Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 63 / No. 26
July 4, 2014

Drowsy Driving and Risk Behaviors — 10 States and Puerto Rico, 2011–2012

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Findings in published reports have suggested that drowsy driving is a factor each year in as many as 7,500 fatal motor vehicle crashes (approximately 25%) in the United States (*1,2*). CDC previously reported that, in 2009–2010, 4.2% of adult respondents in 19 states and the District of Columbia reported having fallen asleep while driving at least once during the previous 30 days (*3*). Adults who reported usually sleeping ≤6 hours per day, snoring, or unintentionally falling asleep during the day were more likely to report falling asleep while driving compared with adults who did not report these sleep patterns (*3*). However, limited information has been published on the association between drowsy driving and other risk behaviors that might contribute to crash injuries or fatalities. Therefore, CDC analyzed responses to survey questions regarding drowsy driving among 92,102 respondents in 10 states and Puerto Rico to the 2011–2012 Behavioral Risk Factor Surveillance System (BRFSS) surveys. The results showed that 4.0% reported falling asleep while driving during the previous 30 days. In addition to known risk factors, drowsy driving was more prevalent among binge drinkers than non-binge drinkers or abstainers and also more prevalent among drivers who sometimes, seldom, or never wear seatbelts while driving or riding in a car, compared with those who always or almost always wear seatbelts. Drowsy driving did not vary significantly by self-reported smoking status. Interventions designed to reduce binge drinking and alcohol-impaired driving, to increase enforcement of seatbelt use, and to encourage adequate sleep and seeking treatment for sleep disorders might contribute to reductions in drowsy driving crashes and related injuries.

Each year, state health departments administer BRFSS, a random-digit–dialed telephone survey of noninstitutionalized adults aged ≥18 years, in collaboration with CDC. The response rate is the number of respondents who completed the survey as a proportion of all eligible and likely eligible persons.* The median survey response rate for all 50 states and the District of Columbia, was 49.7% in 2011 (range = 33.8%–64.1%) and 45.2% in 2012 (range = 27.7%–60.4%). Questions regarding insufficient sleep were asked in an optional sleep module used by only 10 states and Puerto Rico†; therefore, this analysis was confined to those 10 states and Puerto Rico. Response rates for the 10 states and Puerto Rico had a median of 51.7% in 2011 and ranged from 35.4% (California) to 61.7% (Puerto Rico);

*Additional information available at http://www.aapor.org/standard_definitions2.htm.

†Alaska, California, Kansas, Maine, Massachusetts, Minnesota, Nebraska, Nevada, Oregon, Tennessee, and Puerto Rico used the insufficient sleep module in 2011. Alaska, Kansas, Nevada, Oregon, and Puerto Rico used the module again in 2012. Aggregating data for two surveys increased the sample size in those states; sampling weights in each year were halved before obtaining the prevalence estimates in those states. The prevalence of drowsy driving was not statistically different when comparing 2011 and 2012 for the states that used the module for both years.

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response rates in 2012 had a median of 47.0% and ranged from 39.4% (Oregon) to 58.2% (Puerto Rico).[§]

A total of 92,102 respondents were asked, "During the past 30 days, have you ever nodded off or fallen asleep, even just for a brief moment, while driving?" Drowsy driving was defined as an affirmative response, whereas no drowsy driving included responses of "no" and also 81 responses of "don't know/not sure." Those who responded that they did not drive or did not have a license (5,575) were excluded from the analysis. Frequent insufficient sleep was defined as ≥14 days in response to "During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?" Respondents were also asked: "On average, how many hours of sleep do you get in a 24-hour period? Think about the time you actually spend sleeping or napping, not just the amount of sleep you think you should get." "Do you snore?" and "During the past 30 days, for about how many days did you find yourself unintentionally falling asleep during the day (categorized as none or ≥1 day)?"

Smoking status included current smoker, former smoker, and never smoker. Alcohol use status included binge drinker, non-binge drinker, and abstainer. Binge drinking was defined for men as having five or more drinks and for women as having four or more drinks on at least one occasion during the preceding month. Abstainers were respondents who had not consumed any alcoholic beverages during the preceding month. Respondents also were asked about their frequency of seatbelt use and categorized as "always or almost always" and "sometimes, seldom, or never" users.

The age-adjusted prevalences of falling asleep while driving (with 95% confidence intervals) were calculated by state, selected demographic characteristics, sleep-related characteristics, and risk behaviors using statistical software that took into account the complex sampling design. For comparisons of prevalence between subgroups, statistical significance ($p<0.05$) was determined by using t-tests. All indicated differences between subgroups are statistically significant.

Among the 92,102 respondents, 4.0% reported falling asleep while driving during the preceding 30 days (Table 1). Drowsy driving decreased with age (linear trend $p<0.001$) from 5.9% among adults aged 18–24 years to 1.8% among adults aged ≥65 years. Overall, the age-adjusted prevalence of drowsy driving was higher among men than women (5.0% compared with 3.0%, $p<0.001$). The prevalence of drowsy driving for men aged 18–34 years was 6.9%, compared with 3.5% for women in the same age group. Drowsy driving prevalence was higher among all other racial/ethnic groups compared with non-Hispanic whites ($p<0.05$) and did not differ by educational level. Among the 10 states and Puerto Rico, drowsy driving prevalence ranged from 1.8% in Oregon to 7.4% in Puerto Rico (Table 1). These prevalence estimates can be extrapolated to approximately 1.8 million

[§] Additional information available at http://www.cdc.gov/brfss/pdf/2011_summary_data_quality_report.pdf and http://www.cdc.gov/brfss/annual_data/2012/pdf/summarydataqualityreport2012_20130712.pdf.

The *MMWR* series of publications is published by the Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

Suggested citation: [Author names; first three, then et al., if more than six.] [Report title]. MMWR 2014;63:[inclusive page numbers].

TABLE 1. Age-adjusted* prevalence of falling asleep while driving in the preceding 30 days among drivers aged ≥18 years, by selected characteristics — Behavioral Risk Factor Surveillance System, 10 states and Puerto Rico, 2011–2012

Characteristic	No.†	No. who reported falling asleep while driving	%§	(95% CI)
Total	**92,102**	**2,602**	**4.0**	**(3.7–4.4)**
Sex				
Men	37,105	1,368	5.0	(4.4–5.7)
Women	54,997	1,234	3.0	(2.6–3.5)
Age group (yrs)				
18–24	3,885	179	5.9	(4.4–8.0)
25–34	8,365	353	4.8	(3.8–6.0)
35–44	12,177	507	4.4	(3.7–5.3)
45–54	17,359	592	4.2	(3.5–5.0)
55–64	21,519	564	2.9	(2.3–3.5)
≥65	28,797	407	1.8	(1.5–2.3)
Race/Ethnicity				
White, non-Hispanic	70,783	1,605	2.9	(2.6–3.3)
Black, non-Hispanic	2,595	110	7.0	(4.9–9.9)
Hispanic	12,678	704	4.9	(4.2–5.7)
Other race¶, non-Hispanic	5,425	167	6.5	(4.8–8.7)
Education level				
Less than high school diploma or GED	6,701	199	3.6	(2.6–5.1)
High school diploma or GED	24,633	655	4.1	(3.4–5.0)
At least some college	60,628	1,743	4.1	(3.7–4.7)
Employment status				
Employed	46,866	1,725	4.5	(4.0–5.1)
Unemployed	5,320	170	3.7	(2.6–5.1)
Retired	25,997	339	**	
Unable to work	5,080	182	**	
Student/Homemaker	8,624	185	2.5	(1.9–3.3)
Location of residence				
Alaska	7,025	124	2.1	(1.6–2.7)
California	9,314	303	4.5	(3.8–5.2)
Kansas	13,306	349	3.6	(3.1–4.1)
Maine	3,658	75	3.7	(2.6–5.3)
Massachusetts	5,531	141	3.3	(2.4–4.5)
Minnesota	13,535	353	3.1	(2.6–3.6)
Nebraska	9,461	282	3.2	(2.6–3.9)
Nevada	8,039	182	2.8	(2.3–3.4)
Oregon	9,253	150	1.8	(1.4–2.3)
Tennessee	4,917	126	3.8	(2.6–5.5)
Puerto Rico	8,063	517	7.4	(6.6–8.2)
Median (range)			**3.3**	**(1.8–7.4)**

Abbreviations: CI = confidence interval; GED = General Educational Development certificate.
* Age adjusted to the 2000 projected U.S. population, except for age groups.
† Unweighted sample. Categories might not sum to survey total because of missing responses.
§ Weighted percentage.
¶ Asian, Native Hawaiian or Pacific Islander, American Indian/Alaska Native, and multiracial.
** Estimate is unreliable. Relative standard error >0.3.

drivers driving drowsy in the last 30 days in the 10 states and Puerto Rico included in this report.¶

Respondents who usually slept ≤5 hours per 24 hours reported drowsy driving more often than those who slept 6 hours or ≥7 hours (9.1% compared with 5.2% [p<0.001] and 2.7% [p<0.001], respectively), as did snorers compared with non-snorers (5.6% compared with 2.9%, p<0.001) (Table 2). In addition, drowsy driving was more common among binge drinkers than non-binge drinkers and abstainers (5.2% compared with 3.7% [p=0.028] and 3.6% [p=0.005], respectively). Drowsy driving also was more common among drivers who sometimes, seldom, or never wear seatbelts while driving or riding in a car compared with those who always or almost always wear seatbelts (6.6% compared with 3.9%, p=0.005). Drowsy driving did not vary by smoking status.

