

# Substance Abuse in Minnesota

## DATA BRIEF: 2016 CSTE SUBSTANCE ABUSE INDICATORS

Minnesota is currently experiencing a drug overdose epidemic. In Minnesota, the age-adjusted drug overdose mortality rate increased from 2.6 per 100,000 in 2000 to 10.6 per 100,000 in 2015 (1).

- On average, those who have opioid dependence or who misuse opioids have annual direct health care costs that are 8.7 times higher than non-abusers (2).
- Drug or alcohol dependence/abuse remains high among those aged 18-25 years.
- However, trends in drug or alcohol dependence/abuse and prescription opioid sales have been decreasing over time in Minnesota.

This data brief analyzes death certificate data, hospital discharge data, prescription opioid sales, and survey data to examine the trends in drug use, mortality, and morbidity.

## Substance Abuse Indicators

The Council of State and Territorial Epidemiologists (CSTE) established a Substance Abuse Subcommittee in 2006 to develop substance abuse and mental health surveillance indicators for state and local public health departments (3). Due to economic costs, disability, suffering, and mortality from drug abuse, CSTE has recommended five surveillance indicators for drug abuse that are detailed below (4). These indicators coincide with Healthy People 2020's objectives to reduce drug-induced deaths, illicit substance use, and nonmedical use of prescription drugs (5). Data sources are referenced at the end of this Data Brief.

## Drug Overdose Mortality

In 2015, there were over 52,000 drug overdose deaths in the U.S. (1). This is nearly double the number of deaths from a decade ago (1). In 2015, the age-adjusted drug overdose mortality rate in the U.S. was 16.3 per 100,000.

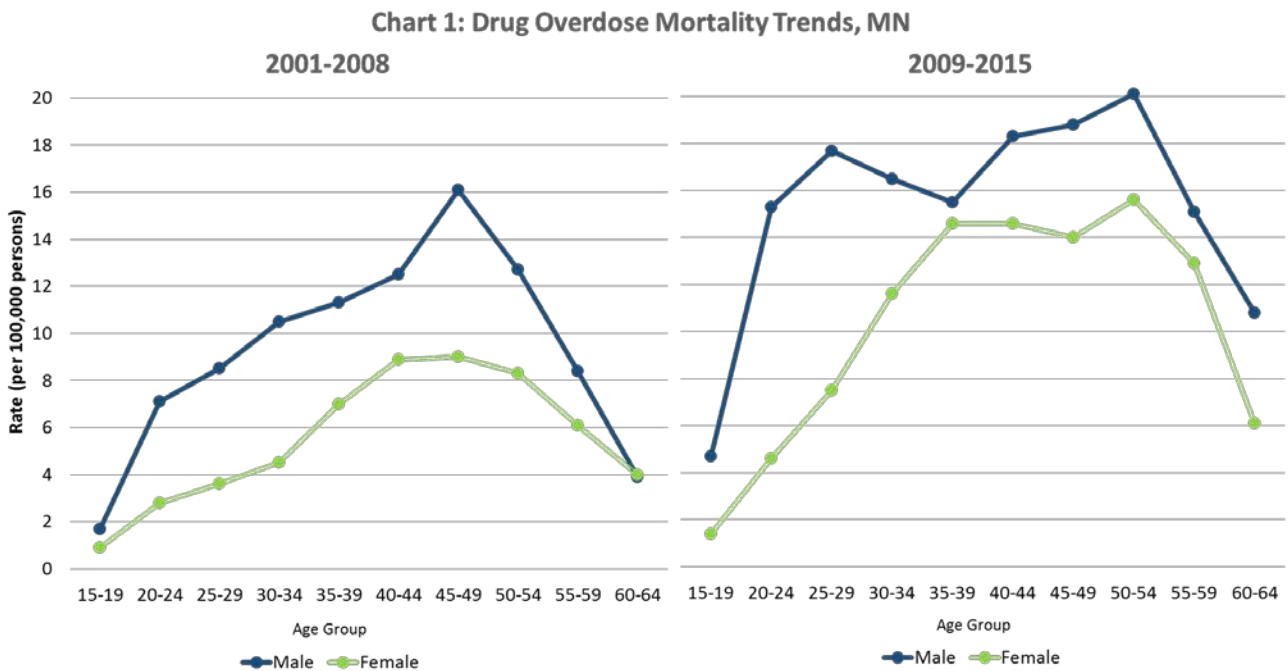
Minnesota had the sixth lowest drug overdose mortality rate in 2015 at 10.6 per 100,000 or 583 deaths. The highest drug overdose mortality rates were among middle-aged adults ages 45 to 54 years (19.1 per 100,000 population) and 35 to 44 years (19 per 100,000 population). However, in the last 15 years the drug overdose mortality rates have been rapidly increasing in males ages 20 to 29 creating two peaks (see chart 1). More than half of the deaths involved prescription opioids as opposed to illegal street drugs. Heroin related deaths have increased substantially in the last five years from 0.3 per 100,000 in 2010 to 2.2 per 100,000 in 2015.

