

Dispelling Myths

The Facts About Marijuana Regulation

Opponents of medical and adult-use cannabis laws often make bold claims about the negative impact marijuana will have on individuals and communities. Examples of these claims include arguments that marijuana is a “gateway drug,” that legalization will double traffic fatalities, or that cannabis use results in increased levels of drug abuse and addiction.

Establishing effective marijuana laws and regulations is a complicated process, made more difficult when elected leaders and voters lack accurate information. The following paper addresses potential sources of misinformation using the growing body of research that has emerged since the passage of state-level cannabis laws. Through a review of government publications, academic articles, third party studies, and other resources, this paper examines the five most common arguments against marijuana legalization to separate **MYTH** from **FACT**.

- **MYTH:** Marijuana is a “gateway drug.”
- **FACT:** Marijuana use is not a causal factor in use of harder drugs.
- **MYTH:** Marijuana is addictive and more dangerous than cigarettes or alcohol.
- **FACT:** Marijuana is safer and less addictive than both cigarettes and alcohol.
- **MYTH:** Legalized marijuana will lead to higher youth usage.
- **FACT:** Youth usage does not increase when marijuana is legalized.
- **MYTH:** Legalizing marijuana will empower black market activity.
- **FACT:** Effective marijuana regulation can help eliminate black markets.
- **MYTH:** Legalizing marijuana will double traffic fatalities.
- **FACT:** Preliminary data on traffic fatalities is mixed at best.

While misinformation about cannabis remains widespread, an increasing number of individuals and organizations have scrutinized existing evidence and concluded that the actual impact of medical and adult-use cannabis laws deviates considerably from opponents’ bleak forecasts. As an example, the Cato Institute noted in a recent report “that state marijuana legalizations have had minimal effect on marijuana use and related outcomes....On the basis of available data...we find little support for the stronger claims made by either opponents or advocates of legalizations. The absence of significant adverse consequences is especially striking given the sometimes dire predictions made by legalization opponents.”¹

We believe that policymakers and voters will reach similar conclusions when provided with accurate information.

“Our conclusion is that state marijuana legalizations have had minimal effect on marijuana use and related outcomes....The absence of significant adverse consequences is especially striking given the sometimes dire predictions made by legalization opponents.” – Cato Institute, 2016

¹ Angela Dills, Sietse Goffard, and Jeffrey Miron (Cato Institute). [Dose of Reality: The Effects of State Marijuana Legalizations](#), 2016, p. 1.

Myth: Marijuana is a “Gateway Drug.”

Fact: Marijuana use is not a causal factor in use of harder drugs.

While studies have found that those who use marijuana are more likely to use other drugs, these studies demonstrate correlation not causation. In a seminal 1999 report, the Institute of Medicine found that marijuana “does not appear to be a gateway drug to the extent that it is the *cause* or even that it is the most significant predictor of serious drug abuse.”²

“While the gateway theory has enjoyed popular acceptance, scientists have always had their doubts. Our study shows that these doubts are justified.” – Andrew Morral (RAND, 2002)

More recent studies further undermine the so-called “gateway theory.”

- In a 2006 study published in the *American Journal of Psychiatry*, researchers found that drug abuse is not determined by preceding use of marijuana, but rather a user’s individual tendencies and environmental circumstances.³
- In a 2002 study, RAND’s Drug Policy Research Center concluded that “it is not marijuana use but individuals’ opportunities and unique propensities to use drugs that determine their risk of initiating hard drugs.”⁴ Upon the release of this study, Andrew Morral, Associate Director of RAND’s Public Safety and Justice division asserted, “We have shown that the marijuana gateway effect is not the best explanation for the link between marijuana use and the use of harder drugs. While the gateway theory has enjoyed popular acceptance, scientists have always had their doubts. Our study shows that these doubts are justified.”⁵

With the passage of medical and adult-use cannabis laws in several states, researchers have begun studying the impact of expanded cannabis access on hard drug use. In a May 2014 National Bureau of Economic Research paper, public health researchers at Emory University found that the implementation of medical marijuana laws had no impact on hard drug use, leading to the conclusion that “the often-voiced concerns about the potential gateway effect of marijuana is not supported by our findings.”⁶

While evidence supporting the gateway theory is limited, there is a growing body of research indicating that medical cannabis has actually served as a substitute for alternative substances like alcohol, prescription drugs, and illicit drugs.⁷ In fact, researchers have even found that medical cannabis laws are associated with significant reductions in prescription medications, opioid pain reliever (OPR) overdose deaths, OPR hospitalizations.⁸

In short, there is no evidence suggesting that marijuana use in and of itself is a gateway to harder drugs or drug abuse. On the contrary, regulated cannabis has the potential to reduce abuse of harmful drugs.

² Institute of Medicine. *Marijuana and Medicine: Assessing the Science Base*, 1999, p. 101. <http://www.nap.edu/read/6376/chapter/2#6>

³ Ralph E. Tarter et al. “Predictors of Marijuana Use in Adolescents before and after Licit Drug Use: Examination of the Gateway Hypothesis,” in *American Journal of Psychiatry*, December 2006, Vol. 163, No. 12, p. 2139.