¶ Alaska, approximately 10,000; California, 1,052,000; Kansas, 70,000; Maine, 32,000; Massachusetts, 135,000; Minnesota, 106,000; Nebraska, 39,000; Nevada, 48,000; Oregon, 46,000; Tennessee, 130,000; Puerto Rico, 173,000.

TABLE 2. Age-adjusted* prevalence of falling asleep while driving in the preceding 30 days among drivers aged ≥18 years, by sleep patterns and risk behaviors — Behavioral Risk Factor Surveillance System, 10 states and Puerto Rico, 2011–2012†

Characteristic	No.§	No. who reported falling asleep while driving	%	(95% CI)
Sleep patterns				
Frequent insufficient sleep (≥14 days of insufficient rest or sleep in the preceding 30 days)				
Yes	22,711	1,139	6.2	(5.4–7.1)
No	69,279	1,462	3.2	(2.8–3.6)
Usual sleep duration (per 24 hrs)				
≤5 hrs	8,693	568	9.1	(7.5–11.2)
6 hrs	19,610	789	5.2	(4.4–6.1)
7 hrs	27,762	623	3.0	(2.4–3.7)
8 hrs	25,710	417	2.4	(1.9–3.0)
≥9 hrs	9,482	179	2.7	(1.8–3.8)
Snoring				
Yes	43,902	1,541	5.6	(4.8–6.5)
No	48,178	1,061	2.9	(2.6–3.4)
Unintentionally fell asleep during the day (≥1 day in the preceding 30 days)				
Yes	29,394	1,815	8.9	(8.0–9.9)
No	62,652	786	1.6	(1.3–1.9)
Risk behaviors				
Smoking status				
Current smoker	13,435	382	4.3	(3.3–5.5)
Former smoker	27,291	687	3.7	(3.0–4.6)
Never smoker	50,995	1,522	4.0	(3.6–4.5)
Alcohol use (previous 30 days)				
None (abstainers)	42,575	1,138	3.6	(3.1–4.1)
Binge drinkers¶	11,720	500	5.2	(4.3–6.3)
Non-binge drinkers**	36,588	916	3.8	(3.2–4.6)
Seatbelt use				
Always/almost always	87,175	2,361	3.9	(3.5–4.3)
Sometimes, seldom, or never	4,835	238	6.6	(5.0–8.8)

Abbreviation: CI = confidence interval.

* Age adjusted to the 2000 projected U.S. population.

† The sleep module was used by Alaska, California, Kansas, Maine, Massachusetts, Minnesota, Nebraska, Nevada, Oregon, Tennessee, and Puerto Rico in 2011 and again by Alaska, Kansas, Nevada, Oregon, and Puerto Rico in 2012.

§ Unweighted sample. Categories might not sum to survey total because of missing responses.

¶ Binge drinking was defined for men as having five or more drinks and for women as having four or more drinks on one occasion during the previous 30 days.

** Includes respondents who reported consuming alcohol in previous 30 days, but not binge drinking.

Discussion

CDC has named motor vehicle injury prevention as one of its 10 "winnable battles."** More than 30,000 persons have died in motor vehicle crashes each year since 1963 (*4*). In 2012, nearly one third (10,322) of the 33,561 traffic fatalities occurred in alcohol-impaired driving crashes (i.e., a driver involved in the crash had a blood alcohol content of ≥0.08 g/dL), and 70% of the alcohol-impaired drivers involved in these fatal crashes had a blood alcohol content of ≥0.15 g/dL, indicating binge drinking.†† In addition, half of vehicle occupants killed were not wearing seatbelts (*4*), and as many as 7,500 fatal crashes in the United States each year might involve drowsy drivers (*1*,*2*).

Effective interventions exist to address binge drinking, alcohol-impaired driving, and nonuse of seatbelts. Information about these interventions has been published by the Community Preventive Services Task Force.§§ This study showed that drivers who reported binge drinking or infrequent (sometimes, seldom, or never) use of seatbelts also were more likely to drive drowsy; therefore, enforcement efforts aimed at these behaviors might also help reduce drowsy driving crashes and resulting injuries, as well as provide opportunities for increasing awareness of the dangers of drowsy driving. Because young men are more likely to engage in all of these risk behaviors, interventions might be aimed at this high-risk population.

Falling asleep while driving is clearly dangerous, but drowsiness also impairs the ability to drive safely even if drivers do not fall asleep. Studies have observed that drowsy drivers take

** Additional information available at http://www.cdc.gov/winnablebattles/motorvehicleinjury.

†† Available at http://www-nrd.nhtsa.dot.gov/pubs/811870.pdf.

§§ Available at http://www.thecommunityguide.org/index.html.

What is already known on this topic?

As many as 7,500 fatal motor vehicle crashes in the United States each year might involve drowsy driving, and 4.2% of adult respondents to a 2009–2010 survey reported falling asleep while driving at least once during the previous 30 days. Adults who reported usually sleeping ≤6 hours per day, snoring, or unintentionally falling asleep during the day were more likely to report falling asleep while driving than adults who did not.

What is added by this report?

CDC analyzed data regarding drowsy driving by selected characteristics, including sleep patterns and risk behaviors, from 92,102 adult survey respondents in 10 states and Puerto Rico in 2011–2012. Among the respondents, 4% reported having fallen asleep while driving in the previous 30 days. In addition to known risk factors, drowsy driving was more prevalent among men, younger drivers, binge drinkers, and among drivers who did not regularly use seatbelts compared with other respondents.

What are the implications for public health practice?

Interventions designed to reduce binge drinking and alcohol-impaired driving, to enforce seatbelt use, and to encourage adequate sleep and seeking treatment for sleep disorders might contribute to reductions in drowsy driving crashes and their related deaths and injuries.

longer to react, are less attentive to their environment, and have impaired decision-making skills (*5*), all of which can contribute to vehicle crashes. Sleep-related crashes are more likely to happen at times when drivers are more likely to be sleepy: at night or in the midafternoon (*6,7*). Although these crashes often involve a single vehicle going off the road, sleep-related crashes also are disproportionately represented in rear-end and head-on collisions. Finally, injuries and fatalities are more common in drowsy driving crashes than non-drowsy driving crashes (*6*). Various technologies have been developed to prevent drowsy driving crashes (*7*). Detection technologies use in-vehicle devices to sense changes in the driver that indicate sleepiness, such as excessive eyelid closure and head-nodding. Other technologies, such as the use of rumble strips (shoulder or center line), in-vehicle lane departure warning systems, and collision avoidance systems, are designed to prevent crashes from driver fatigue or inattention. Although evaluation of the effectiveness of in-vehicle technologies in preventing crashes is in the early stages, results to date are promising (*7,8*).

The findings in this report are subject to at least three limitations. First, estimates of falling asleep while driving are based on self-report, which likely result in underestimates. Persons often are not aware that they have fallen asleep, even after several minutes asleep (*9*). Second, data were not collected for all states and might not be generalizable to the rest of the United States. In addition, because response rates for the states that used the optional sleep module during 2011–2012 were relatively low, ranging from 35.4% to 60.9% (median = 51.7%), nonresponse bias might have affected the results. Finally, BRFSS does not survey persons aged <18 years, thereby excluding young drivers who might be at increased risk for drowsy driving (*6*).

To prevent drowsy driving, drivers should get enough sleep (7–8 hours for adults), seek treatment for sleep disorders, and avoid alcohol use before driving. Even small amounts of alcohol can amplify driver impairment caused by drowsiness (*10*). Drivers should recognize the symptoms of drowsiness and respond appropriately when on the road. Symptoms of drowsiness include frequent yawning or blinking, difficulty remembering the past few miles driven, missing exits, drifting from a lane, or hitting a rumble strip. Drivers are advised to get off the road and rest until no longer drowsy or change drivers if they experience these symptoms. Turning up the radio, opening the window, and turning up the air conditioner have not proven to be effective techniques to stay awake (*7*). Public health professionals in motor vehicle injury prevention can learn about drowsy driving countermeasures and other highway safety countermeasures in the National Highway Traffic Safety Administration's guide *Countermeasures That Work*.¶¶

¶¶ Available at http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf.

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Vital Signs: Variation Among States in Prescribing of Opioid Pain Relievers and Benzodiazepines — United States, 2012

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On July 1, 2014, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Abstract

Background: Overprescribing of opioid pain relievers (OPR) can result in multiple adverse health outcomes, including fatal overdoses. Interstate variation in rates of prescribing OPR and other prescription drugs prone to abuse, such as benzodiazepines, might indicate areas where prescribing patterns need further evaluation.

Methods: CDC analyzed a commercial database (IMS Health) to assess the potential for improved prescribing of OPR and other drugs. CDC calculated state rates and measures of variation for OPR, long-acting/extended-release (LA/ER) OPR, high-dose OPR, and benzodiazepines.

Results: In 2012, prescribers wrote 82.5 OPR and 37.6 benzodiazepine prescriptions per 100 persons in the United States. State rates varied 2.7-fold for OPR and 3.7-fold for benzodiazepines. For both OPR and benzodiazepines, rates were higher in the South census region, and three Southern states were two or more standard deviations above the mean. Rates for LA/ER and high-dose OPR were highest in the Northeast. Rates varied 22-fold for one type of OPR, oxymorphone.