Although Minnesota had the sixth lowest drug overdose mortality rate, this masks significant racial disparities. Among American Indian/Alaskan Natives, Minnesota had the highest mortality rate (59.4 per 100,000 population) in the U.S. This rate is five times that of Whites in Minnesota and represented the largest disparity ratio nationally. Significant disparities are also observed

with the African American/Black population. Among African Americans/Blacks, Minnesota had the sixth highest drug overdose mortality rate in the U.S. (21.2 per 100,000 population). The mortality rate was twice that of Whites in Minnesota, again representing the greatest disparity ratio among states.

Males have a higher drug overdose mortality rate than females (12.4 vs 8.8 per 100,000 population) but the trends between genders follow different patterns across age groups. Females have the highest rate among those 35 to 44 years (19.6 per 100,000 population), while males have two peaks; one in the 25 to 34 year age group (22.7 per 100,000 population) and another in the 45 to 54 year age group (20.9 per 100,000 population). While overdose mortality rates among middle-aged adults (35 to 64) are primarily due to opioids, younger adults (25 to 34) have higher overdose mortality rates due to heroin (see chart 2).

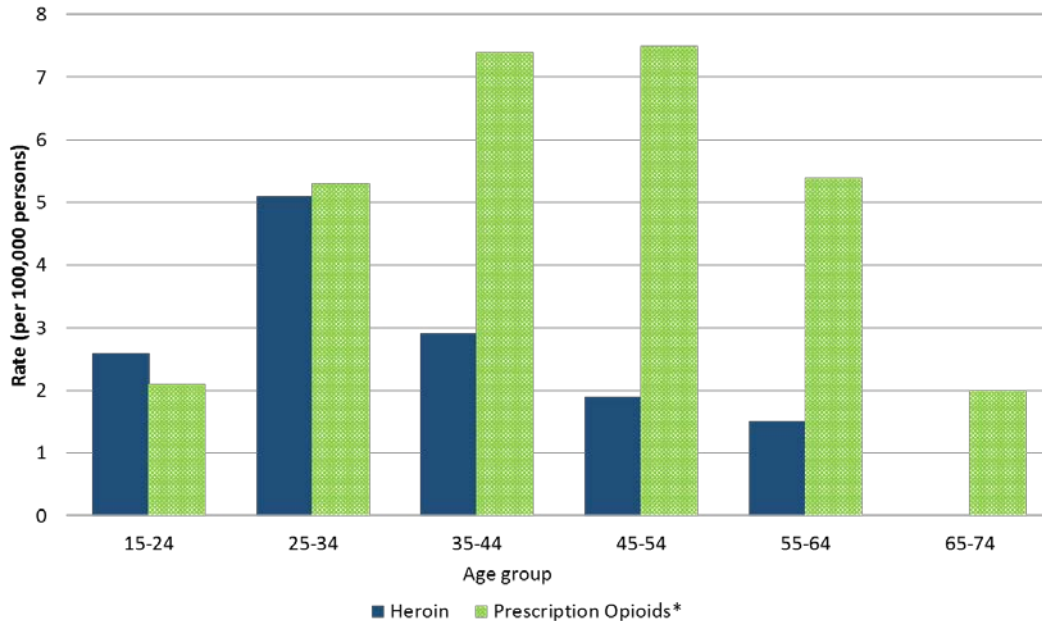
### Drug Overdose Rates Doubled for Younger Males Aged 15-29 Years



*Chart 1:* From 2001-08 both males and females followed the same pattern/distribution of mortality rate, with 40-49 year olds having the highest rate of drug overdose mortality. However, from 2009 to 2015, a different pattern emerges among males, with a bimodal distribution. The mortality rate for 25 to 29 year olds doubled and the peak among middle aged adults moved from 45 to 49 years olds to 50 to 54 year olds. Among females the rate has accelerated as age increases among those ages 15 to 34.

