

# The CBHSQ Report

Short Report

July 13, 2017

## STATE AND SUBSTATE ESTIMATES OF NONMEDICAL USE OF PRESCRIPTION PAIN RELIEVERS

### AUTHORS

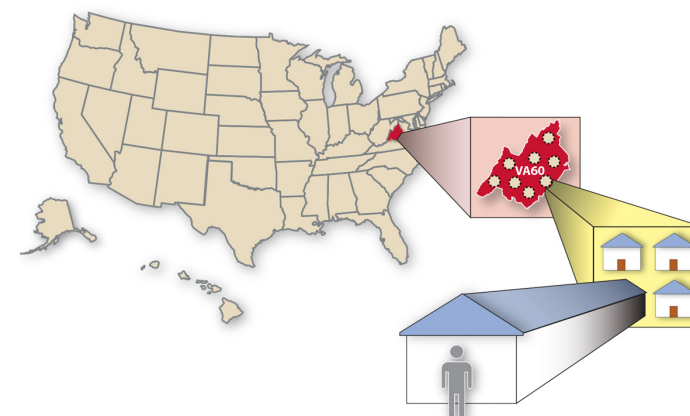
Rachel N. Lipari, Ph.D., Struther L. Van Horn, M.A., Arthur Hughes, M.S. and, Matthew Williams, Ph.D.

### INTRODUCTION

Although the vast majority of people who take prescription pain relievers do not misuse them,<sup>1</sup> pain reliever misuse is second only to marijuana use as the nation's most prevalent illicit drug problem.<sup>2</sup> As a result, the misuse of prescription pain relievers is a major public health concern, and with over 26 million people initiating nonmedical prescription pain reliever use since 2002, it is a continuing problem.<sup>3</sup> Prescription pain reliever use can be safe. When used appropriately under medical supervision, pain relievers such as hydrocodone (e.g., Vicodin®), oxycodone (e.g., OxyContin®), and methadone can be medically beneficial by reducing pain and suffering. However, when taken without a physician's direction, there is a higher risk of serious adverse consequences such as substance use disorder, overdose, or death.<sup>4,5</sup> Prescription pain reliever overdoses have resulted in nearly 15,000 deaths since 2008.<sup>6</sup> Nonmedical use of prescription pain relievers costs health insurers up to \$75.5 billion annually in direct health care costs.<sup>6</sup> Data on geographic variation in the nonmedical use of prescription pain relievers may be relevant for developing targeted prevention and treatment programs. Policymakers can use state- and substate-level information to help inform their assessments of substance abuse prevention and treatment needs in their communities.

This issue of *The CBHSQ Report* presents estimates of past year nonmedical use of prescription pain relievers for people aged 12 or older based on combined 2012–2014 National Survey on Drug Use and Health (NSDUH) data. NSDUH is an annual survey of the U.S. civilian, noninstitutionalized population aged 12 years or older. One of NSDUH's strengths is the stability of its survey design, which allows for multiple years of data to be combined to examine the national, state, and substate (e.g., local) estimates of nonmedical use of prescription pain relievers and changes across time.<sup>7</sup>

In NSDUH, respondents are asked about their nonmedical use of prescription pain relievers during the past year. Prescription pain relievers cover many medications that are or have been available by prescription.<sup>8</sup> In the 2012–2014 NSDUHs, nonmedical use of prescription pain relievers was defined as the use of these drugs without a prescription that occurred simply for the experience or feeling the drug caused.



### In Brief

- Combined 2012–2014 National Survey on Drug Use and Health data can be used to advance the understanding of the prevalence of nonmedical use of prescription pain relievers in U.S. communities.
- Nationally, 4.31 percent of people aged 12 or older used prescription pain relievers nonmedically in the past year.
- Among states, estimates of nonmedical use of prescription pain relievers ranged from 3.41 percent in Minnesota to 5.31 percent in Oklahoma.
- Among the substate regions, estimates of nonmedical use of prescription pain relievers ranged from 2.95 percent in Florida's Southern region (Circuits 11 and 16) to 5.89 percent in Colorado's Region 1.
- Of the 16 substate regions with the lowest estimates of nonmedical use of prescription pain relievers, 5 were in the Northeast, 4 were in the Midwest, 4 were in the West, and 3 were in the South.
- Of the 16 substate regions with the highest estimates of nonmedical use of prescription pain relievers, 7 were in the South, 5 were in the West, and 4 were in the Midwest.
- Comparisons of combined 2010–2012 data and combined 2012–2014 data showed that estimates of nonmedical use of prescription pain relievers decreased at the national level, within 3 census regions and in 13 states.

NSDUH estimates of past year nonmedical use of prescription pain relievers does not include over-the-counter use or legitimate use of prescription pain relievers.<sup>9</sup>

This report presents NSDUH estimates of past year nonmedical use of prescription pain relievers across four levels: (1) the nation, (2) census regions (i.e., South, Midwest, West, and Northeast), (3) states (i.e., 50 states and the District of Columbia), and (4) substate regions (i.e., 362 substate regions). This report also compares estimates of nonmedical use of prescription pain relievers in 2010–2012 and 2012–2014. All changes across time that are discussed in this report are significant at the .05 level. Findings in this report are annual averages based on combined 2012–2014 NSDUH data from approximately 204,000 respondents aged 12 or older. Estimates were derived from a complex statistical model (i.e., small area estimation) in which substate data from NSDUH were combined with other local area data to enhance statistical power and analytic capability.<sup>10</sup>

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## **NATIONAL, REGIONAL, AND STATE ESTIMATES**

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In this section, estimates of past year nonmedical use of prescription pain relievers among people aged 12 or older are presented in Figure 1 and Table 1 for the nation, census regions, and the 50 states and the District of Columbia. In Table 1, state estimates are shown to two decimal places and are ordered from highest to lowest percentage of the population with past year nonmedical use of prescription pain relievers. To produce the map in Figure 1, the states that were presented in Table 1 from highest to lowest were then divided into quintiles (fifths).<sup>11</sup> A state having a higher or lower estimate does not imply that the estimate is significantly higher or lower than the next highest or lowest estimate. When comparing two estimates, overlapping 95 percent confidence intervals do not imply that the estimates are statistically equivalent at the 5 percent level of significance.<sup>12</sup>

### ***National Estimate of Nonmedical Use of Prescription Pain Relievers***

Based on combined 2012–2014 NSDUH data, an annual average of 11.3 million U.S. adults aged 12 or older reported having used prescription pain relievers nonmedically in the past year. This corresponds to a national estimate of 4.31 percent of people aged 12 or older using prescription pain relievers nonmedically. Among states, estimates of past year nonmedical use of prescription pain relievers ranged from 3.41 percent in Minnesota to 5.31 percent in Oklahoma (Figure 1; Table 1).

### ***Regional Estimates of Nonmedical Use of Prescription Pain Relievers***

Across the census regions, estimates of past year nonmedical use of prescription pain relievers were 4.78 percent in the West, 4.30 percent in the South, 4.21 percent in the Midwest, and 3.82 percent in the Northeast (Table 1).<sup>13</sup>

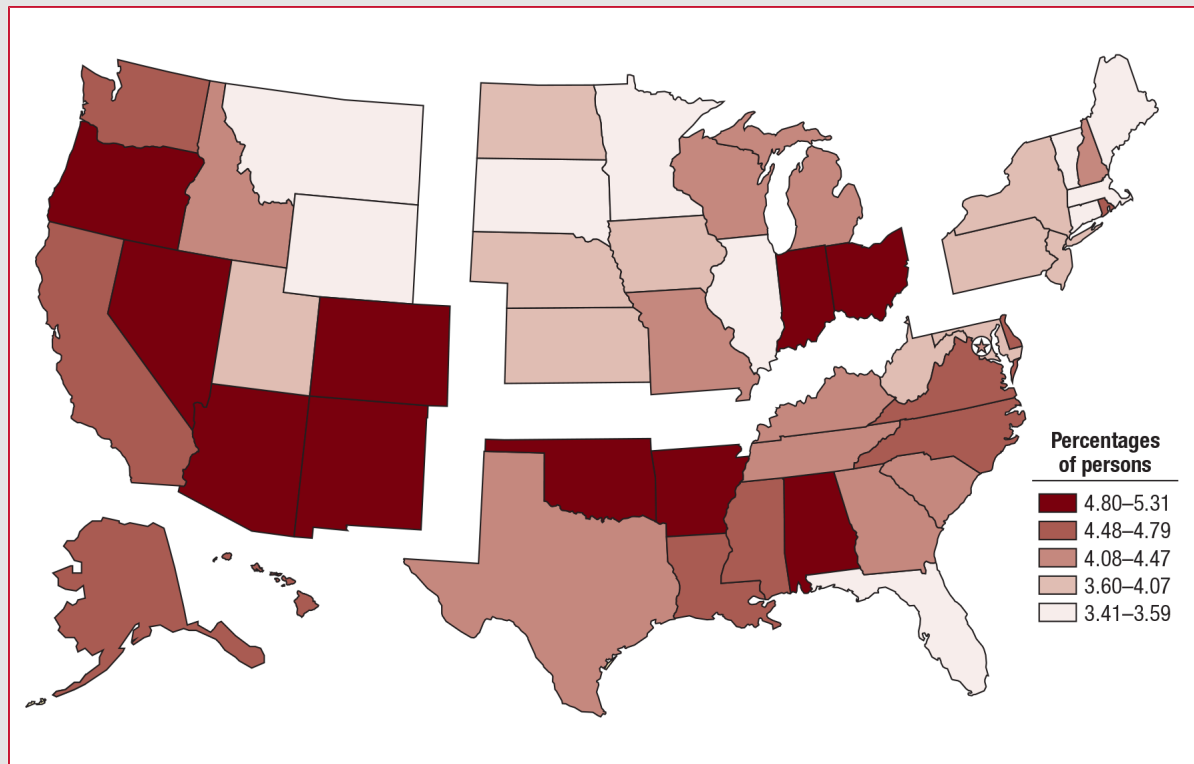
Some variability in state-level estimates of nonmedical use of prescription pain relievers was observed within census regions. In the West, estimates of past year nonmedical use of prescription pain relievers ranged from 5.20 percent in Nevada to 3.46 percent in Montana. In the South, estimates of past year nonmedical use of prescription pain relievers ranged from 5.31 percent in Oklahoma to 3.47 percent in Florida. In the Midwest, estimates of past year nonmedical use of prescription pain relievers ranged from 4.98 percent in Indiana and Ohio to 3.41 percent in Minnesota. In the Northeast, estimates of past year nonmedical use of prescription pain relievers ranged from 4.57 percent in Rhode Island to 3.49 percent in Massachusetts and Vermont.

### ***State Estimates of Nonmedical Use of Prescription Pain Relievers***

As described previously, the 50 states and the District of Columbia were divided into quintiles based on the percentage of the population who used prescription pain relievers nonmedically in the past year. The 10 states in the highest quintile of estimates of past year nonmedical use of prescription pain relievers included Oklahoma (5.31 percent), Alabama (5.24 percent), Arkansas (5.21 percent), Nevada (5.20 percent), Arizona (5.18 percent), Oregon (5.10 percent), Colorado (5.03 percent), Indiana (4.98 percent), Ohio (4.98 percent), and New Mexico (4.84 percent).

The 10 states in the lowest quintile of estimates of past year nonmedical use of prescription pain relievers included Illinois (3.59 percent), Maine (3.59 percent), Wyoming (3.58 percent), Connecticut (3.55 percent), South Dakota (3.50 percent), Massachusetts (3.49 percent), Vermont (3.49 percent), Florida (3.47 percent), Montana (3.46 percent), and Minnesota (3.41 percent).

