

Alcohol and Suicide: White Male Youth in Minnesota

MARCH 2019

This report builds off prior public health surveillance data and research examining the connection between alcohol and suicide with an in-depth analysis of the Minnesota Violent Death Reporting System (MNVDRS) focusing on White, non-Hispanic male youth.

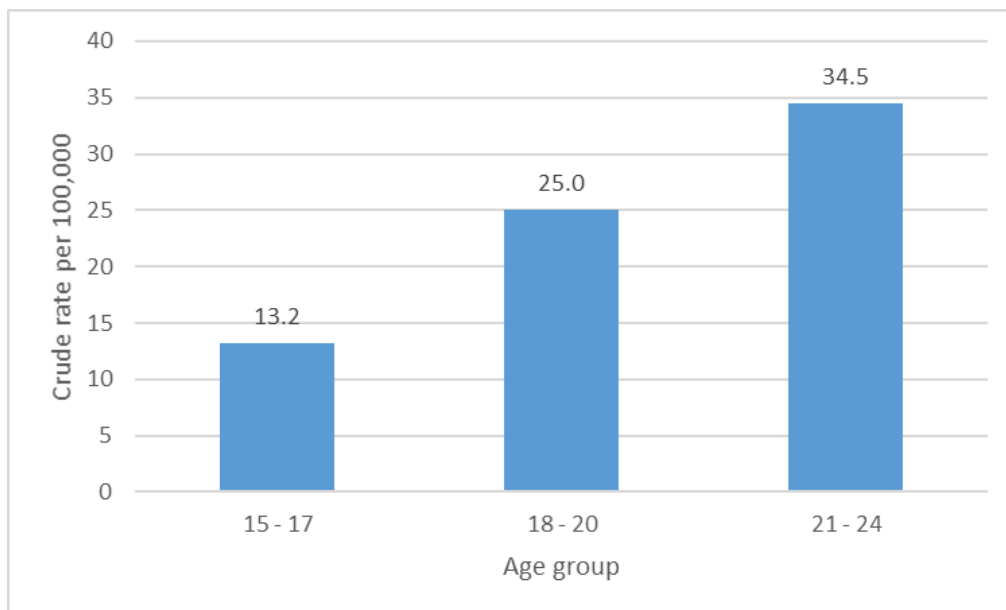
Suicide and substance misuse share many risk and protective factors, and suicide is one of the leading causes of death among those with substance use disorders (1,2). Binge drinking (defined as five or more drinks on an occasion for males and four or more drinks for females) may reduce inhibitions to hurt oneself while intensifying feelings of hopelessness and depression and increasing impulsivity (2). Alcohol use may also impair judgement (3).

Studies of Adverse Childhood Experiences (ACEs) show an association between the number of ACEs experienced and substance misuse and suicide attempts (4,5). The 2016 Minnesota Student Survey showed that as the number of ACEs students experienced increased, so does the percentage of students reporting binge drinking in the prior 30 days and the percentage of students reporting both suicidal ideation and suicide attempts in the year prior (6,7).

Youth Suicide in Minnesota

Suicide is increasing in Minnesota and nationally. Since 1999, the age-adjusted suicide rate increased 53% in Minnesota (8). While suicide rates are increasing across all demographic groups in Minnesota, Minnesota's youth suicide rate (among ages 15-24 years old) is higher than the youth suicide rate nationally (14.7 per 100,000 compared to 12.8 per 100,000) (9). Among White, non-Hispanic male (hereafter referred to as White) youth specifically, Minnesota's suicide rate among those ages 21 to 24 is 14% higher than the national rate. Between 2015 and 2016, Minnesota males ages 15 to 24 were over four times more likely to die by suicide compared to females in this age group. White males accounted for 81% of all male suicides among Minnesota youth and 67% of all suicides among Minnesota youth (9). Combined data from 2015 and 2016 show the rates of suicide increase with age in this population (see Figure 1).