## Prescription Opioids a Problem for Middle-aged Adults, While Heroin is Primarily a Concern among Younger Adults

Chart 2: Drug Overdose Mortality by Drug Type, 2013-2015, MN



\*Includes methadone and other synthetic narcotics (T40.2-40.4)

**Chart 2:** Among middle-aged adults, the primary contributor to the drug overdose mortality rate is prescription opioids, while heroin is involved in a greater proportion of deaths among younger adults.

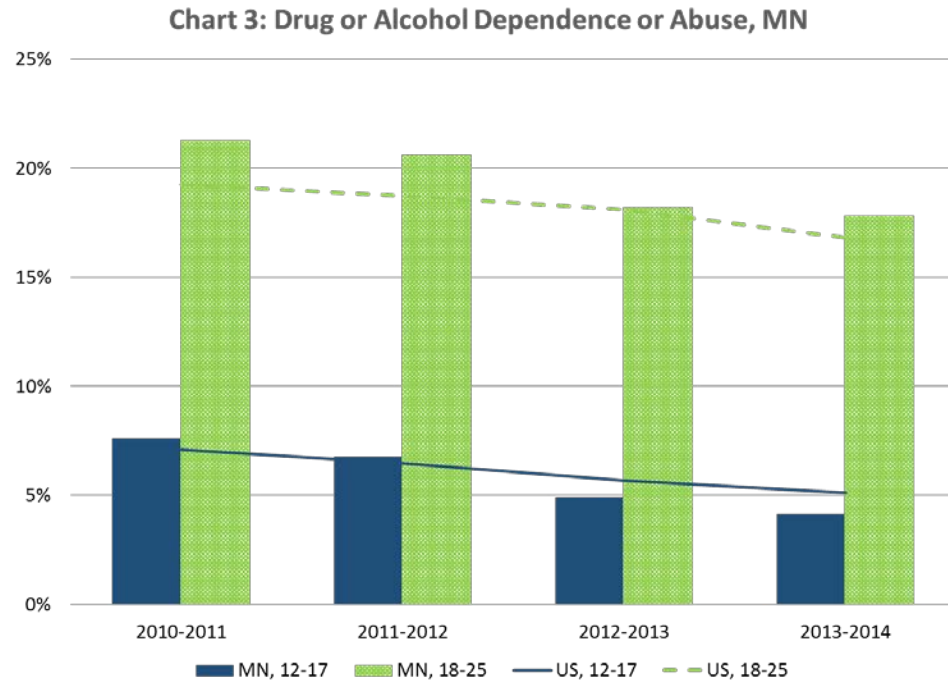
## Drug or Alcohol Dependence/Abuse

Nationally, deaths from drug overdose, suicide, and alcoholic liver disease among middle-aged, white, non-Hispanic persons with less than a high school education have risen substantially in the past 15 years (6). Most of the direct risk behaviors for these causes of death are captured by drug or alcohol dependence/abuse (4). In 2013-2014 in the U.S., 8% of respondents to the National Survey of Drug Use and Health (NSDUH) reported alcohol or drug dependence/abuse within the last year. This ranged from 7% to 12% among all states.

In NSDUH's 2013-2014 report, 8% of Minnesota's respondents stated drug or alcohol dependence/abuse within the last year. The prevalence of drug or alcohol dependence/abuse is significantly higher among those aged 18 to 25 year olds (17.8%) compared to 12 to 17 year olds (4.2%). The proportion is decreasing over time (see chart 3).

Although Minnesota data are not yet available, national data suggest the prevalence rate decreases after age 25. These results have important implications for prevention policies; for example, intervening during the transition from adolescence into young adulthood.

