SAMHSA
Substance Abuse and Mental Health Services Administration

2018 National Survey on Drug Use and Health (NSDUH): Methodological Resource Book

Section 11: Person-Level Sampling Weight Calibration

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

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2018 National Survey on Drug Use and Health (NSDUH): Methodological Resource Book

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Table of Contents

Chapter **Page**

List of Terms and Abbreviations xv

Overview 1

1. Introduction 3

2. Generalized Exponential Model for Weight Calibration 9

3. Predictor Variables in GEM for the 2018 NSDUH 11

4. Practical Aspects of Implementing GEM for NSDUH 15
   - 4.1 Definition of Extreme Weights of Sampling Weights 15
   - 4.2 Definition of Lower and Upper Bounds for Weight Adjustment Factors 15
   - 4.3 Definition of Control Totals 18
   - 4.4 Efficient Computation Using Grouped Data 19
   - 4.5 Steps in GEM Fitting 19
   - 4.6 Quality Control Checks 20
   - 4.7 Practical Guidelines in Using GEM 20
   - 4.8 Variable Collapsing Guide 22

5. Weight Calibration at Dwelling Unit and Person Levels 25
   - 5.1 Household-Level Weight Components 28
     - 5.1.1 Weight Components #1 to #8: Selection of a Dwelling Unit 28
     - 5.1.2 Weight Component #9: Dwelling Unit–Level Nonresponse Adjustment 29
     - 5.1.3 Weight Component #10: Dwelling Unit–Level Poststratification Adjustment 29
     - 5.1.4 Weight Component #11: Dwelling Unit–Level Extreme Weight Adjustment 30
   - 5.2 Person-Level Weight Components 31
     - 5.2.1 Weight Component #12: Selection of a Person within a Dwelling Unit .. 31
     - 5.2.2 Weight Component #13: Selected Person-Level Poststratification Adjustment 32
     - 5.2.3 Weight Component #14: Respondent Person-Level Nonresponse Adjustment 32
     - 5.2.4 Weight Component #15: Respondent Person-Level Poststratification Adjustment 32
     - 5.2.5 Weight Component #16: Respondent Person-Level Extreme Weight Adjustment 33

6. Evaluation of Calibration Weights 35
   - 6.1 Response Rates 35
   - 6.2 Percentages of Extreme Weights and Outwinsors 35
   - 6.3 Slippage Rates 36
   - 6.4 Weight Adjustment Summary Statistics 37
   - 6.5 Sensitivity Analysis of Drug Use Estimates to Baseline Models 37

References 53

List of Contributors 55

Table of Contents (continued)

Appendix

A Technical Details about the Generalized Exponential Model A-1

B Poststratification Control Totals B-1

C Imputation Methodology C-1

D Generalized Exponential Model Summary D-1

- D1 Model Group 1: New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) D-17
- D2 Model Group 2: Middle Atlantic (New Jersey, New York, and Pennsylvania) D-29
- D3 Model Group 3: East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin) D-41
- D4 Model Group 4: West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota) D-53
- D5 Model Group 5: South Atlantic (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia) D-65
- D6 Model Group 6: East South Central (Alabama, Kentucky, Mississippi, and Tennessee) D-77
- D7 Model Group 7: West South Central (Arkansas, Louisiana, Oklahoma, and Texas) D-89
- D8 Model Group 8: Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) D-101
- D9 Model Group 9: Pacific (Alaska, California, Hawaii, Oregon, and Washington) D-113

E Evaluation of Calibration Weights: Response Rates E-1

F Evaluation of Calibration Weights: Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors F-1

G Evaluation of Calibration Weights: Person-Level Percentages of Extreme Weights and Outwinsors G-1

H Evaluation of Calibration Weights: Slippage Rates H-1

I Evaluation of Calibration Weights: Weight Summary Statistics I-1

List of Tables

Table **Page**

4.1 Examples of Respondents with Pre- and Post-Weights, Critical Values, Bounds, and Adjustment Factors 18

5.1 Sample Size, by Model Group for Each Stage of Sampling 27

5.2 Weight Distribution for Design-Based Weight and Weight after DU-Level Adjustments. 31

5.3 Weight Distribution for Weight before Any Person-Level Adjustment and after Person-Level Adjustments 33

6.1 Summary Statistics of Overall Weighted Response Rates across Individual States 35

6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH 39

6.3 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH 41

6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH 43

6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH 45

6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH 47

6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH 49

6.8 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Major Depressive Episode (MDE) in the Past Year and Serious Mental Illness (SMI) in the Past Year among Persons Aged 18 or Older: 2018 NSDUH 51

D Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (United States) D-4

D.1a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 1: New England) D-19

D.1b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 1: New England) D-20

List of Tables (continued)

Table		Page
D.2a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 2: Middle Atlantic)	D-31
D.2b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 2: Middle Atlantic)	D-32
D.3a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 3: East North Central)	D-43
D.3b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 3: East North Central)	D-44
D.4a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 4: West North Central)	D-55
D.4b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 4: West North Central)	D-56
D.5a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 5: South Atlantic)	D-67
D.5b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 5: South Atlantic)	D-68
D.6a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 6: East South Central)	D-79
D.6b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 6: East South Central)	D-80
D.7a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 7: West South Central)	D-91
D.7b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 7: West South Central)	D-92
D.8a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 8: Mountain)	D-103
D.8b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 8: Mountain)	D-104
D.9a	2018 NSDUH Person Weight GEM Modeling Summary (Model Group 9: Pacific)	D-115
D.9b	Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 9: Pacific)	D-116
E.1	2018 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States	E-3

List of Tables (continued)

Table		Page
F.1	2018 NSDUH Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States	F-3
G.1	2018 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States	G-3
G.2	2018 NSDUH Respondent Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States	G-5
H.1	2018 NSDUH Slippage Rates: United States	H-3
H.2	2018 NSDUH Slippage Rates: Alabama	H-3
H.3	2018 NSDUH Slippage Rates: Alaska	H-4
H.4	2018 NSDUH Slippage Rates: Arizona	H-4
H.5	2018 NSDUH Slippage Rates: Arkansas	H-5
H.6	2018 NSDUH Slippage Rates: California	H-5
H.7	2018 NSDUH Slippage Rates: Colorado	H-6
H.8	2018 NSDUH Slippage Rates: Connecticut	H-6
H.9	2018 NSDUH Slippage Rates: Delaware	H-7
H.10	2018 NSDUH Slippage Rates: District of Columbia	H-7
H.11	2018 NSDUH Slippage Rates: Florida	H-8
H.12	2018 NSDUH Slippage Rates: Georgia	H-8
H.13	2018 NSDUH Slippage Rates: Hawaii	H-9
H.14	2018 NSDUH Slippage Rates: Idaho	H-9
H.15	2018 NSDUH Slippage Rates: Illinois	H-10
H.16	2018 NSDUH Slippage Rates: Indiana	H-10
H.17	2018 NSDUH Slippage Rates: Iowa	H-11
H.18	2018 NSDUH Slippage Rates: Kansas	H-11
H.19	2018 NSDUH Slippage Rates: Kentucky	H-12
H.20	2018 NSDUH Slippage Rates: Louisiana	H-12
H.21	2018 NSDUH Slippage Rates: Maine	H-13
H.22	2018 NSDUH Slippage Rates: Maryland	H-13
H.23	2018 NSDUH Slippage Rates: Massachusetts	H-14
H.24	2018 NSDUH Slippage Rates: Michigan	H-14
H.25	2018 NSDUH Slippage Rates: Minnesota	H-15

List of Tables (continued)

Table		Page
H.26	2018 NSDUH Slippage Rates: Mississippi	H-15
H.27	2018 NSDUH Slippage Rates: Missouri	H-16
H.28	2018 NSDUH Slippage Rates: Montana	H-16
H.29	2018 NSDUH Slippage Rates: Nebraska	H-17
H.30	2018 NSDUH Slippage Rates: Nevada	H-17
H.31	2018 NSDUH Slippage Rates: New Hampshire	H-18
H.32	2018 NSDUH Slippage Rates: New Jersey	H-18
H.33	2018 NSDUH Slippage Rates: New Mexico	H-19
H.34	2018 NSDUH Slippage Rates: New York	H-19
H.35	2018 NSDUH Slippage Rates: North Carolina	H-20
H.36	2018 NSDUH Slippage Rates: North Dakota	H-20
H.37	2018 NSDUH Slippage Rates: Ohio	H-21
H.38	2018 NSDUH Slippage Rates: Oklahoma	H-21
H.39	2018 NSDUH Slippage Rates: Oregon	H-22
H.40	2018 NSDUH Slippage Rates: Pennsylvania	H-22
H.41	2018 NSDUH Slippage Rates: Rhode Island	H-23
H.42	2018 NSDUH Slippage Rates: South Carolina	H-23
H.43	2018 NSDUH Slippage Rates: South Dakota	H-24
H.44	2018 NSDUH Slippage Rates: Tennessee	H-24
H.45	2018 NSDUH Slippage Rates: Texas	H-25
H.46	2018 NSDUH Slippage Rates: Utah	H-25
H.47	2018 NSDUH Slippage Rates: Vermont	H-26
H.48	2018 NSDUH Slippage Rates: Virginia	H-26
H.49	2018 NSDUH Slippage Rates: Washington	H-27
H.50	2018 NSDUH Slippage Rates: West Virginia	H-27
H.51	2018 NSDUH Slippage Rates: Wisconsin	H-28
H.52	2018 NSDUH Slippage Rates: Wyoming	H-28

List of Tables (continued)

Table		Page
I.1	2018 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States	I-3
I.2	2018 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States	I-5
I.3	2018 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States	I-7

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List of Exhibits

Exhibit **Page**

1.1 Sampling Weight Calibration Steps 6
3.1 Definition of Levels for Variables 12
4.1 Generalized Exponential Model Steps 16
5.1 Summary of 2018 NSDUH Sample Weight Components 26
5.2 U.S. Census Bureau Divisions/Model Groups 27
5.3 Imputed Demographic Variables and Corresponding Explanatory or Auxiliary Sort Variables 30
B.1 Definition of Levels for Variables B-3
D.1 Definition of Levels for Variables D-6
D.2 Covariates for 2018 NSDUH Person Weights (res.sdu.nr) D-12
D.3 Covariates for 2018 NSDUH Person Weights (res.sdu.ps) D-13
D.4 Covariates for 2018 NSDUH Person Weights (sel.per.ps and res.per.nr) D-14
D.5 Covariates for 2018 NSDUH Person Weights (res.per.ps and res.per.ev) D-15
D1.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 1: New England D-23
D1.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 1: New England D-24
D1.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 1: New England D-25
D1.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 1: New England D-26
D1.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 1: New England D-27
D2.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 2: Middle Atlantic D-35
D2.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 2: Middle Atlantic D-36
D2.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 2: Middle Atlantic D-37
D2.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 2: Middle Atlantic D-38
D2.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 2: Middle Atlantic D-39

List of Exhibits (continued)

Exhibit **Page**

D3.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 3: East North Central D-47

D3.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 3: East North Central D-48

D3.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 3: East North Central D-49

D3.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 3: East North Central D-50

D3.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 3: East North Central D-51

D4.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 4: West North Central D-59

D4.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 4: West North Central D-60

D4.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 4: West North Central D-61

D4.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 4: West North Central D-62

D4.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 4: West North Central D-63

D5.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 5: South Atlantic D-71

D5.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 5: South Atlantic D-72

D5.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 5: South Atlantic D-73

D5.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 5: South Atlantic D-74

D5.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 5: South Atlantic D-75

D6.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 6: East South Central D-83

D6.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 6: East South Central D-84

List of Exhibits (continued)

Exhibit **Page**

D6.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 6: East South Central D-85

D6.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 6: East South Central D-86

D6.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 6: East South Central D-87

D7.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 7: West South Central D-95

D7.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 7: West South Central D-96

D7.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 7: West South Central D-97

D7.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 7: West South Central D-98

D7.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 7: West South Central D-99

D8.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 8: Mountain D-107

D8.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 8: Mountain D-108

D8.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 8: Mountain D-109

D8.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 8: Mountain D-110

D8.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 8: Mountain D-111

D9.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 9: Pacific D-119

D9.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 9: Pacific D-120

D9.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 9: Pacific D-121

D9.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 9: Pacific D-122

D9.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 9: Pacific D-123

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List of Terms and Abbreviations

C	Center point.
CAI	Computer-assisted interviewing.
DU	Dwelling unit.
ev	Extreme weight adjustment. See Section 4.1 for more detail.
FI	Field interviewer.
GEM	Generalized exponential model. See Chapter 2 for more detail.
half-step	This refers to halving the increment in the Newton-Raphson iterative process for fitting GEM.
IQR	Interquartile range.
L	Lower bound on adjustment factor.
MPMN	Multivariate predictive mean neighbor.
nr	Nonresponse adjustment.
Outwinsor	Signifies the percentages of weights trimmed after extreme weight adjustment via winsorization.
PMN	Predictive mean neighborhood.
ps	Poststratification adjustment.
res.sdu.nr	Respondent screener dwelling unit nonresponse adjustment step. See Section 5.1.2 for more detail.
res.sdu.ps	Respondent screener dwelling unit poststratification adjustment step. See Section 5.1.3 for more detail.
res.sdu.ev	Respondent screener dwelling unit extreme weight adjustment step. See Section 5.1.4 for more detail.
sel.per.ps	Selected person-level poststratification adjustment step. See Section 5.2.2 for more detail.
res.per.nr	Respondent person-level nonresponse adjustment step. See Section 5.2.3 for more detail.
res.per.ps	Respondent person-level poststratification adjustment step. See Section 5.2.4 for more detail.
res.per.ev	Respondent person-level extreme weight adjustment step. See Section 5.2.5 for more detail.
SAE	Small area estimate.
SDU	Screener dwelling unit.
SE	Standard error.
SES	Socioeconomic status indicator. See Exhibit 3.1 for more detail.
SS	State sampling.
U	Upper bound on adjustment factor.
UPMN	Univariate predictive mean neighbor.
UWE	Unequal weighting effect. It refers to the contribution in the design effect due to unequal selection probability and is defined as $1 + \left[(n-1)/n\right] * CV^2$ where CV = coefficient of variation of weights, and n is the sample size.
VESTR	Variance estimation stratum.
VEREP	Variance estimation replicates.
Winsorization	A method of extreme weight adjustment that replaces extreme weights with the critical values used for defining low and high extreme weights.

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Overview

This report contains a brief review of the sampling weight calibration methodology used for the 2018 National Survey on Drug Use and Health (NSDUH), which was known as the National Household Survey on Drug Abuse (NHSDA) before 2002. This report also lists detailed documentation on the implementation steps and evaluation results from the weight calibration application. The constrained exponential modeling method used in the surveys before 1999 (referred to in this report as the generalized exponential model [GEM]) was modified to provide more flexibility in dealing internally with the extreme weights and for setting bounds directly on the weight adjustment factors so they can become suitable for nonresponse (nr) and poststratification (ps) adjustments. The introduction of the 50-state sample design and new baseline in 1999 provided an opportunity for this modification to occur and to include state-level predictors. GEM provides a consolidated method that can handle nonresponse, poststratification (including a much larger number of population controls for state estimation), and extreme weight adjustments. The highlights of the method are summarized as follows:

- NSDUH's inherent two-stage interview[1] design (viewing the large screener sample as the first stage and the actual questionnaire sample as the second stage) allows for the additional step of poststratifying the selected people to estimated controls from the large first-stage sample of people. This additional step results in stable controls for the later step of nonresponse adjustment at the respondent-person level. These two steps had been combined as one step in surveys before 1999, but they have been kept separate from 1999 onward.
- A poststratification step at the respondent-household level of the screening interview reduced coverage bias resulting from the DU sampling and produced controls for use in poststratification at the selected-person level, respondent person-pair level, and respondent-household level in the main interview. This step again takes advantage of the inherent two-stage interview design of the study.
- The built-in control on extreme weights in GEM can be supplemented by a separate step of extreme value adjustment after the final poststratification whenever the extreme weight percentage in the initial unadjusted weights is considered to be too large. This can be accomplished by using GEM so that the sample demographic distribution is preserved. This method represents an improvement over the trimming method implemented before the nonresponse adjustment in surveys before 1999 and the extreme value adjustment before the nonresponse adjustment used for the 1999 NHSDA. For the 2018 NSDUH, this final extreme value adjustment was judged to be unnecessary.

Several chapters in this report describe the implementation and evaluation of GEM, and the appendices contain mainly tables. In the interest of reducing the size of the report, detailed domain-specific evaluation results are presented in the supplement to this report, which is available upon request.

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

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1. Introduction

The respondent universe for the 2018 National Survey on Drug Use and Health[2] (NSDUH) was the civilian, noninstitutionalized population aged 12 years or older residing within the 50 states and the District of Columbia. Consistent with NSDUH's design since 1991, the 2018 NSDUH universe included residents of noninstitutional group quarters (e.g., shelters, rooming houses, dormitories, group homes), residents of Alaska and Hawaii, and civilians residing on military bases.

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

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

The 2014 through 2022 design provides for estimates by state in all 50 states plus the District of Columbia. States may therefore be viewed as the first level of stratification and as a reporting variable. The survey's sample was designed to yield the following:

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

The target national sample size for the 2018 NSDUH was 67,507 people, and the achieved sample for the 2018 NSDUH was 67,791 people—corresponding to 50,373 responding dwelling units (DUs) out of 141,844[3] DUs screened.

[2] This report presents information from the 2018 NSDUH. Prior to 2002, the survey was called the National Household Survey on Drug Abuse (NHSDA).

[3] The number of DUs that completed the screening was 141,879, but some DUs did not have eligible people, so they were removed from the DU poststratification and person-level calibration steps. The number of DUs that had eligible people in them was 141,844.

In addition to having a different sample allocation by state, the 2014 through 2022 survey design places more sample in the 26 or older age groups to estimate drug use and related mental health measures more accurately among the aging population. For the 2014 through 2018 NSDUHs, each state sample will be allocated to age groups as follows: 25 percent for youths aged 12 to 17, 25 percent for young adults aged 18 to 25, 15 percent for adults aged 26 to 34, 20 percent for adults aged 35 to 49, and 15 percent for adults aged 50 or older. In the 2005 through 2013 NSDUHs, the sample was allocated equally across the 12 to 17, 18 to 25, and 26 or older age groups.

Similar to the 2005 through 2013 NSDUHs, the first stage of selection for the 2014 through 2022 NSDUHs was census tracts. This stage was included to contain sample segments within a single census tract to the extent possible.

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

Before selecting census tracts, additional implicit stratification was achieved by sorting the first-stage sampling units by a core-based statistical area/socioeconomic status indicator and by the percentage of the population that is non-Hispanic and white. From this well-ordered sample frame, 48 census tracts per SSR were sequentially selected with probabilities proportionate to a composite size measure and with minimum replacement (Chromy, 1979).

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

Because census block groups generally exceed the minimum DU requirement, one smaller geographic region was selected within each sampled census block group. For this third stage of sampling, each selected census block group was partitioned into compact clusters[4] of DUs by aggregating adjacent census blocks. Consistent with the terminology used in previous NSDUHs, these geographic clusters of blocks are referred to as "segments." A sample DU in

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

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

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

An equal probability subsample of eight segments is used for each NSDUH year. These eight segments are randomly assigned to quarters and to two panels within each quarter. For 2018, the first panel segments (panel E) were used for the 2017 and 2018 surveys, constituting the overlap sample. The second panel segments (panel F) were used for the 2018 survey and are being used again for the 2019 survey.

After sample segments for the 2018 NSDUH were selected, specially trained field household listers visited the areas and obtained complete and accurate lists of all eligible DUs within the sample segment boundaries. These lists served as the frames for the fourth stage of sample selection.

Using a random start point and interval-based (systematic) selection, the actual listing units were selected from the segment frame. After DU selections were made, an interviewer visited each selected DU to obtain a roster of all people residing in the DU. Using the roster information obtained from an eligible member of the selected DU, 0, 1, or 2 people were selected for the survey. Sampling rates were preset by age group and state. Roster information was entered directly into the electronic screening instrument, which automatically implemented this fifth stage of selection based on the state and age group sampling parameters.

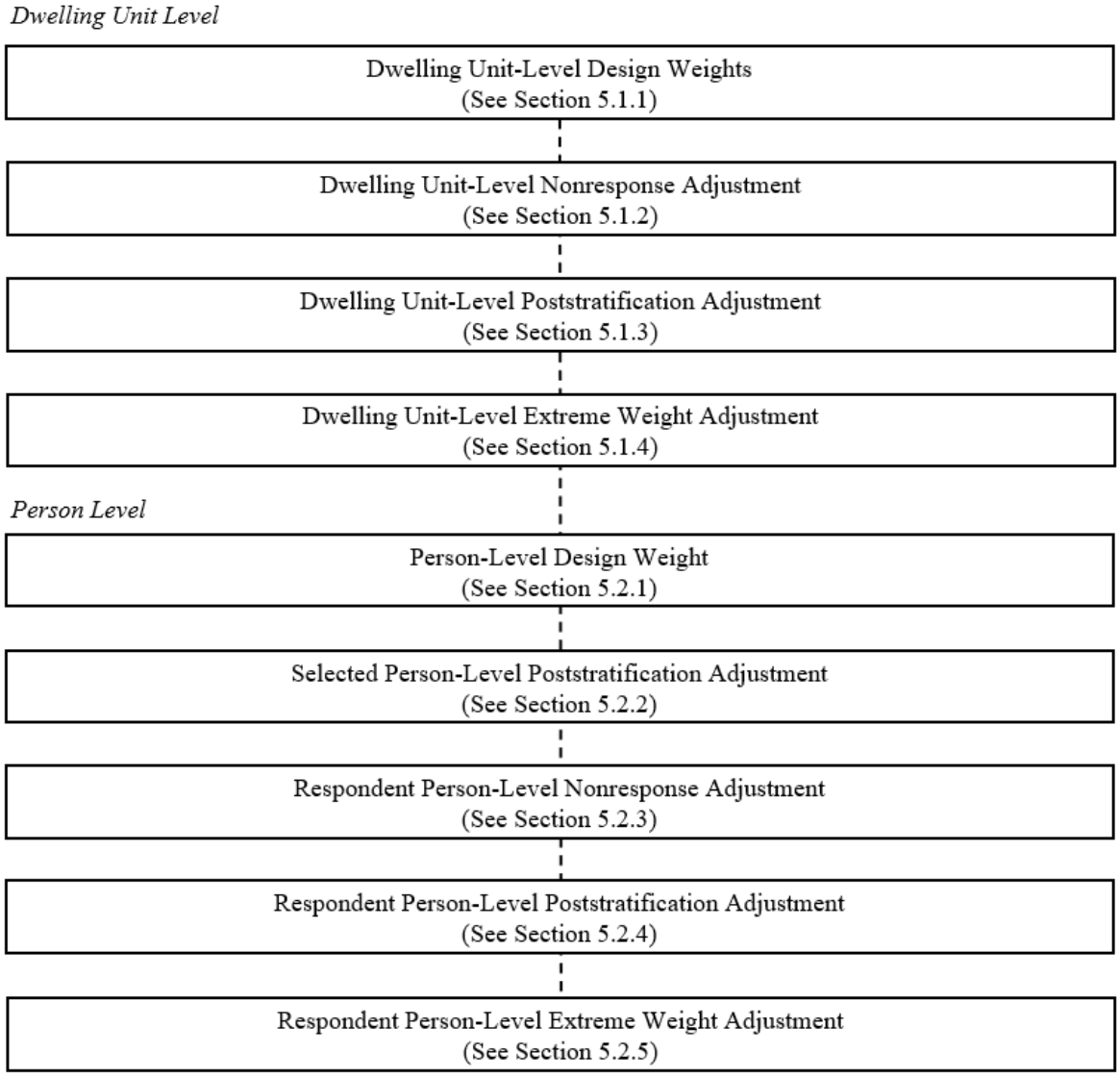
As in previous years of the survey,[5] the 2018 NSDUH sample weighting posed challenges because of the sheer magnitude of the number of state-specific predictors used for nonresponse (nr) and poststratification (ps) adjustments. With the 51-state survey, using a single model for each of the adjustments was not practical; however, treating each state separately was not desirable because individual state sample sizes were not large enough to support reliable estimation of a number of parameters. Therefore, the 51 states were grouped into nine model groups corresponding to the nine U.S. Census Bureau divisions. This helped to keep a substantial number of predictor variables in each model and reduced the computing time that would be associated with fitting a larger model.

As with each survey after 1999, an important feature of the 2018 NSDUH sample weighting was to capitalize on the NSDUH two-stage interview design (although the design was primarily viewed as multistage) by adding a step to poststratify the household weights in the screening interview (see Exhibit 1.1). This reduced coverage bias resulting from the DU

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

sampling and produced estimated controls for use in poststratification of person-pair weights and household weights in the main interview stage. No other suitable source was available for obtaining these controls for poststratification. Note also that screener DU weights were poststratified to population counts by adjusting the DU's weighted contribution of person counts to various demographic domains. The second important feature was to add a step to poststratify selected people (including respondents and nonrespondents) to estimated controls from the large screener sample of people for various predictor variables at the segment, DU, and person levels. This provided stable controls for the step involving the nonresponse adjustment of respondent weights. Incorporating this important feature would not have been possible without screener data on the sociodemographics of members of the selected households.

Exhibit 1.1 Sampling Weight Calibration Steps



As in previous NSDUHs, a modification of the earlier methodology of scaled constrained exponential modeling (CEM) (Folsom & Witt, 1994) was used to meet the new demands on the

weighting mentioned previously (i.e., the two-stage interview design and large number of available predictors). The modified methodology, called the generalized exponential model (GEM) (Folsom & Singh, 2000), has several features:

- Like CEM, GEM can use a large number of predictor variables, such as those obtained from the screener sample for the 50 states plus the District of Columbia, and some of their interactions.
- GEM allows unit-specific bounds for the weights initially identified as extreme, which provide tight controls on the extreme weights. This built-in control is often adequate, in that the frequency of extreme weights, after the nonresponse and poststratification adjustments, is not usually high. However, if this is not the case, GEM can be used for a separate extreme weight adjustment after poststratification. This extra adjustment, which uses tighter bounds, will preserve the demographic population controls used in the poststratification step.
- GEM provides a unified approach to nonresponse, poststratification, and extreme weight adjustments. The differences are only in terms of the bounds and control totals that are used.
- GEM can be implemented efficiently using software developed at RTI.
- GEM is a generalization of the commonly used raking-ratio method in which a distance function is minimized such that (1) the initial weights are perturbed only a little and lie within certain bounds, and (2) control totals are met. It is also a generalization of Deville and Särndal's (1992) logit method in that the bounds on weights are not required to be uniform. Moreover, the lower bound can be set to one, which is desirable for the nonresponse adjustment. Like the previously mentioned methods, fitting GEM requires iterations (such as Newton-Raphson).

The report is organized as follows. In Chapter 2, GEM is reviewed, and a heuristic description outlines how GEM provides a unified approach to all three procedures' adjustments for nonresponse, poststratification, and extreme weight adjustment. In Chapter 3, potential predictor variables for use with nonresponse, poststratification, and extreme weight are discussed, and the strategy for dealing with many predictors via modeling groups of states is reviewed. In Chapter 4, practical steps for implementing GEM for the 2018 NSDUH are presented, and in Chapter 5, details of the weight calibrations, including all weight components corresponding to screening and interviewing, are given. Chapter 6 presents the evaluation measures of calibrated weights and a sensitivity analysis of point estimates and standard errors (adjusted for calibration) of selected drug prevalence estimates, major depressive episode, and serious mental illness. The sensitivity analysis compares the estimates and standard errors from final models to those of the baseline models (which consist of only main effects). Nine appendices also are included. Appendix A presents technical details about GEM, Appendix B documents the creation and source of the poststratification control totals, and Appendix C contains information on the imputation methodology. Appendix D summarizes the GEM modeling, and the remaining five appendices contain various tables on weighted response rates, percentages of extreme weights and outwinsors, slippage rates, and weight adjustment summary statistics.

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2. Generalized Exponential Model for Weight Calibration

In survey practice, design weights are typically adjusted in three steps via the following methods: (1) weighting class adjustments for nonresponse, (2) raking-ratio adjustments for poststratification, and (3) winsorization for extreme weights. The bias introduced by winsorization is alleviated to some extent through poststratification. The nonresponse (nr) adjustment is a correction for bias that is introduced when estimates are based only on responding units; poststratification is an adjustment for coverage (typically undercoverage) bias, as well as for variance reduction (which is possibly due to correlation between the study and control, usually demographic, variables). If weights are not treated for extreme weight adjustment, the resulting estimates, although unbiased, will tend to have lower precision.

There are limitations in the existing methods of weight adjustment for nonresponse, poststratification, and extreme weight. For the nonresponse step, there are general raking-type methods, such as the scaled constrained exponential model developed by Folsom and Witt (1994), where the lower and upper bounds can be suitably chosen by using a separate scaling factor. The factor is set as the inverse of the overall response propensity. It would be beneficial to have a model for the nonresponse adjustment factor that incorporates the desired lower and upper bounds on the factor as part of the model. Note that the lower bound on the nonresponse adjustment factor should be 1 because it is interpreted as the inverse of the probability of response for a particular unit. For the poststratification step, the general calibration methods of Deville and Särndal (1992), such as the logit method, allow for built-in lower (L) and upper (U) bounds (for poststratification, typically $L < 1 < U$). However, it would be useful to have nonuniform bounds (L_k, U_k) depending on the unit k, such that the final adjusted weights, w_k, could be controlled within certain limits. An important application of this feature would be weight adjustments to allow the user to have some control over the final adjustment of weights initially identified as extreme weights. It would be advantageous to adjust for bias introduced in the extreme weight adjustment step (such as when extreme weights are treated via winsorization) so that the sample distribution for various demographic characteristics is preserved.

A modification of the earlier method of the scaled constrained exponential model of Folsom and Witt (1994), termed the generalized exponential model (GEM) and proposed by Folsom and Singh (2000), provides a unified approach to the three weight adjustments for nonresponse, poststratification, and extreme weight, and it has the valuable features mentioned previously. The functional form of the GEM adjustment factor is given in Appendix A. It generalizes the logit model of Deville and Särndal (1992), typically used for poststratification, such that the bounds (L, U) may depend on k. Thus, it provides a built-in control on extreme weights, during both nonresponse adjustments and poststratification. In addition, the bounds are internal to the model and can be set to chosen values (e.g., $L_k = 1$ in the nonresponse step). If the frequency of extreme weights is low after the final poststratification, a separate extreme weight adjustment step may not be necessary.

Note that in view of the nonresponse adjustment factor being defined as the inverse of response propensity, GEM requires it to be greater than 1. However, the built-in extreme weight control feature of GEM essentially defines adjustment factors with regard to the critical value under winsorization. Therefore, although the adjustment factor with regard to the cutoff point is

always greater than 1, with regard to the original weight, it can be less than 1. (See the example in Section 4.2 for details.)

In fitting GEM to a particular problem, choosing a large number of predictor variables along with tight bounds will have an impact on the resulting unequal weighting effect (UWE) and the percentage of extreme weights. In practice, this leads to somewhat subjective evaluations of trade-offs between the target set of bounds for a given set of factor effects, the target UWE, and the target proportions of extreme weights. The percentage of "outwinsors" (a term coined to signify the extent of residual weights after extreme weight adjustment via winsorization) is probably a more realistic benchmark in determining the robustness of estimates in the presence of extreme weights. Chapter 4 provides details about the GEM process and some practical guidelines about fitting such a model. In particular, an adaptive method based on realized minimum and maximum bounds after setting loose initial bounds is recommended for choosing bounds more objectively.

A large increase in the number of predictor variables in GEM typically would result in a higher UWE, indicating a possible loss in precision. By looking at the change in variance calculated for a model run with the minimal number of predictor variables versus the final model that was reached during the weighting process, a more precise measure of loss (or gain) in precision can be obtained for variance of selected study variables. The results are presented in Chapter 6.

3. Predictor Variables in GEM for the 2018 NSDUH

For the 2018 National Survey on Drug Use and Health (NSDUH), the initial set of predictor variables was identical to the set used for the 2017 NSDUH and have been the same since 1999. Exhibit 3.1 shows the definitions and levels of these predictor variables. Typical predictors used for the screener dwelling unit (DU) nonresponse adjustment were State, Quarter, Group Quarters Indicator, Population Density, Percentage Hispanic or Latino in Segment, Percentage Black or African American in Segment, Percentage Owner-Occupied DUs in Segment, and Segment-Combined Median Rent and Housing Value, which is also called the Socioeconomic Status (SES) indicator. The SES indicator was a composite measure based on (standardized) median rent, median housing value, and the percentage of dwellings that are owner occupied. Typical predictors for the person-level nonresponse adjustments were, in addition to those stated previously, Age, Gender, Race, Hispanicity, and Relation to Householder (i.e., the head of the household). For poststratification, predictors typically used were State, Age, Race, Gender, Hispanicity, and Quarter. In all cases, the model consisted of main effects and some interactions of these predictors. For a separate extreme weight adjustment with the generalized exponential model (GEM) after poststratification, the predictors were the same as those used in the poststratification (ps) adjustment.

Generally, it is desirable to include, whenever possible, poststratification predictors (correlated with the outcome variable) as part of nonresponse predictors (correlated with the response variable) because of the potential variance reduction; this works to offset the variance inflation, which is due to the random controls used in the nonresponse (nr) adjustment. In general, this is not possible because demographic information (often used for poststratification) is not available for nonrespondents. However, with a two-stage interview design, such as NSDUH's, this problem does not exist because the screener data contain the necessary information. There is, of course, the cost in time and effort required to edit and impute the screener-based predictors in advance of this nonresponse adjustment. Many times, the need to edit, impute, or both edit and impute nonresponse predictors for the full sample, which consists of respondents and nonrespondents, is eliminated because the poststratification and nonresponse adjustments are combined into a single poststratification step. However, the processes leading to nonresponse and coverage errors are likely to be different enough to benefit from separate modeling. The nonresponse-adjustment models also can benefit from bias reduction when segment-level variables, such as the percentage of owner-occupied DUs, are included in the model. Population totals for these segment-level variables have not been developed for use as poststratification controls.

Exhibit 3.1 Definition of Levels for Variables

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

Gender
1: Male, 2: Female[1]

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

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

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

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

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

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

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

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

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

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

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

States[4]

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

MSA = metropolitan statistical area.

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

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

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Heuristically, the suitable number of state-specific controls should depend on the size of the realized sample in each state; because of this, the nature of the problem of too many controls in nonresponse- and poststratification-adjustment models is state specific. Therefore, for the 2018 NSDUH, the strategy proposed by Singh, Penne, and Gordek (1999) was followed and is discussed in the following paragraphs. Also using Singh et al. (1999), some general guidelines were used to choose an initial set of state-specific controls, and the initial set was modified iteratively as problems in maintaining them arose. The process began with the baseline model of one-factor effects and then proceeded with the addition of second- and third-order effects; collapsing was performed as necessary, depending on the individual state sample sizes. To obtain more precise state-level estimates, every effort was made to include as many important state-specific covariates as possible in models for nonresponse and poststratification weight adjustments. These covariates typically were defined by sociodemographic domains. However, keeping a multitude of state-specific covariates, especially higher order interactions, was not possible because individual state sample sizes were not large enough to support stable estimation of an adequate number of model parameters. Therefore, a hierarchical order was used for including covariates in the model; the order started with covariates at the national level, followed by covariates at the census division level within the nation, then covariates at the combined state level within the census division, and finally, whenever possible, covariates at the state level within the combined states.

When adding certain covariates to the model resulted in parameters that could not be estimated or were unstable, the hierarchy strategy mentioned previously was used to combine states within a census division so that covariates at the combined level could be included. However, this problem typically arose with state-specific higher order interactions, and states were collapsed only when combining levels of covariates within a state was not a reasonable alternative. This was thought to be beneficial in obtaining more reliable state-level estimates using small area estimation (SAE) techniques. The eight largest states were not combined with other smaller states, to the extent possible, so that direct state-level estimates could be obtained without relying on SAE.

As an objective check for the suitability of the number of factors, once a satisfactory convergent model was obtained (see Section 6.5 for details), the relative efficiency of a more complex model (with many effects) versus a simpler model (with fewer effects) was measured. In addition to the relative efficiency, the increase in the unequal weighting effect was checked.

For the 2018 NSDUH data, as for the previous years' data, it became apparent that the number of controls could be very high (in excess of 1,000). This many controls would be computationally prohibitive because the implementation of GEM involves iterative steps, and a matrix (whose dimension corresponds to the number of controls) must be inverted in each of these iterations. A solution would be to use separate models within groups of states rather than a single overall model. It can be shown that, if effects (two-factor or higher order) are always collapsed within a group of states, then fitting an overall model of GEM is equivalent to fitting separate models for each group. In this way, the computational problems associated with too many controls could be reduced. Therefore, in the 2018 NSDUH, as in the 1999 through 2017 surveys, nine model groups corresponding to the nine census divisions were used.

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4. Practical Aspects of Implementing GEM for NSDUH

As explained in Chapter 2, the generalized exponential model (GEM) can be used for nonresponse (nr) adjustment, poststratification (ps), and extreme weight (ev) adjustment (see Exhibit 4.1 for a schematic presentation of the steps). These steps were implemented using the GEM macro developed at RTI. A detailed discussion can be found in Chen, Penne, and Singh (2000).

4.1 Definition of Extreme Weights of Sampling Weights

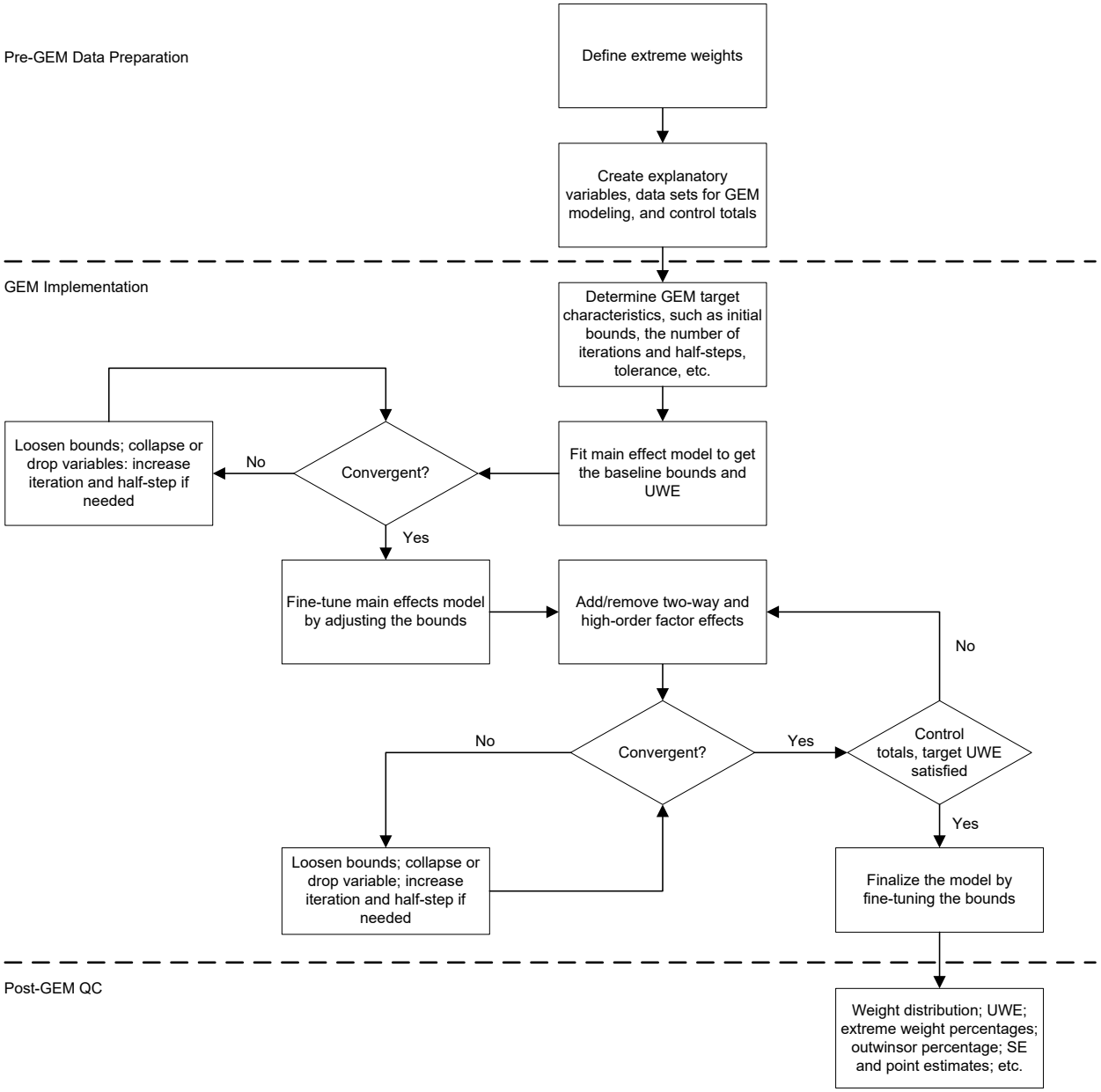
An important aspect of GEM is the built-in provision of extreme weight adjustment. Sampling weights for the survey generally were classified as extreme (high or low) if they fell outside the commonly used interval defined by the median $\pm 3 \times$ interquartile range (IQR) for some prespecified domains; these domains were usually defined by design strata, taking into account deep stratification. For example, the dwelling unit (DU)-level weight for the 2018 National Survey on Drug Use and Health (NSDUH) used the state sampling region (SSR) as the domain. The person-level weight adjustments used a hierarchy of four domains: (1) SSR × Age group, (2) State × Age group, (3) SSR, and (4) State. A minimum of 30 observations was required for defining the boundaries, or critical values, for extreme weights. If this minimum was not met at the lower level, the next level up in the hierarchy was used.

Although the SSR × Age group domain corresponded to a deep stratum, it could be unsuitable for defining extreme weights because of insufficient sample sizes. So, collapsing SSRs within a state gave rise to such domains as State × Age group. Even at this level, sample sizes could be insufficient, so SSRs and, later, states themselves could be used as domains to define extreme weights. The critical values for low and high extreme weights are denoted by $b_{k(l)}$ and $b_{k(u)}$, respectively. The critical points for extreme weights within GEM modeling were defined as the median $\pm 2.5 \times$ IQR, which was conservative when compared with the commonly used standard of the median $\pm 3 \times$ IQR. This is because, to better prevent the adjusted weights from crossing the standard boundary and those at or beyond the boundary, weights near but below it (which have the most potential to become extreme) were treated as extreme by GEM.

4.2 Definition of Lower and Upper Bounds for Weight Adjustment Factors

For implementing extreme weight control via GEM, we define a ratio m_k for each individual unit. The ratio m_k was defined as $b_{k(u)} / w_k$ for high extreme weights, and $b_{k(1)} / w_k$ for low extreme weights, where w_k represents the sampling weight before adjustment, and $b_{k(u)}, b_{k(l)}$ denote the critical values for the extreme weights. (Note that under this definition, nonextreme weights have a value of 1 for m_k; for high extreme weights, the more extreme the weight is, the smaller m_k will be; conversely for low extreme weights, the more extreme the weight is, the bigger m_k will be.)

Exhibit 4.1 Generalized Exponential Model Steps



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

The upper and lower bounds for the adjustment factors were defined, respectively, as the product of m_k and the upper and lower boundary parameters specified in the modeling of GEM. GEM allows inputs of three different upper (U) and lower (L) boundary parameters (L_1, and U_1, L_2, and U_2, L_3, and U_3, respectively) for high, non-, and low extreme weights. By applying a small upper boundary parameter for high extreme weights and a large lower boundary parameter for low extreme weights, the extreme weights could be controlled in the modeling.

GEM also requires specification of centers (C), such that L < C < U. For nonresponse adjustment, it was constructive to require all adjustments to be greater than 1 because the adjustments represented the inverse of response propensities. The value of C in this case was chosen as the inverse of the overall response propensity. For poststratification, centers were set to 1 so the adjusted weights would not be too far away from the original design weights. Here, lower bounds were chosen to be less than 1 and upper bounds were greater than 1 because the control totals could be larger or smaller than the estimated totals based on the design weights. The extreme weight adjustment is analogous to the poststratification adjustment (see Appendix A) in that it is a repeated poststratification with tighter bounds for extreme weights identified after the poststratification step. Section 4.7 gives guidelines for the choice of lower, center, and upper parameters.

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

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

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

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

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

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

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

4.3 Definition of Control Totals

GEM modeling for nonresponse adjustment, poststratification, and extreme weight adjustment involved estimation of parameters of the adjustment factor model, such that specified control totals were satisfied. There were two types of control totals. For nonresponse adjustment, the control totals were from the full sample (i.e., respondents and nonrespondents), while for poststratification, control totals were obtained from external sources, such as the Census Bureau or the large screener sample. Specifically, for the 2018 NSDUH, the control totals for various domains for the selected person-level poststratification adjustment (sel.per.ps, see Section 5.2.2) were obtained from the screener sample (respondents who completed the screening) containing roster information, and the control totals for the respondent person-level poststratification (res.per.ps, see Section 5.2.4) were obtained from the Census Bureau's Postcensal Population Estimates for various demographic domains. Controls used for extreme weight adjustment were the same as those for poststratification because they were based on the poststratified weight. (See Appendix B for more information.)

4.4 Efficient Computation Using Grouped Data

Because adjustment factors remained the same for units (DUs or people) having common values for all explanatory variables used in the model, the size of the sample data was reduced by grouping units having common values of these variables. Also, within the groupings, the units with extreme weights were further grouped such that, in addition to the common values of the explanatory variables, they also had common values of m_k. This significantly saved computation time, especially because the original sample size was large. Modeling GEM with grouped data was implemented by treating each group as a single record, with the associated weight defined as the sum of the individual weights in the group. Note that when using GEM with grouped data, the unequal weighting effect (UWE) and *t*-test statistics normally produced in the output would be misleading because the weights in grouped data are sums of the weights for the individual units within each group. Also, the definition of variance estimation stratum (VESTR) and replicates (VEREP) required for variance calculation would not be correct. To avoid these misleading results from using the grouped data, the final model was rerun with the full (ungrouped) data.

4.5 Steps in GEM Fitting

Exhibit 4.1 depicts the GEM steps. After specifying the GEM parameters, such as the initial upper and lower bounds, the number of the Newton-Raphson iterations and half-steps, and the type of weight adjustment (nonresponse adjustment, poststratification, or extreme weight adjustment), a forward selection method for modeling was used. A model with only main effects and loose bounds was first fit to obtain a set of realized baseline upper and lower bounds for extreme and nonextreme weights and to calculate a baseline UWE. Next, using the realized bounds, as many higher order interactions as possible were added to the model to help reduce bias, without unduly increasing the UWE and the extreme weight percentages. Convergence problems were addressed by loosening lower bounds and upper bounds and collapsing or dropping variables. In GEM, *t* tests and *p* values for significance of various effects could be computed for a previously converged model, which would be helpful in deciding about the collapsing of effects when convergence problems arose with realized bounds.

