HHS/PS COMMITTEE #1
June 28, 2012

# MEMORANDUM

June 26, 2012

TO: Health and Human Services Committee
Public Safety Committee

FROM: Linda McMillan, Senior Legislative Analyst

SUBJECT: **Briefing and Discussion: Treatment and Enforcement Efforts – Substance Abuse and Addiction – Overview of Treatment Systems**

***Expected for this session:***
Uma Ahluwalia, Director, Department of Health and Human Services (DHHS)
Dr. Raymond Crowel, Chief, DHHS Behavioral Health and Crisis Services (BHCS)
Hardy Bennett, Acting Director for Treatment Services, DHHS BHCS
Nicki Drotleff, Manager, Child and Adolescent Outpatient Services, DHHS BHCS
Larry Simmons, Co-Chair, Alcohol and Other Drug Abuse Advisory Council
Dr. Brenda Wilks, Department of Student Services, Montgomery County Public Schools (MCPS)

## Background – April 27th Meeting

At the Council's operating budget public hearings, the Council received testimony and comments that there is a growing problem with the use of heroin, opiates, and prescription drugs in the county and that there have been several overdoses and deaths. The Damascus community was specifically mentioned as a place where this problem has grown. The HHS and PS Committees agreed that they wanted to understand more about the issue, trends in the use of heroin and opiates, and how the County approaches enforcement and treatment.

On April 27th, the joint HHS and PS Committee met and received information from Commander Reynolds and Captain Cunningham of the Montgomery County Police Department

about enforcement efforts that have been going on in the Damascus Gardens area. Commander Reynolds told the joint Committee that they made arrests, but have also been working closely with the community, parents, the faith community and the apartment management and there have been significant improvements. With regards to overall issues with illegal drugs and substance abuse of both legal and illegal drugs, they emphasized that this should be seen as a county-wide issue. The Police are seeing a growing problem with abuse and addiction to prescription drugs. This can sometimes lead to heroin use if the user no longer has access to the prescription opiate. Commander Reynolds also told the Committee that the District Community Action Teams approved in the FY13 budget will provide the Police Department with the type of resource that can impact these types of problems. The joint Committee also received comments from Ms. Lowe of the Heroin Action Committee of Montgomery County that included concerns about the shortage of residential drug treatment beds and the cost of treating addiction.

The joint Committee requested information at its next session about the addictions treatment system.

**This Session – The Addiction Treatment System**

Council staff has asked the Department of Health and Human Services to provide the joint Committee with an overview briefing on the addiction treatment system. It is important to note that the treatment system is really several systems. There are systems for juveniles/adolescents that include services for those who qualify for public funding and services that are provided privately and may either be covered in whole or in part by health insurance. In addition, if a juvenile is in the juvenile justice system there may be court-ordered treatment that may or may not be paid for by the State or other public funding.

The same is true in the adult system. There are public and private pay systems, depending on eligibility. In addition, for adults in the justice system there may be community based treatment order as a part of parole or probation or pre-trial or re-entry services.

While a comment was received about the shortage of residential beds, Council staff has asked that DHHS discuss both the out-patient and residential systems. Trends have been to serve more people through out-patient and intensive out-patient treatment when it can be provided effectively as it is much less costly.

MCPS representatives will be present to address the issue of how a student who is found to have a substance abuse problem is referred to the treatment system. MCPS has not been asked to discuss drug education and prevention programs at this session. The Committee chairs have agreed they would like to address education and prevention programs at a future meeting.

Attached at ©1-2 are two summaries from the University of Maryland's Center for Substance Abuse Research (CESAR) regarding reasons people say they did not seek treatment for alcohol or drug addiction. Findings from the National Household Survey on Drug Use and Health (©1) show:

- The top reason for not receiving drug treatment during the past year was having no health coverage and not being able to afford the cost (37.2% average for years 2005 through 2008).
- The second highest reason was that the person was not ready to stop using drugs (29.5%)
- 15.3% responded that they did not know where to get treatment.

A 2009 poll conducted by Lake research partners (©2) indicated that:

- 49% of all U.S. adults polled said that they could not afford the cost of alcohol or drug treatment if they or someone in their family needed it.
- 67% responded this way if they had a household income of less than $50,000.
- 25% responded this way if they had a household income of more than $100,000.

**Background Information on Prevalence of Opiate Use**

As background for this discussion, some research on the prevalence of drug use is attached to this packet.

- At ©3, a summary from CESAR shows that for U.S. teens in grades 7 through 12 in 2008, the most commonly used drug (not including alcohol) was marijuana (33%), followed by inhalants (19%) and prescription drugs (19%).

- The State of Maryland Automated Record Tracking (SMART) System data for Fiscal Year 2011 shows (©4) that the rate of heroin-related treatment admissions per 100,000 population over age 14 was 38.54 for Montgomery County. This compares to 61.54 for Howard County, 18.98 for Prince George's County, and 127.18 for Frederick County.

- SMART System data for Fiscal Year 11 shows (©5) that the prescription opiate-related treatment admissions per 100,000 population over age 14 was 52.51 for Montgomery County. This compares to 57.5 for Howard County, 17.17 for Prince George's County, and 179.39 for Frederick County.

- Attached at ©6-9 is a brief from the National Institute on Drug Abuse (NIDA) about drug related hospital emergency department visits. It reports that in 2009 there were almost 4.6 million drug-related emergency room visits nationwide. Of these, about 2.1 million were related to drug abuse (as opposed to adverse reaction to drugs taken as prescribed). Of the 2.1 million visits, 27.1% involved non-medical use of a pharmaceutical, 21.2% involved illicit drugs, and 14.3% involved alcohol in combination with other drugs.

- This same report notes that the total number of drug-related emergency department visits increased 81% from 2004 to 2009. Emergency department visits that involved the non-medical use of pharmaceuticals increased 98.4% during this same period. The largest increases were for oxycodone products (242.2%), alprazolam (148.3%), and hydrocodone (124.5%).

- A 2011 data brief from the Centers for Disease Control and Prevention regarding Drug Poisoning Deaths in the United States, 1980-2008, reports that the number of drug poisoning death increase from about 6,100 in 1980 to 36,500 in 2008 and that opioid analgesics were involved in more than 40% of all drug poisoning deaths in 2008, an increase of 25% from 1999. (The report also notes that in about 25% of the drug poisoning deaths in 2008, the death certificate did not specify the type of drug(s) involved.)

- The CDC Morbidity and Mortality Weekly Report from November 1, 2011 (©17-22), shows that rate of drug overdose deaths for in 2008 per 100,000 population was 11.9, which was the same as the national average. It also reports that in Maryland the rate of non-medical use of opioid pain relievers for people age 12 and older, was 3.8 per 100,000. However, nationally the data shows that overdose deaths from opioid pain relievers now exceed deaths involving heroin and cocaine combined. It states the following "Key Points" (©22):

    - Death from opioid pain relievers (OPR) is an epidemic in the United States.
    - Sales from OPR quadrupled between 1999 and 2010. Enough OPR were prescribed last year to medicate every American adult with a standard pain treatment taken every 4 hours for a month.
    - Abuse of OPR costs health insurers approximately $72.5 billion annually in health-care costs.
    - State-based prescription drug monitoring program records and insurance claims information can identify and address inappropriate prescribing and use by patients.

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CESAR FAX

October 5, 2009
Vol. 18, Issue 39

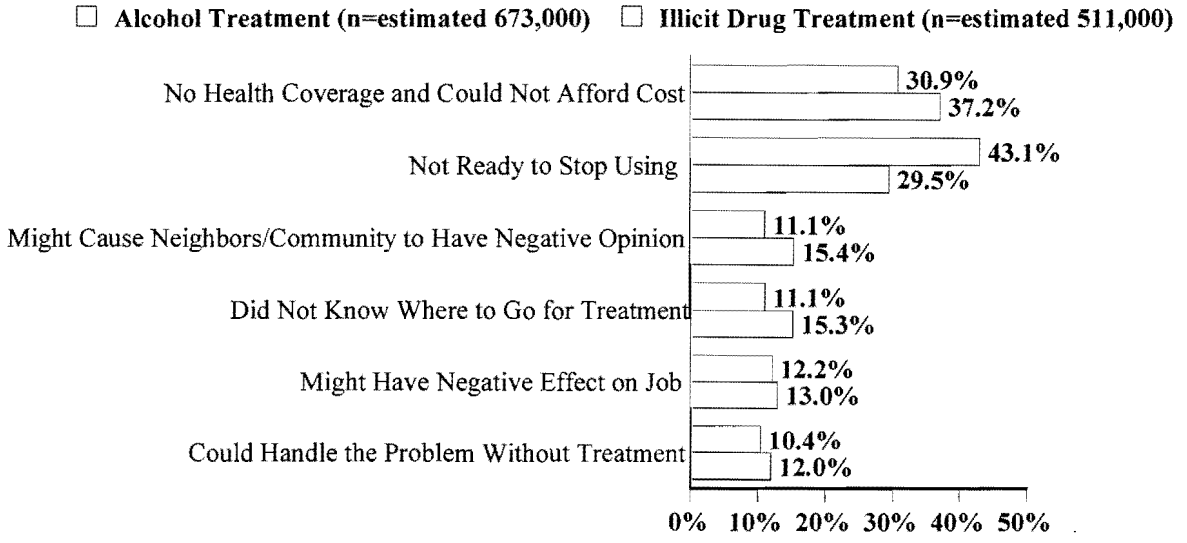
A Weekly FAX from the Center for Substance Abuse Research
University of Maryland, College Park

## *Lack of Health Coverage and Not Being Ready to Stop Using Top Reasons for Not Receiving Needed Alcohol or Drug Treatment*

An estimated 17.4 million people who needed alcohol treatment in the past year and 6.4 million who needed illicit drug treatment did not receive it, according to data from the 2008 National Survey on Drug Use and Health (NSDUH). Of those who were diagnosed as needing but did not receive treatment, only a small percentage also felt that they needed treatment for their alcohol (3.7%) or illicit drug (6.3%) use problem. The most commonly reported reasons for not receiving treatment among those who were classified as needing—and felt they needed—treatment were 1) not having health coverage and not being able to afford the cost* and 2) not being ready to stop using alcohol or illicit drugs. Other reasons given were not knowing where to go for treatment, thinking that going to treatment might have a negative effect on their job or social relationships, or that they could handle the problem without treatment (see figure below).

**Reasons Given for Not Receiving Alcohol and/or Illicit Drug Treatment in the Past Year, 2005 to 2008 Annual Averages**

(N=U.S. residents ages 12 and older classified as needing and perceiving a need for—but not receiving—treatment)




*Another health coverage-related reason cited was "had health coverage but did not cover treatment or did not cover cost" (4.9% alcohol; 6.7% illicit drug).

NOTES: Respondents were classified as *needing treatment* if in the past year they met the diagnostic criteria for abuse or dependence on the substance or received treatment for the substance at a specialty facility. A *specialty facility* was defined as an inpatient or outpatient rehabilitation facility, an inpatient hospital, or a mental health center. Responses to the categories are not mutually exclusive because respondents could indicate multiple reasons.