**Drug or Alcohol Dependence/Abuse:  
Dramatically Higher among Younger Adults than Teens  
But Rates Decreasing Over Time among Youth & Young Adults**



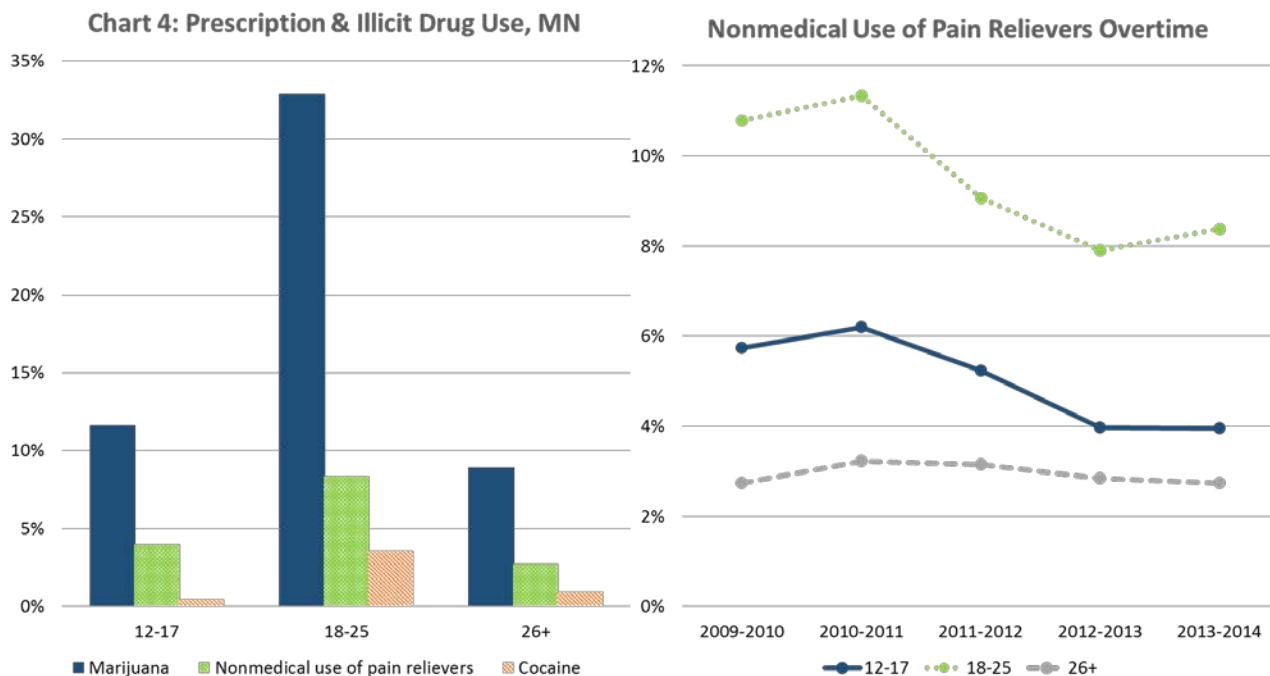
*Chart 3: The prevalence among those ages 18 to 25 years is slowly decreasing over time as it is for those aged 12 to 17 years. Reported drug or alcohol dependence/abuse is significantly higher among 18 to 25 year olds than 12 to 17 year olds. NSDUH.*

## Selected Prescription & Illicit Drug Use

In the U.S. from 2013-2014, 13% of NSDUH respondents reported use of marijuana within the last year, with states ranging from 9% to 22%. Nonmedical use of pain relievers was 4% nationally with states ranging from 3% to 5%.

In NSDUH’s 2013-2014 report for Minnesota, 12% of all respondents reported using marijuana within the last year. Reported use was highest among those ages 18 to 25 years where 33% used marijuana in the past year. Marijuana use is increasing among those 18 or older. For nonmedical use of pain relievers, 4% of respondents reported nonmedical use, which was highest among those ages 18 to 25 years (8.4%). Nonmedical use of pain relievers is decreasing among all age groups. Overall, 9% of respondents reported using illicit drugs within the last month.