For this application, "collapsing" implies combining the "levels" of variables with other levels explicitly present in the model, while "dropping" implies combining with the reference levels, which are not explicitly represented in the model. Collapsing or dropping lower order interactions had a direct impact on the inclusion of the number of higher order interactions. For the 2018 NSDUH, when adding higher order terms, all previously selected explanatory variables were retained in the model. Possible reasons for nonconvergence included explanatory variables corresponding to domains with small sample sizes, or domains with large discrepancies between estimated totals based on the initial weights and the target control totals. The variables causing problems with convergence were identified by the high magnitude of the estimated model parameters. Once the explanatory variables were finalized, finer adjustments of upper bounds and lower bounds could optimize the model by reducing UWE and the extreme weight percentages.

4.6 Quality Control Checks

The distributions of the weights before and after each adjustment were compared to uncover any unusual impact of the weight adjustment on the initial weights. In addition to the weight distributions, the ratios of the maximum weight to the mean weight and the UWEs were compared across various domains both before and after each adjustment. The percentages of extreme weights were checked after each adjustment to see how effective the modeling was in controlling extreme weights. Coverage bias analysis based on the slippage (the distance between the total sample weighted count and the target population count) rates also was conducted to check the impact of poststratification on various noncontrolled domains (i.e., those factors that were dropped or collapsed in the model).

4.7 Practical Guidelines in Using GEM

1. Collapsing checks for domains with small sample sizes. The number of observations in various domains defined by levels of the factor effects was examined. If the domain sample size was 0 and the control total corresponding to this domain also was 0, the factor generally was dropped. This automatically collapsed the factor level with the reference level; however, if the control total was not 0, the factor could not be dropped because collapsing the domains together for the sample also would collapse the population domains together. The result would be that control totals could not be met for the reference levels involved. In these cases, the factor level corresponding to a 0 domain sample size should be collapsed with another level to satisfy the control total.

In general, domains with small sample sizes may cause problems during GEM modeling and prevent the model from converging. For the 2018 NSDUH, if the model did not converge because a domain sample size was small, the corresponding factor effect was collapsed with another effect based on substantive considerations. For example, if State was involved, then it was better, in general, to collapse within states; collapsing of geographically adjacent states was done only when there was no other reasonable alternative (see Section 4.8 for more details). The necessity of collapsing was checked at each stage of model enlargement in the forward selection of factors. If variables were collapsed at a previous stage, the corresponding factor levels were also collapsed using the hierarchy principle at succeeding stages involving higher order factor effects.

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

3. Finding the initial factor set. After the collapsing and singularity checks, the remaining factor effects at a given stage of model enlargement formed the initial factor set.

4. Baseline model. Starting with the model consisting of all one-factor effects from the initial factor set, a convergent version was found (after any required collapsing) under no restrictions on the bounds. The model was optimized by trying to reduce the UWE and tighten the bounds. If necessary (to obtain convergence), factors corresponding to large parameter estimates were collapsed. As an option, *p* values could have been used to determine which factors to collapse.

5. Baseline plus two-factor effects. All two-factor interactions from the initial factor set were added to the baseline model. A convergent version under no bound restrictions then was found, and the model was optimized using criteria described in Guideline 4. The non-state two-factor effects were added first, and then, in a separate step, the state two-factor effects were added.

6. Baseline with two and higher order factor effects. Starting with the optimized model from Guideline 5, the higher order factor effects were added—first the non-state three-factor effects, then, in a separate step, the state three-factor effects. Again, criteria from Guideline 4 were followed to obtain an optimal model.

7. Optimizing a model with respect to the target model characteristics. These are summarized in the following points:

- For each step of model enlargement, the UWE for the initial weights was computed. It was allowed to increase up to 20 percent, or the maximum allowable UWE (generally under six), whichever was lower.
- The following guidelines, based on empirical considerations, were used for setting the bounds. In the case of poststratification and separate extreme weight adjustments, the center was set as $C_1 = C_2 = C_3 = 1$. Instead of tightening the bounds to as close to 1 as possible, as was done for surveys before 2002, an adaptive approach was used to choose the bounds starting from the 2003 NSDUH; that is, starting with loose bounds of (0.1, 10), GEM was performed iteratively four times, each with the realized bounds from the previous iteration. The final bounds for nonextreme weights were desired to be around (0.2, 5). The iterations based on the adaptive approach generally met this desired criterion. If this was not the case, then collapsing of some model variables was allowed to meet this criterion. Finally, the bounds U_1 and L_3 were further tightened to be as close to 1 as possible to better control high and low extreme weights, while maintaining $L_3 \geq L_2$ and $U_1 \leq U_2$.
- In the case of nonresponse, the centers were set equal to the common value of the overall inverse response propensity, and all the three lower bounds (L_1, L_2, and L_3) were set to 1. Next, starting with the loose bounds of (1, 10), the bounds were chosen iteratively as mentioned above using the realized bounds from the previous GEM iteration. The bounds U_1 and L_3 were further tightened to as close to center as possible, while maintaining $L_3 \geq L_2$ and $U_1 \leq U_2$.

- Targets for the maximum acceptable percentages of extreme weights and outwinsors within GEM for nonresponse and poststratification were as follows: 3 percent for the unweighted extreme weights, 15 percent for weighted extreme weights, and 5 percent for outwinsors. These percentages are liberal and serve as guidelines only. In practice, reducing them by half is preferable. If these guidelines were not met after all stages of calibration, a separate GEM for adjustment of extreme weights was implemented after poststratification.

8. Evaluation measures. After each stage of model enlargement, various characteristics were examined for large values. These included the UWE, the ratio of the maximum to the mean for adjusted weight, the percentage of extreme weights and outwinsors, the distance between the total sample weighted count and the target population count (i.e., slippage rates for different domains), and other characteristics, such as weight summary statistics. In addition, the distributions of adjustment factors were checked for highly asymmetric tails. With the set of realized bounds for the final model, the baseline model was rerun, and then point estimates and standard errors (SEs) for selected outcome variables for the two models were compared. Generally, the two estimates were likely to be close, but not the SEs. The SEs for the final model were expected to be smaller but, at times, could be larger. Larger SEs were identified and examined because they could be an indication of instability of the model parameter estimates because of possible overfitting or insufficient sample sizes. In such situations, the final model was revised to get a more parsimonious model.

4.8 Variable Collapsing Guide

As discussed in Section 4.5, convergence problems in GEM were solved by either loosening bounds or collapsing model variables. Grouping proposed levels into a smaller number of categories could be done in several ways, but care was taken so that they remained meaningful. When constructing the model and attempting to obtain convergence, maintenance of logical groupings was a top priority. The following are some general guidelines that were followed when collapsing variables.

- *Ordinal variables*. Most of the proposed explanatory variables were ordinal. Thus, collapsing was done in a meaningful way, following the order. For example, the combined Rent/Housing quintile had five levels (i.e., 1st, 2nd, 3rd, 4th, and 5th quintile) with the 5th quintile set for the reference. If the 4th quintile needed to be collapsed, it would be collapsed with either the 3rd or 5th quintile.
- *Age groups*. Age group had five levels: 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older (50 or older was further broken down into 50 to 64 and 65 or older for the person-level poststratification adjustment and the person-level extreme weight adjustment to increase the accuracy of estimates for these age groups). For the main effects, the age covariate with five or six levels was easy to incorporate in the model. For the interactions, every effort was made to maintain the age group, and, therefore, collapsing was performed within age groups first. Collapsing across age groups occurred only if the age groups could not be maintained separately.
- *Large and adjacent states*. In the main effects, fitting states separately in the model was not a problem. For the state-specific interactions, collapsing was done within the state first; collapsing with other adjacent states was done only if needed. For the eight

states with the largest sample sizes (California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania, and Texas), every effort was made to preserve all factor levels within states so that direct estimates could be made for the large states.

- *Race*. In the main effects and state-specific two-factor interactions, Race had five levels (white, black or African American, American Indian or Alaska Native, Asian, and two or more races), while in non-state-specific two- and three-factor effects, Race had three levels (white, black or African American, and other). If maintaining all five levels was difficult in the main effects or State × Race interactions, the following guidelines were followed: (1) collapse American Indian or Alaska Native and Asian if either of them caused a convergence problem; (2) collapse black or African American with two or more races if black or African American caused a convergence problem; (3) collapse two or more races with American Indian or Alaska Native or Asian, whichever had a smaller sample size, if two or more races caused a convergence problem; and (4) collapse American Indian or Alaska Native, Asian, and two or more races, or collapse all other Race groups if necessary. In the State × Race interactions, collapsing Race was done within State. If the three-level Race could not be maintained, the levels were collapsed to white and all other Race groups.

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5. Weight Calibration at Dwelling Unit and Person Levels

The 2018 National Survey on Drug Use and Health (NSDUH) was based on probability sampling so that valid inferences could be made from survey findings to the target population. Probability sampling refers to sampling in which every unit on the frame is given a known, nonzero probability of inclusion in the survey. This is required for unbiased estimation of the population total. The assumption of nonzero inclusion probability for every pair of units in the frame also is required for unbiased variance estimation. The basic sampling plan involved five stages of selection at the dwelling unit (DU) and person levels (see Exhibit 5.1). The five stages of selection were as follows: at the DU level, (1) the selection of census tracts within the state sampling region (SSR), (2) the selection of census block groups from census tracts, (3) the selection of segments within each sampled census block group, (4) the selection of DUs within these segments, and at the person level, (5) the selection of eligible individuals within DUs (Table 5.1). Specific details of the sample design and sample selection procedures can be found in the 2018 sample design report in the *NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality, 2019).

As part of the postsurvey data-processing activities, analysis weights were calculated for the 2018 NSDUH respondents that reflected the selection probabilities from various stages of the sample design. These sample weights were adjusted at both the DU level (screener sample) and person level (main interview sample) to account for bias due to extreme weights, nonresponse, and coverage.

The final DU-level and person-level sample weights for the 2018 NSDUH sample are products of several factors (see Exhibit 5.1), each representing either a probability of selection at some particular stage or some form of extreme weight, nonresponse, or poststratification adjustment. In the following sections, these components are described in greater detail. In summary, the first 11 factors are defined for all screener-complete DUs and reflect the fully adjusted DU-level weight. The latter five components reflect the person-level selection within each screened DU, as well as any additional adjustments for person-level extreme weight, nonresponse, and poststratification error. Note that the unconditional, final person-level weights for the 2018 NSDUH sample are the product of all 16 weight components, as illustrated in Exhibit 5.1.

Exhibit 5.2 shows the U.S. Census Bureau divisions and model groups used in the 2018 NSDUH person-level weight calibration.

Exhibit 5.1 Summary of 2018 NSDUH Sample Weight Components

Dwelling Unit Level

	2014-2018 Design Weight Components	Corresponding 2005-2013 Design Weight Components
#1	Inverse Probability of Selecting Census Tract	#1
#2	Inverse Probability of Selecting Census Block Group	
#3	Inverse Probability of Selecting Segment	#2
#4	Quarter Segment Weight Adjustment	#3
#5	Subsegmentation Inflation Adjustment	#4
#6	Inverse Probability of Selecting Dwelling Unit	#5
#7	Inverse Probability of Added/Subsampled Dwelling Unit	#6
#8	Dwelling Unit Release Adjustment	#7

	2014-2018 Weight Adjustment Components	Corresponding 2005-2013 Weight Adjustment Components
#9	Dwelling Unit Nonresponse Adjustment ***(res.sdu.nr)****	#8
#10	Dwelling Unit Poststratification Adjustment ***(res.sdu.ps)****	#9
#11	Dwelling Unit Extreme Weight Adjustment ***(res.sdu.ev)****	#10

Person Level

	2014-2018 Design Weight Component	Corresponding 2005-2013 Design Weight Component
#12	Inverse Probability of Selecting a Person within a Dwelling Unit	#11

	2014-2018 Weight Adjustment Components	Corresponding 2005-2013 Weight Adjustment Components
#13	Selecting Person-Level Poststratification Adjustment to Screener Data Controls ***(sel.per.ps)****	#12
#14	Person-Level Nonresponse Adjustment ***(res.per.nr)****	#13
#15	Person-Level Poststratification Adjustment ***(res.per.ps)****	#14
#16	Person-Level Extreme Weight Adjustment ***(res.per.ev)****	#15

*These adjustments use the generalized exponential model (GEM), which also involves pre- and postprocessing in addition to running the GEM macro. See Exhibit 4.1. For computational feasibility, all weight adjustments were done using the nine model groups based on U.S. census divisions defined in Exhibit 5.2.

Exhibit 5.2 U.S. Census Bureau Divisions/Model Groups

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

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

Model Group	Eligible DUs	Completed DUs	Eligible Persons	Selected Persons	Completed Persons
1	18,299	13,522	28,400	8,925	5,776
2	25,476	16,650	36,426	11,150	7,163
3	26,676	19,293	40,401	13,792	9,233
4	17,643	14,093	28,324	9,646	6,699
5	38,976	27,929	58,129	17,972	12,706
6	8,741	7,336	15,061	5,386	3,835
7	13,474	11,102	23,441	8,571	6,276
8	19,175	14,895	31,145	10,548	7,615
9	24,996	17,059	39,108	13,121	8,488
Total	193,456	141,879	300,435	99,111	67,791

DU = dwelling unit.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

In the 2018 NSDUH, as in the 2000 through 2016 surveys, the order of the extreme weight adjustment step at both the DU and person level was different from the order used in the 1999 National Household Survey on Drug Abuse (NHSDA) computer-assisted interviewing (CAI). In the 1999 NHSDA CAI, the extreme weight adjustment step was introduced before nonresponse and poststratification, which was analogous to the traditional trimming step before nonresponse and poststratification. In the 1999 NHSDA, the initially identified extreme weights were held fixed at their winsorized values, and the nonextreme weights were adjusted so that the original sample distribution of the weights for various domains was preserved. As a better alternative for the surveys after 1999, the generalized exponential model (GEM) first was allowed to control the extreme weights during the nonresponse and poststratification steps, and then a separate extreme weight adjustment step was performed after poststratification, if necessary. This step would be like a repeated poststratification, except that the extreme weights identified after poststratification would have tighter bounds, thus preserving the sample distributions in various domains (equivalent to satisfying the poststratification controls). For the 2018 NSDUH, the extreme weight adjustment step was not necessary either at the DU level or at the person level.

5.1 Household-Level Weight Components

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

The first eight components in the sample weights reflect the probability of selecting the DUs. These components were derived from (1) the probability of selecting the census tract within each SSR, (2) the probability of selecting the census block group, (3) the probability of selecting the segment within each census tract, (4) a quarter segment weight adjustment, (5) a subsegmentation inflation factor, (6) the probability of selecting a DU from within each counted and listed sampled segment, (7) the probability of inclusion of added DUs, and (8) DU percent release adjustment.

Segments were selected with probabilities representing a full year's sample; therefore, Weight Component #4 was set to 1 in the 12-month analysis and was set to 2 in the 6-month analysis (because only half of the segments were used in the analysis). Also, when the field staff, who were responsible for counting and listing, traveled to a specified segment, occasionally they may have found the number of potential DUs to be much greater than what the sample frame (constructed from 2010 U.S. Census Bureau data adjusted for more recent Claritas projections) indicated. This happened either because of errors in the frame or, more commonly, because of rapid growth in a particular geographic area. When this occurred, the original segment was partitioned and a subsegment was randomly selected. There was an occasional second subsegmentation step when the initial partitioning of segments was insufficient due to out-of-date census counts or the segment was still too large to list after the original subsegmentation. Weight Component #5 (i.e., subsegmentation inflation factor) is an adjustment that accounts for this selection process.

As noted in the 2018 and earlier sample design reports, a lengthy process of determining the optimal DU sample was used during the design of the survey. Weight Component #6 is a result of this process and is equal to the inverse of the DU sample size divided by the total number of DUs counted and listed within a selected segment.

Furthermore, the list of DUs, which includes housing units and group quarters, was constructed by the counting and listing staff during the summer and fall of 2017 Because the listing was done a short time before the 2018 screening and interviewing activities began, no major discrepancies were expected. However, such factors as new construction, demolition, and inaccurate listing were present in some cases. More commonly, DUs may have been "hidden" and, therefore, overlooked by the counter and lister. For all DUs to be given a chance of being selected, the NSDUH has a procedure for locating and adding missed DUs. If the number of added DUs linked to any particular DU did not exceed 5, or if the number for the entire segment was less than or equal to 10, the field interviewer (FI) was instructed to consider these DUs as part of his or her assignment. However, if either of these limits was exceeded, the FI would contact RTI for subsampling to be considered. Weight Component #7 accounts for any subsampling that occurred because of added DUs.

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

For more detailed information on Weight Components #1 through #8, refer to the 2018 sample design report (Center for Behavioral Health Statistics and Quality, 2019).

5.1.2 Weight Component #9: Dwelling Unit–Level Nonresponse Adjustment

After DUs were selected, an FI was sent to the DU to screen the residence. Failure to obtain the screening interview from eligible DUs represented the first type of nonresponse encountered in the survey. To account for this nonresponse, as in previous surveys, the (unconditional) sample weights up to this point (equal to the product of Weight Components #1 through #8) were adjusted using a multiplicative adjustment factor derived from modeling response propensity via GEM.

5.1.3 Weight Component #10: Dwelling Unit–Level Poststratification Adjustment

The screener data provided a large sample with information on some demographic variables for the households. Therefore, screener dwelling unit (SDU) weights first were adjusted for nonresponse and poststratification. Later, estimates for household variables (which were based on screener data) were used as control totals for weight adjustments at the person level and for person pair-level weights. This was useful because, unlike census controls that were available for individual people, no controls were available for person pairs. Note that for SDU poststratification, census controls still could be used because each SDU's contribution was computed as the number of people in the SDU who had certain demographic characteristics multiplied by the SDU weight. It follows that, although explanatory variables used for modeling the weight adjustment were counts instead of binary (0/1), as is often the case, person-level census controls still could be used. For example, age group had five categories (12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older); in SDU poststratification, category 12 to 17 was the number of the people in this age category within a DU, and so on. The intercept was the total number of people in the DU, which varied by SDU because SDU size was not constant. Note that when defining interaction control variables for count variables, the corresponding count

variables were not simply multiplied, as was done for the binary case; instead, the counts for the category defined by the interaction term (say, Age × Gender) were used.

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

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

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

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

The product of Weight Components #1 through #10 was checked to see if the extreme weight adjustment step was needed. Using the SSR as the domain for the extreme weight definition, weights were defined as extreme if they were outside the range defined by the median $\pm 3 \times$ interquartile range. Because the unweighted, weighted, and winsorized extreme weight percentages were not high, the extreme weight adjustment was not necessary (see results in Appendix F). Therefore, Weight Component #11 was set to 1 for every DU for which roster information was collected (i.e., every DU with a completed screener).

After this adjustment was completed, the final DU weight was calculated as the product of Weight Components #1 through #11 described previously. This adjusted weight was used to compute household-level estimates from the screener data. It also was used to compute person-level estimates derived from the full roster sample. In addition, these 11 weight components became the first 11 components of the final interview respondent sample weight. The remaining five weight components discussed in the next section account for the person-level probability of selection for those people for whom a NSDUH interview was sought; they also account for person-level nonresponse, extreme weights, and coverage errors resulting from the last stages of the sample design.

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

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

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

Weight	Minimum	25% Percentile	Median	75% Percentile	Maximum	Mean	*n*	UWE
Design-Based Weight	35	330	602	822	5,906	597	193,456	1.34
Weight after DU-Level Adjustments	20	424	849	1,228	8,909	891	141,844	1.45

DU = dwelling unit; UWE = unequal weighting effect.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

5.2 Person-Level Weight Components

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

The rate at which people were selected within each DU depended on the age group and was determined during the design of the 2018 study; this also was done for the probabilities of selecting DUs (i.e., Weight Component #6). Note that, similar to the previous surveys, all possible pairs of eligible rostered people were given some nonzero probability of selection to facilitate unbiased variance estimation. With the FIs' use of the Samsung tablets, selection probabilities were adjusted to reflect the total household composition. The survey design restricted the number of interviews to two per DU. With this restriction, a modified Brewer's selection method was used to select either zero, one, or two people from the DU. (Three ghost units were defined for each DU to allow for the selection of no people and to avoid division by 0 in Brewer's algorithm.) In short, if the sum of the selection probabilities for all eligible DU members was greater than 2, then the probabilities were ratio-adjusted to sum to 2; sums less than 2 were unadjusted. These adjusted rates then were retained as the final selection probabilities. An additional design change was made in 2002 and continued through 2018. A new pair-sampling strategy was implemented that increased the number of person pairs selected in DUs with older people on the roster (Chromy & Penne, 2002). Weight Component #12 represents the inverse of this probability of selection.

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

The selected person-level poststratification step was started during the 1999 NHSDA. In NHSDAs before 1999, a combined step of person-level nonresponse and poststratification to estimated totals from the screener person data was used as a compromise to this step. As was done for the previous surveys, the combined step was divided into two separate steps; the first step was poststratification of the selected people (i.e., respondents and nonrespondents) to estimate control totals from the screener person data; the second step was respondent person-level nonresponse adjustment (see Component #14) to reproduce control totals from the selected person data (i.e., the full sample). Using two separate steps takes advantage of the inherent two-stage interview survey design (although the design is viewed primarily as multistage). With this step, more stable controls for the nonresponse adjustment were obtained (as compared with the traditional nonresponse adjustment) because of the additional selected-person poststratification. Note that this would not have been possible in the absence of screener data on the member demographics of the selected DUs. See Appendix D for details on the final models.

5.2.3 Weight Component #14: Respondent Person-Level Nonresponse Adjustment

The next step was to adjust the sample weights of the interview respondents to the weighted distributions over various demographic domains based on the full sample.

Demographic information for the main interview respondents was available from two sources—screener data and questionnaire data—while only screener data were available for the large screener sample of rostered individuals of all the screened DUs. However, to be consistent with respect to the data source, screener data for both respondents and nonrespondents were used for the person-level nonresponse adjustment. It may be noted that during screening, the only required demographic was the age of each person who was rostered. Thus, such demographics as race/ethnicity and gender of all the rostered eligible people were not required, and imputation procedures were needed to replace missing data for race/ethnicity and gender. For race/ethnicity, imputations were created using PMN methodology, and for gender, imputations were created using hot-deck methodology. It should be noted that answers from the questionnaire respondents potentially could cause discrepancies between screener values of demographics and their final imputation-revised values. Details on the final models used for the person nonresponse adjustment for each model group can be found in Appendix D.

5.2.4 Weight Component #15: Respondent Person-Level Poststratification Adjustment

This adjustment was to calibrate the weighted respondent-sample data for various demographic domains to the specified control totals obtained from the Census Bureau's estimates of the civilian, noninstitutionalized population aged 12 or older for the year 2018 based on the 2010 census. See Appendix B for details on the derivation of control totals.

After computing the various control totals that were needed, appropriate poststratification factors were applied to the sample weights using GEM to (1) control the resulting UWE and thereby reduce the potential variance inflation that could result from this weight adjustment, and

(2) control for a larger number of main effect and lower order interaction control variables. Details on the final models used for the person-level poststratification adjustment for each model group can be found in Appendix D.

5.2.5 Weight Component #16: Respondent Person-Level Extreme Weight Adjustment

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

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

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

Weight	Minimum	25% Percentile	Median	75% Percentile	Maximum	Mean	*n*	UWE
Weight before Any Person-Level Adjustment	21	885	1,743	3,400	63,753	2,745	99,111	2.19
Weight after Person-Level Adjustments	3	1,079	2,378	4,894	80,610	4,038	67,791	2.49

UWE = unequal weighting effect.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

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6. Evaluation of Calibration Weights

During the weight calibration process, several criteria for quality control were implemented to assess model adequacy. This chapter describes the individual procedures and presents a summary of their results. All tables referred to in this chapter can be found in Appendices E, F, G, H, and I. More details can be found in the supplement to the appendices.

6.1 Response Rates

Table E.1 in Appendix E displays the final sample sizes for the categories "selected," "eligible," and "completed" at the dwelling unit (DU) level, and for "selected" and "respondents" at the person level from the 2018 National Survey on Drug Use and Health (NSDUH), for both the national and state levels. This table also shows the weighted eligibility rates and weighted response rates[6] for DU screeners and person-level interviews. Table E.1, at the national level, indicates an overall eligibility rate of 85.08 percent as compared with 84.49 percent for 2017. This similarity in overall rates held in nearly all states, with a few notable exceptions: the eligibility rate decreased from 86.45 to 79.37 percent for Missouri and increased from 71.87 to 79.10 percent for Arizona. The screening rate at the national level decreased from 75.08 percent for 2017 to 73.30 percent for 2018. The national interview response rate was 66.44 percent, a decrease of 0.65 percentage points compared with 67.09 percent for 2017, with the biggest decrease for Connecticut (from 68.23 percent for 2017 to 58.88 percent for 2018) and the biggest increase for South Carolina (from 70.92 percent for 2017 to 75.88 percent for 2018). Table 6.1 presents summary statistics of overall response rates across individual states.

Table 6.1 Summary Statistics of Overall Weighted Response Rates across Individual States

Domain	National Level	Minimum	Median	Maximum
Dwelling Unit Level				
Eligibility Rate	85.08%	72.22% (Alaska)	84.10% (South Carolina)	92.56% (California)
Screener Response Rate	73.30%	56.25% (District of Columbia)	76.64% (New Hampshire)	87.81% (Arkansas)
Person Level				
Interview Response Rate	66.44%	58.88% (Connecticut)	68.39% (Tennessee)	75.88% (South Carolina)

6.2 Percentages of Extreme Weights and Outwinsors

During the stages of modeling adjustments (i.e., nonresponse and poststratification), a major factor in deciding the adequacy of a particular model was the extent of resulting extreme weights among the weights. As explained in Section 4.1, the percentages of extreme weights for

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

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

Table F.1 in Appendix F and Tables G.1 and G.2 in Appendix G present percentages of extreme weights at both the DU level for the nation and the person level for the individual states. Unweighted percentages are based on the actual counts of units and are defined as the ratio of extreme weights relative to the total sample size. Weighted percentages reflect the percentage of total extreme value weights relative to the total sample weight, while outwinsor percentages represent the total amount of residual weight (given that the weights are trimmed to the critical values that were used for extreme weight definition) relative to the total sample weight. For evaluation purposes, the outwinsor percentage is considered the most important of the three percentages. This assessment stems from the fact that its value reflects only the actual amount of weight that would be affected if trimming were implemented.

For the 2018 NSDUH sample, domains for extreme weight definitions were defined as follows for various weight adjustments via the generalized exponential model (GEM) (see Section 4.1):

- DU-level adjustment[7] (DUNR, DUPS)
  - State sampling region (SSR)
- Person-level adjustment[8] (SELPS, PRNR, PRPS)
  - SSR and age group[9]
  - State and age group
  - SSR
  - State

Before any weight adjustment was implemented, the percentage of unweighted extreme weights was 3.29 percent and the outwinsor was 0.57 percent for the product of design Weight Components #1 to #8. After DU-level nonresponse adjustment and poststratification, the percentage of unweighted extreme weights decreased to 2.36 percent and the outwinsor increased to 0.61 percent. When the design Weight Component #12 (inverse probability of selecting a person within a dwelling unit) was introduced, the percentage of unweighted extreme weights increased to 2.78 percent and the outwinsor increased to 1.67 percent. The person-level adjustments, which consisted of selected person-level poststratification, person-level nonresponse adjustment, and person-level poststratification, were able to bring down the percentage of unweighted extreme weights to 0.89 percent and the outwinsor to 0.47 percent.

6.3 Slippage Rates

The slippage rate for a given domain is defined as the percentage difference between the design-based domain population estimate and the census control total, relative to the census

[7] DUNR: DU level nonresponse adjustment; DUPS: DU level poststratification adjustment.
[8] SELPS: selected person poststratification adjustment; PRNR: person nonresponse adjustment; PRPS: person poststratification.
[9] Age group categories are 12 to 17, 18 to 25, 26 to 34, 35 to 49, and 50 or older.

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

Consider Table H.11 for Florida, which indicates a sample size of 2,321 for race domain "white"; an initial total, also known as the design-based weight, of 13,553,915; a census total of 14,348,125; and an initial slippage rate of -5.54 percent. The ratio of the census total to the initial total gives the value of the weight adjustment: 1.06. Similar to this example, but in the opposite direction, is Table H.38 for Oklahoma. The domain "Age Group 50-64" contains a sample size of 88 and an initial slippage rate of 7.70 percent. The initial total of 768,476 and the census total of 713,505 indicate that an adjustment of 0.93 would be required.

Occasionally, the final population estimates after poststratification do not match census control totals. Consider Table H.24 for Michigan, the domain "American Indian/Alaska Native" contains a sample size of 20, an initial total of 68,343, and a final total of 33,344, which does not match the census total of 60,553. The large difference between the initial total and the census total caused the GEM weight calibration model to not converge and so "American Indian/Alaska Native" had to be collapsed with "Asian." At the end, the combined domain for "American Indian/Alaska Native" and "Asian" has a sample size of 138 and a combined final total of 353,615 (33,344 + 320,271) that matches the census total of 353,615 (60,553 + 293,062).

6.4 Weight Adjustment Summary Statistics

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

6.5 Sensitivity Analysis of Drug Use Estimates to Baseline Models

In general, there is a trade-off between bias reduction and variance reduction. For instance, with GEM (for nonresponse or poststratification), enlarging a simple model (such as the one with only main effects) has the potential of further reducing the bias. At the same time, this enlargement may be associated with a corresponding increase in the variance of the estimate of the population total. The increased variability comes from estimating the additional

parameters included in the model. To check for possible overfitting of the GEM, a sensitivity analysis was conducted for the final poststratification step, where a simple baseline model was fitted with the same bounds and maximum number of iterations as those used for the final, more complex model. Then, point estimates and standard errors (SEs) were examined for substantial changes. If the SE increased only slightly under the complex model or, even better, if it decreased (which is possible because of the correlation between the study and predictor variables), then the more complex model could be fit.

The SE, a ratio-adjusted estimator denoted by SE1, computed under the DESCRIPT procedure in SUDAAN®, treats the calibration adjustment factors as nonrandom. A more complete method of estimation would take into account the variability present in the weight adjustment. The sandwich formula for the Taylor linearization (see Vaish, Gordek, & Singh, 2000) is designed to provide an estimate of the variance that adjusts for the random calibration factors to sampling weights via GEM. This "sandwich variance," adjusting for the poststratification variability, is denoted by SE2. Both SE1 and SE2 were calculated, as well as point estimates for a few important drug recency variables (past year marijuana, alcohol, and cigarette use), major depressive episode, and serious mental illness variables across four age groups (12 to 17, 18 to 25, 26 to 34, and 35 or older), for the eight states with the largest sample sizes.

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

As noted previously, to check for overfitting, the variances of the baseline and final models were compared. In Tables 6.2 to 6.8, there are cases where the SE from the final model is slightly larger than the SE from the baseline model, indicating possible overfitting. However, the variance estimates for the two models (baseline and final) are generally similar to each other. Note that smaller variance estimates for the final model would indicate that the complex model for the poststratification adjustment resulted in better variance reduction (because of correlation between study and predictor variables) and bias reduction (because of meeting control totals corresponding to a number of factor effects). Therefore, the evidence does not favor the view that fitting a large number of parameters in GEM creates instability in estimates.

Table 6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Lifetime											
Total	Point Estimates	55.88	55.70	50.86	50.34	52.75	52.74	54.07	54.00	56.84	56.93
	SE1	0.31	0.32	1.10	1.10	1.41	1.39	1.70	1.79	1.57	1.60
	SE2	0.28	0.27	0.96	0.91	1.33	1.14	1.61	1.51	1.55	1.41
12-17	Point Estimates	9.64	9.63	6.15	6.19	9.05	9.31	8.19	8.09	10.58	10.68
	SE1	0.30	0.30	0.83	0.86	1.12	1.15	1.25	1.24	1.38	1.42
	SE2	0.30	0.29	0.83	0.84	1.12	1.14	1.25	1.22	1.38	1.42
18-25	Point Estimates	45.87	45.86	41.32	41.29	35.34	35.58	41.39	41.18	47.17	46.83
	SE1	0.56	0.57	1.93	1.96	1.81	1.86	2.66	2.66	3.25	3.14
	SE2	0.56	0.53	1.93	1.86	1.80	1.73	2.64	2.58	3.25	3.17
26-34	Point Estimates	62.71	62.57	58.01	57.85	58.22	58.71	62.14	61.84	64.27	63.89
	SE1	0.61	0.62	2.04	2.05	2.60	2.62	2.82	2.99	2.53	2.62
	SE2	0.60	0.58	2.01	1.89	2.58	2.51	2.81	2.96	2.51	2.54
35+	Point Estimates	62.85	62.60	57.61	56.74	59.52	59.33	61.17	61.34	63.61	63.86
	SE1	0.42	0.43	1.50	1.52	1.81	1.81	2.17	2.31	2.04	2.08
	SE2	0.40	0.39	1.37	1.30	1.75	1.56	2.10	2.06	2.03	1.91
Alcohol Lifetime											
Total	Point Estimates	81.05	80.81	80.31	79.97	81.58	81.78	82.18	82.10	83.92	83.80
	SE1	0.25	0.26	0.92	0.96	1.03	1.02	1.24	1.29	0.99	1.13
	SE2	0.21	0.21	0.80	0.76	0.99	0.84	1.15	0.88	0.98	0.98
12-17	Point Estimates	26.48	26.31	27.14	27.03	27.95	28.46	24.82	24.26	29.10	29.55
	SE1	0.44	0.44	1.56	1.61	1.86	1.91	1.86	1.87	2.05	2.17
	SE2	0.43	0.43	1.57	1.61	1.85	1.84	1.86	1.78	2.06	2.13
18-25	Point Estimates	79.56	79.65	82.28	82.35	77.40	77.69	79.41	79.71	82.32	81.97
	SE1	0.43	0.43	1.28	1.28	1.65	1.65	2.40	2.45	2.13	2.17
	SE2	0.42	0.40	1.25	1.23	1.65	1.57	2.36	2.33	2.12	2.16
26-34	Point Estimates	90.07	90.05	89.08	89.09	87.71	88.10	88.91	88.77	93.00	93.07
	SE1	0.41	0.42	1.38	1.45	1.65	1.64	2.09	2.18	1.49	1.49
	SE2	0.40	0.39	1.36	1.43	1.65	1.62	2.08	2.08	1.49	1.45
35+	Point Estimates	87.04	86.68	85.48	84.91	87.30	87.38	89.33	89.42	89.92	89.71
	SE1	0.32	0.34	1.24	1.31	1.24	1.23	1.52	1.62	1.22	1.37
	SE2	0.29	0.28	1.15	1.09	1.21	1.08	1.46	1.24	1.23	1.29

(continued)

Table 6.2 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Lifetime									
Total	Point Estimates	51.13	50.83	60.30	59.79	58.95	58.99	50.63	50.48
	SE1	1.40	1.45	1.34	1.39	1.52	1.60	1.14	1.16
	SE2	1.36	1.34	1.35	1.37	1.47	1.38	1.04	1.01
12-17	Point Estimates	5.52	5.31	12.78	13.04	8.32	8.09	8.94	9.01
	SE1	0.91	0.87	1.37	1.42	1.36	1.37	1.28	1.29
	SE2	0.90	0.84	1.37	1.36	1.37	1.35	1.27	1.25
18-25	Point Estimates	42.02	42.82	51.00	51.00	47.52	47.32	44.62	44.43
	SE1	2.27	2.31	2.11	2.10	2.47	2.54	2.02	2.02
	SE2	2.25	2.10	2.11	2.11	2.44	2.35	2.04	2.09
26-34	Point Estimates	56.66	56.57	64.49	64.43	68.35	68.03	56.76	56.14
	SE1	2.86	2.86	2.69	2.88	2.60	2.66	2.27	2.29
	SE2	2.85	2.83	2.70	2.92	2.60	2.64	2.30	2.26
35+	Point Estimates	57.38	56.81	67.80	67.03	65.54	65.71	57.77	57.65
	SE1	1.92	1.96	1.89	1.98	1.91	2.01	1.76	1.81
	SE2	1.88	1.89	1.88	1.91	1.89	1.81	1.67	1.59
Alcohol Lifetime									
Total	Point Estimates	80.15	79.57	83.47	83.10	84.05	83.93	75.76	75.70
	SE1	1.12	1.19	0.99	1.03	1.06	1.08	1.07	1.10
	SE2	1.06	1.04	0.97	0.91	1.00	0.87	0.91	0.87
12-17	Point Estimates	26.32	26.39	27.53	27.56	26.39	26.32	23.21	22.81
	SE1	1.69	1.74	2.06	2.09	2.18	2.22	1.82	1.80
	SE2	1.69	1.65	2.06	2.07	2.18	2.12	1.82	1.82
18-25	Point Estimates	82.83	82.85	83.12	82.81	82.88	83.30	74.42	74.51
	SE1	1.51	1.55	2.04	2.10	1.93	1.85	1.81	1.79
	SE2	1.51	1.57	2.04	2.00	1.93	1.89	1.79	1.73
26-34	Point Estimates	87.36	87.27	93.56	93.14	91.62	91.47	84.10	83.80
	SE1	2.04	2.03	1.50	1.63	1.66	1.71	1.99	2.03
	SE2	2.07	2.07	1.48	1.49	1.62	1.55	1.95	1.96
35+	Point Estimates	84.78	83.87	89.21	88.80	90.04	89.81	83.21	83.16
	SE1	1.50	1.63	1.20	1.30	1.25	1.27	1.39	1.45
	SE2	1.44	1.42	1.20	1.22	1.23	1.16	1.30	1.22

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table 6.3 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Lifetime											
Total	Point Estimates	45.36	45.27	47.74	47.43	41.83	41.58	47.28	46.54	50.10	50.70
	SE1	0.33	0.34	1.23	1.24	1.41	1.42	1.65	1.71	1.48	1.55
	SE2	0.30	0.29	1.07	0.97	1.35	1.19	1.55	1.46	1.48	1.31
12-17	Point Estimates	15.39	15.36	19.56	19.47	14.43	14.62	16.01	16.46	17.36	17.33
	SE1	0.36	0.37	1.36	1.37	1.34	1.36	1.66	1.68	1.99	2.00
	SE2	0.36	0.36	1.34	1.31	1.35	1.37	1.66	1.67	1.99	1.97
18-25	Point Estimates	51.44	51.45	55.89	55.81	45.50	45.76	48.96	49.07	58.06	57.59
	SE1	0.55	0.55	1.90	1.92	1.74	1.77	2.93	2.92	2.74	2.62
	SE2	0.54	0.52	1.89	1.83	1.75	1.74	2.86	2.66	2.73	2.62
26-34	Point Estimates	56.87	56.76	54.79	54.65	53.32	53.76	61.58	61.48	62.59	62.27
	SE1	0.68	0.70	2.28	2.32	2.69	2.67	3.18	3.42	2.31	2.36
	SE2	0.67	0.64	2.23	2.13	2.67	2.65	3.15	3.46	2.30	2.37
35+	Point Estimates	45.81	45.70	48.37	47.94	42.22	41.65	48.10	47.00	50.46	51.54
	SE1	0.45	0.47	1.69	1.67	1.94	1.96	2.14	2.26	1.94	2.09
	SE2	0.42	0.40	1.53	1.33	1.86	1.66	2.05	2.00	1.97	1.84
Cocaine Lifetime											
Total	Point Estimates	14.63	14.68	18.77	18.79	14.36	14.35	14.02	13.80	13.44	13.62
	SE1	0.24	0.25	0.99	1.03	0.97	0.97	1.00	1.08	1.08	1.12
	SE2	0.23	0.22	0.91	0.90	0.93	0.86	0.99	1.07	1.07	1.02
12-17	Point Estimates	0.68	0.69	0.70	0.77	0.81	0.85	0.90	0.81	0.67	0.70
	SE1	0.08	0.09	0.28	0.31	0.40	0.42	0.47	0.42	0.34	0.37
	SE2	0.08	0.09	0.28	0.31	0.40	0.43	0.47	0.42	0.34	0.37
18-25	Point Estimates	11.38	11.37	13.89	13.83	8.82	9.07	8.98	9.08	11.48	11.42
	SE1	0.37	0.37	1.59	1.60	1.00	1.03	1.35	1.36	1.65	1.63
	SE2	0.37	0.35	1.59	1.52	1.00	1.00	1.34	1.31	1.65	1.65
26-34	Point Estimates	18.73	18.67	23.31	23.42	18.53	18.76	15.09	14.80	15.28	14.96
	SE1	0.52	0.52	1.96	2.01	2.08	2.07	1.56	1.61	2.12	2.09
	SE2	0.52	0.50	1.97	1.99	2.07	2.10	1.57	1.57	2.12	2.02
35+	Point Estimates	16.31	16.41	21.28	21.26	16.00	15.89	16.61	16.37	15.21	15.56
	SE1	0.34	0.36	1.44	1.50	1.31	1.32	1.56	1.69	1.50	1.56
	SE2	0.32	0.32	1.35	1.31	1.27	1.19	1.54	1.62	1.50	1.44

(continued)

Table 6.3 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Lifetime Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Lifetime									
Total	Point Estimates	42.90	42.55	45.67	45.66	47.66	47.63	35.14	35.19
	SE1	1.52	1.57	1.41	1.41	1.38	1.44	1.32	1.34
	SE2	1.49	1.52	1.35	1.18	1.39	1.44	1.28	1.26
12-17	Point Estimates	14.73	14.75	14.39	14.53	14.59	14.48	11.73	11.62
	SE1	1.40	1.35	1.68	1.73	1.68	1.73	1.35	1.42
	SE2	1.41	1.32	1.68	1.68	1.68	1.66	1.35	1.42
18-25	Point Estimates	54.10	54.48	50.23	50.26	52.47	52.28	42.73	42.69
	SE1	2.04	2.10	1.90	1.88	2.57	2.60	2.27	2.25
	SE2	2.03	2.21	1.91	1.89	2.57	2.51	2.25	2.18
26-34	Point Estimates	57.99	57.76	60.34	60.37	58.94	58.57	44.00	43.61
	SE1	3.52	3.55	3.09	3.18	3.17	3.23	2.18	2.18
	SE2	3.48	3.29	3.05	3.07	3.16	3.16	2.25	2.14
35+	Point Estimates	40.65	40.13	46.02	46.02	48.63	48.72	35.27	35.47
	SE1	1.89	1.95	1.82	1.86	1.93	1.97	1.92	1.95
	SE2	1.88	1.91	1.76	1.61	1.93	2.00	1.86	1.79
Cocaine Lifetime									
Total	Point Estimates	14.23	14.25	13.89	13.88	15.51	15.91	10.61	10.81
	SE1	0.97	1.01	0.92	0.93	1.13	1.20	0.68	0.70
	SE2	0.95	0.96	0.90	0.87	1.14	1.15	0.63	0.64
12-17	Point Estimates	0.20	0.19	0.30	0.31	0.57	0.62	0.81	0.81
	SE1	0.15	0.14	0.23	0.23	0.41	0.44	0.35	0.35
	SE2	0.15	0.14	0.23	0.23	0.41	0.41	0.35	0.36
18-25	Point Estimates	14.00	14.37	9.39	9.26	12.44	12.31	7.82	7.69
	SE1	1.21	1.26	1.33	1.33	1.89	1.87	1.05	1.03
	SE2	1.21	1.29	1.33	1.27	1.89	1.81	1.05	1.00
26-34	Point Estimates	21.31	21.41	15.10	14.97	18.27	17.77	16.90	16.61
	SE1	2.66	2.72	2.17	2.12	2.14	2.14	1.82	1.78
	SE2	2.66	2.58	2.17	2.06	2.14	2.07	1.80	1.62
35+	Point Estimates	14.34	14.29	16.38	16.43	17.41	18.13	11.31	11.74
	SE1	1.34	1.38	1.36	1.38	1.53	1.64	0.96	1.02
	SE2	1.32	1.30	1.33	1.29	1.55	1.61	0.90	0.92

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table 6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Year											
Total	Point Estimates	21.00	20.98	15.67	15.39	19.33	19.21	19.12	18.74	21.90	22.38
	SE1	0.26	0.27	0.73	0.72	0.97	0.97	1.31	1.28	1.39	1.50
	SE2	0.25	0.25	0.72	0.70	0.96	0.90	1.28	1.17	1.37	1.33
12-17	Point Estimates	5.47	5.48	3.08	3.15	5.86	6.06	4.82	4.74	5.54	5.61
	SE1	0.23	0.23	0.63	0.66	0.88	0.91	0.91	0.90	0.88	0.91
	SE2	0.22	0.23	0.64	0.67	0.88	0.90	0.92	0.91	0.89	0.92
18-25	Point Estimates	27.87	27.92	20.83	20.85	20.58	20.75	23.48	23.57	29.80	29.71
	SE1	0.47	0.47	1.56	1.59	1.38	1.41	2.37	2.48	2.40	2.35
	SE2	0.46	0.45	1.55	1.53	1.38	1.37	2.34	2.40	2.40	2.34
26-34	Point Estimates	32.01	31.94	24.96	24.53	30.61	30.85	31.70	32.01	34.49	33.79
	SE1	0.62	0.63	1.88	1.87	2.23	2.24	3.21	3.29	2.55	2.54
	SE2	0.61	0.59	1.89	1.85	2.23	2.20	3.19	3.08	2.55	2.42
35+	Point Estimates	19.35	19.33	14.03	13.70	18.51	18.20	17.40	16.79	20.00	20.88
	SE1	0.35	0.35	0.98	0.97	1.32	1.31	1.72	1.64	1.82	1.99
	SE2	0.34	0.33	0.98	0.95	1.30	1.22	1.67	1.42	1.80	1.77
Alcohol Past Year											
Total	Point Estimates	65.70	65.49	66.41	66.07	65.81	65.72	69.85	69.82	68.90	69.21
	SE1	0.33	0.34	1.24	1.27	1.56	1.58	1.72	1.75	1.32	1.33
	SE2	0.30	0.29	1.11	1.03	1.51	1.37	1.63	1.40	1.31	1.30
12-17	Point Estimates	20.95	20.85	21.11	20.96	22.63	23.18	19.82	19.38	23.00	23.58
	SE1	0.41	0.41	1.39	1.43	1.72	1.76	1.71	1.71	1.90	2.02
	SE2	0.40	0.40	1.39	1.44	1.71	1.73	1.71	1.64	1.90	1.98
18-25	Point Estimates	73.01	73.06	75.40	75.72	69.78	70.19	72.78	72.99	78.95	78.69
	SE1	0.47	0.47	1.50	1.51	1.87	1.86	2.68	2.74	2.26	2.31
	SE2	0.46	0.44	1.47	1.42	1.86	1.75	2.62	2.60	2.25	2.32
26-34	Point Estimates	79.38	79.26	77.93	77.85	78.43	78.88	81.25	81.17	84.15	84.19
	SE1	0.54	0.55	1.81	1.85	1.98	2.01	2.20	2.25	2.03	2.05
	SE2	0.53	0.52	1.80	1.79	1.97	1.97	2.20	2.17	2.02	2.01
35+	Point Estimates	67.52	67.22	68.24	67.67	67.77	67.36	73.77	73.92	70.10	70.53
	SE1	0.46	0.47	1.75	1.79	2.12	2.15	2.23	2.28	1.76	1.72
	SE2	0.43	0.42	1.63	1.52	2.06	1.89	2.14	1.92	1.77	1.76

(continued)

