

# Prevalence of Substance Use Disorders Among Veterans and Comparable Nonveterans From the National Survey on Drug Use and Health

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The Department of Veterans Affairs (VA) operates over 200 substance abuse treatment programs. Historically, planning for these services has not been informed by population-level prevalence data. Accordingly, the authors analyzed the National Survey on Drug Use and Health data from 2000 to 2003 to estimate substance use and substance use disorder prevalence among all veterans. The authors present the data in comparison to comparable nonveterans. Data show notable rates of substance use among veterans; 22.6% and 4.4% of veterans reported binge drinking and any illicit drug use in the past month, respectively. In addition, prevalence varied by geographic location. Monitoring substance use prevalence is needed to ensure the VA and other substance use providers can plan appropriate substance use disorder services for current and future enrollees, including veterans of the current military operations in Iraq and Afghanistan.

*Keywords:* substance use treatment, alcohol, drugs, tobacco, veterans

Addictive disorders contribute to premature mortality, family conflict, unemployment, crime, psychiatric disorders, infectious disease

transmission, and automobile accidents. Veterans, who represent about 11% (23.7 million) of the adult U.S. population (U.S. Census Bureau, 2004), are among those significantly affected by addiction. The Department of Veterans Affairs (VA) diagnosed almost 800,000 patients with illicit drug, nicotine, and/or alcohol use disorders in fiscal year 2005 (McKellar & Dalton, 2006). Recognizing the severity of these problems, and that about 1 in 4 veterans use VA health care services, the Veterans Health Administration operates over 200 substance abuse treatment programs across the country (Tracy, Trafton, & Humphreys 2004).

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Planning for VA services has historically been hampered by a lack of data on the prevalence of problematic substance use and of treatment-seeking among veterans in the general population. VA addiction treatment planners have often been forced to estimate the need for services based on the nonrepresentative subset of veterans who seek treatment rather than on

population-level prevalence data. Planning in this fashion can lead to the misallocation of resources in times of great change, such as the current wars in Iraq and Afghanistan.

To help remedy this situation, we analyzed data from the National Survey on Drug Use and Health (NSDUH) to determine population-based substance use prevalence estimates for veterans and a comparable group of non-veterans. These analyses are of inherent interest for VA planning and have the added advantage of being based on data gathered prior to the utilization of VA services by significant numbers of veterans of the current wars in Iraq and Afghanistan. Baseline estimates will be important in the future for judging how need for VA services is affected by the current military operations, which have resulted in substantial numbers of current military personnel (most of whom will become veterans) seeking mental health services (Hoge, Auchterlonie, & Milliken, 2006).

### Data and Method

We analyzed data from adults participating in the 2000, 2001, 2002, and 2003 NSDUH. The NSDUH is administered annually by the Substance Abuse and Mental Health Services Administration and is the primary source of statistical information on the use and misuse of alcohol, tobacco and illegal drugs in the United States (for more information see <http://www.oas.samhsa.gov/nhsda.htm>). The survey is designed to be a nationally representative sample of the civilian, noninstitutionalized population. NSDUH employs a multistage probability sampling design to facilitate state-level estimation. Response rates for the survey varied from 73.3% in 2001 to a high of 78.6% in 2002, due in part to the introduction of a \$30 payment to respondents and new quality control programs. The NSDUH has been widely used in analyzing determinants of substance use and in forecasting need for substance abuse prevention and treatment programs (Gfroerer & Epstein, 1999; Harris & Edlund, 2005a, 2005b).

We included 16 measures related to alcohol, tobacco, and illicit drug use from the NSDUH. Seven of the variables assessed behaviors in the past month (i.e., 30 days prior to the interview): alcohol use, binge alcohol use, heavy alcohol

use, daily smoking, marijuana use, any illicit drug use and any illicit drug use other than marijuana. Binge drinking was defined as consuming five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy drinking was defined as consuming five or more drinks on the same occasion on 5 or more days in the past 30 days. Thus, heavy alcohol users are by definition also binge users of alcohol. The survey defined illicit drugs as including marijuana or hashish, cocaine, inhalants, hallucinogens (including LSD, PCP, or Ecstasy), heroin, and nonmedical use of psychotherapeutics, which include stimulants, sedatives, tranquilizers, and pain relievers.