⁴ RAND Drug Policy Research Center. “Using Marijuana May Not Raise the Risk of Using Harder Drugs,” in *Research Briefs*, 2002, p. 2.

⁵ Andrew R. Morral et al. “Reassessing the Marijuana Gateway Effect,” in *Psychology Society Bulletin*, Fall 2003, Vol. 1, No. 1, 2003, p. 63.

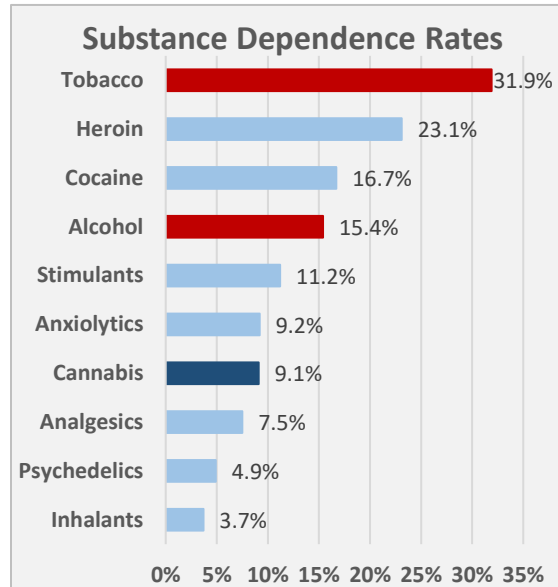
⁶ Hefei Wen et al. “The Effect of Medical Marijuana Laws on Marijuana, Alcohol, and Hard Drug Use,” in *NBER Working Paper Series*, May 2014, p. 25.

⁷ Amanda Reiman. “Cannabis as a Substitute for Alcohol and Other Drugs,” in *Harm Reduction Journal*, December 2009, p. 1.

⁸ Ashley C. Bradford. “Medical Marijuana Laws Reduce Prescription Medication Use in Medicare Part D,” in *Health Affairs*, July 2016, Vol. 35, No. 7, p. 1230; Marcus A. Bachhuber et al. “Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in the United States, 1999,2010,” in *Journal of the American Medical Association*, October 2014; and Yuyan Shi. “Medical Marijuana Policies and Hospitalizations Related to Marijuana and Opioid Pain Reliever,” in *Drug and Alcohol Dependence*, February 2017, p. 148.

Myth: Marijuana is addictive and more dangerous than cigarettes or alcohol.
Fact: Marijuana is safer and less addictive than both cigarettes and alcohol.

While marijuana dependence is a serious issue, the addiction rate for marijuana is much lower than that of other illegal and legal substances. In a comprehensive analysis of data from the National Comorbidity Survey, researchers from Johns Hopkins University and the University of Michigan found that marijuana has one of the lowest dependency rates among ten of the most widely used substances in the US. Whereas 9.1 percent of marijuana users develop dependency on marijuana, addiction rates stand at 31.9 percent for tobacco users, 23.1 percent for heroin users, 16.7 percent for cocaine users, and 15.4 percent for alcohol users.⁹



Data from the National Comorbidity Study (Anthony et al., 1994).

The Institute of Medicine also concluded that few marijuana users develop dependence, particularly when compared to other drugs. The Institute acknowledges that, though rare, marijuana users can develop dependence, but marijuana users “appear to be less likely to do so than users of other drugs (including alcohol and nicotine), and marijuana dependence appears to be less severe than dependence on other drugs.”¹⁰

The health costs and risks associated with marijuana are also substantially lower than those associated with alcohol and nicotine. In a review of the direct health care costs associated with the use of certain substances, researchers in Canada found that the direct annual health care costs per user stood at \$20.50 for cannabis, \$165.11 for alcohol, and \$822.26 for tobacco.¹¹ In a separate study, researchers conducted a comparative risk assessment of ten substances and, based on these assessments, categorized both alcohol and tobacco as “high risk” and cannabis as “low risk.” The researchers concluded that “the risk of cannabis may have been overestimated in the past” and the low risk levels associated with cannabis “suggest a strict legal approach rather than the current prohibition approach.”¹²

While some have raised concerns that smoking marijuana may have an adverse impact on the lungs, a 20-year study on marijuana use published in *The Journal of the American Medical Association* found “no evidence that increasing exposure to marijuana adversely affects pulmonary function.”¹³ A 2006 study on the potential connection between marijuana smoking and lung and upper aerodigestive tract cancers

