Alcohol-Related Deaths in Minnesota

2019

Excessive alcohol use can result in harms such as motor vehicle injuries, violence, heart disease, cancer, alcohol poisoning, and poor birth outcomes.[1] Binge drinking is the most common form of excessive alcohol use, and typically results in acute intoxication and is responsible for over half of deaths and three-quarters of the economic costs of excessive drinking.[2, 3] Binge drinking is defined as five or more drinks per occasion for men or four or more drinks for women. Minnesota has one of the highest binge drinking rates in the nation. In 2017, 20% of Minnesota adults age 18 and older reported binge drinking in the past 30 days (25.5% of men, 14.8% of women).[4]

In Minnesota, the number of alcohol-related deaths has increased significantly over the past 15 years, going from an annual average age-adjusted rate of 18.6 per 100,000 during 2001 – 2005 to an average rate of 28.9 per 100,000 during 2013 – 2017.

Defining alcohol-related causes of death

Alcohol-related deaths can be broken into two primary groups. Some causes of death are, by definition, 100% attributable to excessive alcohol use. These include 12 chronic causes such as alcoholic liver disease or gastritis, and three acute causes such as alcohol poisoning (see the methodology section for a complete list).[5] For other causes of death, especially acute causes such as injuries, alcohol is a contributing factor in a proportion of the deaths from those conditions. CDC's Alcohol-Related Disease Impact (ARDI) application uses estimates of alcohol-attributable fractions from research to estimate the number of deaths from these causes that were due to alcohol. This report describes both groups—with "alcohol-related deaths" referring to the combination of 100% alcohol-attributable deaths *and* deaths from causes that are estimated using alcohol-attributable fractions.

Common causes of alcohol-related death

Liver diseases, including alcoholic liver disease, liver cancer, and cirrhosis of the liver, are some of the most common alcohol-related causes of death in Minnesota. During 2013 – 2017, these causes of death accounted for 28% of all alcohol-related deaths in Minnesota. Liver diseases also account for a significant proportion of the increase in alcohol-related deaths between 2001 and 2017. Average annual deaths due to alcoholic liver disease increased from 34 deaths annually during 2001 – 2005 to 343 in 2013 – 2017 (an increase of 909%, likely due in part to improved reporting of cause of death). The average annual deaths due to liver cancer increased from seven deaths during 2001 – 2005, to 18 during 2013 – 2017.

Alcohol abuse and dependence, falls, motor vehicle crashes, suicides, homicides, and poisoning (both alcohol poisoning and non-alcohol poisoning) are also common causes of alcohol-related death in Minnesota.

Populations most at-risk for alcohol-related causes of death

Men

Overall, men are more likely to die from alcohol-related causes of death, however women make up a significant proportion of deaths due to alcohol—about 44% of alcohol-related deaths among those age 65 years and older are among women (Chart 1).

Older adults

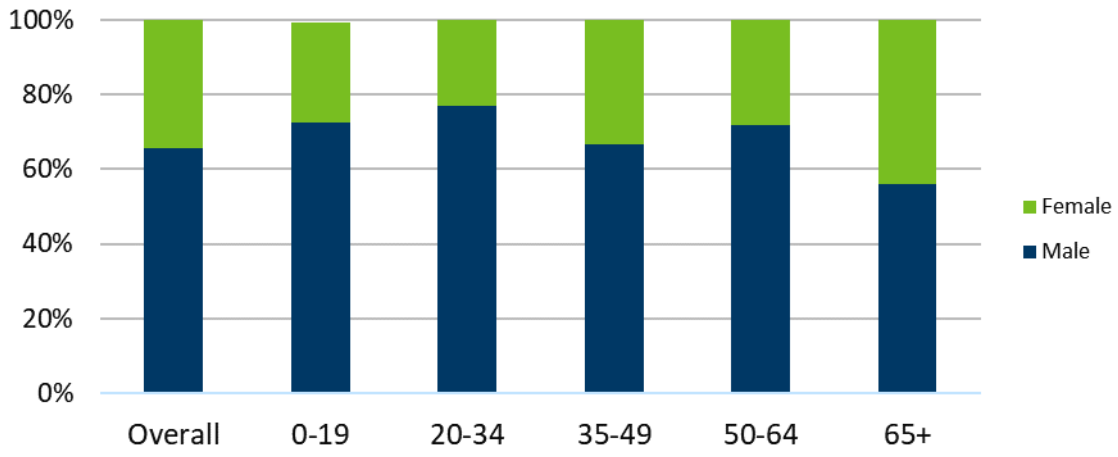
As Chart 2 shows, Minnesotans of all ages die from alcohol-attributable causes of death. Although overall death rates have gone down in Minnesota during the past decade, the average annual rate of alcohol-attributable deaths among older Minnesotans has increased.