Table 6.4 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Year									
Total	Point Estimates	18.35	18.19	25.49	25.00	22.61	23.03	20.41	20.35
	SE1	1.10	1.13	1.48	1.49	1.35	1.43	1.02	1.03
	SE2	1.08	1.03	1.45	1.38	1.34	1.34	0.99	0.99
12-17	Point Estimates	3.48	3.40	6.86	7.02	3.95	3.90	4.34	4.35
	SE1	0.75	0.73	1.09	1.13	0.95	0.96	0.87	0.88
	SE2	0.75	0.72	1.10	1.17	0.95	0.94	0.87	0.86
18-25	Point Estimates	28.42	28.70	32.80	32.85	31.85	31.56	26.01	25.90
	SE1	1.85	1.87	1.83	1.85	2.39	2.42	1.76	1.76
	SE2	1.86	1.79	1.84	1.85	2.37	2.33	1.76	1.81
26-34	Point Estimates	32.07	31.37	35.42	35.52	34.32	33.96	30.50	30.12
	SE1	2.90	2.88	2.92	3.21	2.89	2.93	1.94	1.90
	SE2	2.90	2.79	2.93	3.28	2.87	2.86	1.95	1.85
35+	Point Estimates	14.95	14.89	24.59	23.79	20.82	21.62	19.36	19.36
	SE1	1.33	1.37	1.95	1.93	1.68	1.83	1.41	1.44
	SE2	1.32	1.31	1.91	1.77	1.69	1.73	1.38	1.36
Alcohol Past Year									
Total	Point Estimates	67.32	66.32	65.56	64.98	70.45	69.87	60.55	60.59
	SE1	1.33	1.41	1.45	1.50	1.48	1.51	1.28	1.31
	SE2	1.27	1.23	1.44	1.39	1.45	1.46	1.17	1.13
12-17	Point Estimates	22.48	22.33	22.09	22.15	22.23	22.28	19.00	18.62
	SE1	1.66	1.62	1.88	1.88	1.86	1.89	1.74	1.74
	SE2	1.65	1.52	1.88	1.87	1.86	1.81	1.73	1.76
18-25	Point Estimates	74.61	74.44	74.77	74.26	79.12	79.46	67.13	67.21
	SE1	1.90	1.98	2.45	2.47	2.15	2.12	1.80	1.78
	SE2	1.88	1.95	2.45	2.38	2.14	2.08	1.79	1.77
26-34	Point Estimates	76.98	76.34	82.41	82.32	84.38	84.22	70.03	69.46
	SE1	2.44	2.54	2.38	2.49	2.28	2.32	2.45	2.49
	SE2	2.47	2.53	2.35	2.45	2.25	2.20	2.42	2.40
35+	Point Estimates	69.30	67.95	66.28	65.53	72.09	71.18	63.96	64.19
	SE1	1.80	1.93	1.99	2.08	2.03	2.09	1.80	1.86
	SE2	1.73	1.73	1.99	1.95	2.01	2.11	1.70	1.65

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table 6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Year											
Total	Point Estimates	15.85	15.89	19.38	19.23	14.07	14.14	15.53	15.27	19.15	19.47
	SE1	0.23	0.24	0.85	0.87	0.92	0.92	1.03	1.01	1.26	1.35
	SE2	0.21	0.21	0.76	0.76	0.89	0.85	0.98	0.87	1.22	1.09
12-17	Point Estimates	12.51	12.49	16.03	15.82	12.03	12.28	13.80	14.09	13.67	13.55
	SE1	0.33	0.33	1.25	1.24	1.25	1.26	1.65	1.66	1.60	1.58
	SE2	0.32	0.32	1.23	1.19	1.25	1.26	1.64	1.63	1.60	1.56
18-25	Point Estimates	34.67	34.75	41.13	41.19	32.01	32.37	31.34	31.16	44.40	44.23
	SE1	0.54	0.54	1.94	1.98	1.57	1.57	2.36	2.37	2.70	2.61
	SE2	0.52	0.50	1.93	1.89	1.57	1.56	2.31	2.28	2.70	2.70
26-34	Point Estimates	25.99	25.82	30.18	29.73	23.32	23.66	28.87	28.68	30.15	29.84
	SE1	0.61	0.62	1.94	1.96	1.88	1.89	2.59	2.66	2.54	2.57
	SE2	0.60	0.57	1.91	1.85	1.87	1.90	2.62	2.89	2.53	2.53
35+	Point Estimates	10.33	10.42	12.51	12.49	9.70	9.58	9.65	9.30	12.62	13.24
	SE1	0.27	0.29	1.01	1.03	1.13	1.12	1.29	1.24	1.32	1.50
	SE2	0.26	0.25	0.98	0.96	1.11	1.06	1.22	1.00	1.31	1.30
Cocaine Past Year											
Total	Point Estimates	2.02	2.02	2.92	2.89	1.75	1.78	2.41	2.35	1.95	1.94
	SE1	0.07	0.08	0.30	0.29	0.27	0.27	0.47	0.45	0.34	0.34
	SE2	0.07	0.07	0.29	0.28	0.27	0.26	0.46	0.40	0.34	0.31
12-17	Point Estimates	0.45	0.45	0.29	0.31	0.81	0.85	0.77	0.68	0.13	0.13
	SE1	0.07	0.07	0.15	0.17	0.40	0.42	0.43	0.37	0.13	0.13
	SE2	0.07	0.07	0.15	0.17	0.40	0.43	0.43	0.37	0.13	0.13
18-25	Point Estimates	5.76	5.78	7.75	7.72	5.06	5.30	4.12	4.26	7.27	7.28
	SE1	0.26	0.26	1.11	1.11	0.73	0.75	0.95	0.98	1.25	1.24
	SE2	0.26	0.25	1.11	1.05	0.73	0.74	0.95	0.96	1.25	1.23
26-34	Point Estimates	4.62	4.54	7.72	7.71	4.83	4.78	5.41	5.42	3.54	3.54
	SE1	0.28	0.27	1.11	1.11	1.25	1.24	1.28	1.36	1.09	1.10
	SE2	0.28	0.27	1.12	1.12	1.25	1.24	1.27	1.37	1.08	1.06
35+	Point Estimates	0.92	0.93	1.05	1.03	0.75	0.73	1.63	1.51	0.82	0.80
	SE1	0.08	0.08	0.25	0.24	0.26	0.26	0.63	0.60	0.35	0.34
	SE2	0.07	0.08	0.25	0.24	0.26	0.25	0.61	0.52	0.36	0.33

(continued)

Table 6.5 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Year Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Year									
Total	Point Estimates	16.13	16.19	13.68	13.64	15.09	15.11	10.92	10.97
	SE1	1.05	1.06	0.81	0.81	1.11	1.13	0.70	0.72
	SE2	1.01	0.98	0.80	0.78	1.08	1.00	0.67	0.67
12-17	Point Estimates	13.54	13.62	11.03	11.07	11.68	11.81	9.22	9.04
	SE1	1.40	1.37	1.51	1.55	1.56	1.64	1.06	1.13
	SE2	1.40	1.35	1.50	1.55	1.56	1.59	1.07	1.15
18-25	Point Estimates	37.81	38.32	33.29	33.42	34.60	34.07	25.85	25.91
	SE1	1.93	1.96	2.06	2.05	2.48	2.47	1.97	1.97
	SE2	1.93	1.99	2.05	2.04	2.48	2.37	1.97	1.92
26-34	Point Estimates	29.54	29.56	23.74	23.05	26.11	25.70	14.90	14.53
	SE1	3.33	3.33	2.39	2.38	2.58	2.63	1.90	1.86
	SE2	3.32	3.22	2.38	2.32	2.57	2.64	1.94	1.80
35+	Point Estimates	8.98	9.03	8.19	8.24	9.63	9.86	6.84	7.06
	SE1	1.05	1.11	0.92	0.94	1.17	1.24	0.82	0.86
	SE2	1.04	1.06	0.92	0.95	1.17	1.21	0.82	0.82
Cocaine Past Year									
Total	Point Estimates	2.83	2.85	1.23	1.19	2.29	2.24	1.20	1.16
	SE1	0.41	0.41	0.21	0.20	0.34	0.33	0.21	0.21
	SE2	0.41	0.40	0.21	0.19	0.34	0.33	0.21	0.20
12-17	Point Estimates	0.06	0.07	0.10	0.10	0.57	0.62	0.61	0.60
	SE1	0.06	0.07	0.10	0.10	0.41	0.44	0.32	0.32
	SE2	0.06	0.07	0.10	0.10	0.41	0.41	0.32	0.32
18-25	Point Estimates	7.50	7.77	4.17	4.10	8.01	8.03	3.53	3.50
	SE1	0.95	0.95	0.85	0.85	1.76	1.76	0.64	0.63
	SE2	0.94	0.94	0.85	0.85	1.76	1.74	0.64	0.63
26-34	Point Estimates	6.72	6.47	1.44	1.48	5.43	5.24	2.65	2.59
	SE1	1.53	1.50	0.70	0.72	1.08	1.06	0.90	0.88
	SE2	1.53	1.47	0.69	0.70	1.08	1.03	0.89	0.85
35+	Point Estimates	1.33	1.39	0.79	0.72	0.81	0.77	0.41	0.37
	SE1	0.49	0.50	0.29	0.26	0.26	0.25	0.13	0.12
	SE2	0.49	0.48	0.29	0.24	0.26	0.27	0.13	0.12

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table 6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH

		United States		California		Florida		Illinois		Michigan	
Variables		**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**	**Baseline**	**Final**
Cigarettes Past Month											
Total	Point Estimates	17.17	17.15	11.15	10.95	16.39	16.22	15.15	14.83	17.88	17.94
	SE1	0.24	0.25	0.63	0.62	0.88	0.87	1.17	1.14	1.29	1.32
	SE2	0.24	0.23	0.62	0.61	0.87	0.80	1.14	1.07	1.27	1.26
12-17	Point Estimates	2.67	2.70	1.09	1.09	3.33	3.45	1.76	1.80	2.73	2.80
	SE1	0.16	0.16	0.33	0.33	0.79	0.82	0.56	0.59	0.70	0.73
	SE2	0.16	0.16	0.33	0.34	0.79	0.81	0.56	0.59	0.70	0.74
18-25	Point Estimates	19.11	19.14	11.53	11.51	12.65	12.67	16.92	16.92	19.34	19.43
	SE1	0.41	0.41	1.22	1.23	1.07	1.09	2.09	2.19	2.15	2.09
	SE2	0.41	0.40	1.22	1.20	1.08	1.06	2.08	2.13	2.14	2.02
26-34	Point Estimates	25.79	25.72	18.60	18.26	26.23	26.33	25.77	25.90	29.40	28.79
	SE1	0.59	0.59	1.78	1.78	2.23	2.25	2.78	2.83	2.44	2.44
	SE2	0.58	0.56	1.78	1.79	2.23	2.20	2.77	2.74	2.45	2.40
35+	Point Estimates	16.89	16.86	10.61	10.39	16.60	16.27	14.26	13.78	17.30	17.49
	SE1	0.33	0.33	0.83	0.84	1.21	1.20	1.52	1.45	1.71	1.76
	SE2	0.32	0.31	0.81	0.80	1.21	1.14	1.49	1.32	1.69	1.67
Alcohol Past Month											
Total	Point Estimates	51.30	51.08	52.31	51.83	50.35	50.11	57.92	58.05	53.88	54.21
	SE1	0.35	0.36	1.39	1.39	1.59	1.59	1.78	1.83	1.53	1.54
	SE2	0.32	0.31	1.22	1.14	1.53	1.35	1.68	1.50	1.52	1.49
12-17	Point Estimates	9.02	8.97	8.26	8.25	9.74	10.01	8.85	8.67	8.35	8.37
	SE1	0.29	0.30	0.99	0.99	1.17	1.21	1.49	1.46	1.21	1.24
	SE2	0.29	0.29	0.98	0.97	1.17	1.18	1.49	1.41	1.21	1.26
18-25	Point Estimates	55.15	55.11	56.89	57.01	49.14	49.48	54.12	54.25	61.25	61.30
	SE1	0.57	0.57	1.94	1.97	2.11	2.11	2.50	2.53	2.50	2.50
	SE2	0.55	0.53	1.90	1.83	2.09	1.92	2.43	2.31	2.50	2.55
26-34	Point Estimates	63.40	63.25	62.42	62.27	62.25	62.68	68.89	69.34	70.06	69.67
	SE1	0.64	0.65	2.08	2.13	2.58	2.59	2.57	2.65	2.66	2.74
	SE2	0.63	0.62	2.04	2.03	2.58	2.61	2.55	2.60	2.66	2.57
35+	Point Estimates	53.80	53.51	55.24	54.46	52.97	52.39	63.09	63.36	55.36	55.92
	SE1	0.48	0.49	1.83	1.82	2.19	2.20	2.33	2.42	2.13	2.12
	SE2	0.45	0.43	1.69	1.58	2.11	1.89	2.24	2.11	2.12	2.07

(continued)

Table 6.6 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Licit Drug Estimates, Cigarettes and Alcohol: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Cigarettes Past Month									
Total	Point Estimates	13.64	13.56	21.16	20.65	19.19	19.40	17.05	16.98
	SE1	1.02	1.04	1.37	1.38	1.27	1.30	0.99	1.00
	SE2	1.01	0.99	1.34	1.29	1.27	1.25	0.98	0.97
12-17	Point Estimates	2.11	2.05	5.00	5.12	2.20	2.14	1.93	1.95
	SE1	0.56	0.54	0.98	1.01	0.65	0.65	0.61	0.61
	SE2	0.57	0.55	0.98	1.04	0.66	0.64	0.61	0.61
18-25	Point Estimates	17.27	17.41	23.24	23.19	21.99	21.94	18.25	18.25
	SE1	1.61	1.59	1.85	1.88	1.96	1.95	1.58	1.58
	SE2	1.61	1.54	1.85	1.89	1.96	1.85	1.60	1.63
26-34	Point Estimates	22.46	21.80	30.80	31.19	30.15	29.72	24.30	23.93
	SE1	2.25	2.15	3.04	3.32	3.01	3.04	1.91	1.89
	SE2	2.25	2.12	3.04	3.41	2.99	2.98	1.93	1.85
35+	Point Estimates	12.26	12.31	20.95	20.10	18.53	18.98	17.55	17.52
	SE1	1.29	1.33	1.81	1.79	1.55	1.62	1.41	1.44
	SE2	1.29	1.29	1.78	1.64	1.57	1.60	1.39	1.37
Alcohol Past Month									
Total	Point Estimates	52.48	51.46	50.47	50.28	54.74	53.89	44.65	44.76
	SE1	1.49	1.53	1.63	1.63	1.42	1.49	1.20	1.23
	SE2	1.39	1.27	1.62	1.53	1.37	1.32	1.14	1.16
12-17	Point Estimates	9.75	9.52	9.29	9.30	7.48	7.35	7.38	7.13
	SE1	1.37	1.34	1.60	1.59	1.22	1.24	1.02	1.02
	SE2	1.36	1.29	1.59	1.56	1.22	1.20	1.01	1.00
18-25	Point Estimates	56.95	56.95	53.82	53.63	58.85	58.99	49.81	49.83
	SE1	2.37	2.48	2.38	2.40	2.90	2.95	1.90	1.92
	SE2	2.33	2.35	2.38	2.36	2.89	2.89	1.89	1.93
26-34	Point Estimates	63.54	63.29	63.96	64.00	69.86	69.61	53.08	52.64
	SE1	2.80	2.81	2.75	2.87	2.51	2.58	2.63	2.67
	SE2	2.81	2.75	2.73	2.76	2.48	2.50	2.62	2.68
35+	Point Estimates	54.38	52.91	52.69	52.47	56.85	55.61	47.89	48.20
	SE1	1.98	2.07	2.18	2.18	1.91	2.00	1.83	1.87
	SE2	1.88	1.75	2.18	2.08	1.87	1.86	1.78	1.79

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table 6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Month											
Total	Point Estimates	10.08	10.11	12.86	12.75	9.15	9.19	9.96	9.77	12.45	12.78
	SE1	0.18	0.19	0.72	0.74	0.68	0.68	0.89	0.87	1.04	1.16
	SE2	0.17	0.17	0.66	0.65	0.68	0.66	0.85	0.75	1.01	0.96
12-17	Point Estimates	6.68	6.66	8.39	8.17	6.14	6.40	7.22	7.28	7.28	7.08
	SE1	0.25	0.25	0.98	0.96	0.93	0.97	1.20	1.28	1.27	1.22
	SE2	0.25	0.24	0.97	0.93	0.94	0.97	1.20	1.28	1.27	1.25
18-25	Point Estimates	22.07	22.12	26.63	26.81	20.87	21.04	20.35	20.28	30.01	30.02
	SE1	0.46	0.47	1.83	1.88	1.38	1.39	1.89	1.90	2.49	2.40
	SE2	0.45	0.43	1.81	1.78	1.37	1.39	1.85	1.86	2.48	2.36
26-34	Point Estimates	16.89	16.74	21.35	20.98	16.15	16.48	18.35	18.38	19.49	18.86
	SE1	0.51	0.51	1.71	1.72	1.76	1.79	2.16	2.23	2.67	2.65
	SE2	0.50	0.49	1.70	1.65	1.76	1.83	2.14	2.54	2.65	2.52
35+	Point Estimates	6.67	6.74	8.43	8.40	6.29	6.19	6.42	6.13	8.22	8.90
	SE1	0.22	0.24	0.91	0.92	0.82	0.80	1.05	0.99	1.04	1.25
	SE2	0.21	0.21	0.87	0.84	0.82	0.80	1.01	0.81	1.03	1.09
Cocaine Past Month											
Total	Point Estimates	0.71	0.71	1.04	1.03	0.71	0.70	1.10	1.06	0.54	0.52
	SE1	0.05	0.05	0.19	0.19	0.20	0.20	0.33	0.32	0.21	0.19
	SE2	0.05	0.05	0.19	0.19	0.20	0.20	0.32	0.28	0.20	0.18
12-17	Point Estimates	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE1	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SE2	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18-25	Point Estimates	1.54	1.54	1.81	1.82	1.79	1.85	1.17	1.15	1.73	1.66
	SE1	0.13	0.13	0.44	0.45	0.42	0.43	0.58	0.57	0.64	0.61
	SE2	0.13	0.13	0.44	0.45	0.42	0.44	0.59	0.58	0.64	0.62
26-34	Point Estimates	1.62	1.57	3.43	3.49	1.81	1.69	2.47	2.54	1.40	1.40
	SE1	0.19	0.19	0.99	1.01	0.85	0.83	0.90	1.06	0.75	0.76
	SE2	0.19	0.19	0.99	1.01	0.85	0.84	0.90	1.04	0.75	0.70
35+	Point Estimates	0.44	0.45	0.41	0.39	0.41	0.40	0.92	0.85	0.21	0.18
	SE1	0.05	0.05	0.16	0.14	0.23	0.23	0.46	0.42	0.21	0.18
	SE2	0.05	0.05	0.15	0.14	0.23	0.22	0.44	0.34	0.21	0.18

(continued)

Table 6.7 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Past Month Illicit Drug Estimates, Marijuana and Cocaine: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Marijuana Past Month									
Total	Point Estimates	9.77	9.82	8.63	8.59	8.80	8.82	6.23	6.27
	SE1	0.75	0.79	0.71	0.70	0.82	0.86	0.50	0.51
	SE2	0.73	0.74	0.70	0.68	0.81	0.78	0.49	0.49
12-17	Point Estimates	6.18	6.03	5.99	6.02	5.30	5.31	5.34	5.30
	SE1	1.04	1.01	1.19	1.19	0.94	0.98	0.88	0.89
	SE2	1.05	1.01	1.19	1.19	0.94	0.98	0.87	0.88
18-25	Point Estimates	23.45	24.08	19.23	19.11	17.91	17.36	14.77	14.88
	SE1	1.68	1.78	1.85	1.84	1.81	1.77	1.62	1.63
	SE2	1.65	1.73	1.86	1.91	1.82	1.78	1.61	1.57
26-34	Point Estimates	20.07	19.69	16.25	15.73	14.72	14.49	8.30	8.03
	SE1	2.73	2.70	2.12	2.05	2.36	2.41	1.44	1.41
	SE2	2.72	2.62	2.11	2.00	2.35	2.36	1.46	1.40
35+	Point Estimates	5.06	5.19	5.37	5.42	6.32	6.52	3.94	4.07
	SE1	0.71	0.82	0.78	0.80	0.92	0.99	0.57	0.60
	SE2	0.71	0.79	0.77	0.76	0.92	0.95	0.57	0.58
Cocaine Past Month									
Total	Point Estimates	1.24	1.20	0.31	0.30	0.77	0.76	0.49	0.46
	SE1	0.29	0.28	0.09	0.08	0.19	0.19	0.12	0.11
	SE2	0.29	0.27	0.09	0.08	0.19	0.19	0.12	0.11
12-17	Point Estimates	0.00	0.00	0.10	0.10	0.27	0.33	0.00	0.00
	SE1	0.00	0.00	0.10	0.10	0.27	0.33	0.00	0.00
	SE2	0.00	0.00	0.10	0.10	0.27	0.34	0.00	0.00
18-25	Point Estimates	2.13	2.17	1.81	1.72	2.17	2.21	1.03	1.02
	SE1	0.62	0.63	0.53	0.51	0.78	0.79	0.38	0.39
	SE2	0.61	0.62	0.53	0.51	0.78	0.80	0.39	0.38
26-34	Point Estimates	2.84	2.48	0.35	0.36	2.32	2.16	0.87	0.84
	SE1	0.97	0.83	0.30	0.30	0.86	0.83	0.44	0.42
	SE2	0.97	0.79	0.30	0.30	0.85	0.80	0.44	0.42
35+	Point Estimates	0.83	0.86	0.04	0.04	0.25	0.26	0.35	0.31
	SE1	0.37	0.37	0.04	0.04	0.15	0.15	0.11	0.11
	SE2	0.37	0.36	0.04	0.04	0.15	0.15	0.11	0.11

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table 6.8 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Major Depressive Episode (MDE) in the Past Year and Serious Mental Illness (SMI) in the Past Year among Persons Aged 18 or Older: 2018 NSDUH

Variables		United States		California		Florida		Illinois		Michigan	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Major Depressive Episode											
Total	Point Estimates	7.16	7.20	7.06	6.93	6.06	5.98	6.67	6.53	7.51	7.35
	SE1	0.17	0.17	0.52	0.51	0.58	0.57	0.72	0.71	0.79	0.78
	SE2	0.16	0.16	0.51	0.49	0.57	0.53	0.72	0.68	0.78	0.70
18-25	Point Estimates	13.76	13.76	13.28	13.08	13.43	13.50	13.37	13.68	13.86	14.11
	SE1	0.38	0.38	1.16	1.16	1.14	1.15	1.64	1.69	1.53	1.53
	SE2	0.37	0.36	1.15	1.12	1.14	1.09	1.62	1.57	1.52	1.46
26-34	Point Estimates	9.92	9.90	11.39	11.27	7.20	7.26	9.55	9.35	9.88	9.75
	SE1	0.42	0.42	1.36	1.35	1.19	1.20	1.51	1.50	1.66	1.67
	SE2	0.42	0.41	1.35	1.30	1.19	1.16	1.52	1.50	1.66	1.59
35+	Point Estimates	5.26	5.32	4.66	4.56	4.69	4.54	4.75	4.53	5.76	5.51
	SE1	0.19	0.20	0.59	0.58	0.75	0.73	0.85	0.81	0.95	0.90
	SE2	0.19	0.19	0.58	0.55	0.74	0.72	0.85	0.77	0.94	0.89
Serious Mental Illness											
Total	Point Estimates	4.54	4.57	4.21	4.15	3.76	3.75	3.95	3.90	4.74	4.58
	SE1	0.13	0.13	0.37	0.37	0.42	0.41	0.55	0.54	0.58	0.54
	SE2	0.12	0.13	0.36	0.35	0.42	0.39	0.55	0.53	0.57	0.50
18-25	Point Estimates	7.70	7.69	7.04	7.07	6.83	6.85	8.34	8.76	7.22	7.15
	SE1	0.27	0.28	0.81	0.81	1.10	1.12	1.30	1.42	1.33	1.30
	SE2	0.27	0.27	0.79	0.80	1.11	1.19	1.30	1.39	1.32	1.28
26-34	Point Estimates	7.34	7.30	8.05	8.05	6.29	6.35	7.56	7.24	9.89	9.65
	SE1	0.34	0.35	1.01	1.02	1.06	1.09	1.38	1.32	1.96	1.92
	SE2	0.34	0.34	1.00	0.99	1.07	1.09	1.39	1.32	1.95	1.87
35+	Point Estimates	3.29	3.34	2.61	2.53	2.79	2.74	2.27	2.19	3.18	3.02
	SE1	0.15	0.15	0.42	0.42	0.55	0.54	0.67	0.63	0.67	0.60
	SE2	0.14	0.15	0.42	0.40	0.55	0.54	0.66	0.61	0.66	0.59

(continued)

Table 6.8 Point Estimates, Ratio-Adjusted Standard Errors (SE1), and Sandwich Standard Errors (SE2) for Baseline and Final Models—Drug Estimates (United States and Eight Large States): Major Depressive Episode (MDE) in the Past Year and Serious Mental Illness (SMI) in the Past Year among Persons Aged 18 or Older: 2018 NSDUH (continued)

Variables		New York		Ohio		Pennsylvania		Texas	
		Baseline	Final	Baseline	Final	Baseline	Final	Baseline	Final
Major Depressive Episode									
Total	Point Estimates	6.46	6.47	8.43	8.71	7.77	8.01	5.57	5.51
	SE1	0.58	0.59	0.66	0.73	0.70	0.79	0.47	0.47
	SE2	0.58	0.59	0.66	0.70	0.71	0.78	0.45	0.45
18-25	Point Estimates	13.04	12.99	16.89	17.09	13.98	13.68	10.81	10.74
	SE1	1.41	1.45	1.72	1.73	1.70	1.72	1.24	1.25
	SE2	1.40	1.42	1.72	1.71	1.69	1.67	1.22	1.18
26-34	Point Estimates	10.62	10.88	13.71	14.51	10.33	10.26	7.78	7.64
	SE1	1.94	2.05	1.92	2.33	1.91	1.92	1.32	1.29
	SE2	1.93	1.97	1.91	2.34	1.90	1.92	1.30	1.26
35+	Point Estimates	4.21	4.19	5.71	5.89	6.09	6.51	3.81	3.79
	SE1	0.67	0.68	0.78	0.83	0.79	0.94	0.57	0.57
	SE2	0.67	0.70	0.78	0.79	0.78	0.91	0.55	0.54
Serious Mental Illness									
Total	Point Estimates	3.97	3.91	5.83	6.09	4.24	4.40	3.34	3.23
	SE1	0.46	0.46	0.59	0.69	0.54	0.62	0.38	0.37
	SE2	0.46	0.46	0.60	0.67	0.54	0.59	0.37	0.35
18-25	Point Estimates	7.00	7.12	10.13	10.18	6.82	6.78	5.15	5.02
	SE1	1.09	1.14	1.43	1.44	1.28	1.29	0.78	0.77
	SE2	1.08	1.14	1.43	1.39	1.29	1.27	0.76	0.72
26-34	Point Estimates	6.68	6.66	11.53	12.33	6.98	7.02	5.09	4.99
	SE1	1.34	1.40	1.77	2.25	1.30	1.34	1.06	1.06
	SE2	1.33	1.36	1.77	2.25	1.30	1.35	1.05	1.04
35+	Point Estimates	2.72	2.63	3.79	3.98	3.18	3.41	2.47	2.38
	SE1	0.48	0.48	0.68	0.75	0.61	0.75	0.44	0.41
	SE2	0.49	0.48	0.68	0.72	0.60	0.72	0.43	0.40

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

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Appendix A: Technical Details about the Generalized Exponential Model

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Appendix A: Technical Details about the Generalized Exponential Model

A.1 Distance Function

Let $\Delta(w,d)$ denote the distance between the initial weights $d = \{d_k : k \in s\}$ and the adjusted weights *w*, with *k* being the k^{th} unit in the sample and *s* being the sample selected. The distance function minimized under the generalized exponential model (GEM), subject to calibration constraints, is given by

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

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

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

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

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

Note that the number of parameters in the GEM should be $\leq n$, where *n* is the size of the sample *s*. This is also the dimension of vectors *d* and *w*. It follows from equation A.1.3 that

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

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

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

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

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

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

By choosing the user-specified parameters ℓ_k, c_k, and u_k appropriately, the unified GEM formula (A.1.3) can be justified for all three types of adjustment: extreme value treatment, nonresponse, and poststratification. For extreme value treatment via winsorization, denote the winsorized weights by $\{b_k\}$, where $b_k = d_k$ if d_k is not an extreme weight, and $b_k = \text{med}\{d_k\} \pm 3 * \text{IQR}$ if d_k is an extreme weight, where IQR denotes the interquartile range, and the median and quartiles for the weights are defined with respect to a suitable design-based stratum.

For the nonresponse adjustment, the sample is first divided into two parts: the nonextreme weight subsample and the extreme weight subsample. For nonextreme weights, the following are set: $\ell_2 = 1, c_2 = \rho^{-1}, u_2 = u > \rho^{-1},$ where ρ is the overall response propensity. For extreme weights with high weights, $\ell_k = \ell_1 m_k$, $c_k = \rho^{-1} m_k$, and $u_k = u_1 m_k$, where $m_k = b_k / d_k$ and $1 \le \ell_1 < \rho^{-1} = c_1 < u_1$ are prescribed numbers. Similarly, for extreme weights with low weights, $\ell_k = \ell_3 m_k$, $c_k = \rho^{-1} m_k$, $u_k = u_3 m_k$, and $1 \le \ell_3 < \rho^{-1} = c_3 < u_3$.

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

Notice that the GEM allows the flexibility of specifying different bounds for different subsamples. In addition, the lower bound (in the case of nonresponse adjustments) can be made to equal one by choosing the center $c_k > 1$.

A.3 Newton-Raphson Steps

Let X denote the $n \times p$ matrix of predictor values, and for the v^{th} iteration,

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

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

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

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

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

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

A.4 Scaled Constrained Exponential Model

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

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

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Appendix B: Poststratification Control Totals

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Appendix B: Poststratification Control Totals

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

To arrive at quarterly estimates, approximations at the midpoints of the quarters were needed. To get these approximations, the estimates from the last 2 months in each quarter were averaged. For example, to obtain an approximation for the first quarter of 2018, the U.S. census estimates for February 1 and March 1 were averaged, resulting in a population estimate appropriate for February 15 (i.e., the midpoint of Quarter 1).

Exhibit B.1 Definition of Levels for Variables

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

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

Gender
1: Male, 2: Female

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

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Appendix C: Imputation Methodology

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Appendix C: Imputation Methodology

The adjustments of (1) dwelling unit poststratification, (2) poststratification of the selected sample to all eligible rostered people, and (3) person-level nonresponse required the use of demographic information obtained from the 2018 National Survey on Drug Use and Health (NSDUH) screener interview. However, at the time of screening, the only required information for an individual was age; thus, some demographic information (i.e., gender, Hispanic or Latino origin, and race) was missing. Therefore, some form of imputation was required for cases with missing data.[1]

As in 2002-2017, the predictive mean neighborhood (PMN) methodology was used for the 2018 NSDUH weighting process to impute "race" and "Hispanic or Latino origin" for the screener demographic information, as well as the questionnaire data (Singh, Grau, & Folsom, 2002). Because there was not a good set of predictors for PMN modeling, the unweighted sequential hot-deck method was used to impute gender.

C.1 Unweighted Hot Deck

This imputation was performed using an unweighted hot-deck methodology. The unweighted hot-deck method of imputing a variable with missing responses (which is called the base variable in this appendix) involved three basic steps.

1. *Forming imputation classes.* When a strong logical association existed between the base variable and certain auxiliary variables, the dataset was partitioned by the auxiliary variables, and imputation procedures were implemented independently within classes defined by the cross of the auxiliary variables.
2. *Sorting the file.* Within each imputation class, the file was sorted by auxiliary variables that were relevant to the item being imputed. The sort order of the auxiliary variables was chosen to reflect the degree of importance of the auxiliary variables in relation to the base variable being imputed (i.e., those auxiliary variables that were better predictors for the item being imputed were used as the first sorting variables).

   For the 2018 NSDUH, two types of sorting procedures were used to sort the files prior to imputation:

   (a) Straight Sort. A set of variables was sorted in ascending order by the first variable specified, then, within each level of the first variable, the file was sorted in ascending order by the second variable specified, and so on. For example:

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

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

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

(b) Serpentine Sort. A set of variables was sorted so that the direction of the sort (ascending or descending) changed each time the value of a variable changed. For example:

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

The serpentine sort has the advantage of minimizing the change in the entire set of auxiliary variables whenever any one of the variables changes its value.

3. *Replace missing values.* The file was sorted and then read sequentially. Each time an item respondent was encountered (i.e., the base variable was nonmissing), the base variable response was stored, updating the donor response, and any subsequent nonrespondent encountered received the stored donor response, creating the statistically imputed response. A starting value was needed if an item nonrespondent was the first record on a sorted file. Typically, the response from the first respondent on the sorted file was used as the starting value.

   Note that because the file was sorted by relevant auxiliary variables, the preceding item respondent (donor) closely matched the neighboring item nonrespondent (recipient) with respect to the auxiliary variables.

For more information on the general hot-deck method of item imputation, see Little and Rubin, 1987 (pp. 62-67).

With the unweighted sequential hot-deck imputation procedure, for any particular item being imputed, there was the risk of several nonrespondents appearing next to one another on the sorted file. To detect this problem in NSDUH, for every variable being imputed, a record was kept of the imputation donor. Then, by examining frequencies by imputation donor, if several nonrespondents were lining up next to one another in the sort, the situation could be detected. When this problem occurred, sort variables were added or eliminated, or the order of the sort variables was rearranged.

C.2 Predictive Mean Neighborhood (PMN)

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

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

To address the deficiencies of the unweighted sequential hot deck, the PMN methodology was developed for NSDUH. It is a combination of two commonly used imputation methods: a nonmodel-based hot deck and Rubin's model-based predictive mean matching method (Rubin, 1986). It enhances the predictive mean matching method in that it can be applied to both discrete and continuous variables either individually or jointly. It also enhances the nearest neighbor hot-deck method in that the distance function used to find neighbors is no longer ad hoc. It is easily applicable to problems of both univariate (UPMN) and multivariate (MPMN) imputations. Univariate imputation is used for imputing a single continuous or dichotomous discrete variable independently, whereas multivariate imputation arises when values of two or more variables are missing for a single respondent or when a single polytomous variable has missing values. (A polytomous variable is a categorical variable with three or more possible values, such as marital status, which is categorical and has the possible values of married, widowed, divorced, and never married.)

The procedure for implementing univariate and multivariable imputations can be summarized with the following six steps. Steps 2 through 5, and sometimes Step 6, were cycled through each of the variables in the order determined by Step 1. Steps 4 and 5 (Steps 4 through 6, when applicable) could be considered a variant of a random nearest neighbor hot deck.

Step 1: Hierarchy definition. Determine the order in which variables are modeled, so that variables early in the hierarchy may be used for modeling the conditional predictive mean (i.e., variables early in the hierarchy have the potential to be part of the set of covariates for variables later in the hierarchy).

For each variable:

Step 2: Setup for model building and hot-deck assignment. For each model that is fitted, two groups must be created: complete and incomplete data respondents (item respondents and item nonrespondents). Complete data respondents have complete data across the variables of interest, and incomplete data respondents encompass the remainder of respondents.

Step 3: Sequential hierarchical modeling. The model is built using the complete data for respondents only, with weights adjusted for item nonresponse.

Step 4: Computation of predictive means and delta neighborhoods. The predictive means for item respondents and item nonrespondents are calculated using the model coefficients. Then those item respondents whose predictive means are determined to be "close" (based on a distance function taking values within delta) to the item nonrespondents are considered part of the "delta" neighborhood.

Step 5: Assignment of imputed values using a univariate predictive mean. Using a simple random draw from the neighborhood developed in Step 4, a donor is chosen for each item nonrespondent.

If the variables for which Steps 2 through 5 have been completed are part of a complete multivariate set for which multivariate imputation is to be applied, Step 6 is the next step in the process. If the variables for which Steps 2 through 5 are completed are not part of a complete multivariate set, and other variables are still to be imputed, Step 2 is the next step. Otherwise, the process is finished.

Step 6: Determination of multivariate predictive mean neighborhood and assignment of imputed values. With multivariate imputation, the neighborhood is defined based on a vector of predictive means, rather than from a single predictive mean as in the univariate case.

The PMN methodology addresses all of the shortcomings of the unweighted sequential hot-deck method and was widely used for the imputation of a variety of variables in NSDUH, including both continuous and categorical variables with one or more levels. The models were fit using standard modeling procedures in SAS and SUDAAN®, while SAS macros were used to implement the hot-deck step, including the restrictions on the neighborhoods. Although creating a different neighborhood for each item nonrespondent was computationally intensive, the method was implemented successfully. For more details on PMN, see the 2018 editing and imputation report in the *NSDUH Methodological Resource Book* (Center for Behavioral Health Statistics and Quality, 2020).

Appendix D: Generalized Exponential Model Summary

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Appendix D: Generalized Exponential Model Summary

This appendix summarizes each model group throughout all stages of modeling the weight calibrations. Unlike much of the other information presented in this report, this appendix provides a model-specific overview of weight calibration, as opposed to a state- or domain-specific one.

The modeling for the 2018 National Survey on Drug Use and Health (NSDUH) involved taking nine generalized exponential model (GEM) groups through five adjustment steps: (1) dwelling unit (DU)–level nonresponse adjustment, (2) DU-level poststratification, (3) selected person-level poststratification, (4) person-level nonresponse adjustment, and (5) respondent person-level poststratification. The sampling weights after DU-level poststratification and person-level poststratification for this year were reasonably distributed, so the additional treatment of the extreme weight adjustment step was not necessary at the DU level or the person level. See Table D for a summary of the distributions of each of the weight components at the national level.

Model-specific summary statistics are shown in Tables D.1a and D.1b to D.9a and D.9b. Included in these tables, for each stage of modeling, are the following: the number of effects that were controlled directly; the high, low, and nonextreme weight bounds set to provide the upper and lower limits for GEM; weighted, unweighted, and winsorized weight proportions; the unequal weighting effect (UWE); and weight distributions. The UWE provides an approximate measure of variance and establishes how much impact a particular stage of modeling has on the distribution of the new product of weights. For more details on bounds, see Section 4.2. At each stage in the modeling, these summary statistics were calculated and used to evaluate the model that was constructed and its corresponding product of weights.

Such circumstances as small sample sizes and exact linear combinations (i.e., singularities) in the realized data led to situations where finalizing models with the originally proposed set of covariates was not possible. The text and exhibits in Sections D.1 to D.9 summarize the decisions made regarding final covariates that were included in each model. For a list of the proposed initial covariates considered at each stage of modeling, see Exhibit D1.1, and for the list of realized final model covariates, see Exhibits D1.1 through D9.5. The following sections establish a series of guidelines to assist in the interpretation of the covariates.

Table D Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (United States)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	35	0.24	36	0.19	20	1.01	21	0.09	9	0.45	9	0.11	3
1%	37	1.00	66	0.51	64	1.01	106	0.52	101	1.00	129	0.21	108
5%	80	1.07	104	0.76	111	1.01	233	0.74	225	1.05	298	0.46	257
10%	106	1.12	139	0.87	151	1.01	369	0.81	362	1.12	501	0.80	446
25%	330	1.19	416	0.99	424	1.29	885	0.91	869	1.24	1,148	0.96	1,079
Median	602	1.29	797	1.07	849	2.43	1,743	1.00	1,738	1.40	2,392	1.02	2,378
75%	822	1.45	1,123	1.18	1,228	3.26	3,400	1.10	3,417	1.60	4,892	1.08	4,894
90%	1,026	1.70	1,476	1.33	1,631	7.37	6,712	1.22	6,722	1.86	9,928	1.20	9,797
95%	1,193	1.93	1,634	1.49	1,891	8.72	9,223	1.33	9,430	2.10	14,076	1.37	14,131
99%	1,402	2.67	2,098	2.10	2,645	10.01	13,326	1.67	13,980	2.86	22,701	1.76	23,923
Maximum	5,906	5.24	4,371	5.87	8,909	21.36	63,753	6.70	51,244	7.86	66,685	5.00	80,610
n	193,456	141,879	141,879	141,844	141,844	99,111	99,111	99,111	99,111	67,791	67,791	67,791	67,791
Max/Mean	9.89	-	5.37	-	10.00	-	23.22	-	18.55	-	16.51	-	19.96

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

D.1 Final Model Explanatory Variables

For brevity, numeric abbreviations for variable levels are established in Exhibit 3.1 in Chapter 3 (included here as Exhibit D.1 for easy reference). There, a complete list is provided of all variables and associated levels used at any stage of modeling. In this report, each level of a variable is referred to as a covariate. Note that (1) not all variables or levels are present in all stages of modeling; (2) the initial set of covariates, allowing for differences in states across model groups, is the same for all model groups within a stage of modeling; and (3) the initial set of covariates changes across the stages of modeling. Exhibits D.2 through D.5 provide the initial covariates for the stages of modeling, and Exhibits D1.1 through D9.5 provide lists of the proposed and the final covariates for the nine model groups. This last group of exhibits is grouped by model groups and contains one exhibit for each stage of weight adjustment. The initial variables are found in the "Proposed" column, and the realized covariates are found in the "Final" column.

Section D.3 explains how to create cross-classification tables, which help to illustrate what covariates are controlled for at each stage of the modeling. The general pattern is as follows: directions to follow, semicolon, reason for the change. Sections D.2 and D.3 explain how to use various exhibits for selected model variables to construct these tables. For greater detail on why variable levels are collapsed or dropped, see Section 4.7.

Exhibit D.1 Definition of Levels for Variables

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

Gender
1: Male, 2: Female[1]

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

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

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

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

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

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

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

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

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

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

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

States[4]

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

MSA = metropolitan statistical area.

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

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

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

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

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

All levels present. All levels of the variable under consideration were included in the final model.

Coll. Collapse (levels). These levels of the factor effect were collapsed together. Levels that have been collapsed together no longer appear in the model as separate variables, but rather manifest themselves jointly in the model.

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

Drop all levels. All levels of a factor effect were completely removed from the model, as well as any combinations involving this factor.

Drop *level(s)*. These levels of a factor effect were collapsed into the reference set. The dropped levels manifest themselves jointly with the appropriate reference levels.

Drop *level(s)*; singularity/zero sample. During the modeling process, the levels of factor effect(s) listed were removed from the model because of either singularities or sample sizes of zero.

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

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

Hier. Factor effects collapsed/dropped at lower order and the hierarchical effect carries up. This indicates that one or more levels of factor effects were collapsed/dropped in an earlier stage, and that the same action (collapse/drop) was performed on the corresponding levels in all higher-order factor effects containing the dropped/collapsed levels.

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

Reference/reference set. The reference levels of factor effects (see Exhibit D.1) are not explicitly listed in the set of model variables, but are represented implicitly in the model in the intercept term. These include one-, two-, and three-factor effects.

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

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

D.3 How to Interpret Collapsing and Dropping of Factor Effects

To help visualize what effects were directly controlled for in the model, a table that reflects the collapsing scheme employed can be constructed. The following is a complex example from the 2004 modeling, which demonstrates how to use the information found in Exhibits D1.1 through D9.5.

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

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

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

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

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

Age (years)

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

Race (3 levels)

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

3. Construct the cross-classification table.

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

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

Shading indicates the reference-level set.

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

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

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

Shading indicates the reference-level set.

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

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

Shading indicates the reference-level set.

The number of respondents in that class at this stage of modeling would appear within each cell of the table. Construction of the other cross-classification tables follows the same logic and is only necessary to the point of providing an understanding of the final table.

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

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

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

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

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

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

Shading indicates the reference-level set.

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

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

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

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

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

Shading indicates the reference-level set.

The unshaded cells represent the factors directly controlled for by the model (i.e., those factors that were not collapsed or dropped). The shaded cells represent the composite reference set, whose values may be obtained by utilizing the marginal sums, although when changes to the initially proposed set occur, it can make certain reference cell counts indistinguishable.

Exhibit D.2 Covariates for 2018 NSDUH Person Weights (res.sdu.nr)

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

Exhibit D.3 Covariates for 2018 NSDUH Person Weights (res.sdu.ps)

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

Exhibit D.4 Covariates for 2018 NSDUH Person Weights (sel.per.ps and res.per.nr)

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

Exhibit D.5 Covariates for 2018 NSDUH Person Weights (res.per.ps and res.per.ev)

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

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Appendix D1: Model Group 1: New England

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

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Table D.1a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 1: New England)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	2.07	1.51	0.05	1.85163	306	(1.06, 1.40)	(1.06, 1.40)
	2.08	2.37	0.30	1.94000	134	(1.00, 4.41)	(1.00, 4.41)
						(1.10, 2.49)	(1.10, 2.18)
res.sdu.ps	2.08	2.37	0.30	1.94004	232	(0.52, 1.10)	(0.52, 1.10)
	2.14	4.12	1.22	2.03904	230	(0.20, 5.00)	(0.20, 5.00)
						(0.90, 4.03)	(0.90, 4.03)
sel.per.ps	3.16	5.93	1.83	3.04438	332	(0.24, 2.30)	(0.25, 2.29)
	1.84	4.11	1.04	3.13744	307	(0.23, 4.39)	(0.24, 4.38)
						(0.90, 1.60)	(0.90, 1.60)
res.per.nr	1.90	4.07	0.77	3.20589	332	(1.00, 3.00)	(1.00, 3.00)
	1.92	4.73	1.00	3.44532	250	(1.00, 5.00)	(1.00, 5.00)
						(1.50, 5.00)	(1.50, 1.50)
res.per.ps	1.96	5.09	1.13	3.44532	267	(0.20, 1.70)	(0.20, 1.70)
	0.88	1.43	0.18	3.45557	248	(0.20, 5.00)	(0.20, 5.00)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.1b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 1: New England)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	59	0.79	67	0.20	20	1.01	40	0.19	13	0.48	16	0.11	3
1%	61	1.02	75	0.49	72	1.01	81	0.40	78	1.00	91	0.20	42
5%	70	1.13	85	0.77	91	1.01	126	0.66	121	1.00	159	0.43	143
10%	79	1.15	100	0.88	105	1.01	182	0.77	176	1.08	234	0.79	220
25%	120	1.23	153	0.98	162	1.22	303	0.88	303	1.26	426	0.94	414
Median	176	1.31	223	1.05	244	2.43	689	0.99	673	1.46	966	1.02	954
75%	447	1.42	601	1.14	623	3.28	1,728	1.10	1,664	1.69	2,496	1.07	2,558
90%	864	1.57	1,134	1.28	1,173	9.11	3,374	1.24	3,359	2.06	5,381	1.25	5,424
95%	901	1.71	1,317	1.41	1,381	10.00	5,401	1.38	5,374	2.42	8,671	1.48	8,622
99%	1,026	2.26	1,529	2.25	1,792	12.27	10,720	2.00	11,126	4.10	17,527	2.41	17,912
Maximum	1,048	4.41	2,253	5.14	6,027	16.84	30,182	4.38	23,053	5.00	39,961	5.00	33,125
n	18,299	13,522	13,522	13,519	13,519	8,925	8,925	8,925	8,925	5,776	5,776	5,776	5,776
Max/Mean	3.40	-	5.39	-	13.62	-	20.96	-	16.07	-	18.03	-	14.95

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 1 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in all factors except the percent Owner-Occupied × Rent/Housing, Rent/Housing × percent Hispanic or Latino, and State × Quarter interactions. Out of 122 proposed variables, 91 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 160 proposed variables, 19 were included in the model.

