

# Polysubstance Use

Topical Brief Series: Vol. 1, Issue 2

## What is Polysubstance Use?

Polysubstance use is defined broadly as using two or more psychoactive substances. Simultaneous polysubstance use refers to the concurrent use of multiple substances. Separate polysubstance use refers to the use of multiple substances over a period, such as 12 months or the past 30 days.<sup>1</sup> Given its broad definition, research on polysubstance use has explored a wide range of time intervals and has been limited by a focus on high-risk populations, small sample sizes, and self-report data.<sup>2,3</sup> Clinicians diagnose substance use disorders (SUDs) individually, rather than a polysubstance use disorder.

While polysubstance use does not have a standard temporal or clinical definition, various polysubstance use behaviors are associated with acute and chronic health effects. Specific health effects can differ by combination of substances; however, some general dangers exist across combina-

tions. Simultaneous polysubstance use can lead to greater addictive effects, as well as unique and often more severe side effects than the individual effects of each drug. Overdose is of higher concern when combining substances because certain substances mask the effects of other substances, potentially leading to consumption of higher doses than a person is accustomed to. People often use multiple substances simultaneously to counteract the negative effects of one substance or balance out, enhance, or lengthen the effects of the high. Separate polysubstance use can also lead to greater addictive effects.<sup>4</sup>

Like general substance use, polysubstance use can be harmful to an individual without having a SUD diagnosis. This brief contains information on a variety of polysubstance use behaviors, including past-month polysubstance use of people 12 and older; adult polysubstance use; lifetime youth polysubstance use; polysubstance use disorders and treatment; and, public health and safety harms of polysubstance use.

## Key Findings

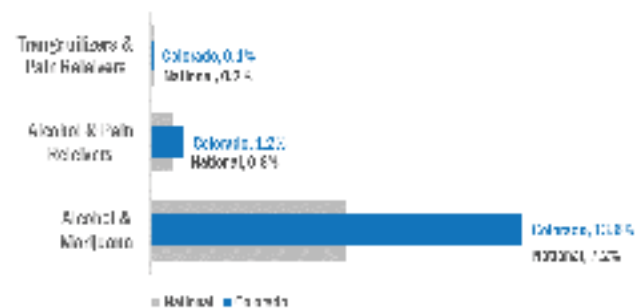
- Polysubstance use is broadly defined and is associated with numerous acute and chronic health effects.
- Nationally and in Colorado, alcohol and marijuana are the substances most commonly used in the past month.
- Treatment admissions in our state for the combination of methamphetamine and heroin rose dramatically from 2014-2018.
- In Colorado, the proportion of roadway fatalities involving polysubstance increased from 2013 to 2018.
- Overdose deaths due to methamphetamine and heroin were the most common combination of substances.

## Prevalence of Polysubstance Use

National and state surveys on substance use behaviors are limited on polysubstance use. Most behavioral health surveys do not ask directly about simultaneous or separate polysubstance use. Instead, looking at the proportion of respondents indicating they used more than one substance within the past month is used as a proxy for polysubstance use. The National Survey on Drug Use and Health (NSDUH) asks about a variety of substances at the national and state level.

Individuals 12 and older in the U.S. and Colorado who reported using multiple substances in the past month primarily used alcohol in

Figure 1. Coloradans reported using alcohol and marijuana in the past month at nearly twice the national prevalence.



Data source: National Survey on Drug Use and Health, SAMHSA, 2016-2017

combination with another substance. The most prevalent combination was alcohol and marijuana (Figure 1), with nearly 20 million people in the U.S. using both in the past month.<sup>5</sup>

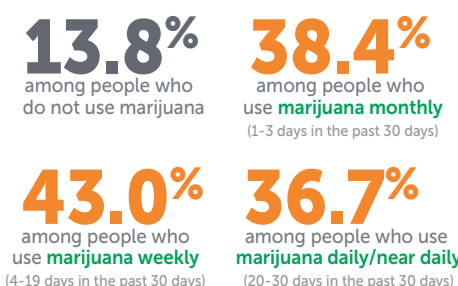
The combination of heroin and methamphetamine are of concern due to increased risk of overdose death. Nationally from 2016-17, about a quarter of people who used heroin in the past month also used methamphetamine, an increase of 10% from 2015-16. State-level data were unavailable for heroin and methamphetamine. Also of concern due to risk of overdose death is the combination of pain relievers and tranquilizers (benzodiazepines). In 2016-17, approximately 40% of Coloradans who used tranquilizers in the past month reported using pain relievers, a slight increase from 2015-16.<sup>6</sup>