Figure 1. Suicide Rates among White Male Youth in Minnesota Increased with Age, 2015 and 2016

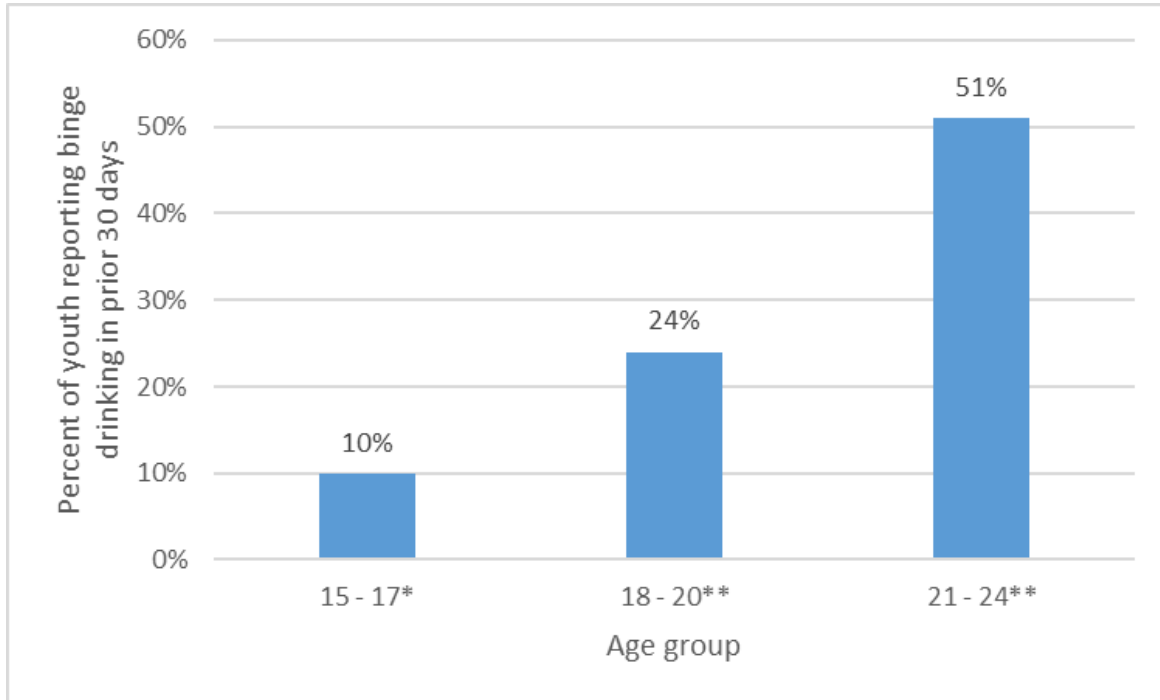


Youth Alcohol Use in Minnesota

Minnesota has consistently had one of the highest rates of reported binge drinking among adults in the nation. In 2016, 21.3% of Minnesota adults reported binge drinking in the past 30 days, compared to 16.9% of adults nationally (10).

Binge drinking increases drastically with age among youth 15 to 24 years old (see Figure 2). Data from the 2016 Minnesota Student Survey indicate 10% of White, non-Hispanic males between the ages of 15 and 17 years old reported binge drinking in the prior 30 days (11). According to combined data from the 2015 and 2016 Minnesota Behavioral Risk Factor Surveillance System, 24% of White males ages 18-20 report binge drinking in the prior 30 days, and 51% of those ages 21-24 report binge drinking (12).

Figure 2. Binge Drinking Among White Male Youth in Minnesota Increased with Age



*Data from the 2016 Minnesota Student Survey

**Data from 2015-2016 Minnesota Behavioral Risk Factor Surveillance System

Youth Alcohol Use and Suicide in Minnesota

According to 2016 Minnesota Student Survey data, suicidal ideation and attempts are more prevalent among high school students (9th and 11th graders) who report binge drinking in the prior 30 days. White male students who reported binge drinking were almost twice as likely to have considered suicide in the past year (13.1%) and more than three times as likely to have attempted suicide in the past year (5.1%), compared to those who did not report binge drinking (6.6% and 1.4%, respectively) (11).