Conclusions: Factors accounting for the regional variation are unknown. Such wide variations are unlikely to be attributable to underlying differences in the health status of the population. High rates indicate the need to identify prescribing practices that might not appropriately balance pain relief and patient safety.

Implications for Public Health: State policy makers might reduce the harms associated with abuse of prescription drugs by implementing changes that will make the prescribing of these drugs more cautious and more consistent with clinical recommendations.

Introduction

Persons in the United States consume opioid pain relievers (OPR) at a greater rate than any other nation. They consume twice as much per capita as the second ranking nation, Canada (*1*). Overprescribing of opioid pain relievers can result in multiple adverse health outcomes, including fatal overdoses (*2*). Opioid pain relievers were involved in 16,917 overdose deaths in 2011; in 31% of these deaths, benzodiazepine sedatives were also cited as contributing causes (CDC WONDER, unpublished data, 2014). High rates of prescribing these controlled substances are important determinants of rates of fatal overdose and drug abuse (*3,4*). Overall state prescribing rates of OPR vary widely (*5*). Variation in prescribing rates for higher-risk opioid prescriptions (e.g., those for long-acting or extended-release [LA/ER] formulations) or those for high daily dosage have not been examined. LA/ER OPR are more prone to abuse, and high-dose formulations are more likely to result in overdoses, so they deserve special attention. Benzodiazepines are commonly prescribed in combination with OPR, even though this combination increases the risk for overdose (*6*). Interstate variation in prescribing rates for benzodiazepines has not been measured.

Information on local prescribing rates can alert authorities to atypical use and can prompt action. Such authorities include state and local health departments, law enforcement agencies, health-care systems, and licensure boards. States have the authority to track prescribing and dispensing and regulate medical practice within their borders. They can influence the rate of prescribing of controlled prescription drugs by various measures. These include passing regulations related to use of state prescription drug monitoring programs and the operation of pain clinics.

Methods

Data on prescribing in 2012 come from IMS Health's National Prescription Audit (NPA). NPA provides estimates of the numbers of prescriptions dispensed in each state based on a sample of approximately 57,000 pharmacies, which dispense nearly 80% of the retail prescriptions in the United States. Prescriptions, including refills, dispensed at retail pharmacies

and paid for by commercial insurance, Medicaid, Medicare, or cash were included.*

CDC used the numbers of prescriptions and census denominators to calculate prescribing rates for OPR, subtypes of OPR, and benzodiazepines. The OPR category included semisynthetic opioids, such as oxycodone and hydrocodone, and synthetic opioids, such as tramadol. It did not include buprenorphine products used primarily for substance abuse treatment rather than pain, methadone distributed through substance abuse treatment programs, or cough and cold formulations containing opioids. LA/ER OPR were defined as those that should be taken only 2 to 3 times a day, such as methadone, OxyContin, and Opana ER. High-dose OPR were defined as the largest formulations available for each type of OPR that resulted in a total daily dosage of ≥100 morphine milligram equivalents when taken at the usual frequency, for example, every 4–6 hours. Benzodiazepines included alprazolam, clonazepam, clorazepate, diazepam, estazolam, flurazepam, lorazepam, oxazepam, quazepam, temazepam, and triazolam.

CDC calculated prescribing rates per 100 persons for the United States, each census region, and each state. CDC described the distribution of state rates using mean, standard deviation (SD), coefficient of variation (CV) (SD divided by the mean), the interquartile ratio (IQ) (75th percentile rate divided by the 25th percentile rate), and the ratio of the highest/lowest rates. Rates were transformed into multiples of the SD above or below the mean state rate of each drug.

Results

Prescribers wrote 82.5 OPR prescriptions and 37.6 benzodiazepine prescriptions per 100 persons in the United States in 2012 (Table). LA/ER OPR accounted for 12.5%, and high-dose OPR accounted for 5.1% of the estimated 258.9 million OPR prescriptions written nationwide. Prescribing rates varied widely by state for all drug types. For all OPR combined, the prescribing rate in Alabama was 2.7 times the rate in Hawaii. The high/low ratio was greater for LA/ER OPR and high-dose OPR compared with all OPR together: for high-dose OPR, state rates ranged 4.6-fold (Delaware versus Texas), and for LA/ER OPR, state rates ranged 5.3-fold (Maine versus Texas). State rates ranged 3.7-fold (West Virginia versus Hawaii) for benzodiazepines. For both OPR and benzodiazepines, Alabama, Tennessee, and West Virginia were the three highest-prescribing states. Among the OPR drugs, interstate variation was greatest for oxymorphone (CV = 0.72, IQ = 2.50, high/low = 21.9). OPR prescribing rates correlated with benzodiazepine prescribing rates ($r = 0.80$; $p<0.01$).

The distribution of state prescribing rates was skewed toward higher rates (Figure 1). For both OPR and benzodiazepine rates, Alabama, Tennessee, and West Virginia were ≥2 SDs above the mean. For LA/ER opioids, Maine and Delaware were ≥2 SDs above the mean. For high-dose OPR, Delaware, Tennessee, and Nevada were ≥2 SDs above the mean. Texas's rate for LA/ER OPR was the only rate ≥2 SDs below the mean for any category.

The South region had the highest rate of prescribing OPR and benzodiazepines (Figure 2). The Northeast had the highest rate for high-dose OPR and LA/ER OPR, although high rates also were observed in individual states in the South and West. In the Northeast, 17.8% of OPR prescribed were LA/ER OPR. States in the South ranked highest for all individual opioids except for hydromorphone, fentanyl, and methadone, for which the highest rates were in Vermont, North Dakota, and Oregon, respectively.

Conclusions and Comment

The rates of use of pain relievers and benzodiazepine sedatives showed about three- to five-fold variation from the highest to lowest states. Variation was greater for the LA/ER and high-dose formulations of OPR. Higher OPR and benzodiazepine prescribing rates in the South presented in this report are similar to the findings of higher prescribing rates for other drugs in the South, including antibiotics (*7*), stimulants in children (*8*), and medications that are high-risk for the elderly (*9*). Previous studies have found that regional prescribing variation cannot be explained by variation in the prevalence of the conditions treated by these drugs (*5,7*). Other research indicates that wide variation in rates of surgery and hospitalization also cannot be explained by the underlying health status of the population (*9,10*). Wide variation in the use of medical technology, including pharmacotherapy, usually indicates a lack of consensus on the appropriateness of its use (*9*). Therefore, one possible explanation for the results of this study is the lack of consensus among health-care providers on whether and how to use OPR for chronic, noncancer pain (*2*).

Research on small-area variation in health care indicates that high rates of use of prescription drugs and medical procedures do not necessarily translate into better outcomes or greater patient satisfaction. In fact, high rates of use might produce worse outcomes (*11,12*). In this case, greater use of opioids and benzodiazepines might expose populations to greater risks for overdose and falls (*2,3,13,14*). Greater use is also associated with abuse (*4*), although such use might both cause and be caused by abuse. The wide variation in rates of use for LA/ER

*Additional information available at http://www.imshealth.com/deployedfiles/ims/global/content/insights/researchers/npa_data_brief.pdf.

TABLE. Prescribing rates per 100 persons, by state and drug type — IMS Health, United States, 2012

State	Opioid pain relievers	Rank	Long-acting/ extended-release opioid pain relievers	Rank	High-dose opioid pain relievers	Rank	Benzodiazepines	Rank
Alabama	142.9	1	12.4	22	6.8	4	61.9	2
Alaska	65.1	46	10.7	31	4.2	26	24.0	50
Arizona	82.4	26	14.5	12	5.5	12	34.3	33
Arkansas	115.8	8	9.6	37	4.1	29	50.8	8
California	57.0	50	5.8	49	3.0	42	25.4	47
Colorado	71.2	40	11.8	24	4.1	31	28.0	44
Connecticut	72.4	38	14.1	13	5.4	13	46.2	11
Delaware	90.8	17	21.7	2	8.8	1	41.5	19
District of Columbia	85.7	23	13.7	17	5.7	10	38.4	24
Florida	72.7	37	11.3	26	6.6	5	46.9	10
Georgia	90.7	18	8.6	43	4.1	30	37.0	27
Hawaii	52.0	51	8.8	42	3.9	36	19.3	51
Idaho	85.6	24	10.3	33	3.9	34	29.1	42
Illinois	67.9	43	5.2	50	2.0	50	34.2	34
Indiana	109.1	9	10.7	30	4.9	20	42.9	17
Iowa	72.8	36	7.3	47	2.2	48	37.3	26
Kansas	93.8	16	10.3	34	4.0	32	38.9	23
Kentucky	128.4	4	11.6	25	5.0	19	57.4	5
Louisiana	118.0	7	7.8	46	3.6	39	51.5	7
Maine	85.1	25	21.8	1	5.6	11	40.7	22
Maryland	74.3	33	16.0	6	5.0	18	29.9	40
Massachusetts	70.8	41	14.9	8	3.5	41	48.8	9
Michigan	107.0	10	9.1	40	4.5	22	45.5	14
Minnesota	61.6	48	10.2	35	2.2	49	24.9	48
Mississippi	120.3	6	7.2	48	2.9	43	46.2	12
Missouri	94.8	14	9.5	38	3.5	40	42.6	18
Montana	82.0	27	14.0	15	4.4	23	33.7	35
Nebraska	79.4	28	7.8	45	2.3	46	35.0	32
Nevada	94.1	15	14.8	10	8.2	3	37.5	25
New Hampshire	71.7	39	19.6	3	6.1	7	41.2	21
New Jersey	62.9	47	11.3	27	5.8	9	36.5	28
New Mexico	73.8	35	12.7	21	3.8	38	31.5	37
New York	59.5	49	9.5	39	4.3	24	27.3	45
North Carolina	96.6	13	13.7	18	4.3	25	45.3	15
North Dakota	74.7	32	10.5	32	2.3	47	31.1	39
Ohio	100.1	12	11.2	28	4.2	27	41.3	20
Oklahoma	127.8	5	12.8	20	6.0	8	44.5	16
Oregon	89.2	20	18.8	4	5.2	16	31.4	38

opioids, in particular, might reflect the demand for these drugs in the drug-using community and their selective prescribing, often in combination with sedatives and muscle relaxants, by unscrupulous pain clinics (*14*). Factors that might explain why some states have consistently lower rates of prescribing also need to be identified in future research.