## Adult Polysubstance Use

This section focuses on alcohol and marijuana due to the combination's prevalence in Colorado and nationally. Binge drinking (4+ drinks for a female or 5+ drinks for a male on a single occa-

sion) and daily or near daily marijuana use (20+ days in past month) both have documented health and safety concerns. Binge drinking has many serious risks, including injuries from car crashes, sexual assault, and several types of cancer.<sup>7</sup> Daily or near daily marijuana use has respiratory, cognitive, and mental health effects. Heavy use of marijuana can damage memory and marijuana use in high doses can cause temporary psychosis while high.<sup>8</sup>

Figure 2. In Colorado, binge drinking is more prevalent among adults who use marijuana.



Data source: Behavioral Risk Factor Surveillance System, CDPHE, 2018

The Behavioral Risk Factor Surveillance System (BRFSS) is one of Colorado's primary data sources for understanding the prevalence of adult substance use. BRFSS is a national survey administered by the Centers for Disease Control and Prevention in coordination with state agencies. It collects data on past month use of alcohol, marijuana, and tobacco. While the survey is limited in the number of substances on which it gathers data, a larger state-level sample size allows for more extensive analyses.

In 2018, individuals who used marijuana in the past month reported more than twice the prevalence (Figure 2) of binge drinking compared to those who did not use marijuana.<sup>9</sup> Approximately one in ten Colorado adults used marijuana daily or near daily. Of those individuals, respondents aged 18-34 reported the highest prevalence of binge drinking (Figure 2).<sup>10</sup> Given the risks associated with binge drinking and daily or near daily marijuana use, public health and safety professionals should consider approaches that target reducing both behaviors.

## Youth Polysubstance Use

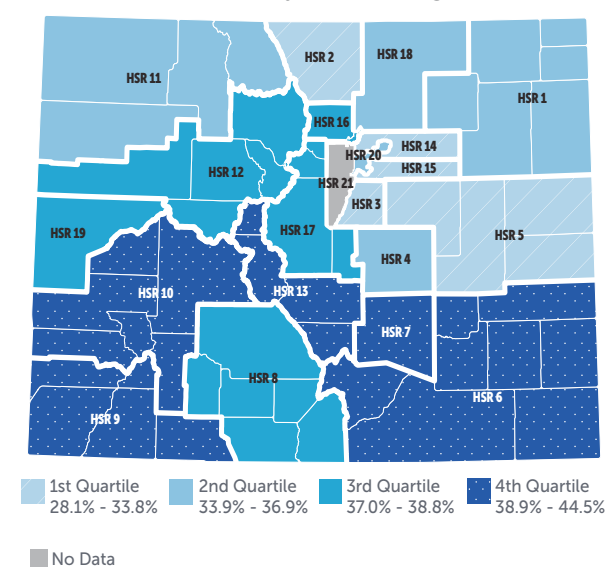
Like adults, youth also experiment with and use multiple substances simultaneously or separately. Previous research has found adolescents "may be

particularly vulnerable to the interactive and neurotoxic effects of polysubstance use."<sup>11</sup> To understand youth polysubstance use in Colorado, the 2017 Healthy Kids Colorado Survey data were examined to understand the prevalence of high school students who reported using two or more substances in their lifetime. Figure 4 highlights the prevalence of youth polysubstance use by Health Statistics Region.<sup>12</sup>

The presence of protective factors – factors which are associated with reduced likelihood of youth substance use – were analyzed for youth who have only used one substance in their lives compared to two or more substances. In compiling state substance use profiles, six factors (Figure 3) that are most influential in reducing youth substance use of alcohol, marijuana, and prescription drugs were identified.<sup>13</sup>