SOURCE: Adapted by CESAR from Substance Abuse and Mental Health Services Administration (SAMHSA), *Results from the 2008 National Household Survey on Drug Use and Health: National Findings*, 2009. Available online at http://www.oas.samhsa.gov/nsduhLatest.htm.

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CESAR FAX

July 13, 2009
Vol. 18, Issue 27

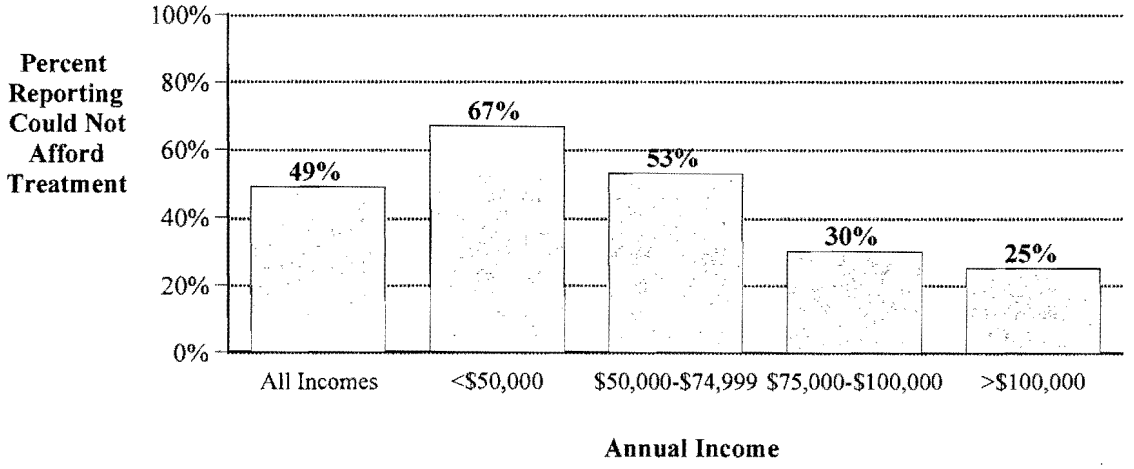
A Weekly FAX from the Center for Substance Abuse Research

University of Maryland, College Park

## *Americans of All Incomes Say They Could Not Afford Alcohol or Drug Treatment If They Needed It*

Nearly half of U.S. adults say that they would not be able to afford alcohol or drug treatment if they or someone in their family needed it, according to a telephone survey conducted this past June. While adults with annual incomes under $50,000 are most likely to say they would not be able to afford treatment (67%), more affluent adults also perceive an inability to pay for treatment. Thirty percent of those with incomes between $75,000 and $100,000 and one-fourth of those with incomes above $100,000 didn't think they would be able to afford treatment if they needed it. R. Gil Kerlikowske, Director of the Office of National Drug Control Policy, recently stated that his office will be "working to ensure drug abuse treatment services are incorporated into our national health care reform process."*

**Percentage of U.S. Adult Household Residents Reporting That They Could Not Afford the Costs of Alcohol or Drug Treatment If They or Someone in Their Family Needed It, by Annual Income**
(N=1,001 adult U.S. household residents)




NOTE: Data is from a nationwide telephone survey of 1,001 adults ages 18 and older conducted by telephone, using RDD probability sample, May 29 to June 1, 2009. Data were weighted by gender, age, race, and region. The margin of error is ± 3.1 percentage points.

*R. Gil Kerlikowske, Director, Office of National Drug Control Policy, *Remarks at Release of the 2009 World Drug Report*, June 24, 2009.

SOURCE: Adapted by CESAR from Lake Research Partners, "New Poll Shows Majority of Americans Support Efforts to Make Alcohol and Drug Addiction Treatment More Accessible, Affordable," June 16, 2009 Press Release. Poll conducted by Lake Research Partners for the Closing the Addiction Treatment Gap program, an initiative of the Open Society Institute.

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CESAR FAX

March 9, 2009
Vol. 18, Issue 9

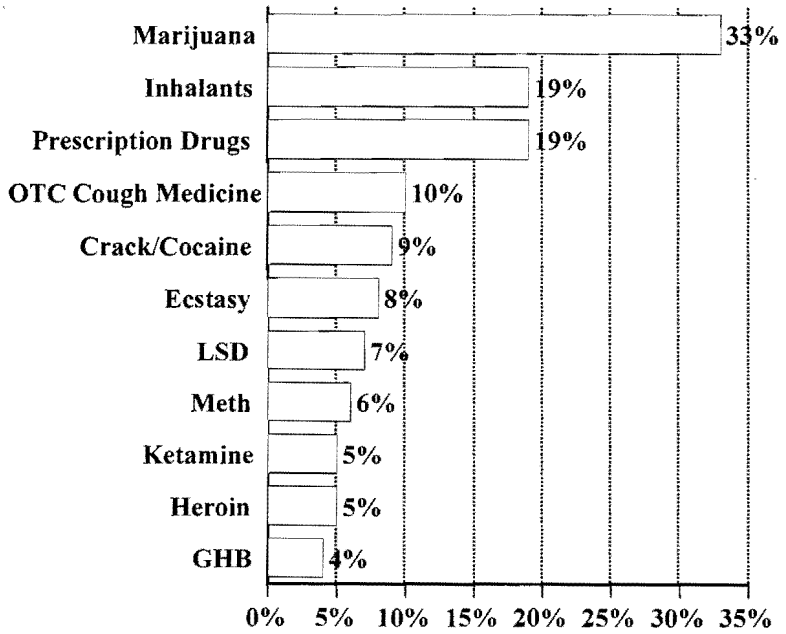
A Weekly FAX from the Center for Substance Abuse Research
University of Maryland, College Park

## *Marijuana, Inhalants, and Prescription Drugs Are Top Three Substances Abused by Teens*

More teens report abusing prescription drugs and inhalants than any illicit drug except marijuana, according to data from the recently released Partnership Attitude Tracking Study (PATS). Marijuana continues to be the most prevalent drug used among this population, with nearly one-third of teens reporting having ever tried marijuana in their lifetime. The next two most prevalent substances abused, however, are substances that are not illegal when used as directed, and are often readily available in teens' households. Nearly one in five (an estimated 4.7 million) teens have ever abused inhalants and the same number report abusing prescription drugs. In addition, 10% of teens (an estimated 2.5 million) have ever abused over-the-counter cough medicines—approximately the same percentage who have ever used crack/cocaine or ecstasy (see figure below). Perceived risk and availability may help explain the prevalence of prescription drug abuse—41% of teens thought that prescription drugs are much safer to use than illegal drugs and 61% reported that prescription drugs are easier to get than illegal drugs (data not shown).

**Percentage of U.S. Teens (Grades 7 to 12) Reporting Ever Trying Drugs, 2008**

(N=6,518)




NOTES: Abuse of inhalants and OTC cough medicine is defined as using the substance to get high. Abuse of prescription drugs is defined as use without a doctor's prescription. The margin of error is +/- 1.3%.

SOURCE: Adapted by CESAR from The Partnership for a Drug-Free America, *The Partnership Attitude Tracking Study (PATS): Teens 2008 Report*, 2009. Available online at http://www.drugfree.org/Files/full_report_teens_2008. For more information, contact the Partnership at 212-922-1560.

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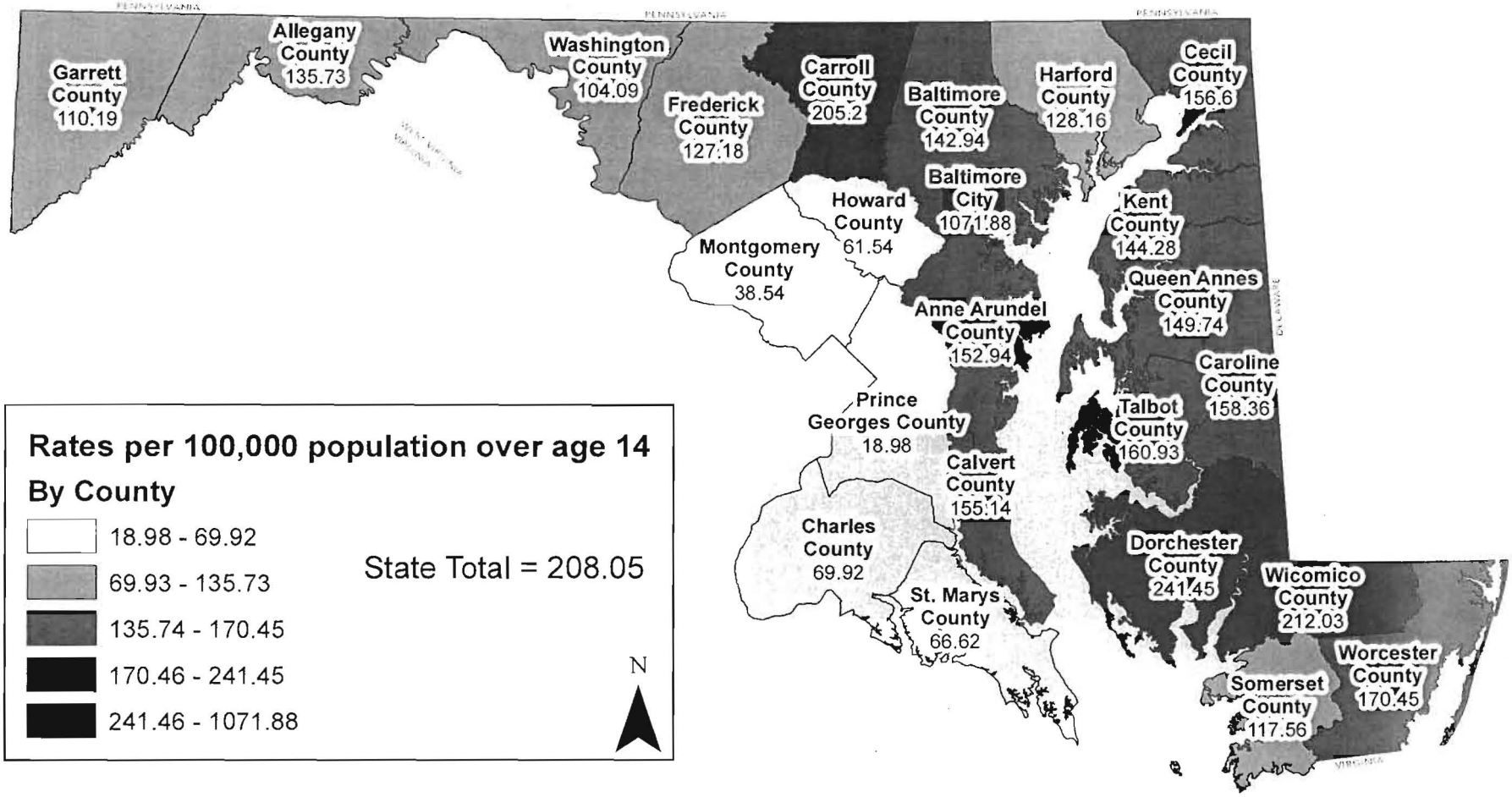
# Heroin-Related Treatment Admissions Fiscal Year 2011