The findings in this report are subject to at least four limitations. First, IMS estimates have not been validated, and they do not include prescriptions dispensed by prescribers, hospital/clinic pharmacies, or health maintenance organization pharmacies, potentially biasing rates downward. Second, prescriptions might be dispensed to nonstate residents, as commonly occurred in Florida during the previous decade (*14*). Third, prescribing rates cannot be correlated with rates of outcomes, such as overdoses with these drugs, because drug-specific overdose data are not available for most jurisdictions. Finally, the prescribing rates shown for a state might conceal large differences in rates within the state (*15*).

Evaluating and modifying state prescribing patterns is particularly important in states with the highest prescribing rates for drugs prone to abuse. States can determine the factors driving their high prescribing rates by using data from their prescription drug monitoring programs (PDMPs), systems that record all prescriptions for drugs prone to abuse. They can also use PDMPs to evaluate the impacts of policy changes. Recently, a few states have been able to change prescribing patterns by increasing prescriber use of their PDMPs. New York and Tennessee, for example, mandated prescriber use of the state PDMP in 2012. They subsequently used their PDMPs to document declines of 75% and 36%, respectively, in the inappropriate use of multiple prescribers by patients (*16*).

TABLE. (*Continued*) Prescribing rates per 100 persons, by state and drug type — IMS Health, United States, 2012

State	Opioid pain relievers	Rank	Long-acting/ extended-release opioid pain relievers	Rank	High-dose opioid pain relievers	Rank	Benzodiazepines	Rank
Pennsylvania	88.2	21	14.9	9	5.4	14	46.1	13
Rhode Island	89.6	19	14.0	14	5.2	17	60.2	4
South Carolina	101.8	11	11.0	29	3.9	33	52.6	6
South Dakota	66.5	45	9.0	41	2.5	45	28.0	43
Tennessee	142.8	2	18.2	5	8.7	2	61.4	3
Texas	74.3	34	4.2	51	1.9	51	29.8	41
Utah	85.8	22	12.1	23	5.3	15	35.9	30
Vermont	67.4	44	13.9	16	4.7	21	35.5	31
Virginia	77.5	29	9.9	36	3.8	37	36.4	29
Washington	77.3	30	14.6	11	4.1	28	27.1	46
West Virginia	137.6	3	15.7	7	6.2	6	71.9	1
Wisconsin	76.1	31	13.1	19	3.9	35	33.4	36
Wyoming	69.6	42	8.0	44	2.7	44	24.1	49
Mean	*87.3*	—	*12.0*	—	*4.5*	—	*39.2*	—
Standard deviation	*22.4*	—	*3.9*	—	*1.6*	—	*11.1*	—
Coefficient of variation	*0.26*	—	*0.32*	—	*0.36*	—	*0.28*	—
Median	*82.4*	—	*11.3*	—	*4.2*	—	*37.3*	—
25th percentile	*71.7*	—	*9.5*	—	*3.7*	—	*31.1*	—
75th percentile	*96.6*	—	*14.1*	—	*5.4*	—	*46.1*	—
Interquartile ratio	*1.3*	—	*1.5*	—	*1.4*	—	*1.5*	—
Ratio of highest to lowest	*2.7*	—	*5.3*	—	*4.6*	—	*3.7*	—
Northeast	70.8		12.6		4.8		38.2	
South	93.7		10.2		4.6		43.1	
Midwest	88.4		9.3		3.4		38.1	
West	68.0		9.6		3.9		27.9	
U.S. rate	**82.5**	—	**10.3**	—	**4.2**	—	**37.6**	—

Key Points

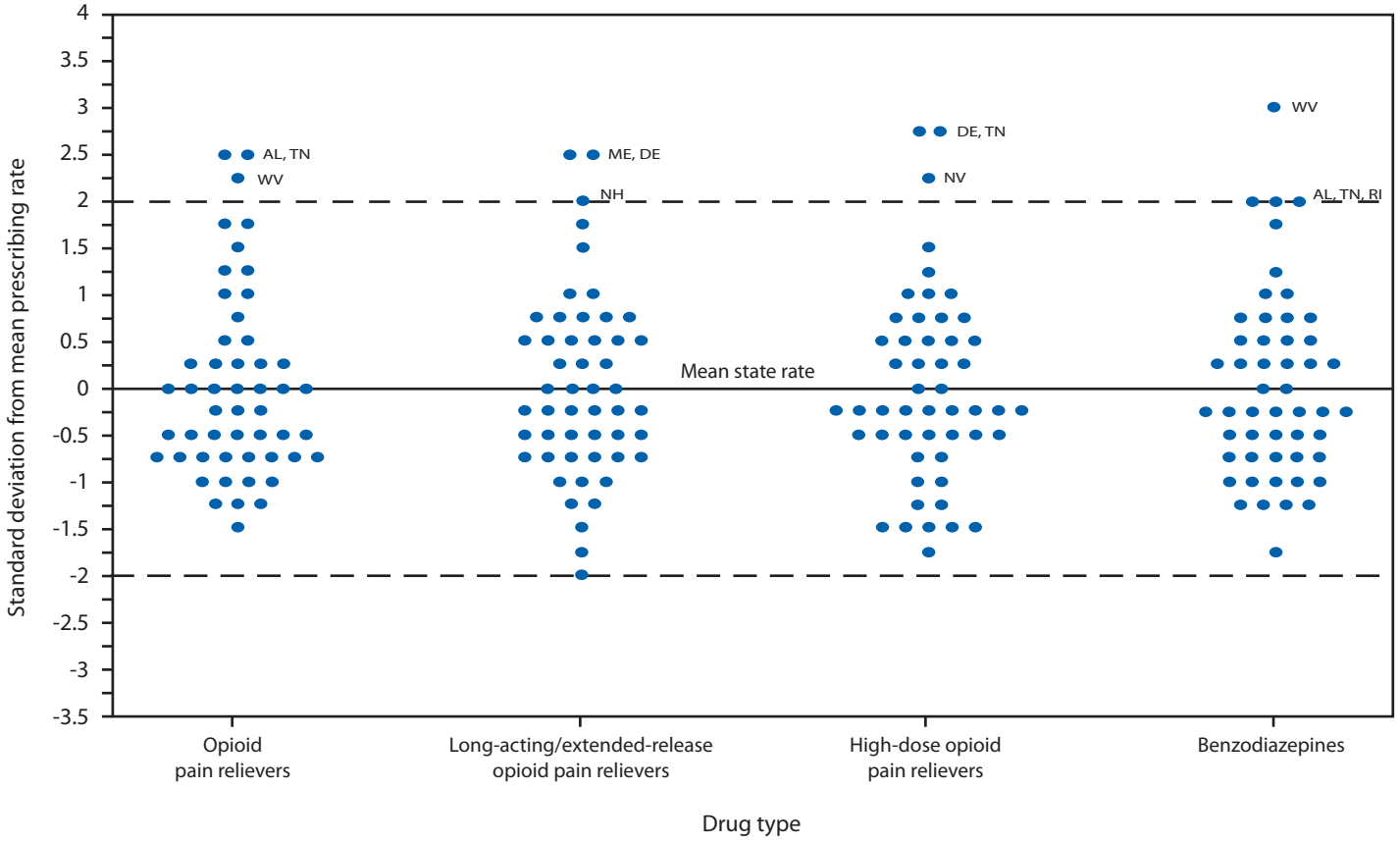
- Opioid pain relievers and benzodiazepine sedatives are commonly prescribed in the United States. They are frequently prescribed to the same patient.
- Overprescribing of opioid pain relievers can result in multiple adverse health outcomes, including fatal overdoses.
- Wide variation exists from one state to another in prescribing rates for these drugs. For states that prescribe well above the national rate, the need for a change in prescribing practices is urgent.
- CDC recommends that states make active use of their prescription drug monitoring programs to calculate current rates of prescribing, examine variations within the state, and track the impact of safer prescribing initiatives.
- Additional information is available at http://www.cdc.gov/vitalsigns.

