

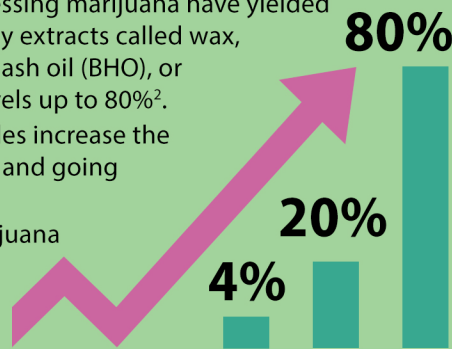
# Marijuana: Know the Truth

## Impacts of Legalization



### Marijuana Potency

- Marijuana potency has risen from 4% in 1995 to 20% in 2015<sup>1</sup>.
- New methods of processing marijuana have yielded extremely high potency extracts called wax, shatter, dabs, butane hash oil (BHO), or honey oil, with THC levels up to 80%<sup>2</sup>.
- Potent marijuana edibles increase the chance THC poisoning and going to the ER<sup>3</sup>.
- In 2018 vaping of marijuana has increased across grades 8th - 10th<sup>4</sup>.



### Mental Health Effects

- Marijuana stimulates the brain causing altered thinking, memory, brain development, hallucinations, and psychosis<sup>8</sup>.
- Adolescents with heavy marijuana use lose an average of 8-10 IQ points<sup>9</sup>.
- People with mental illness suffer an increase in depressed mood and anxiety when they use marijuana<sup>10</sup>.
- Marijuana induces anxiety, psychosis, and schizophrenia in those with no mental illness<sup>10</sup>.
- Youth who used marijuana 3 times or more by age 18 were more likely to have a depressive disorder at age 26<sup>11</sup>.
- Marijuana use was significantly associated with worse recovery for depression and anxiety symptoms and mental health functioning compared with patients not using marijuana<sup>12</sup>.
- Daily adolescent users were 18 times more likely to become dependent on marijuana, 7 times more likely to attempt suicide and 8 times more likely to use other illegal drugs in the future<sup>13</sup>.
- People smoking marijuana before age 17 were 3.5 times more likely to attempt suicide than those who started smoking marijuana later in life<sup>14</sup>.



### Marijuana and Opioid Use Vulnerability

- 90% of all addictions start in adolescence<sup>15</sup>.
- There is little evidence that marijuana reduces pain or the use of opioids<sup>16</sup>.
- Marijuana use increases the likelihood of opioid dependence<sup>17</sup>.
- Past year marijuana users are 3x more likely to misuse prescription opioids and 2x the chance of developing prescription opioid dependence<sup>18</sup>.
- Early use of marijuana reduces reactivity of the brain's reward center in adulthood causing vulnerability to opioid and other drug addiction<sup>19,20</sup>.
- Marijuana prepares the brain for heightened responses to other drugs<sup>21</sup>.