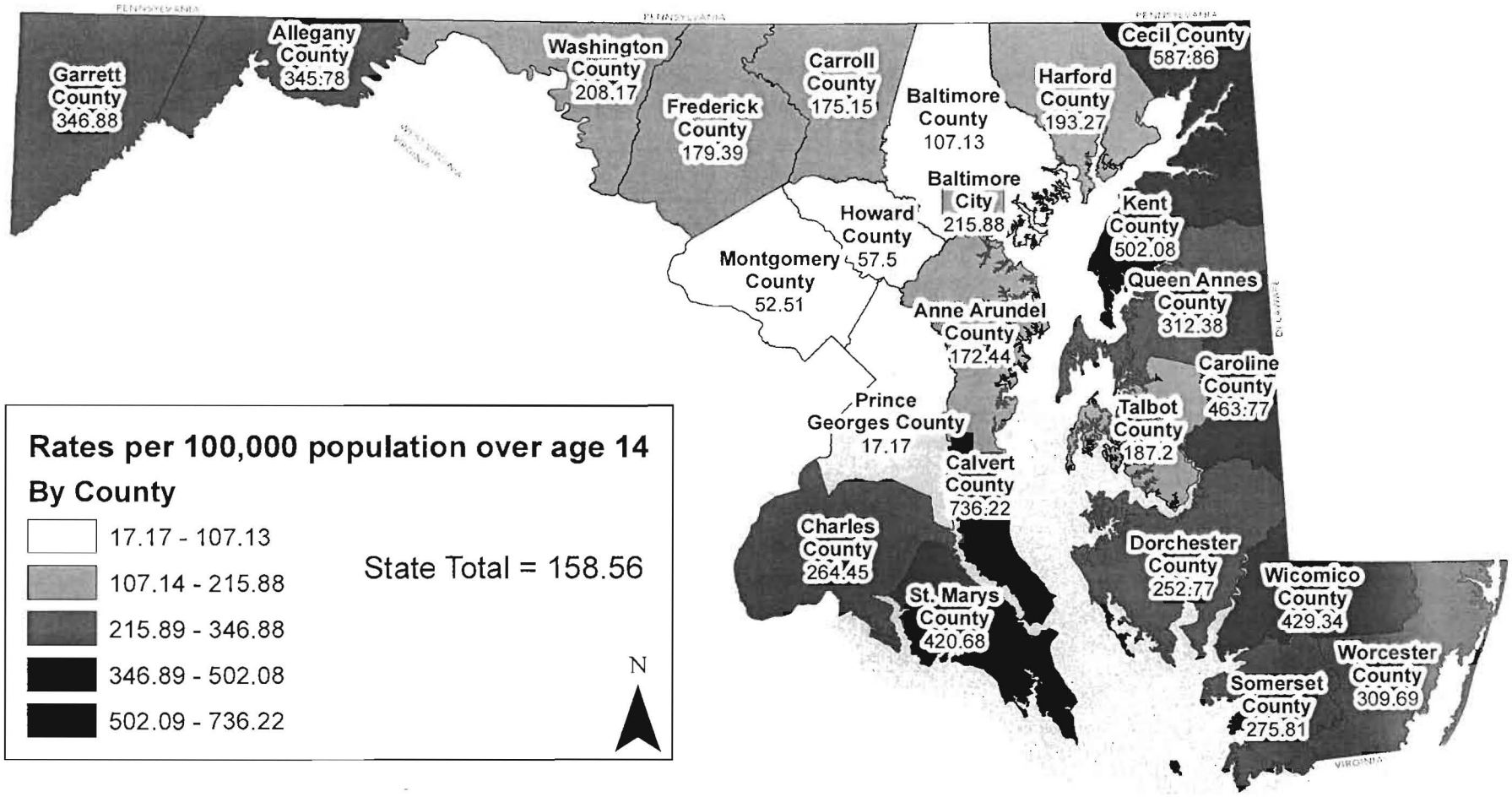

**Map prepared for:**
DHMH/Alcohol and Drug Abuse Administration
January 24, 2011

Classification Method: Jenks Natural Breaks using five (5) classes.

**Data Sources:**
Treatment data--State of Maryland Automated Record Tracking (SMART) system, Fiscal Year 2011.

County boundaries--ESRI, 2006.
Light grey basemap--ESRI, 2012.

# Prescription Opiate-Related Treatment Admissions Fiscal Year 2011

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County boundaries--ESRI, 2006.
Light grey basemap--ESRI, 2012.

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# Drug-Related Hospital Emergency Room Visits

National estimates on drug-related visits to hospital emergency departments (ED) are obtained from the Drug Abuse Warning Network (DAWN),[1,2] a public health surveillance system managed by the Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (HHS). DAWN data* are based on a national sample of general, non-Federal hospitals operating 24-hour Emergency Departments (EDs). Information is collected for all types of drugs—including illegal drugs, inhalants, alcohol—and abuse** of prescription and over-the-counter (OTC) medications and dietary supplements.

## Highlights from the 2009 Drug Abuse Warning Network

In 2009, there were nearly 4.6 million drug-related ED visits nationwide. These visits included reports of drug abuse, adverse reactions to drugs, or other drug-related consequences. Almost 50 percent were attributed to adverse reactions to pharmaceuticals taken as prescribed, and 45 percent involved drug abuse. DAWN estimates that of the 2.1 million drug abuse visits—

- 27.1 percent involved nonmedical use of pharmaceuticals (i.e., prescription or OTC medications, dietary supplements)
- 21.2 percent involved illicit drugs
- 14.3 percent involved alcohol, in combination with other drugs.

ED visits involving nonmedical use of pharmaceuticals (either alone or in combination with another drug) increased 98.4 percent between 2004 and 2009, from 627,291 visits to 1,244,679, respectively. ED visits involving adverse reactions to pharmaceuticals increased 82.9 percent between 2005 and 2009, from 1,250,377 to 2,287,273 visits, respectively.

The majority of drug-related ED visits were made by patients 21 or older (80.9 percent, or 3,717,030 visits). Of these, slightly less than half involved drug abuse. Patients aged 20 or younger accounted for 19.1 percent (877,802 visits) of all drug-related visits in 2009; about half of these visits involved drug abuse.

## Illicit Drugs

In 2009, almost one million visits involved an illicit drug, either alone or in combination with other types of drugs. DAWN estimates that—

- cocaine was involved in 422,896 ED visits
- marijuana was involved in 376,467 ED visits
- heroin was involved in 213,118 ED visits
- stimulants, including amphetamines and methamphetamine, were involved in 93,562 ED visits
- other illicit drugs—such as PCP, ecstasy, and GHB—were involved much less frequently than any of the drug types mentioned above.

The rates of ED visits involving cocaine, marijuana, and heroin were higher for males than for females. Rates for cocaine were highest among individuals aged 35–44, rates for heroin were highest among individuals aged 21–24, stimulant use was highest among those 25–29, and marijuana use was highest for those aged 18–20.

## Alcohol and Other Drugs

Approximately 32 percent (658,263) of all drug abuse ED visits in 2009 involved the use of alcohol, either alone or in combination with another drug. DAWN reports alcohol-related data when it is used alone among individuals under the age of 21 or in combination with other drugs among all groups, regardless of age. Because DAWN does not account for ED visits involving alcohol use alone in adults, the actual number of ED visits involving alcohol among the general population is thought to be significantly higher than what is reported in DAWN.

In 2009, DAWN estimated 519,650 ED visits related to the use of alcohol in combination with other drugs. Alcohol was most frequently combined with—

- central nervous system agents (e.g., analgesics, stimulants, sedatives) (229,230 visits)
- cocaine (152,631 visits)
- marijuana (125,438 visits)
- psychotherapeutic agents (e.g., antidepressants and antipsychotics) (44,217 visits)
- heroin (43,110 visits).

While alcohol use is illegal for individuals under age 21, DAWN estimates that in 2009 there were 199,429 alcohol-related ED visits among individuals under age 21; 76,918 ED visits were reported among those aged 12 to 17, and 120,853 alcohol-related ED visits were reported among those aged 18 to 20.

## Nonmedical Use of Pharmaceuticals

In 2009, 1.2 million ED visits involved the nonmedical use of pharmaceuticals or dietary supplements. The most frequently reported drugs in the nonmedical use category of ED visits were opiate/opioid analgesics, present in 50 percent of nonmedical-use ED visits; and psychotherapeutic agents, (commonly used to treat anxiety and sleep disorders), present in more than one-third of nonmedical ED visits. Included among the most frequently reported opioids were single-ingredient formulations (e.g., oxycodone) and combination forms (e.g., hydrocodone with acetaminophen). Methadone, together with single-ingredient and combination forms of oxycodone and hydrocodone, was also included under the most frequently reported opioids classification—

- hydrocodone (alone or in combination) in 104,490 ED visits
- oxycodone (alone or in combination) in 175,949 ED visits
- methadone in 70,637 ED visits.

### *Increases in drug-related ED visits over time.*

The total number of drug-related ED visits increased 81 percent from 2004 (2.5 million) to 2009 (4.6 million). ED visits involving nonmedical use of pharmaceuticals increased 98.4 percent over the same period, from 627,291 visits to 1,244,679.

The largest pharmaceutical increases were observed for oxycodone products (242.2 percent increase), alprazolam (148.3 percent increase), and hydrocodone products (124.5 percent). Among ED visits involving illicit drugs, only those involving ecstasy increased more than 100 percent from 2004 to 2009 (123.2 percent increase).

For patients aged 20 or younger, ED visits resulting from nonmedical use of pharmaceuticals increased 45.4 percent between 2004 and 2009 (116,644 and 169,589 visits, respectively). Among patients aged 21 or older, there was an increase of 111.0 percent.

ED visits involving adverse reactions to pharmaceuticals increased 82.9 percent between 2005 and 2009, from 1,250,377 visits to 2,287,273. The majority of adverse reaction visits were made by patients 21 or older, particularly among patients 65 or older; the rate increased 89.2 percent from 2005 to 2009 among this age group.

### *Data Sources*

[1] Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality (formerly the Office of Applied Studies). *The DAWN Report: Highlights of the 2009 Drug Abuse Warning Network (DAWN) Findings on Drug-Related Emergency Department Visits.* Rockville, MD, December 28, 2010. Available at: http://www.oas.samhsa.gov/2k10/DAWN034/EDHighlights.htm.

[2] Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. *Drug Abuse Warning Network: Detailed Tables: National Estimates, Drug-Related Emergency Department Visits for 2004–2009.* Rockville, MD, December 28, 2010. Available at: https://dawninfo.samhsa.gov/data/default.asp?met=All.

### *Notes*

* DAWN relies on longitudinal data collected from selected hospitals across the United States. Beginning in 2004, DAWN adjusted its sampling and weighting methodologies in order to improve the quality, reliability, and generalizability of its estimates. Thus, trends reported earlier than 2004 cannot be compared to more current estimates due to changes in the DAWN data collection reporting system.