## Illicit Drug Use: Marijuana Use High among Young Adults Nonmedical Use of Pain Relievers Declines among All Age Groups



*Chart 4: The highest rate of illicit drug use within the past month was among those aged 18 to 25 years at 22.1% (18.7%-25.5%). The highest rate of marijuana use within the past year was also among those aged 18 to 25 years at 32.9% (29.1%-36.8%). 2013 to 2014 compared to the average of the last 5 reports indicated that nonmedical use of pain relievers seems to be decreasing among all ages and all selected drugs have decreased among those aged 12 to 17 years. NSDUH 2013 to 2014.*

## Hospitalizations Associated with Drugs

The drug-attributed hospitalization rate measures the burden of more severe drug use among the population. These hospitalizations represent drug use as the primary reason why the hospitalization occurred. In 2014, there were 10,174 hospitalizations in Minnesota attributable to drugs that have the potential for abuse and dependence, with an age-adjusted rate of 19.3 per 10,000 population. The highest rate was among those aged 15 to 34 years with a rate of 39.7 per 10,000 population. The most common underlying cause was opioid abuse followed by prescription opioid poisoning with age-adjusted rates of 3.14 and 1.78 respectively per 10,000 population.

Hospitalizations associated with drugs measure less severe drug use among the population. Drugs may not be the primary reason for the hospitalization, but listed as a contributing cause. There were 53,423 hospitalizations for diseases associated with drugs that have the potential for abuse and dependence, with an age-adjusted rate of 100.8 per 10,000 population. The highest rate was among those aged 25 to 34 years, with a rate of 171.4 per 10,000 population. The most common underlying cause was opioid abuse followed by cocaine abuse with age-adjusted rates of 25.2 and 8.8 per 10,000 population respectively.

## Prescription Opioid Sales per Capita

Although not a direct indicator of opioid abuse, trends in total sales of prescription opioids can provide insight into possible overuse, diversion and/or abuse. Retail drug purchases include purchases by weight by pharmacies, hospitals, practitioners, narcotic treatment programs, and teaching institutions. These purchases of prescription opioids have been increasing nationally.

In 2001, there were 3.1 kilograms of morphine equivalent sold per 10,000 population. This more than doubled to 8.5 kilograms of morphine equivalent sold per 10,000 population in 2014. The kilograms of morphine equivalent sold per 10,000 population ranged from 4.8 to 14.8 among all states in 2014.

In 2016, the total amount of drug retail purchases of prescription opioids in Minnesota was 4.9 kilograms of morphine equivalent per 10,000 persons or 494 morphine equivalent per capita. This corresponded to 2710 kg of morphine equivalent sold in Minnesota.

## Prevention

Minnesota's prevention strategies incorporate an understanding that substance abuse is not simply an individual problem, but is also shaped by factors such as community and family support, access to health care, and healthy relationships. Preventing substance abuse means addressing pain management and empowering communities and people.

The State Opioid Oversight Project (SOOP) coordinates Minnesota's efforts and is comprised of representatives from the departments of Human Services, Health, Education, Public Safety, Labor & Industry and Corrections; and the boards of Medical Practice, Nursing, Pharmacy, Dentistry, Veterinary Medicine and Podiatry.

The Opioid Prescribing Improvement Program (OPIP) addresses Minnesota's opioid dependency and substance use in Minnesota Health Care Programs by recommending strategies like opioid prescribing cycle protocols and development of educational resources for providers.

The Minnesota Prescription Monitoring Program (PMP) helps detect diversion, abuse and misuse of prescriptions through collected data, and allows providers and prescribers to see patient's prescriptions. To improve safety and reduce harm, the Minnesota Department of (MDH) promotes the distribution of naloxone, access to syringe service programs and permanent drug take-back programs.

Minnesota has expanded drug courts to allow offenders to avoid being imprisoned, and instead have the opportunity for help and treatment to break the cycle of addiction and criminal behavior. The Department of Human Services (DHS) is dedicated to increasing the availability of effective treatment for those with opioid use disorders.

MDH receives \$294,000 each year through CDC's Data-Driven Prevention Initiative (DDPI). The grant is aimed at: increasing data collection and analysis of opioid misuse, abuse and overdose through improved use of prescription monitoring program; developing and implementing effective evidence-based interventions in communities and insurer/health systems; and evaluating state practices and policies.

The Minnesota Prevention Resource Center (MPRC) and Minnesota Regional ATOD Prevention Coordinators (RPCs) support local communities in the prevention of alcohol, tobacco and other drug abuse. Both provide resource materials, trainings, and technical assistance to those interested in prevention. In addition, the MPRC also assists with research and development of community campaigns while the RPCs also support cultural competency, evaluation, and building regional relationships.