Six measures tapped alcohol and illicit drug abuse and dependence in the past year. Respondents were considered substance abusers if they met one or more of the four criteria for abuse included in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* and did not meet the definition for dependence on that substance (American Psychiatric Association, 1996). Additional criteria for alcohol and marijuana abuse were that if respondents reported a specific number of days that they used these drugs in the past 12 months, they must have used these drugs on 6 or more days in that period. Respondents were defined as dependent if they met three out of seven dependence criteria (for substances that included questions to measure a withdrawal criterion) or three out of six criteria (for substances that did not include withdrawal questions) for that substance, based on criteria included in the *DSM-IV* (American Psychiatric Association, 1996). Additional criteria for alcohol and marijuana dependence were that if respondents reported a specific number of days that they used these drugs in the past 12 months, they must have used these drugs on 6 or more days in that period.

We tallied responses to three additional variables. First, respondents were asked whether in the past 12 months they had driven a vehicle while under the influence of alcohol and/or illegal drugs. Second, to identify substance use treatment the NSDUH asked, "During the past 12 months, that is since [DATEFILL] have you received treatment or counseling for your use of alcohol or any

drug, not counting cigarettes?” Lastly, the survey generates an estimate of the “treatment gap,” which is widely cited in federal policy circles, for example by Congress, SAMHSA and the White House Office on National Drug Control Policy (see, e.g., SAMHSA, 2002). The treatment gap is defined by these agencies as being dependent on drugs and/or alcohol but not receiving SUD treatment in the last year.

Compared to the general population, veterans tend to be older, have a much greater proportion of men than women, and are concentrated in different parts of the country. Although we present unadjusted prevalence estimates for veterans, we used statistical models to create a comparison group of nonveterans, taking age, gender, and geographic region into account. We used estimates of the VA population to calculate county-level estimates for males and females, both overall and for ages 34 or younger, 35 to 54, 55 to 74, and 75 or older (Department of Veterans Affairs, 2005). Separate files were created for each year to match the 2000–2003 NSDUH data. A Veteran Integrated Service Network (VISN)-county-state crosswalk file was used to merge the VA data with NSDUH analytical data to provide estimates by geographic region. Using statistical models, the nonveteran population was made to be comparable with veteran population for domains defined by age, gender, and VISN. The models also controlled for time trends and changes in NSDUH survey methods using year dummy variables. We use the weighting class adjustment method for standardization (Konijn, 1973). In standardization, a ratio of the sum of poststratified weights for the veteran sample to the sum of NSDUH analysis weight for the nonveteran sample was calculated first for each of the domains defined by VISN, new age group (7 levels) and gender. Then the domain-specific ratio was applied to the NSDUH analysis weight for the nonveteran sample, (i.e., obtaining the standardized weight by multiplying the NSDUH analysis weight by the ratio). To adjust for the effect of age on substance use behaviors for veterans and nonveterans, we used finer age groups in the standardization process while preserving the cutoff points of the original four age groups proposed by the VA office. If there was no veteran sample in a specific domain,

the ratio was zero and thus the standardized weight for the nonveteran sample in that domain was zero. For veterans, we also used weights that were poststratified to the VA population totals. Details of the methods are available upon request in a technical report. By using these models, veterans and nonveterans have been statistically adjusted to have similar distributions across age, gender, and geographic region. Hereafter, we referred to this group as “comparable nonveterans.” Although we pooled data across years, for some outcomes there were geographic regions with small sample sizes. Standard NSDUH criteria were implemented to identify unreliable estimates and were based on the relative standard error, on the nominal sample size, and on the effective sample size. The sample size limitations also prevented us from assessing prevalence among subgroups, such as among women or racial/ethnic groups.

## Study Findings

### *Sample Characteristics*

Of the 12,072 veteran respondents, defined as having served in the armed forces and no longer in active duty, about a quarter were under age 35 (see Table 1). There were 20 persons under age 18 years of age. Veterans at this young age are rare, but we have included them in the study for completeness. Note that because NSDUH’s target population was limited to the civilian population, persons currently on active duty were not included in the NSDUH data.