Working-age adults

From 2013 – 2017, excessive alcohol use accounted for more than 1 in 10 (11.7%) deaths among working age adults (ages 20 to 64 years) in Minnesota. In contrast, the proportion of all deaths that are attributable to alcohol was 5% among 0 to 19 year olds, and 2% among those 65 years and older.

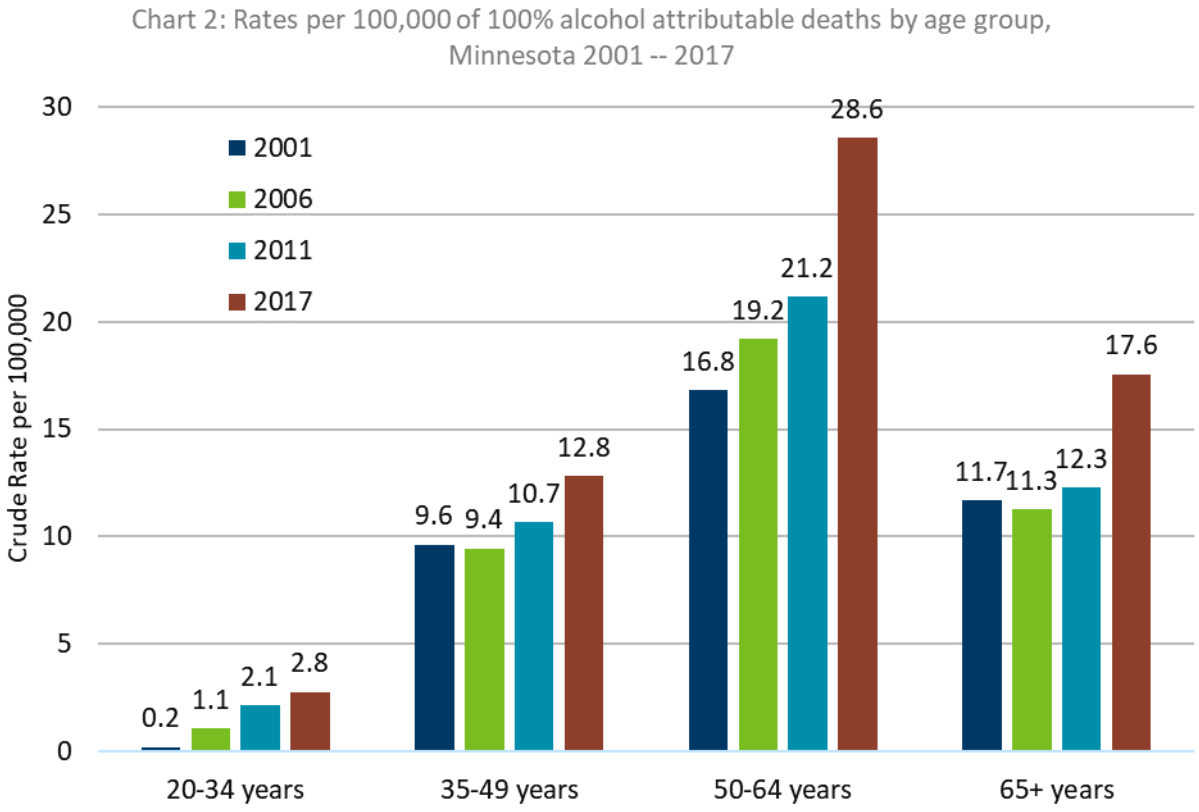
During 2013 – 2017, men were significantly more likely to die from alcohol-related causes than women.

Chart 1: Percent of average annual alcohol-related deaths, by gender and age group; Minnesota 2013-2017



Death Certificate Data, calculated using CDC's Alcohol-related Disease Impact application CDC ARDI – www.cdc.gov/ardi

The largest increase in the average annual rate of 100% alcohol-attributable deaths has been among Minnesota residents ≥50 years between 2001 and 2017.