Examples of programs and grants include the Drug-Free Communities (DFC) through the Office of National Drug Control Policy and the Minnesota Strategic Prevention Framework Partnerships for Success (SPF-PFS) through Minnesota's DHS Alcohol and Drug Abuse Division. DFC funding is a five year grant that seeks to strengthen collaboration among communities, governments, and agencies to support their efforts to prevent and reduce substance abuse among youth (specifically any combination of alcohol, tobacco, marijuana, or prescription drug abuse). SPF-PFS currently funds seven colleges and universities in Minnesota to address underage drinking and marijuana use over the next five years.

## Methods

**Drug Overdose Mortality:** Data come from CDC Wonder, using 2001-2015 data. Underlying cause of deaths for accidental poisoning by drugs (X40-X44), intentional self-poisoning by drugs (X60-X64), assault by drug poisoning (X85), or drug poisoning of undetermined intent (Y10-Y14) were included. To identify specific drug categories, we stratified with multiple causes of death T-codes from the range of T36-T50 (poisonings by drugs, medicaments, and biological substances). T40 (0.0-0.9), T42.4, T43.6, and T50.9 were used to stratify by heroin, methadone, other opioids, cocaine, synthetic narcotics, cannabis, psychodysleptics, benzodiazepines, and psychostimulants with abuse potential. Prescription opioids in chart 2 included T40.2-40.4, including codeine, morphine, methadone, and other synthetic narcotics, among others. U.S. Census Bureau was used for population estimates and age-adjusted rates were standardized by direct method to year 2000 standard U.S. population distribution.

*Limitations:* Both underlying-cause and multiple-cause death certificate files are needed for these analyses. Death records often lack specificity as to the exact drug responsible for the death. Deaths suspected to be due to these drugs are typically medical examiner or coroner cases, and the extent of laboratory analysis varies by jurisdiction. Records indicating that the death is due to overdose with an unknown or unspecified drug are an issue in many states, and these should be tabulated separately.

**Drug or Alcohol Dependence or Abuse:** Data were obtained from the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Survey on Drug Use and Health (NSDUH). Respondents who positively answered questions on dependence or abuse of alcohol or drugs were included, with the total number of respondents within each jurisdiction as the denominator.

*Limitations:* It relies on multiple National Survey on Drug Use and Health (NSDUH) questionnaire items, which are self-reported with a long recall period. Reported data rely on a two-year rolling average and reflect respondents' recalled experience for the full twelve months before the interview date. The indicator captures information only on non-institutionalized civilian persons (i.e. not in jail, hospitalized long-term or on active duty). It hides regional variations in relative importance of various drugs and of alcohol.

**Selected Prescription & Illicit Drug Use:** Data were obtained from the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Survey on Drug Use and Health (NSDUH). Respondents who indicated use of specific substances were included, using the total number of respondents within each jurisdiction as the denominator. Measures asking within past year were included. The second chart of Chart 4 used data from NSDUH's previous surveys that combined 2 survey years for estimates, including results from 2009-2010, 2010-2011, 2011-2012, 2012-2013, and 2013-2014.

## SUBSTANCE ABUSE DATA BRIEF

*Limitations:* It relies on multiple National Survey on Drug Use and Health (NSDUH) questionnaire items, which are self-reported with a long recall period. Reported data rely on a two-year rolling average and reflect respondents' recalled experience for the full twelve months before the interview date. The indicator captures information only on non-institutionalized civilian persons (i.e. not in jail, hospitalized long-term or on active duty). It hides regional variations in relative importance of various drugs and of alcohol.

**Hospitalization Rate Attributed/Associated with Drugs:** Data were obtained from the Minnesota hospital discharge data. All hospitalizations of acute care, non-federal in-state hospital settings were included. Excluded are those with unknown age, out-of-jurisdiction residence, unknown state of residence, non-acute care or federal hospital admission, and admission only for short stays or observation visits. In method A, hospitalizations attributable to drugs with potential for abuse and dependence, excluding alcohol and substances that cause adverse effects in therapeutic use. A case may be identified using either the principal (first-listed) diagnosis using ICD 9-CM codes: 292.0, 304[.00-.93], 305 [.20-.23, .3-.33, .4-.43, .5-.53, .6-.63, .7-.73, .8-.83, .9-.93], 648 [.30-.34], 760.72, 760.73, 760.75, 779.5, 965[.00-.09], 967[.0-.9], 969.4, 969.6, 969[.7-.79], 970.81; or the first listed, valid ICD-9-CM cause-of-injury external cause codes: E850.0, E850.1, E850.2, E851, E852[.0-.9], E853.2, E854.1, E854.2, E950.1, E950.2, E980.1, E980.2.