### *Alcohol Use*

Over half (56.6%) of the veterans reported any alcohol use in the past month, significantly higher than the rate (50.8%) among comparable nonveterans (see Table 2). The binge alcohol use rate among veterans (22.6%) was similar to that of nonveterans. The proportion of veterans who were heavy alcohol users was high in absolute terms (7.5%) and significantly greater than the rate among nonveterans. Despite these indicators of greater alcohol consumption among veterans, veterans and comparable nonveterans were not statistically different with re-

**Table 1**  
*Unweighted Sample Sizes for Veterans and Nonveterans by Age Group and Gender*

|              | Veteran status |    | Nonveteran status |    |
|--------------|----------------|----|-------------------|----|
|              | <i>N</i>       | %  | <i>N</i>          | %  |
| Total        | 12,072         |    | 184,339           |    |
| Age group, y |                |    |                   |    |
| 17–34        | 2,913          | 24 | 132,543           | 72 |
| 35–54        | 4,260          | 35 | 38,350            | 21 |
| 55–74        | 3,632          | 30 | 10,376            | 5  |
| 75 or older  | 1,267          | 11 | 3,070             | 2  |
| Gender       |                |    |                   |    |
| Male         | 10,866         | 90 | 81,142            | 44 |
| Female       | 1,206          | 10 | 103,197           | 56 |

*Source.* Substance Abuse and Mental Health Services Administration (SAMHSA), Office of Applied Studies, National Survey on Drug Use and Health (NSDUH), 2000, 2001, 2002, and 2003.

**Table 2**  
*Prevalence of Substance Use by Veterans and Age, Gender, and Geographic Region Comparable Nonveterans*

|  | Veteran                 |                                      | Comparable nonveteran <sup>a</sup> |                         |
|--|-------------------------|--------------------------------------|------------------------------------|-------------------------|
|  | Prevalence <sup>b</sup> | 95% Confidence interval <sup>b</sup> | Prevalence                         | 95% Confidence interval |
| <b>Past month</b>  |                         |                                      |                                    |                         |
| Alcohol use  | 56.6 <sup>c</sup>       | (54.5, 58.6)                         | 50.8                               | (48.5, 53.1)            |
| Binge alcohol use <sup>d</sup>   | 22.6                    | (21.0, 24.2)                         | 21.6                               | (20.1, 23.1)            |
| Heavy alcohol use <sup>d</sup>   | 7.5 <sup>c</sup>        | (6.6, 8.5)                           | 6.5                                | (5.7, 7.3)              |
| Daily smoking  | 18.8 <sup>c</sup>       | (17.3, 20.3)                         | 14.3                               | (13.0, 15.7)            |
| Marijuana use  | 3.5 <sup>c</sup>        | (3.0, 4.1)                           | 3.0                                | (2.7, 3.4)              |
| Any illicit drug use   | 4.4                     | (3.8, 5.1)                           | 4.2                                | (3.7, 4.7)              |
| Any illicit drug use other than marijuana                                  | 1.7                     | (1.3, 2.2)                           | 1.9                                | (1.6, 2.3)              |
| <b>Past year</b>   |                         |                                      |                                    |                         |
| Alcohol abuse or dependence  | 6.2                     | (5.4, 7.1)                           | 5.9                                | (5.3, 6.7)              |
| Alcohol dependence   | 2.6                     | (2.1, 3.2)                           | 2.5                                | (2.1, 3.0)              |
| Illicit drug abuse or dependence   | 1.5                     | (1.1, 1.9)                           | 1.4                                | (1.2, 1.7)              |
| Illicit drug dependence  | 0.9                     | (0.7, 1.3)                           | 0.9                                | (0.7, 1.1)              |
| Illicit drug or alcohol abuse dependence                                   | 7.0                     | (6.2, 7.9)                           | 6.8                                | (6.1, 7.5)              |
| Illicit drug or alcohol dependence   | 3.3                     | (2.8, 4.0)                           | 3.2                                | (2.8, 3.8)              |
| Self-reported driving under the influence of alcohol or drugs              | 13.2 <sup>e</sup>       | (12.1, 14.4)                         | 12.2                               | (11.2, 13.1)            |
| Received any alcohol or illicit drug counseling or treatment in prior year | 0.8 <sup>e</sup>        | (0.6, 1.1)                           | 0.5                                | (0.4, 0.8)              |
| Federally defined “treatment gap”  | 2.8                     | (2.3, 3.4)                           | 2.9                                | (2.5, 3.4)              |

*Source.* Authors’ analysis of the 2000-2003 National Survey on Drug Use and Health (NSDUH).