**Figure 1. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by region and state: percentages, annual averages based on combined 2012 to 2014 NSDUHs**



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

**Table 1. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by region and state: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                | Census region | Percentage of adolescents | Quintile group |
|----------------------|---------------|---------------------------|----------------|
| Oklahoma             | South         | 5.31%                     | 5              |
| Alabama              | South         | 5.24%                     | 5              |
| Arkansas             | South         | 5.21%                     | 5              |
| Nevada               | West          | 5.20%                     | 5              |
| Arizona              | West          | 5.18%                     | 5              |
| Oregon               | West          | 5.10%                     | 5              |
| Colorado             | West          | 5.03%                     | 5              |
| Indiana              | Midwest       | 4.98%                     | 5              |
| Ohio                 | Midwest       | 4.98%                     | 5              |
| New Mexico           | West          | 4.84%                     | 5              |
| Louisiana            | South         | 4.79%                     | 4              |
| Mississippi          | South         | 4.76%                     | 4              |
| California           | West          | 4.76%                     | 4              |
| Alaska               | West          | 4.72%                     | 4              |
| Delaware             | South         | 4.70%                     | 4              |
| Washington           | West          | 4.68%                     | 4              |
| Hawaii               | West          | 4.64%                     | 4              |
| Virginia             | South         | 4.61%                     | 4              |
| North Carolina       | South         | 4.57%                     | 4              |
| Rhode Island         | Northeast     | 4.57%                     | 4              |
| Georgia              | South         | 4.47%                     | 3              |
| Wisconsin            | Midwest       | 4.38%                     | 3              |
| Michigan             | Midwest       | 4.36%                     | 3              |
| South Carolina       | South         | 4.35%                     | 3              |
| New Hampshire        | Northeast     | 4.32%                     | 3              |
| Kentucky             | South         | 4.31%                     | 3              |
| Idaho                | West          | 4.29%                     | 3              |
| Missouri             | Midwest       | 4.21%                     | 3              |
| Texas                | South         | 4.19%                     | 3              |
| Tennessee            | South         | 4.18%                     | 3              |
| District of Columbia | South         | 4.13%                     | 3              |
| Maryland             | South         | 4.07%                     | 2              |
| Utah                 | West          | 4.06%                     | 2              |
| Kansas               | Midwest       | 4.03%                     | 2              |
| New Jersey           | Northeast     | 3.92%                     | 2              |
| West Virginia        | South         | 3.89%                     | 2              |
| Pennsylvania         | Northeast     | 3.87%                     | 2              |
| New York             | Northeast     | 3.87%                     | 2              |
| Iowa                 | Midwest       | 3.76%                     | 2              |
| North Dakota         | Midwest       | 3.69%                     | 2              |
| Nebraska             | Midwest       | 3.61%                     | 2              |
| Illinois             | Midwest       | 3.59%                     | 1              |
| Maine                | Northeast     | 3.59%                     | 1              |
| Wyoming              | West          | 3.58%                     | 1              |
| Connecticut          | Northeast     | 3.55%                     | 1              |
| South Dakota         | Midwest       | 3.50%                     | 1              |
| Massachusetts        | Northeast     | 3.49%                     | 1              |
| Vermont              | Northeast     | 3.49%                     | 1              |
| Florida              | South         | 3.47%                     | 1              |
| Montana              | West          | 3.46%                     | 1              |
| Minnesota            | Midwest       | 3.41%                     | 1              |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

***Changes over Time***

This report also compares the combined 2012–2014 state estimates of past year nonmedical use of prescription pain relievers with 2010–2012 estimates of nonmedical use of prescription pain relievers to examine changes over time. The 2010–2012 data are based on information obtained from 206,200 people aged 12 or older. The inclusion of a common year (i.e., 2012) in these comparisons increases the precision of the estimates and the ability to detect statistically significant differences between the two periods. Statistically significant differences between 2010–2012 and 2012–2014 indicate average annual change between 2010–2011 and 2013–2014. It is not possible to examine changes over time at the substate level because of changes to substate boundaries by the states between 2010–2012 and 2012–2014.

Comparisons of 2010–2012 national estimates with 2012–2014 national estimates indicate that the nation as a whole experienced a statistically significant decrease in past year nonmedical use of prescription pain relievers (4.63 to 4.31 percent) (Table 2). Similarly, when 2010–2012 region-level estimates of past year nonmedical use of prescription pain relievers for people aged 12 or older were compared with 2012–2014 estimates, three census regions experienced statistically significant decreases (4.19 to 3.82 percent in the Northeast, 4.65 to 4.21 percent in the Midwest, and 5.24 to 4.78 percent in the West) (Table 2). The South experienced no change in the estimate of past year nonmedical use of prescription pain relievers.

When the 2010–2012 state estimates were compared with the 2012–2014 state estimates, 13 states (Florida, Idaho, Maine, Michigan, Minnesota, Missouri, Montana, Oregon, Tennessee, Vermont, Washington, West Virginia, and Wyoming) experienced a statistically significant decrease in their estimates of past year nonmedical use of prescription pain relievers. The remaining 37 states and the District of Columbia experienced no change in the percentage of past year nonmedical use of prescription pain relievers (Table 2).

**Table 2. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by region and state: percentages, annual averages based on combined 2010 to 2012 and combined 2012 to 2014 NSDUHs**

| State                 | Annual averages: 2010–2012 |                         | Annual averages: 2012–2014 |                         |
|-----------------------|----------------------------|-------------------------|----------------------------|-------------------------|
|                       | Percent                    | 95% Confidence interval | Percent                    | 95% Confidence interval |
| <b>National*</b>      | <b>4.63</b>                | <b>(4.49–4.78)</b>      | <b>4.31</b>                | <b>(4.17–4.45)</b>      |
| <i>Northeast*</i>     | 4.19                       | (3.92–4.48)             | 3.82                       | (3.57–4.10)             |
| <i>Midwest*</i>       | 4.65                       | (4.43–4.88)             | 4.21                       | (4.00–4.43)             |
| South                 | 4.45                       | (4.23–4.67)             | 4.30                       | (4.09–4.51)             |
| West*                 | 5.24                       | (4.92–5.59)             | 4.78                       | (4.48–5.10)             |
| Alabama               | 4.92                       | (4.13–5.84)             | 5.24                       | (4.40–6.24)             |
| Alaska                | 5.21                       | (4.40–6.16)             | 4.72                       | (3.95–5.64)             |
| Arizona               | 5.70                       | (4.77–6.80)             | 5.18                       | (4.29–6.24)             |
| Arkansas              | 5.74                       | (4.85–6.78)             | 5.21                       | (4.37–6.20)             |
| California            | 5.03                       | (4.55–5.56)             | 4.76                       | (4.30–5.26)             |
| Colorado              | 5.55                       | (4.70–6.56)             | 5.03                       | (4.18–6.05)             |
| Connecticut           | 4.13                       | (3.39–5.02)             | 3.55                       | (2.90–4.35)             |
| Delaware              | 5.28                       | (4.45–6.26)             | 4.70                       | (3.92–5.63)             |
| District of Columbia  | 4.50                       | (3.73–5.41)             | 4.13                       | (3.41–4.99)             |
| <i>Florida*</i>       | 3.95                       | (3.50–4.45)             | 3.47                       | (3.07–3.92)             |
| Georgia               | 3.99                       | (3.31–4.80)             | 4.47                       | (3.74–5.34)             |
| Hawaii                | 4.32                       | (3.53–5.26)             | 4.64                       | (3.81–5.65)             |
| <i>Idaho*</i>         | 5.70                       | (4.83–6.73)             | 4.29                       | (3.60–5.10)             |
| Illinois              | 3.90                       | (3.49–4.35)             | 3.59                       | (3.19–4.03)             |
| Indiana               | 5.69                       | (4.85–6.66)             | 4.98                       | (4.20–5.90)             |
| Iowa                  | 3.68                       | (3.05–4.44)             | 3.76                       | (3.10–4.55)             |
| Kansas                | 4.13                       | (3.43–4.96)             | 4.03                       | (3.33–4.88)             |
| Kentucky              | 4.44                       | (3.72–5.31)             | 4.31                       | (3.58–5.19)             |
| Louisiana             | 5.03                       | (4.30–5.87)             | 4.79                       | (4.03–5.68)             |
| <i>Maine*</i>         | 4.22                       | (3.52–5.05)             | 3.59                       | (2.94–4.36)             |
| Maryland              | 3.79                       | (3.11–4.61)             | 4.07                       | (3.33–4.97)             |
| Massachusetts         | 4.05                       | (3.38–4.85)             | 3.49                       | (2.86–4.27)             |
| <i>Michigan*</i>      | 5.14                       | (4.67–5.65)             | 4.36                       | (3.91–4.85)             |
| <i>Minnesota*</i>     | 4.12                       | (3.43–4.94)             | 3.41                       | (2.78–4.17)             |
| Mississippi           | 4.78                       | (4.05–5.63)             | 4.76                       | (3.99–5.66)             |
| <i>Missouri*</i>      | 4.92                       | (4.19–5.76)             | 4.21                       | (3.50–5.05)             |
| <i>Montana*</i>       | 4.60                       | (3.87–5.46)             | 3.46                       | (2.81–4.25)             |
| Nebraska              | 3.86                       | (3.18–4.69)             | 3.61                       | (2.97–4.38)             |
| Nevada                | 5.92                       | (4.87–7.17)             | 5.20                       | (4.26–6.33)             |
| New Hampshire         | 4.41                       | (3.72–5.23)             | 4.32                       | (3.62–5.14)             |
| New Jersey            | 4.37                       | (3.63–5.25)             | 3.92                       | (3.23–4.75)             |
| New Mexico            | 5.60                       | (4.70–6.66)             | 4.84                       | (3.98–5.87)             |
| New York              | 4.17                       | (3.72–4.68)             | 3.87                       | (3.41–4.38)             |
| North Carolina        | 4.30                       | (3.60–5.13)             | 4.57                       | (3.81–5.48)             |
| North Dakota          | 3.60                       | (2.97–4.37)             | 3.69                       | (3.05–4.48)             |
| Ohio                  | 5.22                       | (4.74–5.73)             | 4.98                       | (4.46–5.55)             |
| Oklahoma              | 5.15                       | (4.37–6.07)             | 5.31                       | (4.43–6.35)             |
| <i>Oregon*</i>        | 6.14                       | (5.21–7.23)             | 5.10                       | (4.26–6.10)             |
| Pennsylvania          | 4.05                       | (3.63–4.53)             | 3.87                       | (3.46–4.33)             |
| Rhode Island          | 5.00                       | (4.17–5.98)             | 4.57                       | (3.78–5.52)             |
| South Carolina        | 4.91                       | (4.13–5.83)             | 4.35                       | (3.63–5.19)             |
| South Dakota          | 3.48                       | (2.87–4.23)             | 3.50                       | (2.88–4.24)             |
| <i>Tennessee*</i>     | 4.93                       | (4.16–5.84)             | 4.18                       | (3.50–4.99)             |
| Texas                 | 4.45                       | (4.01–4.93)             | 4.19                       | (3.77–4.64)             |
| Utah                  | 4.11                       | (3.42–4.92)             | 4.06                       | (3.39–4.85)             |
| <i>Vermont*</i>       | 4.73                       | (4.00–5.58)             | 3.49                       | (2.87–4.23)             |
| Virginia              | 4.58                       | (3.85–5.44)             | 4.61                       | (3.88–5.48)             |
| <i>Washington*</i>    | 5.55                       | (4.70–6.54)             | 4.68                       | (3.93–5.57)             |
| <i>West Virginia*</i> | 4.56                       | (3.87–5.37)             | 3.89                       | (3.24–4.67)             |
| Wisconsin             | 4.74                       | (3.94–5.68)             | 4.38                       | (3.63–5.27)             |
| <i>Wyoming*</i>       | 4.36                       | (3.66–5.18)             | 3.58                       | (2.93–4.36)             |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.