*Limitations:* Method A does not capture admissions for which drug use may be an ancillary or indirect reason, e.g., a motor vehicle crash injury caused by drug-impaired driving. This indicator is only as good as the recognition, documentation and coding of drug use and drug-related diagnoses by hospital staff, all of which are known to vary.

In method B, hospitalizations for diseases associated with drugs with the potential for abuse and dependence, taken together (excluding alcohol and substances that cause adverse effects in therapeutic use), and separately for several key drugs of interest. Records were included if any of the above listed ICD9-CM diagnosis codes, or E-codes, for drug-related events are present, in either the primary or any secondary diagnosis fields.

*Limitations:* Method B assesses hospitalizations in which the admitting physician has identified an issue with drugs with a potential for dependence and abuse, whether or not drug use is the primary reason for admission. For example, it would count an admission for vehicle crash injuries in which acute drug dependence and abuse was present and coded as a secondary diagnosis. It gives a fuller picture of the hospitalization experience of the population of people who use or abuse drugs, but some of the hospitalizations it captures may not be caused by drug use or abuse in any significant way.

**Prescription Opioid Sales per Capita:** Data were obtained from Drug Enforcement Administration ARCOS database using the retail drug purchases report. Retail drug purchases included purchases by weight by pharmacies, hospitals, practitioners, narcotic treatment programs, and teaching institutions. The quantity of opioid prescription drugs were expressed in morphine kilogram equivalent per 10,000 population per year, for the year 2016. Conversion factors for individual opioids came from a [document](#) published by CDC in 2015 (7) and adapted from an article by Von Korff et al. (8).

*Limitations:* This indicator cannot distinguish between prescriptions issued for necessary pain relief and prescriptions issued for other reasons. The optimal amount of prescribed MMEs of opioid drugs per capita is not known. Reducing overall consumption of opioid drugs too low could mean that some people are not obtaining needed pain relief. The data reported by the U.S. DEA reflect the distribution of prescription opioids to pharmacies, not actual prescriptions written or filled, medications taken, or individual users.



## Data Sources

**2001-2015:** Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death from [CDC WONDER](https://wonder.cdc.gov/mcd.html) Online Database, released 2016.

<https://wonder.cdc.gov/mcd.html>

County level data available.

**2014:** Minnesota Department of Health. Minnesota Hospital Association. Minnesota Hospital Discharge Data.

County level data currently not available for the indicators in this Data Brief, but will become available soon through MDH's Minnesota Injury Data Access System (MIDAS).

<http://www.health.state.mn.us/injury/midas/index.cfm>

**2016:** Drug Enforcement Administration. Automation of Reports and Consolidated Orders System (ARCOS). Report 5: Statistical Summary for Retail Drug Purchases, released 2016.

**2009-2014:** Substance Abuse and Mental Health Services Administration's (SAMHSA) National Survey of Drug Use and Health (NSDUH). State Estimates of Substance Use and Mental Disorders, released 2016.

## References

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8. Von Korff, M., Saunders, K., Ray, G. T., Boudreau, D., Campbell, C., Merrill, J., ... & Weisner, C. (2008). *Defacto long-term opioid therapy for non-cancer pain. The Clinical journal of pain, 24(6), 521.*

## Suggested Citation

Blood T, Wright N, Roesler J. CSTE Drug Indicators in Minnesota-Data Brief. Saint Paul, MN: Minnesota Department of Health, June 2017.

Minnesota Department of Health.  
Injury & Violence Prevention Section  
PO Box 64882  
St. Paul, MN 55164-0882  
651.201.4237  
[Tim.Blood@state.mn.us](mailto:Tim.Blood@state.mn.us)  
[Nate.Wright@state.mn.us](mailto:Nate.Wright@state.mn.us)  
[Jon.Roesler@state.mn.us](mailto:Jon.Roesler@state.mn.us)

06/16/2017

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