In the final model, a total of 134 variables were included; see Exhibit D1.1.

Dwelling Unit Poststratification

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

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

For the three-factor effects, variable collapsing was present in the State × Age × Race and State × Race × Hispanicity interactions. Out of 127 proposed variables, 125 were included in the model.

In the final model, a total of 230 variables were included; see Exhibit D1.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Black or African American, percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, State × Race, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 168 proposed variables, 152 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Hispanicity and State × Race × Hispanicity interactions. Out of 127 proposed variables, 118 were included in the model.

In the final model, a total of 307 variables were included; see Exhibit D1.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Black or African American, percent Owner-Occupied × percent Hispanic or Latino, percent Owner-Occupied × Rent/Housing, State × Race, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 168 proposed variables, 148 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Age × Hispanicity × Gender, Race × Hispanicity × Gender, State × Age × Gender, and State × Hispanicity × Gender interactions. Out of 127 proposed variables, 65 were included in the model.

In the final model, a total of 250 variables were included; see Exhibit D1.4.

Respondent Person-Level Poststratification

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

All 95 proposed two-factor effects were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Race, State × Age × Hispanicity, and State ×Race × Hispanicity interactions. Out of 152 proposed variables, 133 were included in the model.

In the final model, a total of 248 variables were included; see Exhibit D1.5.

Exhibit D1.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**24**	**24**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**91**	
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3/2,1); zero/sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Drop (2,1); sing.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	6	Drop (1/4,1); zero.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	6 × 4	15	15	All levels present.
State × Population Density	6 × 4	15	4	Keep (1,1), (2,2/3), & (3,2), drop all others; zero/sing.
State × Group Quarter	6 × 3	10	7	Coll. (1,1) & (1,2), repeat for NH & RI; zero/conv.
State × % Black or African American	6 × 3	10	5	Drop (2/4/5,1) & (3,1/2); zero.
State × % Hispanic or Latino	6 × 3	10	5	Drop (2/4,1/2), (3,1); zero.
State × % Owner-Occupied	6 × 3	10	9	Coll. (4,2) & (4,3); conv.
State × Rent/Housing	6 × 5	20	19	Coll. (4,1) & (4,2); conv.
Three-Factor Effects		**160**	**19**	
State × % Owner-Occupied × % Black or African American	6 × 3 × 3	20	2	Keep (1,2,2), coll. (4,3,2) & (4,2,2), drop all others; sing./zero/hier./conv.
State × % Owner-Occupied × % Hispanic or Latino	6 × 3 × 3	20	2	Keep (1,2,2), (3,3,2), drop all others; sing./zero/hier./conv.
State × % Owner-Occupied × Rent/Housing	6 × 3 × 5	40	9	Coll. (1,2,3) & (1,2,4), coll. (1,3,2) & (1,2,2), keep (2,2,1/2), (3,2,2/3/4), (5,2,1/2), drop all others; sing./zero/hier./conv.
State × Rent/Housing × % Black or African American	6 × 3 × 5	40	3	Keep (1,3/4,2). Coll. (4,1,2) & (4,2,2), drop all others; sing./zero/hier./conv.
State × Rent/Housing × % Hispanic or Latino	6 × 3 × 5	40	3	Coll. (1,1,2) & (1,12,2), keep (1/3,3,2), drop all others; sing./zero/hier./conv.
Total		**306**	**134**	

Exhibit D1.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 1: New England

Variables	Level	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**86**	**86**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	6 × 4	15	15	All levels present.
State × Age	6 × 5	20	20	All levels present.
State × Race (5 levels)	6 × 5	20	20	All levels present.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
Three-Factor Effects		**127**	**125**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	6 × 5 × 3	40	39	Coll. (3,2,2) & (3,2,3); conv.
State × Age × Hispanicity	6 × 5 × 2	20	20	All levels present.
State × Age × Gender	6 × 5 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	6 × 3 × 2	10	9	Coll. (5,2,1) & (5,3,1); conv.
State × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Total		**232**	**230**	

Exhibit D1.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**37**	**37**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**168**	**152**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (2/3,1); zero/sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Drop (2,1); sing.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	6	Drop (1/4,1); zero.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	6 × 4	15	15	All levels present.
State × Age	6 × 5	20	20	All levels present.
State × Race (5 levels)	6 × 5	20	19	Coll. (5,3) & (5,4); conv.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
State × % Black or African American	6 × 3	10	5	Drop (2/4/5,1), (3,1/2); zero.
State × % Hispanic or Latino	6 × 3	10	5	Drop (2/5, 1/2), (3,1); zero.
State × % Owner-Occupied	6 × 3	10	10	All levels present.
State × Rent/Housing	6 × 5	20	20	All levels present.
Three-Factor Effects		**127**	**118**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	6 × 5 × 3	40	40	All levels present.
State × Age × Hispanicity	6 × 5 × 2	20	19	Coll. (2,3,1) & (2,4,1); conv.
State × Age × Gender	6 × 5 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	6 × 3 × 2	10	2	Coll. (1,2,1) & (1,3,1), repeat for all states, drop for CT, ME, & RI; conv.
State × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Total		**332**	**307**	

Exhibit D1.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**37**	**37**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**168**	**148**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3/2,1); sing./zero.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Drop (2,1); sing.
% Owner-Occupied × Rent/Housing	3 × 5	8	6	Drop (1/4,1); zero.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	6 × 4	15	15	All levels present.
State × Age	6 × 5	20	20	All levels present.
State × Race (5 levels)	6 × 5	20	15	Coll. (1,3) & (1,4), repeat for all states; conv.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
State × % Black or African American	6 × 3	10	5	Drop (2/4/5,1), (3,1/2); zero.
State × % Hispanic or Latino	6 × 3	10	5	Drop (2/5,1/2), (3,1); zero.
State × % Owner-Occupied	6 × 3	10	10	All levels present.
State × Rent/Housing	6 × 5	20	20	All levels present.
Three-Factor Effects		**127**	**65**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	2	Coll. (1,2,1) & (1,3,1), repeat for all age groups, drop for age groups 3 & 4; conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	6 × 5 × 3	40	6	Coll. (1,1,2) & (1,1,3), repeat for all states & age groups, keep (1,1/2/3,*) & (2,1/2/3,*), drop all others; conv.
State × Age × Hispanicity	6 × 5 × 2	20	12	Drop (1/4/5,3/4,1), (2/3,4,1); conv.
State × Age × Gender	5 × 5 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	10	0	Drop all, conv.
State × Race (3 levels) × Gender	5 × 3 × 2	10	6	Coll. (2,2,1) & (2,3,1), repeat for NH, RI, & VT; conv.
State × Hispanicity × Gender	5 × 2 × 2	5	5	All levels present.
Total		**332**	**250**	

Exhibit D1.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 1: New England

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**20**	**20**	
Intercept	1	1	1	All levels present.
State	6	5	5	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**95**	**95**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	6 × 4	15	15	All levels present.
State × Age	6 × 6	25	25	All levels present.
State × Race (5 levels)	6 × 5	20	20	All levels present.
State × Hispanicity	6 × 2	5	5	All levels present.
State × Gender	6 × 2	5	5	All levels present.
Three-Factor Effects		**152**	**133**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	6 × 5 × 3	50	37	Drop (1,4/5,2/3), (2,5,2/3), (3,5,2/3), coll. (3,4,2) & (3,4,3), drop (5,4/5,2/3); zero/sing./conv.
State × Age × Hispanicity	6 × 6 × 2	25	23	Drop (2/3,5,1); conv.
State × Age × Gender	6 × 6 × 2	25	25	All levels present.
State × Race (3 levels) × Hispanicity	6 × 3 × 2	10	6	Coll. (2,2,1) & (2,3,1), drop (3,2/3,1), coll. (5,2,1) & (5,3,1); zero/conv.
State × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
State × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Total		**267**	**248**	

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Appendix D2: Model Group 2: Middle Atlantic

(New Jersey, New York, and Pennsylvania)

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Table D.2a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 2: Middle Atlantic)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	4.47	5.26	0.47	1.04745	153	(1.23, 2.00)	(1.23, 2.00)
	2.65	4.07	0.45	1.10679	105	(1.01, 4.17)	(1.01, 4.17)
						(1.50, 2.21)	(1.50, 2.21)
res.sdu.ps	2.65	4.07	0.45	1.10681	127	(0.37, 1.10)	(0.37, 1.10)
	2.18	4.91	1.43	1.18247	127	(0.26, 5.00)	(0.28, 5.00)
						(0.90, 3.03)	(0.90, 3.03)
sel.per.ps	3.33	9.19	2.79	1.99021	197	(0.68, 2.00)	(0.68, 2.00)
	1.88	4.94	0.96	1.92571	196	(0.66, 2.86)	(0.67, 2.86)
						(0.90, 1.27)	(0.90, 1.27)
res.per.nr	2.44	5.92	1.36	1.94709	197	(1.04, 2.70)	(1.04, 2.70)
	2.23	7.09	1.15	2.16621	194	(1.00, 4.28)	(1.00, 4.24)
						(N/A, N/A)	(N/A, N/A)
res.per.ps	2.28	7.15	1.17	2.16621	147	(0.20, 1.60)	(0.20, 1.60)
	0.88	3.52	0.50	2.19192	145	(0.20, 2.30)	(0.20, 2.30)
						(0.90, 5.00)	(0.91, 0.97)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.2b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 2: Middle Atlantic)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	451	0.24	503	0.19	201	1.01	232	0.22	158	0.58	158	0.13	54
1%	478	1.01	551	0.54	416	1.01	457	0.67	425	1.00	489	0.21	189
5%	482	1.10	641	0.72	570	1.01	694	0.78	672	1.06	818	0.33	665
10%	484	1.19	673	0.83	655	1.01	825	0.85	819	1.14	1,056	0.78	985
25%	537	1.28	723	0.96	748	1.35	1,161	0.94	1,179	1.29	1,640	0.96	1,634
Median	596	1.41	823	1.03	864	2.77	2,118	1.01	2,112	1.49	3,045	1.03	3,078
75%	654	1.70	1,011	1.10	1,042	3.31	3,482	1.09	3,603	1.74	5,728	1.08	5,801
90%	687	2.10	1,216	1.22	1,314	8.72	7,498	1.21	7,642	2.09	11,786	1.34	11,844
95%	694	2.34	1,371	1.35	1,577	9.22	8,955	1.31	9,433	2.33	15,498	1.52	15,203
99%	860	4.06	2,248	2.66	2,780	9.71	13,408	1.57	13,988	2.90	25,333	1.76	26,480
Maximum	5,906	4.17	3,469	5.00	6,632	21.36	58,464	2.86	32,834	4.24	66,685	2.30	59,378
n	25,476	16,650	16,650	16,644	16,644	11,150	11,150	11,150	11,150	7,163	7,163	7,163	7,163
Max/Mean	9.97	-	3.83	-	6.94	-	18.94	-	10.46	-	13.64	-	12.15

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 2 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the Rent/Housing × percent Hispanic or Latino, State × Population Density, and State × Group Quarter interactions. Out of 68 proposed variables, 61 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 64 proposed variables, 24 were included in the model.

In the final model, a total of 105 variables were included; see Exhibit D2.1.

Dwelling Unit Poststratification

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

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

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

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

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the Rent/Housing × percent Hispanic or Latino interaction. Out of 99 proposed variables, 98 were included in the model.

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

In the final model, a total of 196 variables were included; see Exhibit D2.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing was present in the Rent/Housing × percent Hispanic or Latino interaction. Out of 99 proposed variables, 98 were included in the model.

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity and State × Race × Hispanicity interactions. Out of 64 proposed variables, 62 were included in the model.

In the final model, a total of 194 variables were included; see Exhibit D2.4.

Respondent Person-Level Poststratification

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

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

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

In the final model, a total of 145 variables were included; see Exhibit D2.5.

Exhibit D2.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**20**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1,2); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**68**	**61**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4.1) & (4,2); sing.
State × Quarter	3 × 4	6	6	All levels present
State × Population Density	3 × 4	6	4	Drop (2,2), (2,3); sing.
State × Group Quarter	3 × 3	4	0	Drop all; conv.
State × % Black or African American	3 × 3	4	4	All levels present.
State × % Hispanic or Latino	3 × 3	4	4	All levels present.
State × % Owner-Occupied	3 × 3	4	4	All levels present.
State × Rent/Housing	3 × 5	8	8	All levels present.
Three-Factor Effects		**64**	**24**	
State × % Owner-Occupied × % Black or African American	3 × 3 × 3	8	3	Coll. (3,2,1) & (3,2,2), keep (2,2,1), (2,2,2), drop others; zero/sing./conv.
State × % Owner-Occupied × % Hispanic or Latino	3 × 3 × 3	8	4	Coll. (3,2,1) & (3,2,2), keep (2,2,1), (2,2,2), (2,3,1), drop others; zero/sing./conv.
State × % Owner-Occupied × Rent/Housing	3 × 3 × 5	16	4	Keep (2,2,3), (2,2,4), (3,2,1), (3,2,2); drop others; zero/sing./conv.
State × Rent/Housing × % Black or African American	3 × 3 × 5	16	7	Keep (2,2,2), (2,3,1), (2,3,2), (2,4,2), (3,1,1), (3,1,2), (3,2,2); drop others; zero/sing./conv.
State × Rent/Housing × % Hispanic or Latino	3 × 3 × 5	16	6	Keep (2,2,2), (2,3,1), (2,3,2), (2,4,1/2), (3,1,2), (3,1,2); drop others; zero/sing./conv.
Total		**153**	**105**	

Exhibit D2.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**16**	**16**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**47**	**47**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	3 × 4	6	6	All levels present.
State × Age	3 × 5	8	8	All levels present.
State × Race (5 levels)	3 × 5	8	8	All levels present.
State × Hispanicity	3 × 2	2	2	All levels present.
State × Gender	3 × 2	2	2	All levels present.
Three-Factor Effects		**64**	**64**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	3 × 5 × 3	16	16	All levels present.
State × Age × Hispanicity	3 × 5 × 2	8	8	All levels present.
State × Age × Gender	3 × 5 × 2	8	8	All levels present.
State × Race (3 levels) × Hispanicity	3 × 3 × 2	4	4	All levels present.
State × Race (3 levels) × Gender	3 × 3 × 2	4	4	All levels present.
State × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
Total		**127**	**127**	

Exhibit D2.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**34**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**99**	**98**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
State × Quarter	3 × 4	6	6	All levels present.
State × Age	3 × 5	8	8	All levels present.
State × Race (5 levels)	3 × 5	8	8	All levels present.
State × Hispanicity	3 × 2	2	2	All levels present.
State × Gender	3 × 2	2	2	All levels present.
State × % Black or African American	3 × 3	4	4	All levels present.
State × % Hispanic or Latino	3 × 3	4	4	All levels present.
State × % Owner-Occupied	3 × 3	4	4	All levels present.
State × Rent/Housing	3 × 5	8	8	All levels present.
Three-Factor Effects		**64**	**64**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	3 × 5 × 3	16	16	All levels present.
State × Age × Hispanicity	3 × 5 × 2	8	8	All levels present.
State × Age × Gender	3 × 5 × 2	8	8	All levels present.
State × Race (3 levels) × Hispanicity	3 × 3 × 2	4	4	All levels present.
State × Race (3 levels) × Gender	3 × 3 × 2	4	4	All levels present.
State × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
Total		**197**	**196**	

Exhibit D2.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**34**	**34**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**99**	**98**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
State × Quarter	3 × 4	6	6	All levels present.
State × Age	3 × 5	8	8	All levels present.
State × Race (5 levels)	3 × 5	8	8	All levels present.
State × Hispanicity	3 × 2	2	2	All levels present.
State × Gender	3 × 2	2	2	All levels present.
State × % Black or African American	3 × 3	4	4	All levels present.
State × % Hispanic or Latino	3 × 3	4	4	All levels present.
State × % Owner-Occupied	3 × 3	4	4	All levels present.
State × Rent/Housing	3 × 5	8	8	All levels present.
Three-Factor Effects		**64**	**62**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Coll. (4,2,1) & (4,3,1); conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	3 × 5 × 3	16	16	All levels present.
State × Age × Hispanicity	3 × 5 × 2	8	8	All levels present.
State × Age × Gender	3 × 5 × 2	8	8	All levels present.
State × Race (3 levels) × Hispanicity	3 × 3 × 2	4	3	Coll. (3,2,1) & (3,3,1); conv.
State × Race (3 levels) × Gender	3 × 3 × 2	4	4	All levels present.
State × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
Total		**197**	**194**	

Exhibit D2.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 2: Middle Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
Intercept	1	1	1	All levels present.
State	3	2	2	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**53**	**52**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	3 × 4	6	6	All levels present.
State × Age	3 × 6	10	10	All levels present.
State × Race (5 levels)	3 × 5	8	7	Coll. (3,3) & (3,4); conv.
State × Hispanicity	3 × 2	2	2	All levels present.
State × Gender	3 × 2	2	2	All levels present.
Three-Factor Effects		**77**	**76**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	3 × 6 × 3	20	20	All levels present.
State × Age × Hispanicity	3 × 6 × 2	10	9	Drop (3,5,1); conv.
State × Age × Gender	3 × 6 × 2	10	10	All levels present.
State × Race (3 levels) × Hispanicity	3 × 3 × 2	4	4	All levels present.
State × Race (3 levels) × Gender	3 × 3 × 2	4	4	All levels present.
State × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
Total		**147**	**145**	

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Appendix D3: Model Group 3: East North Central

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

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Table D.3a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 3: East North Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	6.55	7.76	0.51	1.03572	255	(1.00, 2.40)	(1.00, 2.40)
	2.75	4.12	0.94	1.11066	167	(1.00, 4.99)	(1.00, 4.99)
						(1.30, 1.40)	(1.30, 1.39)
res.sdu.ps	2.75	4.12	0.94	1.11067	197	(0.53, 1.10)	(0.53, 1.10)
	1.26	2.17	0.36	1.13102	196	(0.20, 4.46)	(0.20, 4.44)
						(0.90, 1.23)	(0.90, 1.23)
sel.per.ps	3.23	6.86	1.71	1.84438	287	(0.55, 2.00)	(0.55, 2.00)
	1.86	4.00	0.54	1.85416	285	(0.39, 2.73)	(0.40, 2.72)
						(0.80, 1.25)	(0.80, 1.24)
res.per.nr	2.03	4.29	0.75	1.88057	287	(1.00, 1.90)	(1.00, 1.90)
	1.48	3.45	0.44	1.96794	262	(1.00, 3.54)	(1.00, 3.53)
						(1.40, 1.83)	(1.40, 1.83)
res.per.ps	1.43	3.39	0.48	1.96794	227	(0.20, 2.70)	(0.20, 2.70)
	1.20	4.01	0.89	2.06431	199	(0.20, 4.86)	(0.20, 4.86)
						(0.90, 1.05)	(0.90, 0.96)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.3b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 3: East North Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	245	0.79	245	0.20	138	1.01	273	0.23	230	0.47	232	0.16	117
1%	472	1.04	541	0.55	503	1.01	563	0.64	525	1.00	648	0.20	279
5%	479	1.12	608	0.83	597	1.01	753	0.80	752	1.06	922	0.59	785
10%	514	1.15	681	0.94	680	1.01	874	0.86	872	1.15	1,132	0.85	1,070
25%	590	1.21	743	1.02	780	1.22	1,157	0.93	1,164	1.30	1,620	0.96	1,583
Median	612	1.30	813	1.07	894	2.14	2,001	1.00	1,984	1.45	2,818	1.02	2,786
75%	694	1.42	947	1.15	1,068	3.05	3,131	1.08	3,185	1.65	4,976	1.05	4,989
90%	763	1.63	1,249	1.27	1,329	7.43	6,650	1.18	6,724	1.89	10,212	1.12	10,115
95%	957	1.86	1,371	1.37	1,523	7.95	8,003	1.27	8,390	2.07	12,940	1.37	13,086
99%	1,037	3.19	1,969	1.79	2,202	9.55	12,076	1.52	12,510	2.78	20,183	1.82	20,922
Maximum	1,552	4.99	4,088	4.44	8,426	17.88	32,927	2.72	24,667	4.03	41,328	4.86	55,153
n	26,676	19,293	19,293	19,290	19,290	13,792	13,792	13,792	13,792	9,233	9,233	9,233	9,233
Max/Mean	2.40	-	4.58	-	8.70	-	11.64	-	8.62	-	9.67	-	12.90

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 3 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the State × Group Quarter, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 104 proposed variables, 97 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 128 proposed variables, 47 were included in the model.

In the final model, a total of 167 variables were included; see Exhibit D3.1.

Dwelling Unit Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 73 proposed variables, 72 were included in the model.

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

In the final model, a total of 196 variables were included; see Exhibit D3.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable dropping was present in the State × percent Hispanic or Latino interaction. Out of 145 proposed variables, 144 were included in the model.

For the three-factor effects, variable collapsing was present in the State × Race × Hispanicity interaction. Out of 106 proposed variables, 105 were included in the model.

In the final model, a total of 285 variables were included; see Exhibit D3.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable dropping was present in the State × percent Hispanic or Latino interaction. Out of 145 proposed variables, 144 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 106 proposed variables, 82 were included in the model.

In the final model, a total of 262 variables were included; see Exhibit D3.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 81 proposed variables, 79 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Race, State × Age × Hispanicity, and State × Race × Hispanicity interactions. Out of 127 proposed variables, 101 were included in the model.

In the final model, a total of 199 variables were included; see Exhibit D3.5.

Exhibit D3.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**23**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**104**	**97**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Population Density	5 × 4	12	12	All levels present.
State × Group Quarter	5 × 3	8	3	Coll. (1,1) & (1,2); zero. Coll. (3,1) & (3,2); sing. Coll. (5,1) & (5,2); conv. Drop (4,1); zero. Drop (4,2); conv.
State × % Black or African American	5 × 3	8	8	All levels present.
State × % Hispanic or Latino	5 × 3	8	7	Drop (3,1); zero.
State × % Owner-Occupied	5 × 3	8	7	Coll. (3,3) & (3,2); conv.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**128**	**47**	
State × % Owner-Occupied × % Black or African American	5 × 3 × 3	16	6	Coll. (3,3,1) & (3,2,1), (3,3,2) & (3,2,2); hier. Coll. (1,3,2) & (1,2,2), (5,3,2) & (5,2,2); conv. Keep (1,2,1), (5,2,1). Drop all others; hier./zero/sing./conv.
State × % Owner-Occupied × % Hispanic or Latino	5 × 3 × 3	16	4	Coll. (1,3,2) & (1,2,2); conv. Keep (1,2,1), (4,2,2), (5,2,2), drop all others; hier./zero/sing./conv.
State × % Owner-Occupied × Rent/Housing	5 × 3 × 5	32	13	Coll. (3,3,1) & (3,2,1), (3,3,2) & (3,2,2), (3,3,3) & (3,2,3); hier. Coll. (1,2,1) & (1,2,2), (5,3,1) & (5,2,1), (5,3,4) & (5,2,4); conv. Keep (1,2,3), (1,2,4), (4,2,1), (4,2,2), (5,2,2), (5,2,3), (5,3,3), drop all others; hier./zero/sing./conv.
State × Rent/Housing × % Black or African American	5 × 3 × 5	32	15	Keep (1,1,2), (1,2,1), (1,2,2), (1,3,2), (1,4,2), (3,1,2), (3,2,1), (3,2,2), (3,3,2), (5,1,1), (5,1,2), (5,2,1), (5,2,2), (5,3,2), (5,4,2), drop all others; zero/sing./conv.
State × Rent/Housing × % Hispanic or Latino	5 × 3 × 5	32	9	Coll. (1,2,1) & (1,2,2), (3,2,2) & (3,3,2); conv. Keep (1,1,2), (1,3,2), (1,4,2), (3,1,2), (4,2,2), (4,3,2), (5,1,2), drop all others; hier./zero/sing./conv.
Total		**255**	**167**	

Exhibit D3.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**73**	**72**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 5	16	16	All levels present.
State × Race (5 levels)	5 × 5	16	15	Coll. (5,3) & (5,4); conv.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
Three-Factor Effects		**106**	**106**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 5 × 3	32	32	All levels present.
State × Age × Hispanicity	5 × 5 × 2	16	16	All levels present.
State × Age × Gender	5 × 5 × 2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**197**	**196**	

Exhibit D3.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**144**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 5	16	16	All levels present.
State × Race (5 levels)	5 × 5	16	16	All levels present.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
State × % Black or African American	5 × 3	8	8	All levels present.
State × % Hispanic or Latino	5 × 3	8	7	Drop (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**106**	**105**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 5 × 3	32	32	All levels present.
State × Age × Hispanicity	5 × 5 × 2	16	16	All levels present.
State × Age × Gender	5 × 5 × 2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Coll. (5,2,1) & (5,3,1); conv.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**287**	**285**	

Exhibit D3.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**144**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 5	16	16	All levels present.
State × Race (5 levels)	5 × 5	16	16	All levels present.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
State × % Black or African American	5 × 3	8	8	All levels present.
State × % Hispanic or Latino	5 × 3	8	7	Drop (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	16	All levels present.
Three-Factor Effects		**106**	**82**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 5 × 3	32	16	Coll. (1,1,2) & (1,1,3), repeat for all states & all age groups; conv.
State × Age × Hispanicity	5 × 5 × 2	16	12	Drop (1,4,1), repeat for all states; conv.
State × Age × Gender	5 × 5 × 2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all states; conv.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**287**	**262**	

Exhibit D3.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 3: East North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**81**	**79**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 6	20	20	All levels present.
State × Race (5 levels)	5 × 5	16	14	Coll. (1,3) & (1,4), (3,3) & (3,4); conv.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
Three-Factor Effects		**127**	**101**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 6 × 3	40	20	Coll. (1,1,2) & (1,1,3), repeat for all age groups & all states; conv.
State × Age × Hispanicity	5 × 6 × 2	20	18	Drop (3,4,1), (3,5,1); conv.
State × Age × Gender	5 × 6 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (1,2,1) & (1,3,1), repeat for all states; conv.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**227**	**199**	

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Appendix D4: Model Group 4: West North Central

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

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Table D.4a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 4: West North Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	2.32	2.56	0.26	1.52630	357	(1.12, 1.30)	(1.12, 1.30)
	1.06	1.82	0.23	1.56840	187	(1.00, 5.00)	(1.00, 5.00)
						(1.20, 1.32)	(1.21, 1.31)
res.sdu.ps	1.06	1.82	0.23	1.56816	267	(0.33, 1.10)	(0.33, 1.10)
	1.29	2.53	0.56	1.64342	259	(0.23, 5.00)	(0.24, 5.00)
						(0.97, 1.10)	(0.97, 1.10)
sel.per.ps	2.57	4.97	1.24	2.62699	377	(0.20, 2.90)	(0.20, 2.90)
	1.52	3.52	0.93	2.68245	348	(0.20, 4.69)	(0.20, 4.68)
						(0.90, 1.08)	(0.90, 1.08)
res.per.nr	1.25	3.12	0.98	2.68319	377	(1.00, 3.00)	(1.00, 3.00)
	1.52	3.47	0.76	2.67555	339	(1.00, 4.80)	(1.00, 4.80)
						(1.40, 5.00)	(1.40, 1.40)
res.per.ps	1.54	3.46	0.75	2.67555	307	(0.28, 1.80)	(0.28, 1.80)
	1.00	2.78	0.54	2.77343	264	(0.20, 3.83)	(0.20, 3.72)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.4b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 4: West North Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	70	0.85	72	0.24	26	1.01	44	0.12	9	0.51	9	0.15	3
1%	71	1.00	86	0.53	79	1.01	92	0.37	81	1.00	116	0.25	96
5%	73	1.06	95	0.78	100	1.01	178	0.66	167	1.04	232	0.66	204
10%	93	1.11	109	0.87	122	1.01	255	0.77	249	1.12	354	0.82	335
25%	143	1.17	169	0.97	185	1.29	465	0.89	455	1.25	669	0.96	659
Median	398	1.23	477	1.05	479	2.43	1,102	0.99	1,054	1.39	1,496	1.02	1,495
75%	741	1.30	877	1.18	909	3.05	2,102	1.10	2,112	1.57	3,006	1.06	3,048
90%	984	1.39	1,152	1.34	1,324	7.57	4,410	1.25	4,319	1.79	6,365	1.14	6,262
95%	1,056	1.45	1,465	1.54	1,568	8.36	6,500	1.38	6,358	2.01	9,277	1.30	9,165
99%	1,197	1.90	1,638	2.19	2,000	9.73	11,704	1.81	12,411	2.95	17,804	1.66	18,793
Maximum	2,125	5.00	2,991	5.00	7,242	13.90	43,286	4.68	22,326	4.80	30,598	3.72	46,888
n	17,643	14,093	14,093	14,089	14,089	9,646	9,646	9,646	9,646	6,699	6,699	6,699	6,699
Max/Mean	4.71	-	5.30	-	11.80	-	23.44	-	12.15	-	11.57	-	17.72

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 4 Overview

Dwelling Unit Nonresponse

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

Variable collapsing or dropping was present in all two-factor effects except the percent Owner-Occupied × Rent/Housing, State × Quarter, State × percent Owner-Occupied, and State × Rent/Housing interactions. Out of 140 proposed variables, 116 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 192 proposed variables, 46 were included in the model.

In the final model, a total of 187 variables were included; see Exhibit D4.1.

Dwelling Unit Poststratification

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

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

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

In the final model, a total of 259 variables were included; see Exhibit D4.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the percent Owner-Occupied × percent Black or African American, percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 191 proposed variables, 179 were included in the model.

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

In the final model, a total of 348 variables were included; see Exhibit D4.3.

Respondent Person-Level Nonresponse

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

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

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Age × Hispanicity × Gender, State × Age × Gender, State × Race × Gender, and State × Hispanicity × Gender interactions. Out of 148 proposed variables, 123 were included in the model.

In the final model, a total of 339 variables were included; see Exhibit D4.4.

Respondent Person-Level Poststratification

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

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

For the three-factor effects, variable collapsing or dropping was present in Age × Race × Hispanicity, Race × Hispanicity × Gender, State × Age × Race, State × Age × Hispanicity, and State × Race× Hispanicity interactions. Out of 177 proposed variables, 134 were included in the model.

In the final model, a total of 264 variables were included; see Exhibit D4.5.

Exhibit D4.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**25**	**25**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**140**	**116**	
% Owner-Occupied × % Black or African American	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	6	Coll. (1,1) & (1,2); zero. Coll. (4,1) & (4,2); sing.
State × Quarter	7 × 4	18	18	All levels present.
State × Population Density	7 × 4	18	14	Coll. (1,1) & (1,2), do the same for states 5, 6, & 7; zero.
State × Group Quarter	7 × 3	12	4	Drop (1,1/2), (3,1/2), coll. (2,1) & (2,2); zero. Drop (5,1/2), coll. (6,1) & (6,2); conv.
State × % Black or African American	7 × 3	12	9	Coll. (5,1) & (5,2), do the same for states 6 & 7; zero.
State × % Hispanic or Latino	7 × 3	12	8	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (3,1) & (3,2); sing.
State × % Owner-Occupied	7 × 3	12	12	All levels present.
State × Rent/Housing	7 × 5	24	24	All levels present.
Three-Factor Effects		**192**	**46**	
State × % Owner-Occupied × % Black or African American	7 × 3 × 3	24	4	Coll. (1,2,1) & (1,2,2) & (1,3,1) & (1,3,2), do the same for states 2, 3, & 5, drop states 6 & 7; sing./zero.
State × % Owner-Occupied × % Hispanic or Latino	7 × 3 × 3	24	5	Coll. (1,2,1) & (1,2,2) & (1,3,1) & (1,3,2), do the same for states 2, 3, 5, & 7. Drop state 6; zero/sing.
State × % Owner-Occupied × Rent/Housing	7 × 3 × 5	48	17	Coll. (1,2,1) & (1,2,2) & (1,3,1) & (1,3,2), coll. (1,2,3) & (1,3,3), (1,2,4) & (1,3,4), do the same for all states; sing./zero. Coll. (2,2,1) & (2,2,2) & (2,3,1) & (2,3,2), do the same for states 5, 6, & 7, drop (3,2/3,1/2); conv.
State × Rent/Housing × % Black or African American	7 × 3 × 5	48	11	Coll. (1,1,1) & (1,1,2) & (1,2,1) & (1,2,2), do the same for state 5. Coll. (2,1,1) & (2,1,2), (2,2,1) & (2,2,2). Coll. (1,3,1) & (1,3,2), do the same for states 2 & 5. Coll. (1,4,1) & (1,4,2), do the same for states 2 & 5. Drop (3,1/2,1/2), coll. (3,3,1) & (3,3,2) & (3,4,1) & (3,4,2), drop remainder; conv./sing./zero.
State × Rent/Housing × % Hispanic or Latino	7 × 3 × 5	48	9	Coll. (1,1,1) & (1,1,2) & (1,2,1) & (1,2,2), do the same for states 2, 3, & 5; conv. Coll. (2,3,1) & (2,3,2), do the same for states 3 & 5. Coll. (3,4,1) & (3,4,2), do the same for state 5, drop remainder; conv./sing./zero.
Total		**357**	**187**	

Exhibit D4.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**20**	**20**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**99**	**99**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	7 × 4	18	18	All levels present.
State × Age	7 × 5	24	24	All levels present.
State × Race (5 levels)	7 × 5	24	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
Three-Factor Effects		**148**	**140**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	6	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	7 × 5 × 3	48	48	All levels present.
State × Age × Hispanicity	7 × 5 × 2	24	24	All levels present.
State × Age × Gender	7 × 5 × 2	24	24	All levels present.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	6	Coll. (1,2,1) & (1,3,1), do the same for all states; conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**267**	**259**	

Exhibit D4.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**38**	**38**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**191**	**179**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); zero.
Rent/Housing × % Hispanic or Latino	3 × 5	8	6	Coll. (1,1) & (1,2); zero. Coll. (4,1) & (4,2); sing.
State × Quarter	7 × 4	18	18	All levels present.
State × Age	7 × 5	24	24	All levels present.
State × Race (5 levels)	7 × 5	24	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
State × % Black or African American	7 × 3	12	9	Coll. (5,1) & (5,2), do the same for states 6 & 7; zero.
State × % Hispanic or Latino	7 × 3	12	8	Coll. (1,1) & (1,2), do the same for states 6 & 7; zero. Coll. (3,1) & (3,2); sing.
State × % Owner-Occupied	7 × 3	12	12	All levels present.
State × Rent/Housing	7 × 5	24	24	All levels present.
Three-Factor Effects		**148**	**131**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), drop (4,2/3,1); conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	7 × 5 × 3	48	40	Coll. (1,4,2) & (1,4,3); sing. Coll. (1,1,2) & (1,1,3), (1,2,2) & (1,2,3), (1,3,2) & (1,3,3), do the same for state 6; conv.
State × Age × Hispanicity	7 × 5 × 2	24	24	All levels present.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	7	Coll. (5,2,1) & (5,3,1); zero. Coll. (1,2,1) & (1,3,1), do the same for states 2, 6, & 7; conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Age × Gender	7 × 5 × 2	24	24	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**377**	**348**	

Exhibit D4.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**38**	**38**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**191**	**178**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	3	Coll. (3,1) & (3,2); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); zero.
Rent/Housing × % Hispanic or Latino	3 × 5	8	6	Coll. (1,1) & (1,2); zero. Coll. (4,1) & (4,2); sing.
State × Quarter	7 × 4	18	18	All levels present.
State × Age	7 × 5	24	24	All levels present.
State × Race (5 levels)	7 × 5	24	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
State × % Black or African American	7 × 3	12	8	Coll. (5,1) & (5,2); zero. Coll. (6,1) & (6,2) & (7,1) & (7,2); conv.
State × % Hispanic or Latino	7 × 3	12	8	Coll. (1,1) & (1,2), (6,1) & (6,2), (7,1) & (7,2); zero. Coll. (3,1) & (3,2); sing.
State × % Owner-Occupied	7 × 3	12	12	All levels present.
State × Rent/Housing	7 × 5	24	24	All levels present.
Three-Factor Effects		**148**	**123**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	3	Coll. (1,2,1) & (1,3,1), do the same for age groups 2 & 3. Drop (4,2/3,1); conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	7 × 5 × 3	48	39	Coll. (1,4,2) & (1,4,3); sing. Coll. (7,1,2) & (7,1,3), do the same for all age groups, then for state 5; conv.
State × Age × Hispanicity	7 × 5 × 2	24	22	Drop (1,4,1), (7,4,1); conv.
State × Age × Gender	7 × 5 × 2	24	24	All levels present.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	4	Coll. (1,2,1) & (1,3,1), (5,2,1) & (5,3,1); zero. Coll. (3,2,1) & (3,3,1), (6,2,1) & (6,3,1), drop (1/2,2/3,1); conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**377**	**339**	

Exhibit D4.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 4: West North Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**21**	**21**	
Intercept	1	1	1	All levels present.
State	7	6	6	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**109**	**109**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	7 × 4	18	18	All levels present.
State × Age	7 × 6	30	30	All levels present.
State × Race (5 levels)	7 × 5	24	24	All levels present.
State × Hispanicity	7 × 2	6	6	All levels present.
State × Gender	7 × 2	6	6	All levels present.
Three-Factor Effects		**177**	**134**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	7	Coll. (4,2,1) & (4,3,1); sing. Drop (5,2/3,1); sing./zero.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	7 × 6 × 3	60	38	Coll. (1,5,2) & (1,5,3), do the same for states 3 & 7; sing. Coll. (6,5,2) & (6,5,3); zero. Coll. (1,1,2) & (1,1,3), do the same for age groups 2, 3, & 4 & for states 2, 3, & 6, drop (2,5,2/3); conv.
State × Age × Hispanicity	7 × 6 × 2	30	22	Drop (1/5/6,5,1); sing. Drop (7,5,1); zero. Coll. (6,1,1) & (7,1,1), do the same for age groups 2, 3, & 4; conv.
State × Age × Gender	7 × 6 × 2	30	30	All levels present.
State × Race (3 levels) × Hispanicity	7 × 3 × 2	12	3	Coll. (1,2,1) & (1,3,1); sing. Coll. (2,2,1) & (2,3,1), (5,2,1) & (5,3,1), drop (3/6/7,2/3,1); conv.
State × Race (3 levels) × Gender	7 × 3 × 2	12	12	All levels present.
State × Hispanicity × Gender	7 × 2 × 2	6	6	All levels present.
Total		**307**	**264**	

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Appendix D5: Model Group 5: South Atlantic

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

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Table D.5a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 5: South Atlantic)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	2.89	4.21	0.78	1.34650	459	(1.00, 3.00)	(1.00, 3.00)
	2.59	3.77	0.69	1.36486	289	(1.00, 5.00)	(1.00, 5.00)
						(1.20, 2.63)	(2.62, 2.62)
res.sdu.ps	2.59	3.77	0.69	1.36474	337	(0.46, 1.10)	(0.46, 1.10)
	0.93	1.77	0.29	1.39132	337	(0.20, 4.22)	(0.20, 4.14)
						(0.90, 1.59)	(0.90, 1.59)
sel.per.ps	2.23	4.11	0.89	2.14576	467	(0.27, 2.90)	(0.28, 2.89)
	1.25	2.42	0.46	2.15977	458	(0.41, 3.54)	(0.41, 3.48)
						(0.60, 4.97)	(0.60, 4.97)
res.per.nr	1.29	3.18	0.53	2.16083	467	(1.00, 3.00)	(1.00, 3.00)
	1.10	3.03	0.67	2.30819	438	(1.00, 4.24)	(1.00, 4.20)
						(1.40, 2.37)	(1.40, 2.37)
res.per.ps	1.16	3.27	0.79	2.30819	387	(0.20, 2.90)	(0.20, 2.90)
	0.91	2.55	0.45	2.37059	372	(0.20, 4.87)	(0.20, 4.87)
						(0.90, 5.00)	(0.90, 0.90)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.5b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 5: South Atlantic)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	35	0.40	36	0.20	20	1.01	21	0.15	21	0.62	24	0.14	14
1%	35	1.00	46	0.49	44	1.01	74	0.56	74	1.00	89	0.21	74
5%	37	1.11	64	0.73	68	1.01	203	0.75	204	1.09	274	0.48	228
10%	46	1.16	102	0.85	98	1.01	356	0.81	356	1.15	505	0.80	441
25%	200	1.23	293	0.98	308	1.31	1,013	0.90	973	1.24	1,313	0.97	1,206
Median	701	1.33	953	1.08	1,030	2.53	1,907	0.99	1,915	1.37	2,568	1.02	2,559
75%	844	1.49	1,165	1.20	1,307	3.38	3,703	1.10	3,721	1.52	5,238	1.08	5,327
90%	1,049	1.76	1,402	1.35	1,581	8.22	8,023	1.23	7,920	1.73	10,996	1.18	10,698
95%	1,122	2.08	1,570	1.49	1,770	8.96	10,346	1.34	10,477	1.88	15,002	1.27	15,406
99%	1,466	2.71	2,127	1.91	2,314	9.99	13,853	1.70	14,572	2.35	22,432	1.70	24,160
Maximum	4,811	5.00	4,371	4.14	5,256	20.20	50,867	6.32	31,711	4.20	58,838	4.87	59,439
n	38,976	27,929	27,929	27,922	27,922	17,972	17,972	17,972	17,972	12,706	12,706	12,706	12,706
Max/Mean	7.94	-	5.17	-	5.68	-	16.70	-	10.38	-	13.62	-	13.76

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 5 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the State × Population Density, State × Group Quarter, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 176 proposed variables, 155 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Many factors were excluded because of zero sample sizes or exact linear combinations. Out of 256 proposed variables, 107 were included in the model.

In the final model, a total of 289 variables were included; see Exhibit D5.1.

Dwelling Unit Poststratification

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

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

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

In the final model, a total of 337 variables were included; see Exhibit D5.2.

Selected Person-Level Poststratification

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

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

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Hispanicity and State × Race × Hispanicity interactions. Out of 190 proposed variables, 185 were included in the model.

In the final model, a total of 458 variables were included; see Exhibit D5.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the State × Race, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 237 proposed variables, 226 were included in the model.

For the three-factor effects, variable collapsing or dropping was present in the State × Age × Race, State × Age × Hispanicity, State × Race × Hispanicity, and State × Race × Gender interactions. Out of 190 proposed variables, 172 were included in the model.

In the final model, a total of 438 variables were included; see Exhibit D5.4.

Respondent Person-Level Poststratification

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

For the two-factor effects, variable collapsing was present in the State × Race interaction. Out of 137 proposed variables, 129 were included in the model.

For the three-factor effects, variable dropping was present in the State × Age × Hispanicity interaction. Out of 227 proposed variables, 220 were included in the model.

In the final model, a total of 372 variables were included; see Exhibit D5.5.