States can take other actions that will affect prescribers. Developing or adopting existing guidelines for prescribing OPR and other controlled substances can establish local standards of care that might help bring prescribing rates more in line with current best practices. State Medicaid programs can manage pharmacy benefits so as to promote cautious, consistent use of OPR and benzodiazepines. In addition, a number of states have passed laws designed to address the most egregious prescribing excesses. Florida, for example, enacted pain clinic legislation in 2010 and prohibited dispensing by prescribers in 2011. It subsequently experienced a decline in rates of drug diversion (*17*) and a 52% decline in its oxycodone overdose death rate (*18*). Guidelines, insurance strategies, and laws are promising interventions that need further evaluation. Patients in all states deserve access to safe and effective evidence-based medical care, and prescribers should carefully consider the balance between risks and benefits in any pharmacotherapy.

Acknowledgments

Rose Rudd, MSPH, National Center for Injury Prevention and Control, CDC. Caitlin Koris, Rollins School of Public Health, Emory University.

FIGURE 1. Distribution of state prescribing rates,* by drug type — IMS Health, United States, 2012



* State rates are rounded to the nearest 0.25 standard deviation for purposes of presentation.

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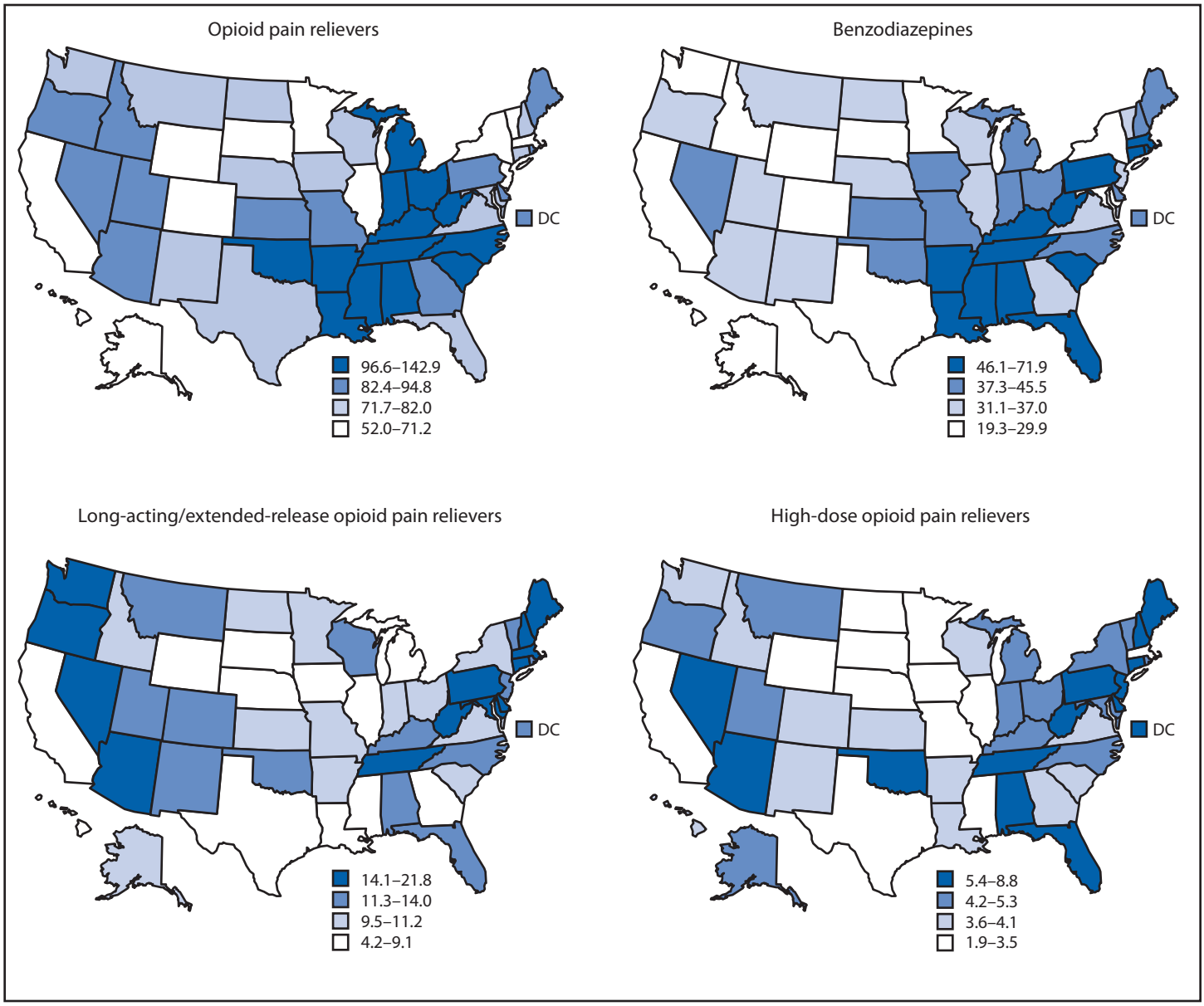
FIGURE 2. Prescribing rates per 100 persons (in quartiles), by state and drug type — IMS Health, United States, 2012



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Decline in Drug Overdose Deaths After State Policy Changes — Florida, 2010–2012

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On July 1, 2014, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

During 2003–2009, the number of deaths caused by drug overdose in Florida increased 61.0%, from 1,804 to 2,905, with especially large increases in deaths caused by the opioid pain reliever oxycodone and the benzodiazepine alprazolam (*1*). In response, Florida implemented various laws and enforcement actions as part of a comprehensive effort to reverse the trend. This report describes changes in overdose deaths for prescription and illicit drugs and changes in the prescribing of drugs frequently associated with these deaths in Florida after these policy changes. During 2010–2012, the number of drug overdose deaths decreased 16.7%, from 3,201 to 2,666, and the deaths per 100,000 persons decreased 17.7%, from 17.0 to 14.0. Death rates for prescription drugs overall decreased 23.2%, from 14.5 to 11.1 per 100,000 persons. The decline in the overdose deaths from oxycodone (52.1%) exceeded the decline for other opioid pain relievers, and the decline in deaths for alprazolam (35.6%) exceeded the decline for other benzodiazepines. Similar declines occurred in prescribing rates for these drugs during this period. The temporal association between the legislative and enforcement actions and the substantial declines in prescribing and overdose deaths, especially for drugs favored by pain clinics, suggests that the initiatives in Florida reduced prescription drug overdose fatalities.

Florida gained notoriety after 2007 because of the proliferation of pain clinics in the state that were prescribing large quantities of drugs for pain with little medical justification and were being used primarily by persons abusing or diverting opioid analgesics, benzodiazepines, and muscle relaxants (*2*). In 2010, Florida was also home to 98 of the 100 U. S. physicians who dispensed the highest quantities of oxycodone directly from their offices. In response, Florida enacted several measures to address prescribing that was inconsistent with best practices. The Florida legislature required that pain clinics treating pain with controlled substances register with the state by January 4, 2010. In February 2010, the Drug Enforcement Administration and various Florida law enforcement agencies began to work together in Operation Pill Nation (*3*). Pain clinic regulations were further expanded later in 2010. In February 2011, law enforcement conducted statewide raids, resulting in numerous arrests, seizures of assets, and pain clinic closures. In July of that year, coinciding with a public health emergency declaration by the Florida Surgeon General, the state legislature prohibited physician dispensing of schedule II or III drugs from their offices and activated regional strike forces to address the emergency. Mandatory dispenser reporting to the newly established prescription drug monitoring program began in September 2011. Finally, in 2012, the legislature expanded regulation of wholesale drug distributors and created the Statewide Task Force on Prescription Drug Abuse and Newborns.

Florida Medical Examiners Commission (FMEC) data from the period 2003–2012 were analyzed for this report. Florida has a regional system of 24 district medical examiners with jurisdiction over all drug-related deaths occurring in the state. Florida has established a unique system that requires each medical examiner to submit a report to the FMEC on every death in which a drug is detected in a decedent. The report includes information on the manner of death (unintentional, suicide, homicide, or undetermined) and which of 50 monitored drugs were detected in the decedent (including prescription drugs, illicit drugs, and alcohol). For each drug detected, the medical examiner determines whether it played a causal role in the death or was merely present (*4*). Only those deaths caused by one or more drugs (i.e., overdoses) were included in this analysis. Deaths were not restricted to Florida residents.

Drug overdose death rates per 100,000 Florida residents were computed using population estimates compiled by the Florida Department of Health in consultation with the Florida Legislature's Office of Economic and Demographic Research.* Rates were calculated for deaths caused by all drugs, all prescription drugs, opioid analgesics (including oxycodone, methadone, hydrocodone, morphine, and hydromorphone), benzodiazepines (including alprazolam), carisoprodol (a muscle relaxant), illicit drugs (including heroin and cocaine), and alcohol. Most deaths included more than one drug, so rates (including those for alcohol) refer to deaths involving a drug type irrespective of whether they were single or multidrug overdoses. The statistical significance of changes in death rates from 2010 to 2012 was assessed using z-tests.