Alcohol Toxicology Testing

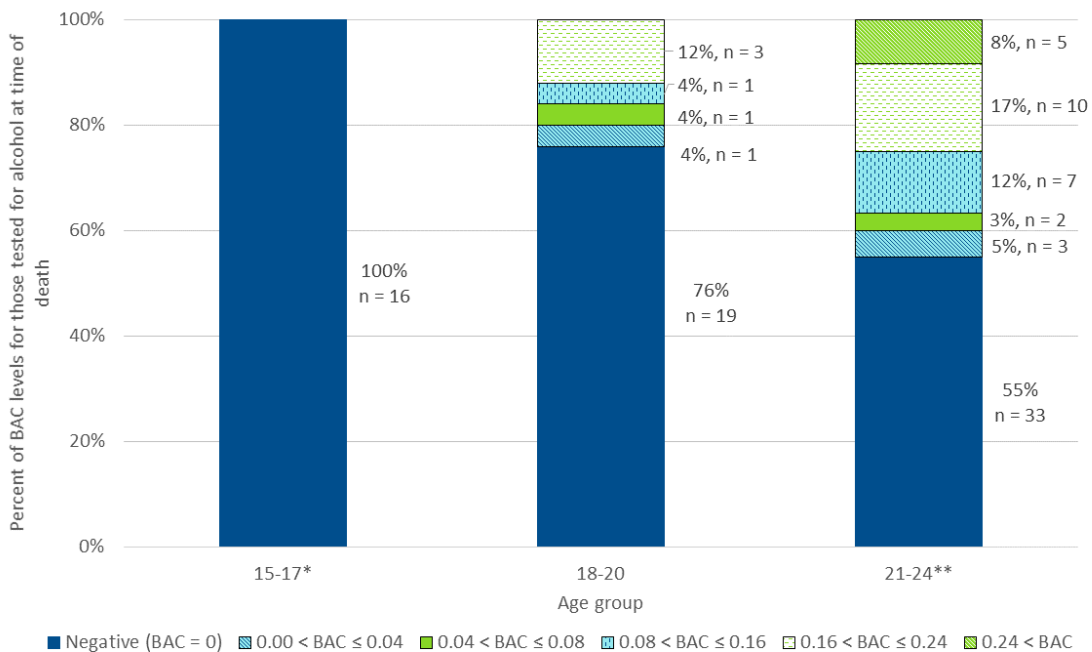
Alcohol toxicology data from 2015 and 2016 MNVDRS were analyzed for White males 15 to 24 years old. The percentage of youth suicides that tested positive for alcohol at time of death increased with age (see Table 1).

Table 1. Percentage of Suicide Decedents with Positive Alcohol Results Increased with Age

Age group	Number of suicides	Percent of suicide decedents tested for alcohol	Percent of suicide decedents with positive alcohol toxicology results (among those tested)
15 - 17	21	80%	0%
18 - 20	32	78%	24%
21 - 24	71	87%	45%

Figure 3 shows the blood alcohol concentration (BAC) levels of youth tested for alcohol at the time of death. One in four youth between 21 and 24 years old had a BAC of greater than or equal to 0.16 at the time of death, twice the legal limit for driving.

Figure 3. One in Four Young Adults 21-24 Years Old had a BAC > 0.16



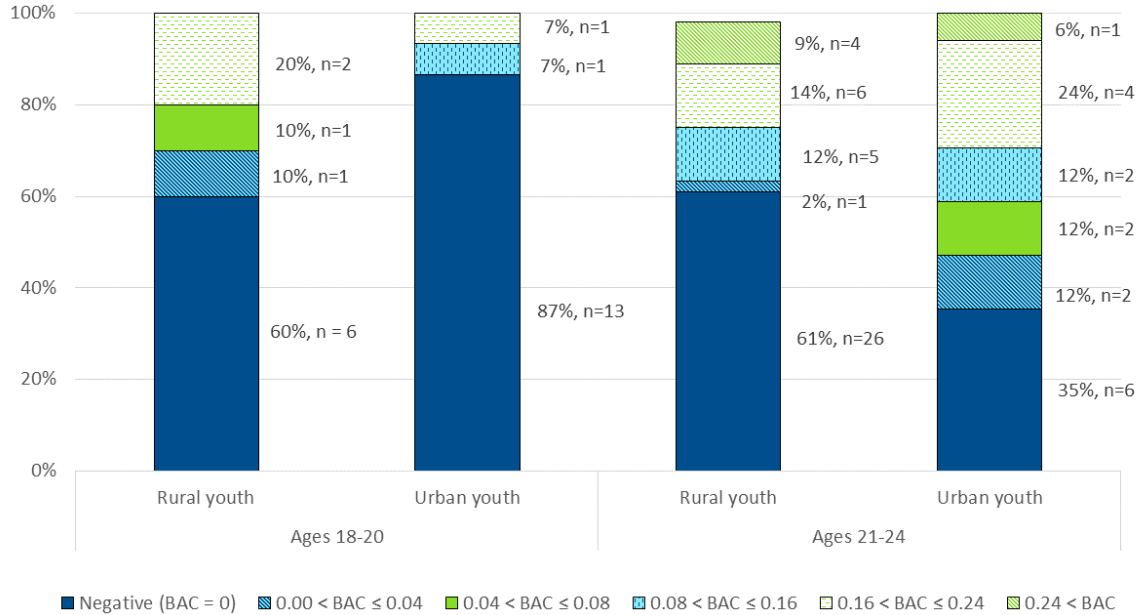
*One decedent in the 15-17 year old age group was excluded from analysis due to an unreliable BAC as a result of decomposition.