*Note.* Data were projected to 2003 through the logistic regression model; nonveterans standardized to veteran age, gender and geographic region distributions.

<sup>a</sup> Nonveteran population was standardized by the proportions of age group and gender for each Veteran Integrated Service Network (VISN) level in veteran population. <sup>b</sup> Prevalence and confidence intervals were calculated on logit scale and then transformed back. <sup>c</sup> Veterans are significantly different from at non-veterans at .01 level. <sup>d</sup> Binge alcohol use is defined as drinking five or more drinks on the same occasion. Heavy alcohol use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days. All heavy alcohol users are also classified as binge users. <sup>e</sup> Veterans are significantly different from at nonveterans at .05 level.

gard to alcohol abuse or dependence in the previous year.

### *Cigarette Smoking and Illicit Drug Use*

Approximately one in five veterans reported daily cigarette smoking (18.8%) and 3.5% smoked marijuana (see Table 2); both prevalence estimates were significantly higher than those among comparable nonveterans. In the prior month, 4.4% of veterans reported any illicit drug use and 1.7% reporting using an illicit drug other than marijuana. Illicit drug abuse or dependence in the last year was reported by 1.5% of the veterans. These illicit drug variables did not differ between veterans and comparable nonveterans.

*Substance use-related behaviors.* Among veterans, 13.2% reported driving under the influence of alcohol or illicit drugs, and 0.8% reported receiving any drug or alcohol treatment in the prior year (see Table 2). Both of

these estimates were higher among veterans than the comparable nonveterans. The “treatment gap,” defined as being dependent on drugs and/or alcohol but not receiving treatment in the last year, was similar for veterans (2.8%) and nonveterans (2.9%).

*Substance use problems across the nation.* The prevalence of substance use problems varied widely by geographic region. The VA health care system is comprised of 21 geographically defined networks or Veterans Integrated Service Network (VISNs). Table 3 shows prevalence estimates by VISN along with the 95% confidence intervals. Figure 1 shows the prevalence of substance use problems and receipt of treatment across the nation. We could not identify any consistent patterns across regional areas. VISN v, which encompasses Washington, DC, had the highest prevalence of alcohol abuse or dependence (11.1%) and a corresponding high prevalence of illicit drug abuse or dependence (3.3%). In

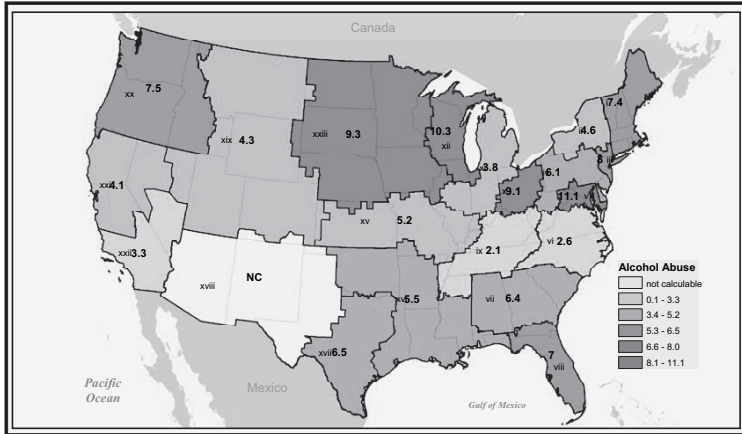
Table 3  
*Prevalence Estimates by Veteran Integrated Service Network (VISN)<sup>a</sup>*