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## SUBSTATE REGION ESTIMATES OF NONMEDICAL USE OF PRESCRIPTION PAIN RELIEVERS

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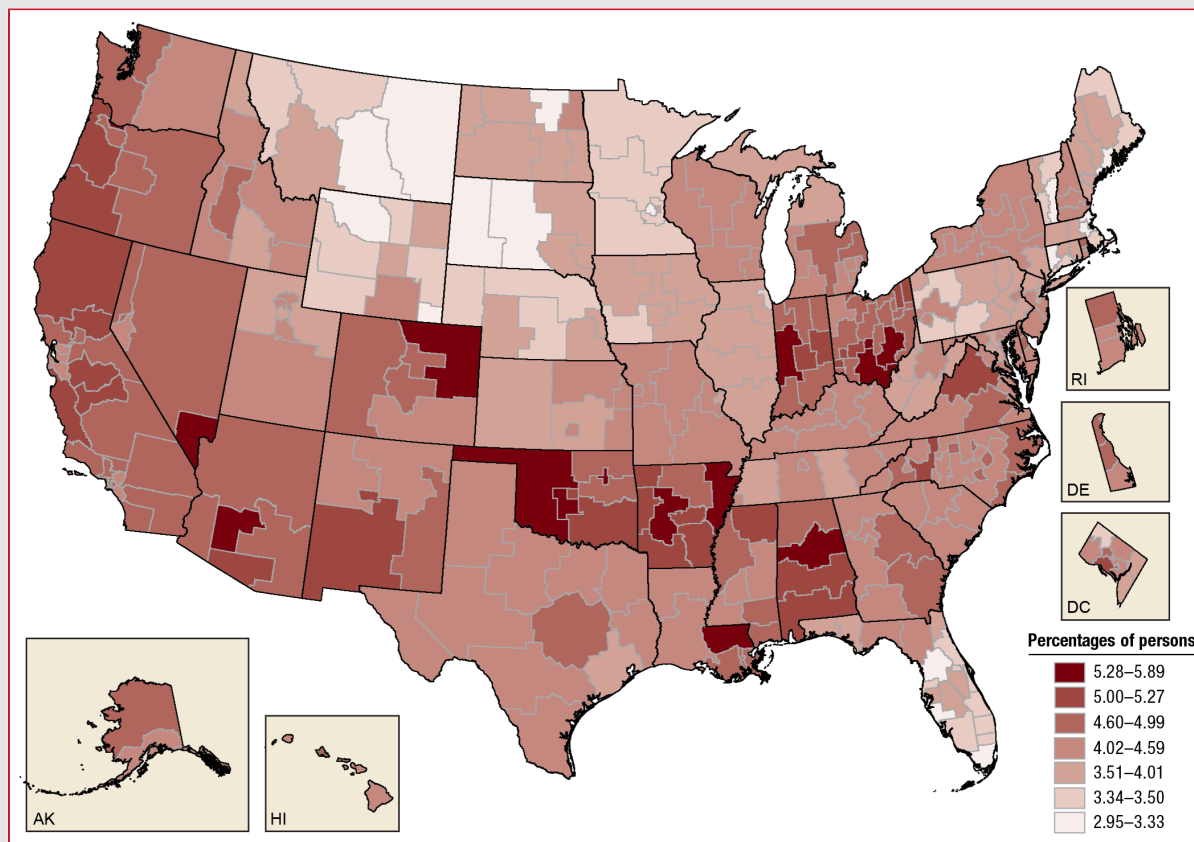
SAMHSA works with state substance abuse/mental health agency representatives to define substate areas that meet state needs and reporting requirements while ensuring that the NSDUH sample sizes are large enough to provide estimates with adequate precision.<sup>14</sup> Combined 2012–2014 NSDUH data can be used to estimate past year nonmedical use of prescription pain relievers in 362 substate regions. The 2012–2014 estimates in this report are based on substate boundaries that reflect current state needs and reporting requirements and may not be comparable with estimates from substate regions from prior years. For substate region definitions, see the "2012–2014 National Survey on Drug Use and Health Substate Region Definitions" at <http://samhsa.gov/data/>. In most states, the substate regions are defined in terms of single counties or groups of counties; in some states, the regions are defined entirely in terms of census tracts (in Connecticut, the District of Columbia, and Massachusetts), parishes (in Louisiana), boroughs/census areas (in Alaska), a combination of counties and census tracts (in California and Delaware), and a combination of counties and independent cities (in Maryland, Missouri, Nevada, and Virginia).

Substate region estimates of past year nonmedical use of prescription pain relievers among people aged 12 or older are displayed on a U.S. map (Figure 2). In Table S1, substate region estimates are shown to two decimal places and are listed alphabetically by state. To produce the substate map in Figure 2, the substate estimates of past year nonmedical use of prescription pain relievers were ordered from highest to lowest percentage and were then divided into three approximately equal groups based on their percentage. There are 121 substate regions in the lowest third (i.e., with the lowest percentages) and there are 121 substate regions in the highest third (i.e. with the highest percentages). There are 120 substate regions in the middle third. The highest and lowest thirds were subdivided into thirds to further distinguish among the substate regions. Overall, the seven groups in each map were constructed to represent a somewhat symmetrical distribution.<sup>15</sup> In some cases, a category could have more or fewer substate regions because two (or more) substate regions have the same estimate (to two decimal places). When such ties occurred at the "boundary" between two groups, all substate regions with the same estimate were assigned to the lower group. Individual state maps at <http://samhsa.gov/data/> provide more granularity in areas too small to display clearly on the U.S. maps. Table 2 provides estimates associated with each map. Ninety-five percent confidence intervals are included as a measure of precision for each estimate.<sup>16</sup>

Among the substate regions, estimates of past year nonmedical use of prescription pain relievers ranged from 5.89 percent in Region 1 in the northeastern part of Colorado to 2.95 percent in Florida's Southern region (Circuits 11 and 16) consisting of Miami-Dade and Monroe Counties. Of the 16 substate regions with the lowest estimates of past year nonmedical use of prescription pain relievers, 5 were in the Northeast (2 in Massachusetts, 1 in Connecticut, 1 in Maine, and 1 in Vermont), 4 were in the Midwest (2 in South Dakota, 1 in Minnesota, and 1 in North Dakota), 4 were in the West (2 in Montana and 2 in Wyoming), and 3 were in the South (all in Florida).

Of the 16 substate regions with the highest estimates of past year nonmedical use of prescription pain relievers, 7 were in the South (3 in Oklahoma, 2 in Arkansas, 1 in Alabama, and 1 in Louisiana), 5 were in the West (1 in Arizona, 1 in California, 1 in Colorado, 1 in Oregon, and 1 in Nevada), and 4 were in the Midwest (3 in Ohio and 1 in Indiana).

**Figure 2. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

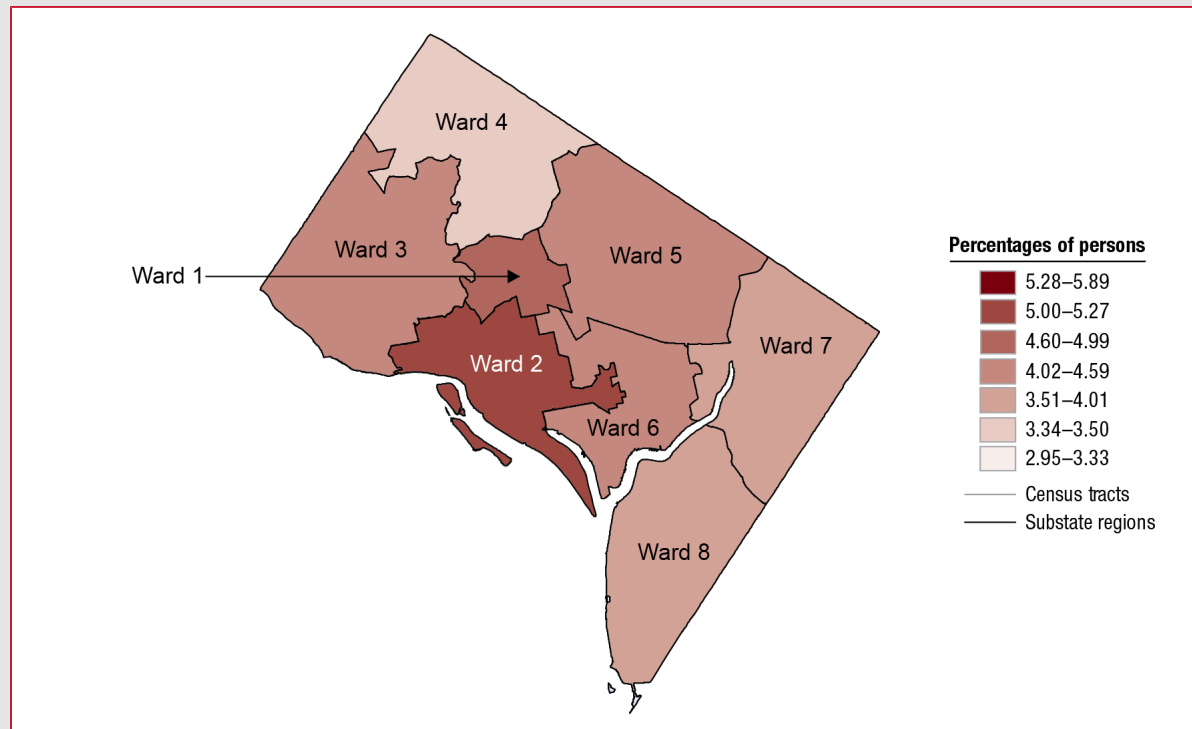
The previous sections examined 2012–2014 NSDUH state and substate past year estimates of nonmedical use of prescription pain relievers individually. Some substate areas are too small to display clearly on the U.S. national maps (Figure 2); therefore, individual state maps are particularly useful for seeing these small substate areas. SAMHSA produces individual NSDUH state maps that display the substate estimates of past year nonmedical use of prescription pain relievers. In this section, one of the individual state maps is presented to illustrate the variability within states. For more state-specific NSDUH maps, see <http://www.samhsa.gov/data/sites/default/files/NSDUHsubstateStateTabs2014/NSDUHsubstateSpecificStatesTOC2014.htm>.

As previously noted, the assignments of the substate areas within states were created by dividing 362 substate regions, nationally, into 7 groups based on their percentages of past year nonmedical use of prescription pain relievers. Figure 2 shows that states that are in the highest and lowest quintiles tend to have more uniform substate estimates. That is, states with the highest percentages of past year nonmedical use of prescription pain relievers tend to have substate areas with high percentages of past year nonmedical use of prescription pain relievers. For example, 6 of the 10 states in the highest quintile of estimates of past year nonmedical use of prescription pain relievers had substate estimates that were in the highest third. Likewise, 7 of the 10 states in the lowest quintile of estimates of past year nonmedical use of prescription pain relievers had substate-level estimates that were in the lowest third. When all of the substate areas are in the same third, this is a probable indicator of low variability within those states. Estimates were not tested to determine whether they represent significantly higher or lower estimates.

Across the states and the District of Columbia, the most variability in substate estimates occurred within states in the middle quintile. Stated another way, the states in the middle third in Figure 1 had the most variation at the substate level in Figure 2. Of the 11 states in the middle quintile, 4 states had substate-level estimates of past year nonmedical use of prescription pain relievers that were in the highest, middle and lowest third, which may indicate some variability. An example of this variability can be seen in the District of Columbia (Figure 3).



**Figure 3. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older in the District of Columbia: percentages, annual averages based on combined 2012 to 2014 NSDUHs**



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

In the District of Columbia, past year nonmedical use of prescription pain relievers for people aged 12 or older ranged from 5.06 percent in Ward 2 to 3.45 percent in Ward 4. In the District of Columbia, 2 substate regions were in the highest third (Wards 2 and 1), indicating high estimates of past year nonmedical use of prescription pain relievers. Three substate regions were in the lowest third (Wards 8, 7, and 4), indicating low estimates of past year nonmedical use of prescription pain relievers. The remaining 3 regions (Wards 6, 5, and 3) fell in the middle third.

## DISCUSSION

Nonmedical use of prescription pain relievers is a health concern for the residents of every state and the District of Columbia. Data in this report highlight nonmedical use of prescription pain relievers at the national, census region, state, and substate levels. These findings suggest that some progress has been made in reducing nonmedical use of prescription pain relievers, although this progress has not been uniform across all states. Highlighting the prevalence of nonmedical use of prescription pain relievers in each state and substate level, as well as monitoring changes, will help state and federal policymakers refine and focus substance abuse prevention and treatment strategies designed to reduce the burden of nonmedical use of prescription pain relievers on the nation's health and health care system. Maps and tables presented in this report can help state policymakers quickly see where efforts are needed to address substance abuse in their state. For example, substate regions within small areas can vary in the estimates of nonmedical use of prescription pain relievers (e.g., District of Columbia). As data from several years of NSDUHs are accumulated, in-depth analysis of these state and substate data will continue to provide insight into the patterns of nonmedical use of prescription pain relievers, such as variations over time and by age and gender within each state.