Rates of prescribing selected prescription drugs in Florida were calculated from statewide estimates of prescription counts from the IMS Health National Prescription Audit (NPA). NPA provides state level estimates of the numbers of prescriptions

*Data available at http://www.floridacharts.com/flquery/population/populationrpt.aspx.

filled during 2008–2012. NPA estimates are based on a sample of approximately 57,000 pharmacies, which fill nearly 80% of the retail prescriptions in the United States. Confidence limits for the estimates are not available. All prescriptions, including refills, dispensed at retail pharmacies were included (*5*). Prescriptions were not restricted to those for Florida residents.

The rate of drug overdose deaths increased 58.9% during 2003–2010. The number of drug overdose deaths decreased 16.7%, from 3,201 to 2,666, and the rate decreased 17.7% during 2010 and 2012 (Table 1, Figure 1). This change was largely attributable to the decrease in prescription drug-related deaths, which peaked at 2,722 in 2010 and decreased to 2,116 in 2012. The prescription drug overdose death rate decreased 23.2% to 11.1 per 100,000 persons, the lowest rate since 2007. Opioid analgesic overdose deaths declined from 2,560 to 1,892, with a corresponding rate decrease of 27.0%. Oxycodone, methadone, and hydrocodone rates decreased, whereas morphine and hydromorphone rates increased. Benzodiazepine overdose death rates decreased 28.4%, with alprazolam rates down 35.6%. The rate of carisoprodol-related deaths also declined, but not significantly. Prescribing declined for drugs whose overdose rate declined and increased for drugs whose overdose rate increased. For example, oxycodone prescribing declined 24.0%, whereas morphine prescribing increased 37.6%. Overall illicit drug overdose death rates did not change significantly, although heroin overdose deaths increased from 48 to 108, a change from 0.3 to 0.6 per 100,000 persons. Alcohol overdose death rates were unchanged. The semiannual time trends in overdose rates for specific drugs indicate a steady decline beginning in 2011 rather than an abrupt decline following any one of the legislative and enforcement actions taken in Florida (Figure 2).

Although the oxycodone overdose death rate decreased across all demographic groups, the greatest declines were among males (57.0%) and non-Hispanic whites (52.6%) (Table 2). Decedents who were aged 0–24 years (67.0%) and 25–34 years (66.7%) showed larger decreases than older decedents. The rate of deaths ruled unintentional showed a larger decrease (53.9%) than those of suicide (37.8%) or undetermined intent (29.0%). Additionally, the rate of deaths in which oxycodone and alprazolam were both identified as causal declined 61.5%.

Discussion

This analysis showed that policy changes in Florida were followed by declines in the prescribing of drugs, especially those favored by Florida prescribing dispensers and pain clinics, as well as by declines in overdose deaths involving those drugs. Florida has reported that approximately 250 pain clinics were closed by 2013, and the number of high-volume oxycodone dispensing prescribers declined from 98 in 2010 to 13 in 2012 and zero in 2013 (*2*). Law enforcement agencies in Florida also reported that rates of drug diversion (i.e., channeling of prescription drugs to illicit markets) declined during 2010–2012 (*6*). Preliminary data for the first half of 2013 from the FMEC indicate a continued decline in oxycodone and alprazolam overdose deaths (*4*). These changes might represent the first documented substantial decline in drug overdose mortality in any state during the past 10 years.

Although the combined state initiatives were followed by the desired effect, determining the extent of each policy's contribution to the decline in overdose deaths in Florida is not possible. Declines in overdoses of oxycodone might also have been related to the transition in late 2010 to a formulation of extended-release oxycodone designed to be abuse-resistant (*7*), but most of the decline in oxycodone prescribing and overdoses occurred after 2011. The increase in deaths associated with heroin and hydromorphone and morphine after 2010 might be a sign of a switch to use of alternative opioids. However, the effect of such a switch was limited: 668 fewer opioid analgesic overdose deaths occurred in 2012, compared with 60 more heroin deaths. Heroin deaths fluctuated widely during 2003–2012, so other factors might be involved. Moreover, other states that did not experience declines in prescription opioid deaths have reported increases in heroin overdose deaths during 2010–2012 (*8*). National data indicate a substantial increase in heroin overdose deaths during 2010–2011 (CDC WONDER, unpublished data, 2014).

What is already known on this topic?

From 2003 to 2009, the number of deaths caused by drug overdose in Florida increased 61.0%, from 1,804 to 2,905. In 2010, Florida's legislature implemented laws regulating pain clinics, and in 2011, prohibited prescribers from dispensing opioid analgesics from their offices.

What is added by this report?

After the implementation of legislation, overdose death rates for opioid analgesics declined 27.0%, from 13.6 to 9.9 per 100,000 persons, and overdose death rates for benzodiazepines declined 28.4%, from 6.9 to 5.0 per 100,000 persons. Heroin overdose death rates increased 122.4%, from 0.3 to 0.6 per 100,000, but the overall drug overdose death rate declined 17.7%, from 17.0 to 14.0 per 100,000.

What are the implications for public health practice?

State legislation that establishes oversight over pain management clinics or describes specific registration, licensure, or ownership requirements for such clinics, coupled with restrictions on dispensing controlled substances by prescribers, are promising interventions to limit prescription drug overdose deaths.

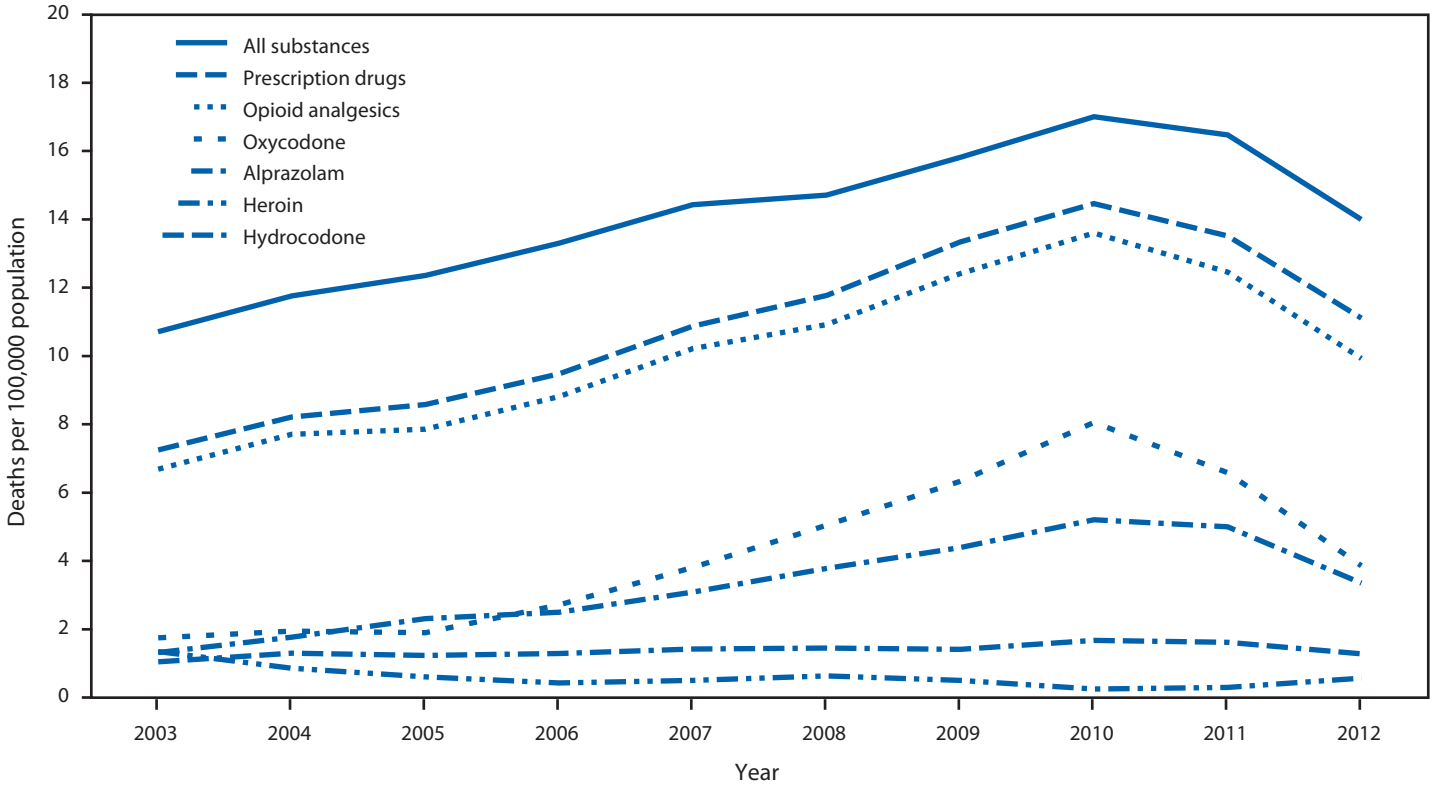
TABLE 1. Overdose death rates,* number of overdose deaths, and prescribing (Rx) rates† for selected substances, by year — Florida, 2003–2012