**Two decedents were excluded from analysis in the 21-24 year old age group due to unreliable BACs as a result of decomposition.

Alcohol Toxicology by Geography and Age

The percentage of decedents with alcohol on board at the time of death varied by age and geography (see Figure 4). Among youth ages 18 to 20 living in Greater Minnesota, 40% had a positive alcohol toxicology result at the time of death compared to only 14% living in the 7 county metropolitan area. However, among youth ages 21 to 24, 65% of those from the metro area tested positive for alcohol compared to 39% from Greater Minnesota.

Figure 4. BAC Level Varies by Geography and Age



Key Findings and Recommendations

- White, non-Hispanic males made up the majority of suicide decedents among Minnesota youth 15-24 during 2015 and 2016. The suicide rate for White males ages 21-24 in Minnesota is greater than the national rate.
- As age increased, the percentage of suicides among White male youth in Minnesota with positive alcohol toxicology results increased. This trend is similar to the increase with age regarding the proportion of young males reporting binge drinking (11,12).
- A higher percentage of youth living in rural areas between 18 and 20 years old had alcohol in their system at the time of death compared to those living in the seven-county metropolitan area. The opposite is true for those over the age of 21.

More work needs to be done to examine the association between suicide and alcohol use at the time of death among youth and young adults. Future analyses should examine the relationship between documented history of addiction treatment, whether toxicology testing was performed and toxicology results. Additionally, more analyses need to explore the interaction between geography, age and presence of alcohol at death.

Minnesota's State Suicide Prevention Plan acknowledges the link between suicide and substance use disorders and calls for reducing stigma associated with suicidal behaviors and substance use disorders (Objective 1.4) (13). These efforts should continue with the goal of encouraging help-seeking behaviors.

Both suicide and alcohol use disorders share common risk and protective factors. More focus needs to be placed on upstream efforts to reduce risk factors for these outcomes and increase protective factors. Data illustrate that as the number of ACEs increases, so does the percent of Minnesota high school youth reporting binge drinking (6). Another recommendation of the State Suicide Prevention Plan is to "promote programs that decrease and address trauma in childhood" to prevent suicide (Objective 1.3). Working to prevent ACEs may reduce the number of Minnesotans affected by alcohol use disorders, suicide, or both.

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Suggested Citation.

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Appendix

Table for Figure 1

Table 1. Suicide Rates among White Male Youth in Minnesota Increased with Age, 2015 and 2016

Age group	Crude rate per 100,000
15 - 17	13.2
18 - 20	25.0
21 - 24	34.5

Table for Figure 2

Table 2. Binge Drinking Among White Male Youth in Minnesota Increases with Age

Age group	Percent of youth reporting binge drinking n prior 30 days
15 - 17	10%
18 - 20	24%
21 - 24	51%

Table for Figure 3

Table 3. One in Four Young Adults 21-24 Years Old had a BAC > 0.16

Age group	Negative (BAC = 0)	0.00 < BAC ≤ 0.04	0.04 < BAC ≤ 0.08	0.08 < BAC ≤ 0.16	0.16 < BAC ≤ 0.24	0.24 < BAC
15 - 17*	100%	0%	0%	0%	0%	0%
18 - 20	76%	4%	4%	4%	12%	0%
21 - 24**	55%	5%	3%	12%	17%	8%

*One decedent in the 15-17 year old age group was excluded from analysis due to an unreliable BAC as a result of decomposition.

**Two decedents were excluded from analysis in the 21-24 year old age group due to unreliable BACs as a result of decomposition.

Table for Figure 4

Table 4. BAC Level Varies by Geography and Age

Age group	Geography	Negative (BAC = 0)	0.00 < BAC ≤ 0.04	0.04 < BAC ≤ 0.08	0.08 < BAC ≤ 0.16	0.16 < BAC ≤ 0.24	0.24 < BAC
Ages 18-20	Rural youth	60%	10%	10%	0%	20%	0%
Ages 18-20	Urban youth	87%	0%	0%	7%	7%	0%
Ages 21-24	Rural youth	61%	2%	0%	12%	14%	9%
Ages 21-24	Urban youth	35%	12%	12%	12%	24%	6%