SAMHSA provides information for communities and local governments that may help prevent overdoses and deaths related to nonmedical use of prescription pain relievers:

- <http://store.samhsa.gov/product/Opioid-Overdose-Prevention-Toolkit-Updated-2014/SMA14-4742>
- <http://www.samhsa.gov/prescription-drug-misuse-abuse>

SAMHSA provides information about where to find substance abuse treatment at <https://findtreatment.samhsa.gov>.

### Other NSDUH Substate Measures

The combined 2012–2014 NSDUH estimates for past year nonmedical use of prescription pain relievers for people aged 12 or older are available, along with 24 additional behavioral health measures for 384 substate areas, 50 states and the District of Columbia, 4 census regions, and the United States. Information on the methodology that generated these estimates is available online at <http://samhsa.gov/data/>. This report discusses one of the measures for the 362 substate areas displayed on the maps. The 25 additional measures include substance use and mental health issues, including use of illicit drugs (e.g., marijuana use, cocaine use), alcohol, and tobacco; substance use disorders; needing but not receiving treatment for a substance use problem; any mental illness; serious mental illness; depression; and suicidal thoughts. Also provided are national maps for all measures and detailed tables including percentages for each substate region, state, census region, and the nation for people aged 12 or older; tables by age group; and state-specific tables and maps. The state maps are particularly useful in areas too small to display clearly on the U.S. maps.

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## ENDNOTES

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1. Although new information on prescription drug use and misuse was added to NSDUH in 2015, this report relies on earlier data because the estimation of state and substate percentages requires the pooling of multiple years of data. For more information on the 2015 NSDUH estimates, please see Hughes, A., Williams, M. R., Lipari, R. N., Bose, J., Copello, E. A. P., & Kroutil, L. A. (2016, September). *Prescription drug use and misuse in the United States: Results from the 2015 National Survey on Drug Use and Health*. NSDUH Data Review. Retrieved from <http://samhsa.gov/data/>
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7. Although NSDUH is generally stable, advances in survey methodology and the substance use prevention field necessitate periodic redesigns. For NSDUH, these redesigns have occurred in 2002 and 2015. To address advances in the field, the prescription drug questions were revised in 2015. Before 2015, NSDUH used the term "nonmedical use" of prescription drugs, which was defined as use of prescription drugs that were not prescribed for an individual or were taken only for the experience or feeling that the drugs caused. However, challenges and issues were associated with the measurement of this concept. One concern, for example, was that the phrase "for the experience or feeling it caused" may erroneously capture reports of legitimate use based on the intended effects of the drug, such as pain relief. A further concern was whether the term "nonmedical use" appropriately describes use of prescription drugs that individuals took to treat a condition for which the medications are

typically prescribed (e.g., nonprescription use of opioid pain relievers to relieve physical pain) but were prescribed for someone else. In addition, the definition did not specifically include the criterion of overuse of prescribed medication, which is particularly important for prescription pain relievers. To address these shortcomings, the 2015 prescription drug questions were revised to ask survey respondents about the use of prescription drugs "in any way that a doctor did not direct you to use them," including (1) use without a prescription of the respondent's own; (2) use in greater amounts, more often, or longer than the respondent was told to take them; or (3) use in any other way a doctor did not direct the respondent to use them. Along with changes to the definition of misuse, NSDUH reports and tables no longer use the term "nonmedical use" and instead use the term "misuse." Additional details on changes to the prescription drug questions and the implications for analysis are provided at <http://samhsa.gov/data/>.

8. Respondents were shown a "pill card" displaying the names and photographs of specific pain relievers and asked to indicate which, if any, they had ever used without a doctor's prescription or simply for the feeling of experience the drug caused. The "pill card" can be found at <http://www.samhsa.gov/data/sites/default/files/NSDUH2012MRB/NSDUH2012MRB/2k12PillCards.pdf>. Note that although the majority of drugs listed on the pain relievers card are opioids, some of them are not considered as such (e.g., Fioricet®, Fiorinal®). Moreover, respondents were asked about their nonmedical use of any other pain relievers not included in this list and were asked to specify the names of the drugs that they had ever used nonmedically.

9. In NSDUH, because "any pain relievers" can include drugs other than opioid-based ones, the percentage for nonmedical use of any other pain reliever dependence/abuse could possibly be inflated if the respondent indicated use for non-opioid-based drug(s) only.

10. Estimates presented in this report are derived from a hierarchical Bayes model-based small area estimation (SAE) procedure in which NSDUH data at the substate level are combined with local area county and census block group/tract-level data from the area to provide more precise estimates of substance use and mental health outcomes. The precision of the SAE estimates can be improved significantly by combining data across 3 years (i.e., 2012 to 2014). With 3 years of combined NSDUH data, the sample sizes in the 362 substate regions ranged from 100 people to approximately 3,500 people.

11. In some cases, a "quintile" could have more or fewer states than desired because two (or more) states have the same estimate (to two decimal places). When such ties occurred at the "boundary" between two quintiles, all states with the same estimate were assigned to the lower quintile.

12. In this report, state estimates are discussed in terms of their observed rankings because they provide useful context. However, a state having a highest or lowest rate does not imply that the state's rate is significantly higher or lower than the rate of the next highest or lowest state. Similarly, the quintiles were not selected to represent statistical differences across quintiles or to correspond to proximity to a target public health threshold for a particular measure. For example, the division of states into quintiles does not indicate that states in the same quintile are statistically similar to each other. While a nearly equal number of states are contained in each quintile, the size of the intervals (i.e., the difference between the upper and lower limits of each quintile) that define the map boundaries is not necessarily uniform across each quintile. When comparing two state prevalence rates, the method of overlapping confidence intervals is more conservative (i.e., it rejects the null hypothesis of no difference less often) than the standard method based on Z statistics when the null hypothesis is true. Even if confidence intervals for two states overlap, the two estimates may be declared significantly different by the test based on Z statistics. Hence, the method of overlapping confidence intervals is not recommended to test the difference of two state estimates. A detailed description of the method of overlapping confidence intervals and its comparison with the standard methods for testing of a hypothesis is given in the following articles: (a) Schenker, N., & Gentleman, J. F. (2001). On judging the significance of differences by examining the overlap between confidence intervals. *American Statistician*, 55(3), 182-186. (b) Payton, M. E., Greenstone, M. H., & Schenker, N. (2003). Overlapping confidence intervals or standard error intervals: What do they mean in terms of statistical significance? *Journal of Insect Science*, 3, 34. For details on a more accurate test to compare state prevalence estimates, please see Section B.12 in Appendix B of *2011-2012 National Survey on Drug Use and Health: Guide to state tables and summary of small area estimation methodology*, located at <http://www.samhsa.gov/data/NSDUH/2k12State/NSDUHsae2012/Index.aspx>.

13. The West has 13 states: AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, and WY. The South has 16 states plus the District of Columbia: AL, AR, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, and WV. The Northeast has 9 states: CT, MA, ME, NH, NJ, NY, PA, RI, and VT. The Midwest has 12 states: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, and WI.

14. Substance use and mental health officials from each of the 50 states and the District of Columbia typically define these substate areas to correspond to areas reported in their applications for the Substance Abuse Prevention and Treatment Block Grant (SABG) administered by SAMHSA. The SABG program provides financial and technical assistance to the 50 states, the District of Columbia, and other jurisdictions to support substance abuse prevention and treatment programs and to promote public health. States use NSDUH substate estimates for a variety of purposes, including strategic planning and program development, production of epidemiological profiles for briefing state legislatures and informing the public, allocation of funds to areas based on the need for services, and other uses.

15. The seven categories were not selected to represent statistical differences across categories or to correspond to proximity to a target public health threshold for a particular measure. For example, the division of substate regions into seven categories does not indicate that substate regions in the same category are statistically similar to each other. Furthermore, the size of the intervals (i.e., the difference between the upper and lower limits of each category) that define the map boundaries is not necessarily uniform across each category. The substate areas are uniquely defined based on the needs of each state and may not be demographically or geographically comparable to substate areas in other states.

16. When comparing two substate region percentages, the method of overlapping confidence intervals is more conservative (i.e., it rejects the null hypothesis of no difference less often) than the standard method based on Z statistics when the null hypothesis is true. Even if confidence intervals for two substate regions overlap, the two estimates may be declared significantly different by the test based on Z statistics. Hence, the method of overlapping confidence intervals is not recommended to test the difference of two substate region estimates. As percentages are standardized, they do not inform a reader when two states or substates have the same percentage but different population sizes.

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## **SUGGESTED CITATION**

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Lipari, R.N., Van Horn, S.L., Hughes, A. and Williams, M. *State and substate estimates of nonmedical use of prescription pain relievers from the 2012-2014 National Surveys on Drug Use and Health*. The CBHSQ Report: July 13, 2017. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD.

**Table S1. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                      | Substate region             | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|----------------------------|-----------------------------|---------------------|----------------|----------------|---------------------|
| <b>Total United States</b> | <b>Total United States</b>  | <b>4.31%</b>        | <b>4.17%</b>   | <b>4.45%</b>   |                     |
| Northeast                  | Northeast                   | 3.82%               | 3.57%          | 4.10%          |                     |
| Midwest                    | Midwest                     | 4.21%               | 4.00%          | 4.43%          |                     |
| South                      | South                       | 4.30%               | 4.09%          | 4.51%          |                     |
| West                       | West                        | 4.78%               | 4.48%          | 5.10%          |                     |
| <b>Alabama</b>             | <b>Alabama</b>              | <b>5.24%</b>        | <b>4.40%</b>   | <b>6.24%</b>   |                     |
| Alabama                    | Region 1                    | 4.88%               | 3.77%          | 6.29%          | 5                   |
| Alabama                    | Region 2                    | 5.62%               | 4.48%          | 7.03%          | 7                   |
| Alabama                    | Region 3                    | 5.12%               | 3.99%          | 6.56%          | 6                   |
| Alabama                    | Region 4                    | 5.27%               | 4.13%          | 6.72%          | 6                   |
| <b>Alaska</b>              | <b>Alaska</b>               | <b>4.72%</b>        | <b>3.95%</b>   | <b>5.64%</b>   |                     |
| Alaska                     | Anchorage                   | 5.02%               | 4.02%          | 6.24%          | 6                   |
| Alaska                     | Northern                    | 4.61%               | 3.59%          | 5.90%          | 5                   |
| Alaska                     | South Central               | 4.58%               | 3.55%          | 5.89%          | 4                   |
| Alaska                     | Southeast                   | 4.15%               | 3.10%          | 5.53%          | 4                   |
| <b>Arizona</b>             | <b>Arizona</b>              | <b>5.18%</b>        | <b>4.29%</b>   | <b>6.24%</b>   |                     |
| Arizona                    | Maricopa                    | 5.37%               | 4.35%          | 6.62%          | 7                   |
| Arizona                    | Pima                        | 5.09%               | 3.86%          | 6.69%          | 6                   |
| Arizona                    | Rural North                 | 4.87%               | 3.59%          | 6.56%          | 5                   |
| Arizona                    | Rural South                 | 4.67%               | 3.49%          | 6.22%          | 5                   |
| <b>Arkansas</b>            | <b>Arkansas</b>             | <b>5.21%</b>        | <b>4.37%</b>   | <b>6.20%</b>   |                     |
| Arkansas                   | Catchment Area 1            | 5.06%               | 3.94%          | 6.47%          | 6                   |
| Arkansas                   | Catchment Area 2            | 4.83%               | 3.71%          | 6.28%          | 5                   |
| Arkansas                   | Catchment Area 3            | 5.64%               | 4.36%          | 7.28%          | 7                   |
| Arkansas                   | Catchment Area 4            | 5.25%               | 4.00%          | 6.85%          | 6                   |
| Arkansas                   | Catchment Area 5            | 5.56%               | 4.34%          | 7.11%          | 7                   |
| Arkansas                   | Catchment Area 6            | 5.18%               | 3.93%          | 6.79%          | 6                   |
| Arkansas                   | Catchment Area 7            | 5.05%               | 3.80%          | 6.67%          | 6                   |
| Arkansas                   | Catchment Area 8            | 5.08%               | 3.93%          | 6.54%          | 6                   |
| <b>California</b>          | <b>California</b>           | <b>4.76%</b>        | <b>4.30%</b>   | <b>5.26%</b>   |                     |
| California                 | Region 1R                   | 5.26%               | 4.14%          | 6.66%          | 6                   |
| California                 | Region 2R                   | 5.23%               | 4.15%          | 6.59%          | 6                   |
| California                 | Region 3R (Sacramento)      | 4.78%               | 3.83%          | 5.96%          | 5                   |
| California                 | Region 4R                   | 4.66%               | 3.70%          | 5.84%          | 5                   |
| California                 | Region 5R (San Francisco)   | 4.76%               | 3.63%          | 6.20%          | 5                   |
| California                 | Region 6 (Santa Clara)      | 4.36%               | 3.43%          | 5.53%          | 4                   |
| California                 | Region 7R (Contra Costa)    | 4.54%               | 3.57%          | 5.78%          | 4                   |
| California                 | Region 8R (Alameda)         | 4.56%               | 3.58%          | 5.81%          | 4                   |
| California                 | Region 9R (San Mateo)       | 4.28%               | 3.29%          | 5.55%          | 4                   |
| California                 | Region 10                   | 4.93%               | 3.88%          | 6.23%          | 5                   |
| California                 | LA SPA 1 and 5              | 4.92%               | 3.88%          | 6.23%          | 5                   |
| California                 | LA SPA 2                    | 4.76%               | 3.79%          | 5.96%          | 5                   |
| California                 | LA SPA 3                    | 4.23%               | 3.32%          | 5.37%          | 4                   |
| California                 | LA SPA 4                    | 4.81%               | 3.77%          | 6.12%          | 5                   |
| California                 | LA SPA 6                    | 5.49%               | 4.32%          | 6.95%          | 7                   |
| California                 | LA SPA 7                    | 4.76%               | 3.75%          | 6.03%          | 5                   |
| California                 | LA SPA 8                    | 4.49%               | 3.54%          | 5.68%          | 4                   |
| California                 | Region 12R                  | 4.67%               | 3.68%          | 5.92%          | 5                   |
| California                 | Regions 13 and 19R          | 4.84%               | 3.92%          | 5.96%          | 5                   |
| California                 | Region 14 (Orange)          | 4.38%               | 3.52%          | 5.43%          | 4                   |
| California                 | Region 15R (Fresno)         | 5.11%               | 4.08%          | 6.40%          | 6                   |
| California                 | Region 16R (San Diego)      | 4.93%               | 4.00%          | 6.06%          | 5                   |
| California                 | Region 17R                  | 4.88%               | 3.90%          | 6.09%          | 5                   |
| California                 | Region 18R (San Bernardino) | 4.80%               | 3.86%          | 5.97%          | 5                   |
| California                 | Region 20R                  | 5.08%               | 4.00%          | 6.42%          | 6                   |
| California                 | Region 21R                  | 5.19%               | 4.10%          | 6.55%          | 6                   |