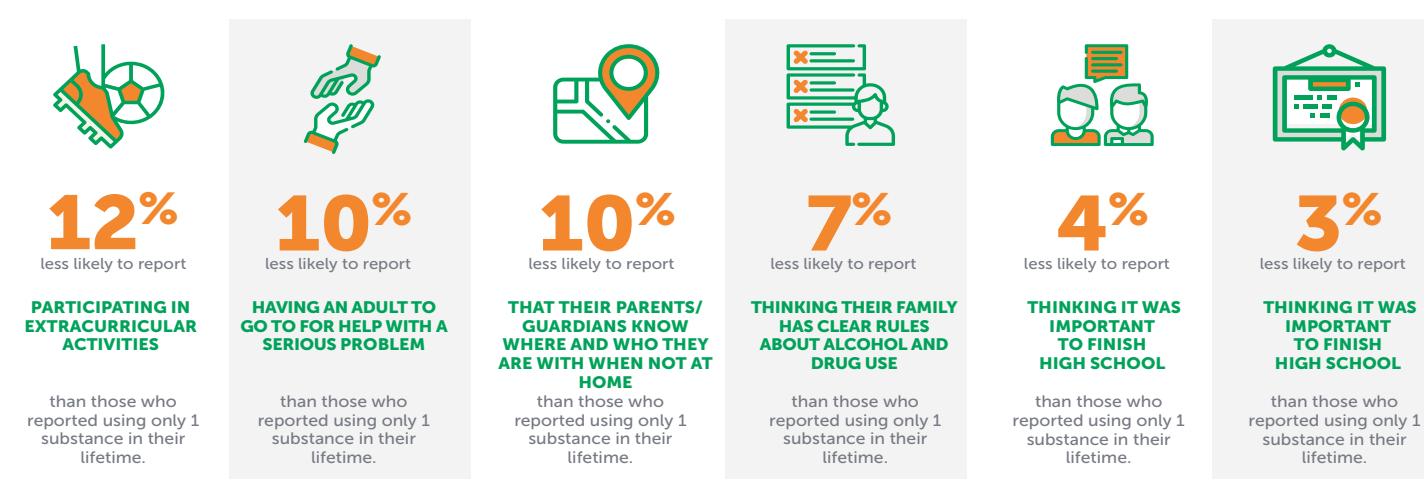
Students who used two or more substances in their lifetime were consistently less likely to report these protective factors compared to students who used only one substance in their lifetime.<sup>14</sup> Supporting opportunities for students, parents, and communities to build these protective factors can reduce youth substance use.

Figure 4. Percent of high school students who reported using 2+ substances in their lifetime by health statistic region (HSR).



Data source: Healthy Kids Colorado Survey, CDPHE, 2017

Figure 3. Colorado high school students who reported using 2+ substances in their lifetime were less likely to have the following protective factors.



Data source: Healthy Kids Colorado Survey, CDPHE, 2017

## Substance Use Disorders & Treatment

A person who uses multiple substances is not necessarily dependent upon those substances. However, a small minority of people with an SUD are dependent on more than one substance. In 2018, 20.3 million people in the U.S. aged 12 and older had an SUD in the past year. Thirteen percent of those, or 2.7 million people, had both an alcohol and illicit drug use disorder. The number of individuals with two or more SUDs is comparable to previous years, with young adults, aged 18-25, having the highest prevalence among all age groups in 2017 and 2018. Individuals with two or more SUDs are three times less likely to receive treatment within the past year compared to individuals with either an alcohol use disorder or an illicit drug disorder. State-level estimates of the percentage of individuals with both an alcohol and illicit drug use disorder were unavailable.<sup>15, 16</sup>

Treating addiction for polysubstance use is more complicated and requires specialized treatment to achieve full recovery.<sup>17</sup> It is valuable to understand the unique challenges of treatment for individuals who are admitted for polysubstance use. From 2014 to 2018 in Colorado, individuals aged 25-34 constituted the largest group of treatment admissions, followed by 35-44 year-olds. In general, the number of treatment admissions increased from 2014 to 2018. Admissions with polysubstance use accounted for approximately 60% of all treatment admits within that time, with proportions remaining stable since 2014. Individuals aged 18-34 were more likely to be admitted for polysubstance use compared to a single substance.<sup>17</sup>