Exhibit D5.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**27**	**27**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**176**	**155**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	9 × 4	24	24	All levels present.
State × Population Density	9 × 4	24	17	Drop (1,*), (2,*), (4,3); zero/sing.
State × Group Quarter	9 × 3	16	6	Drop (4,1/2), (6,1), (8,1/2); zero/sing. Coll. (9,1) & (9,2), repeat for remainder of the states; sing./zero/conv.
State × % Black or African American	9 × 3	16	16	All levels present.
State × % Hispanic or Latino	9 × 3	16	13	Drop (1,1), (2,1), (8,1); zero.
State × % Owner-Occupied	9 × 3	16	15	Drop (8,3); zero.
State × Rent/Housing	9 × 5	32	32	All levels present.
Three-Factor Effects		**256**	**107**	
State × % Owner-Occupied × % Black or African American	9 × 3 × 3	32	14	Coll. (9,3,1) & (9,3,2), (9,2,1) & (9,2,2), keep (1,3,1), (1,2,1/2), (5,3,1), (5,2,1/2), (6,2,1/2), (7,3,1), (7,2,1/2), (8,2,2), drop all others; zero/sing./conv.
State × % Owner-Occupied × % Hispanic or Latino	9 × 3 × 3	32	9	Coll. (9,2,1) & (9,2,2), (7,2,1) & (7,2,2), keep (1,2,2), (2,2,2), (4,2,1/2), (5,2,2), (6,2,1/2), drop all others; zero/sing./conv.
State × % Owner-Occupied × Rent/Housing	9 × 3 × 5	64	33	Drop (9,3,4), (1,3,1/2/4), (1,2,1), (2,3,1), (2,2,1/2), (4,3,2/3), (4,2,1), (5,3,1/3/4), (5,2,4), (6,3,1/3/4), (6,2,4), (7,3,*), (7,2,4), (8,3,*), (8,2,2/3/4); sing./zero/conv.
State × Rent/Housing × % Black or African American	9 × 3 × 5	64	33	Drop (9,4,1), (1,1,1/2), (1,2,2), (1,4,1/2), (2,*,*), (4,1,1/2), (4,4,1), (5,3,1), (5,4,1/2), (6,3,1), (6,4,1/2), (7,4,1/2), (8,1/2,1), (8,3,*), (8,4,*); conv./zero/sing.
State × Rent/Housing × % Hispanic or Latino	9 × 3 × 5	64	18	Coll. (9,3,1) & (9,3,2), keep (9,1,2), (9,2,1/,2), (9,4,1/2), (1,2/3,3), (4,2/4,2), (5,1/2/3,2), (6,1/2/3,2), (7,1/2,2), drop all others; conv./zero/sing.
Total		**459**	**289**	

Exhibit D5.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**125**	**125**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	9 × 4	24	24	All levels present.
State × Age	9 × 5	32	32	All levels present.
State × Race (5 levels)	9 × 5	32	32	All levels present.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
Three-Factor Effects		**190**	**190**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	9 × 5 × 3	64	64	All levels present.
State × Age × Hispanicity	9 × 5 × 2	32	32	All levels present.
State × Age × Gender	9 × 5 × 2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	16	All levels present.
State × Race (3 levels) × Gender	9 × 3 × 2	16	16	All levels present.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**337**	**337**	

Exhibit D5.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**40**	**40**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**237**	**233**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	9 × 4	24	24	All levels present.
State × Age	9 × 5	32	32	All levels present.
State × Race (5 levels)	9 × 5	32	32	All levels present.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
State × % Black or African American	9 × 3	16	16	All levels present.
State × % Hispanic or Latino	9 × 3	16	13	Drop (1/2/8,1); zero.
State × % Owner-Occupied	9 × 3	16	15	Drop (8,3); zero.
State × Rent/Housing	9 × 5	32	32	All levels present.
Three-Factor Effects		**190**	**185**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	9 × 5 × 3	64	64	All levels present.
State × Age × Hispanicity	9 × 5 × 2	32	28	Drop (8,4,1); sing. Drop (8,1,2,3,1); conv.
State × Age × Gender	9 × 5 × 2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	15	Coll. (8,2,1) & (8,3,1); conv.
State × Race (3 levels) × Gender	9 × 3 × 2	16	16	All levels present.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**467**	**458**	

Exhibit D5.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**40**	**40**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**237**	**226**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	9 × 4	24	24	All levels present.
State × Age	9 × 5	32	32	All levels present.
State × Race (5 levels)	9 × 5	32	25	Coll. (8,3) & (8,4); zero. Do the same for all states except FL; conv.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
State × % Black or African American	9 × 3	16	16	All levels present.
State × % Hispanic or Latino	9 × 3	16	13	Drop (1/2/8,1); zero.
State × % Owner-Occupied	9 × 3	16	15	Drop (8,3); zero.
State × Rent/Housing	9 × 5	32	32	All levels present.
Three-Factor Effects		**190**	**172**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	9 × 5 × 3	64	56	Coll. (6,1,2) & (6,1,3), repeat for all age groups, do the same for WV; conv.
State × Age × Hispanicity	9 × 5 × 2	32	31	Drop (8,4,1); sing.
State × Age × Gender	9 × 5 × 2	32	32	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	8	Coll. (1,2,1) & (1,3,1), repeat for all states; conv.
State × Race (3 levels) × Gender	9 × 3 × 2	16	15	Coll. (8,2,1) & (8,3,1); conv.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**467**	**438**	

Exhibit D5.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 5: South Atlantic

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**23**	
Intercept	1	1	1	All levels present.
State	9	8	8	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**137**	**129**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	9 × 4	24	24	All levels present.
State × Age	9 × 6	40	40	All levels present.
State × Race (5 levels)	9 × 5	32	24	Coll. (9,3) & (9,4), do the same for all states; conv.
State × Hispanicity	9 × 2	8	8	All levels present.
State × Gender	9 × 2	8	8	All levels present.
Three-Factor Effects		**227**	**220**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	9 × 6 × 3	80	80	All levels present.
State × Age × Hispanicity	9 × 6 × 2	40	33	Drop (6,5,1), (8,4/5); sing. Drop (8,1/2/3); conv. Drop (5,5,1); conv.
State × Age × Gender	9 × 6 × 2	40	40	All levels present.
State × Race (3 levels) × Hispanicity	9 × 3 × 2	16	16	All levels present.
State × Race (3 levels) × Gender	9 × 3 × 2	16	16	All levels present.
State × Hispanicity × Gender	9 × 2 × 2	8	8	All levels present.
Total		**387**	**372**	

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Appendix D6: Model Group 6: East South Central

(Alabama, Kentucky, Mississippi, and Tennessee)

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Table D.6a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 6: East South Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	0.90	1.19	0.14	1.07360	204	(1.19, 1.25)	(1.19, 1.25)
	2.49	4.18	0.64	1.09191	138	(1.00, 2.75)	(1.00, 2.62)
						(1.15, 1.20)	(1.15, 1.15)
res.sdu.ps	2.50	4.18	0.64	1.09189	162	(0.35, 1.75)	(0.36, 1.75)
	0.90	1.65	0.28	1.14916	161	(0.23, 3.59)	(0.23, 3.59)
						(0.90, 1.21)	(0.90, 1.21)
sel.per.ps	2.30	3.91	0.65	1.87263	242	(0.20, 2.90)	(0.20, 2.90)
	1.65	3.20	0.67	1.93481	223	(0.20, 3.29)	(0.20, 3.27)
						(0.90, 1.29)	(0.90, 1.29)
res.per.nr	1.49	2.91	0.61	1.95959	242	(1.00, 2.50)	(1.00, 2.50)
	1.75	3.23	0.68	2.20041	191	(1.00, 4.88)	(1.00, 4.88)
						(1.40, 5.00)	(1.40, 5.00)
res.per.ps	1.80	3.42	0.77	2.20041	187	(0.20, 1.20)	(0.20, 1.20)
	0.76	1.47	0.27	2.27402	157	(0.20, 4.39)	(0.20, 4.39)
						(N/A, N/A)	(N/A, N/A)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.6b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 6: East South Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	390	1.00	409	0.23	141	1.01	142	0.17	44	0.53	46	0.14	12
1%	402	1.00	430	0.41	363	1.01	413	0.39	345	1.00	451	0.21	294
5%	411	1.05	468	0.73	484	1.01	583	0.70	572	1.03	715	0.64	625
10%	562	1.08	633	0.87	584	1.01	750	0.80	715	1.07	892	0.86	844
25%	654	1.12	763	0.99	748	1.17	1,182	0.89	1,155	1.18	1,510	0.96	1,495
Median	785	1.17	918	1.10	984	2.01	1,936	1.00	1,933	1.33	2,495	1.02	2,529
75%	994	1.25	1,170	1.18	1,314	3.03	3,554	1.12	3,563	1.56	4,816	1.07	4,732
90%	1,095	1.30	1,350	1.31	1,569	6.80	6,496	1.26	6,931	1.83	9,666	1.12	9,398
95%	1,180	1.36	1,398	1.42	1,756	7.46	9,386	1.39	9,596	2.07	14,542	1.18	14,171
99%	1,215	1.56	1,777	1.75	2,198	8.34	12,810	1.89	13,439	3.16	23,040	2.10	24,446
Maximum	1,234	2.62	2,653	3.59	4,713	13.61	25,141	3.27	29,323	7.86	32,684	4.39	35,577
n	8,741	7,336	7,336	7,332	7,332	5,386	5,386	5,386	5,386	3,835	3,835	3,835	3,835
Max/Mean	1.53	-	2.76	-	4.49	-	8.63	-	9.91	-	7.87	-	8.56

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 6 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, and State × percent Hispanic or Latino interactions. Out of 86 proposed variables, 77 were included in the model.

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

In the final model, a total of 138 variables were included; see Exhibit D6.1.

Dwelling Unit Poststratification

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

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

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

In the final model, a total of 161 variables were included; see Exhibit D6.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, and State × percent Hispanic or Latino interactions. Out of 122 proposed variables, 113 were included in the model.

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

In the final model, a total of 223 variables were included; see Exhibit D6.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Hispanic or Latino, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × Race, State × percent Hispanic or Latino, and State × percent Owner-Occupied interactions. Out of 122 proposed variables, 107 were included in the model.

Variable collapsing or dropping was present in all three-factor effects except the Age × Hispanicity × Gender and State × Age × Gender interactions. Out of 85 proposed variables, 49 were included in the model.

In the final model, a total of 191 variables were included; see Exhibit D6.4.

Respondent Person-Level Poststratification

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

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

Variable collapsing or dropping was present in all three-factor effects except the Age × Race × Gender, Race × Hispanicity × Gender, State × Age × Gender, State × Race × Gender, and State × Hispanicity × Gender interactions. Out of 102 proposed variables, 72 were included in the model.

In the final model, a total of 157 variables were included; see Exhibit D6.5.

Exhibit D6.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**86**	**77**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	2	Drop (3,1), (2,1); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Drop (4,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	5	Drop (1,1), (3,1); zero, drop (4,1); sing.
State × Quarter	4 × 4	9	9	All levels present.
State × Population Density	4 × 4	9	9	All levels present.
State × Group Quarter	4 × 3	6	6	All levels present.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	3	Drop (2,1), (3,1); zero, drop (1,1); sing.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**96**	**39**	
State × % Owner-Occupied × % Black or African American	4 × 3 × 3	12	4	Keep (1,2,1), (1,2,2), (2,2,2), (3,2,1), drop all others; zero/sing.
State × % Owner-Occupied × % Hispanic or Latino	4 × 3 × 3	12	3	Keep (1,2,2), (2,2,2), (3,2,2), drop all others; hier./zero/sing.
State × % Owner-Occupied × Rent/Housing	4 × 3 × 5	24	10	Keep (1,2,1), (1,2,2), (1,2,3), (1,2,4), (2,2,2), (2,2,3), (2,2,4), (3,2,2), (3,2,3), (3,2,4), drop all others; zero/sing.
State × Rent/Housing × % Black or African American	4 × 3 × 5	24	16	Drop (1,4,1), (2,4,1), (3,4,1); hier. Drop (2,3,1); zero. Drop (2,1,1), (2,2,1), (3,1,1), (3,1,2); sing.
State × Rent/Housing × % Hispanic or Latino	4 × 3 × 5	24	6	Keep (1,3,2), (2,2,2), (2,3,2), (3,1,2), (3,2,2), (3,3,2), drop all others; hier./zero/sing.
Total		**204**	**138**	

Exhibit D6.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**60**	**60**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 5	12	12	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
Three-Factor Effects		**85**	**84**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	4 × 5 × 3	24	24	All levels present.
State × Age × Hispanicity	4 × 5 × 2	12	12	All levels present.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	5	Coll. (3,2,1) & (3,3,1); conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**162**	**161**	

Exhibit D6.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**113**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	2	Drop (2,1), (3,1); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Coll. (4,1) & (4,2); conv.
Rent/Housing × % Hispanic or Latino	3 × 5	8	5	Drop (1,1), (3,1); zero. Coll. (4,1) & (4,2); conv.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 5	12	12	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	3	Drop (2,1), (3,1); zero. Coll. (1,1) & (1,2); sing.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**75**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	4	Coll. (3,2,1) & (3,3,1); zero. Coll. (2,2,1) & (2,3,1); conv. Drop (4,*,1); sing./conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	4 × 5 × 3	24	24	All levels present.
State × Age × Hispanicity	4 × 5 × 2	12	12	All levels present.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	1	Coll. (1,2,1) & (1,3,1); conv. Drop all others; sing./conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**242**	**223**	

Exhibit D6.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**107**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	2	Drop (3,1), (2,1); zero.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	7	Drop (4,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	5	Drop (1,1), (3,1); zero. Drop (4,1); sing.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 5	12	12	All levels present.
State × Race (5 levels)	4 × 5	12	8	Coll. (1,3) & (1,4) & (1,5), (3,3) & (3,4) & (3,5); conv.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	3	Drop (1,1), repeat for all states; zero/sing.
State × % Owner-Occupied	4 × 3	6	4	Coll. (1,3) & (1,2), (2,3) & (2,2); conv.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**49**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	2	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), drop all others; conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	5	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	0	Drop all levels; conv.
State × Age × Race (3 levels)	4 × 5 × 3	24	12	Coll. (1,1,2) & (1,1,3), repeat for all age groups & all states; conv.
State × Age × Hispanicity	4 × 5 × 2	12	9	Drop (1,4,1), (3,3,1), (3,4,1); conv.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	0	Drop all levels; conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	3	Coll. (1,2,1) & (1,3,1), repeat for all states; conv.
State × Hispanicity × Gender	4 × 2 × 2	3	2	Drop (1,1,1); conv.
Total		**242**	**191**	

Exhibit D6.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 6: East South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**67**	**67**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 6	15	15	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
Three-Factor Effects		**102**	**72**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	5	Coll. (3,2,1) & (3,3,1); zero. Drop (5,2,1); zero. Drop (5,3,1); sing. Coll. (2,2,1) & (2,3,1), (4,2,1) & (4,3,1); conv.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	4	Drop (5,1,1); sing.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	4 × 6 × 3	30	15	Coll. (1,1,2) & (1,1,3), repeat for all states & all age groups; conv.
State × Age × Hispanicity	4 × 6 × 2	15	9	Keep (1,1,1), (1,2,1), (1,3,1), repeat for all states. Drop all others; sing./conv.
State × Age × Gender	4 × 6 × 2	15	15	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	3	Coll. (1,2,1) & (1,3,1), repeat for all states; conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**187**	**157**	

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Appendix D7: Model Group 7: West South Central

(Arkansas, Louisiana, Oklahoma, and Texas)

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Table D.7a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 7: West South Central)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	2.43	2.58	0.05	1.17478	204	(1.07, 1.25)	(1.07, 1.25)
	2.31	3.69	0.38	1.20201	138	(1.00, 5.00)	(1.00, 5.00)
						(1.04, 1.27)	(1.04, 1.26)
res.sdu.ps	2.31	3.69	0.38	1.20207	162	(0.25, 1.50)	(0.25, 1.50)
	1.55	3.42	0.75	1.30343	162	(0.20, 5.00)	(0.20, 5.00)
						(0.90, 1.96)	(0.90, 1.96)
sel.per.ps	2.31	4.98	1.08	1.75069	242	(0.56, 2.97)	(0.58, 2.97)
	0.92	2.54	0.58	1.78597	239	(0.25, 4.82)	(0.26, 4.81)
						(0.40, 2.87)	(0.40, 2.82)
res.per.nr	1.02	2.74	0.64	1.79975	242	(1.00, 2.85)	(1.00, 2.83)
	1.59	3.59	0.55	1.92909	228	(1.00, 4.37)	(1.00, 4.32)
						(1.40, 5.00)	(1.40, 1.40)
res.per.ps	1.58	3.84	0.55	1.92909	187	(0.20, 1.70)	(0.20, 1.70)
	0.67	1.72	0.34	1.97990	179	(0.20, 4.95)	(0.20, 4.95)
						(0.62, 1.06)	(0.62, 1.05)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.7b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 7: West South Central)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	373	0.50	373	0.20	93	1.01	154	0.26	48	0.45	48	0.16	10
1%	382	1.00	428	0.50	315	1.01	399	0.51	282	1.00	334	0.24	204
5%	387	1.04	480	0.79	475	1.01	673	0.74	625	1.04	763	0.51	676
10%	455	1.06	529	0.90	562	1.01	864	0.82	840	1.09	1,029	0.81	965
25%	586	1.11	653	1.03	724	1.23	1,520	0.92	1,505	1.18	1,945	0.98	1,866
Median	775	1.17	983	1.12	1,190	2.27	2,634	1.01	2,643	1.30	3,381	1.04	3,427
75%	1,326	1.27	1,584	1.26	1,856	3.07	5,172	1.08	5,168	1.47	6,936	1.10	6,930
90%	1,392	1.40	1,756	1.46	2,252	5.87	8,581	1.18	8,453	1.68	11,860	1.16	11,715
95%	1,416	1.51	1,863	1.66	2,558	6.90	10,903	1.26	11,073	1.86	15,671	1.20	16,117
99%	1,438	1.87	2,271	2.17	3,354	8.22	14,317	1.54	15,206	2.54	23,239	1.39	24,606
Maximum	4,317	5.00	3,851	5.00	8,909	15.18	32,529	6.70	51,244	4.32	49,151	4.95	63,994
n	13,474	11,102	11,102	11,098	11,098	8,571	8,571	8,571	8,571	6,276	6,276	6,276	6,276
Max/Mean	4.58	-	3.37	-	6.60	-	8.54	-	13.37	-	9.39	-	12.23

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 7 Overview

Dwelling Unit Nonresponse

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

For the two-factor effects, variable collapsing or dropping was present in the State × Group Quarter and State × percent Hispanic or Latino interactions. Out of 86 proposed variables, 81 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 96 proposed variables, 35 were included in the model.

In the final model, a total of 138 variables were included; see Exhibit D7.1.

Dwelling Unit Poststratification

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

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

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

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

Selected Person-Level Poststratification

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

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

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity and State × Race × Hispanicity interactions. Out of 85 proposed variables, 83 were included in the model.

In the final model, a total of 239 variables were included; see Exhibit D7.3.

Respondent Person-Level Nonresponse

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

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

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

In the final model, a total of 228 variables were included; see Exhibit D7.4.

Respondent Person-Level Poststratification

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

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

For the three-factor effects, variable collapsing was present in the State × Age × Race and State × Race × Hispanicity interactions. Out of 102 proposed variables, 94 were included in the model.

In the final model, a total of 179 variables were included; see Exhibit D7.5.

Exhibit D7.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**86**	**81**	
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Population Density	4 × 4	9	9	All levels present.
State × Group Quarter	4 × 3	6	2	Drop (3,1), (3,2); zero. Coll. (2,1) & (2,2), (4,1) & (4,2); conv.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	5	Drop (2,1); zero.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**96**	**35**	
State × % Owner-Occupied × % Black or African American	4 × 3 × 3	12	6	Keep (4,2,1/2), (2,2,1/2), (3,2,1/2), drop all others; zero/sing./conv.
State × % Owner-Occupied × % Hispanic or Latino	4 × 3 × 3	12	4	Keep (4,2,2), (2,2/3,2), (3,2,2) drop all others; zero/sing./conv.
State × % Owner-Occupied × Rent/Housing	4 × 3 × 5	24	5	Coll. (4,2,1) & (4,2,2); conv. Keep (4,2,3/4), (3,2,1/2), drop all others; zero/sing./conv.
State × Rent/Housing × % Black or African American	4 × 3 × 5	24	12	Keep (4,1,2), (4,2,1/2), (4,3,1/2), (4,4,2), (2,2,1/2), (2,3,1/2), (3,2,2), (3,3,2), drop all others; zero/sing./conv.
State × Rent/Housing × % Hispanic or Latino	4 × 3 × 5	24	8	Keep (4,1,1), (4,2,1/2), (4,3/4,2), (2,2,2), (3,2/3,2) drop all others; zero/sing./conv.
Total		**204**	**138**	

Exhibit D7.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**17**	**17**	All levels present.
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**60**	**60**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 5	12	12	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
Three-Factor Effects		**85**	**85**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	4 × 5 × 3	24	24	All levels present.
State × Age × Hispanicity	4 × 5 × 2	12	12	All levels present.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	6	All levels present.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**162**	**162**	

Exhibit D7.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**121**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 5	12	12	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	5	Drop (2,1); sing.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**83**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Coll. (4,2,1) & (4,3,1); sing.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	4 × 5 × 3	24	24	All levels present.
State × Age × Hispanicity	4 × 5 × 2	12	12	All levels present.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	5	Coll. (3,2,1) & (3,3,1); sing.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**242**	**239**	

Exhibit D7.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**35**	**35**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**122**	**121**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	4	All levels present.
% Owner-Occupied × % Hispanic	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	8	All levels present.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 5	12	12	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
State × % Black or African American	4 × 3	6	6	All levels present.
State × % Hispanic or Latino	4 × 3	6	5	Drop (2,1); zero.
State × % Owner-Occupied	4 × 3	6	6	All levels present.
State × Rent/Housing	4 × 5	12	12	All levels present.
Three-Factor Effects		**85**	**72**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Drop (4,2,1); sing.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	4 × 5 × 3	24	16	Coll. (3,1,2) & (3,1,3), repeat for all age levels & for LA; conv.
State × Age × Hispanicity	4 × 5 × 2	12	12	All levels present.
State × Age × Gender	4 × 5 × 2	12	12	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	2	Coll. (3,2,1) & (3,3,1), repeat for all other states; conv. Drop (3,*,1); conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**242**	**228**	

Exhibit D7.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 7: West South Central

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
Intercept	1	1	1	All levels present.
State	4	3	3	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**67**	**67**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	4 × 4	9	9	All levels present.
State × Age	4 × 6	15	15	All levels present.
State × Race (5 levels)	4 × 5	12	12	All levels present.
State × Hispanicity	4 × 2	3	3	All levels present.
State × Gender	4 × 2	3	3	All levels present.
Three-Factor Effects		**102**	**94**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	4 × 6 × 3	30	25	Coll. (2,5,2) & (2,5,3); sing. Coll. (2,1,2) & (2,1,3), repeat for all age groups; conv.
State × Age × Hispanicity	4 × 6 × 2	15	15	All levels present.
State × Age × Gender	4 × 6 × 2	15	15	All levels present.
State × Race (3 levels) × Hispanicity	4 × 3 × 2	6	3	Coll. (2,2,1) & (2,3,1), repeat for all states; conv.
State × Race (3 levels) × Gender	4 × 3 × 2	6	6	All levels present.
State × Hispanicity × Gender	4 × 2 × 2	3	3	All levels present.
Total		**187**	**179**	

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Appendix D8: Model Group 8: Mountain

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

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Table D.8a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 8: Mountain)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	3.15	3.06	0.44	1.70055	408	(1.00, 3.00)	(1.00, 3.00)
	2.55	4.05	0.45	1.88070	192	(1.00, 4.80)	(1.00, 4.76)
						(1.20, 2.11)	(1.20, 2.11)
res.sdu.ps	2.55	4.05	0.45	1.88080	302	(0.34, 1.10)	(0.34, 1.10)
	1.56	3.29	0.69	1.86606	295	(0.20, 5.00)	(0.20, 4.99)
						(0.90, 4.97)	(0.90, 4.97)
sel.per.ps	2.89	8.04	2.10	2.73258	422	(0.20, 2.60)	(0.20, 2.60)
	1.50	3.41	0.65	2.85463	388	(0.20, 3.83)	(0.20, 3.83)
						(0.90, 4.73)	(0.90, 4.73)
res.per.nr	1.71	4.74	0.96	2.87337	422	(1.00, 3.00)	(1.00, 2.99)
	1.88	5.93	1.28	3.10495	381	(1.00, 5.00)	(1.00, 5.00)
						(1.10, 4.87)	(1.11, 4.85)
res.per.ps	1.93	6.12	1.27	3.10495	347	(0.20, 1.60)	(0.20, 1.60)
	0.84	2.89	0.39	3.22013	317	(0.20, 5.00)	(0.20, 5.00)
						(0.30, 1.06)	(1.05, 1.05)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.8b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 8: Mountain)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	79	0.65	79	0.20	24	1.01	35	0.11	19	0.62	19	0.11	9
1%	79	1.00	88	0.43	84	1.01	106	0.46	104	1.00	118	0.21	90
5%	91	1.00	97	0.73	110	1.01	160	0.69	159	1.03	194	0.43	183
10%	94	1.03	112	0.86	125	1.01	257	0.77	245	1.08	301	0.73	266
25%	112	1.13	154	1.01	178	1.25	491	0.89	478	1.17	618	0.96	596
Median	311	1.22	385	1.12	439	2.44	1,100	1.01	1,109	1.31	1,465	1.03	1,426
75%	719	1.35	836	1.22	882	3.28	2,264	1.14	2,244	1.50	3,080	1.12	3,070
90%	1,011	1.60	1,262	1.40	1,403	6.83	4,208	1.29	4,213	1.77	5,853	1.23	6,001
95%	1,047	1.83	1,636	1.60	1,824	7.84	6,136	1.39	6,375	1.98	9,401	1.40	9,329
99%	1,156	2.40	2,313	2.30	2,625	11.64	12,992	1.72	14,326	2.58	20,890	1.72	20,922
Maximum	2,901	5.24	4,208	5.87	7,313	15.76	33,624	5.35	31,280	7.79	51,525	5.00	50,754
n	19,175	14,895	14,895	14,893	14,893	10,548	10,548	10,548	10,548	7,615	7,615	7,615	7,615
Max/Mean	6.53	-	7.36	-	11.57	-	17.86	-	16.20	-	19.26	-	18.98

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 8 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm was collapsed with Other Group Quarter. Out of 26 proposed variables, 25 were included in the model.

Variable collapsing or dropping was present in all two-factor effects except the percent Owner-Occupied × percent Hispanic or Latino, percent Owner-Occupied × Rent/Housing, Rent/Housing × percent Hispanic or Latino, State × Quarter, and State × Rent/Housing interactions. Out of 158 proposed variables, 121 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 224 proposed variables, 46 were included in the model.

In the final model, a total of 192 variables were included; see Exhibit D8.1.

Dwelling Unit Poststratification

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

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

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity, State × Age × Race, and State × Race × Hispanicity interactions. Out of 169 proposed variables, 162 were included in the model.

In the final model, a total of 295 variables were included; see Exhibit D8.2.

Selected Person-Level Poststratification

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

For the two-factor effects, variable collapsing or dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 214 proposed variables, 195 were included in the model.

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity, State × Age × Race, and State × Race × Hispanicity interactions. Out of 169 proposed variables, 154 were included in the model.

In the final model, a total of 388 variables were included; see Exhibit D8.3.

Respondent Person-Level Nonresponse

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

For the two-factor effects, variable dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, State × percent Black or African American, and State × percent Hispanic or Latino interactions. Out of 214 proposed variables, 195 were included in the model.

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

In the final model, a total of 381 variables were included; see Exhibit D8.4.

Respondent Person-Level Poststratification

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

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

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

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

Exhibit D8.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**26**	**25**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	1	Coll. (1) & (2); conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**158**	**121**	
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (*,1); zero/sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	3	Coll. (1,2) & (2,2); conv. Drop (1/2/3/4,1); zero/sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	8 × 4	21	21	All levels present.
State × Population Density	8 × 4	21	15	Drop (2/3/5/7,1), (5/7,3); zero/sing.
State × Group Quarter	8 × 3	14	4	Coll. (7,1) & (7,2); hier. Keep (1,2), (3,2), (5,1), drop remainder; conv.
State × % Black or African American	8 × 3	14	3	Keep (1,2), (5,2). Coll (4,1) & (4,2); conv. Drop remainder; zero/sing.
State × % Hispanic or Latino	8 × 3	14	12	Drop (3,1) & (7,1); zero.
State × % Owner-Occupied	8 × 3	14	13	Coll. (3,2) & (3,3); conv.
State × Rent/Housing	8 × 5	28	28	All levels present.
Three-Factor Effects		**224**	**46**	
State × % Owner-Occupied × % Black or African American	8 × 3 × 3	28	3	Keep (1,*,2). Coll (4,2,2) & (4,3,2). Drop remainder; sing./zero/hier./conv.
State × % Owner-Occupied × % Hispanic or Latino	8 × 3 × 3	28	7	Keep (1,2,1/2), (1,3,1), (5,2,*), (6,2,2) & (7,2,2), drop all others; sing./zero/hier./conv.
State × % Owner-Occupied × Rent/Housing	8 × 3 × 5	56	13	Keep (1,2,2), (1,2,3), (1,2,4), (1,3,3), (3,2,1), (3,2,3), (4,2,*), (6,3,2). Coll. (3,2,2) & (3,3,2), (6,2,2) & (6,2,3). Drop remainder; sing./zero/hier./conv.
State × Rent/Housing × % Black or African American	8 × 3 × 5	56	6	Keep (1,*,2), (4,2,2), (4,4,2), drop all others; sing./zero/hier./conv.
State × Rent/Housing × % Hispanic or Latino	8 × 3 × 5	56	17	Keep (1,1,*), (1,2,1), (1,3,2), (1,4,2), (2,1,2), (2,4,2), (4,1,2), (4,2,1), (4,3,1), (4,4,2), (5,1,1), (5,2,1), (6,3,2), (6,4,2). Coll. (2,2,2) & (2,3,2), (6,1,2) & (6,2,2). Drop all others; sing./zero/hier./conv.
Total		**408**	**192**	

Exhibit D8.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comment
One-Factor Effects		**21**	**21**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**112**	**112**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	8 × 4	21	21	All levels present.
State × Age	8 × 5	28	28	All levels present.
State × Race (5 levels)	8 × 5	28	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
Three-Factor Effects		**169**	**162**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Coll. (2,2,1) & (2,3,1); conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	8 × 5 × 3	56	52	Coll. (8,1,2) & (8,1,3), repeat for all age groups in WY; conv.
State × Age × Hispanicity	8 × 5 × 2	28	28	All levels present.
State × Age × Gender	8 × 5 × 2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	12	Coll. (5,2,1) & (5,3,1), (8,2,1) & (8,3,1); conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	14	All levels present.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**302**	**295**	

Exhibit D8.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**39**	**39**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**214**	**195**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	2	Coll. (3,1) & (3,2); sing. Drop (2,1); sing.
% Owner-Occupied × % Hispanic	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	4	Coll. (4,1) & (4,2); sing. Drop (1,1), (2,1), (3,1); zero.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	8 × 4	21	21	All levels present.
State × Age	8 × 5	28	28	All levels present.
State × Race (5 levels)	8 × 5	28	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
State × % Black or African American	8 × 3	14	3	Drop (*,1), (2,2), (3,2,), (6,2), (7.2); sing.
State × % Hispanic or Latino	8 × 3	14	12	Drop (3,1), (7,1); sing.
State × % Owner-Occupied	8 × 3	14	14	All levels present.
State × Rent/Housing	8 × 5	28	28	All levels present.
Three-Factor Effects		**169**	**154**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Coll. (4,2,1) & (4,3,1); sing.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	8 × 5 × 3	56	48	Coll. (2,2,2) & (2,2,3), (2,3,2) & (2,3,3), (2,4,2) & (2,4,3), (3,3,2) & (3,3,3), (6,4,2) & (6,4,3); conv. Coll. (3,2,2) & (3,2,3), (3,4,2) & (3,4,3), (7,4,2) & (7,4,3); conv.
State × Age × Hispanicity	8 × 5 × 2	28	28	All levels present.
State × Age × Gender	8 × 5 × 2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	10	Coll. (2,2,1) & (2,3,1), (4,2,1) & (4,3,1), (5,2,1) & (5,3,1), (6,2,1) & (6,3,1); conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	12	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**422**	**388**	

Exhibit D8.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**39**	**39**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**214**	**195**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (*,1); sing./zero.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	4	Drop (*,1); sing./zero.
Rent/Housing × % Hispanic or Latino	3 × 5	8	8	All levels present.
State × Quarter	8 × 4	21	21	All levels present.
State × Age	8 × 5	28	28	All levels present.
State × Race (5 levels)	8 × 5	28	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
State × % Black or African American	8 × 3	14	3	Keep (1,2), (4,2), (5,2), drop remainder; sing./zero.
State × % Hispanic or Latino	8 × 3	14	12	Drop (3,1), (7,1); sing./zero.
State × % Owner-Occupied	8 × 3	14	14	All levels present.
State × Rent/Housing	8 × 5	28	28	All levels present.
Three-Factor Effects		**169**	**147**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	7	Drop (4,2,1); sing.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	8 × 5 × 3	56	40	Drop (3,2,2), (3,4,2); sing./zero. Coll. (4,1,2) & (4,1,3), (4,2,2) & (4,2,3), (4,3,2) & (4,3,3), (4,4,2) & (4,4,3), (6,1,2) & (6,1,3), (6,2,2) & (6,2,3), (6,3,2) & (6,3,3), (7,1,2) & (7,1,3), (7,2,2) & (7,2,3), (7,3,2) & (7,3,3); conv. Drop (6,4,*), (7,4,*); conv./sing./zero.
State × Age × Hispanicity	8 × 5 × 2	28	28	All levels present.
State × Age × Gender	8 × 5 × 2	28	28	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	10	Coll. (4,2,1) & (4,3,1), (5,2,1) & (5,3,1), (6,2,1) & (6,3,1), (7,2,1) & (7,3,1); conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	14	All levels present.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**422**	**381**	

Exhibit D8.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 8: Mountain

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**22**	**22**	
Intercept	1	1	1	All levels present.
State	8	7	7	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**123**	**123**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	8 × 4	21	21	All levels present.
State × Age	8 × 6	35	35	All levels present.
State × Race (5 levels)	8 × 5	28	28	All levels present.
State × Hispanicity	8 × 2	7	7	All levels present.
State × Gender	8 × 2	7	7	All levels present.
Three-Factor Effects		**202**	**172**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	9	Coll. (5,2,1) & (5,3,1); sing.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	9	Coll. (5,2,1) & (5,3,1); conv.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	8 × 6 × 3	70	52	Coll. (1,4,2) & (1,4,3), (1,5,2) & (1,5,3), (2,5,2) & (2,5,3), (3,3,2) & (3,3,3), (3,4,2) & (3,4,3), (3,5,2) & (3,5,3), (5,5,2) & (5,5,3), (6,4,2) & (6,4,3), (7,1,2) & (7,1,3), (7,2,2) & (7,2,3), (7,3,2) & (7,3,3), (7,4,2) & (7,4,3); sing./zero/conv. Drop (4,5,*), (6,5,*), (7,5,*); sing./conv.
State × Age × Hispanicity	8 × 6 × 2	35	30	Drop (2,5,1), (4,5,1), (6,4,1), (6,5,1), (7,5,1); sing./conv.
State × Age × Gender	8 × 6 × 2	35	35	All levels present.
State × Race (3 levels) × Hispanicity	8 × 3 × 2	14	11	Coll. (3,2,1) & (3,3,1), (6,2,1) & (6,3,1), (7,2,1) & (7,3,1); conv.
State × Race (3 levels) × Gender	8 × 3 × 2	14	12	Coll. (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	8 × 2 × 2	7	7	All levels present.
Total		**347**	**317**	

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Appendix D9: Model Group 9: Pacific

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

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Table D.9a 2018 NSDUH Person Weight GEM Modeling Summary (Model Group 9: Pacific)

Modeling Step[1]	Extreme Weight Proportions			UWE[2]	# XVAR[3]	Bounds[4]	
	% Unweighted	% Weighted	% Outwinsor			Nominal	Realized
res.sdu.nr	2.56	2.62	0.75	1.32403	255	(1.38, 2.98)	(1.39, 2.98)
	2.40	3.83	0.55	1.37366	131	(1.03, 3.54)	(1.03, 3.53)
						(1.47, 1.86)	(1.51, 1.86)
res.sdu.ps	2.40	3.83	0.55	1.37356	197	(0.68, 2.10)	(0.69, 2.10)
	1.55	3.50	0.95	1.40649	193	(0.46, 5.00)	(0.47, 5.00)
						(0.83, 3.90)	(0.84, 3.90)
sel.per.ps	2.81	6.67	1.81	2.03504	287	(0.27, 2.40)	(0.27, 2.40)
	1.14	2.39	0.44	1.96746	271	(0.52, 2.89)	(0.52, 2.86)
						(N/A, N/A)	(N/A, N/A)
res.per.nr	1.40	3.02	0.60	2.00600	287	(1.00, 2.80)	(1.01, 2.80)
	1.65	5.99	0.64	2.28280	262	(1.00, 4.47)	(1.00, 4.47)
						(1.60, 1.65)	(1.65, 1.65)
res.per.ps	1.79	6.33	0.87	2.28280	227	(0.20, 1.50)	(0.20, 1.50)
	0.72	3.63	0.29	2.41599	207	(0.20, 2.87)	(0.20, 2.86)
						(0.95, 1.05)	(0.98, 0.98)

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

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

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

[4] There are six sets of bounds for each modeling step. Nominal bounds are used in defining maximum/minimum values for the generalized exponential model (GEM) adjustment factors. The realized bound is the actual adjustment produced by the modeling. The set of three bounds listed for each step correspond to the high extreme values, the nonextreme values, and the low extreme values.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table D.9b Distribution of Weight Adjustment Factors and Weight Products for the 2018 NSDUH Person Weight (Model Group 9: Pacific)

Statistics	*sel.sdu.des*[1]	*res.sdu.nr*[1]		*res.sdu.ps*[1]		*sel.per.des*[1]		*sel.per.ps*[1]		*res.per.nr*[1]		*res.per.ps*[1]	
	1-8[2]	**9**[3]	**1-9**[3]	**10**[4]	**1-10**[4]	**12**[5]	**1-12**[5]	**13**[5]	**1-13**[5]	**14**[6]	**1-14**[6]	**15**[6]	**1-15**[6]
Minimum	80	0.47	90	0.40	48	1.01	60	0.09	40	0.63	42	0.12	33
1%	81	1.11	102	0.68	107	1.01	130	0.65	122	1.02	153	0.22	144
5%	89	1.16	123	0.82	136	1.01	208	0.79	207	1.12	268	0.29	260
10%	104	1.19	145	0.88	160	1.04	352	0.84	348	1.19	452	0.66	427
25%	394	1.28	474	0.98	502	1.31	1,181	0.93	1,172	1.31	1,558	0.95	1,172
Median	878	1.46	1,284	1.08	1,283	2.71	2,252	1.01	2,288	1.48	3,236	1.04	3,204
75%	963	1.57	1,495	1.18	1,600	3.28	4,523	1.08	4,445	1.69	6,819	1.15	6,851
90%	1,103	1.74	1,655	1.33	1,878	6.36	8,610	1.17	8,392	1.97	12,736	1.30	12,806
95%	1,215	1.90	1,813	1.47	2,100	6.76	10,674	1.26	10,934	2.22	17,280	1.39	17,630
99%	1,285	2.32	2,558	2.10	2,871	9.83	14,501	1.49	15,245	2.87	27,912	1.53	30,017
Maximum	2,496	3.53	4,000	5.00	7,417	15.08	63,753	2.86	31,927	4.47	47,759	2.86	80,610
n	24,996	17,059	17,059	17,057	17,057	13,121	13,121	13,121	13,121	8,488	8,488	8,488	8,488
Max/Mean	3.51	-	3.84	-	6.59	-	18.57	-	9.37	-	9.07	-	15.30

Note 1: Weight component 11 and weight products 1-11 are excluded because weight 11 = 1 for all selected dwelling units.

Note 2: Weight component 16 and weight products 1-16 are excluded because weight 16 = 1 for all respondents.

Note 3: Under the generalized exponential model (GEM), nonresponse adjustment factors (weight components #9 and #14) could be less than 1 due to the built-in control for extreme values. For an explanation, see Chapter 2.

[1] Sel.sdu.des refers to selected screener dwelling unit design weight, and sel.per.des refers to selected person design weight. For a key to other modeling abbreviations, see Chapter 5, Exhibit 5.1.

[2] Based on eligible dwelling units.

[3] Based on screener-complete dwelling units.

[4] Based on screener-complete dwelling units, occupants verified eligible.

[5] Based on selected persons.

[6] Based on questionnaire-complete persons.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Model Group 9 Overview

Dwelling Unit Nonresponse

For the one-factor effects, College Dorm was collapsed with Other Group Quarter. Out of 23 proposed variables, 21 were included in the model.

For the two-factor effects, variable dropping was present in the percent Owner-Occupied × percent Black or African American, Rent/Housing × percent Black or African American, Rent/Housing × percent Hispanic or Latino, State × Population Density, State × Group Quarter, State × percent Black or African American, State × percent Hispanic or Latino, and State × Rent/Housing interactions. Out of 104 proposed variables, 76 were included in the model.

Variable collapsing or dropping was present in all three-factor effects. Out of 128 proposed variables, 34 were included in the model.

In the final model, a total of 131 variables were included; see Exhibit D9.1.

Dwelling Unit Poststratification

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

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

For the three-factor effects, variable collapsing was present in the Age × Race × Hispanicity, Race × Hispanicity × Gender, and State × Age × Race interactions. Out of 106 proposed variables, 102 were included in the model.

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

Selected Person-Level Poststratification

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

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

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

In the final model, a total of 271 variables were included; see Exhibit D9.3.

Respondent Person-Level Nonresponse

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

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

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

In the final model, a total of 262 variables were included; see Exhibit D9.4.

Respondent Person-Level Poststratification

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

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

For the three-factor effects, variable collapsing was present in the State × Age × Race interaction. Out of 127 proposed variables, 107 were included in the model.

In the final model, a total of 207 variables were included; see Exhibit D9.5.

Exhibit D9.1 Covariates for 2018 NSDUH Person Weights (res.sdu.nr), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**23**	**21**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	0	Drop all levels; conv.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**104**	**76**	
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3,1); zero. Drop (2,1); sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	5	Drop (1,1), (4,1); zero. Drop (3,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Drop (4,1); sing.
State × Quarter	5 × 4	12	12	All levels present.
State × Population Density	5 × 4	12	6	Drop (1,1), (2,1), (2,3), (5,3); zero. Drop (2,2), (3,3); sing.
State × Group Quarter	5 × 3	8	0	Drop all levels; hier.
State × % Black or African American	5 × 3	8	4	Drop (1,1), (2,1), (3,1); zero. Drop (5,1); sing.
State × % Hispanic or Latino	5 × 3	8	5	Drop (1,1), (2,1), (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	15	Drop (3,4); sing.
Three-Factor Effects		**128**	**34**	
State × % Owner-Occupied × % Black or African American	5 × 3 × 3	16	3	Coll. (1,3,2) & (1,2,2); conv. Keep (5,3,2), (5,2,2). Drop all others; hier./zero/sing./conv.
State × % Owner-Occupied × % Hispanic	5 × 3 × 3	16	7	Coll. (1,3,2) & (1,2,2); sing. Coll. (3,3,2) & (3,2,2); conv. Keep (2,3,2), (2,2,2), (5,3,1), (5,2,1), (5,2,2). Drop all others; zero/sing./conv.
State × % Owner-Occupied × Rent/Housing	5 × 3 × 5	32	15	Coll. (2,3,3) & (2,2,3), (3,3,1) & (3,3,2); sing. Coll. (5,3,1) & (5,3,2), (5,3,3) & (5,3,4); conv. Keep (1,2,1), (1,2,2), (1,2,3), (2,2,2), (2,2,4), (3,2,1), (3,2,2), (5,2,1), (5,2,2), (5,2,3), (5,2,4). Drop all others; hier./zero/sing./conv.
State × Rent/Housing × % Black or African American	5 × 3 × 5	32	3	Keep (5,1,2), (5,2,2), (5,3,2). Drop all others; hier./zero/sing.
State × Rent/Housing × % Hispanic or Latino	5 × 3 × 5	32	6	Keep (1,1,2), (3,1,2), (5,1,2), (5,2,2), (5,3,2), (5,4,2). Drop all others; hier./zero/sing.
Total		**255**	**131**	

Exhibit D9.2 Covariates for 2018 NSDUH Person Weights (res.sdu.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**18**	**18**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**73**	**73**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 5	16	16	All levels present.
State × Race (5 levels)	5 × 5	16	16	All levels present.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
Three-Factor Effects		**106**	**102**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	6	Coll. (3,2,1) & (3,3,1), (4,2,1) & (4,3,1); conv.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	1	Coll. (2,1,1) & (3,1,1); conv.
State × Age × Race (3 levels)	5 × 5 × 3	32	31	Coll. (2,2,2) & (2,2,3); conv.
State × Age × Hispanicity	5 × 5 × 2	16	16	All levels present.
State × Age × Gender	5 × 5 × 2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**197**	**193**	

Exhibit D9.3 Covariates for 2018 NSDUH Person Weights (sel.per.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**131**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3,1); zero. Coll. (2,1) & (2,2); conv.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	5	Drop (1,1), (4,1); zero. Coll. (3,1) & (3,2); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Coll. (4,1) & (4,2); sing.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 5	16	16	All levels present.
State × Race (5 levels)	5 × 5	16	16	All levels present.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
State × % Black or African American	5 × 3	8	4	Drop (1,1), (2,1), (3,1); zero. Coll. (5,1) & (5,2); sing.
State × % Hispanic or Latino	5 × 3	8	5	Drop (1,1), (2,1), (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	15	Drop (3,4); sing.
Three-Factor Effects		**106**	**104**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 5 × 3	32	30	Coll. (2,1,2) & (2,1,3), (2,2,2) & (2,2,3); conv.
State × Age × Hispanicity	5 × 5 × 2	16	16	All levels present.
State × Age × Gender	5 × 5 × 2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**287**	**271**	

Exhibit D9.4 Covariates for 2018 NSDUH Person Weights (res.per.nr), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**36**	**36**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	5	4	4	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Relation to Householder	4	3	3	All levels present.
Population Density	4	3	3	All levels present.
Group Quarter	3	2	2	All levels present.
% Black or African American	3	2	2	All levels present.
% Hispanic or Latino	3	2	2	All levels present.
% Owner-Occupied	3	2	2	All levels present.
Rent/Housing	5	4	4	All levels present.
Two-Factor Effects		**145**	**131**	
Age × Race (3 levels)	5 × 3	8	8	All levels present.
Age × Hispanicity	5 × 2	4	4	All levels present.
Age × Gender	5 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
% Owner-Occupied × % Black or African American	3 × 3	4	2	Drop (3,1); zero. Drop (2,1); sing.
% Owner-Occupied × % Hispanic or Latino	3 × 3	4	4	All levels present.
% Owner-Occupied × Rent/Housing	3 × 5	8	8	All levels present.
Rent/Housing × % Black or African American	3 × 5	8	5	Drop (1,1), (4,1); zero. Drop (3,1); sing.
Rent/Housing × % Hispanic or Latino	3 × 5	8	7	Drop (4,1); sing.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 5	16	16	All levels present.
State × Race (5 levels)	5 × 5	16	16	All levels present.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
State × % Black or African American	5 × 3	8	4	Drop (1,1), (2,1), (3,1); zero. Drop (5,1); sing.
State × % Hispanic or Latino	5 × 3	8	5	Drop (1,1), (2,1), (3,1); zero.
State × % Owner-Occupied	5 × 3	8	8	All levels present.
State × Rent/Housing	5 × 5	16	15	Drop (3,4); sing.
Three-Factor Effects		**106**	**95**	
Age × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
Age × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
Age × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 5 × 3	32	30	Coll. (3,4,2) & (3,4,3); sing. Coll. (3,3,2) & (3,3,3); conv.
State × Age × Hispanicity	5 × 5 × 2	16	16	All levels present.
State × Age × Gender	5 × 5 × 2	16	16	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	2	Coll. (5,2,1) & (5,2,3), (3,2,1) & (3,2,3); conv. Drop all others; conv.
State × Race (3 levels) × Gender	5 × 3 × 2	8	5	Coll. (1,2,1) & (1,3,1), (2,2,1) & (2,3,1), (3,2,1) & (3,3,1); conv.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**287**	**262**	

Exhibit D9.5 Covariates for 2018 NSDUH Person Weights (res.per.ps), Model Group 9: Pacific

Variables	Levels	Proposed	Final	Comments
One-Factor Effects		**19**	**19**	
Intercept	1	1	1	All levels present.
State	5	4	4	All levels present.
Quarter	4	3	3	All levels present.
Age	6	5	5	All levels present.
Race (5 levels)	5	4	4	All levels present.
Gender	2	1	1	All levels present.
Hispanicity	2	1	1	All levels present.
Two-Factor Effects		**81**	**81**	
Age × Race (3 levels)	6 × 3	10	10	All levels present.
Age × Hispanicity	6 × 2	5	5	All levels present.
Age × Gender	6 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity	3 × 2	2	2	All levels present.
Race (3 levels) × Gender	3 × 2	2	2	All levels present.
Hispanicity × Gender	2 × 2	1	1	All levels present.
State × Quarter	5 × 4	12	12	All levels present.
State × Age	5 × 6	20	20	All levels present.
State × Race (5 levels)	5 × 5	16	16	All levels present.
State × Hispanicity	5 × 2	4	4	All levels present.
State × Gender	5 × 2	4	4	All levels present.
Three-Factor Effects		**127**	**107**	
Age × Race (3 levels) × Hispanicity	6 × 3 × 2	10	10	All levels present.
Age × Race (3 levels) × Gender	6 × 3 × 2	10	10	All levels present.
Age × Hispanicity × Gender	6 × 2 × 2	5	5	All levels present.
Race (3 levels) × Hispanicity × Gender	3 × 2 × 2	2	2	All levels present.
State × Age × Race (3 levels)	5 × 6 × 3	40	20	Coll. (1,1,2) & (1,1,3), repeat for all states & all age groups; zero/sing./conv.
State × Age × Hispanicity	5 × 6 × 2	20	20	All levels present.
State × Age × Gender	5 × 6 × 2	20	20	All levels present.
State × Race (3 levels) × Hispanicity	5 × 3 × 2	8	8	All levels present.
State × Race (3 levels) × Gender	5 × 3 × 2	8	8	All levels present.
State × Hispanicity × Gender	5 × 2 × 2	4	4	All levels present.
Total		**227**	**207**	

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Appendix E: Evaluation of Calibration Weights: Response Rates

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Table E.1 2018 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States