| VISN  | Alcohol abuse or dependence in the past year |                                      | Illicit drug abuse or dependence in the past year |                         | Received illicit drug or alcohol treatment in the past year |                         | Treatment gap: Dependent but untreated in past year |                         |
|-------|--|--------------------------------------|---|-------------------------|---|-------------------------|---|-------------------------|
|       | Prevalence <sup>b</sup>                      | 95% Confidence interval <sup>b</sup> | Prevalence  | 95% Confidence interval | Prevalence  | 95% Confidence interval | Prevalence  | 95% Confidence interval |
| i     | 7.4  | (3.6, 14.5)                          | 0.6   | (0.3, 1.1)              | 0.9   | (0.2, 4.1)              | 2.9   | (1.3, 6.8)              |
| ii    | 4.6  | (2.5, 8.2)                           | 1.8   | (0.4, 6.8)              | <sup>c</sup>  | <sup>c</sup>            | 1.6   | (0.7, 3.8)              |
| iii   | 8.0  | (3.7, 16.6)                          | <sup>c</sup>                                      | <sup>c</sup>            | 0.7   | (0.1, 3.4)              | <sup>c</sup>  | <sup>c</sup>            |
| iv    | 6.1  | (3.5, 10.2)                          | 1.1   | (0.5, 2.1)              | 1.4   | (0.7, 3.0)              | 2.6   | (1.0, 6.6)              |
| v     | 11.1   | (6.1, 19.5)                          | 3.3   | (1.1, 9.0)              | 0.7   | (0.3, 1.8)              | 5.1   | (2.0, 12.5)             |
| vi    | 2.6  | (1.4, 4.9)                           | <sup>c</sup>                                      | <sup>c</sup>            | 0.3   | (0.1, 1.0)              | <sup>c</sup>  | <sup>c</sup>            |
| vii   | 6.4  | (3.6, 11.2)                          | 1.6   | (0.4, 6.1)              | <sup>c</sup>  | <sup>c</sup>            | 1.9   | (0.9, 4.0)              |
| viii  | 7.0  | (5.0, 9.6)                           | 2.7   | (1.4, 5.1)              | 1.4   | (0.6, 3.6)              | 3.4   | (1.9, 6.0)              |
| ix    | 2.1  | (0.9, 4.7)                           | 1.1   | (0.3, 3.5)              | 1.4   | (0.6, 3.6)              | 1.0   | (0.3, 2.9)              |
| X     | 9.1  | (5.4, 14.7)                          | 1.9   | (0.8, 4.5)              | 1.2   | (0.4, 3.6)              | 4.7   | (2.0, 10.6)             |
| xi    | 3.8  | (2.4, 5.9)                           | 1.3   | (0.6, 2.5)              | 0.6   | (0.2, 1.5)              | 1.4   | (0.7, 2.9)              |
| xii   | 10.3   | (6.5, 16.0)                          | 3.8   | (1.4, 9.6)              | 0.2   | (0.0, 0.8)              | 3.6   | (1.6, 7.8)              |
| xv    | 5.2  | (3.1, 8.5)                           | 1.4   | (0.6, 3.5)              | 0.4   | (0.2, 0.9)              | 3.1   | (1.6, 5.7)              |
| xvi   | 5.5  | (3.2, 9.2)                           | 1.9   | (0.8, 4.5)              | 0.3   | (0.1, 0.6)              | 3.6   | (2.1, 6.2)              |
| xvii  | 6.5  | (3.3, 12.3)                          | 1.1   | (0.4, 3.2)              | 0.1   | (0.0, 0.6)              | 2.6   | (0.9, 7.4)              |
| xviii | <sup>c</sup>                                 | <sup>c</sup>                         | 0.8   | (0.3, 2.0)              | 1.2   | (0.4, 3.8)              | 2.1   | (0.9, 4.8)              |
| xix   | 4.3  | (2.2, 8.3)                           | 1.1   | (0.5, 2.3)              | 1.0   | (0.4, 2.3)              | 2.2   | (1.0, 4.9)              |
| xx    | 7.5  | (4.7, 11.9)                          | 0.7   | (0.2, 2.4)              | 0.6   | (0.2, 1.7)              | 2.6   | (1.1, 6.0)              |
| xxi   | 4.1  | (1.6, 10.0)                          | 1.5   | (0.4, 5.4)              | 0.2   | (0.1, 0.6)              | <sup>c</sup>  | <sup>c</sup>            |
| xxii  | 3.3  | (1.4, 7.9)                           | 0.4   | (0.1, 1.4)              | 0.2   | (0.1, 0.7)              | 2.1   | (0.6, 7.2)              |
| xxiii | 9.3  | (6.0, 14.1)                          | 0.9   | (0.4, 1.9)              | <sup>c</sup>  | <sup>c</sup>            | 2.8   | (1.4, 5.4)              |

Note. VISN xxxiii was created by merging VISNs xiii and xiv.