Over the 5-year period between 2014 and 2018, the most common combination of substances used by people admitted for polysubstance treatment was alcohol (primary) and marijuana (secondary). The next most common combination was methamphetamine (primary) and marijuana (secondary). The number of people seeking treatment for heroin and methamphetamine increased drastically during this period, while admissions for other common combinations remained stable (Figure 5). In 2018, the number of admits for alcohol and marijuana (2,951) was only slightly higher than admits for heroin and methamphetamine (2,851). People admitted to treatment for polysubstance use

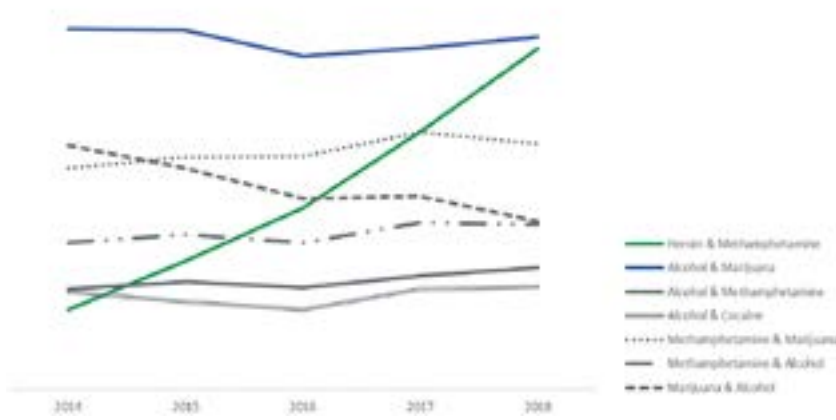
were more likely to have severe issues with work, school, and maintaining relationships with friends and family. Furthermore, when compared to people admitted for a single substance, people admitted for polysubstance use were 16% more likely to have a co-occurring mental health problem and 15% more likely to have minimal achievement of treatment goals.<sup>19</sup> Once in treatment, polysubstance users face greater challenges than those seeking treatment for a single substance. Professionals working in this area should consider the unique challenges for polysubstance users to provide the support necessary for successful treatment and recovery.

## Public Health & Safety Harms

Polysubstance use has public health and safety consequences. Polysubstance use is a risk factor for overdose death. A 2017 study reviewed national data from 2002 to 2015 to assess the increase in opioid-related deaths involving another substance. Results showed that 22.1% of the increase in opioid deaths over that period were attributable to combining another substance with opioids.<sup>20</sup> Similarly, a 2015 study that reviewed heroin deaths from 2002 to 2013 concluded that nearly three out of five heroin-related deaths involved another substance.<sup>21</sup> In Colorado in 2018, the rate of polysubstance overdose deaths was 8.1 (per 100,000) compared to 16.5 (per 100,000) for all drug overdoses. Methamphetamine and heroin were the most common combination in overdose deaths.<sup>22</sup>

Roadway fatalities resulting from polysubstance use are also of concern. In Colorado, the proportion of roadway fatalities that involved polysubstance use steadily increased from 2016 to

Figure 5. In Colorado the number of people admitted for the combination of heroin and methamphetamine has seen a dramatic increase.



Data source: Drug/Alcohol Coordinated Data System, Office of Behavioral Health, CDHS, 2014-2018

2018, while the rate of fatal crashes involving a single substance remained stable. Roadway fatalities involving both alcohol and marijuana constituted most roadway fatalities involving more than one substance.<sup>23,24</sup> According to the Colorado Department of Public Health and Environment, "using alcohol and marijuana together increases impairment and the risk of motor vehicle crash more than using either substance alone." In 2018, the proportion of fatal crashes involving alcohol in combination with stimulants (primarily methamphetamine) reached the same rate as those involving alcohol and marijuana. Of the 45 fatal crashes that tested positive for methamphetamine in 2018, over half of them involved an additional substance.<sup>25</sup>

## Conclusion

Polysubstance use is broadly defined and associated with numerous acute and chronic health effects. The combination of binge drinking and daily or near daily marijuana use is of concern due to documented health effects. Additionally, treatment admissions for the combination of methamphetamine and heroin are increasing dramatically. Continued and improved data collection and monitoring of polysubstance use are essential for understanding these behaviors and informing public health and safety efforts.