Substance	Year										% change 2010 to 2012
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Prescription drugs	**7.3**	**8.2**	**8.6**	**9.5**	**10.9**	**11.8**	**13.3**	**14.5**	**13.5**	**11.1**	**-23.2§**
	1,239	**1,436**	**1,534**	**1,730**	**2,012**	**2,195**	**2,496**	**2,722**	**2,560**	**2,116**	**-22.3**
Opioid analgesics	6.7	7.7	7.9	8.8	10.2	10.9	12.4	13.6	12.5	9.9	-27.0§
	1,142	1,347	1,405	1,608	1,891	2,037	2,323	2,560	2,359	1,892	-26.1
Oxycodone	1.8	1.9	1.9	2.7	3.8	5.0	6.3	8.1	6.6	3.9	-52.1§
	299	340	340	496	705	941	1,185	1,516	1,247	735	-51.5
Rx rate	—	—	—	—	—	*21,571*	*23,195*	*26,049*	*24,456*	*19,790*	*-24.0*
Methadone	2.1	3.2	3.5	3.9	4.2	3.7	3.8	3.7	3.6	2.7	-27.2§
	367	556	620	716	785	693	720	694	691	511	-26.4
Rx rate	—	—	—	—	—	*1,674*	*1,802*	*1,950*	*1,986*	*1,760*	*-9.8*
Hydrocodone	1.1	1.3	1.2	1.3	1.4	1.4	1.4	1.7	1.6	1.3	-23.1§
	180	228	221	236	264	270	265	315	307	245	-22.2
Rx rate	—	—	—	—	—	*34,409*	*34,335*	*33,184*	*32,685*	*29,970*	*-9.7*
Morphine	1.3	1.2	1.4	1.3	1.4	1.6	1.6	1.4	1.8	2.2	56.2§
	217	216	247	229	255	300	302	262	345	414	58.0
Rx rate	—	—	—	—	—	*2,222*	*2,564*	*2,693*	*3,028*	*3,706*	*37.6*
Hydromorphone	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.9	189.9§
	12	20	24	31	36	41	64	60	99	176	193.3
Rx rate	—	—	—	—	—	*863*	*1,109*	*1,133*	*1,403*	*1,790*	*58.0*
Other opioid analgesics	1.6	1.5	1.4	1.4	1.4	1.7	1.5	2.1	2.2	2.0	-4.5
	276	268	257	249	267	313	288	386	411	373	-3.4
Benzodiazepines	2.2	2.6	3.2	3.5	4.0	5.0	5.9	6.9	6.8	5.0	-28.4§
	376	460	574	632	743	929	1,099	1,305	1,294	945	-27.6
Alprazolam	1.3	1.8	2.3	2.5	3.1	3.8	4.4	5.2	5.0	3.4	-35.6§
	226	310	414	456	572	705	822	981	947	639	-34.9
Rx rate	—	—	—	—	—	*21,319*	*22,503*	*23,681*	*23,114*	*21,041*	*-11.1*
Other benzodiazepines	1.1	1.1	1.2	1.3	1.4	1.8	2.2	2.4	3.0	2.3	-5.0
	192	198	222	235	258	328	406	459	565	441	-3.9
Carisoprodol	0.3	0.5	0.5	0.4	0.5	0.5	0.5	0.6	0.8	0.5	-19.0
	45	81	96	74	88	84	98	111	153	91	-18.0
Rx rate	—	—	—	—	—	*4,585*	*4,719*	*4,883*	*4,668*	*3,649*	*-25.3*
Illicit drugs	**4.3**	**4.4**	**4.9**	**5.1**	**5.1**	**4.1**	**3.4**	**3.6**	**3.9**	**3.8**	**5.5**
	737	**771**	**882**	**936**	**935**	**768**	**635**	**678**	**739**	**724**	**6.8**
Heroin	1.3	0.9	0.6	0.4	0.5	0.6	0.5	0.3	0.3	0.6	122.4§
	230	150	109	78	93	119	95	48	57	108	125.0
Cocaine	3.2	3.4	4.1	4.5	4.6	3.5	2.8	3.0	3.2	2.9	-3.1
	541	591	732	829	843	648	529	561	604	550	-2.0
Ethanol (alcohol)	**1.6**	**1.7**	**1.9**	**2.1**	**2.5**	**2.6**	**3.0**	**3.0**	**3.1**	**3.0**	**-0.8**
	279	**293**	**343**	**378**	**466**	**489**	**559**	**572**	**590**	**574**	**0.3**
All substances¶	**10.7**	**11.8**	**12.4**	**13.3**	**14.4**	**14.7**	**15.8**	**17.0**	**16.5**	**14.0**	**-17.7§**
	1,829	**2,056**	**2,210**	**2,427**	**2,670**	**2,742**	**2,960**	**3,201**	**3,120**	**2,666**	**-16.7**

* Per 100,000 population, based on Florida Department of Health resident population estimates, available at http://www.floridacharts.com/flquery/population/populationrpt.aspx. The source of overdose death data is the Florida Medical Examiners Commission.
† Per 100,000 population, based on Florida Department of Health resident population estimates. The source of prescribing data is IMS Health's National Prescription Audit.
§ Change in rate is statistically significant at p<0.001. Changes in prescribing rates were not tested.
¶ Many deaths had more than one drug contributing to the death; thus, the sum of the rates in each column exceeds the total death rate.

The findings in this report are subject to at least five limitations. First, rates might be overestimated by the inclusion of nonstate residents, but the impact of this factor on trends is likely to be small (Florida Medical Examiners Commission, unpublished data, 2005–2008). Second, deaths from heroin might be underestimated because only the metabolites of heroin, such as morphine, are usually present in postmortem toxicology specimens. For prescription drug overdose deaths, however, the FMEC data provide a more complete accounting than death certificates (*9*). Third, prescription counts are estimated by a proprietary method and therefore include an undisclosed amount of error. Fourth, the role of other factors that might have affected prescribing and/or overdose death rates during this period (e.g., greater awareness of the problem) could not be evaluated. The absence of similar recent drug-specific overdose mortality data from other states precluded a comparison with other jurisdictions not making policy changes. Finally, the data sources available for this investigation did not permit any assessment of potential unintended consequences of these policy changes, such as reduction of

FIGURE 1. Overdose death rates* for selected substances, by year — Florida, 2003–2012†



* Per 100,000 population. Based on Florida Department of Health resident population estimates, available at http://www.floridacharts.com/flquery/population/populationrpt.aspx.
† The source of overdose death data is the Florida Medical Examiners Commission.

TABLE 2. Oxycodone overdose death rate* and number of deaths, by selected characteristics — Florida, 2010 and 2012†

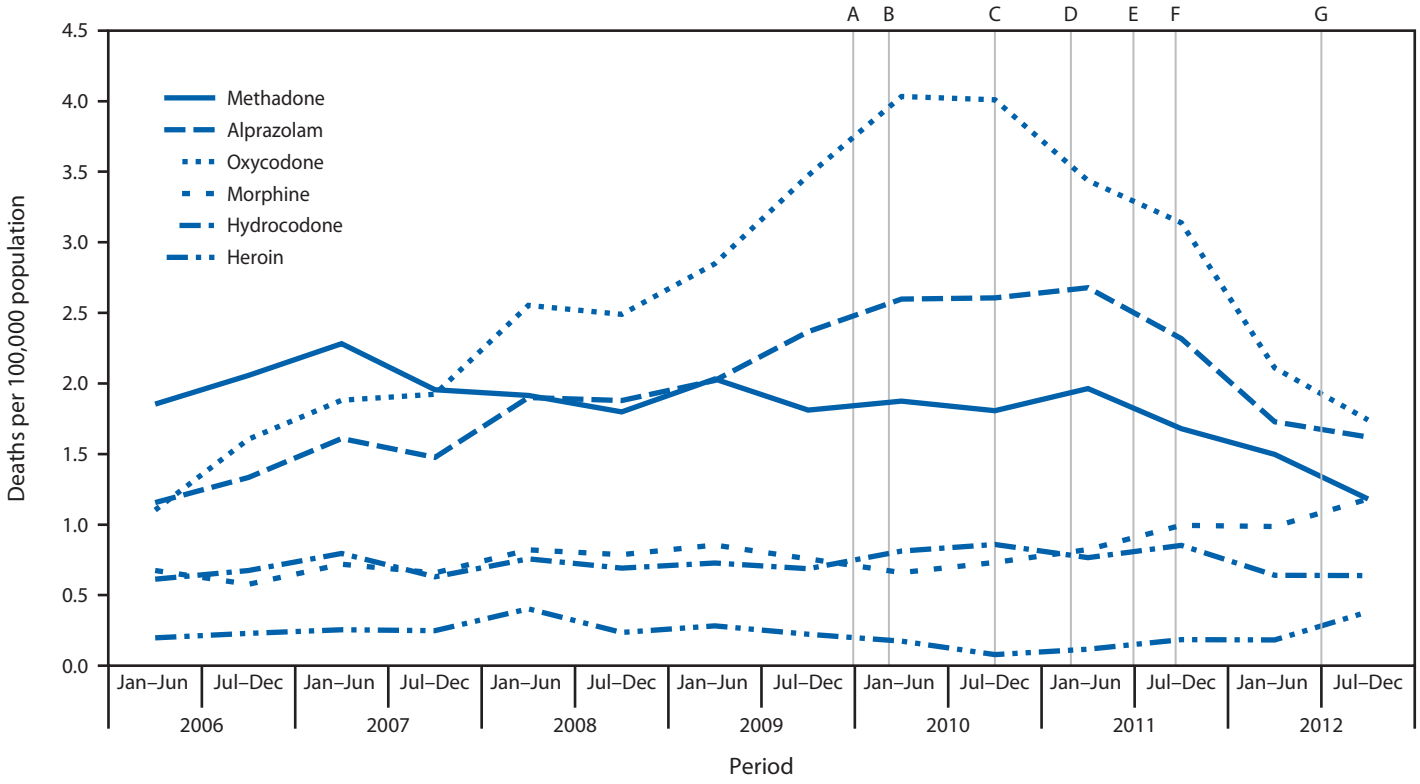
Characteristic	2010		2012		% change in rate
	Rate	No.	Rate	No.	
Sex					
Female	5.1	487	2.9	287	-41.8
Male	11.2	1029	4.8	448	-57.0
Age group (yrs)					
0–24	2.7	156	0.9	52	-67.0
25–34	17.3	394	5.8	136	-66.7
35–44	14.4	349	6.4	151	-55.7
45–54	15.0	412	8.4	225	-44.3
≥55	3.6	205	2.9	171	-19.2
Race/Ethnicity					
White, non-Hispanic	13.2	1446	6.3	683	-52.6
Black/Other, non-Hispanic	1.3	46	1.0	37	-21.4
Hispanic	0.6	24	0.3	15	-39.8
Manner of death					
Unintentional	7.2	1347	3.3	628	-53.9
Suicide	0.7	124	0.4	78	-37.8
Undetermined	0.2	39	0.1	28	-29.0
Oxycodone and alprazolam	3.3	627	1.3	244	-61.5
Total	**8.1**	**1516**	**3.9**	**735**	**-52.1**