** The abuse of pharmaceuticals (prescription and over-the-counter medications) is also referred to as "nonmedical use."

NIDA NATIONAL INSTITUTE ON DRUG ABUSE

**National Institutes of Health – U.S. Department of Health and Human Services**

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NCHS Data Brief ■ No. 81 ■ December 2011

# Drug Poisoning Deaths in the United States, 1980–2008

Margaret Warner, Ph.D.; Li Hui Chen, Ph.D.; Diane M. Makuc, Dr.P.H.,
Robert N. Anderson, Ph.D.; and Arialdi M. Miniño, M.P.H.

## Key findings

### Data from the National Vital Statistics System Mortality File

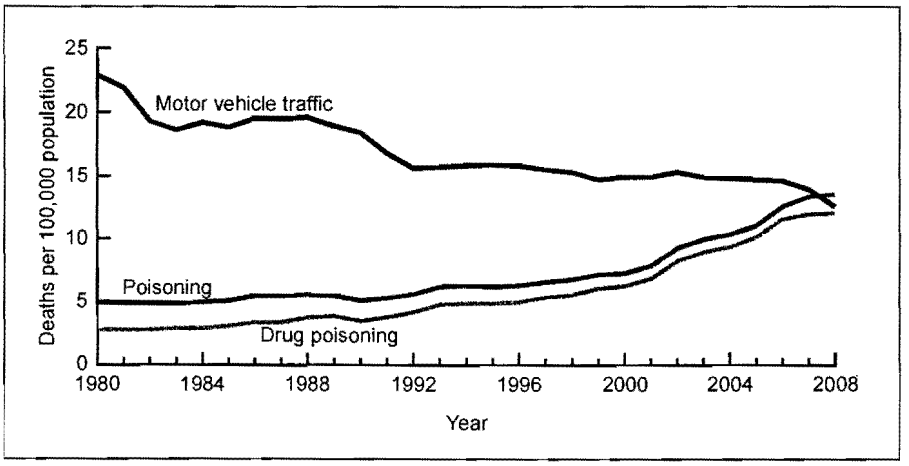
- In 2008, poisoning became the leading cause of injury death in the United States and nearly 9 out of 10 poisoning deaths are caused by drugs.
- During the past three decades, the number of drug poisoning deaths increased sixfold from about 6,100 in 1980 to 36,500 in 2008.
- During the most recent decade, the number of drug poisoning deaths involving opioid analgesics more than tripled from about 4,000 in 1999 to 14,800 in 2008.
- Opioid analgesics were involved in more than 40% of all drug poisoning deaths in 2008, up from about 25% in 1999.
- In 2008, the drug poisoning death rate was higher for males, people aged 45–54 years, and non-Hispanic white and American Indian or Alaska Native persons than for females and those in other age and racial and ethnic groups.

In 2008, over 41,000 people died as a result of a poisoning. One of the Healthy People 2020 objectives, retained from *Healthy People 2010*, is to reduce fatal poisonings in the United States (1). However, poisoning mortality increased during the *Healthy People 2010* tracking period. Drugs—both legal and illegal—cause the vast majority of poisoning deaths. Misuse or abuse of prescription drugs, including opioid analgesic pain relievers, is responsible for much of the increase in drug poisoning deaths (see "Definitions" section). This report highlights trends in poisoning deaths, drug poisoning deaths, and the type of drugs involved in drug poisoning deaths and updates a previous data brief on this topic (2).

*Keywords: opioid analgesics • overdose • prescription pain relievers • National Vital Statistics System Mortality File*

**Poisoning is now the leading cause of death from injuries in the United States and nearly 9 out of 10 poisoning deaths are caused by drugs.**

Figure 1. Motor vehicle traffic, poisoning, and drug poisoning death rates: United States, 1980–2008




NOTE: In 1999, the *International Classification of Diseases, Tenth Revision (ICD–10)* replaced the previous revision of the ICD (ICD–9). This resulted in approximately 5% fewer deaths being classified as motor-vehicle traffic–related deaths and 2% more deaths being classified as poisoning-related deaths. Therefore, death rates for 1998 and earlier are not directly comparable with those computed after 1998. Access data table for Figure 1 at http://www.cdc.gov/nchs/data/databriefs/db81_tables.pdf#1.
SOURCE: CDC/NCHS, National Vital Statistics System.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

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In 2008, the number of poisoning deaths exceeded the number of motor vehicle traffic deaths for the first time since at least 1980. In 2008, there were more than 41,000 poisoning deaths, compared with about 38,000 motor vehicle traffic deaths. In 2008, 89% of poisoning deaths were caused by drugs.

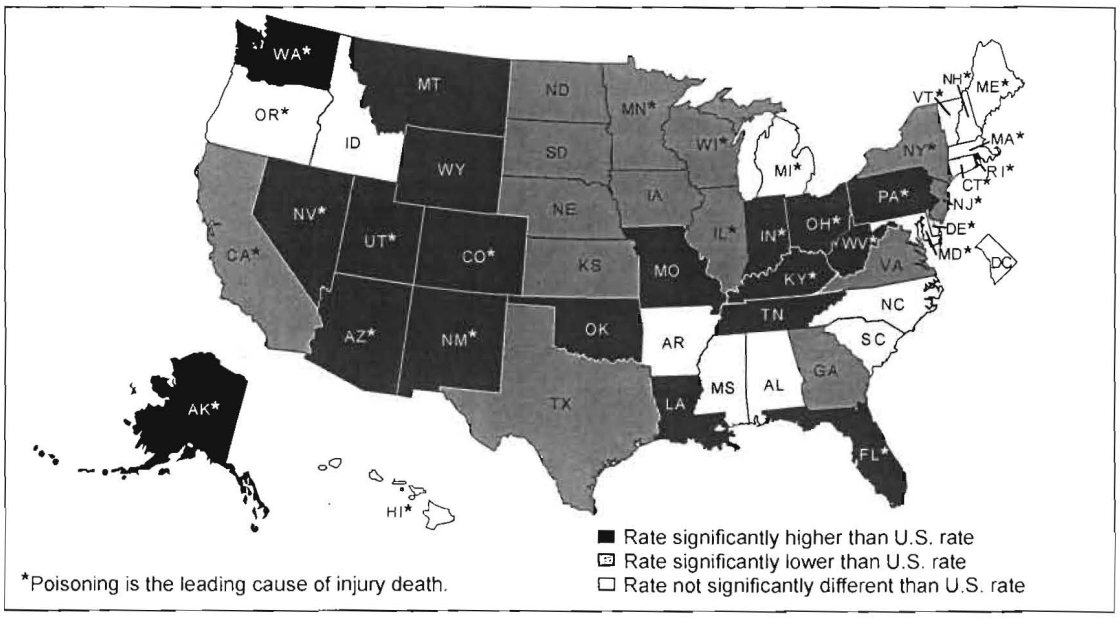
During the past three decades, the poisoning death rate per 100,000 population nearly tripled from 4.8 in 1980 to 13.5 in 2008, while the motor vehicle traffic death rate decreased by almost one-half from 22.9 in 1980 to 12.5 in 2008 (Figure 1). In the most recent decade, from 1999 to 2008, the poisoning death rate increased 90%, while the motor vehicle traffic death rate decreased 15%.

From 1980 to 2008, the percentage of poisoning deaths caused by drugs increased from 56% to 89%. In 2008, about 77% of the drug poisoning deaths were unintentional, 13% were suicides, and 9% were of undetermined intent (see Appendix table).

## Poisoning is the leading cause of death from injury in 30 states.

In 2008, poisoning was the leading cause of injury death in the following 30 states: Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, Washington, West Virginia, and Wisconsin (Figure 2).

Figure 2. Age-adjusted poisoning death rates: Comparison of state and U.S. rates: United States, 2008




NOTES: The poisoning death rate for Georgia may not be based on the final numbers of poisoning deaths See "Data source and methods" for details Figure 2 at http://www cdc.gov/nchs/data/databriefs/db81_tables.pdf#2.
SOURCE: CDC/NCHS, National Vital Statistics System.

In 2008, age-adjusted poisoning death rates varied by state, ranging from 7.6 to 30.8 per 100,000 population. In 20 states, the age-adjusted poisoning death rate was significantly higher than the U.S. rate of 13.4 deaths per 100,000 population.

The five states with the highest poisoning death rates were New Mexico (30.8), West Virginia (27.6), Alaska (24.2), Nevada (21.0), and Utah (20.8). In 43 states over 80% of poisoning deaths were caused by drugs (data not shown).



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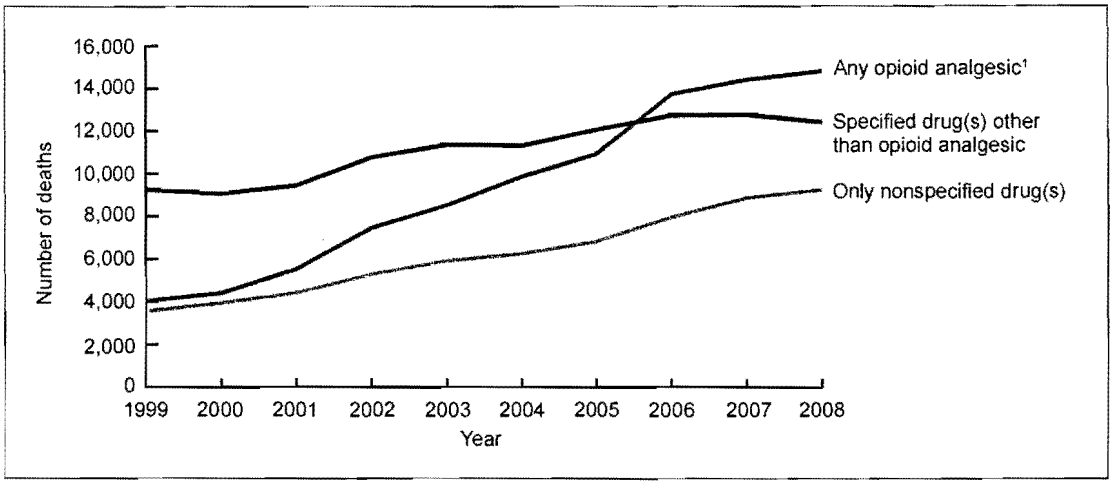
## Opioid analgesics were involved in more than 40% of drug poisoning deaths in 2008.

Of the 36,500 drug poisoning deaths in 2008, more than 40% (14,800) involved opioid analgesics (Figure 3). For about one-third (12,400) of the drug poisoning deaths, the type of drug(s) involved was specified on the death certificate but it was not an opioid analgesic. The remaining 25% involved drugs, but the type of drugs involved was not specified on the death certificate (for example, "drug overdose" or "multiple drug intoxication" was written on the death certificate).

Figure 3. Number of drug poisoning deaths involving opioid analgesics and other drugs: United States, 1999–2008




[1] Opioid analgesics include natural and semi-synthetic opioid analgesics (for example, morphine, hydrocodone, and oxycodone) and synthetic opioid analgesics (for example, methadone and fentanyl). Some deaths in which the drug was poorly specified or unspecified may involve opioid analgesics.
NOTES: Drug categories are mutually exclusive. Access data table for Figure 3 at http://www.cdc.gov/nchs/data/databriefs/db81_tables.pdf#3.
SOURCE: CDC/NCHS, National Vital Statistics System.