(continued)

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                       | Substate region   | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|-----------------------------|---|---------------------|----------------|----------------|---------------------|
| <b>Colorado</b>             | <b>Colorado</b>   | <b>5.03%</b>        | <b>4.18%</b>   | <b>6.05%</b>   |                     |
| Colorado                    | Region 1  | 5.89%               | 4.49%          | 7.70%          | 7                   |
| Colorado                    | Regions 2 and 7   | 4.99%               | 3.98%          | 6.23%          | 5                   |
| Colorado                    | Region 3  | 4.73%               | 3.61%          | 6.17%          | 5                   |
| Colorado                    | Region 4  | 4.58%               | 3.43%          | 6.08%          | 4                   |
| Colorado                    | Regions 5 and 6   | 4.84%               | 3.67%          | 6.37%          | 5                   |
| <b>Connecticut</b>          | <b>Connecticut</b>  | <b>3.55%</b>        | <b>2.90%</b>   | <b>4.35%</b>   |                     |
| Connecticut                 | Eastern   | 3.93%               | 3.00%          | 5.14%          | 3                   |
| Connecticut                 | North Central   | 3.79%               | 2.89%          | 4.96%          | 3                   |
| Connecticut                 | Northwestern  | 3.26%               | 2.44%          | 4.35%          | 1                   |
| Connecticut                 | South Central   | 3.44%               | 2.59%          | 4.55%          | 2                   |
| Connecticut                 | Southwest   | 3.36%               | 2.52%          | 4.45%          | 2                   |
| <b>Delaware</b>             | <b>Delaware</b>   | <b>4.70%</b>        | <b>3.92%</b>   | <b>5.63%</b>   |                     |
| Delaware                    | Kent  | 4.77%               | 3.71%          | 6.12%          | 5                   |
| Delaware                    | New Castle (excluding Wilmington City)                            | 4.85%               | 3.90%          | 6.02%          | 5                   |
| Delaware                    | Sussex  | 4.30%               | 3.25%          | 5.66%          | 4                   |
| Delaware                    | Wilmington City   | 4.73%               | 3.51%          | 6.35%          | 5                   |
| <b>District of Columbia</b> | <b>District of Columbia</b>                                       | <b>4.13%</b>        | <b>3.41%</b>   | <b>4.99%</b>   |                     |
| District of Columbia        | Ward 1  | 4.62%               | 3.44%          | 6.18%          | 5                   |
| District of Columbia        | Ward 2  | 5.06%               | 3.80%          | 6.69%          | 6                   |
| District of Columbia        | Ward 3  | 4.05%               | 3.03%          | 5.39%          | 4                   |
| District of Columbia        | Ward 4  | 3.45%               | 2.55%          | 4.65%          | 2                   |
| District of Columbia        | Ward 5  | 4.06%               | 3.06%          | 5.36%          | 4                   |
| District of Columbia        | Ward 6  | 4.10%               | 3.05%          | 5.50%          | 4                   |
| District of Columbia        | Ward 7  | 3.67%               | 2.73%          | 4.91%          | 3                   |
| District of Columbia        | Ward 8  | 3.90%               | 2.97%          | 5.11%          | 3                   |
| <b>Florida</b>              | <b>Florida</b>  | <b>3.47%</b>        | <b>3.07%</b>   | <b>3.92%</b>   |                     |
| Florida                     | Broward (Circuit 17)  | 3.42%               | 2.73%          | 4.29%          | 2                   |
| Florida                     | Circuit 9   | 3.71%               | 3.01%          | 4.57%          | 3                   |
| Florida                     | Circuit 18  | 3.47%               | 2.75%          | 4.36%          | 2                   |
| Florida                     | Circuit 6   | 3.37%               | 2.60%          | 4.35%          | 2                   |
| Florida                     | Circuit 10  | 3.55%               | 2.75%          | 4.56%          | 3                   |
| Florida                     | Circuit 12  | 3.06%               | 2.33%          | 4.02%          | 1                   |
| Florida                     | Circuit 13 (Hillsborough)   | 3.67%               | 2.90%          | 4.63%          | 3                   |
| Florida                     | Circuit 20  | 3.50%               | 2.68%          | 4.56%          | 2                   |
| Florida                     | Circuit 4   | 3.62%               | 2.87%          | 4.57%          | 3                   |
| Florida                     | Circuit 5   | 3.19%               | 2.46%          | 4.12%          | 1                   |
| Florida                     | Circuit 7   | 3.50%               | 2.74%          | 4.45%          | 2                   |
| Florida                     | Circuit 8 plus Columbia, Dixie, Hamilton, Lafayette, and Suwannee | 4.55%               | 3.56%          | 5.79%          | 4                   |
| Florida                     | Circuit 1   | 4.01%               | 3.12%          | 5.14%          | 3                   |
| Florida                     | Circuit 2 plus Madison and Taylor                                 | 4.42%               | 3.49%          | 5.59%          | 4                   |
| Florida                     | Circuit 14  | 3.96%               | 3.03%          | 5.16%          | 3                   |
| Florida                     | South (Circuits 11 and 16)  | 2.95%               | 2.31%          | 3.76%          | 1                   |
| Florida                     | Circuit 15 (Palm Beach)   | 3.41%               | 2.67%          | 4.34%          | 2                   |
| Florida                     | Circuit 19  | 3.38%               | 2.63%          | 4.34%          | 2                   |
| <b>Georgia</b>              | <b>Georgia</b>  | <b>4.47%</b>        | <b>3.74%</b>   | <b>5.34%</b>   |                     |
| Georgia                     | Region 1  | 4.49%               | 3.52%          | 5.70%          | 4                   |
| Georgia                     | Region 2  | 4.96%               | 3.85%          | 6.37%          | 5                   |
| Georgia                     | Region 3  | 4.18%               | 3.25%          | 5.37%          | 4                   |
| Georgia                     | Region 4  | 4.59%               | 3.51%          | 5.98%          | 4                   |
| Georgia                     | Region 5  | 4.77%               | 3.62%          | 6.27%          | 5                   |
| Georgia                     | Region 6  | 4.30%               | 3.30%          | 5.58%          | 4                   |
| <b>Hawaii</b>               | <b>Hawaii</b>   | <b>4.64%</b>        | <b>3.81%</b>   | <b>5.65%</b>   |                     |
| Hawaii                      | Hawaii Island   | 4.37%               | 3.19%          | 5.96%          | 4                   |
| Hawaii                      | Honolulu  | 4.73%               | 3.81%          | 5.86%          | 5                   |
| Hawaii                      | Kauai   | 4.26%               | 3.08%          | 5.85%          | 4                   |
| Hawaii                      | Maui  | 4.57%               | 3.34%          | 6.21%          | 4                   |

(continued)

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.