* Per 100,000 population. Based on Florida Department of Health resident population estimates, available at http://www.floridacharts.com/flquery/population/populationrpt.aspx.
† The source of overdose death data is the Florida Medical Examiners Commission.

access to pain medication for legitimate prescribing indications.

Some of the measures introduced in Florida have been adopted by other states. For example, the number of states with pain clinic laws increased from three in 2010 to 11 in 2013 (*10*). However, more rigorous evaluations of such interventions using comparison populations are necessary. At present, state legislation that establishes oversight over pain management clinics or describes specific registration, licensure, or ownership requirements for such clinics, coupled with restrictions on dispensing controlled substances by prescribers, can be considered promising interventions to reduce prescription drug overdose deaths.

FIGURE 2. Semiannual drug overdose death rates* for selected drugs, and selected prescription drug diversion and misuse actions taken — Florida, 2006–2012†



* Per 100,000 population. Based on Florida Department of Health resident population estimates, available at http://www.floridacharts.com/flquery/population/populationrpt.aspx.

† The source of overdose death data is the Florida Medical Examiners Commission.

A. January 4, 2010. Pain clinics must register.
B. February, 2010. Operation Pill Nation: U.S. Drug Enforcement Agency and state and local law enforcement begin investigation of pain clinics.
C. October 1, 2010. Pain clinic regulation expanded.
D. February 23, 2011. Operation Pill Nation: joint law enforcement raids begin.
E. July 1, 2011. Physician dispensing prohibited and statewide regional strike forces activated.
F. September 1, 2011. Mandatory reporting to prescription drug monitoring program begins.
G. July 1, 2012. Wholesale distributor regulations expanded.

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Announcement

National Cleft and Craniofacial Awareness and Prevention Month — July 2014

July is National Cleft and Craniofacial Awareness and Prevention Month, an observance intended to raise awareness and improve understanding of birth defects of the head and face. Common craniofacial birth defects include orofacial clefts (cleft lip, cleft palate, or both), craniosynostosis (when the skull sutures join together prematurely), and anotia/microtia (when the ear is missing or malformed).

This year, CDC highlights research on the association between smoking during early pregnancy and orofacial clefts. Although the causes of most orofacial clefts are unknown, the 2014 Surgeon General's report confirmed that maternal smoking during early pregnancy can cause orofacial clefts in babies (*1*). In the United States, approximately 7,000 babies are born with orofacial clefts each year (*2*). Many of those birth defects could be prevented if women did not smoke during early pregnancy.

Orofacial clefts occur very early in pregnancy. Health-care providers should encourage women who are thinking about becoming pregnant to quit smoking before pregnancy or as soon as they find out that they are pregnant. Additional information regarding National Cleft and Craniofacial Awareness and Prevention Month is available at http://www.nccapm.org/about.html.

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Errata

Vol. 63, No. 25

In the report, "Tobacco Product Use Among Adults — United States, 2012–2013," one of the sexual orientation categories was incorrectly listed as lesbian, gay, bisexual, or transgender (LGBT). For the 2012–2013 National Adult Tobacco Survey, respondents could self-identify as lesbian, gay, or bisexual (LGB); the measure did not specifically assess whether a respondent was transgender. In the tables, on pages 543 and 544, the second listing under "Sexual orientation" should be **LGB**, defined as **LGB = lesbian, gay, or bisexual**. On page 545, the final sentence should read, "By sexual orientation, prevalence was higher among **lesbian, gay, or bisexual (LGB)** adults (30.8%) than heterosexual/straight adults (20.5)." On page 546, the second sentence under "Discussion" should read, "Any tobacco use was greater among men, younger adults, non-Hispanic other adults, those living in the Midwest and South, those with less education and income, and **LGB** adults."

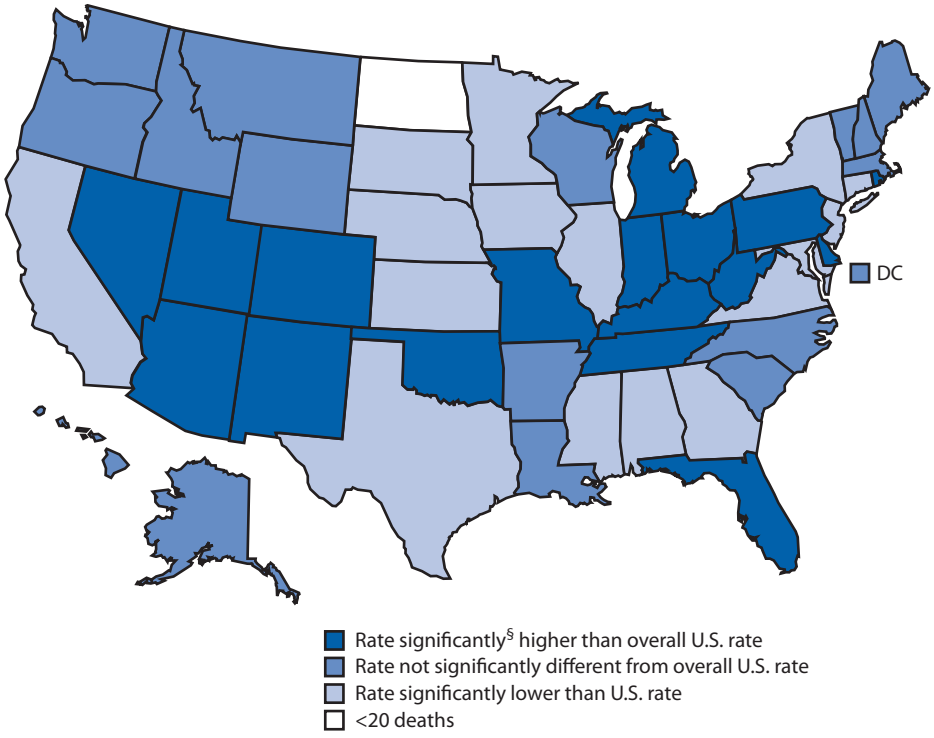
Vol. 63, No. SS–4

In the MMWR Surveillance Summary "Youth Risk Behavior Surveillance — United States, 2013," the title for Table 23 on page 72 was incorrect. It should read, "TABLE 23. Percentage of high school students **who felt sad or hopeless**,[*,†] by sex, race/ethnicity, and grade — United States, Youth Risk Behavior Survey, 2013."

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Drug-Poisoning* Death Rates,† by State — United States, 2011



* Based on *International Classification of Diseases, 10th Revision* codes X40–X44, X60–X64, X85, and Y10–Y14, which include deaths from all intents (unintentional, suicide, homicide, and undetermined).
† Age adjusted, per 100,000 standard population.
§ To identify state rates that were significantly higher or lower than the overall U.S. rate of 13.2 deaths per 100,000 population, differences between the U.S. and state estimates were evaluated using two-sided significance tests at the 0.01 level.

In 2011, age-adjusted rates for deaths from drug poisoning varied by state, ranging from 7.1 to 36.3 per 100,000 population. In 17 states, the age-adjusted drug-poisoning death rate was significantly higher than the overall U.S. rate of 13.2 deaths per 100,000 population. The five states with the highest poisoning death rates were West Virginia (36.3), New Mexico (26.3), Kentucky (25.0), Nevada (22.8), and Utah (19.5).

Sources: National Vital Statistics System mortality data. Available at http://www.cdc.gov/nchs/deaths.htm. Death rates for drug poisoning, by state of residence, United States, 2011. Available at http://www.cdc.gov/nchs/pressroom/states/drug_deaths_2011.pdf.

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The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy each week, visit *MMWR*'s free subscription page at *http://www.cdc.gov/mmwr/mmwrsubscribe.html*. Paper copy subscriptions are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone 202-512-1800.

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U.S. Government Printing Office: 2014-723-032/01064 Region IV ISSN: 0149-2195