<sup>a</sup> The 2000-2003 National Survey on Drug Use and Health (NSDUH) data projected to 2003 through the logistic regression model. <sup>b</sup> Expected probability and confidence interval were calculated using statistical models on the logit scale and then transformed back. <sup>c</sup> Low precision; no estimate reported.

a



b

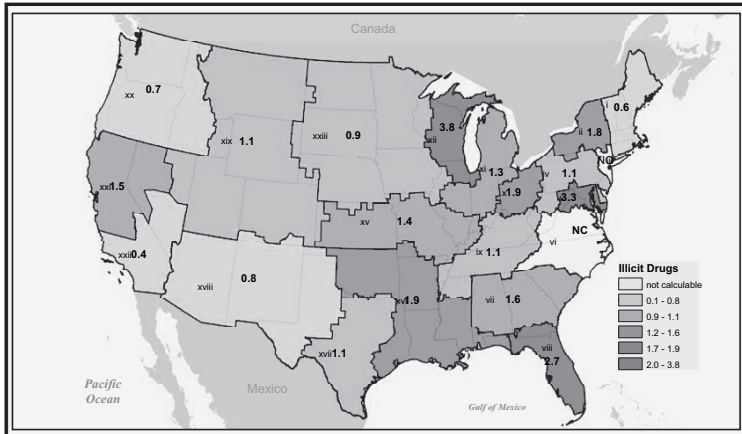
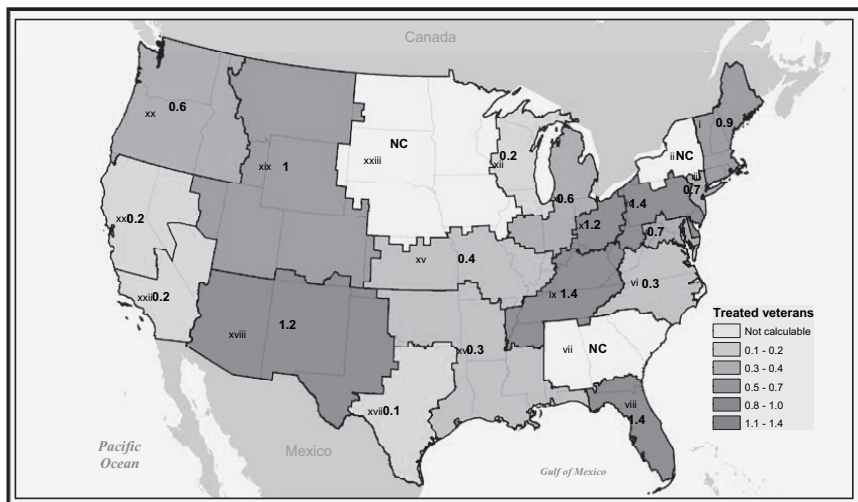


Figure 1. a) Alcohol abuse or dependence in the last year; b) Drug abuse or dependence in the last year. Source: Authors’ analysis of the 2000–2003 National Survey on Drug Use and Health. Mapped according to VA VISN. VISNs are: i New England, ii Upstate NY, iii VA NY/NJ Veterans Health care Network, iv Stars and Stripes (Pittsburgh), v VA Capitol Health Care Network, vi VA Mid-Atlantic Health Care Network, vii VA Southeast Network, viii VA Sunshine Health care Network, ix VA Mid South Health care Network, x VA Health care System of Ohio, xi Michigan, xii The Great Lakes Health Care System, xv VA Heartland Network IL/ MO, xvi South Central VA Health Care Network, xvii VA Heart of Texas Health Care Network, xviii VA Southwest Health Care Network, xix Rocky Mountain Network, xx Northwest Network, xxi Sierra Pacific Network, xxii Desert Pacific Health care Network, xxiii VA Midwest Health Care Network.

comparison, VISN xxiii, which includes Iowa, Minnesota, and much of the upper Midwest, had a high prevalence of alcohol abuse or dependence (9.3%), but a low prevalence of illicit drug abuse or dependence (0.9%). Table 3 shows the wide variation, and the figures highlight differences in

prevalence among neighboring VISNs. While VISN xxiii had a low prevalence of illicit drug abuse or dependence (0.9%), the neighboring VISN to the east (VISN xii) had the highest prevalence of illicit drug abuse or dependence (3.8%; Figure 1b).