From 1999 to 2008, the number of drug poisoning deaths involving opioid analgesics increased from about 4,000 to 14,800, more rapidly than deaths involving only other types of drugs or only nonspecified drugs.

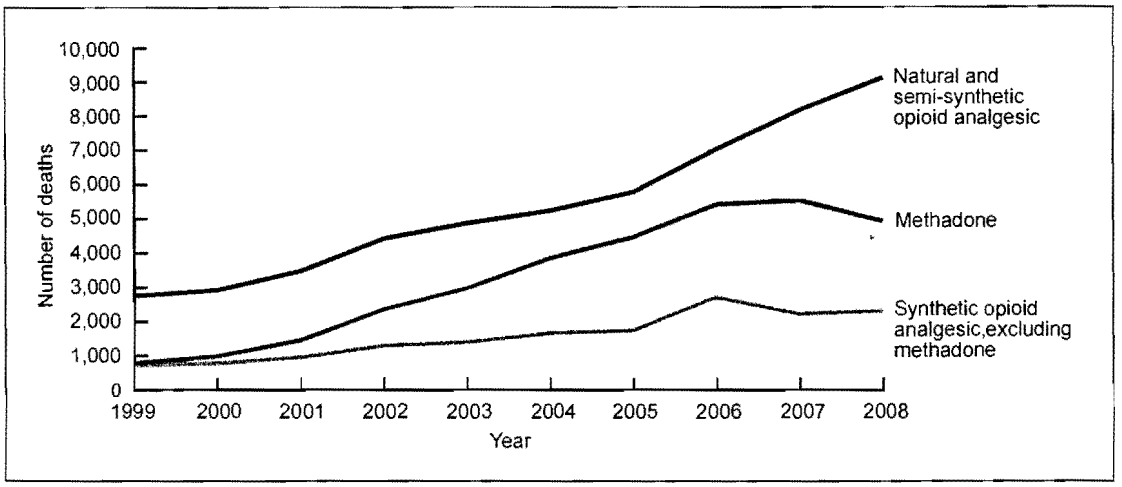
From 1999 to 2008, the number of drug poisoning deaths involving only nonspecified drugs increased from about 3,600 to about 9,200. Some drug poisoning deaths for which the drug was not specified may involve opioid analgesics.

## Natural and semi-synthetic opioid analgesics such as morphine, hydrocodone, and oxycodone were involved in over 9,100 drug poisoning deaths in 2008, up from about 2,700 in 1999.

Of the 14,800 drug poisoning deaths involving opioid analgesics in 2008, the majority involved natural and semi-synthetic opioid analgesics such as morphine, hydrocodone, and oxycodone. The number of drug poisoning deaths involving natural and semi-synthetic opioid analgesics increased steadily each year from about 2,700 deaths in 1999 to over 9,100 deaths in 2008 (Figure 4).

The number of drug poisoning deaths involving methadone, which is a synthetic opioid analgesic used to treat opioid dependency as well as pain, increased sevenfold from about 800 deaths in 1999 to about 5,500 in 2007. Between 2007 and 2008, the number of deaths involving methadone decreased by nearly 600 deaths, the first decrease since 1999.

Figure 4. Number of drug poisoning deaths involving opioid analgesic by opioid analgesic category: United States, 1999–2008



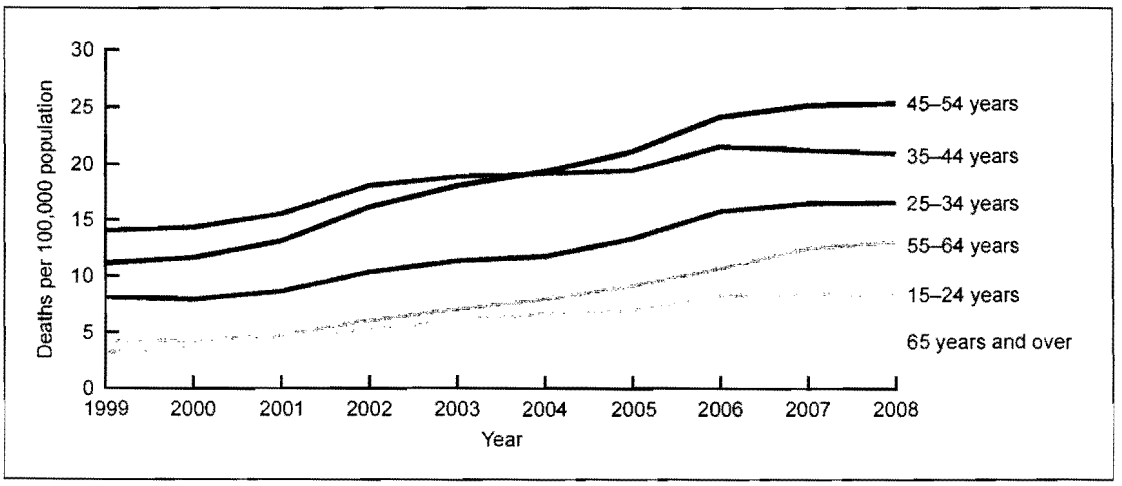

NOTES: Opioid analgesic categories are not mutually exclusive. Deaths involving more than one opioid analgesic category shown in this figure are counted multiple times. Natural and semi-synthetic opioid analgesics include morphine, hydrocodone, and oxycodone; and synthetic opioid analgesics include fentanyl. Access data table for Figure 4 at http://www.cdc.gov/nchs/data/databriefs/db81_tables.pdf#4.
SOURCE: CDC/NCHS, National Vital Statistics System.

The number of drug poisoning deaths involving synthetic opioid analgesics other than methadone, such as fentanyl, tripled from about 700 in 1999 to 2,300 in 2008.

## In 2008, the drug poisoning death rate was higher among those aged 45–54 years than among those in other age groups.

From 1999 to 2008, the drug poisoning death rate increased among all age groups. In 2004, the drug poisoning death rate among those aged 45–54 years surpassed the rate among those aged 35–44 years, and became the age group with the highest drug poisoning death rate (Figure 5).

Figure 5. Drug poisoning death rates by age: United States, 1999–2008




NOTE: Access data table for Figure 5 at http://www.cdc.gov/nchs/data/databriefs/db81_tables.pdf#5.
SOURCE: CDC/NCHS, National Vital Statistics System.

From 1999 to 2008, the age-adjusted drug poisoning death rate increased for males and females and for all race and ethnicity groups (Appendix table). In 2008, the rate was higher for males than



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for females, and higher for non-Hispanic American Indian or Alaska Native and non-Hispanic white persons than for those in other race and ethnicity groups.

Appendix table. Age-adjusted drug poisoning death rates, by demographic characteristics and intent: United States, 1999–2008

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Age-adjusted death rate | | | | | | | | | |
| Total | 6.1 | 6.2 | 6.8 | 8.1 | 8.9 | 9.3 | 10.0 | 11.4 | 11.8 | 11.9 |
| **Sex** | | | | | | | | | | |
| Male | 8.2 | 8.3 | 9.0 | 10.5 | 11.4 | 11.7 | 12.7 | 14.6 | 14.8 | 14.8 |
| Female | 3.9 | 4.1 | 4.7 | 5.8 | 6.4 | 6.9 | 7.3 | 8.2 | 8.9 | 9.0 |
| **Race and ethnicity** | | | | | | | | | | |
| Hispanic | 5.5 | 4.6 | 4.4 | 5.3 | 5.6 | 5.2 | 5.7 | 6.2 | 5.9 | 5.9 |
| Non-Hispanic white | 6.1 | 6.6 | 7.4 | 9.2 | 10.1 | 10.9 | 11.7 | 13.5 | 14.4 | 14.7 |
| Non-Hispanic Black | 7.5 | 7.3 | 7.6 | 8.2 | 8.2 | 8.3 | 9.4 | 10.9 | 9.8 | 8.5 |
| Non-Hispanic American Indian or Alaska Native | 6.0 | 5.5 | 6.8 | 8.4 | 10.6 | 12.3 | 12.9 | 13.9 | 13.9 | 15.6 |
| Non-Hispanic Asian or Pacific Islander | 1.2 | 1.0 | 1.2 | 1.4 | 1.4 | 1.5 | 1.7 | 1.9 | 1.9 | 1.8 |
| **Intent**[1] | | | | | | | | | | |
| Unintentional | 4.0 | 4.2 | 4.6 | 5.7 | 6.3 | 6.8 | 7.5 | 8.8 | 9.1 | 9.2 |
| Suicide | 1.1 | 1.2 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 | 1.6 |
| Undetermined | 0.9 | 0.9 | 1.0 | 1.1 | 1.2 | 1.1 | 1.0 | 1.1 | 1.2 | 1.1 |

[1]Age-adjusted drug poisoning rates for homicides, legal interventions, and operations of war rates are less than 0.1 per 100,000 population each year and are not shown.
SOURCE: CDC/NCHS, National Vital Statistics System.

## Summary

In 2008, the number of poisoning deaths exceeded the number of motor vehicle traffic deaths and was the leading cause of injury death for the first time since at least 1980. During the past three decades, the poisoning death rate nearly tripled, while the motor vehicle traffic death rate decreased by one-half. During this period, the percentage of poisoning deaths that were caused by drugs increased from about 60% to about 90%.

The population groups with the highest drug poisoning death rates in 2008 were males, people aged 45–54 years, and non-Hispanic white and American Indian or Alaska Native persons. The vast majority of drug poisoning deaths are unintentional (see Appendix table). Opioid analgesics were involved in more drug poisoning deaths than other specified drugs, including heroin and cocaine. Opioid analgesics were involved in nearly 15,000 deaths in 2008, while cocaine was involved in about 5,100 deaths and heroin was involved in about 3,000 deaths (data not shown). Deaths involving opioid analgesics may involve other drugs as well, including benzodiazepines (2).

In addition to an increase in the number of deaths caused by drug poisoning, increases in drug use, abuse, misuse, and nonfatal health outcomes have been observed. In the past two decades, there has been an increase in the distribution and medical use of prescription drugs, including opioid analgesics (3). From 1999 to 2008, the use of prescription medications increased (4). In 2007–2008, 48% of Americans used at least one prescription drug in the past month and 11% of Americans used five or more prescriptions in the past month. Analgesics for pain relief were

among the common drugs taken by adults aged 20–59 years (4). In 2009–2010, over 5 million Americans reported using prescription pain relievers nonmedically in the past month (that is, without a doctor's prescription or only for the experience or feeling they caused), and the majority of people using prescription pain relievers nonmedically reported getting the drugs from friends or family (5,6). From 2004 to 2008, the estimated rate of emergency department visits involving nonmedical use of opioid analgesics doubled from 49 per 100,000 to 101 per 100,000 (7).