Domain	Dwelling Unit (DU)					Person Level		Interview Response Rate	
	Selected DUs	Eligible DUs	Completed DUs	Eligibility Rate	Screening Rate	Selected Persons	Respondents	WT1-12[1]	WT1-13[2]
United States	227,252	193,456	141,879	85.08%	73.30%	99,111	67,791	66.56%	66.44%
Alabama	2,857	2,288	1,934	80.01%	84.30%	1,279	935	68.29%	68.48%
Alaska	3,293	2,483	1,841	72.22%	73.06%	1,357	952	69.79%	69.90%
Arizona	2,952	2,342	1,597	79.10%	67.92%	1,192	871	72.09%	71.74%
Arkansas	2,625	2,133	1,874	81.52%	87.81%	1,313	999	72.96%	73.01%
California	14,501	13,463	8,605	92.56%	63.83%	7,275	4,540	60.01%	59.83%
Colorado	2,940	2,476	1,894	83.66%	76.09%	1,376	955	66.22%	67.11%
Connecticut	3,442	3,095	2,129	90.04%	68.72%	1,639	1,006	58.45%	58.88%
Delaware	4,091	3,375	2,310	72.87%	67.60%	1,498	985	64.29%	63.83%
District of Columbia	6,941	5,945	3,555	85.01%	56.25%	1,301	975	71.25%	71.87%
Florida	11,601	9,609	6,989	78.02%	71.78%	4,839	3,462	69.51%	69.42%
Georgia	4,337	3,695	2,825	84.51%	76.42%	2,049	1,488	69.76%	69.73%
Hawaii	3,971	3,397	2,238	85.12%	65.50%	1,564	1,045	66.18%	65.54%
Idaho	2,491	2,169	1,744	85.09%	80.50%	1,300	944	72.87%	72.68%
Illinois	8,541	7,496	4,678	87.69%	62.39%	3,846	2,372	60.38%	59.79%
Indiana	3,275	2,846	1,986	86.95%	69.91%	1,401	996	69.94%	69.70%
Iowa	3,430	2,932	2,300	85.27%	78.60%	1,450	959	66.79%	67.59%
Kansas	2,786	2,283	1,769	81.76%	77.42%	1,355	960	69.24%	69.35%
Kentucky	2,707	2,225	1,806	81.96%	81.13%	1,433	972	65.55%	65.33%
Louisiana	2,789	2,243	1,943	80.32%	86.64%	1,338	1,006	72.27%	72.25%
Maine	3,668	2,800	2,280	74.71%	81.43%	1,430	967	69.04%	69.18%
Maryland	3,265	2,937	2,003	89.84%	68.43%	1,303	936	71.16%	70.45%
Massachusetts	3,324	3,053	2,175	91.69%	71.18%	1,536	963	62.81%	62.31%
Michigan	7,909	6,674	5,152	83.45%	77.15%	3,450	2,431	68.37%	68.13%
Minnesota	2,622	2,279	1,742	86.06%	75.83%	1,313	928	69.94%	69.49%
Mississippi	2,493	2,043	1,767	81.74%	86.42%	1,347	980	68.97%	69.17%

(continued)

Table E.1 2018 NSDUH Weighted Response Rates: United States, District of Columbia, and the 50 States (continued)

Domain	Dwelling Unit (DU)					Person Level		Interview Response Rate	
	Selected DUs	Eligible DUs	Completed DUs	Eligibility Rate	Screening Rate	Selected Persons	Respondents	WT1-12[1]	WT1-13[2]
Missouri	3,057	2,494	2,079	79.37%	83.33%	1,316	980	73.23%	73.36%
Montana	4,169	3,404	2,702	81.22%	79.37%	1,468	972	66.79%	66.61%
Nebraska	2,605	2,310	1,818	88.77%	79.04%	1,377	966	71.76%	70.94%
Nevada	2,802	2,527	1,713	89.08%	67.09%	1,394	986	69.80%	70.25%
New Hampshire	3,590	2,965	2,275	81.90%	76.64%	1,444	956	63.60%	62.73%
New Jersey	5,563	4,967	3,346	81.23%	66.33%	2,442	1,511	59.89%	59.38%
New Mexico	3,025	2,232	1,871	72.32%	84.11%	1,240	936	72.21%	72.18%
New York	14,345	12,675	7,485	88.13%	57.98%	5,187	3,269	59.54%	58.99%
North Carolina	4,424	3,748	2,814	84.79%	75.08%	2,076	1,451	67.96%	67.74%
North Dakota	3,664	2,954	2,442	79.53%	82.88%	1,499	965	64.20%	64.07%
Ohio	7,993	6,914	5,247	86.50%	75.88%	3,697	2,465	64.76%	64.91%
Oklahoma	3,186	2,627	2,015	83.14%	76.27%	1,461	964	65.72%	65.82%
Oregon	3,605	3,176	2,425	87.92%	76.13%	1,494	994	65.92%	65.91%
Pennsylvania	9,182	7,834	5,819	85.47%	74.26%	3,521	2,383	66.28%	66.28%
Rhode Island	3,741	3,274	2,239	87.34%	68.40%	1,417	937	66.92%	66.34%
South Carolina	2,779	2,336	1,764	84.10%	75.57%	1,227	933	76.25%	75.88%
South Dakota	2,894	2,391	1,943	81.58%	81.71%	1,336	941	71.30%	71.50%
Tennessee	2,575	2,185	1,829	84.70%	83.76%	1,327	948	67.85%	68.39%
Texas	7,690	6,471	5,270	84.07%	81.44%	4,459	3,307	71.72%	71.52%
Utah	1,876	1,679	1,445	89.53%	86.06%	1,341	1,001	73.68%	73.23%
Vermont	4,045	3,112	2,424	76.70%	78.01%	1,459	947	67.70%	66.52%
Virginia	4,940	4,279	3,328	86.31%	77.74%	2,146	1,516	70.04%	69.97%
Washington	2,778	2,477	1,950	89.34%	78.63%	1,431	957	65.26%	65.21%
West Virginia	3,775	3,052	2,341	80.90%	76.78%	1,533	960	61.22%	61.01%
Wisconsin	3,205	2,746	2,230	85.73%	81.20%	1,398	969	67.50%	67.78%
Wyoming	2,893	2,346	1,929	80.88%	82.17%	1,237	950	71.84%	72.19%

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

[2] Includes a selected person poststratification weight.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

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

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Table F.1 2018 NSDUH Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before nr[1] (WT1*...*WT8)			After nr[1] & Before ps[2] (WT1*...*WT9)			After ps[2] (WT1*...*WT10)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
United States	141,879	3.29%	3.88%	0.57%	2.36%	3.70%	0.61%	1.49%	2.95%	0.72%
Alabama	1,934	3.41%	4.33%	0.51%	6.83%	9.55%	1.13%	0.67%	1.19%	0.15%
Alaska	1,841	0.27%	0.74%	0.32%	2.72%	3.49%	0.35%	1.52%	3.23%	0.59%
Arizona	1,597	4.57%	4.50%	0.15%	2.57%	3.71%	0.54%	1.38%	3.54%	0.84%
Arkansas	1,874	1.60%	1.38%	0.02%	0.64%	0.94%	0.10%	0.96%	1.16%	0.31%
California	8,605	1.69%	3.03%	1.00%	2.50%	4.77%	0.72%	1.62%	3.87%	1.14%
Colorado	1,894	1.48%	1.69%	0.07%	6.23%	7.59%	0.98%	1.69%	3.30%	0.56%
Connecticut	2,129	3.52%	2.63%	0.44%	0.19%	0.33%	0.02%	1.55%	3.58%	0.94%
Delaware	2,310	0.43%	1.61%	0.35%	0.35%	0.98%	0.15%	0.26%	0.58%	0.08%
District of Columbia	3,555	6.61%	14.05%	5.09%	5.71%	8.32%	1.39%	0.90%	2.21%	0.44%
Florida	6,989	3.32%	6.37%	1.98%	2.95%	5.49%	1.27%	0.64%	1.16%	0.23%
Georgia	2,825	9.98%	11.76%	0.61%	6.16%	7.78%	1.22%	1.59%	2.59%	0.40%
Hawaii	2,238	11.62%	14.13%	2.45%	5.59%	7.94%	1.11%	2.10%	4.63%	1.08%
Idaho	1,744	0.57%	0.83%	0.18%	4.07%	6.93%	1.11%	1.32%	2.88%	0.69%
Illinois	4,678	0.00%	0.00%	0.00%	3.57%	4.95%	1.14%	0.96%	1.67%	0.16%
Indiana	1,986	0.20%	0.37%	0.06%	0.10%	0.28%	0.08%	1.26%	2.75%	0.58%
Iowa	2,300	10.57%	10.92%	1.59%	2.35%	3.41%	0.17%	1.57%	3.71%	0.91%
Kansas	1,769	0.00%	0.00%	0.00%	0.73%	1.77%	0.50%	0.62%	1.60%	0.43%
Kentucky	1,806	0.00%	0.00%	0.00%	1.33%	2.78%	0.84%	0.72%	1.35%	0.23%
Louisiana	1,943	5.66%	4.75%	0.59%	1.44%	1.14%	0.05%	1.44%	2.00%	0.52%
Maine	2,280	1.18%	2.01%	0.60%	5.57%	7.17%	0.52%	3.11%	4.27%	1.22%
Maryland	2,003	2.15%	2.53%	0.04%	0.70%	1.29%	0.35%	1.35%	2.67%	0.38%
Massachusetts	2,175	0.00%	0.00%	0.00%	1.43%	1.94%	0.19%	1.66%	4.26%	1.41%
Michigan	5,152	5.18%	5.57%	0.83%	2.39%	5.17%	2.14%	1.55%	2.46%	0.45%
Minnesota	1,742	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.98%	2.70%	0.46%
Mississippi	1,767	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.36%	2.49%	0.61%

(continued)

Table F.1 2018 NSDUH Dwelling Unit–Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before nr[1] (WT1*...*WT8)			After nr[1] & Before ps[2] (WT1*...*WT9)			After ps[2] (WT1*...*WT10)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
Missouri	2,079	0.58%	1.37%	0.40%	1.54%	2.41%	0.23%	0.38%	1.07%	0.30%
Montana	2,702	8.88%	9.48%	1.65%	1.96%	2.61%	0.20%	1.04%	1.87%	0.29%
Nebraska	1,818	3.96%	5.19%	0.27%	1.82%	3.71%	0.76%	2.48%	5.41%	1.17%
Nevada	1,713	1.81%	5.81%	3.04%	1.05%	1.87%	0.13%	0.99%	3.09%	0.97%
New Hampshire	2,275	6.68%	6.80%	1.29%	0.18%	0.52%	0.11%	0.79%	1.62%	0.31%
New Jersey	3,346	7.77%	9.08%	2.05%	0.06%	0.16%	0.03%	1.05%	2.40%	0.63%
New Mexico	1,871	1.02%	1.81%	0.43%	0.00%	0.00%	0.00%	1.71%	3.63%	0.49%
New York	7,485	0.55%	0.84%	0.11%	3.73%	5.41%	0.38%	3.02%	7.19%	2.16%
North Carolina	2,814	0.00%	0.00%	0.00%	0.92%	1.12%	0.03%	0.64%	1.12%	0.26%
North Dakota	2,442	0.00%	0.00%	0.00%	0.49%	0.86%	0.10%	1.31%	3.26%	0.61%
Ohio	5,247	13.23%	14.80%	0.94%	3.35%	4.41%	0.58%	1.22%	1.67%	0.48%
Oklahoma	2,015	0.00%	0.00%	0.00%	1.09%	3.23%	1.00%	0.94%	2.40%	0.46%
Oregon	2,425	0.00%	0.00%	0.00%	0.74%	1.29%	0.02%	1.48%	3.25%	0.59%
Pennsylvania	5,819	7.61%	7.96%	0.60%	2.75%	4.85%	0.86%	1.86%	3.21%	0.97%
Rhode Island	2,239	1.16%	1.26%	0.03%	5.00%	8.48%	2.09%	2.32%	6.15%	2.18%
South Carolina	1,764	0.00%	0.00%	0.00%	0.17%	0.39%	0.08%	1.64%	3.54%	0.68%
South Dakota	1,943	0.00%	0.00%	0.00%	0.31%	0.45%	0.14%	1.90%	3.80%	0.73%
Tennessee	1,829	0.00%	0.00%	0.00%	1.48%	2.75%	0.40%	1.09%	1.81%	0.30%
Texas	5,270	2.47%	2.71%	0.20%	3.68%	4.58%	0.56%	2.11%	4.09%	0.97%
Utah	1,445	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.87%	3.27%	0.76%
Vermont	2,424	0.00%	0.00%	0.00%	0.12%	0.40%	0.17%	3.38%	6.91%	1.87%
Virginia	3,328	0.12%	0.07%	0.00%	1.32%	2.20%	0.58%	1.11%	1.49%	0.20%
Washington	1,950	1.38%	1.12%	0.01%	0.10%	0.20%	0.01%	0.82%	1.79%	0.27%
West Virginia	2,341	0.00%	0.00%	0.00%	1.92%	2.84%	0.27%	1.24%	2.22%	0.49%
Wisconsin	2,230	13.36%	18.44%	1.70%	2.78%	4.16%	0.21%	1.43%	3.13%	0.46%
Wyoming	1,929	3.53%	3.43%	0.19%	4.10%	7.02%	2.68%	2.80%	3.76%	0.75%

[1] nr = nonresponse adjustment.

[2] ps = poststratification adjustment.

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

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

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Table G.1 2018 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before sel.per.ps[1] (WT1*...*WT12)			After sel.per.ps[1] (WT1*...*WT13)		
		% Unweighted	% Weighted[2]	% Outwinsor[3]	% Unweighted	% Weighted[2]	% Outwinsor[3]
United States	99,111	2.78%	6.45%	1.67%	1.62%	3.78%	0.75%
Alabama	1,279	1.72%	2.51%	0.40%	1.64%	3.55%	0.88%
Alaska	1,357	3.10%	6.77%	1.39%	1.40%	3.15%	0.36%
Arizona	1,192	3.27%	8.57%	2.20%	1.43%	3.85%	0.80%
Arkansas	1,313	1.52%	2.14%	0.25%	0.30%	0.86%	0.04%
California	7,275	3.27%	8.06%	2.32%	1.76%	3.69%	0.61%
Colorado	1,376	5.16%	15.03%	4.01%	1.38%	2.86%	0.37%
Connecticut	1,639	2.50%	4.55%	1.22%	1.59%	4.80%	1.43%
Delaware	1,498	1.40%	3.61%	0.68%	0.80%	2.01%	0.18%
District of Columbia	1,301	2.54%	8.18%	2.39%	1.15%	3.81%	0.47%
Florida	4,839	2.58%	6.02%	1.18%	1.49%	4.05%	0.67%
Georgia	2,049	3.47%	7.76%	1.61%	1.07%	2.21%	0.40%
Hawaii	1,564	3.39%	6.37%	1.64%	1.53%	2.51%	0.30%
Idaho	1,300	3.92%	8.00%	1.60%	1.77%	4.08%	1.13%
Illinois	3,846	4.42%	12.84%	4.26%	3.30%	8.05%	1.77%
Indiana	1,401	1.78%	3.64%	0.74%	2.07%	3.99%	0.57%
Iowa	1,450	3.31%	8.32%	1.88%	2.62%	8.06%	2.71%
Kansas	1,355	2.14%	4.37%	1.08%	0.74%	1.40%	0.45%
Kentucky	1,433	3.07%	5.22%	1.02%	0.98%	2.39%	0.41%
Louisiana	1,338	2.77%	4.86%	0.88%	0.75%	2.94%	0.65%
Maine	1,430	4.20%	8.80%	3.05%	2.24%	3.56%	0.83%
Maryland	1,303	1.53%	3.55%	0.90%	1.30%	4.03%	0.70%
Massachusetts	1,536	2.02%	5.10%	1.55%	1.43%	2.93%	0.57%
Michigan	3,450	2.06%	3.89%	0.71%	1.51%	4.18%	0.68%
Minnesota	1,313	1.60%	4.82%	1.23%	1.75%	3.93%	0.94%
Mississippi	1,347	1.86%	3.99%	0.71%	1.93%	3.82%	0.69%

(continued)

Table G.1 2018 NSDUH Selected Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before sel.per.ps[1] (WT1*...*WT12)			After sel.per.ps[1] (WT1*...*WT13)		
		% Unweighted	% Weighted[2]	% Outwinsor[3]	% Unweighted	% Weighted[2]	% Outwinsor[3]
Missouri	1,316	1.44%	2.88%	0.52%	1.06%	2.33%	0.40%
Montana	1,468	1.84%	3.17%	0.60%	0.95%	2.08%	0.21%
Nebraska	1,377	3.27%	8.32%	2.61%	2.18%	5.09%	1.33%
Nevada	1,394	2.73%	8.30%	1.81%	2.01%	5.46%	1.21%
New Hampshire	1,444	1.73%	3.15%	0.63%	1.39%	3.58%	0.84%
New Jersey	2,442	1.72%	4.31%	1.09%	1.35%	2.92%	0.57%
New Mexico	1,240	2.74%	5.89%	1.22%	1.69%	5.48%	1.43%
New York	5,187	4.49%	13.67%	4.10%	3.20%	8.70%	1.82%
North Carolina	2,076	1.16%	1.80%	0.31%	1.20%	2.09%	0.47%
North Dakota	1,499	3.00%	6.38%	1.34%	0.93%	2.38%	0.48%
Ohio	3,697	2.16%	3.96%	0.87%	1.27%	2.27%	0.34%
Oklahoma	1,461	1.78%	4.89%	1.35%	1.30%	4.17%	0.80%
Oregon	1,494	1.94%	4.87%	1.04%	1.00%	2.63%	0.84%
Pennsylvania	3,521	3.21%	6.60%	1.93%	1.85%	3.71%	0.79%
Rhode Island	1,417	2.89%	7.77%	3.56%	3.25%	8.88%	2.03%
South Carolina	1,227	2.85%	5.60%	1.15%	1.47%	3.11%	0.26%
South Dakota	1,336	3.59%	8.18%	2.33%	1.12%	2.32%	0.41%
Tennessee	1,327	2.71%	4.24%	0.86%	1.66%	3.27%	0.72%
Texas	4,459	2.42%	5.40%	1.27%	1.08%	2.69%	0.67%
Utah	1,341	2.39%	6.58%	2.42%	1.49%	3.47%	0.67%
Vermont	1,459	5.69%	12.88%	3.66%	1.92%	3.42%	0.72%
Virginia	2,146	2.19%	4.00%	0.82%	0.98%	2.39%	0.43%
Washington	1,431	1.68%	3.47%	0.70%	0.70%	1.56%	0.23%
West Virginia	1,533	1.83%	3.55%	0.89%	1.04%	2.53%	0.41%
Wisconsin	1,398	3.51%	6.16%	1.39%	1.07%	2.06%	0.10%
Wyoming	1,237	3.15%	5.98%	1.03%	2.67%	4.61%	0.80%

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

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table G.2 2018 NSDUH Respondent Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States

Domain	*n*	Before res.per.nr[1] (WT1*…*WT13)			After res.per.nr[1] (WT1*…*WT14)			Before res.per.ps[2] (WT1*…*WT14)			After res.per.ps[2] (WT1*…*WT15)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
United States	67,791	1.60%	3.78%	0.77%	1.60%	4.43%	0.75%	1.64%	4.63%	0.83%	0.89%	2.92%	0.47%
Alabama	935	1.82%	2.65%	0.71%	1.18%	2.07%	0.53%	1.18%	2.07%	0.53%	0.75%	2.02%	0.61%
Alaska	952	1.79%	3.96%	0.47%	0.95%	3.18%	0.61%	1.26%	3.75%	0.74%	0.63%	2.64%	0.37%
Arizona	871	2.07%	6.12%	1.18%	1.49%	3.78%	0.79%	1.72%	4.23%	0.76%	0.46%	2.88%	0.18%
Arkansas	999	0.50%	1.14%	0.05%	1.70%	4.10%	0.69%	1.50%	3.83%	0.63%	0.90%	2.50%	0.33%
California	4,540	1.65%	3.74%	0.72%	1.61%	5.64%	0.66%	1.85%	6.33%	0.94%	0.81%	3.78%	0.19%
Colorado	955	1.36%	2.76%	0.35%	3.35%	11.03%	2.77%	3.46%	11.26%	2.70%	0.63%	1.60%	0.05%
Connecticut	1,006	1.09%	4.04%	1.14%	1.79%	6.02%	1.48%	1.89%	6.65%	1.82%	0.89%	2.65%	0.16%
Delaware	985	1.02%	2.40%	0.27%	0.61%	1.18%	0.08%	0.51%	1.07%	0.08%	0.51%	1.34%	0.18%
District of Columbia	975	0.62%	1.92%	0.34%	1.85%	6.15%	0.90%	1.85%	6.27%	1.48%	1.64%	4.45%	0.51%
Florida	3,462	1.30%	3.59%	0.67%	1.01%	2.51%	0.40%	1.13%	2.78%	0.67%	0.38%	1.15%	0.10%
Georgia	1,488	1.08%	2.16%	0.36%	1.34%	3.42%	0.89%	1.34%	3.42%	0.88%	1.88%	4.85%	0.74%
Hawaii	1,045	1.72%	3.08%	0.41%	1.82%	7.04%	0.75%	2.01%	7.54%	0.84%	0.29%	1.29%	0.10%
Idaho	944	2.01%	4.87%	1.26%	2.12%	4.37%	0.97%	2.22%	4.54%	0.98%	1.27%	3.19%	0.37%
Illinois	2,372	3.16%	8.40%	1.72%	1.26%	3.44%	0.41%	1.05%	2.97%	0.42%	1.60%	6.05%	1.35%
Indiana	996	1.81%	3.45%	0.48%	1.81%	3.45%	0.64%	1.91%	3.65%	0.70%	1.51%	4.67%	0.89%
Iowa	959	2.82%	8.97%	3.09%	2.50%	6.48%	1.90%	2.50%	6.48%	1.89%	1.56%	5.46%	1.31%
Kansas	960	0.63%	1.10%	0.33%	1.77%	3.25%	0.67%	1.77%	3.25%	0.68%	0.42%	1.68%	0.18%
Kentucky	972	0.82%	1.99%	0.50%	1.44%	2.93%	0.49%	1.44%	2.93%	0.48%	0.62%	1.52%	0.10%
Louisiana	1,006	0.70%	2.43%	0.38%	0.89%	3.02%	0.70%	0.89%	3.02%	0.67%	0.89%	5.71%	1.50%
Maine	967	1.86%	3.23%	0.78%	1.03%	3.03%	0.42%	1.03%	3.03%	0.43%	0.62%	1.12%	0.27%
Maryland	936	1.60%	4.34%	0.63%	1.50%	5.57%	1.89%	1.50%	5.57%	1.91%	1.18%	4.75%	1.53%
Massachusetts	963	2.18%	3.65%	0.48%	1.66%	3.70%	0.52%	1.87%	4.18%	0.57%	0.21%	0.25%	0.05%
Michigan	2,431	1.48%	4.00%	0.65%	1.69%	3.70%	0.41%	1.81%	3.94%	0.46%	1.28%	4.23%	1.14%
Minnesota	928	1.40%	3.47%	1.05%	2.16%	4.87%	0.81%	2.16%	4.87%	0.76%	0.86%	3.19%	0.51%
Mississippi	980	1.63%	3.88%	0.84%	2.04%	4.77%	1.06%	2.14%	5.25%	1.34%	1.22%	2.80%	0.63%

(continued)

Table G.2 2018 NSDUH Respondent Person-Level Percentages of Extreme Weights and Outwinsors: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before res.per.nr[1] (WT1*…*WT13)			After res.per.nr[1] (WT1*…*WT14)			Before res.per.ps[2] (WT1*…*WT14)			After res.per.ps[2] (WT1*…*WT15)		
		% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]	% Unweighted	% Weighted[3]	% Outwinsor[4]
Missouri	980	0.71%	1.65%	0.39%	0.61%	1.34%	0.34%	0.51%	1.26%	0.32%	0.61%	1.36%	0.16%
Montana	972	0.72%	2.12%	0.22%	1.23%	3.05%	0.37%	1.13%	2.87%	0.37%	0.51%	0.93%	0.05%
Nebraska	966	2.07%	4.53%	1.36%	1.97%	4.40%	1.00%	1.97%	4.49%	0.97%	1.97%	5.52%	1.52%
Nevada	986	1.72%	5.58%	1.41%	1.72%	5.46%	0.85%	1.72%	5.46%	0.87%	0.91%	3.82%	0.61%
New Hampshire	956	1.05%	2.21%	0.19%	1.05%	3.33%	0.44%	1.05%	3.33%	0.48%	0.94%	2.36%	0.14%
New Jersey	1,511	1.39%	2.73%	0.48%	1.39%	3.81%	0.51%	1.46%	3.81%	0.46%	0.26%	1.08%	0.06%
New Mexico	936	2.14%	6.83%	1.74%	1.82%	5.25%	0.50%	1.71%	4.96%	0.52%	0.96%	4.14%	0.64%
New York	3,269	3.24%	9.21%	2.17%	3.24%	10.14%	1.52%	3.27%	10.19%	1.56%	1.16%	4.82%	0.68%
North Carolina	1,451	2.07%	3.74%	0.60%	1.45%	3.62%	0.75%	1.59%	4.21%	0.92%	1.17%	2.23%	0.48%
North Dakota	965	0.73%	2.13%	0.37%	0.93%	2.09%	0.21%	1.04%	2.24%	0.25%	0.31%	1.61%	0.47%
Ohio	2,465	1.42%	2.49%	0.34%	0.97%	1.81%	0.19%	0.81%	1.73%	0.28%	0.85%	2.92%	0.50%
Oklahoma	964	1.66%	5.20%	1.14%	2.18%	5.93%	0.84%	2.18%	5.93%	0.85%	1.24%	3.88%	0.56%
Oregon	994	1.01%	2.46%	0.79%	2.21%	5.55%	0.74%	2.01%	4.77%	1.10%	0.80%	3.36%	0.39%
Pennsylvania	2,383	2.01%	3.56%	0.74%	1.01%	4.16%	0.96%	1.05%	4.30%	1.00%	0.80%	3.25%	0.59%
Rhode Island	937	3.63%	10.69%	2.38%	2.99%	9.27%	2.95%	2.99%	9.27%	3.26%	1.71%	3.90%	0.88%
South Carolina	933	1.18%	3.03%	0.27%	1.18%	3.45%	0.38%	1.18%	3.45%	0.38%	0.54%	2.02%	0.37%
South Dakota	941	0.96%	2.15%	0.48%	0.96%	2.09%	0.36%	1.06%	2.24%	0.38%	1.59%	2.32%	0.35%
Tennessee	948	1.48%	3.17%	0.55%	2.11%	3.39%	0.77%	2.22%	3.72%	0.90%	0.21%	0.24%	0.01%
Texas	3,307	1.00%	2.71%	0.73%	1.42%	3.31%	0.56%	1.51%	3.76%	0.58%	0.33%	0.91%	0.21%
Utah	1,001	1.20%	2.86%	0.59%	1.60%	4.82%	1.24%	1.60%	4.82%	1.23%	0.90%	3.79%	1.07%
Vermont	947	2.01%	2.64%	0.49%	3.38%	8.17%	2.37%	3.27%	7.85%	2.30%	1.69%	4.71%	0.84%
Virginia	1,516	1.12%	2.88%	0.51%	0.59%	2.22%	0.44%	0.73%	2.56%	0.48%	0.66%	3.42%	0.41%
Washington	957	0.73%	1.08%	0.14%	1.46%	5.15%	0.36%	1.57%	5.34%	0.42%	0.42%	3.04%	0.70%
West Virginia	960	1.04%	2.97%	0.38%	1.25%	2.60%	0.46%	1.15%	2.45%	0.46%	1.04%	2.50%	0.54%
Wisconsin	969	0.72%	1.03%	0.07%	1.24%	5.41%	0.59%	1.24%	5.41%	0.60%	0.21%	0.22%	0.01%
Wyoming	950	2.74%	4.54%	1.05%	2.63%	5.11%	1.05%	2.63%	5.11%	1.11%	1.26%	4.17%	1.90%

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

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

[3] Weighted outlier percentage = 100*∑kwok /∑kwk, where wok denotes the weight for outliers and wk denotes the weight for both outliers and nonoutliers.

[4] Outwinsor weight percentage = 100*∑k(wek - bk)/∑kwk, where bk denotes the cutoff point for defining the extreme weight.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Appendix H: Evaluation of Calibration Weights: Slippage Rates

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Table H.1 2018 NSDUH Slippage Rates: UNITED STATES

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		67,791	273,753,043	273,753,043	273,753,043	0.00	-0.00
Quarter	**Quarter 1**	16,131	68,228,529	68,228,530	68,228,530	-0.00	0.00
	Quarter 2	18,020	68,358,159	68,358,159	68,358,159	-0.00	0.00
	Quarter 3	17,035	68,510,563	68,510,563	68,510,563	0.00	0.00
	Quarter 4	16,605	68,655,791	68,655,791	68,655,791	0.00	-0.00
Age Group	**12-17**	16,820	24,867,140	24,895,613	24,895,613	-0.11	0.00
	18-25	16,561	33,948,804	34,036,348	34,036,348	-0.26	0.00
	26-34	10,224	40,024,342	40,023,105	40,023,105	0.00	0.00
	35-49	13,889	61,061,982	60,915,856	60,915,856	0.24	0.00
	50-64	5,769	64,272,391	62,675,184	62,675,184	2.55	0.00
	65+	4,528	49,578,384	51,206,938	51,206,938	-3.18	-0.00
Race	**White**	48,675	200,938,170	211,992,330	211,992,330	-5.21	0.00
	Black or African American	9,309	36,729,523	35,109,171	35,109,172	4.62	-0.00
	American Indian/Alaska Native	2,613	8,992,965	3,304,425	3,304,425	172.15	0.00
	Asian	3,954	18,631,908	17,284,147	17,284,147	7.80	0.00
	Two or More Races	3,240	8,460,477	6,062,970	6,062,970	39.54	0.00
Hispanicity	**Hispanic or Latino**	12,570	47,045,075	46,632,133	46,632,133	0.89	-0.00
	Non-Hispanic or Latino	55,221	226,707,968	227,120,910	227,120,910	-0.18	-0.00
Gender	**Male**	32,394	132,633,070	132,812,820	132,812,820	-0.14	0.00
	Female	35,397	141,119,973	140,940,223	140,940,223	0.13	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.2 2018 NSDUH Slippage Rates: ALABAMA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		935	4,092,865	4,092,865	4,092,865	-0.00	0.00
Quarter	**Quarter 1**	259	1,021,734	1,021,734	1,021,734	0.00	0.00
	Quarter 2	300	1,022,532	1,022,532	1,022,532	-0.00	0.00
	Quarter 3	167	1,023,725	1,023,725	1,023,725	0.00	0.00
	Quarter 4	209	1,024,875	1,024,875	1,024,875	0.00	0.00
Age Group	**12-17**	233	371,499	371,499	371,499	0.00	0.00
	18-25	221	502,642	506,815	506,815	-0.82	0.00
	26-34	145	564,500	560,326	560,326	0.74	-0.00
	35-49	213	875,345	885,620	885,620	-1.16	0.00
	50-64	69	951,719	961,245	961,245	-0.99	0.00
	65+	54	827,160	807,358	807,358	2.45	-0.00
Race	**White**	547	2,809,552	2,875,082	2,875,082	-2.28	0.00
	Black or African American	329	1,087,589	1,067,352	1,067,352	1.90	0.00
	American Indian/Alaska Native	26	66,159	29,468	29,468	124.51	0.00
	Asian	9	69,092	66,236	66,236	4.31	0.00
	Two or More Races	24	60,472	54,727	54,727	10.50	-0.00
Hispanicity	**Hispanic or Latino**	61	155,758	152,595	152,595	2.07	0.00
	Non-Hispanic or Latino	874	3,937,107	3,940,270	3,940,270	-0.08	0.00
Gender	**Male**	442	1,941,633	1,944,865	1,944,865	-0.17	0.00
	Female	493	2,151,232	2,148,000	2,148,000	0.15	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.3 2018 NSDUH Slippage Rates: ALASKA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		952	585,952	585,952	585,952	0.00	-0.00
Quarter	**Quarter 1**	226	146,490	146,490	146,490	0.00	-0.00
	Quarter 2	309	146,490	146,490	146,490	0.00	0.00
	Quarter 3	201	146,508	146,507	146,508	0.00	-0.00
	Quarter 4	216	146,465	146,465	146,465	-0.00	0.00
Age Group	**12-17**	244	57,712	57,930	57,930	-0.38	-0.00
	18-25	215	74,274	72,447	72,447	2.52	-0.00
	26-34	146	95,525	98,563	98,563	-3.08	0.00
	35-49	197	132,775	132,708	132,708	0.05	-0.00
	50-64	81	127,449	138,211	138,211	-7.79	-0.00
	65+	69	98,217	86,093	86,093	14.08	0.00
Race	**White**	585	391,422	394,812	394,812	-0.86	0.00
	Black or African American	27	19,856	20,058	20,058	-1.01	-0.00
	American Indian/Alaska Native	144	84,510	85,617	85,617	-1.29	-0.00
	Asian	87	48,698	49,129	49,129	-0.88	-0.00
	Two or More Races	109	41,466	36,336	36,336	14.12	-0.00
Hispanicity	**Hispanic or Latino**	81	38,757	37,748	37,748	2.67	-0.00
	Non-Hispanic or Latino	871	547,195	548,204	548,204	-0.18	-0.00
Gender	**Male**	477	298,871	298,871	298,871	0.00	0.00
	Female	475	287,081	287,081	287,081	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.4 2018 NSDUH Slippage Rates: ARIZONA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		871	5,985,411	5,985,411	5,985,411	0.00	0.00
Quarter	**Quarter 1**	261	1,484,795	1,484,795	1,484,795	0.00	0.00
	Quarter 2	229	1,492,273	1,492,273	1,492,273	0.00	0.00
	Quarter 3	176	1,500,260	1,500,260	1,500,260	0.00	0.00
	Quarter 4	205	1,508,084	1,508,084	1,508,084	0.00	0.00
Age Group	**12-17**	212	555,702	559,972	559,972	-0.76	0.00
	18-25	224	763,152	760,513	760,513	0.35	0.00
	26-34	138	880,230	856,261	856,261	2.80	0.00
	35-49	168	1,243,675	1,285,883	1,285,883	-3.28	0.00
	50-64	65	1,386,183	1,275,660	1,275,660	8.66	0.00
	65+	64	1,156,469	1,247,122	1,247,122	-7.27	0.00
Race	**White**	634	4,753,396	5,025,997	5,025,997	-5.42	0.00
	Black or African American	62	316,717	285,948	285,948	10.76	0.00
	American Indian/Alaska Native	101	507,086	291,415	291,415	74.01	0.00
	Asian	43	257,851	241,921	241,921	6.58	0.00
	Two or More Races	31	150,360	140,129	140,129	7.30	0.00
Hispanicity	**Hispanic or Latino**	362	1,819,084	1,749,268	1,749,268	3.99	0.00
	Non-Hispanic or Latino	509	4,166,327	4,236,142	4,236,142	-1.65	0.00
Gender	**Male**	425	2,919,477	2,927,410	2,927,410	-0.27	0.00
	Female	446	3,065,934	3,058,001	3,058,001	0.26	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.5 2018 NSDUH Slippage Rates: ARKANSAS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		999	2,494,812	2,494,811	2,494,812	0.00	-0.00
Quarter	**Quarter 1**	248	622,362	622,362	622,362	0.00	0.00
	Quarter 2	279	623,155	623,155	623,155	0.00	0.00
	Quarter 3	217	624,171	624,171	624,171	0.00	0.00
	Quarter 4	255	625,124	625,124	625,124	0.00	-0.00
Age Group	**12-17**	240	233,861	236,796	236,796	-1.24	0.00
	18-25	260	309,882	313,342	313,342	-1.10	0.00
	26-34	154	350,407	345,164	345,164	1.52	0.00
	35-49	188	541,620	540,469	540,469	0.21	0.00
	50-64	74	485,762	563,009	563,009	-13.72	0.00
	65+	83	573,280	496,033	496,033	15.57	-0.00
Race	**White**	725	1,945,729	2,006,894	2,006,894	-3.05	0.00
	Black or African American	186	380,518	370,577	370,577	2.68	0.00
	American Indian/Alaska Native	21	62,730	24,895	24,895	151.98	0.00
	Asian	16	43,189	50,106	50,106	-13.81	0.00
	Two or More Races	51	62,645	42,340	42,340	47.96	-0.00
Hispanicity	**Hispanic or Latino**	103	174,868	171,364	171,364	2.05	0.00
	Non-Hispanic or Latino	896	2,319,943	2,323,448	2,323,448	-0.15	-0.00
Gender	**Male**	468	1,209,212	1,204,536	1,204,536	0.39	0.00
	Female	531	1,285,600	1,290,275	1,290,275	-0.36	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.6 2018 NSDUH Slippage Rates: CALIFORNIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		4,540	33,085,496	33,085,496	33,085,496	-0.00	-0.00
Quarter	**Quarter 1**	1,164	8,251,800	8,251,800	8,251,800	-0.00	-0.00
	Quarter 2	1,119	8,263,729	8,263,729	8,263,729	-0.00	-0.00
	Quarter 3	1,108	8,278,153	8,278,153	8,278,153	-0.00	0.00
	Quarter 4	1,149	8,291,813	8,291,813	8,291,813	-0.00	0.00
Age Group	**12-17**	1,107	3,026,416	3,019,147	3,019,148	0.24	-0.00
	18-25	1,086	4,253,764	4,213,626	4,213,626	0.95	-0.00
	26-34	726	5,308,966	5,331,383	5,331,383	-0.42	0.00
	35-49	938	7,693,048	7,706,656	7,706,656	-0.18	0.00
	50-64	394	7,383,937	7,233,860	7,233,860	2.07	0.00
	65+	289	5,419,365	5,580,823	5,580,823	-2.89	-0.00
Race	**White**	2,878	20,856,678	23,886,827	23,886,827	-12.69	-0.00
	Black or African American	353	2,397,718	2,083,601	2,083,601	15.08	-0.00
	American Indian/Alaska Native	381	2,355,658	541,832	541,833	334.76	-0.00
	Asian	606	5,775,046	5,471,827	5,471,827	5.54	0.00
	Two or More Races	322	1,700,395	1,101,408	1,101,408	54.38	-0.00
Hispanicity	**Hispanic or Latino**	2,129	12,313,922	12,271,092	12,271,092	0.35	-0.00
	Non-Hispanic or Latino	2,411	20,771,574	20,814,404	20,814,404	-0.21	0.00
Gender	**Male**	2,183	16,231,588	16,220,713	16,220,713	0.07	-0.00
	Female	2,357	16,853,908	16,864,783	16,864,783	-0.06	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.7 2018 NSDUH Slippage Rates: COLORADO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		955	4,770,917	4,770,917	4,770,917	0.00	0.00
Quarter	**Quarter 1**	267	1,184,981	1,184,981	1,184,981	0.00	0.00
	Quarter 2	232	1,189,962	1,189,962	1,189,962	0.00	0.00
	Quarter 3	216	1,195,353	1,195,353	1,195,353	0.00	0.00
	Quarter 4	240	1,200,621	1,200,622	1,200,622	-0.00	0.00
Age Group	**12-17**	226	432,601	432,601	432,601	-0.00	0.00
	18-25	272	593,197	590,083	590,083	0.53	0.00
	26-34	158	769,371	782,410	782,410	-1.67	0.00
	35-49	176	1,122,572	1,125,232	1,125,232	-0.24	0.00
	50-64	82	1,189,634	1,046,455	1,046,455	13.68	0.00
	65+	41	663,542	794,137	794,137	-16.44	0.00
Race	**White**	768	4,011,196	4,196,163	4,196,163	-4.41	0.00
	Black or African American	51	209,978	201,881	201,881	4.01	0.00
	American Indian/Alaska Native	44	207,703	72,260	72,260	187.44	0.00
	Asian	42	192,881	176,590	176,590	9.23	0.00
	Two or More Races	50	149,159	124,023	124,023	20.27	0.00
Hispanicity	**Hispanic or Latino**	236	971,681	954,266	954,266	1.82	0.00
	Non-Hispanic or Latino	719	3,799,236	3,816,652	3,816,652	-0.46	0.00
Gender	**Male**	449	2,363,525	2,370,816	2,370,816	-0.31	0.00
	Female	506	2,407,393	2,400,102	2,400,102	0.30	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.8 2018 NSDUH Slippage Rates: CONNECTICUT

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,006	3,060,394	3,060,394	3,060,394	-0.00	0.00
Quarter	**Quarter 1**	199	764,767	764,767	764,767	0.00	0.00
	Quarter 2	216	764,931	764,931	764,931	0.00	0.00
	Quarter 3	338	765,269	765,269	765,269	-0.00	0.00
	Quarter 4	253	765,428	765,428	765,428	-0.00	0.00
Age Group	**12-17**	269	272,217	270,264	270,264	0.72	0.00
	18-25	248	379,999	385,633	385,633	-1.46	0.00
	26-34	129	383,901	391,325	391,325	-1.90	0.00
	35-49	216	680,641	650,192	650,192	4.68	0.00
	50-64	80	750,690	767,104	767,104	-2.14	0.00
	65+	64	592,946	595,876	595,876	-0.49	-0.00
Race	**White**	743	2,355,960	2,483,076	2,483,076	-5.12	-0.00
	Black or African American	131	397,613	351,336	351,336	13.17	0.00
	American Indian/Alaska Native	30	59,249	16,167	16,167	266.49	0.00
	Asian	68	174,675	150,955	150,955	15.71	0.00
	Two or More Races	34	72,897	58,861	58,861	23.85	0.00
Hispanicity	**Hispanic or Latino**	223	486,221	461,606	461,606	5.33	0.00
	Non-Hispanic or Latino	783	2,574,174	2,598,789	2,598,789	-0.95	0.00
Gender	**Male**	480	1,477,493	1,477,493	1,477,493	-0.00	0.00
	Female	526	1,582,901	1,582,901	1,582,901	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.9 2018 NSDUH Slippage Rates: DELAWARE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		985	818,343	818,343	818,343	-0.00	-0.00
Quarter	**Quarter 1**	205	203,629	203,629	203,629	0.00	-0.00
	Quarter 2	238	204,231	204,231	204,231	0.00	-0.00
	Quarter 3	360	204,909	204,909	204,909	0.00	-0.00
	Quarter 4	182	205,574	205,574	205,574	-0.00	0.00
Age Group	**12-17**	233	69,696	69,296	69,296	0.58	0.00
	18-25	262	92,685	93,302	93,302	-0.66	0.00
	26-34	143	111,741	113,142	113,142	-1.24	0.00
	35-49	206	168,455	166,837	166,837	0.97	0.00
	50-64	74	198,575	198,265	198,265	0.16	0.00
	65+	67	177,191	177,502	177,502	-0.17	0.00
Race	**White**	546	544,610	581,132	581,132	-6.28	0.00
	Black or African American	281	186,805	180,292	180,292	3.61	0.00
	American Indian/Alaska Native	42	18,656	3,919	5,413	244.67	-27.59
	Asian	79	51,336	35,920	34,426	49.12	4.34
	Two or More Races	37	16,937	17,081	17,081	-0.84	0.00
Hispanicity	**Hispanic or Latino**	131	70,720	69,254	69,254	2.12	0.00
	Non-Hispanic or Latino	854	747,623	749,090	749,090	-0.20	-0.00
Gender	**Male**	465	389,451	389,451	389,451	-0.00	-0.00
	Female	520	428,892	428,892	428,892	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.10 2018 NSDUH Slippage Rates: DISTRICT OF COLUMBIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		975	596,107	596,107	596,107	0.00	0.00
Quarter	**Quarter 1**	250	148,563	148,563	148,563	0.00	0.00
	Quarter 2	242	148,853	148,853	148,853	0.00	0.00
	Quarter 3	246	149,182	149,182	149,182	0.00	0.00
	Quarter 4	237	149,509	149,508	149,509	0.00	-0.00
Age Group	**12-17**	283	31,752	31,752	31,752	-0.00	0.00
	18-25	197	90,145	87,077	87,077	3.52	-0.00
	26-34	120	144,582	146,976	146,976	-1.63	0.00
	35-49	210	138,817	141,585	141,585	-1.96	-0.00
	50-64	93	101,758	105,794	105,794	-3.81	-0.00
	65+	72	89,053	82,922	82,922	7.39	0.00
Race	**White**	423	265,805	280,534	280,534	-5.25	0.00
	Black or African American	451	271,680	269,212	269,212	0.92	-0.00
	American Indian/Alaska Native	16	9,118	2,517	3,434	165.50	-26.72
	Asian	35	29,977	29,711	28,793	4.11	3.19
	Two or More Races	50	19,526	14,133	14,133	38.16	0.00
Hispanicity	**Hispanic or Latino**	85	58,218	61,602	61,602	-5.49	0.00
	Non-Hispanic or Latino	890	537,888	534,505	534,505	0.63	-0.00
Gender	**Male**	435	275,154	277,338	277,338	-0.79	0.00
	Female	540	320,952	318,768	318,768	0.69	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.11 2018 NSDUH Slippage Rates: FLORIDA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,462	18,198,084	18,198,084	18,198,084	0.00	0.00
Quarter	**Quarter 1**	861	4,520,646	4,520,646	4,520,646	0.00	-0.00
	Quarter 2	868	4,539,105	4,539,105	4,539,105	0.00	0.00
	Quarter 3	850	4,559,281	4,559,281	4,559,281	0.00	0.00
	Quarter 4	883	4,579,053	4,579,053	4,579,053	0.00	0.00
Age Group	**12-17**	841	1,439,310	1,437,069	1,437,069	0.16	-0.00
	18-25	893	1,950,629	1,963,986	1,963,986	-0.68	0.00
	26-34	526	2,435,859	2,441,038	2,441,038	-0.21	0.00
	35-49	710	3,929,658	3,842,638	3,842,638	2.26	0.00
	50-64	267	4,332,283	4,216,288	4,216,288	2.75	0.00
	65+	225	4,110,345	4,297,064	4,297,064	-4.35	0.00
Race	**White**	2,321	13,553,915	14,348,125	14,348,125	-5.54	0.00
	Black or African American	734	3,013,742	2,873,204	2,873,204	4.89	-0.00
	American Indian/Alaska Native	123	525,744	125,120	91,041	477.48	37.43
	Asian	130	573,392	537,044	571,123	0.40	-5.97
	Two or More Races	154	531,291	314,592	314,592	68.88	0.00
Hispanicity	**Hispanic or Latino**	1,163	4,831,167	4,626,398	4,626,398	4.43	0.00
	Non-Hispanic or Latino	2,299	13,366,917	13,571,686	13,571,686	-1.51	0.00
Gender	**Male**	1,648	8,751,161	8,751,933	8,751,933	-0.01	0.00
	Female	1,814	9,446,923	9,446,151	9,446,151	0.01	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.12 2018 NSDUH Slippage Rates: GEORGIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,488	8,680,877	8,680,877	8,680,877	-0.00	-0.00
Quarter	**Quarter 1**	392	2,159,723	2,159,723	2,159,723	-0.00	0.00
	Quarter 2	436	2,166,457	2,166,457	2,166,457	-0.00	-0.00
	Quarter 3	295	2,173,807	2,173,806	2,173,807	0.00	-0.00
	Quarter 4	365	2,180,890	2,180,890	2,180,890	-0.00	-0.00
Age Group	**12-17**	367	868,582	866,515	866,515	0.24	0.00
	18-25	366	1,103,879	1,106,087	1,106,087	-0.20	0.00
	26-34	224	1,254,842	1,271,507	1,271,507	-1.31	-0.00
	35-49	279	2,082,370	2,041,465	2,041,465	2.00	0.00
	50-64	144	1,954,809	1,961,544	1,961,544	-0.34	0.00
	65+	108	1,416,394	1,433,760	1,433,760	-1.21	-0.00
Race	**White**	789	5,042,059	5,348,493	5,348,493	-5.73	-0.00
	Black or African American	533	2,754,148	2,749,366	2,749,366	0.17	0.00
	American Indian/Alaska Native	36	210,393	45,451	43,859	379.70	3.63
	Asian	60	402,344	390,371	391,963	2.65	-0.41
	Two or More Races	70	271,933	147,197	147,197	84.74	-0.00
Hispanicity	**Hispanic or Latino**	152	796,649	754,826	754,826	5.54	0.00
	Non-Hispanic or Latino	1,336	7,884,228	7,926,052	7,926,052	-0.53	-0.00
Gender	**Male**	693	4,120,472	4,120,472	4,120,472	0.00	-0.00
	Female	795	4,560,405	4,560,405	4,560,405	-0.00	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.13 2018 NSDUH Slippage Rates: HAWAII