c



d

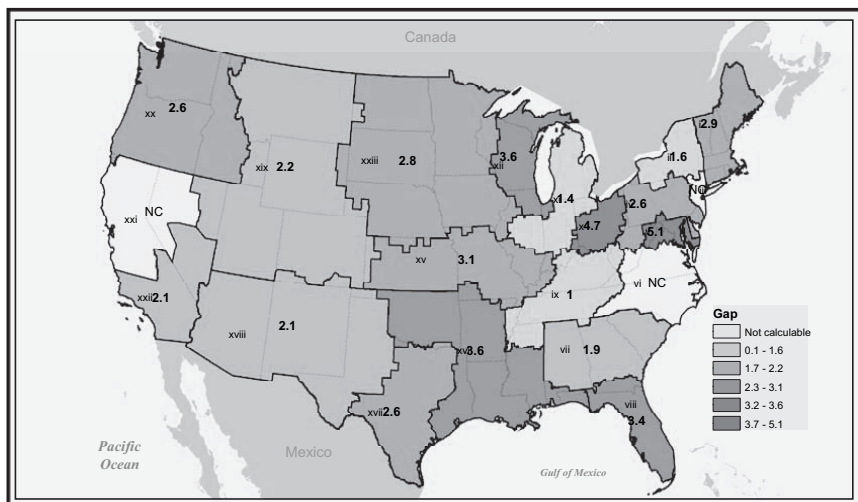


Figure 1. Continued. c) Receipt of treatment in the last year; d) Treatment gap in the last year.

Conclusions

Veterans reported greater rates of any alcohol and heavy alcohol use in the past month when compared with age, gender, and geographic-region comparable nonveterans. Veterans were also more likely to report driving under the influence, daily smoking, and marijuana use than comparable nonveterans. Veterans and comparable nonveterans reported similar rates of alcohol abuse and dependence in the last year and drug abuse and dependence in the last year.

Using the standard federal policy definition, we estimated the “treatment gap” among veterans at 2.8%. This estimate is important because of the wide use of treatment gap numbers in federal policy circles, but it should not be uncritically accepted as a guide to how much treatment services should be expanded. Although the federally defined “treatment gap” is sometimes interpreted as an index of unmet demand for services, in reality less than half of individuals with a diagnosed mental health or

substance abuse disorder believe that they need treatment (Edlund, Unützer, & Curran, 2006). Thus, the expansion of services will shrink, but not eliminate, the so-called "treatment gap."

Some limitations of this study deserve comment. Although we pooled four years of NSDUH data, the total number of veterans in the sample was limited and breaking the sample into geographic regions resulted in a few instances when the sample sizes were too small to estimate prevalence reliably. We note this in the tables and maps. The limited samples sizes also prevented further analyses by race/ethnicity, income, education, or marital status. A second limitation is that there was an overlap of the NSDUH survey data and the start of the current wars in Iraq and Afghanistan. We have no variable in the NSDUH data to identify veterans who served in Operation Enduring Freedom (Afghanistan) or Operation Iraq Freedom. Although it is possible for some of these veterans to be in our data, we believe the numbers would be too small to estimate reliably. A word of caution is warranted when looking at the comparable nonveterans. These estimates should not be viewed as the prevalence of alcohol and drug use in the general U.S. population. These are prevalence estimates after making the US population look similar, using statistical methods, to veterans in terms of age, gender, and location.

These data come at an important time for policymakers. In the mid- to late-1990s, the VA underwent a major reorganization, including a reduction in expenditures for substance use and mental health treatment (Ashton et al., 2003; Chen, Smith, Wagner, & Barnett, 2003; Chen, Wagner, & Barnett, 2001). This was during a period of time when the prevalence of substance use among veterans was relatively stable (Tessler, Rosenheck, & Gamache, 2005). However, many expect the VA will see an increase in the demand for substance use and mental health treatment as personnel come home from Iraq and Afghanistan. VA administrators share this concern, making available funds for the expansion of such services in FY05 and FY06 (Deputy Undersecretary, 2005). VA is not solely responsible for the health of U.S. veterans, because most veterans to at least some extent rely on non-VA systems of care. But VA nonetheless clearly has a leadership role in shaping how the United States responds to the health needs of its veterans. National and regional prevalence estimates of substance use

problems should help VA succeed in that role, by identifying areas of changing need and demand.

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