Government agencies and other organizations joined together to achieve great reductions in the number of deaths from motor vehicle crashes in the past three decades (8,9). A comprehensive approach, including improvements in the safety of vehicles; improvements in roadways; increased use of restraint systems, such as seat belts and child safety seats; reductions in speed; and also efforts to reduce driving under the influence of alcohol and drugs, contributed to the decline in motor vehicle related deaths (8,9). Using a comprehensive, multifaceted approach, it may be possible to reverse the trend in drug poisoning mortality.

## Definitions

Injury deaths: Include deaths that are caused by forces external to the body. Examples of causes of injury death include drowning, fall, firearm, fire or burn, motor vehicle traffic, poisoning, and suffocation.

Poisoning deaths: Include drug poisonings resulting from unintentional or intentional overdoses of a drug, being given the wrong drug, taking the wrong drug in error, or taking a drug inadvertently. Poisoning deaths also include poisoning resulting from other toxic substances, gases, or vapors.

Opioid analgesics: Drugs that are usually prescribed to relieve pain and include: Natural and semi-synthetic opioid analgesics such as morphine, codeine, hydrocodone, and oxycodone; methadone, which is a synthetic opioid analgesic used to treat opioid dependency as well as pain; and other synthetic opioid analgesics (excluding methadone) such as fentanyl and propoxyphene. Opium and heroin are not included in this class of drugs.

## Data source and methods

Estimates are based on the National Vital Statistics System multiple cause of death mortality files (10). Deaths were classified using the *International Classification of Diseases* (ICD), *Tenth Revision* (ICD–10) in 1999–2008 and the Ninth Revision of the ICD (ICD–9) in 1980–1998. Poisoning deaths were defined as having ICD–10 underlying cause of death code (UCOD): X40–X49, X60–X69, X85–X90, Y10–Y19, Y35.2, or *U01(.6–.7) and ICD–9 UCOD: E850.0–E869.9, E950.0–E952.9, E962(.0–.9), E972, or E980.0–E982.9. Drug poisoning deaths were defined as having ICD–10 UCOD: X40–X44 (unintentional), X60–X64 (suicide), X85 (homicide), Y10–Y14 (undetermined intent) and ICD–9 UCOD: E850–E858, E950.0–E950.5, E962.0, or E980.0–E980.5. Motor vehicle traffic deaths were defined as having ICD–10 UCOD: V02–V04(.1,.9), V09.2, V12–V14(.3–.9), V19(.4–.6), V20–V28(.3–.9), V29–V79(.4–.9), V80(.3–.5), V81–V82(.1), V83–V86(.0–.3), V87(.0–.8), or V89.2 and ICD–9 UCOD: E810.0–E819.9, E958.5, or E988.5. When the ICD–10 replaced ICD–9 in 1999, approximately 5% fewer deaths were classified as motor vehicle deaths and 2% more deaths were classified as poisoning deaths (11).



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The identification of individual drugs and drug classes involved in drug poisoning deaths is limited by the classification structure of the ICD. Trends involving individual drugs and drug classes begin with 1999 when the ICD–10 replaced ICD–9, because the classification of individual drugs and drug classes is not comparable between ICD revisions. Among deaths with drug poisoning as the underlying cause, the following ICD–10 codes indicate the type of drug(s) involved: only nonspecified drug(s) (only T50.9); specified drug(s) other than opioid analgesic (any of the codes T36–T50.8 other than T40.2–T40.4); and any opioid analgesic (any of the codes T40.2–T40.4); and natural and semi–synthetic opioid analgesic (T40.2); methadone (T40.3); synthetic opioid analgesic, excluding methadone (T40.4); heroin (T40.1); and cocaine (T40.5).

Age-adjusted death rates were calculated using the direct method and the 2000 standard population (10). To identify state rates that were significantly higher or lower than the overall U.S. rate, differences between national and state estimates were evaluated using two-sided significance tests at the 0.01 level. Georgia was excluded from this comparison because the cause of death was inconclusive for a high proportion of deaths in Georgia in the 2008 NVSS mortality file. When the national mortality file was closed to updates, the manner of death was pending for 8.8% of deaths and was assigned an ill-defined cause in 3.5% of deaths for Georgia as compared with 0.5% pending and 0.3% ill-defined for the nation. Poisoning deaths, which require lengthy investigations, are typically among the causes that remain pending at the close of the file.

Several factors related to death investigation and reporting may affect measurement of death rates involving specific drugs. At autopsy, toxicological lab tests may be performed to determine the type of legal and illegal drugs present. The substances tested for and circumstances in which the tests are performed vary by jurisdiction. Measurement errors related to these factors are more likely to affect substance specific death rates than the overall drug poisoning death rate.

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# Vital Signs: Overdoses of Prescription Opioid Pain Relievers — United States, 1999–2008


## Abstract

**Background:** Overdose deaths involving opioid pain relievers (OPR), also known as opioid analgesics, have increased and now exceed deaths involving heroin and cocaine combined. This report describes the use and abuse of OPR by state.

**Methods:** CDC analyzed rates of fatal OPR overdoses, nonmedical use, sales, and treatment admissions.

**Results:** In 2008, drug overdoses in the United States caused 36,450 deaths. OPR were involved in 14,800 deaths (73.8%) of the 20,044 prescription drug overdose deaths. Death rates varied fivefold by state. States with lower death rates had lower rates of nonmedical use of OPR and OPR sales. During 1999–2008, overdose death rates, sales, and substance abuse treatment admissions related to OPR all increased substantially.

**Conclusions:** The epidemic of overdoses of OPR has continued to worsen. Wide variation among states in the nonmedical use of OPR and overdose rates cannot be explained by underlying demographic differences in state populations but is related to wide variations in OPR prescribing.

**Implications for Public Health Practice:** Health-care providers should only use OPRs in carefully screened and monitored patients when non-OPR treatments are insufficient to manage pain. Insurers and prescription drug monitoring programs can identify and take action to reduce both inappropriate and illegal prescribing. Third-party payers can limit reimbursement in ways that reduce inappropriate prescribing, discourage efforts to obtain OPR from multiple health-care providers, and improve clinical care. Changes in state laws that focus on the prescribing practices of health-care providers might reduce prescription drug abuse and overdoses while still allowing safe and effective pain treatment.


## Introduction

In 2007, nearly 100 persons per day died of drug overdoses in the United States (*1*). The death rate of 11.8 per 100,000 population in 2007 was roughly three times the rate in 1991. Prescription drugs have accounted for most of the increase in those death rates since 1999 (*2*). In 2009, 1.2 million emergency department (ED) visits (an increase of 98.4% since 2004) were related to misuse or abuse of pharmaceuticals, compared with 1.0 million ED visits related to use of illicit drugs such as heroin and cocaine (*3*). Prominent among these prescription drug–related deaths and ED visits are opioid pain relievers (OPR), also known as narcotic or opioid analgesics, a class of drugs that includes oxycodone, methadone, and hydrocodone, among others. OPR now account for more overdose deaths than heroin and cocaine combined. OPR frequently are diverted for nonmedical use by patients or their friends or sold on the street. In 2010, 4.8% of the U.S. population aged ≥12 years used OPR nonmedically (*4*). Nonmedical use of OPR costs insurance companies up to $72.5 billion annually in health-care costs (*5*).

States regulate the use of prescription drugs, such as OPR, and the practices of prescribers and pharmacists. States also finance and regulate health care for Medicaid populations, which are at greater risk for overdose (*6*). States therefore have a central role in ensuring that OPR are used legally and safely.

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Comparisons among jurisdictions in drug overdose mortality, nonmedical use of OPR, and OPR sales can help identify risk factors and effective prevention measures. Among the states, OPR sales varied fourfold in 2002 (*7*), and death rates for overdoses involving OPR varied from 1.8 to 15.6 per 100,000 population in 2006 (*2*). More rural and more impoverished counties tend to have higher prescription drug overdose death rates (*8,9*).

## Methods

For this report, death rates are based on the National Vital Statistics System multiple cause of death files (*10*). Rates were age-adjusted to the 2000 U.S. Census population using bridged-race* population figures. Drug poisoning deaths, referred to as drug overdose deaths in this report, were defined as those with an underlying cause of death classified by the *International Classification of Diseases, 10th Revision* (ICD-10) external cause of injury codes as X40–X44, X60–X64, X85, or Y10–Y14. Rates include injury deaths of any intent (unintentional, suicide, homicide, or undetermined) for U.S. residents. Among deaths with drug overdose as the underlying cause, CDC identified the type of drug involved using ICD-10 codes: prescription drugs (T36–T39, T40.2–T40.4, T41–T43.5, and T43.7–T50.8), including prescription opioid pain relievers (T40.2–T40.4); illicit drugs (T40.1, T40.5, T40.7–T40.9, and T43.6); or only unspecified drugs (T50.9 alone). The prescription drug category includes some over-the-counter medications. Some deaths involved prescription and illicit drugs and are counted in both drug categories. Years of potential life lost (YPLL) before age 65 years were calculated by subtracting age at death from 65 years and summing to get the total YPLL.

Rates of nonmedical OPR use in the past year by state were obtained from the 2008–2009 National Surveys on Drug Use and Health (NSDUH) (*11*). Nonmedical use was defined as use of a prescription pain reliever without a prescription belonging to the respondent or use for the experience or feeling the drug causes. The prescription pain reliever category includes OPR and selected barbiturate combination products used for headaches.

Annual drug sales for 1999–2010 were determined from the Automation of Reports and Consolidated Orders System (ARCOS) of the Drug Enforcement Administration (DEA) (*12*). For this report, ARCOS sales data were used as a surrogate for OPR use. DEA provided data on sales to pharmacies, hospitals, and practitioners for codeine, fentanyl, hydrocodone, hydromorphone, meperidine, methadone, morphine, and oxycodone (Kyle Wright, personal communication, April 11, 2011). Sales of drugs to substance abuse treatment programs were not included. Amounts of drugs were standardized to morphine milligram equivalents (*13*).

The percentage of the state population below the federal poverty level by race and ethnicity during 2007–2008 was provided by the Kaiser Family Foundation (Rachel Licata, personal communication, August 10, 2011). Trends in substance abuse treatment admission rates were based on the Treatment Episode Data Set (*14*). Rates were calculated for admissions for treatment of substance abuse where the primary substance was an OPR.

Spearman's correlation coefficient was used to correlate the absolute increase in the non-Hispanic white overdose death rate during 1999–2008 with poverty level by state. Fisher's exact test was used to compare the proportions of states above and below national rates. Test results are statistically significant at $p<0.05$.

## Results

In 2008, a total of 36,450 deaths were attributed to drug overdose, a rate of 11.9 per 100,000 population (Table 1), among which a drug was specified in 27,153 (74.5%) deaths. One or more prescription drugs were involved in 20,044 (73.8%) of the 27,153 deaths, and OPR were involved in 14,800 (73.8%) of the 20,044 prescription drug overdose deaths. Rates varied by sex, race/ethnicity, and age. For deaths involving OPR, the rate among non-Hispanic whites and American Indians/Alaska Natives was three times higher than the rates in blacks and Hispanic whites. All death rates were highest among persons aged 35–54 years. Overdose resulted in 830,652 YPLL before age 65 years, a number comparable to the YPLL from motor vehicle crashes.