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,045	1,156,640	1,156,640	1,156,640	0.00	0.00
Quarter	**Quarter 1**	217	289,289	289,289	289,289	0.00	0.00
	Quarter 2	234	289,163	289,163	289,163	0.00	-0.00
	Quarter 3	283	289,119	289,119	289,119	0.00	-0.00
	Quarter 4	311	289,069	289,069	289,069	0.00	0.00
Age Group	**12-17**	275	95,637	95,331	95,331	0.32	-0.00
	18-25	249	120,443	122,304	122,304	-1.52	-0.00
	26-34	130	166,993	164,845	164,845	1.30	0.00
	35-49	189	254,982	253,092	253,092	0.75	-0.00
	50-64	117	289,226	263,835	263,836	9.62	-0.00
	65+	85	229,358	257,232	257,232	-10.84	0.00
Race	**White**	227	272,226	289,173	289,173	-5.86	0.00
	Black or African American	19	25,138	17,760	17,760	41.54	-0.00
	American Indian/Alaska Native	8	6,486	4,303	4,303	50.73	-0.00
	Asian	502	591,065	593,699	593,699	-0.44	-0.00
	Two or More Races	289	261,725	251,704	251,704	3.98	-0.00
Hispanicity	**Hispanic or Latino**	154	123,722	101,547	101,547	21.84	-0.00
	Non-Hispanic or Latino	891	1,032,918	1,055,093	1,055,093	-2.10	0.00
Gender	**Male**	497	561,994	559,901	559,901	0.37	0.00
	Female	548	594,646	596,739	596,739	-0.35	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.14 2018 NSDUH Slippage Rates: IDAHO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		944	1,441,575	1,441,575	1,441,575	0.00	0.00
Quarter	**Quarter 1**	220	357,123	357,123	357,123	0.00	0.00
	Quarter 2	301	359,229	359,229	359,229	0.00	0.00
	Quarter 3	192	361,490	361,490	361,490	0.00	0.00
	Quarter 4	231	363,734	363,734	363,734	0.00	0.00
Age Group	**12-17**	238	154,207	154,207	154,207	-0.00	0.00
	18-25	240	183,172	182,631	182,631	0.30	0.00
	26-34	142	199,911	202,589	202,589	-1.32	0.00
	35-49	172	320,353	316,627	316,627	1.18	0.00
	50-64	79	314,212	311,194	311,194	0.97	0.00
	65+	73	269,720	274,328	274,328	-1.68	0.00
Race	**White**	866	1,342,319	1,349,491	1,349,491	-0.53	0.00
	Black or African American	12	12,298	11,569	11,569	6.30	0.00
	American Indian/Alaska Native	25	29,279	23,163	23,163	26.40	0.00
	Asian	17	32,622	27,074	27,074	20.49	0.00
	Two or More Races	24	25,058	30,279	30,279	-17.24	0.00
Hispanicity	**Hispanic or Latino**	164	174,010	165,497	165,497	5.14	0.00
	Non-Hispanic or Latino	780	1,267,565	1,276,079	1,276,079	-0.67	0.00
Gender	**Male**	482	715,032	715,032	715,032	0.00	0.00
	Female	462	726,543	726,543	726,543	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.15 2018 NSDUH Slippage Rates: ILLINOIS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,372	10,691,591	10,691,591	10,691,591	0.00	0.00
Quarter	**Quarter 1**	529	2,674,492	2,674,492	2,674,492	0.00	0.00
	Quarter 2	697	2,673,096	2,673,097	2,673,097	-0.00	0.00
	Quarter 3	537	2,672,502	2,672,502	2,672,502	0.00	0.00
	Quarter 4	609	2,671,501	2,671,501	2,671,501	0.00	0.00
Age Group	**12-17**	578	987,332	989,637	989,637	-0.23	0.00
	18-25	575	1,298,065	1,319,767	1,319,767	-1.64	0.00
	26-34	403	1,583,290	1,562,159	1,562,159	1.35	0.00
	35-49	469	2,408,197	2,422,612	2,422,612	-0.60	0.00
	50-64	223	2,865,672	2,465,309	2,465,309	16.24	0.00
	65+	124	1,549,035	1,932,108	1,932,108	-19.83	0.00
Race	**White**	1,649	7,712,368	8,307,382	8,307,382	-7.16	0.00
	Black or African American	355	1,535,138	1,498,364	1,498,364	2.45	0.00
	American Indian/Alaska Native	163	486,512	99,668	63,910	661.24	55.95
	Asian	133	699,772	615,193	650,951	7.50	-5.49
	Two or More Races	72	257,801	170,985	170,985	50.77	0.00
Hispanicity	**Hispanic or Latino**	484	1,703,720	1,732,843	1,732,843	-1.68	0.00
	Non-Hispanic or Latino	1,888	8,987,871	8,958,748	8,958,748	0.33	-0.00
Gender	**Male**	1,154	5,152,757	5,189,056	5,189,056	-0.70	0.00
	Female	1,218	5,538,834	5,502,535	5,502,535	0.66	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.16 2018 NSDUH Slippage Rates: INDIANA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		996	5,565,964	5,565,964	5,565,964	0.00	0.00
Quarter	**Quarter 1**	236	1,388,165	1,388,165	1,388,165	0.00	0.00
	Quarter 2	264	1,390,199	1,390,199	1,390,199	0.00	0.00
	Quarter 3	256	1,392,671	1,392,671	1,392,671	-0.00	0.00
	Quarter 4	240	1,394,930	1,394,930	1,394,930	0.00	0.00
Age Group	**12-17**	259	545,422	536,952	536,952	1.58	0.00
	18-25	225	734,309	735,308	735,308	-0.14	0.00
	26-34	154	775,515	768,587	768,587	0.90	0.00
	35-49	211	1,206,970	1,221,370	1,221,370	-1.18	0.00
	50-64	79	1,310,642	1,283,877	1,283,877	2.08	0.00
	65+	68	993,106	1,019,871	1,019,871	-2.62	0.00
Race	**White**	838	4,728,042	4,795,988	4,795,988	-1.42	0.00
	Black or African American	85	548,342	514,396	514,396	6.60	0.00
	American Indian/Alaska Native	10	38,744	14,495	23,043	68.14	-37.10
	Asian	34	172,775	151,210	142,662	21.11	5.99
	Two or More Races	29	78,060	89,875	89,875	-13.15	0.00
Hispanicity	**Hispanic or Latino**	93	352,971	353,949	353,949	-0.28	0.00
	Non-Hispanic or Latino	903	5,212,993	5,212,015	5,212,015	0.02	0.00
Gender	**Male**	452	2,690,432	2,712,028	2,712,028	-0.80	0.00
	Female	544	2,875,532	2,853,936	2,853,936	0.76	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.17 2018 NSDUH Slippage Rates: IOWA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		959	2,629,456	2,629,456	2,629,456	0.00	0.00
Quarter	**Quarter 1**	201	655,973	655,973	655,973	0.00	0.00
	Quarter 2	269	656,797	656,797	656,797	0.00	0.00
	Quarter 3	223	657,854	657,854	657,854	0.00	-0.00
	Quarter 4	266	658,831	658,831	658,831	0.00	0.00
Age Group	**12-17**	233	245,428	245,428	245,428	0.00	0.00
	18-25	210	353,725	356,422	356,422	-0.76	0.00
	26-34	158	364,042	351,246	351,246	3.64	0.00
	35-49	199	546,016	556,115	556,115	-1.82	0.00
	50-64	83	586,391	602,619	602,619	-2.69	0.00
	65+	76	533,854	517,626	517,626	3.13	0.00
Race	**White**	861	2,358,909	2,412,446	2,412,446	-2.22	0.00
	Black or African American	36	103,953	92,127	92,127	12.84	-0.00
	American Indian/Alaska Native	12	39,080	12,248	12,248	219.07	0.00
	Asian	19	84,609	75,129	75,129	12.62	0.00
	Two or More Races	31	42,904	37,505	37,505	14.39	0.00
Hispanicity	**Hispanic or Latino**	61	140,526	141,837	141,837	-0.92	0.00
	Non-Hispanic or Latino	898	2,488,930	2,487,619	2,487,619	0.05	0.00
Gender	**Male**	461	1,300,357	1,300,357	1,300,357	0.00	0.00
	Female	498	1,329,098	1,329,098	1,329,098	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.18 2018 NSDUH Slippage Rates: KANSAS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		960	2,380,437	2,380,437	2,380,437	0.00	0.00
Quarter	**Quarter 1**	181	594,529	594,529	594,529	0.00	0.00
	Quarter 2	256	594,802	594,802	594,802	0.00	0.00
	Quarter 3	283	595,321	595,321	595,321	0.00	-0.00
	Quarter 4	240	595,784	595,784	595,784	0.00	0.00
Age Group	**12-17**	242	236,753	236,753	236,753	0.00	0.00
	18-25	237	313,802	320,953	320,953	-2.23	0.00
	26-34	134	331,004	329,425	329,425	0.48	0.00
	35-49	209	513,273	511,069	511,069	0.43	0.00
	50-64	88	628,724	537,931	537,931	16.88	0.00
	65+	50	356,881	444,306	444,306	-19.68	-0.00
Race	**White**	799	2,038,882	2,080,030	2,080,030	-1.98	0.00
	Black or African American	53	120,805	134,983	134,983	-10.50	0.00
	American Indian/Alaska Native	24	57,106	28,128	28,128	103.02	0.00
	Asian	41	99,861	79,194	79,194	26.10	0.00
	Two or More Races	43	63,782	58,102	58,102	9.78	0.00
Hispanicity	**Hispanic or Latino**	163	252,405	256,991	256,991	-1.78	0.00
	Non-Hispanic or Latino	797	2,128,032	2,123,446	2,123,446	0.22	-0.00
Gender	**Male**	456	1,170,505	1,167,550	1,167,550	0.25	0.00
	Female	504	1,209,932	1,212,886	1,212,886	-0.24	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.19 2018 NSDUH Slippage Rates: KENTUCKY

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		972	3,717,480	3,717,480	3,717,480	0.00	-0.00
Quarter	**Quarter 1**	228	927,711	927,711	927,711	0.00	-0.00
	Quarter 2	268	928,679	928,679	928,679	0.00	0.00
	Quarter 3	201	929,958	929,958	929,958	0.00	0.00
	Quarter 4	275	931,132	931,132	931,132	0.00	-0.00
Age Group	**12-17**	214	340,220	340,220	340,220	-0.00	0.00
	18-25	230	455,829	464,329	464,329	-1.83	0.00
	26-34	171	514,683	505,135	505,135	1.89	0.00
	35-49	215	808,867	818,585	818,585	-1.19	0.00
	50-64	74	802,239	880,589	880,589	-8.90	-0.00
	65+	68	795,642	708,621	708,621	12.28	-0.00
Race	**White**	832	3,279,631	3,294,854	3,294,854	-0.46	0.00
	Black or African American	84	290,309	293,667	293,667	-1.14	-0.00
	American Indian/Alaska Native	8	24,731	10,987	10,987	125.09	0.00
	Asian	17	59,357	62,562	62,562	-5.12	0.00
	Two or More Races	31	63,452	55,410	55,410	14.51	0.00
Hispanicity	**Hispanic or Latino**	53	110,494	122,545	122,545	-9.83	-0.00
	Non-Hispanic or Latino	919	3,606,986	3,594,935	3,594,935	0.34	0.00
Gender	**Male**	468	1,801,468	1,802,223	1,802,223	-0.04	0.00
	Female	504	1,916,012	1,915,257	1,915,257	0.04	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.20 2018 NSDUH Slippage Rates: LOUISIANA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,006	3,821,937	3,821,937	3,821,937	0.00	0.00
Quarter	**Quarter 1**	283	955,616	955,616	955,616	0.00	-0.00
	Quarter 2	203	955,394	955,394	955,394	0.00	0.00
	Quarter 3	219	955,472	955,472	955,472	0.00	-0.00
	Quarter 4	301	955,455	955,455	955,455	0.00	0.00
Age Group	**12-17**	236	360,213	360,213	360,213	0.00	0.00
	18-25	285	473,299	472,645	472,645	0.14	0.00
	26-34	147	575,884	575,576	575,576	0.05	0.00
	35-49	196	828,866	832,412	832,412	-0.43	-0.00
	50-64	85	1,002,269	882,285	882,285	13.60	-0.00
	65+	57	581,406	698,806	698,806	-16.80	0.00
Race	**White**	537	2,400,915	2,468,380	2,468,380	-2.73	0.00
	Black or African American	397	1,216,340	1,200,603	1,200,603	1.31	-0.00
	American Indian/Alaska Native	29	63,407	29,921	29,922	111.91	-0.00
	Asian	20	89,992	73,179	73,179	22.98	-0.00
	Two or More Races	23	51,283	49,854	49,854	2.87	-0.00
Hispanicity	**Hispanic or Latino**	64	198,518	182,012	182,012	9.07	0.00
	Non-Hispanic or Latino	942	3,623,419	3,639,925	3,639,925	-0.45	0.00
Gender	**Male**	472	1,819,643	1,820,038	1,820,038	-0.02	-0.00
	Female	534	2,002,294	2,001,898	2,001,898	0.02	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.21 2018 NSDUH Slippage Rates: MAINE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		967	1,162,844	1,162,844	1,162,844	-0.00	-0.00
Quarter	**Quarter 1**	203	290,237	290,237	290,237	0.00	0.00
	Quarter 2	239	290,515	290,515	290,515	0.00	-0.00
	Quarter 3	255	290,881	290,881	290,881	0.00	0.00
	Quarter 4	270	291,211	291,211	291,211	-0.00	0.00
Age Group	**12-17**	211	89,366	89,366	89,366	0.00	0.00
	18-25	263	119,807	121,364	121,364	-1.28	-0.00
	26-34	141	144,743	142,875	142,875	1.31	0.00
	35-49	203	234,594	236,081	236,081	-0.63	0.00
	50-64	83	313,509	304,999	304,999	2.79	0.00
	65+	66	260,825	268,160	268,160	-2.74	0.00
Race	**White**	901	1,105,577	1,106,751	1,106,751	-0.11	-0.00
	Black or African American	24	18,101	16,290	16,290	11.12	-0.00
	American Indian/Alaska Native	9	9,977	7,935	7,935	25.74	0.00
	Asian	10	10,631	15,053	15,053	-29.38	0.00
	Two or More Races	23	18,559	16,816	16,816	10.36	0.00
Hispanicity	**Hispanic or Latino**	27	22,505	17,976	17,976	25.19	0.00
	Non-Hispanic or Latino	940	1,140,340	1,144,868	1,144,869	-0.40	-0.00
Gender	**Male**	491	565,027	565,027	565,028	-0.00	-0.00
	Female	476	597,817	597,817	597,817	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.22 2018 NSDUH Slippage Rates: MARYLAND

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		936	5,055,749	5,055,749	5,055,749	0.00	-0.00
Quarter	**Quarter 1**	230	1,261,933	1,261,933	1,261,933	0.00	-0.00
	Quarter 2	245	1,263,071	1,263,071	1,263,071	0.00	-0.00
	Quarter 3	223	1,264,638	1,264,638	1,264,638	0.00	-0.00
	Quarter 4	238	1,266,107	1,266,107	1,266,107	0.00	0.00
Age Group	**12-17**	257	453,673	450,904	450,904	0.61	0.00
	18-25	205	587,409	594,859	594,859	-1.25	0.00
	26-34	151	737,567	731,526	731,526	0.83	0.00
	35-49	177	1,130,999	1,144,688	1,144,688	-1.20	-0.00
	50-64	83	1,183,944	1,224,899	1,224,899	-3.34	-0.00
	65+	63	962,158	908,873	908,873	5.86	0.00
Race	**White**	493	2,783,843	3,020,745	3,020,745	-7.84	0.00
	Black or African American	291	1,614,258	1,539,254	1,539,254	4.87	0.00
	American Indian/Alaska Native	46	142,563	33,611	28,625	398.04	17.42
	Asian	62	393,897	346,840	351,826	11.96	-1.42
	Two or More Races	44	121,190	115,299	115,299	5.11	0.00
Hispanicity	**Hispanic or Latino**	121	445,147	470,055	470,055	-5.30	0.00
	Non-Hispanic or Latino	815	4,610,602	4,585,694	4,585,694	0.54	-0.00
Gender	**Male**	441	2,404,048	2,404,486	2,404,486	-0.02	0.00
	Female	495	2,651,701	2,651,263	2,651,263	0.02	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.23 2018 NSDUH Slippage Rates: MASSACHUSETTS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		963	5,946,859	5,946,859	5,946,859	0.00	0.00
Quarter	**Quarter 1**	231	1,482,706	1,482,706	1,482,706	0.00	0.00
	Quarter 2	306	1,485,277	1,485,277	1,485,277	0.00	0.00
	Quarter 3	213	1,488,160	1,488,160	1,488,160	0.00	0.00
	Quarter 4	213	1,490,716	1,490,716	1,490,716	0.00	0.00
Age Group	**12-17**	220	477,049	480,574	480,574	-0.73	-0.00
	18-25	228	769,619	795,009	795,009	-3.19	0.00
	26-34	153	921,515	883,245	883,245	4.33	0.00
	35-49	201	1,255,693	1,274,171	1,274,171	-1.45	0.00
	50-64	99	1,600,902	1,408,899	1,408,899	13.63	0.00
	65+	62	922,081	1,104,961	1,104,961	-16.55	-0.00
Race	**White**	732	4,650,356	4,863,494	4,863,494	-4.38	0.00
	Black or African American	96	556,591	502,372	502,372	10.79	0.00
	American Indian/Alaska Native	17	47,370	28,646	28,646	65.36	0.00
	Asian	80	487,164	431,329	431,329	12.94	0.00
	Two or More Races	38	205,378	121,018	121,018	69.71	0.00
Hispanicity	**Hispanic or Latino**	186	663,064	662,636	662,636	0.06	0.00
	Non-Hispanic or Latino	777	5,283,795	5,284,223	5,284,223	-0.01	0.00
Gender	**Male**	488	2,840,593	2,859,132	2,859,132	-0.65	0.00
	Female	475	3,106,266	3,087,727	3,087,727	0.60	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.24 2018 NSDUH Slippage Rates: MICHIGAN

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,431	8,486,500	8,486,500	8,486,500	0.00	0.00
Quarter	**Quarter 1**	509	2,118,801	2,118,801	2,118,801	0.00	0.00
	Quarter 2	720	2,120,372	2,120,372	2,120,372	0.00	0.00
	Quarter 3	611	2,122,647	2,122,647	2,122,647	0.00	0.00
	Quarter 4	591	2,124,679	2,124,679	2,124,679	0.00	0.00
Age Group	**12-17**	618	755,359	758,240	758,240	-0.38	0.00
	18-25	576	1,091,227	1,086,498	1,086,498	0.44	0.00
	26-34	369	1,134,103	1,140,405	1,140,405	-0.55	0.00
	35-49	486	1,759,010	1,770,544	1,770,544	-0.65	0.00
	50-64	204	2,044,881	2,050,140	2,050,140	-0.26	0.00
	65+	178	1,701,919	1,680,674	1,680,674	1.26	0.00
Race	**White**	1,860	6,742,335	6,832,399	6,832,399	-1.32	0.00
	Black or African American	322	1,139,474	1,131,689	1,131,689	0.69	0.00
	American Indian/Alaska Native	20	68,343	33,344	60,553	12.87	-44.93
	Asian	118	305,774	320,271	293,062	4.34	9.28
	Two or More Races	111	230,575	168,798	168,798	36.60	0.00
Hispanicity	**Hispanic or Latino**	111	382,320	395,000	395,000	-3.21	0.00
	Non-Hispanic or Latino	2,320	8,104,179	8,091,500	8,091,500	0.16	0.00
Gender	**Male**	1,201	4,132,953	4,131,167	4,131,167	0.04	0.00
	Female	1,230	4,353,546	4,355,333	4,355,333	-0.04	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.25 2018 NSDUH Slippage Rates: MINNESOTA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		928	4,689,671	4,689,671	4,689,671	0.00	0.00
Quarter	**Quarter 1**	195	1,168,370	1,168,370	1,168,370	0.00	0.00
	Quarter 2	288	1,170,889	1,170,889	1,170,889	0.00	0.00
	Quarter 3	293	1,173,816	1,173,816	1,173,816	0.00	0.00
	Quarter 4	152	1,176,596	1,176,596	1,176,596	0.00	0.00
Age Group	**12-17**	244	426,612	436,225	436,225	-2.20	0.00
	18-25	201	587,980	570,868	570,868	3.00	0.00
	26-34	142	663,713	678,736	678,736	-2.21	0.00
	35-49	201	1,041,444	1,038,801	1,038,801	0.25	0.00
	50-64	77	1,066,581	1,104,251	1,104,251	-3.41	0.00
	65+	63	903,341	860,791	860,791	4.94	-0.00
Race	**White**	747	3,979,283	4,024,709	4,024,709	-1.13	0.00
	Black or African American	60	273,162	281,381	281,381	-2.92	0.00
	American Indian/Alaska Native	11	70,387	55,253	55,253	27.39	0.00
	Asian	71	257,789	236,419	236,419	9.04	0.00
	Two or More Races	39	109,050	91,909	91,909	18.65	0.00
Hispanicity	**Hispanic or Latino**	60	218,173	227,432	227,432	-4.07	0.00
	Non-Hispanic or Latino	868	4,471,498	4,462,238	4,462,238	0.21	0.00
Gender	**Male**	428	2,323,061	2,321,555	2,321,555	0.06	0.00
	Female	500	2,366,610	2,368,116	2,368,116	-0.06	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.26 2018 NSDUH Slippage Rates: MISSISSIPPI

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		980	2,454,379	2,454,379	2,454,379	-0.00	0.00
Quarter	**Quarter 1**	235	613,186	613,186	613,186	-0.00	-0.00
	Quarter 2	292	613,333	613,333	613,333	0.00	0.00
	Quarter 3	223	613,732	613,732	613,732	0.00	0.00
	Quarter 4	230	614,128	614,128	614,128	-0.00	-0.00
Age Group	**12-17**	254	241,249	241,249	241,249	0.00	0.00
	18-25	277	316,795	321,293	321,293	-1.40	0.00
	26-34	134	345,661	335,243	335,243	3.11	0.00
	35-49	180	538,034	532,145	532,145	1.11	-0.00
	50-64	85	629,179	563,582	563,582	11.64	-0.00
	65+	50	383,461	460,867	460,867	-16.80	-0.00
Race	**White**	528	1,476,361	1,485,339	1,485,339	-0.60	0.00
	Black or African American	407	894,057	902,438	902,438	-0.93	-0.00
	American Indian/Alaska Native	13	22,277	14,198	14,198	56.90	0.00
	Asian	9	29,507	28,360	28,360	4.04	0.00
	Two or More Races	23	32,177	24,043	24,043	33.83	0.00
Hispanicity	**Hispanic or Latino**	23	64,265	69,600	69,600	-7.67	0.00
	Non-Hispanic or Latino	957	2,390,114	2,384,779	2,384,779	0.22	0.00
Gender	**Male**	422	1,159,943	1,159,942	1,159,943	0.00	-0.00
	Female	558	1,294,436	1,294,436	1,294,437	-0.00	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.27 2018 NSDUH Slippage Rates: MISSOURI

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		980	5,107,164	5,107,164	5,107,164	0.00	0.00
Quarter	**Quarter 1**	236	1,274,570	1,274,570	1,274,570	0.00	0.00
	Quarter 2	249	1,275,836	1,275,836	1,275,836	0.00	0.00
	Quarter 3	280	1,277,572	1,277,572	1,277,572	0.00	0.00
	Quarter 4	215	1,279,187	1,279,187	1,279,187	0.00	0.00
Age Group	**12-17**	256	465,155	465,639	465,639	-0.10	0.00
	18-25	232	631,780	630,871	630,871	0.14	0.00
	26-34	141	713,887	720,574	720,574	-0.93	0.00
	35-49	199	1,099,331	1,093,069	1,093,069	0.57	0.00
	50-64	85	1,216,160	1,199,328	1,199,328	1.40	0.00
	65+	67	980,851	997,683	997,683	-1.69	-0.00
Race	**White**	751	4,094,621	4,295,054	4,295,054	-4.67	0.00
	Black or African American	138	607,056	570,258	570,258	6.45	0.00
	American Indian/Alaska Native	10	34,635	28,600	28,600	21.10	0.00
	Asian	34	129,551	119,093	119,093	8.78	0.00
	Two or More Races	47	241,301	94,159	94,159	156.27	0.00
Hispanicity	**Hispanic or Latino**	61	208,469	194,533	194,533	7.16	0.00
	Non-Hispanic or Latino	919	4,898,695	4,912,631	4,912,631	-0.28	0.00
Gender	**Male**	493	2,464,990	2,471,208	2,471,208	-0.25	0.00
	Female	487	2,642,174	2,635,957	2,635,957	0.24	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.28 2018 NSDUH Slippage Rates: MONTANA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		972	894,272	894,272	894,272	0.00	0.00
Quarter	**Quarter 1**	215	222,637	222,637	222,637	0.00	0.00
	Quarter 2	237	223,217	223,217	223,217	0.00	0.00
	Quarter 3	271	223,888	223,888	223,888	0.00	0.00
	Quarter 4	249	224,530	224,530	224,530	0.00	0.00
Age Group	**12-17**	267	75,135	75,923	75,923	-1.04	0.00
	18-25	193	111,123	110,175	110,175	0.86	0.00
	26-34	151	119,449	120,042	120,042	-0.49	0.00
	35-49	202	182,156	182,443	182,443	-0.16	0.00
	50-64	76	192,245	211,272	211,272	-9.01	0.00
	65+	83	214,165	194,417	194,417	10.16	0.00
Race	**White**	842	802,911	808,282	808,282	-0.66	0.00
	Black or African American	9	4,280	4,495	4,495	-4.77	0.00
	American Indian/Alaska Native	63	52,630	51,373	51,373	2.45	0.00
	Asian	14	12,056	9,308	9,308	29.53	0.00
	Two or More Races	44	22,394	20,814	20,814	7.59	0.00
Hispanicity	**Hispanic or Latino**	69	37,675	31,522	31,522	19.52	0.00
	Non-Hispanic or Latino	903	856,597	862,751	862,751	-0.71	0.00
Gender	**Male**	464	446,055	446,231	446,231	-0.04	0.00
	Female	508	448,218	448,042	448,042	0.04	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.29 2018 NSDUH Slippage Rates: NEBRASKA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		966	1,580,132	1,580,132	1,580,132	0.00	0.00
Quarter	**Quarter 1**	262	393,850	393,850	393,850	0.00	0.00
	Quarter 2	270	394,585	394,585	394,585	0.00	0.00
	Quarter 3	196	395,444	395,444	395,444	0.00	0.00
	Quarter 4	238	396,253	396,253	396,253	0.00	0.00
Age Group	**12-17**	217	156,160	156,615	156,615	-0.29	0.00
	18-25	235	208,935	212,374	212,374	-1.62	0.00
	26-34	157	236,295	223,864	223,864	5.55	0.00
	35-49	190	326,265	343,638	343,638	-5.06	0.00
	50-64	96	376,831	351,022	351,022	7.35	0.00
	65+	71	275,646	292,619	292,619	-5.80	0.00
Race	**White**	849	1,389,118	1,414,787	1,414,787	-1.81	0.00
	Black or African American	37	73,064	73,939	73,939	-1.18	0.00
	American Indian/Alaska Native	19	19,361	19,592	19,592	-1.18	0.00
	Asian	21	46,362	44,495	44,495	4.20	-0.00
	Two or More Races	40	52,228	27,320	27,320	91.17	0.00
Hispanicity	**Hispanic or Latino**	135	142,955	154,761	154,761	-7.63	0.00
	Non-Hispanic or Latino	831	1,437,177	1,425,372	1,425,372	0.83	0.00
Gender	**Male**	479	782,213	780,837	780,837	0.18	0.00
	Female	487	797,920	799,295	799,295	-0.17	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.30 2018 NSDUH Slippage Rates: NEVADA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		986	2,538,712	2,538,712	2,538,712	0.00	0.00
Quarter	**Quarter 1**	215	629,124	629,124	629,124	0.00	0.00
	Quarter 2	275	632,686	632,686	632,686	0.00	0.00
	Quarter 3	283	636,520	636,520	636,520	0.00	-0.00
	Quarter 4	213	640,383	640,383	640,383	0.00	0.00
Age Group	**12-17**	210	228,624	230,080	230,080	-0.63	0.00
	18-25	236	281,989	282,558	282,558	-0.20	0.00
	26-34	170	385,727	392,046	392,046	-1.61	0.00
	35-49	201	599,517	594,774	594,774	0.80	0.00
	50-64	91	532,108	566,875	566,875	-6.13	0.00
	65+	78	510,747	472,379	472,379	8.12	-0.00
Race	**White**	653	1,761,206	1,908,430	1,908,430	-7.71	0.00
	Black or African American	149	276,267	241,813	241,813	14.25	0.00
	American Indian/Alaska Native	54	123,784	41,106	41,106	201.13	0.00
	Asian	62	268,710	255,479	255,479	5.18	0.00
	Two or More Races	68	108,744	91,884	91,884	18.35	-0.00
Hispanicity	**Hispanic or Latino**	376	684,404	686,265	686,265	-0.27	0.00
	Non-Hispanic or Latino	610	1,854,308	1,852,448	1,852,448	0.10	-0.00
Gender	**Male**	467	1,247,785	1,257,078	1,257,079	-0.74	-0.00
	Female	519	1,290,927	1,281,634	1,281,634	0.73	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.31 2018 NSDUH Slippage Rates: NEW HAMPSHIRE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		956	1,176,853	1,176,853	1,176,853	0.00	0.00
Quarter	**Quarter 1**	186	293,440	293,440	293,440	0.00	0.00
	Quarter 2	327	293,927	293,927	293,927	0.00	0.00
	Quarter 3	249	294,489	294,489	294,489	0.00	-0.00
	Quarter 4	194	294,998	294,998	294,998	0.00	0.00
Age Group	**12-17**	268	95,344	94,845	94,845	0.53	0.00
	18-25	213	138,984	141,387	141,387	-1.70	0.00
	26-34	137	151,779	149,797	149,797	1.32	0.00
	35-49	206	242,010	242,086	242,086	-0.03	0.00
	50-64	81	342,405	311,356	311,356	9.97	0.00
	65+	51	206,331	237,380	237,380	-13.08	0.00
Race	**White**	845	1,089,445	1,103,040	1,103,040	-1.23	0.00
	Black or African American	32	23,376	18,288	18,288	27.82	0.00
	American Indian/Alaska Native	24	14,286	3,465	3,465	312.27	0.00
	Asian	28	30,594	35,221	35,221	-13.14	0.00
	Two or More Races	27	19,153	16,839	16,839	13.74	0.00
Hispanicity	**Hispanic or Latino**	93	39,529	40,838	40,838	-3.21	0.00
	Non-Hispanic or Latino	863	1,137,323	1,136,014	1,136,014	0.12	0.00
Gender	**Male**	483	585,482	579,265	579,265	1.07	-0.00
	Female	473	591,371	597,588	597,588	-1.04	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.32 2018 NSDUH Slippage Rates: NEW JERSEY

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,511	7,533,240	7,533,240	7,533,240	0.00	0.00
Quarter	**Quarter 1**	364	1,880,948	1,880,948	1,880,948	0.00	-0.00
	Quarter 2	426	1,882,280	1,882,280	1,882,280	0.00	0.00
	Quarter 3	337	1,884,180	1,884,180	1,884,180	0.00	0.00
	Quarter 4	384	1,885,832	1,885,832	1,885,832	0.00	0.00
Age Group	**12-17**	413	679,273	678,407	678,407	0.13	0.00
	18-25	331	859,729	868,314	868,314	-0.99	0.00
	26-34	225	987,022	1,023,275	1,023,275	-3.54	-0.00
	35-49	311	1,730,122	1,721,668	1,721,668	0.49	0.00
	50-64	133	1,881,646	1,840,735	1,840,735	2.22	0.00
	65+	98	1,395,448	1,400,841	1,400,841	-0.38	0.00
Race	**White**	876	5,099,230	5,496,930	5,496,930	-7.23	0.00
	Black or African American	267	1,156,311	1,087,241	1,087,241	6.35	-0.00
	American Indian/Alaska Native	90	333,217	69,904	45,684	629.40	53.02
	Asian	226	812,175	742,623	766,843	5.91	-3.16
	Two or More Races	52	132,306	136,542	136,542	-3.10	0.00
Hispanicity	**Hispanic or Latino**	432	1,498,552	1,456,499	1,456,499	2.89	0.00
	Non-Hispanic or Latino	1,079	6,034,688	6,076,741	6,076,741	-0.69	0.00
Gender	**Male**	735	3,634,246	3,635,930	3,635,930	-0.05	0.00
	Female	776	3,898,994	3,897,310	3,897,310	0.04	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.33 2018 NSDUH Slippage Rates: NEW MEXICO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		936	1,743,378	1,743,378	1,743,378	-0.00	0.00
Quarter	**Quarter 1**	262	435,137	435,137	435,137	-0.00	0.00
	Quarter 2	249	435,522	435,522	435,522	-0.00	0.00
	Quarter 3	205	436,084	436,084	436,084	0.00	-0.00
	Quarter 4	220	436,635	436,635	436,635	-0.00	0.00
Age Group	**12-17**	257	165,283	165,747	165,747	-0.28	0.00
	18-25	217	216,906	217,750	217,750	-0.39	0.00
	26-34	127	242,940	243,942	243,942	-0.41	0.00
	35-49	203	362,131	361,195	361,195	0.26	0.00
	50-64	67	407,262	393,364	393,364	3.53	0.00
	65+	65	348,856	361,381	361,381	-3.47	-0.00
Race	**White**	709	1,374,362	1,449,389	1,449,389	-5.18	0.00
	Black or African American	25	46,836	41,822	41,822	11.99	0.00
	American Indian/Alaska Native	138	235,563	179,185	179,185	31.46	-0.00
	Asian	26	39,707	34,967	34,967	13.56	0.00
	Two or More Races	38	46,909	38,015	38,015	23.40	0.00
Hispanicity	**Hispanic or Latino**	544	831,625	825,917	825,917	0.69	0.00
	Non-Hispanic or Latino	392	911,753	917,461	917,461	-0.62	0.00
Gender	**Male**	420	847,393	847,393	847,393	-0.00	0.00
	Female	516	895,985	895,985	895,985	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.34 2018 NSDUH Slippage Rates: NEW YORK

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,269	16,601,139	16,601,139	16,601,139	0.00	0.00
Quarter	**Quarter 1**	758	4,152,648	4,152,648	4,152,648	0.00	0.00
	Quarter 2	929	4,150,568	4,150,568	4,150,568	0.00	-0.00
	Quarter 3	920	4,149,672	4,149,672	4,149,672	0.00	0.00
	Quarter 4	662	4,148,252	4,148,252	4,148,252	0.00	0.00
Age Group	**12-17**	858	1,355,423	1,356,212	1,356,212	-0.06	-0.00
	18-25	785	2,050,854	2,052,555	2,052,555	-0.08	-0.00
	26-34	471	2,549,740	2,555,939	2,555,939	-0.24	-0.00
	35-49	673	3,674,119	3,630,289	3,630,289	1.21	0.00
	50-64	267	4,027,227	3,883,630	3,883,630	3.70	-0.00
	65+	215	2,943,777	3,122,515	3,122,515	-5.72	0.00
Race	**White**	2,147	10,661,737	11,703,300	11,703,300	-8.90	-0.00
	Black or African American	607	3,148,382	2,842,355	2,842,355	10.77	0.00
	American Indian/Alaska Native	141	570,297	160,891	160,891	254.46	0.00
	Asian	258	1,808,850	1,539,015	1,539,015	17.53	0.00
	Two or More Races	116	411,873	355,578	355,578	15.83	0.00
Hispanicity	**Hispanic or Latino**	769	2,942,067	3,017,199	3,017,199	-2.49	0.00
	Non-Hispanic or Latino	2,500	13,659,072	13,583,940	13,583,940	0.55	-0.00
Gender	**Male**	1,525	7,907,394	7,954,660	7,954,660	-0.59	0.00
	Female	1,744	8,693,745	8,646,479	8,646,479	0.55	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.35 2018 NSDUH Slippage Rates: NORTH CAROLINA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,451	8,672,691	8,672,691	8,672,691	0.00	0.00
Quarter	**Quarter 1**	317	2,157,097	2,157,097	2,157,097	0.00	0.00
	Quarter 2	380	2,164,133	2,164,133	2,164,133	0.00	0.00
	Quarter 3	407	2,171,923	2,171,923	2,171,923	0.00	-0.00
	Quarter 4	347	2,179,538	2,179,538	2,179,538	0.00	0.00
Age Group	**12-17**	335	794,388	792,181	792,181	0.28	0.00
	18-25	384	1,072,598	1,064,005	1,064,005	0.81	-0.00
	26-34	217	1,231,443	1,202,644	1,202,644	2.39	0.00
	35-49	277	1,949,127	1,952,229	1,952,229	-0.16	0.00
	50-64	124	1,901,880	2,009,578	2,009,578	-5.36	-0.00
	65+	114	1,723,256	1,652,054	1,652,054	4.31	0.00
Race	**White**	885	5,878,998	6,235,531	6,235,532	-5.72	-0.00
	Black or African American	369	1,909,344	1,875,618	1,875,618	1.80	-0.00
	American Indian/Alaska Native	56	308,804	75,688	129,461	138.53	-41.54
	Asian	76	336,350	332,116	278,343	20.84	19.32
	Two or More Races	65	239,195	153,738	153,738	55.59	0.00
Hispanicity	**Hispanic or Latino**	159	751,504	715,564	715,564	5.02	0.00
	Non-Hispanic or Latino	1,292	7,921,187	7,957,127	7,957,127	-0.45	-0.00
Gender	**Male**	691	4,128,367	4,125,697	4,125,697	0.06	0.00
	Female	760	4,544,324	4,546,994	4,546,994	-0.06	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.36 2018 NSDUH Slippage Rates: NORTH DAKOTA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		965	618,510	618,510	618,510	0.00	0.00
Quarter	**Quarter 1**	243	154,243	154,243	154,243	0.00	0.00
	Quarter 2	157	154,470	154,470	154,470	0.00	0.00
	Quarter 3	248	154,756	154,756	154,756	0.00	0.00
	Quarter 4	317	155,042	155,042	155,042	0.00	0.00
Age Group	**12-17**	241	54,815	53,907	53,907	1.68	0.00
	18-25	212	91,404	92,973	92,973	-1.69	0.00
	26-34	158	99,383	98,844	98,844	0.55	0.00
	35-49	202	128,083	127,409	127,409	0.53	0.00
	50-64	87	136,839	134,857	134,857	1.47	0.00
	65+	65	107,986	110,521	110,521	-2.29	-0.00
Race	**White**	808	544,864	548,531	548,531	-0.67	0.00
	Black or African American	36	18,353	18,470	18,470	-0.63	0.00
	American Indian/Alaska Native	61	32,234	29,871	29,871	7.91	0.00
	Asian	25	11,040	11,273	11,273	-2.06	0.00
	Two or More Races	35	12,019	10,366	10,366	15.95	0.00
Hispanicity	**Hispanic or Latino**	43	21,753	20,515	20,515	6.04	0.00
	Non-Hispanic or Latino	922	596,757	597,995	597,995	-0.21	0.00
Gender	**Male**	445	314,343	314,989	314,989	-0.20	0.00
	Female	520	304,167	303,521	303,521	0.21	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.37 2018 NSDUH Slippage Rates: OHIO

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,465	9,820,776	9,820,776	9,820,776	-0.00	-0.00
Quarter	**Quarter 1**	506	2,451,804	2,451,804	2,451,804	-0.00	0.00
	Quarter 2	627	2,453,742	2,453,742	2,453,742	-0.00	-0.00
	Quarter 3	662	2,456,446	2,456,446	2,456,446	0.00	0.00
	Quarter 4	670	2,458,784	2,458,784	2,458,784	0.00	0.00
Age Group	**12-17**	589	891,199	893,036	893,036	-0.21	0.00
	18-25	632	1,197,320	1,206,412	1,206,412	-0.75	0.00
	26-34	348	1,363,038	1,359,806	1,359,806	0.24	-0.00
	35-49	523	2,106,089	2,092,012	2,092,013	0.67	-0.00
	50-64	212	2,430,678	2,341,540	2,341,540	3.81	0.00
	65+	161	1,832,454	1,927,970	1,927,970	-4.95	-0.00
Race	**White**	1,948	8,056,208	8,173,281	8,173,281	-1.43	-0.00
	Black or African American	316	1,175,656	1,194,966	1,194,966	-1.62	-0.00
	American Indian/Alaska Native	22	61,806	27,703	27,703	123.10	0.00
	Asian	70	255,675	248,549	248,549	2.87	0.00
	Two or More Races	109	271,432	176,277	176,277	53.98	0.00
Hispanicity	**Hispanic or Latino**	141	349,081	343,105	343,106	1.74	-0.00
	Non-Hispanic or Latino	2,324	9,471,695	9,477,671	9,477,671	-0.06	0.00
Gender	**Male**	1,145	4,748,673	4,756,999	4,756,999	-0.18	-0.00
	Female	1,320	5,072,103	5,063,777	5,063,777	0.16	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.38 2018 NSDUH Slippage Rates: OKLAHOMA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		964	3,224,081	3,224,081	3,224,081	-0.00	-0.00
Quarter	**Quarter 1**	191	804,646	804,646	804,646	-0.00	0.00
	Quarter 2	282	805,408	805,408	805,408	-0.00	-0.00
	Quarter 3	295	806,501	806,501	806,501	0.00	0.00
	Quarter 4	196	807,527	807,527	807,527	-0.00	-0.00
Age Group	**12-17**	259	315,220	317,493	317,493	-0.72	0.00
	18-25	219	407,670	417,736	417,736	-2.41	0.00
	26-34	139	475,897	469,352	469,352	1.39	-0.00
	35-49	198	709,793	704,001	704,001	0.82	0.00
	50-64	88	768,476	713,505	713,505	7.70	0.00
	65+	61	547,024	601,995	601,995	-9.13	-0.00
Race	**White**	702	2,394,244	2,445,155	2,445,155	-2.08	-0.00
	Black or African American	57	239,921	236,560	236,560	1.42	-0.00
	American Indian/Alaska Native	80	295,850	287,864	287,865	2.77	-0.00
	Asian	12	78,872	83,350	83,350	-5.37	0.00
	Two or More Races	113	215,195	171,152	171,152	25.73	0.00
Hispanicity	**Hispanic or Latino**	135	318,274	307,808	307,808	3.40	-0.00
	Non-Hispanic or Latino	829	2,905,807	2,916,273	2,916,273	-0.36	-0.00
Gender	**Male**	471	1,560,908	1,567,985	1,567,985	-0.45	-0.00
	Female	493	1,663,173	1,656,097	1,656,097	0.43	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.39 2018 NSDUH Slippage Rates: OREGON

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		994	3,573,890	3,573,890	3,573,890	0.00	0.00
Quarter	**Quarter 1**	237	889,177	889,177	889,177	0.00	0.00
	Quarter 2	242	891,894	891,894	891,894	0.00	0.00
	Quarter 3	223	894,938	894,938	894,938	0.00	0.00
	Quarter 4	292	897,881	897,881	897,881	0.00	0.00
Age Group	**12-17**	257	294,599	294,599	294,599	0.00	0.00
	18-25	211	413,696	416,395	416,395	-0.65	0.00
	26-34	153	537,178	531,235	531,235	1.12	0.00
	35-49	227	812,990	813,958	813,958	-0.12	0.00
	50-64	83	854,852	788,642	788,642	8.40	0.00
	65+	63	660,575	729,061	729,061	-9.39	0.00
Race	**White**	822	3,003,184	3,128,214	3,128,214	-4.00	0.00
	Black or African American	17	60,642	73,232	73,232	-17.19	-0.00
	American Indian/Alaska Native	39	135,083	60,679	60,679	122.62	0.00
	Asian	58	214,939	193,138	193,138	11.29	0.00
	Two or More Races	58	160,041	118,626	118,626	34.91	0.00
Hispanicity	**Hispanic or Latino**	162	429,026	422,019	422,019	1.66	0.00
	Non-Hispanic or Latino	832	3,144,863	3,151,871	3,151,871	-0.22	-0.00
Gender	**Male**	530	1,754,645	1,753,444	1,753,444	0.07	0.00
	Female	464	1,819,245	1,820,446	1,820,446	-0.07	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.40 2018 NSDUH Slippage Rates: PENNSYLVANIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		2,383	10,875,795	10,875,795	10,875,795	0.00	-0.00
Quarter	**Quarter 1**	531	2,716,578	2,716,578	2,716,578	0.00	-0.00
	Quarter 2	635	2,717,820	2,717,820	2,717,820	-0.00	0.00
	Quarter 3	606	2,719,896	2,719,896	2,719,896	0.00	-0.00
	Quarter 4	611	2,721,502	2,721,502	2,721,502	0.00	0.00
Age Group	**12-17**	597	906,817	912,633	912,633	-0.64	0.00
	18-25	586	1,294,756	1,303,202	1,303,202	-0.65	0.00
	26-34	368	1,500,755	1,500,348	1,500,348	0.03	0.00
	35-49	475	2,259,513	2,257,123	2,257,123	0.11	0.00
	50-64	183	2,522,264	2,643,911	2,643,912	-4.60	-0.00
	65+	174	2,391,691	2,258,579	2,258,579	5.89	0.00
Race	**White**	1,795	8,756,253	9,053,656	9,053,656	-3.28	-0.00
	Black or African American	335	1,232,384	1,200,293	1,200,293	2.67	0.00
	American Indian/Alaska Native	21	62,981	14,439	38,659	62.92	-62.65
	Asian	129	513,322	433,843	409,623	25.32	5.91
	Two or More Races	103	310,855	173,565	173,565	79.10	0.00
Hispanicity	**Hispanic or Latino**	230	685,755	731,679	731,679	-6.28	-0.00
	Non-Hispanic or Latino	2,153	10,190,040	10,144,116	10,144,116	0.45	0.00
Gender	**Male**	1,138	5,264,220	5,260,662	5,260,662	0.07	-0.00
	Female	1,245	5,611,576	5,615,133	5,615,133	-0.06	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.41 2018 NSDUH Slippage Rates: RHODE ISLAND