**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State            | Substate region                          | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|------------------|--|---------------------|----------------|----------------|---------------------|
| <b>Idaho</b>     | <b>Idaho</b>                             | <b>4.29%</b>        | <b>3.60%</b>   | <b>5.10%</b>   |                     |
| Idaho            | Region 1                                 | 3.88%               | 2.97%          | 5.06%          | 3                   |
| Idaho            | Region 2                                 | 4.26%               | 3.23%          | 5.60%          | 4                   |
| Idaho            | Region 3                                 | 4.05%               | 3.14%          | 5.20%          | 4                   |
| Idaho            | Region 4                                 | 4.72%               | 3.73%          | 5.95%          | 5                   |
| Idaho            | Region 5                                 | 3.98%               | 3.01%          | 5.23%          | 3                   |
| Idaho            | Region 6                                 | 4.56%               | 3.49%          | 5.94%          | 4                   |
| Idaho            | Region 7                                 | 4.21%               | 3.24%          | 5.46%          | 4                   |
| <b>Illinois</b>  | <b>Illinois</b>                          | <b>3.59%</b>        | <b>3.19%</b>   | <b>4.03%</b>   |                     |
| Illinois         | Region I (Cook)                          | 3.47%               | 2.92%          | 4.12%          | 2                   |
| Illinois         | Region II                                | 3.57%               | 2.98%          | 4.26%          | 3                   |
| Illinois         | Region III                               | 3.96%               | 3.23%          | 4.85%          | 3                   |
| Illinois         | Region IV                                | 3.56%               | 2.81%          | 4.50%          | 3                   |
| Illinois         | Region V                                 | 3.74%               | 3.02%          | 4.63%          | 3                   |
| <b>Indiana</b>   | <b>Indiana</b>                           | <b>4.98%</b>        | <b>4.20%</b>   | <b>5.90%</b>   |                     |
| Indiana          | Central                                  | 5.08%               | 3.97%          | 6.48%          | 6                   |
| Indiana          | East                                     | 5.14%               | 3.98%          | 6.64%          | 6                   |
| Indiana          | North Central                            | 4.70%               | 3.63%          | 6.06%          | 5                   |
| Indiana          | Northeast                                | 4.87%               | 3.75%          | 6.31%          | 5                   |
| Indiana          | Northwest                                | 4.93%               | 3.80%          | 6.38%          | 5                   |
| Indiana          | Southeast                                | 4.91%               | 3.80%          | 6.33%          | 5                   |
| Indiana          | Southwest                                | 4.62%               | 3.52%          | 6.05%          | 5                   |
| Indiana          | West                                     | 5.46%               | 4.27%          | 6.96%          | 7                   |
| <b>Iowa</b>      | <b>Iowa</b>                              | <b>3.76%</b>        | <b>3.10%</b>   | <b>4.55%</b>   |                     |
| Iowa             | Central                                  | 3.61%               | 2.76%          | 4.72%          | 3                   |
| Iowa             | North Central                            | 3.98%               | 3.00%          | 5.26%          | 3                   |
| Iowa             | Northeast                                | 3.83%               | 2.95%          | 4.95%          | 3                   |
| Iowa             | Northwest                                | 3.65%               | 2.74%          | 4.85%          | 3                   |
| Iowa             | Southeast                                | 3.88%               | 2.99%          | 5.02%          | 3                   |
| Iowa             | Southwest                                | 3.50%               | 2.61%          | 4.68%          | 2                   |
| <b>Kansas</b>    | <b>Kansas</b>                            | <b>4.03%</b>        | <b>3.33%</b>   | <b>4.88%</b>   |                     |
| Kansas           | Kansas City Metro                        | 4.06%               | 3.15%          | 5.21%          | 4                   |
| Kansas           | Northeast                                | 4.09%               | 3.13%          | 5.33%          | 4                   |
| Kansas           | South Central                            | 3.91%               | 2.96%          | 5.14%          | 3                   |
| Kansas           | Southeast                                | 4.25%               | 3.16%          | 5.68%          | 4                   |
| Kansas           | West                                     | 3.85%               | 2.91%          | 5.08%          | 3                   |
| Kansas           | Wichita (Sedgwick)                       | 4.02%               | 3.07%          | 5.23%          | 4                   |
| <b>Kentucky</b>  | <b>Kentucky</b>                          | <b>4.31%</b>        | <b>3.58%</b>   | <b>5.19%</b>   |                     |
| Kentucky         | Adanta, Cumberland River, and Lifeskills | 4.11%               | 3.13%          | 5.38%          | 4                   |
| Kentucky         | Bluegrass, Comprehend, and North Key     | 4.53%               | 3.52%          | 5.81%          | 4                   |
| Kentucky         | Communicare and River Valley             | 4.15%               | 3.18%          | 5.40%          | 4                   |
| Kentucky         | Four Rivers and Pennyroyal               | 4.07%               | 3.07%          | 5.37%          | 4                   |
| Kentucky         | Kentucky River, Mountain, and Pathways   | 4.15%               | 3.14%          | 5.48%          | 4                   |
| Kentucky         | Seven Counties                           | 4.43%               | 3.38%          | 5.79%          | 4                   |
| <b>Louisiana</b> | <b>Louisiana</b>                         | <b>4.79%</b>        | <b>4.03%</b>   | <b>5.68%</b>   |                     |
| Louisiana        | Region 1                                 | 4.63%               | 3.50%          | 6.09%          | 5                   |
| Louisiana        | Region 10 (Jefferson)                    | 4.60%               | 3.42%          | 6.15%          | 5                   |
| Louisiana        | Regions 2 and 9                          | 5.30%               | 4.17%          | 6.71%          | 7                   |
| Louisiana        | Region 3                                 | 4.70%               | 3.59%          | 6.13%          | 5                   |
| Louisiana        | Regions 4, 5, and 6                      | 4.59%               | 3.56%          | 5.91%          | 4                   |
| Louisiana        | Regions 7 and 8                          | 4.56%               | 3.57%          | 5.81%          | 4                   |
| <b>Maine</b>     | <b>Maine</b>                             | <b>3.59%</b>        | <b>2.94%</b>   | <b>4.36%</b>   |                     |
| Maine            | Aroostook                                | 3.35%               | 2.48%          | 4.50%          | 2                   |
| Maine            | Downeast                                 | 3.46%               | 2.53%          | 4.72%          | 2                   |
| Maine            | Central                                  | 3.63%               | 2.73%          | 4.82%          | 3                   |
| Maine            | Cumberland                               | 3.55%               | 2.68%          | 4.68%          | 3                   |
| Maine            | Midcoast                                 | 3.18%               | 2.36%          | 4.25%          | 1                   |
| Maine            | Penquis                                  | 3.83%               | 2.91%          | 5.01%          | 3                   |
| Maine            | Western                                  | 3.87%               | 2.91%          | 5.14%          | 3                   |
| Maine            | York                                     | 3.55%               | 2.65%          | 4.75%          | 3                   |

(continued)

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                | Substate region                     | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|----------------------|-------------------------------------|---------------------|----------------|----------------|---------------------|
| <b>Maryland</b>      | <b>Maryland</b>                     | <b>4.07%</b>        | <b>3.33%</b>   | <b>4.97%</b>   |                     |
| Maryland             | Anne Arundel                        | 4.14%               | 3.09%          | 5.52%          | 4                   |
| Maryland             | Baltimore City                      | 4.60%               | 3.42%          | 6.16%          | 5                   |
| Maryland             | Baltimore County                    | 4.26%               | 3.20%          | 5.64%          | 4                   |
| Maryland             | Montgomery                          | 3.70%               | 2.75%          | 4.96%          | 3                   |
| Maryland             | North Central                       | 3.75%               | 2.79%          | 5.02%          | 3                   |
| Maryland             | Northeast                           | 4.18%               | 3.13%          | 5.57%          | 4                   |
| Maryland             | Prince George's                     | 3.96%               | 2.94%          | 5.32%          | 3                   |
| Maryland             | South                               | 4.12%               | 3.07%          | 5.51%          | 4                   |
| Maryland             | West                                | 4.12%               | 3.08%          | 5.50%          | 4                   |
| <b>Massachusetts</b> | <b>Massachusetts</b>                | <b>3.49%</b>        | <b>2.86%</b>   | <b>4.27%</b>   |                     |
| Massachusetts        | Boston                              | 4.15%               | 3.13%          | 5.49%          | 4                   |
| Massachusetts        | Central                             | 3.67%               | 2.75%          | 4.88%          | 3                   |
| Massachusetts        | Metrowest                           | 3.26%               | 2.45%          | 4.32%          | 1                   |
| Massachusetts        | Northeast                           | 3.29%               | 2.49%          | 4.34%          | 1                   |
| Massachusetts        | Southeast                           | 3.40%               | 2.56%          | 4.48%          | 2                   |
| Massachusetts        | Western                             | 3.55%               | 2.67%          | 4.72%          | 3                   |
| <b>Michigan</b>      | <b>Michigan</b>                     | <b>4.36%</b>        | <b>3.91%</b>   | <b>4.85%</b>   |                     |
| Michigan             | Region 1                            | 3.96%               | 3.13%          | 4.99%          | 3                   |
| Michigan             | Region 2                            | 3.68%               | 2.85%          | 4.73%          | 3                   |
| Michigan             | Region 3                            | 4.34%               | 3.57%          | 5.27%          | 4                   |
| Michigan             | Region 4                            | 4.41%               | 3.61%          | 5.37%          | 4                   |
| Michigan             | Region 5                            | 4.74%               | 3.95%          | 5.68%          | 5                   |
| Michigan             | Region 6                            | 4.12%               | 3.34%          | 5.08%          | 4                   |
| Michigan             | Region 7                            | 4.37%               | 3.58%          | 5.32%          | 4                   |
| Michigan             | Region 8                            | 4.07%               | 3.30%          | 5.01%          | 4                   |
| Michigan             | Region 9                            | 4.40%               | 3.56%          | 5.44%          | 4                   |
| Michigan             | Region 10                           | 4.76%               | 3.84%          | 5.89%          | 5                   |
| <b>Minnesota</b>     | <b>Minnesota</b>                    | <b>3.41%</b>        | <b>2.78%</b>   | <b>4.17%</b>   |                     |
| Minnesota            | Regions 1 and 2                     | 3.47%               | 2.57%          | 4.68%          | 2                   |
| Minnesota            | Regions 3 and 4                     | 3.50%               | 2.67%          | 4.56%          | 2                   |
| Minnesota            | Regions 5 and 6                     | 3.43%               | 2.58%          | 4.54%          | 2                   |
| Minnesota            | Region 7A (Hennepin)                | 3.19%               | 2.41%          | 4.23%          | 1                   |
| Minnesota            | Region 7B (Ramsey)                  | 3.69%               | 2.73%          | 4.96%          | 3                   |
| Minnesota            | Region 7C                           | 3.37%               | 2.59%          | 4.39%          | 2                   |
| <b>Mississippi</b>   | <b>Mississippi</b>                  | <b>4.76%</b>        | <b>3.99%</b>   | <b>5.66%</b>   |                     |
| Mississippi          | Region 1                            | 5.22%               | 4.07%          | 6.67%          | 6                   |
| Mississippi          | Region 2                            | 4.73%               | 3.63%          | 6.14%          | 5                   |
| Mississippi          | Region 3                            | 4.58%               | 3.57%          | 5.87%          | 4                   |
| Mississippi          | Region 4                            | 4.48%               | 3.45%          | 5.80%          | 4                   |
| Mississippi          | Region 5                            | 4.54%               | 3.43%          | 5.99%          | 4                   |
| Mississippi          | Region 6                            | 4.75%               | 3.69%          | 6.09%          | 5                   |
| Mississippi          | Region 7                            | 4.67%               | 3.57%          | 6.09%          | 5                   |
| <b>Missouri</b>      | <b>Missouri</b>                     | <b>4.21%</b>        | <b>3.50%</b>   | <b>5.05%</b>   |                     |
| Missouri             | Central                             | 4.51%               | 3.49%          | 5.80%          | 4                   |
| Missouri             | Eastern (St. Louis City and County) | 3.92%               | 3.01%          | 5.09%          | 3                   |
| Missouri             | Eastern (excluding St. Louis)       | 4.26%               | 3.26%          | 5.55%          | 4                   |
| Missouri             | Northwest (Jackson)                 | 4.02%               | 3.00%          | 5.35%          | 4                   |
| Missouri             | Northwest (excluding Jackson)       | 4.25%               | 3.22%          | 5.58%          | 4                   |
| Missouri             | Southeast                           | 4.32%               | 3.28%          | 5.68%          | 4                   |
| Missouri             | Southwest                           | 4.32%               | 3.33%          | 5.58%          | 4                   |
| <b>Montana</b>       | <b>Montana</b>                      | <b>3.46%</b>        | <b>2.81%</b>   | <b>4.25%</b>   |                     |
| Montana              | Region 1                            | 3.17%               | 2.30%          | 4.36%          | 1                   |
| Montana              | Region 2                            | 3.46%               | 2.60%          | 4.58%          | 2                   |
| Montana              | Region 3                            | 3.29%               | 2.48%          | 4.34%          | 1                   |
| Montana              | Region 4                            | 3.64%               | 2.78%          | 4.74%          | 3                   |
| Montana              | Region 5                            | 3.50%               | 2.70%          | 4.53%          | 2                   |

(continued)