**Crude rates per 100,000 population within age groups; Minnesota Death Certificate Data*

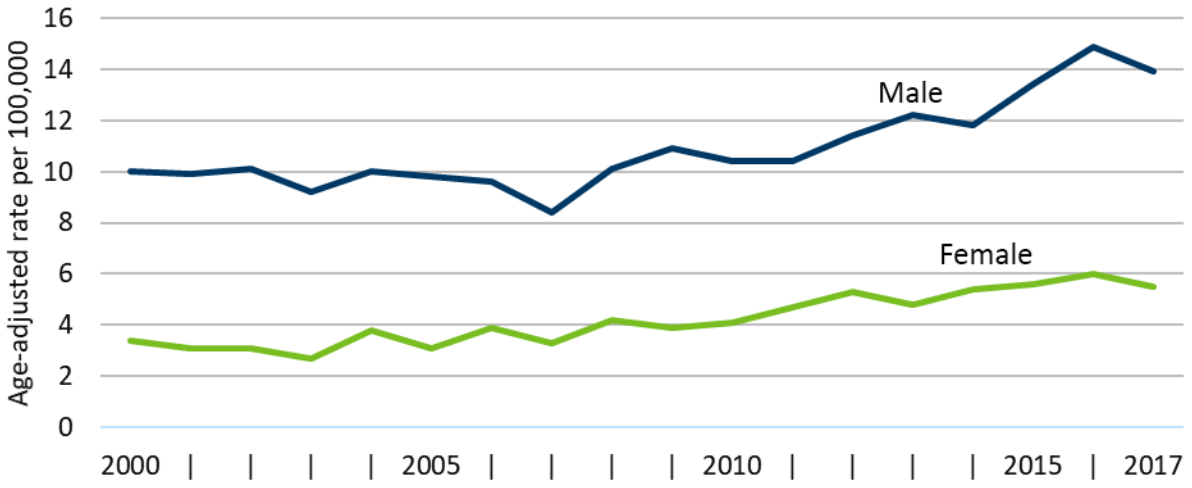
Trends in 100% alcohol-attributable deaths

We track the number of deaths determined to be 100% due to alcohol by using data from Minnesota death certificates.

- In 2013—2017, American Indians in Minnesota died of 100% alcohol-attributable causes of death at rates five times higher than whites (49.2 vs. 9.3 per 100,000). These rates are up from 30.8 and 6.8 per 100,000 for American Indians and whites, respectively, in 2001—2005.
- Men are more likely to die from 100% alcohol-attributable conditions than women (Chart 3). In 2017, men were 2.5 times more likely to die from a 100% alcohol-attributable cause of death than women (13.9 per 100,000 residents compared to 5.5 per 100,000 residents).

Men are more likely than women to die of alcohol-attributable causes, however the rates of alcohol-attributable deaths have increased for both genders.

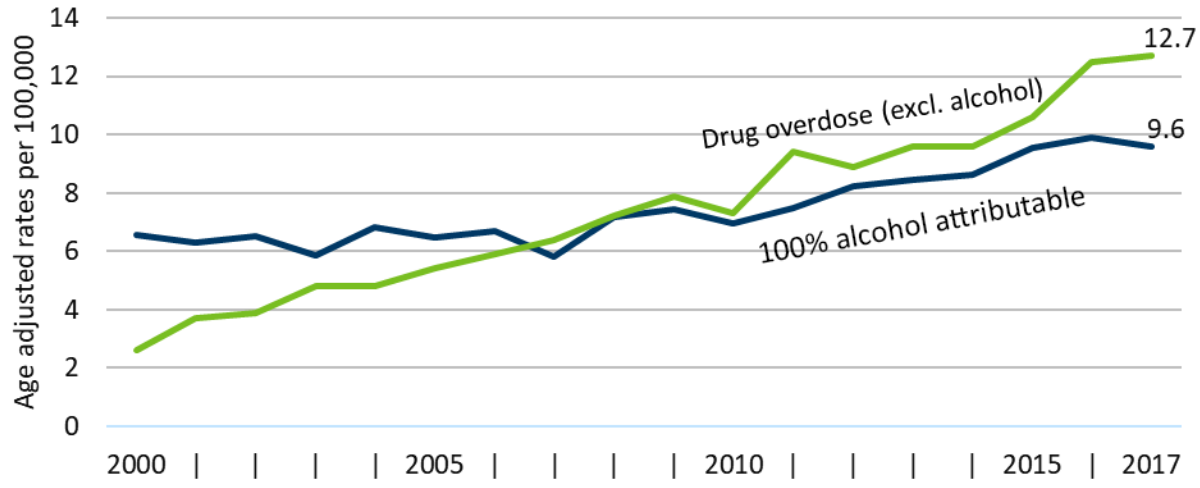
Chart 3: Age adusted rates of 100% alcohol-attributable deaths per 100,000, by sex, Minnesota 2000 --2017



Minnesota Death Certificate Data.