Rates for all outcomes studied varied widely by state (Table 2, Figure 1)† Overdose death rates ranged from 5.5 per 100,000 population in Nebraska to 27.0 in New Mexico. The prevalence of nonmedical use of OPR during 2008–2009 ranged from 3.6% in Nebraska to 8.1% in Oklahoma. The rate of OPR sales ranged from 3.7 kg per 10,000 population in Illinois to 12.6 kg in Florida. The highest sales rates were clustered in the Southeast and the Northwest. Among the 27 states with overdose death rates above the national rate, 21 (77.8%) had rates of nonmedical use above the national rate. Among the 24 states with death rates at or below the national rate, six (25.0%) had rates of nonmedical use above the national rate ($p<0.001$). Among the 27 states with death rates above the national rate, 21 (77.8%) had rates of OPR sales above the national rate. Among the 24 states with death rates at or below the national rate, five (20.8%) had rates of OPR sales above the national rate ($p<0.001$).

* Information about bridged-race categories is available at http://www.cdc.gov/nchs/nvss/bridged_race.htm.

† For this report, District of Columbia is grouped with the states.



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**TABLE 1. Drug overdose death rates by selected characteristics — National Vital Statistics System, United States, 2008**

| Characteristic | Age-adjusted rate* | | | |
|---|---|---|---|---|
| | All drugs† | Prescription drugs§ | Opioid pain relievers¶ | Illicit drugs** |
| **Overall** | **11.9** | **6.5** | **4.8** | **2.8** |
| **Sex** | | | | |
| Men | 14.8 | 7.7 | 5.9 | 4.3 |
| Women | 9.0 | 5.3 | 3.7 | 1.4 |
| **Race/Ethnicity** | | | | |
| White | 13.2 | 7.4 | 5.6 | 2.8 |
| Hispanic†† | 6.1 | 3.0 | 2.1 | 2.5 |
| Non-Hispanic | 14.7 | 8.4 | 6.3 | 2.9 |
| Black | 8.3 | 3.0 | 1.9 | 4.0 |
| Asian/Native Hawaiian or Pacific Islander | 1.8 | 1.0 | 0.5 | 0.6 |
| American Indian/Alaska Native | 13.0 | 8.4 | 6.2 | 2.7 |
| **Age group (yrs)** | | | | |
| 0–14 | 0.2 | 0.2 | 0.1 | —§§ |
| 15–24 | 8.2 | 4.5 | 3.7 | 2.2 |
| 25–34 | 16.5 | 8.8 | 7.1 | 4.4 |
| 35–44 | 20.9 | 11.0 | 8.3 | 5.3 |
| 45–54 | 25.3 | 13.8 | 10.4 | 6.0 |
| 55–64 | 13.0 | 7.3 | 5.0 | 2.5 |
| ≥65 | 4.1 | 3.0 | 1.0 | 0.3 |
| **Intent** | | | | |
| Unintentional | 9.2 | 4.8 | 3.9 | 2.6 |
| Undetermined | 1.1 | 0.6 | 0.5 | 0.2 |
| Suicide | 1.6 | 1.1 | 0.5 | 0.1 |

* Rate per 100,000 population age-adjusted to the 2000 U.S. standard population using the vintage 2008 population. Because deaths might involve both prescription and illicit drugs, some deaths are included in both categories.

† Deaths with underlying causes of unintentional drug poisoning (X40–44), suicide drug poisoning (X60–64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the *International Classification of Diseases, 10th Revision*.

§ Drug overdose deaths, as defined, that have prescription drugs (T36–T39, T40.2–T40.4, T41–T43.5, and T43.7–T50.8) as contributing causes.

¶ Drug overdose deaths, as defined, that had other opioids (T40.2), methadone (T40.3), and other synthetic narcotics (T40.4) as contributing causes.

** Drug overdose deaths, as defined, that have heroin (T40.1), cocaine (T40.5), hallucinogens (T40.7–T40.9), or stimulants (T43.6) as contributing causes.

†† Non-white Hispanics are included in the other racial groups.

§§ Rate is not presented when the estimate is unstable because the number of deaths is less than 20.

During 1999–2008, overdose death rates, sales, and substance abuse treatment admissions related to OPR increased in parallel (Figure 2). The overdose death rate in 2008 was nearly four times the rate in 1999. Sales of OPR in 2010 were four times those in 1999. The substance abuse treatment admission rate in 2009 was almost six times the rate in 1999. The rate of sales of OPR in 2010, 7.1 kg per 10,000 population, was equivalent to 710 mg per person in the United States. The percentage of the non-Hispanic white population below the poverty level during 2007–2008 correlated positively with the increase in overdose death rates among non-Hispanic whites from 1999 to 2008 by state ($r = 0.54$; $p<0.001$). Louisiana, Mississippi, Kentucky, and West Virginia had some of the largest mortality increases and some of the highest poverty levels among non-Hispanic whites.

## Conclusions and Comment

The epidemic of prescription drug overdoses in the United States has worsened over the last decade, and by 2008, drug overdose deaths (36,450) were approaching the number of deaths from motor vehicle crashes (39,973), the leading cause of injury death in the United States. Parallel trends in deaths and OPR sales between 1999 and 2008, combined with continuing upward trends in ED visits (*4*), OPR abuse treatment admissions (*14*), and OPR sales after 2008 suggest that the death rate also has increased since 2008. Preliminary 2009 death data are consistent with such an increase (*15*). These increases occurred despite numerous warnings and recommendations over the past decade for voluntary education of providers about more cautious use of OPR (*16*).

Differences in OPR overdose mortality by race/ethnicity match the pattern for medical and nonmedical use of OPR, with the lowest rates for medical and nonmedical use among Asians and blacks and the highest rates among American Indians/Alaska Natives and non-Hispanic whites (*4,17*). Differences in OPR overdose mortality by race and ethnicity cannot explain the wide variation in death rates among states, given the equally large differences in non-Hispanic white mortality between states. Nor can demographic differences fully explain the wide variations among states in the nonmedical use and sales of OPR. Montana and Iowa, for example, have largely non-Hispanic white populations but widely varying rates of nonmedical use and sales of OPR.

By 2010, enough OPR were sold to medicate every American adult with a typical dose of 5 mg of hydrocodone every 4 hours for 1 month. Increased use of OPR has contributed to the overall increases in rates of overdose death and nonmedical use, and variation among states in OPR sales probably contributes to state variation in these outcomes. Given that 3% of physicians accounted for 62% of the OPR prescribed in one study (*18*), the proliferation of high-volume prescribers can have a large impact on state use of OPR and overdose death rates. Large increases in overdoses involving the types of drugs sold by illegitimate pain clinics (i.e., "pill mills") have been reported in Florida (*19*) and Texas (*20*). Such clinics provide OPR to large volumes of patients without adequate evaluation or follow-up. Another possible contributor to state disparities is poverty, which was associated with greater increases in state death rates during 1999–2008. Medicaid populations are at greater risk of OPR overdose than non-Medicaid populations (*6*).

The findings in this report are subject to at least four limitations. First, vital statistics underestimate the rates of



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TABLE 2. Rates of drug overdose death, nonmedical use of opioid pain relievers (OPR), and OPR sales, by state — United States