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                 | Substate region                             | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|-----------------------|---|---------------------|----------------|----------------|---------------------|
| <b>Nebraska</b>       | <b>Nebraska</b>                             | <b>3.61%</b>        | <b>2.97%</b>   | <b>4.38%</b>   |                     |
| Nebraska              | Region 1                                    | 3.48%               | 2.57%          | 4.70%          | 2                   |
| Nebraska              | Region 2                                    | 3.69%               | 2.69%          | 5.02%          | 3                   |
| Nebraska              | Region 3                                    | 3.46%               | 2.64%          | 4.54%          | 2                   |
| Nebraska              | Region 4                                    | 3.47%               | 2.59%          | 4.65%          | 2                   |
| Nebraska              | Region 5                                    | 3.73%               | 2.90%          | 4.78%          | 3                   |
| Nebraska              | Region 6                                    | 3.62%               | 2.83%          | 4.62%          | 3                   |
| <b>Nevada</b>         | <b>Nevada</b>                               | <b>5.20%</b>        | <b>4.26%</b>   | <b>6.33%</b>   |                     |
| Nevada                | Clark - Region 1                            | 5.37%               | 4.29%          | 6.70%          | 7                   |
| Nevada                | Capital District                            | 4.56%               | 3.35%          | 6.19%          | 4                   |
| Nevada                | Rural/Frontier                              | 4.84%               | 3.57%          | 6.52%          | 5                   |
| Nevada                | Washoe - Region 2                           | 4.83%               | 3.71%          | 6.26%          | 5                   |
| <b>New Hampshire</b>  | <b>New Hampshire</b>                        | <b>4.32%</b>        | <b>3.62%</b>   | <b>5.14%</b>   |                     |
| New Hampshire         | Central                                     | 4.44%               | 3.60%          | 5.47%          | 4                   |
| New Hampshire         | Northern                                    | 4.11%               | 3.14%          | 5.37%          | 4                   |
| New Hampshire         | Southern                                    | 4.30%               | 3.51%          | 5.25%          | 4                   |
| <b>New Jersey</b>     | <b>New Jersey</b>                           | <b>3.92%</b>        | <b>3.23%</b>   | <b>4.75%</b>   |                     |
| New Jersey            | Central                                     | 4.05%               | 3.10%          | 5.29%          | 4                   |
| New Jersey            | Metropolitan                                | 3.58%               | 2.73%          | 4.69%          | 3                   |
| New Jersey            | Northern                                    | 4.00%               | 3.08%          | 5.18%          | 3                   |
| New Jersey            | Southern                                    | 4.02%               | 3.11%          | 5.19%          | 4                   |
| <b>New Mexico</b>     | <b>New Mexico</b>                           | <b>4.84%</b>        | <b>3.98%</b>   | <b>5.87%</b>   |                     |
| New Mexico            | Region 1                                    | 4.44%               | 3.39%          | 5.81%          | 4                   |
| New Mexico            | Region 2                                    | 4.37%               | 3.23%          | 5.89%          | 4                   |
| New Mexico            | Region 3 (Bernalillo)                       | 5.07%               | 3.91%          | 6.54%          | 6                   |
| New Mexico            | Region 4                                    | 4.99%               | 3.83%          | 6.49%          | 5                   |
| New Mexico            | Region 5                                    | 5.12%               | 3.92%          | 6.66%          | 6                   |
| <b>New York</b>       | <b>New York</b>                             | <b>3.87%</b>        | <b>3.41%</b>   | <b>4.38%</b>   |                     |
| New York              | Region A                                    | 3.83%               | 3.27%          | 4.49%          | 3                   |
| New York              | Region B                                    | 3.72%               | 3.15%          | 4.38%          | 3                   |
| New York              | Region C                                    | 4.02%               | 3.49%          | 4.61%          | 4                   |
| New York              | Region D                                    | 4.10%               | 3.44%          | 4.87%          | 4                   |
| <b>North Carolina</b> | <b>North Carolina</b>                       | <b>4.57%</b>        | <b>3.81%</b>   | <b>5.48%</b>   |                     |
| North Carolina        | Alliance Behavioral Healthcare 1            | 4.61%               | 3.51%          | 6.02%          | 5                   |
| North Carolina        | Alliance Behavioral Healthcare 2            | 4.14%               | 3.11%          | 5.49%          | 4                   |
| North Carolina        | Cardinal Innovations Healthcare Solutions 1 | 4.35%               | 3.25%          | 5.80%          | 4                   |
| North Carolina        | Cardinal Innovations Healthcare Solutions 2 | 4.55%               | 3.41%          | 6.06%          | 4                   |
| North Carolina        | Cardinal Innovations Healthcare Solutions 3 | 4.55%               | 3.45%          | 5.99%          | 4                   |
| North Carolina        | CenterPoint Human Services                  | 4.40%               | 3.31%          | 5.84%          | 4                   |
| North Carolina        | Eastpointe                                  | 4.42%               | 3.31%          | 5.88%          | 4                   |
| North Carolina        | Partners Behavioral Health Management       | 5.06%               | 3.83%          | 6.66%          | 6                   |
| North Carolina        | Sandhills Center 1                          | 4.32%               | 3.20%          | 5.81%          | 4                   |
| North Carolina        | Sandhills Center 2                          | 4.70%               | 3.53%          | 6.24%          | 5                   |
| North Carolina        | Smoky Mountain Center 1                     | 4.43%               | 3.26%          | 6.00%          | 4                   |
| North Carolina        | Smoky Mountain Center 2                     | 4.86%               | 3.59%          | 6.56%          | 5                   |
| North Carolina        | Trillium Healthcare Resources 1             | 4.66%               | 3.48%          | 6.21%          | 5                   |
| North Carolina        | Trillium Healthcare Resources 2             | 4.99%               | 3.78%          | 6.56%          | 5                   |
| <b>North Dakota</b>   | <b>North Dakota</b>                         | <b>3.69%</b>        | <b>3.05%</b>   | <b>4.48%</b>   |                     |
| North Dakota          | Badlands and West Central                   | 3.54%               | 2.68%          | 4.65%          | 3                   |
| North Dakota          | Lake Region                                 | 3.00%               | 2.21%          | 4.07%          | 1                   |
| North Dakota          | North Central                               | 3.80%               | 2.86%          | 5.03%          | 3                   |
| North Dakota          | Northeast                                   | 4.21%               | 3.25%          | 5.43%          | 4                   |
| North Dakota          | Northwest                                   | 3.66%               | 2.70%          | 4.93%          | 3                   |
| North Dakota          | South Central                               | 3.51%               | 2.59%          | 4.75%          | 3                   |
| North Dakota          | Southeast                                   | 3.76%               | 2.92%          | 4.82%          | 3                   |

(continued)

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**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                 | Substate region                       | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|-----------------------|---------------------------------------|---------------------|----------------|----------------|---------------------|
| <b>Ohio</b>           | <b>Ohio</b>                           | <b>4.98%</b>        | <b>4.46%</b>   | <b>5.55%</b>   |                     |
| Ohio                  | Boards 2, 46, 55, and 68              | 4.87%               | 3.80%          | 6.22%          | 5                   |
| Ohio                  | Boards 3, 52, and 85                  | 4.98%               | 3.91%          | 6.31%          | 5                   |
| Ohio                  | Boards 4 and 78                       | 5.27%               | 4.07%          | 6.80%          | 6                   |
| Ohio                  | Boards 5 and 60                       | 5.80%               | 4.57%          | 7.33%          | 7                   |
| Ohio                  | Boards 7, 15, 41, 79, and 84          | 4.98%               | 3.93%          | 6.29%          | 5                   |
| Ohio                  | Boards 8, 13, and 83                  | 4.73%               | 3.71%          | 6.00%          | 5                   |
| Ohio                  | Board 9 (Butler)                      | 5.15%               | 4.03%          | 6.58%          | 6                   |
| Ohio                  | Board 12                              | 5.07%               | 3.98%          | 6.44%          | 6                   |
| Ohio                  | Boards 18 and 47                      | 4.60%               | 3.76%          | 5.62%          | 5                   |
| Ohio                  | Boards 20, 32, 54, and 69             | 4.39%               | 3.41%          | 5.65%          | 4                   |
| Ohio                  | Boards 21, 39, 51, 70, and 80         | 4.93%               | 3.90%          | 6.21%          | 5                   |
| Ohio                  | Boards 22, 74, and 87                 | 4.76%               | 3.75%          | 6.04%          | 5                   |
| Ohio                  | Boards 23 and 45                      | 4.62%               | 3.63%          | 5.86%          | 5                   |
| Ohio                  | Board 25 (Franklin)                   | 5.58%               | 4.54%          | 6.85%          | 7                   |
| Ohio                  | Boards 27, 71, and 73                 | 5.41%               | 4.23%          | 6.90%          | 7                   |
| Ohio                  | Boards 28, 43, and 67                 | 5.02%               | 3.96%          | 6.36%          | 6                   |
| Ohio                  | Board 31 (Hamilton)                   | 4.76%               | 3.80%          | 5.95%          | 5                   |
| Ohio                  | Board 48 (Lucas)                      | 5.15%               | 4.05%          | 6.53%          | 6                   |
| Ohio                  | Boards 50 and 76                      | 4.83%               | 3.81%          | 6.10%          | 5                   |
| Ohio                  | Board 57 (Montgomery)                 | 5.10%               | 4.03%          | 6.43%          | 6                   |
| Ohio                  | Board 77 (Summit)                     | 4.82%               | 3.79%          | 6.10%          | 5                   |
| <b>Oklahoma</b>       | <b>Oklahoma</b>                       | <b>5.31%</b>        | <b>4.43%</b>   | <b>6.35%</b>   |                     |
| Oklahoma              | Central                               | 5.65%               | 4.32%          | 7.35%          | 7                   |
| Oklahoma              | East Central                          | 4.88%               | 3.69%          | 6.42%          | 5                   |
| Oklahoma              | Northeast                             | 4.96%               | 3.78%          | 6.49%          | 5                   |
| Oklahoma              | Northwest and Southwest               | 5.76%               | 4.40%          | 7.50%          | 7                   |
| Oklahoma              | Oklahoma County                       | 5.18%               | 4.02%          | 6.65%          | 6                   |
| Oklahoma              | Southeast                             | 5.11%               | 3.91%          | 6.67%          | 6                   |
| Oklahoma              | Tulsa County                          | 5.55%               | 4.28%          | 7.16%          | 7                   |
| <b>Oregon</b>         | <b>Oregon</b>                         | <b>5.10%</b>        | <b>4.26%</b>   | <b>6.10%</b>   |                     |
| Oregon                | Region 1 (Multnomah)                  | 5.53%               | 4.25%          | 7.17%          | 7                   |
| Oregon                | Region 2                              | 4.83%               | 3.75%          | 6.22%          | 5                   |
| Oregon                | Region 3                              | 5.18%               | 4.10%          | 6.54%          | 6                   |
| Oregon                | Region 4                              | 5.01%               | 3.81%          | 6.57%          | 6                   |
| Oregon                | Region 5 (Central)                    | 4.90%               | 3.69%          | 6.47%          | 5                   |
| Oregon                | Region 6 (Eastern)                    | 4.76%               | 3.54%          | 6.37%          | 5                   |
| <b>Pennsylvania</b>   | <b>Pennsylvania</b>                   | <b>3.87%</b>        | <b>3.46%</b>   | <b>4.33%</b>   |                     |
| Pennsylvania          | Region 1 (Allegheny)                  | 4.21%               | 3.38%          | 5.23%          | 4                   |
| Pennsylvania          | Regions 3, 8, 9, and 51               | 4.08%               | 3.24%          | 5.12%          | 4                   |
| Pennsylvania          | Regions 4, 11, 37, and 49             | 3.77%               | 3.02%          | 4.71%          | 3                   |
| Pennsylvania          | Regions 5, 18, 23, 24, and 46         | 3.42%               | 2.71%          | 4.31%          | 2                   |
| Pennsylvania          | Regions 6, 12, 16, 31, 35, 45, and 47 | 3.91%               | 3.11%          | 4.91%          | 3                   |
| Pennsylvania          | Regions 7, 13, 20, and 33             | 3.66%               | 3.02%          | 4.44%          | 3                   |
| Pennsylvania          | Regions 10, 15, 27, 32, 43, and 44    | 3.47%               | 2.71%          | 4.44%          | 2                   |
| Pennsylvania          | Regions 17 and 21                     | 4.01%               | 3.19%          | 5.04%          | 3                   |
| Pennsylvania          | Regions 19, 26, 28, and 42            | 3.61%               | 2.91%          | 4.47%          | 3                   |
| Pennsylvania          | Regions 22, 38, 40, 41, and 48        | 3.46%               | 2.73%          | 4.36%          | 2                   |
| Pennsylvania          | Regions 29 and 34                     | 4.06%               | 3.21%          | 5.12%          | 4                   |
| Pennsylvania          | Regions 30 and 50                     | 3.96%               | 3.13%          | 5.00%          | 3                   |
| Pennsylvania          | Region 36 (Philadelphia)              | 4.57%               | 3.72%          | 5.61%          | 4                   |
| <b>Rhode Island</b>   | <b>Rhode Island</b>                   | <b>4.57%</b>        | <b>3.78%</b>   | <b>5.52%</b>   |                     |
| Rhode Island          | Bristol and Newport                   | 4.34%               | 3.26%          | 5.76%          | 4                   |
| Rhode Island          | Kent                                  | 4.06%               | 3.06%          | 5.37%          | 4                   |
| Rhode Island          | Providence                            | 4.78%               | 3.84%          | 5.93%          | 5                   |
| Rhode Island          | Washington                            | 4.45%               | 3.37%          | 5.85%          | 4                   |
| <b>South Carolina</b> | <b>South Carolina</b>                 | <b>4.35%</b>        | <b>3.63%</b>   | <b>5.19%</b>   |                     |
| South Carolina        | Region 1                              | 4.31%               | 3.39%          | 5.46%          | 4                   |
| South Carolina        | Region 2                              | 4.46%               | 3.51%          | 5.64%          | 4                   |
| South Carolina        | Region 3                              | 4.19%               | 3.23%          | 5.43%          | 4                   |
| South Carolina        | Region 4                              | 4.40%               | 3.45%          | 5.59%          | 4                   |