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		937	909,061	909,061	909,061	0.00	0.00
Quarter	**Quarter 1**	245	227,112	227,112	227,112	0.00	0.00
	Quarter 2	190	227,171	227,171	227,171	0.00	0.00
	Quarter 3	285	227,325	227,325	227,325	0.00	0.00
	Quarter 4	217	227,454	227,454	227,454	0.00	-0.00
Age Group	**12-17**	227	72,635	72,635	72,635	0.00	0.00
	18-25	235	124,094	123,705	123,705	0.31	0.00
	26-34	131	126,132	128,897	128,897	-2.15	0.00
	35-49	186	198,167	187,521	187,521	5.68	0.00
	50-64	86	218,075	221,044	221,044	-1.34	0.00
	65+	72	169,958	175,258	175,258	-3.02	-0.00
Race	**White**	736	722,730	774,706	774,706	-6.71	0.00
	Black or African American	78	81,257	70,979	70,979	14.48	0.00
	American Indian/Alaska Native	29	23,650	8,348	8,348	183.31	0.00
	Asian	51	36,826	34,289	34,289	7.40	0.00
	Two or More Races	43	44,597	20,740	20,740	115.03	0.00
Hispanicity	**Hispanic or Latino**	166	132,262	130,537	130,537	1.32	0.00
	Non-Hispanic or Latino	771	776,798	778,524	778,524	-0.22	-0.00
Gender	**Male**	433	437,335	437,335	437,335	0.00	0.00
	Female	504	471,726	471,726	471,726	0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.42 2018 NSDUH Slippage Rates: SOUTH CAROLINA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		933	4,256,810	4,256,810	4,256,810	0.00	-0.00
Quarter	**Quarter 1**	239	1,058,164	1,058,164	1,058,164	0.00	0.00
	Quarter 2	262	1,061,933	1,061,933	1,061,933	0.00	0.00
	Quarter 3	185	1,066,197	1,066,197	1,066,197	0.00	0.00
	Quarter 4	247	1,070,517	1,070,517	1,070,517	0.00	-0.00
Age Group	**12-17**	221	372,753	374,940	374,940	-0.58	-0.00
	18-25	220	507,979	505,569	505,569	0.48	-0.00
	26-34	141	582,242	582,465	582,465	-0.04	0.00
	35-49	209	911,824	911,824	911,824	0.00	-0.00
	50-64	89	1,179,528	997,935	997,935	18.20	-0.00
	65+	53	702,484	884,077	884,077	-20.54	-0.00
Race	**White**	628	2,929,636	2,975,850	2,975,850	-1.55	-0.00
	Black or African American	254	1,148,978	1,118,166	1,118,166	2.76	-0.00
	American Indian/Alaska Native	12	37,496	25,175	22,275	68.33	13.02
	Asian	15	82,592	76,477	79,376	4.05	-3.65
	Two or More Races	24	58,107	61,143	61,143	-4.96	0.00
Hispanicity	**Hispanic or Latino**	66	194,892	214,232	214,232	-9.03	0.00
	Non-Hispanic or Latino	867	4,061,918	4,042,578	4,042,578	0.48	-0.00
Gender	**Male**	405	2,018,304	2,018,304	2,018,304	0.00	0.00
	Female	528	2,238,506	2,238,506	2,238,506	0.00	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.43 2018 NSDUH Slippage Rates: SOUTH DAKOTA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		941	716,559	716,559	716,559	0.00	0.00
Quarter	**Quarter 1**	241	178,305	178,305	178,305	0.00	0.00
	Quarter 2	268	178,838	178,838	178,838	0.00	0.00
	Quarter 3	198	179,423	179,423	179,423	0.00	0.00
	Quarter 4	234	179,993	179,993	179,993	0.00	0.00
Age Group	**12-17**	233	69,021	69,021	69,021	0.00	0.00
	18-25	213	92,880	92,383	92,383	0.54	0.00
	26-34	136	99,532	100,772	100,772	-1.23	0.00
	35-49	212	148,835	148,091	148,091	0.50	0.00
	50-64	90	194,306	165,657	165,657	17.29	0.00
	65+	57	111,986	140,636	140,636	-20.37	0.00
Race	**White**	769	617,209	621,230	621,230	-0.65	0.00
	Black or African American	27	15,430	14,713	14,713	4.87	-0.00
	American Indian/Alaska Native	82	53,705	54,691	54,691	-1.80	0.00
	Asian	23	12,721	12,870	12,870	-1.16	0.00
	Two or More Races	40	17,495	13,056	13,056	34.00	0.00
Hispanicity	**Hispanic or Latino**	55	25,610	24,759	24,759	3.44	0.00
	Non-Hispanic or Latino	886	690,950	691,800	691,800	-0.12	0.00
Gender	**Male**	476	358,931	358,287	358,287	0.18	0.00
	Female	465	357,628	358,273	358,273	-0.18	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.44 2018 NSDUH Slippage Rates: TENNESSEE

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		948	5,671,414	5,671,414	5,671,414	0.00	0.00
Quarter	**Quarter 1**	287	1,411,966	1,411,966	1,411,966	0.00	0.00
	Quarter 2	182	1,415,658	1,415,658	1,415,658	-0.00	0.00
	Quarter 3	260	1,419,855	1,419,855	1,419,855	0.00	-0.00
	Quarter 4	219	1,423,936	1,423,936	1,423,936	-0.00	0.00
Age Group	**12-17**	254	511,583	511,583	511,583	-0.00	-0.00
	18-25	252	691,504	689,294	689,294	0.32	0.00
	26-34	131	797,063	811,786	811,786	-1.81	0.00
	35-49	179	1,296,796	1,260,039	1,260,039	2.92	0.00
	50-64	81	1,468,337	1,316,788	1,316,788	11.51	-0.00
	65+	51	906,130	1,081,923	1,081,923	-16.25	0.00
Race	**White**	705	4,382,345	4,522,672	4,522,672	-3.10	0.00
	Black or African American	160	913,498	925,299	925,299	-1.28	-0.00
	American Indian/Alaska Native	21	103,627	25,527	25,527	305.95	0.00
	Asian	16	132,309	112,356	112,356	17.76	0.00
	Two or More Races	46	139,635	85,559	85,559	63.20	0.00
Hispanicity	**Hispanic or Latino**	104	312,185	270,446	270,446	15.43	0.00
	Non-Hispanic or Latino	844	5,359,228	5,400,967	5,400,967	-0.77	-0.00
Gender	**Male**	448	2,701,319	2,722,978	2,722,978	-0.80	0.00
	Female	500	2,970,095	2,948,436	2,948,436	0.73	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.45 2018 NSDUH Slippage Rates: TEXAS

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		3,307	23,305,572	23,305,572	23,305,572	-0.00	0.00
Quarter	**Quarter 1**	802	5,791,397	5,791,397	5,791,397	-0.00	0.00
	Quarter 2	884	5,813,744	5,813,744	5,813,744	0.00	0.00
	Quarter 3	851	5,838,179	5,838,179	5,838,179	-0.00	-0.00
	Quarter 4	770	5,862,252	5,862,252	5,862,252	0.00	-0.00
Age Group	**12-17**	770	2,465,861	2,474,930	2,474,930	-0.37	-0.00
	18-25	887	3,091,643	3,110,009	3,110,009	-0.59	0.00
	26-34	498	3,694,630	3,699,178	3,699,178	-0.12	-0.00
	35-49	663	5,627,843	5,606,107	5,606,107	0.39	0.00
	50-64	283	4,845,223	4,891,872	4,891,872	-0.95	-0.00
	65+	206	3,580,372	3,523,476	3,523,476	1.61	0.00
Race	**White**	2,420	17,349,484	18,484,426	18,484,426	-6.14	0.00
	Black or African American	480	3,166,490	2,910,976	2,910,976	8.78	-0.00
	American Indian/Alaska Native	107	770,322	242,194	242,194	218.06	-0.00
	Asian	161	1,386,067	1,284,800	1,284,800	7.88	0.00
	Two or More Races	139	633,209	383,176	383,176	65.25	0.00
Hispanicity	**Hispanic or Latino**	1,539	8,806,447	8,794,843	8,794,843	0.13	-0.00
	Non-Hispanic or Latino	1,768	14,499,125	14,510,729	14,510,729	-0.08	0.00
Gender	**Male**	1,573	11,366,016	11,384,642	11,384,642	-0.16	0.00
	Female	1,734	11,939,555	11,920,930	11,920,930	0.16	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.46 2018 NSDUH Slippage Rates: UTAH

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,001	2,514,542	2,514,542	2,514,542	-0.00	0.00
Quarter	**Quarter 1**	195	623,060	623,060	623,060	-0.00	0.00
	Quarter 2	282	626,682	626,682	626,682	-0.00	0.00
	Quarter 3	248	630,519	630,519	630,519	0.00	0.00
	Quarter 4	276	634,281	634,281	634,281	0.00	0.00
Age Group	**12-17**	231	308,811	309,836	309,836	-0.33	0.00
	18-25	247	406,730	402,825	402,825	0.97	0.00
	26-34	162	408,841	407,652	407,652	0.29	0.00
	35-49	198	591,380	600,670	600,670	-1.55	0.00
	50-64	87	425,968	447,118	447,118	-4.73	0.00
	65+	76	372,813	346,440	346,440	7.61	0.00
Race	**White**	899	2,256,077	2,292,561	2,292,561	-1.59	0.00
	Black or African American	16	36,659	34,113	34,113	7.46	0.00
	American Indian/Alaska Native	20	57,156	35,796	35,796	59.67	-0.00
	Asian	34	110,844	99,044	99,044	11.91	0.00
	Two or More Races	32	53,805	53,029	53,029	1.46	0.00
Hispanicity	**Hispanic or Latino**	168	339,405	332,522	332,522	2.07	0.00
	Non-Hispanic or Latino	833	2,175,137	2,182,020	2,182,020	-0.32	-0.00
Gender	**Male**	491	1,254,548	1,254,548	1,254,548	-0.00	0.00
	Female	510	1,259,994	1,259,994	1,259,994	-0.00	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.47 2018 NSDUH Slippage Rates: VERMONT

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		947	545,944	545,944	545,944	0.00	-0.00
Quarter	**Quarter 1**	277	136,281	136,281	136,281	0.00	-0.00
	Quarter 2	233	136,409	136,409	136,409	0.00	0.00
	Quarter 3	207	136,568	136,568	136,568	0.00	0.00
	Quarter 4	230	136,686	136,686	136,686	0.00	0.00
Age Group	**12-17**	246	41,379	41,379	41,379	0.00	-0.00
	18-25	214	74,079	74,542	74,542	-0.62	0.00
	26-34	135	68,582	65,598	65,598	4.55	-0.00
	35-49	196	103,424	108,330	108,330	-4.53	0.00
	50-64	81	132,793	138,180	138,180	-3.90	0.00
	65+	75	125,686	117,915	117,915	6.59	0.00
Race	**White**	892	511,799	516,675	516,675	-0.94	-0.00
	Black or African American	18	7,330	7,021	7,021	4.40	0.00
	American Indian/Alaska Native	7	3,369	2,150	2,150	56.71	-0.00
	Asian	9	11,073	11,223	11,223	-1.34	-0.00
	Two or More Races	21	12,373	8,875	8,875	39.42	0.00
Hispanicity	**Hispanic or Latino**	35	12,724	10,147	10,147	25.40	-0.00
	Non-Hispanic or Latino	912	533,220	535,797	535,797	-0.48	0.00
Gender	**Male**	437	268,500	267,901	267,901	0.22	-0.00
	Female	510	277,444	278,042	278,042	-0.22	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.48 2018 NSDUH Slippage Rates: VIRGINIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		1,516	7,066,751	7,066,751	7,066,751	0.00	-0.00
Quarter	**Quarter 1**	329	1,761,641	1,761,640	1,761,641	0.00	-0.00
	Quarter 2	379	1,764,700	1,764,700	1,764,700	0.00	0.00
	Quarter 3	437	1,768,406	1,768,406	1,768,406	0.00	0.00
	Quarter 4	371	1,772,005	1,772,005	1,772,005	0.00	0.00
Age Group	**12-17**	369	629,189	629,687	629,687	-0.08	0.00
	18-25	339	864,346	873,344	873,344	-1.03	0.00
	26-34	230	1,024,522	1,010,749	1,010,749	1.36	0.00
	35-49	336	1,593,292	1,603,835	1,603,835	-0.66	-0.00
	50-64	121	1,494,130	1,659,480	1,659,480	-9.96	0.00
	65+	121	1,461,271	1,289,657	1,289,657	13.31	0.00
Race	**White**	922	4,796,367	4,992,286	4,992,286	-3.92	-0.00
	Black or African American	323	1,377,640	1,359,822	1,359,822	1.31	0.00
	American Indian/Alaska Native	54	160,835	52,418	37,472	329.21	39.88
	Asian	137	499,750	492,392	507,338	-1.50	-2.95
	Two or More Races	80	232,159	169,834	169,834	36.70	0.00
Hispanicity	**Hispanic or Latino**	179	639,967	617,515	617,515	3.64	0.00
	Non-Hispanic or Latino	1,337	6,426,784	6,449,237	6,449,237	-0.35	0.00
Gender	**Male**	726	3,391,363	3,396,583	3,396,583	-0.15	0.00
	Female	790	3,675,388	3,670,169	3,670,169	0.14	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.49 2018 NSDUH Slippage Rates: WASHINGTON

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		957	6,307,741	6,307,741	6,307,741	-0.00	-0.00
Quarter	**Quarter 1**	241	1,567,203	1,567,203	1,567,203	-0.00	-0.00
	Quarter 2	288	1,573,397	1,573,397	1,573,397	-0.00	0.00
	Quarter 3	235	1,580,217	1,580,217	1,580,217	0.00	0.00
	Quarter 4	193	1,586,925	1,586,925	1,586,925	-0.00	-0.00
Age Group	**12-17**	196	543,771	543,771	543,771	0.00	-0.00
	18-25	272	741,837	738,106	738,106	0.51	0.00
	26-34	134	971,040	1,012,550	1,012,550	-4.10	0.00
	35-49	218	1,484,090	1,453,818	1,453,818	2.08	0.00
	50-64	78	1,550,021	1,412,900	1,412,900	9.70	0.00
	65+	59	1,016,983	1,146,597	1,146,598	-11.30	-0.00
Race	**White**	711	4,923,376	5,045,049	5,045,049	-2.41	-0.00
	Black or African American	42	239,958	250,479	250,479	-4.20	0.00
	American Indian/Alaska Native	36	162,527	108,833	108,833	49.34	0.00
	Asian	113	697,740	655,465	655,465	6.45	0.00
	Two or More Races	55	284,141	247,916	247,916	14.61	0.00
Hispanicity	**Hispanic or Latino**	169	703,470	713,867	713,867	-1.46	0.00
	Non-Hispanic or Latino	788	5,604,271	5,593,874	5,593,875	0.19	-0.00
Gender	**Male**	461	3,143,674	3,114,294	3,114,294	0.94	-0.00
	Female	496	3,164,067	3,193,447	3,193,447	-0.92	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.50 2018 NSDUH Slippage Rates: WEST VIRGINIA

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		960	1,539,009	1,539,009	1,539,009	0.00	-0.00
Quarter	**Quarter 1**	213	385,428	385,428	385,428	0.00	-0.00
	Quarter 2	235	384,926	384,926	384,926	0.00	0.00
	Quarter 3	238	384,546	384,546	384,546	0.00	0.00
	Quarter 4	274	384,110	384,110	384,110	0.00	-0.00
Age Group	**12-17**	224	123,708	125,051	125,051	-1.07	0.00
	18-25	237	177,464	175,963	175,963	0.85	-0.00
	26-34	154	187,833	187,400	187,400	0.23	-0.00
	35-49	202	325,918	326,509	326,509	-0.18	-0.00
	50-64	80	418,496	372,804	372,804	12.26	0.00
	65+	63	305,591	351,282	351,282	-13.01	-0.00
Race	**White**	881	1,438,861	1,449,361	1,449,361	-0.72	0.00
	Black or African American	43	60,993	50,977	50,977	19.65	0.00
	American Indian/Alaska Native	4	2,476	1,525	3,843	-35.57	-60.32
	Asian	7	18,616	16,130	13,812	34.78	16.78
	Two or More Races	25	18,064	21,017	21,017	-14.05	-0.00
Hispanicity	**Hispanic or Latino**	24	19,755	22,508	22,508	-12.23	0.00
	Non-Hispanic or Latino	936	1,519,254	1,516,501	1,516,501	0.18	-0.00
Gender	**Male**	441	752,743	753,615	753,615	-0.12	-0.00
	Female	519	786,266	785,394	785,395	0.11	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.51 2018 NSDUH Slippage Rates: WISCONSIN

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		969	4,910,679	4,910,679	4,910,679	0.00	0.00
Quarter	**Quarter 1**	250	1,225,015	1,225,015	1,225,015	0.00	0.00
	Quarter 2	269	1,226,627	1,226,627	1,226,627	0.00	0.00
	Quarter 3	288	1,228,626	1,228,626	1,228,626	0.00	0.00
	Quarter 4	162	1,230,411	1,230,411	1,230,411	0.00	0.00
Age Group	**12-17**	260	438,842	442,761	442,761	-0.89	0.00
	18-25	255	620,178	619,296	619,296	0.14	0.00
	26-34	121	642,923	646,476	646,476	-0.55	0.00
	35-49	210	1,041,827	1,042,273	1,042,273	-0.04	0.00
	50-64	67	1,137,044	1,198,514	1,198,514	-5.13	0.00
	65+	56	1,029,864	961,359	961,359	7.13	0.00
Race	**White**	793	4,259,060	4,348,990	4,348,990	-2.07	0.00
	Black or African American	85	319,349	291,959	291,959	9.38	0.00
	American Indian/Alaska Native	34	108,885	51,100	51,100	113.08	0.00
	Asian	37	149,862	145,543	145,543	2.97	0.00
	Two or More Races	20	73,524	73,087	73,087	0.60	0.00
Hispanicity	**Hispanic or Latino**	106	299,910	298,979	298,979	0.31	0.00
	Non-Hispanic or Latino	863	4,610,768	4,611,699	4,611,699	-0.02	0.00
Gender	**Male**	472	2,395,934	2,419,182	2,419,182	-0.96	0.00
	Female	497	2,514,744	2,491,497	2,491,497	0.93	0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table H.52 2018 NSDUH Slippage Rates: WYOMING

Domain		*n*	Initial Total (I)[1]	Final Total (F)[2]	Census Total (C)	(I-C)/C%	(F-C)/C%
Total		950	477,990	477,989	477,990	0.00	-0.00
Quarter	**Quarter 1**	259	119,442	119,441	119,442	0.00	-0.00
	Quarter 2	213	119,456	119,456	119,456	0.00	-0.00
	Quarter 3	235	119,521	119,521	119,521	0.00	-0.00
	Quarter 4	243	119,572	119,572	119,572	0.00	0.00
Age Group	**12-17**	231	44,285	44,561	44,561	-0.62	-0.00
	18-25	259	58,599	57,445	57,445	2.01	-0.00
	26-34	151	67,921	68,187	68,187	-0.39	-0.00
	35-49	184	101,066	103,350	103,350	-2.21	0.00
	50-64	71	116,428	111,435	111,435	4.48	0.00
	65+	54	89,690	93,012	93,012	-3.57	-0.00
Race	**White**	858	443,474	446,627	446,627	-0.71	0.00
	Black or African American	10	5,738	5,599	5,599	2.48	0.00
	American Indian/Alaska Native	30	15,120	11,749	11,749	28.69	0.00
	Asian	4	2,010	5,771	5,771	-65.17	-0.00
	Two or More Races	48	11,648	8,244	8,244	41.29	0.00
Hispanicity	**Hispanic or Latino**	120	48,891	43,619	43,619	12.09	-0.00
	Non-Hispanic or Latino	830	429,098	434,370	434,370	-1.21	-0.00
Gender	**Male**	467	241,840	241,381	241,381	0.19	0.00
	Female	483	236,150	236,609	236,609	-0.19	-0.00

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

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Appendix I: Evaluation of Calibration Weights: Weight Summary Statistics

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Table I.1 2018 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	*n*	Before res.du.nr (WT1*...*WT8)[1]						After res.du.nr & Before res.du.ps (WT1*...*WT9)[1]						After res.du.ps (WT1*...*WT10)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
United States	141,879	35	315	602	820	5,906	1.34	36	416	797	1,123	4,371	1.39	20	424	849	1,228	8,909	1.45
Alaska	1,841	81	83	89	98	398	1.02	90	113	123	140	334	1.03	48	124	143	164	456	1.07
Alabama	1,934	691	713	811	837	1,095	1.02	714	855	925	1,065	1,542	1.04	183	860	1,007	1,192	3,632	1.08
Arkansas	1,874	446	462	530	549	613	1.01	446	544	594	642	871	1.02	93	562	643	731	3,341	1.07
Arizona	1,597	149	926	1,023	1,114	1,182	1.01	778	1,169	1,462	1,674	4,208	1.09	323	1,331	1,671	1,987	7,313	1.13
California	8,605	842	912	945	989	2,496	1.02	1,004	1,317	1,451	1,581	4,000	1.05	669	1,341	1,524	1,764	7,417	1.09
Colorado	1,894	484	735	764	843	2,901	1.20	484	912	1,027	1,219	3,858	1.24	210	946	1,105	1,296	5,025	1.17
Connecticut	2,129	308	315	446	469	499	1.03	354	487	618	708	1,317	1.06	157	501	641	729	3,107	1.11
District of Columbia	3,555	35	36	39	49	343	1.39	36	59	78	102	359	1.30	20	58	77	102	494	1.29
Delaware	2,310	78	79	92	117	408	1.08	86	111	123	184	450	1.13	43	118	150	200	601	1.17
Florida	6,989	638	698	744	770	4,811	1.07	671	929	1,026	1,120	3,845	1.08	261	1,006	1,168	1,370	5,139	1.08
Georgia	2,825	860	877	895	945	1,754	1.02	938	1,089	1,191	1,328	4,371	1.05	285	1,195	1,330	1,515	4,984	1.07
Hawaii	2,238	80	110	112	124	178	1.02	113	159	169	188	537	1.07	63	168	193	230	892	1.11
Iowa	2,300	326	338	408	424	769	1.05	357	452	516	575	1,012	1.05	165	454	501	630	2,833	1.12
Idaho	1,744	145	243	259	292	498	1.01	240	278	307	372	1,337	1.08	93	305	349	419	1,642	1.10
Illinois	4,678	245	521	555	691	976	1.02	245	748	857	982	4,088	1.19	279	803	931	1,119	8,426	1.21
Indiana	1,986	658	753	779	960	1,552	1.02	810	1,022	1,197	1,359	3,325	1.03	308	1,094	1,264	1,490	5,057	1.07
Kansas	1,769	386	399	409	517	598	1.03	413	497	567	665	1,589	1.06	105	517	611	754	2,985	1.10
Kentucky	1,806	649	668	709	785	928	1.02	694	824	895	1,002	2,402	1.03	239	851	979	1,135	3,138	1.06
Louisiana	1,943	564	596	738	756	789	1.01	610	751	832	879	1,157	1.02	133	801	952	1,065	3,647	1.06
Massachusetts	2,175	661	737	874	1,010	1,048	1.02	754	1,086	1,187	1,362	2,253	1.03	315	1,069	1,236	1,424	6,027	1.11
Maryland	2,003	642	662	756	893	925	1.01	705	947	1,066	1,266	3,441	1.05	196	932	1,113	1,306	3,580	1.09
Maine	2,280	161	167	179	197	390	1.03	165	207	222	275	368	1.03	44	219	245	276	1,106	1.09
Michigan	5,152	467	483	596	609	1,278	1.02	467	660	733	804	2,750	1.08	138	687	765	858	2,906	1.05
Minnesota	1,742	723	742	876	1,074	1,240	1.04	785	910	1,108	1,531	2,991	1.08	294	932	1,151	1,558	5,467	1.14
Missouri	2,079	739	770	841	992	2,125	1.03	760	933	1,022	1,182	2,260	1.04	263	1,019	1,171	1,394	7,242	1.08

(continued)

Table I.1 2018 NSDUH Dwelling Unit–Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before res.du.nr (WT1*...*WT8)[1]						After res.du.nr & Before res.du.ps (WT1*...*WT9)[1]						After res.du.ps (WT1*...*WT10)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
Mississippi	1,767	390	412	566	589	654	1.03	409	471	657	704	943	1.03	141	529	677	738	2,613	1.08
Montana	2,702	92	102	111	135	181	1.03	106	125	135	163	313	1.05	38	133	151	184	531	1.07
North Carolina	2,814	977	1,021	1,077	1,155	1,221	1.00	1,037	1,272	1,402	1,562	2,127	1.02	443	1,299	1,483	1,705	5,256	1.05
North Dakota	2,442	70	72	91	101	153	1.04	72	94	107	120	193	1.04	26	97	119	149	532	1.12
Nebraska	1,818	251	263	292	314	409	1.03	275	332	367	414	1,542	1.06	113	346	402	472	2,547	1.11
New Hampshire	2,275	119	122	174	177	246	1.04	121	163	221	251	760	1.07	33	190	240	277	1,142	1.09
New Jersey	3,346	600	615	662	669	5,906	1.12	618	793	968	1,130	2,709	1.07	201	748	938	1,136	4,706	1.12
New Mexico	1,871	251	260	267	311	724	1.03	269	316	340	393	523	1.03	97	362	421	506	1,534	1.09
Nevada	1,713	350	364	410	452	1,408	1.10	358	457	633	730	1,882	1.15	92	479	634	840	4,524	1.23
New York	7,485	461	486	525	596	1,512	1.02	503	719	829	1,036	3,469	1.15	211	721	866	1,095	6,632	1.27
Ohio	5,247	543	600	609	625	738	1.00	595	757	790	886	1,877	1.02	247	823	900	1,003	4,050	1.05
Oklahoma	2,015	373	387	460	609	763	1.06	373	514	629	823	3,018	1.14	146	544	686	894	3,163	1.17
Oregon	2,425	387	400	456	501	750	1.01	449	514	604	677	1,060	1.04	271	569	657	764	2,472	1.07
Pennsylvania	5,819	532	583	598	607	1,361	1.01	546	715	776	866	2,858	1.04	208	774	846	952	5,278	1.06
Rhode Island	2,239	109	114	120	143	147	1.01	126	153	174	208	540	1.08	38	155	180	212	1,106	1.15
South Carolina	1,764	308	616	677	843	874	1.02	340	826	910	1,093	2,205	1.04	212	957	1,107	1,290	3,785	1.08
South Dakota	1,943	102	106	133	147	217	1.02	102	146	164	181	508	1.03	39	152	168	199	753	1.08
Tennessee	1,829	962	994	1,085	1,118	1,234	1.01	1,047	1,181	1,262	1,362	2,653	1.02	329	1,308	1,474	1,670	4,713	1.07
Texas	5,270	1,148	1,267	1,327	1,373	4,317	1.01	1,227	1,512	1,591	1,720	3,851	1.02	279	1,643	1,874	2,180	8,909	1.08
Utah	1,445	443	465	531	584	664	1.01	450	545	626	669	905	1.02	109	621	704	808	3,196	1.08
Virginia	3,328	424	679	697	824	1,090	1.02	601	816	921	1,043	2,738	1.05	134	842	976	1,134	2,972	1.07
Vermont	2,424	60	70	78	84	100	1.02	67	84	99	106	312	1.03	20	91	105	117	569	1.11
Washington	1,950	858	895	1,137	1,228	1,286	1.02	953	1,103	1,456	1,546	2,745	1.04	641	1,266	1,481	1,699	4,953	1.06
Wisconsin	2,230	619	645	672	735	1,124	1.04	681	761	854	1,017	2,088	1.05	351	832	946	1,214	4,200	1.09
West Virginia	2,341	193	203	222	240	260	1.01	221	269	291	311	453	1.01	97	282	309	348	1,006	1.04
Wyoming	1,929	79	81	92	96	123	1.01	79	94	100	119	254	1.07	24	105	117	139	425	1.09

[1] WT1*…*WT8 are design-based weight components; nr = nonresponse adjustment; ps = poststratification adjustment.

[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table I.2 2018 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	*n*	Before sel.per.ps (WT1*...*WT12)[1]						After sel.per.ps (WT1*...*WT13)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
United States	99,111	21	885	1,743	3,400	63,753	2.19	9	869	1,738	3,417	51,244	2.19
Alaska	1,357	60	185	334	490	2,673	1.55	40	186	328	509	2,730	1.68
Alabama	1,279	290	1,473	2,217	3,400	17,133	1.74	73	1,414	2,231	3,450	17,577	1.81
Arkansas	1,313	154	846	1,294	2,276	8,160	1.64	48	839	1,305	2,342	9,271	1.67
Arizona	1,192	341	2,035	3,160	5,438	33,624	1.82	262	2,044	3,203	5,834	31,280	1.89
California	7,275	735	2,023	3,607	5,462	63,753	1.64	670	2,074	3,619	5,411	24,722	1.55
Colorado	1,376	242	1,225	2,192	4,122	28,937	1.94	204	1,237	2,167	4,114	18,426	1.90
Connecticut	1,639	175	729	1,262	2,098	11,439	1.91	125	705	1,190	2,072	23,053	2.15
District of Columbia	1,301	21	128	347	625	3,489	1.82	21	133	363	645	2,664	1.79
Delaware	1,498	52	182	323	572	4,318	2.17	46	181	335	619	4,785	2.18
Florida	4,839	350	1,319	2,568	4,014	50,867	2.06	407	1,338	2,395	3,927	31,711	2.07
Georgia	2,049	448	1,949	3,343	5,193	34,832	1.55	419	1,965	3,343	5,506	21,236	1.50
Hawaii	1,564	88	255	531	925	7,876	1.80	85	258	526	1,028	4,306	1.73
Iowa	1,450	229	832	1,317	1,956	10,737	1.68	68	769	1,222	1,975	19,925	1.84
Idaho	1,300	128	447	756	1,292	5,788	1.73	123	429	783	1,436	8,471	1.76
Illinois	3,846	417	1,125	1,896	3,014	32,927	1.93	312	1,123	1,899	3,152	24,667	1.82
Indiana	1,401	457	1,749	2,907	4,310	27,188	1.75	468	1,813	2,896	4,338	19,256	1.68
Kansas	1,355	106	765	1,271	1,894	12,744	1.82	29	755	1,272	2,022	9,645	1.76
Kentucky	1,433	241	1,171	1,897	2,771	12,471	1.68	66	1,163	1,815	2,912	15,637	1.73
Louisiana	1,338	170	1,115	2,065	3,265	17,737	1.72	50	1,104	1,950	3,552	20,481	1.80
Massachusetts	1,536	469	1,712	2,813	4,206	30,182	1.72	282	1,699	2,754	4,279	19,715	1.72
Maryland	1,303	309	1,495	2,803	4,666	28,825	1.66	240	1,434	2,676	5,030	28,624	1.80
Maine	1,430	47	264	493	798	10,304	2.20	13	272	486	857	6,738	2.22
Michigan	3,450	273	1,083	1,807	2,632	12,748	1.65	254	1,095	1,717	2,659	19,202	1.77
Minnesota	1,313	453	1,466	2,405	4,225	43,286	1.94	198	1,426	2,294	4,429	20,660	1.90
Missouri	1,316	353	1,579	2,800	4,627	19,679	1.69	71	1,581	2,742	4,442	22,326	1.77

(continued)

Table I.2 2018 NSDUH Selected Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before sel.per.ps (WT1*...*WT12)[1]						After sel.per.ps (WT1*...*WT13)[1]					
		Min	Q1[2]	Med	Q3[2]	Max	UWE[3]	Min	Q1[2]	Med	Q3[2]	Max	UWE[3]
Mississippi	1,347	142	709	1,219	2,200	11,454	1.70	44	692	1,217	2,308	11,075	1.74
Montana	1,468	47	254	455	655	3,133	1.87	50	250	434	638	3,569	1.81
North Carolina	2,076	548	1,760	3,054	5,118	17,172	1.61	347	1,722	3,083	5,283	16,248	1.61
North Dakota	1,499	55	197	300	475	2,680	1.71	26	191	312	485	2,953	1.69
Nebraska	1,377	141	505	873	1,378	10,472	1.75	34	496	822	1,357	9,732	1.71
New Hampshire	1,444	50	283	520	878	5,942	2.01	35	292	485	875	12,704	2.23
New Jersey	2,442	232	1,158	2,100	3,547	31,728	1.80	218	1,159	2,040	3,705	19,138	1.90
New Mexico	1,240	107	585	972	1,539	6,856	1.71	26	563	949	1,640	17,525	1.96
Nevada	1,394	93	753	1,297	2,336	13,488	1.82	19	746	1,249	2,296	14,670	1.83
New York	5,187	293	1,160	2,091	3,677	58,464	2.18	296	1,182	2,079	3,814	32,834	1.99
Ohio	3,697	319	1,091	2,002	2,961	21,761	1.73	280	1,107	1,950	2,963	14,665	1.71
Oklahoma	1,461	164	907	1,599	2,936	24,697	1.75	98	879	1,553	2,770	16,668	1.78
Oregon	1,494	360	909	1,856	2,845	19,146	1.78	306	929	1,757	2,718	21,614	1.79
Pennsylvania	3,521	234	1,165	2,257	3,274	31,309	1.80	158	1,183	2,182	3,408	26,186	1.84
Rhode Island	1,417	71	269	452	716	9,714	1.98	57	253	430	784	5,517	1.87
South Carolina	1,227	366	1,396	2,341	3,674	24,749	1.79	223	1,389	2,373	3,790	21,827	1.88
South Dakota	1,336	44	245	366	545	4,453	1.77	9	247	375	562	3,257	1.80
Tennessee	1,327	348	1,617	2,702	5,128	25,141	1.73	300	1,555	2,820	5,327	29,323	1.77
Texas	4,459	283	2,371	4,123	6,737	32,529	1.49	173	2,409	4,204	6,782	51,244	1.52
Utah	1,341	110	951	1,562	2,377	14,065	1.51	70	1,042	1,609	2,417	7,418	1.38
Virginia	2,146	136	1,446	2,399	3,608	19,210	1.64	69	1,457	2,387	3,812	20,505	1.69
Vermont	1,459	40	128	255	372	4,661	2.23	16	137	252	377	1,874	2.00
Washington	1,431	795	1,729	3,396	5,263	25,110	1.66	626	1,672	3,097	5,168	31,927	1.80
Wisconsin	1,398	411	1,281	2,282	3,452	24,628	1.92	230	1,290	2,289	3,555	23,520	2.14
West Virginia	1,533	107	398	693	1,086	7,793	1.85	95	391	668	1,079	6,620	1.92
Wyoming	1,237	35	147	266	420	2,466	1.83	29	154	281	420	2,100	1.80

[1] WT1*...*WT12 and WT1*...*WT13 used demographic variables from screener data; ps = poststratification adjustment.

[2] Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

Table I.3 2018 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States

Domain	*n*	Before res.per.nr (WT1*...*WT13)[1]						After res.per.nr (WT1*...*WT14)[1]						Before res.per.ps (WT1*...*WT14)[2]						Final Weight After res.per.ps (WT1*...*WT15)[2]					
		Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]
United States	67,791	9	851	1,689	3,294	51,244	2.21	9	1,148	2,392	4,892	66,685	2.40	9	1,148	2,392	4,892	66,685	2.40	3	1,079	2,378	4,894	80,610	2.49
Alaska	952	40	178	318	509	2,730	1.71	42	243	454	804	5,684	1.74	42	243	454	804	5,684	1.74	33	243	457	790	4,016	1.75
Alabama	935	73	1,356	2,163	3,232	14,769	1.82	98	1,832	2,817	4,667	30,564	2.17	98	1,832	2,817	4,667	30,564	2.17	42	1,796	2,810	4,625	35,577	2.26
Arkansas	999	48	809	1,238	2,265	9,271	1.69	48	981	1,665	3,018	17,720	1.87	48	981	1,665	3,018	17,720	1.87	13	979	1,659	3,000	16,185	1.92
Arizona	871	262	2,025	3,118	5,701	31,280	1.91	393	2,458	4,292	8,497	46,633	2.00	393	2,458	4,292	8,497	46,633	2.00	79	2,420	4,496	8,322	50,754	2.07
California	4,540	687	1,981	3,437	5,147	24,722	1.57	839	2,976	5,254	8,881	47,759	1.78	839	2,976	5,254	8,881	47,759	1.78	277	2,875	5,196	9,125	49,707	1.89
Colorado	955	253	1,232	2,153	3,918	18,426	1.89	264	1,669	3,036	5,704	51,525	2.18	264	1,669	3,036	5,704	51,525	2.18	151	1,682	3,154	5,966	41,213	2.16
Connecticut	1,006	125	667	1,117	1,949	23,053	2.29	125	1,002	1,797	3,364	39,961	2.37	125	1,002	1,797	3,364	39,961	2.37	30	954	1,803	3,472	28,023	2.32
District of Columbia	975	21	129	336	614	2,664	1.78	24	160	433	872	3,699	1.93	24	160	433	872	3,699	1.93	14	153	418	856	3,799	1.99
Delaware	985	46	181	335	603	3,848	2.12	69	265	474	970	6,155	2.36	69	265	474	970	6,155	2.36	19	237	476	964	6,926	2.40
Florida	3,462	407	1,302	2,279	3,857	31,711	2.08	418	1,780	3,066	5,702	54,709	2.23	418	1,780	3,066	5,702	54,709	2.23	139	1,784	3,095	5,794	47,911	2.27
Georgia	1,488	515	1,873	3,150	5,194	21,236	1.53	515	2,380	4,289	7,833	53,321	1.66	515	2,380	4,289	7,833	53,321	1.66	211	2,332	4,261	7,841	33,844	1.70
Hawaii	1,045	85	250	494	959	4,306	1.79	88	346	735	1,590	6,866	1.89	88	346	735	1,590	6,866	1.89	55	341	750	1,566	6,884	1.92
Iowa	959	68	769	1,242	2,053	19,925	1.88	100	1,147	1,887	3,260	18,776	1.76	100	1,147	1,887	3,260	18,776	1.76	107	1,166	1,911	3,311	20,864	1.76
Idaho	944	123	429	766	1,442	8,471	1.80	127	559	1,012	2,052	13,335	1.83	127	559	1,012	2,052	13,335	1.83	25	568	1,048	1,934	11,803	1.84
Illinois	2,372	384	1,066	1,792	2,944	24,667	1.87	452	1,697	2,942	5,523	41,328	1.95	452	1,697	2,942	5,523	41,328	1.95	132	1,608	2,938	5,653	55,153	2.11
Indiana	996	468	1,771	2,887	4,226	16,761	1.67	470	2,361	3,805	6,472	29,255	1.79	470	2,361	3,805	6,472	29,255	1.79	308	2,320	3,753	6,482	43,679	1.87
Kansas	960	29	734	1,232	1,996	9,645	1.79	140	957	1,713	2,853	13,549	1.86	140	957	1,713	2,853	13,549	1.86	62	993	1,708	2,872	20,240	1.96
Kentucky	972	216	1,169	1,788	2,839	13,320	1.69	256	1,621	2,473	4,178	24,456	1.96	256	1,621	2,473	4,178	24,456	1.96	88	1,612	2,481	4,336	26,935	1.96
Louisiana	1,006	50	1,072	1,854	3,368	19,001	1.80	50	1,369	2,497	4,736	33,413	1.95	50	1,369	2,497	4,736	33,413	1.95	10	1,328	2,489	4,582	47,298	2.14
Massachusetts	963	449	1,642	2,771	4,368	17,959	1.72	515	2,463	4,321	7,712	35,004	1.82	515	2,463	4,321	7,712	35,004	1.82	182	2,564	4,326	7,528	33,125	1.84
Maryland	936	240	1,450	2,665	4,919	26,756	1.79	322	1,890	3,591	6,590	58,838	2.04	322	1,890	3,591	6,590	58,838	2.04	82	1,801	3,568	6,372	59,439	2.04
Maine	967	13	275	484	891	6,738	2.23	65	402	711	1,269	8,303	2.20	65	402	711	1,269	8,303	2.20	23	396	705	1,303	8,639	2.29
Michigan	2,431	254	1,058	1,634	2,587	17,502	1.77	324	1,406	2,312	3,959	24,703	1.84	324	1,406	2,312	3,959	24,703	1.84	218	1,392	2,327	3,942	38,101	1.93
Minnesota	928	198	1,375	2,246	4,165	20,230	1.95	198	1,759	3,194	6,605	30,598	1.96	198	1,759	3,194	6,605	30,598	1.96	85	1,793	3,313	6,517	46,888	2.02
Missouri	980	71	1,589	2,622	4,367	22,326	1.79	95	2,054	3,390	6,306	30,056	1.85	95	2,054	3,390	6,306	30,056	1.85	140	1,999	3,500	6,220	32,465	1.94

(continued)

Table I.3 2018 NSDUH Respondent Person-Level Weight Summary Statistics: United States, District of Columbia, and the 50 States (continued)

Domain	*n*	Before res.per.nr (WT1*...*WT13)[1]						After res.per.nr (WT1*...*WT14)[1]						Before res.per.ps (WT1*...*WT14)[2]						Final Weight After res.per.ps (WT1*...*WT15)[2]					
		Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]	Min	Q1[3]	Med	Q3[3]	Max	UWE[4]
Mississippi	980	46	680	1,181	2,205	11,075	1.75	46	882	1,634	2,970	17,082	1.95	46	882	1,634	2,970	17,082	1.95	12	877	1,643	2,989	26,312	2.05
Montana	972	50	247	437	658	3,569	1.82	50	357	648	1,040	6,231	1.88	50	357	648	1,040	6,231	1.88	41	356	657	1,039	5,398	1.89
North Carolina	1,451	355	1,675	2,963	5,000	16,248	1.63	356	2,207	4,191	7,878	39,322	1.76	356	2,207	4,191	7,878	39,322	1.76	157	2,195	3,996	7,917	35,969	1.81
North Dakota	965	26	187	304	483	2,953	1.72	59	288	487	779	4,121	1.72	59	288	487	779	4,121	1.72	16	289	475	784	5,162	1.80
Nebraska	966	34	496	830	1,358	5,567	1.67	71	721	1,176	2,087	10,419	1.68	71	721	1,176	2,087	10,419	1.68	20	710	1,172	2,112	13,277	1.75
New Hampshire	956	55	287	459	852	5,019	2.09	55	377	675	1,405	10,120	2.34	55	377	675	1,405	10,120	2.34	11	349	685	1,444	10,380	2.40
New Jersey	1,511	218	1,116	1,958	3,566	19,138	1.91	252	1,691	3,062	5,839	33,388	2.01	252	1,691	3,062	5,839	33,388	2.01	71	1,590	3,155	6,097	38,346	2.13
New Mexico	936	26	534	878	1,489	17,525	2.05	26	660	1,153	2,202	14,779	2.14	26	660	1,153	2,202	14,779	2.14	33	677	1,138	2,156	18,167	2.23
Nevada	986	19	731	1,227	2,296	14,670	1.85	19	951	1,734	3,296	19,066	1.94	19	951	1,734	3,296	19,066	1.94	16	894	1,699	2,979	28,324	2.40
New York	3,269	296	1,114	1,958	3,460	32,834	2.04	356	1,571	3,060	6,311	66,685	2.33	356	1,571	3,060	6,311	66,685	2.33	90	1,587	3,060	6,376	59,378	2.30
Ohio	2,465	280	1,097	1,848	2,895	13,763	1.72	283	1,532	2,751	4,506	21,441	1.83	283	1,532	2,751	4,506	21,441	1.83	173	1,546	2,711	4,495	34,567	1.91
Oklahoma	964	104	885	1,550	2,770	16,668	1.79	105	1,208	2,284	4,201	20,517	1.88	105	1,208	2,284	4,201	20,517	1.88	51	1,219	2,364	4,301	30,546	1.91
Oregon	994	306	921	1,759	2,702	11,879	1.76	318	1,343	2,476	3,903	23,749	1.94	318	1,343	2,476	3,903	23,749	1.94	94	1,352	2,524	4,079	26,144	1.95
Pennsylvania	2,383	158	1,165	2,144	3,374	22,652	1.84	158	1,674	2,989	5,053	37,662	1.99	158	1,674	2,989	5,053	37,662	1.99	54	1,692	3,050	5,093	47,051	2.03
Rhode Island	937	57	253	418	783	5,517	1.94	57	348	634	1,235	10,090	2.07	57	348	634	1,235	10,090	2.07	17	339	635	1,226	5,424	1.94
South Carolina	933	223	1,384	2,372	3,814	21,827	1.88	223	1,782	3,032	5,154	33,983	1.96	223	1,782	3,032	5,154	33,983	1.96	158	1,802	3,000	5,133	46,494	2.07
South Dakota	941	9	242	367	576	3,257	1.84	9	332	536	861	4,013	1.78	9	332	536	861	4,013	1.78	3	327	535	863	4,656	1.88
Tennessee	948	300	1,513	2,599	4,994	29,323	1.83	300	1,930	3,561	7,483	32,684	1.98	300	1,930	3,561	7,483	32,684	1.98	104	2,062	3,719	7,264	33,218	2.05
Texas	3,307	187	2,356	3,976	6,396	51,244	1.54	300	3,017	5,218	9,007	49,151	1.65	300	3,017	5,218	9,007	49,151	1.65	97	3,058	5,216	8,950	63,994	1.69
Utah	1,001	70	1,013	1,522	2,400	6,848	1.40	70	1,261	2,152	3,248	13,068	1.47	70	1,261	2,152	3,248	13,068	1.47	15	1,264	2,114	3,272	23,447	1.56
Virginia	1,516	69	1,430	2,316	3,758	20,505	1.71	89	1,963	3,351	5,543	34,276	1.75	89	1,963	3,351	5,543	34,276	1.75	23	1,976	3,319	5,686	39,389	1.85
Vermont	947	16	131	248	379	1,874	2.03	16	196	365	663	5,598	2.05	16	196	365	663	5,598	2.05	3	202	368	697	4,847	2.03
Washington	957	626	1,638	2,976	5,090	21,155	1.78	920	2,502	4,331	8,086	47,703	1.95	920	2,502	4,331	8,086	47,703	1.95	389	2,553	4,282	7,888	80,610	2.06
Wisconsin	969	230	1,263	2,195	3,463	23,520	2.17	232	1,752	3,125	5,248	39,382	2.27	232	1,752	3,125	5,248	39,382	2.27	117	1,709	3,139	5,344	37,041	2.29
West Virginia	960	96	384	656	1,025	6,620	1.96	99	600	1,002	1,669	13,291	2.10	99	600	1,002	1,669	13,291	2.10	20	600	1,000	1,699	12,189	2.14
Wyoming	950	29	152	262	398	2,100	1.80	29	182	322	536	3,332	2.09	29	182	322	536	3,332	2.09	9	181	321	555	8,440	2.29

[1] WT1*...*WT13 and WT1*...*WT14 used demographic variables from screener data; nr = nonresponse adjustment.

[2] WT1*...*WT14 and WT1*...*WT15 used demographic variables from questionnaire data; ps = poststratification adjustment.

[3] Q1 and Q3 refer to the first and third quartile of the weight distribution.

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

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2018.

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