| | Drug overdose deaths* | | | | OPR | | | |
|---|---|---|---|---|---|---|---|---|
| | Overall | | Non-Hispanic whites | | Nonmedical use† | | Sales§ | |
| State | Rate | (SE) | Rate | (SE) | % | (SE) | Rate | (SE) |
| **National** | **11.9** | **(0.1)** | **14.7** | **(0.1)** | **4.8** | **(0.1)** | **7.1** | **(0.0)** |
| New Mexico | 27.0 | (1.2) | 25.1 | (1.7) | 5.7¶ | (0.6) | 6.7 | (0.2) |
| West Virginia | 25.8 | (1.2) | 26.6 | (1.3) | 5.9¶ | (0.6) | 9.4 | (0.2) |
| Nevada | 19.6 | (0.9) | 27.5 | (1.3) | 5.9¶ | (0.4) | 11.8 | (0.2) |
| Utah | 18.4 | (0.9) | 20.4 | (1.0) | 5.3¶ | (0.4) | 7.4¶ | (0.2) |
| Alaska | 18.1 | (1.6) | 18.1¶ | (2.1) | 5.2¶ | (0.8) | 8.2 | (0.3) |
| Kentucky | 17.9 | (0.7) | 19.6 | (0.7) | 6.0 | (0.3) | 9.0 | (0.1) |
| Rhode Island | 17.2 | (1.3) | 19.5 | (1.5) | 6.1 | (0.6) | 5.9 | (0.2) |
| Florida | 16.5 | (0.3) | 23.9 | (0.5) | 4.1 | (0.2) | 12.6 | (0.1) |
| Oklahoma | 15.8 | (0.7) | 17.5 | (0.8) | 8.1 | (0.3) | 9.2 | (0.2) |
| Ohio | 15.1 | (0.4) | 16.0 | (0.4) | 5.5 | (0.2) | 7.9 | (0.1) |
| Louisiana | 15.0 | (0.6) | 19.2 | (0.8) | 5.3¶ | (0.3) | 6.8 | (0.1) |
| Pennsylvania | 15.1 | (0.4) | 15.6 | (0.4) | 4.1 | (0.2) | 8.0 | (0.1) |
| Tennessee | 14.8 | (0.5) | 17.2 | (0.6) | 4.9¶ | (0.2) | 11.8 | (0.1) |
| Washington | 14.7 | (0.5) | 16.1 | (0.6) | 6.1 | (0.2) | 9.2 | (0.1) |
| Colorado | 14.6 | (0.5) | 15.0¶ | (0.6) | 5.7¶ | (0.3) | 6.3 | (0.1) |
| Delaware | 14.5 | (1.3) | 18.7 | (1.8) | 5.6¶ | (0.7) | 10.2 | (0.3) |
| Wyoming | 14.4¶ | (1.8) | 14.6¶ | (2.0) | 3.9¶ | (0.9) | 6.0 | (0.3) |
| Montana | 14.1¶ | (1.2) | 13.7¶ | (1.3) | 5.3¶ | (0.6) | 8.4 | (0.3) |
| Indiana | 13.2 | (0.5) | 14.4¶ | (0.5) | 5.7¶ | (0.2) | 8.1 | (0.1) |
| Alabama | 13.1 | (0.5) | 17.6 | (0.7) | 5.1¶ | (0.3) | 9.7 | (0.1) |
| Arizona | 13.1 | (0.5) | 17.1 | (0.7) | 6.0¶ | (0.2) | 8.4 | (0.1) |
| Arkansas | 13.1¶ | (0.7) | 15.6¶ | (0.9) | 5.1¶ | (0.4) | 8.7 | (0.2) |
| Missouri | 13.1 | (0.5) | 14.2¶ | (0.5) | 4.4¶ | (0.2) | 7.2¶ | (0.1) |
| North Carolina | 12.9 | (0.4) | 17.1 | (0.5) | 5.0¶ | (0.2) | 6.9 | (0.1) |
| South Carolina | 12.6¶ | (0.5) | 16.7 | (0.8) | 4.7¶ | (0.3) | 7.2¶ | (0.1) |
| Maine | 12.3¶ | (1.0) | 12.2 | (1.0) | 4.7¶ | (0.5) | 9.8 | (0.3) |
| Michigan | 12.2¶ | (0.4) | 13.0 | (0.4) | 5.7 | (0.2) | 8.1 | (0.1) |
| Maryland | 11.9¶ | (0.5) | 15.3¶ | (0.7) | 3.8 | (0.2) | 7.3¶ | (0.1) |
| Massachusetts | 11.8¶ | (0.4) | 12.9 | (0.5) | 5.3¶ | (0.2) | 5.8 | (0.1) |
| Oregon | 11.7¶ | (0.6) | 12.8 | (0.6) | 6.8 | (0.3) | 11.6 | (0.2) |
| Vermont | 10.9¶ | (1.4) | 10.9 | (1.4) | 4.6¶ | (0.7) | 8.1 | (0.4) |
| Connecticut | 10.8¶ | (0.6) | 12.5 | (0.7) | 3.8 | (0.3) | 6.7 | (0.1) |
| Mississippi | 10.6 | (0.6) | 16.1¶ | (1.0) | 4.7¶ | (0.3) | 6.1 | (0.1) |
| Illinois | 10.5 | (0.3) | 11.7 | (0.4) | 4.1 | (0.1) | 3.7 | (0.1) |
| Wisconsin | 10.5 | (0.4) | 10.4 | (0.5) | 4.8¶ | (0.2) | 6.5 | (0.1) |
| California | 10.4 | (0.2) | 16.1 | (0.3) | 4.8¶ | (0.1) | 6.2 | (0.0) |
| Idaho | 9.7 | (0.8) | 10.7 | (0.9) | 5.8¶ | (0.4) | 7.5¶ | (0.2) |
| Georgia | 9.5** | (0.3) | 13.4** | (0.5) | 4.6¶ | (0.2) | 6.5 | (0.1) |
| District of Columbia | 9.4¶ | (1.4) | —†† | — | 3.7 | (0.7) | 3.9 | (0.3) |
| Hawaii | 9.4 | (0.9) | 16.4¶ | (2.3) | 5.1¶ | (0.4) | 5.9 | (0.2) |
| New Hampshire | 9.3 | (0.8) | 9.5 | (0.9) | 5.9 | (0.4) | 8.1 | (0.3) |
| Virginia | 9.1 | (0.3) | 11.9 | (0.5) | 4.6¶ | (0.2) | 5.6 | (0.1) |
| Texas | 8.6 | (0.2) | 13.2 | (0.3) | 4.6¶ | (0.1) | 4.2 | (0.0) |
| New York | 8.4 | (0.2) | 10.0 | (0.3) | 4.4¶ | (0.1) | 5.3 | (0.1) |
| Kansas | 8.0 | (0.5) | 8.6 | (0.6) | 5.0¶ | (0.3) | 6.8¶ | (0.2) |
| New Jersey | 8.0 | (0.3) | 10.5 | (0.5) | 3.8 | (0.2) | 6.0 | (0.1) |
| North Dakota | 7.6 | (1.3) | 7.5 | (1.4) | 3.9¶ | (0.6) | 5.0 | (0.3) |
| South Dakota | 7.3 | (1.1) | 6.2 | (1.1) | 3.8 | (0.6) | 5.5 | (0.3) |
| Minnesota | 7.2 | (0.4) | 7.2 | (0.4) | 4.4¶ | (0.2) | 4.2 | (0.1) |
| Iowa | 7.1 | (0.5) | 7.5 | (0.5) | 3.6 | (0.3) | 4.6 | (0.1) |
| Nebraska | 5.5 | (0.6) | 5.8 | (0.7) | 3.6 | (0.3) | 4.2 | (0.2) |

**Abbreviation:** SE = standard error.

* Deaths per 100,000 population in 2008; age-adjusted to the 2000 U.S. standard population using the vintage 2008 population.

† Percentage of persons aged ≥12 years using OPR nonmedically during 2008–2009.

§ Kilograms of OPR sold per 10,000 population in morphine equivalents in 2010.

¶ Rate is not significantly different from the national rate.

** Death rates from Georgia are based on preliminary numbers of deaths and might be underestimates.

†† The rate is not presented when the estimate is unstable because the number of deaths is less than 20.



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FIGURE 1. Drug overdose death rate in 2008 and rate of kilograms (kg) of opioid pain relievers (OPR) sold in 2010 — United States

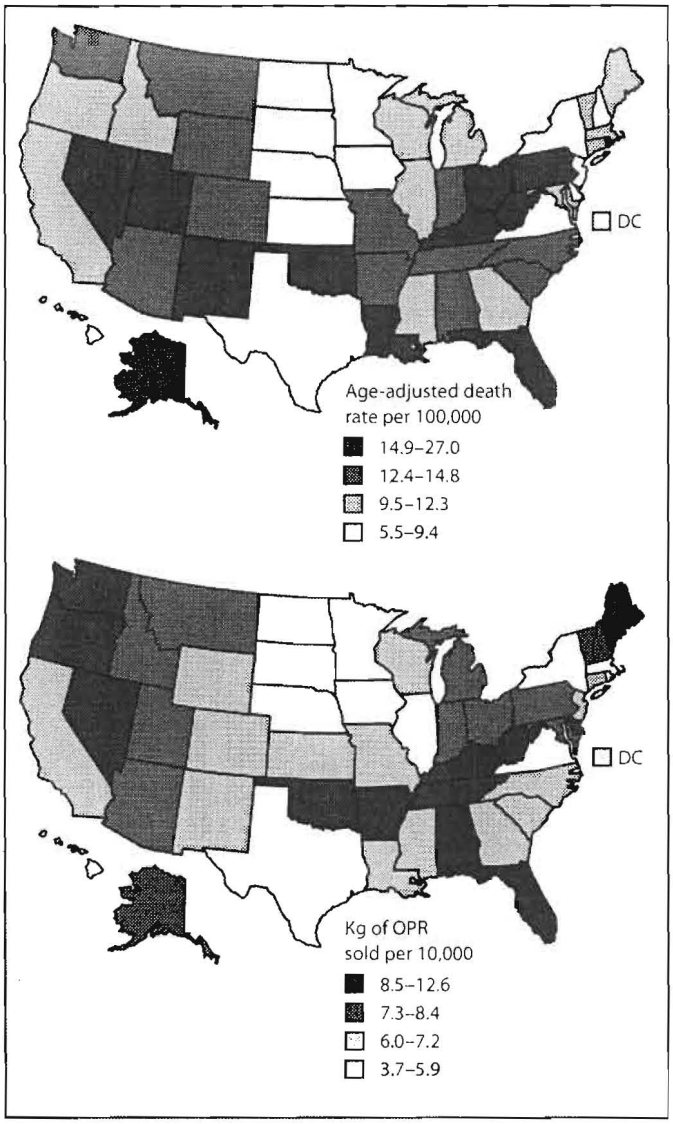
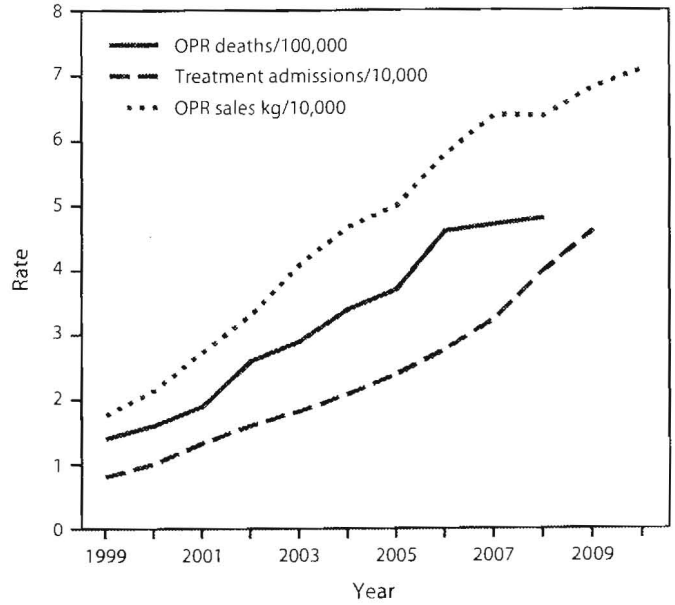



FIGURE 2. Rates* of opioid pain reliever (OPR) overdose death, OPR treatment admissions, and kilograms of OPR sold — United States, 1999–2010




* Age-adjusted rates per 100,000 population for OPR deaths, crude rates per 10,000 population for OPR abuse treatment admissions, and crude rates per 10,000 population for kilograms of OPR sold.

prescription and illicit drugs because the type of drug is not specified on many death certificates. Second, respondents might underreport nonmedical use of OPR in surveys such as the NSDUH. Third, ARCOS data reflect sales to retail outlets by state, but some drugs might have been used by nonstate residents or sent to other states by mail-order pharmacies or otherwise not used by state residents. Finally, sales data did not include buprenorphine, an opioid primarily used for substance abuse treatment, though sometimes prescribed for pain. Its inclusion with drugs primarily used to treat pain would have inappropriately increased sales rates.

Public health interventions to reduce prescription drug overdose must strike a balance between reducing misuse and abuse and safeguarding legitimate access to treatment. To find this balance, health-care providers should only use OPR in carefully screened and monitored patients when non-OPR treatments have not been sufficient to treat pain, as recommended in evidence-based guidelines (*21*). States, as regulators of health-care practice, have the responsibility and authority to monitor and correct inappropriate and illegal prescribing. Data from state prescription drug monitoring programs, which collect records of prescription drugs prone to abuse from pharmacies, and Medicaid claims data can be used to identify and address OPR misuse and abuse. State Medicaid programs and other public insurers can use economic measures to hold providers accountable for their prescribing of OPR and other controlled prescription drugs. State professional licensing boards can take action against prescribers misusing their licenses, and law enforcement agencies can take action against illegal activities. State policies that focus on providers operating outside of normal medical practice, such as laws prohibiting so-called "pill mills," are a promising approach (*19*). All interventions need to be evaluated further and new interventions developed. Concerted attempts to address this problem, especially in states with high rates of OPR sales, nonmedical use, or overdose mortality, might help control the epidemic.



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### Key Points

- Death from opioid pain relievers (OPR) is an epidemic in the United States.
- Sales of OPR quadrupled between 1999 and 2010. Enough OPR were prescribed last year to medicate every American adult with a standard pain treatment dose of 5 mg of hydrocodone (Vicodin and others) taken every 4 hours for a month.
- Abuse of OPR costs health insurers approximately $72.5 billion annually in health-care costs.
- State-based prescription drug monitoring program records and insurance claims information can identify and address inappropriate prescribing and use by patients. State laws and regulations based on these data need to be enacted, enforced, and rigorously evaluated.
- Additional information is available at http://www.cdc.gov/vitalsigns.

### Reported by

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