(continued)

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State                | Substate region                                       | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|----------------------|---|---------------------|----------------|----------------|---------------------|
| <b>South Dakota</b>  | <b>South Dakota</b>                                   | <b>3.50%</b>        | <b>2.88%</b>   | <b>4.24%</b>   |                     |
| South Dakota         | Region 1  | 3.26%               | 2.50%          | 4.24%          | 1                   |
| South Dakota         | Region 2  | 3.30%               | 2.46%          | 4.41%          | 1                   |
| South Dakota         | Region 3  | 3.55%               | 2.73%          | 4.60%          | 3                   |
| South Dakota         | Region 4  | 3.73%               | 2.86%          | 4.84%          | 3                   |
| South Dakota         | Region 5  | 3.60%               | 2.78%          | 4.66%          | 3                   |
| <b>Tennessee</b>     | <b>Tennessee</b>                                      | <b>4.18%</b>        | <b>3.50%</b>   | <b>4.99%</b>   |                     |
| Tennessee            | Region 1  | 4.19%               | 3.13%          | 5.59%          | 4                   |
| Tennessee            | Region 2  | 4.23%               | 3.24%          | 5.49%          | 4                   |
| Tennessee            | Region 3  | 3.97%               | 3.07%          | 5.11%          | 3                   |
| Tennessee            | Region 4 (Davidson)                                   | 4.38%               | 3.35%          | 5.71%          | 4                   |
| Tennessee            | Region 5  | 4.26%               | 3.32%          | 5.45%          | 4                   |
| Tennessee            | Region 6  | 4.01%               | 3.04%          | 5.28%          | 3                   |
| Tennessee            | Region 7 (Shelby)                                     | 4.19%               | 3.21%          | 5.47%          | 4                   |
| <b>Texas</b>         | <b>Texas</b>  | <b>4.19%</b>        | <b>3.77%</b>   | <b>4.64%</b>   |                     |
| Texas                | Region 1  | 4.50%               | 3.61%          | 5.60%          | 4                   |
| Texas                | Region 2  | 4.39%               | 3.44%          | 5.60%          | 4                   |
| Texas                | Region 3  | 4.10%               | 3.53%          | 4.75%          | 4                   |
| Texas                | Region 4  | 4.07%               | 3.25%          | 5.09%          | 4                   |
| Texas                | Region 5  | 4.17%               | 3.28%          | 5.29%          | 4                   |
| Texas                | Region 6  | 3.92%               | 3.30%          | 4.65%          | 3                   |
| Texas                | Region 7  | 4.65%               | 3.90%          | 5.52%          | 5                   |
| Texas                | Region 8  | 4.52%               | 3.66%          | 5.55%          | 4                   |
| Texas                | Region 9  | 4.39%               | 3.46%          | 5.56%          | 4                   |
| Texas                | Region 10   | 4.10%               | 3.24%          | 5.17%          | 4                   |
| Texas                | Region 11   | 4.02%               | 3.33%          | 4.84%          | 4                   |
| <b>Utah</b>          | <b>Utah</b>   | <b>4.06%</b>        | <b>3.39%</b>   | <b>4.85%</b>   |                     |
| Utah                 | Bear River, Northeastern, Summit, Tooele, and Wasatch | 3.91%               | 2.97%          | 5.14%          | 3                   |
| Utah                 | Central, Four Corners, San Juan, and Southwest        | 4.02%               | 3.06%          | 5.26%          | 4                   |
| Utah                 | Davis County  | 4.03%               | 3.09%          | 5.24%          | 4                   |
| Utah                 | Salt Lake County                                      | 3.88%               | 3.08%          | 4.89%          | 3                   |
| Utah                 | Utah County   | 4.38%               | 3.43%          | 5.59%          | 4                   |
| Utah                 | Weber, Morgan   | 4.43%               | 3.32%          | 5.89%          | 4                   |
| <b>Vermont</b>       | <b>Vermont</b>  | <b>3.49%</b>        | <b>2.87%</b>   | <b>4.23%</b>   |                     |
| Vermont              | Champlain Valley                                      | 3.66%               | 2.88%          | 4.63%          | 3                   |
| Vermont              | Rural Northeast                                       | 3.39%               | 2.58%          | 4.43%          | 2                   |
| Vermont              | Rural Southeast                                       | 3.32%               | 2.49%          | 4.42%          | 1                   |
| Vermont              | Rural Southwest                                       | 3.41%               | 2.58%          | 4.50%          | 2                   |
| <b>Virginia</b>      | <b>Virginia</b>                                       | <b>4.61%</b>        | <b>3.88%</b>   | <b>5.48%</b>   |                     |
| Virginia             | Region 1  | 5.08%               | 3.94%          | 6.53%          | 6                   |
| Virginia             | Region 2  | 4.27%               | 3.30%          | 5.49%          | 4                   |
| Virginia             | Region 3  | 4.47%               | 3.46%          | 5.76%          | 4                   |
| Virginia             | Region 4  | 4.97%               | 3.82%          | 6.46%          | 5                   |
| Virginia             | Region 5  | 4.56%               | 3.55%          | 5.84%          | 4                   |
| <b>Washington</b>    | <b>Washington</b>                                     | <b>4.68%</b>        | <b>3.93%</b>   | <b>5.57%</b>   |                     |
| Washington           | Region 1  | 4.57%               | 3.65%          | 5.72%          | 4                   |
| Washington           | Region 2  | 4.75%               | 3.86%          | 5.84%          | 5                   |
| Washington           | Region 3  | 4.66%               | 3.81%          | 5.70%          | 5                   |
| <b>West Virginia</b> | <b>West Virginia</b>                                  | <b>3.89%</b>        | <b>3.24%</b>   | <b>4.67%</b>   |                     |
| West Virginia        | Region I  | 3.70%               | 2.75%          | 4.95%          | 3                   |
| West Virginia        | Region II   | 3.95%               | 3.00%          | 5.20%          | 3                   |
| West Virginia        | Region III  | 3.82%               | 2.86%          | 5.08%          | 3                   |
| West Virginia        | Region IV   | 4.26%               | 3.34%          | 5.42%          | 4                   |
| West Virginia        | Region V  | 3.72%               | 2.90%          | 4.75%          | 3                   |
| West Virginia        | Region VI   | 3.81%               | 2.91%          | 4.96%          | 3                   |

(continued)

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.

**Table S1 - continued. Nonmedical use of prescription pain relievers in the past year among people aged 12 or older, by substate region: percentages, annual averages based on combined 2012 to 2014 NSDUHs**

| State            | Substate region               | Small area estimate | 95% CI (lower) | 95% CI (upper) | Substate area group |
|------------------|-------------------------------|---------------------|----------------|----------------|---------------------|
| <b>Wisconsin</b> | <b>Wisconsin</b>              | <b>4.38%</b>        | <b>3.63%</b>   | <b>5.27%</b>   |                     |
| Wisconsin        | Milwaukee                     | 5.02%               | 3.80%          | 6.60%          | 6                   |
| Wisconsin        | Northeastern                  | 4.08%               | 3.11%          | 5.32%          | 4                   |
| Wisconsin        | Northern                      | 4.06%               | 2.99%          | 5.49%          | 4                   |
| Wisconsin        | Southeastern                  | 4.35%               | 3.29%          | 5.74%          | 4                   |
| Wisconsin        | Southern                      | 4.30%               | 3.28%          | 5.61%          | 4                   |
| Wisconsin        | Western                       | 4.44%               | 3.45%          | 5.69%          | 4                   |
| <b>Wyoming</b>   | <b>Wyoming</b>                | <b>3.58%</b>        | <b>2.93%</b>   | <b>4.36%</b>   |                     |
| Wyoming          | Judicial District 1 (Laramie) | 3.33%               | 2.51%          | 4.39%          | 1                   |
| Wyoming          | Judicial District 2           | 4.52%               | 3.44%          | 5.93%          | 4                   |
| Wyoming          | Judicial District 3           | 3.38%               | 2.56%          | 4.47%          | 2                   |
| Wyoming          | Judicial District 4           | 3.39%               | 2.48%          | 4.61%          | 2                   |
| Wyoming          | Judicial District 5           | 3.26%               | 2.40%          | 4.42%          | 1                   |
| Wyoming          | Judicial District 6           | 3.73%               | 2.80%          | 4.95%          | 3                   |
| Wyoming          | Judicial District 7 (Natrona) | 3.87%               | 2.92%          | 5.12%          | 3                   |
| Wyoming          | Judicial District 8           | 3.37%               | 2.50%          | 4.54%          | 2                   |
| Wyoming          | Judicial District 9           | 3.42%               | 2.53%          | 4.61%          | 2                   |

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health (NSDUH), 2012 to 2014.



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## SUMMARY

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**Background:** Nonmedical use of prescription pain relievers is second only to marijuana use as the nation's most prevalent illicit drug problem and is a public health concern, with approximately over 26 million people initiating nonmedical use of prescription pain relievers since 2002. Data on geographic variation in the nonmedical use of prescription pain relievers (and other drugs) are important for developing targeted prevention and treatment programs. **Method:** Combined 2012–2014 National Survey on Drug Use and Health national, regional, state-level, and substate-level estimates of nonmedical use of prescription pain relievers among people aged 12 or older were analyzed. **Results:** Nationally, 11.3 million people aged 12 or older used prescription pain relievers nonmedically in the past year, corresponding to 4.31 percent of the adult population. Across the census regions, estimates of past year nonmedical use of prescription pain relievers were 4.78 percent in the West, 4.30 percent in the South, 4.21 percent in the Midwest, and 3.82 percent in the Northeast. Among states, estimates of past year nonmedical use of prescription pain relievers ranged from 3.41 percent in Minnesota to 5.31 percent in Oklahoma. Among the substate regions, estimates of past year nonmedical use of prescription pain relievers ranged from 5.89 percent in Colorado's Region 1 to 2.95 percent in Florida's Southern region (Circuits 11 and 16). Comparisons of combined 2010–2012 data with combined 2012–2014 data showed that past year nonmedical use of prescription pain relievers among people aged 12 or older decreased at the national level, within 3 census regions (Northeast, Midwest, and West), and in 13 states. **Conclusion:** Highlighting the percentage of people who use prescription pain relievers nonmedically at state and substate levels can help policymakers inform their assessments of substance abuse needs in their communities.

**Keywords:** Prescription pain relievers, National Survey on Drug Use and Health, NSDUH, state, substate

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## AUTHOR INFORMATION

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cbhsqrequest@samhsa.hhs.gov

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## KEYWORDS

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Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, Short Report, Population Data, 2010, 2011, 2012, 2013, 2014, Researchers, Nonmedical Use, Drug Use Trends, Pain Relievers, All US States Only

The Substance Abuse and Mental Health Services Administration (SAMHSA) is the agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. SAMHSA's mission is to reduce the impact of substance abuse and mental illness on America's communities.

The National Survey on Drug Use and Health (NSDUH) is an annual survey sponsored by The Substance Abuse and Mental Health Services Administration (SAMHSA). The data used in this report are based on 2012–2014 NSDUH data from approximately 204,000 respondents aged 12 or older. The Survey collects data by administering questionnaires to a representative sample of the population through face-to-face interviews at their place of residence.

The NSDUH Report is prepared by The Center for Behavioral Health Statistics and Quality (CBHSQ), SAMHSA, and by RTI International in Research Triangle Park, North Carolina. (RTI International is a trade name of Research Triangle Institute.)

Information on the most recent NSDUH is available in the following publication:

Center for Behavioral Health Statistics and Quality. (2016). Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug Use and Health (HHS Publication No. SMA 16-4984, NSDUH Series H-51). Retrieved from <http://samhsa.gov/data/>.

Also available online: <http://www.samhsa.gov/data/population-data-nsduh>.



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Substance Abuse & Mental Health Services Administration  
Center for Behavioral Health Statistics and Quality  
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