### References

- <sup>1</sup>ElSohly, M.A., et al. (2016). Changes in cannabis potency over the last 2 decades (1995- 2014): Analysis of current data in the United States. <sup>2</sup>Drug Enforcement Administration. (2019). The facts about Marijuana concentrates. <sup>3</sup>Rocky Mountain High Intensity Drug Trafficking Area. (2017). The legalization of marijuana in Colorado: The impact. <sup>4</sup>National Institute on Drug Abuse. (2018). Monitoring the future 2018 survey results. <sup>5</sup>Anthony, J.C. et al. (1994) Comparative epidemiology of dependence on tobacco, alcohol, controlled substances, and inhalants: Basic findings from the National Comorbidity Survey. <sup>6</sup>Hall, W., & Degenhards, L. (2009). Adverse health effects on non-medical cannabis use. <sup>7</sup>Hall, W. (2009). The adverse health effects of cannabis use: what are they, and what are their implications for policy? <sup>8</sup>NIDA. (2018). Marijuana. <sup>9</sup>Meier, M. H. et al. (2012). Persistent cannabis users show neuropsychological decline from childhood to midlife. <sup>10</sup>NIDA. (2018). Marijuana. <sup>11</sup>Arseneault, L., Cannon, M., Poulton, R., & et al. (2002). Cannabis use in adolescence and risk for adult psychosis: longitudinal prospective study. <sup>12</sup>Bahorik, A., Leibowitz, A., Sterling, S., Travis, A., Weisner, C., & Satre, D. (2017). Patterns of marijuana use among psychiatry patients with depression and its impact on recovery. <sup>13</sup>Young, S. (2014). Frequent teen marijuana use linked to issues later in life. <sup>14</sup>Lynskey, M., et al. (2012). An Australian twin study of cannabis and other illicit drug use and misuse, and other psychopathology. Twin research and human genetics: The official Journal of the International Society for Twin Studies. <sup>15</sup>The National Center on Addiction and Substance Abuse at Columbia University. (2011). National study reveals teen substance use America's #1 public health problem. <sup>16</sup>Campbell, G., Hall, W., Peacock, A., & et al. (2018). Effect of cannabis use in people with chronic non-cancer pain prescribed opioids: Findings from a 4-year prospective cohort study. <sup>17</sup>Butelman, E., Maremmani, A., Bacciardi, S., & et al. (2018). Non-medical cannabis self-exposure as a dimensional predictor of opioid dependence diagnosis: A propensity score matched analysis. <sup>18</sup>NIDA. (2017). Marijuana use is associated with an increased risk of prescription opioid misuse and use disorders. <sup>19</sup>Pistis, M. et al. (2004). Adolescent exposure to cannabinoids induces long-lasting changes in the response to drugs of abuse of rat midbrain dopamine neurons. <sup>20</sup>Agrawal, A. et al. (2004). A twin study of early cannabis use and subsequent use and abuse/dependence of other illicit drugs. <sup>21</sup>Panlilio, L. V. et al. (2013). Prior exposure to THC increases the addictive effects of nicotine in rats. <sup>22</sup>The National Academies of Science Engineering and Medicine. (2017, January). The Health Effects of Cannabis and Cannabinoids. <sup>23</sup>NIDA. (2018). Marijuana. <sup>24</sup>Callaghan, R. C. et al. (2017). Cannabis use and incidence of testicular cancer: A 42-year follow-up of Swedish men between 1970 and 2011.

## Pregnancy

- Marijuana use while pregnant can cause harm to the baby including low-birth weight, developmental problems, attention and learning difficulties<sup>25</sup>.
- THC can be passed to the baby through breastmilk<sup>25</sup>.



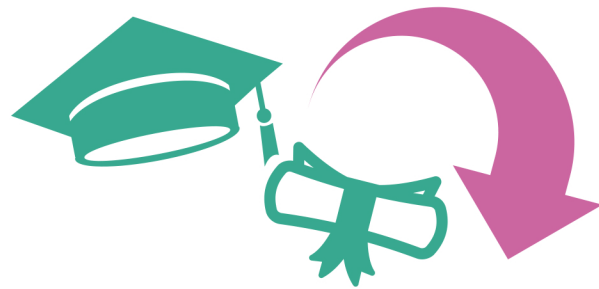
## Environment

- Devastating environmental impacts from marijuana cultivation include: endangering native animals and their habitats, toxic waste run-off, deforestation, noise and light pollution, diversion of water resources, human waste and garbage littering<sup>29, 30</sup>.
- Marijuana cultivation uses a large amount of critical resources. In California, cultivation accounts for over \$5 billion worth of electricity usage annually<sup>31</sup>.



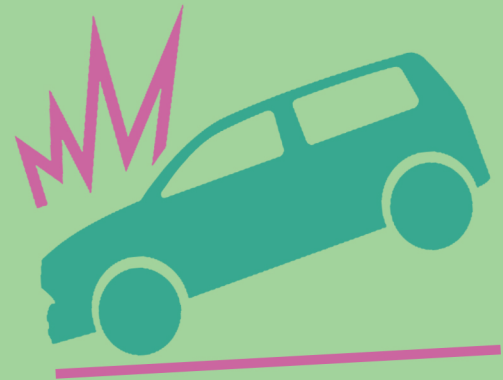
## Educational Disruption

- Marijuana use is consistently associated with reduced educational attainment (e.g., grades and chances of graduating)<sup>32, 33</sup>.
- 86% of Colorado Student Resource Officers reported an increase in marijuana-related incidents after legalization, with 44% of those incidents relating to students under the influence during school hours<sup>3</sup>.