Between 2000 and 2017, 100% alcohol-attributable deaths more than doubled in Minnesota. Chart 4 shows the alcohol-attributable death rates and drug overdose deaths (age adjusted per 100,000) in Minnesota. While alcohol plays a role in a portion of drug overdose deaths, this chart shows the number of 100% alcohol-attributable deaths separate from these to show that 100% alcohol-attributable deaths increased at a similar rate as drug overdose deaths between 2000 and 2017.

Chart 4: Age-adjusted rate per 100,000 of alcohol attributable deaths and drug overdose deaths, Minnesota, 2000 - 2017



Minnesota Death Certificate Data.

Deaths due to alcohol are preventable

Deaths due to excessive alcohol use are preventable. The Community Guide[6] includes several evidence-based recommendations to reduce the likelihood of binge drinking, alcohol-related harms, and deaths due to excessive alcohol use:

- Increase the price of alcohol by increasing alcohol taxes
- Regulate alcohol outlet density
- Dram shop (commercial host) liability
- Avoiding privatization of retail alcohol sales
- Maintain limits on the days and hours when alcohol is sold (in settings such as liquor stores, restaurants, and bars)
- Enhanced enforcement of laws prohibiting alcohol sales to minors
- Electronic screening and brief intervention to reduce excessive alcohol use. These screening and brief intervention programs can be integrated into clinic and emergency department services, at work places, or in other community settings using mobile devices or computers.

Methodology

This data brief reports on mortality from Minnesota death certificate data. After a death occurs and the manner and cause of death is determined, the information is sent to the Office of Vital Records at the Minnesota Department of Health (MDH) for data quality checks. The data are then sent to the National Center for Health Statistics where a computer program codes the information on the death certificate into ICD-10 codes. This program allows for one underlying cause of death and up to 20 contributing causes of death. Once this process is complete, the data are returned to MDH and made available for analysis.

Some deaths are, by definition, due to alcohol consumption ("100% alcohol-attributable"). These deaths, identified by CDC's Alcohol-Related Disease Impact (ARDI) application (www.cdc.gov/ardi), include three acute causes of death: alcohol poisoning (X45, Y15, T51.0, T51.1, T51.9), suicide by and exposure to alcohol (X65), and excessive blood level of alcohol (R78.0). Twelve chronic causes of death are also 100% alcohol-attributable, including alcoholic psychosis (F10.3-F10.9), alcohol abuse (F10.0, F10.1), alcohol dependence syndrome (F10.2), alcohol polyneuropathy (G62.1), degeneration of nervous system due to alcohol (G31.2), alcoholic myopathy (G72.1), alcohol cardiomyopathy (I42.6), alcoholic gastritis (K29.2), alcoholic liver disease (K70-K70.4, K70.9), fetal alcohol syndrome (Q86.0), fetus and newborn affected by maternal use of alcohol (P04.3, O35.4), and alcohol-induced chronic pancreatitis (K86.0). Deaths were identified as alcohol-attributable if the underlying cause of death (based on ICD-10 codes) was one of the 15 conditions that are included in ARDI as 100% alcohol-attributable. These data were then summarized by demographic and geographic variables of interest.

To estimate the number of alcohol-related deaths, i.e., those that are partially attributable to alcohol, data from Minnesota death certificates were uploaded to CDC's ARDI application. ARDI calculates estimates of alcohol-related mortality using current population estimates of the total proportion of deaths for various causes that are attributable to alcohol use (for more information, see Alcohol and Public Health: Alcohol-Related Disease Impact (ARDI) – https://nccd.cdc.gov/DPH_ARDI/Info/Methods.aspx).

References

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Minnesota Department of Health
Injury & Violence Prevention Section
PO Box 64882
St. Paul, MN 55164-0882
Kari.Gloppen@state.mn.us
health.injuryprevention@state.mn.us
www.health.state.mn.us/injury