### For more information

including references, please visit our website - [www.coloradoseow.org](http://www.coloradoseow.org)





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1. Connor, J., Gullo, M., White, A., and Kelly, A. (2014). Polysubstance use: Diagnostic challenges, patterns of use, and health. *Current Opinion in Psychiatry*, 27(4), 269-275.
2. Ibid.
3. Tomczyk, S., Isensee, R., and Hanewinkel, R. (2016). Latent classes of polysubstance use among adolescents – a systematic review. *Drug and Alcohol Dependence*, 160, 12-29.
4. Polysubstance Use and Abuse: The Unique Treatment Needs of Polydrug Users. *American Addiction Centers* (last updated: September 2019). Retrieved from <https://americanaddictioncenters.org/polysubstance-abuse> on October 1, 2019.
5. Substance Abuse and Mental Health Data Archive. *Restricted-Use Data Analysis System, 2-Year (2016-17)*. Substance Abuse and Mental Health Services Administration, Rockville, MD.
6. Ibid.
7. Centers for Disease Control and Prevention (2018). *Fact Sheets – Binge Drinking*. Retrieved from <https://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm> on 10/11/2019.
8. Colorado Department of Public Health and Environment (2018). *Monitoring Health Concerns Related to Marijuana in Colorado: 2018*. Retrieved from <https://www.colorado.gov/pacific/marijuanahealthinfo/summary> on 10/11/2019.
9. 2018 Behavioral Risk Surveillance System, Colorado Department of Public Health and Environment.
10. Ibid.
11. Chan, G. C., Kelly, A. B., Carroll, A., & Williams, J. W. (2017). Peer drug use and adolescent polysubstance use: Do parenting and school factors moderate this association? *Addictive Behaviors*, 64, 78–81.
12. 2017 Healthy Kids Colorado Survey, Colorado Department of Public Health and Environment.
13. Colorado State Epidemiological Outcomes Workgroup (2019). *Colorado State Epi Profiles*.
14. 2017 Healthy Kids Colorado Survey, Colorado Department of Public Health and Environment.
15. Center for Behavioral Health Statistics and Quality (2019). *2018 National Survey on Drug Use and Health: Detailed Tables*. Substance Abuse and Mental Health Services Administration, Rockville, MD.
16. Substance Abuse and Mental Health Services Administration. (2019). *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health* (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>
17. Polysubstance Use and Abuse: The Unique Treatment Needs of Polydrug Users. *American Addiction Centers* (last updated: September 2019). Retrieved from <https://americanaddictioncenters.org/polysubstance-abuse> on October 1, 2019.
18. Drug and Alcohol Coordinated Data System, Office of Behavioral Health, Colorado Department of Human Services.
19. Ibid.
20. Kandel, D., Hu, M., Griesler, P. and Wall, M. (2017). Increases from 2002 to 2015 in prescription opioid overdose deaths in combination with other substances. *Drug and Alcohol Dependence*, 178, 501-511.
21. Jones, C., Logan, J., Gladden, M., and Bohm, M. (2015). Demographic and substance use trends among heroin users – United States, 2002-2013. *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention.
22. 2018 Colorado Vital Statistics, Colorado Department of Public Health and Environment.
23. 2016-2018 Fatality Analysis Reporting System, Colorado Department of Transportation.
24. Note: Presence of marijuana meant presence of Delta-9-tetrahydrocannabinol, or THC (marijuana’s main mind-altering ingredient). In 2016, traffic fatality data began including information on the presence of Delta-9 in addition to general presence of cannabinoids.
25. 2018 Fatality Analysis Reporting System, Colorado Department of Transportation.