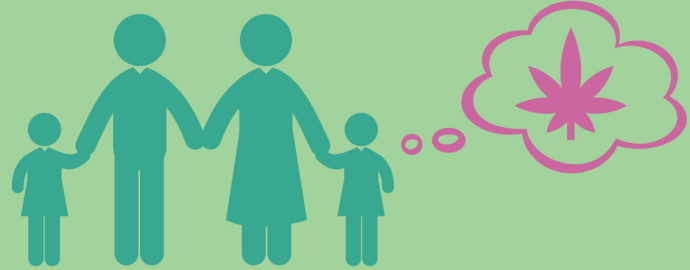
## Driving Risks

- Since recreational marijuana was legalized in Colorado, traffic deaths involving drivers who tested positive for marijuana more than doubled from 55 in 2013 to 138 people killed in 2017<sup>34</sup>.
- The percentage of all Colorado traffic deaths that were marijuana related increased from 11.43 percent in 2013 to 21.3 percent in 2017<sup>34</sup>.
- From 2010 through 2013, the estimated number and proportion of Washington State drivers involved in fatal crashes who had a detectable concentration of THC in their blood ranged from a low of 48 (7.9%) to a high of 53 (8.5%); the number and proportion both approximately doubled from 49 (8.3%) in 2013 to 106 (17.0%) in 2014<sup>35</sup>.



## Access and Availability

- “Big Marijuana” is a lucrative global industry that has followed the “Big Tobacco” playbook through marketing their products to youth and downplaying harms<sup>26</sup>.
- Marijuana dispensary density has been linked to an increase in youth use<sup>27</sup>.
- As marijuana users and growers increase in a community, consumption among youth also increases<sup>27</sup>.
- In states where recreational marijuana is legal, youths’ perception of harm from smoking marijuana is lowest<sup>28</sup>.



## Black Market

- Post-legalization, the black market continues to thrive in Colorado and other states. Postal service seizures of diverted Colorado marijuana increased 844%<sup>3</sup>. Federal agencies have confiscated millions of dollars’ worth of illegal marijuana in rural forests, hills, and protected lands<sup>27</sup>.

## Crime

- In areas that have legalized marijuana, almost all have seen an increase in property and violent crimes<sup>27</sup>.

## References

<sup>25</sup>National Center for Chronic Disease Prevention and Health Promotion. (2016). What You Need to Know About Marijuana Use and Pregnancy. <sup>26</sup>Hornberg, E. (2018, May 7). Statement: INCB thematic hearing on the use of cannabis for medical and non-medical purposes. <sup>27</sup>Smart Approaches to Marijuana. (2018). Lessons learned from marijuana legalization in four U.S. states and D.C. <sup>28</sup>SAMHSA. (2018). National Survey on Drug Use and Health: Comparison 2015-2016 and 2016-2017 population percentages (50 States and the District of Columbia). <sup>29</sup>California Department of Fish and Wildlife. (2018). Cannabis Program. <sup>30</sup>California Department of Fish and Wildlife Habitat Conservation Planning Branch. (2018, July). A review of the potential impacts of cannabis cultivation on fish and wildlife resources. <sup>31</sup>Mills, E. (2012). The carbon footprint of indoor Cannabis production. <sup>32</sup>Fergusson, D., & Boden, J. M. (2008). Cannabis use and later life outcomes. <sup>33</sup>MacLeod, J., Oakes, R., Copello, A., Crome, I., Egger, M., Hickman, M., & et al. (2004). Psychological and social sequelae of cannabis and other illicit drug use by young people: A systematic review of longitudinal, general population studies. <sup>34</sup>Rocky Mountain High Intensity Drug Trafficking Area. (2018). The legalization of marijuana in Colorado: The impact update. <sup>35</sup>AAA Foundation for Traffic Safety. (2016). Prevalence of marijuana involvement in fatal crashes: Washington, 2010-2014.