⁹ James C. Anthony, Lynn A. Warner, and Ronald C. Kessler. [“Comparative Epidemiology of Dependence on Tobacco, Alcohol, Controlled Substances, and Inhalants: Basic Findings from the National Comorbidity Survey.”](#) in *Experimental and Clinical Psychopharmacology*, 1994, Vol. 2, No. 3, p. 251.
¹⁰ Janet E. Joy et. al. (Institute of Medicine). *Marijuana and Medicine: Assessing the Science Base*, 1999, p. 98.
¹¹ Gerald Thomas and Chris Davis. [“Cannabis, Tobacco, and Alcohol Use in Canada: Comparing Risks of Harm and Costs to Society.”](#) in *Visions: BC’s Mental Health and Addictions Journal*, Vol. 5, No. 4, 2009, p. 13.
¹² Drik W. Lachenmeier and Jurgen Rehm. [“Comparative Risk Assessment of Alcohol, Tobacco, Cannabis, and Other Illicit Drugs Using the Margin of Exposure Approach.”](#) in *Scientific Reports*, January 2015, p. 4 and 6.
¹³ Mark P. Pletcher et al. [“Association Between Marijuana Exposure and Pulmonary Function over 20 Years.”](#) in *The Journal of the American Medical Association*, January 2012, Vol. 307, No. 2., p. 177.

found no such connection and concluded that “the association of these cancers with marijuana, even long-term or heavy use, is not strong and may be below practically detectable limits.”¹⁴

In 1995, the World Health Organization (WHO) published a comprehensive report on the health risks associated with marijuana and concluded that “these risks are small to moderate in size.” The report added that “In aggregate they are unlikely to produce public health problems comparable in scale to those currently produced by alcohol and tobacco....on even the most worst-case scenario, it is unlikely that the public health effect of cannabis use would approach those of alcohol or tobacco use.”¹⁵ WHO also made the following findings:

- “Tobacco smoking is associated with a wide variety of other chronic health conditions for which cannabis smoking has not so far been implicated. These include cancer of the cervix, stomach, bladder and kidney, coronary heart disease, peripheral vascular disease, and stroke, as well as cataracts and osteoporosis.”
- “There is good evidence that chronic, heavy alcohol use increases the risk of premature mortality from accidents, suicide and violence. There is no comparable evidence for chronic cannabis use.”
- “In large doses alcohol can cause death by asphyxiation, alcohol poisoning, cardiomyopathy and cardiac infarct. There are no recorded cases of overdose fatalities attributed to cannabis, and the estimated lethal dose for humans extrapolated from animal studies is so high that it cannot be achieved by recreational users.”
- “A major difference between [alcohol and cannabis] is that withdrawal symptoms are either absent or mild after dependent cannabis users abruptly stop their cannabis use, whereas the abrupt cessation of alcohol use in severely dependent drinkers produces a well-defined withdrawal syndrome which can be potentially fatal.”¹⁶

These findings led Philip M. Boffey, the former science and health editor of *The New York Times*, to conclude that there is a “vast gap between antiquated federal law enforcement policies and the clear consensus of science that marijuana is far less harmful to human health than most other banned drugs and is less dangerous than the highly addictive

“[This] neatly illustrates the vast gap between antiquated federal law enforcement policies and the clear consensus of science that marijuana is far less harmful to human health than most other banned drugs and is less dangerous than the highly addictive but perfectly legal substances known as alcohol and tobacco.” –Philip M. Boffey (The New York Times, 2014)

but perfectly legal substances known as alcohol and tobacco. Marijuana cannot lead to a fatal overdose. There is little evidence that it causes cancer. Its addictive properties, while present, are low, and the myth that it leads users to more powerful drugs has long since been disproved.”¹⁷

¹⁴ Mia Hashibe et al. “[Marijuana Use and the Risk of Lung and Upper Aerodigestive Tract Cancers: Results of a Population-Based Case-Control Study.](#)” in *Cancer Epidemiology, Biomarkers, & Prevention*, October 2006, Vol. 15, No. 10, p. 1829.

¹⁵ World Health Organization, Project on Health Implications of Cannabis Use. *A Comparative Appraisal of the Health and Psychological Consequences of Alcohol, Cannabis, Nicotine and Opiate Use*, August 1995.

¹⁶ World Health Organization, Project on Health Implications of Cannabis Use. *A Comparative Appraisal of the Health and Psychological Consequences of Alcohol, Cannabis, Nicotine and Opiate Use*, August 1995.

¹⁷ Philip M. Boffey. “[What Science Says about Marijuana.](#)” in *The New York Times*, July 30, 2014.

Myth: Legalized marijuana will lead to higher youth usage.

Fact: Youth usage does not increase when marijuana is legalized.

National and state-level data make clear that marijuana legalization does not increase youth usage of marijuana. Over the past two decades, the United States has seen a proliferation of state laws legalizing medical and adult-use marijuana, yet youth marijuana usage rates have declined throughout this period. According to data from the CDC:

- Between 1995 and 2015, the percent of high school students who had used marijuana at some point in their lifetime fell from 42.4 percent to 38.6 percent.
- Between 1995 and 2015, the percent of high school students who had used marijuana at least once in the past month fell from 25.3 percent to 21.7 percent.¹⁸

In a 2014 study published in the peer-reviewed journal, *Lancet Psychiatry*, the authors analyzed youth marijuana usage rates over a 24-year period and found “no evidence for an increase of adolescent marijuana use after passage of state laws permitting use of marijuana for medical purposes.” The authors concluded, “concerns that increased adolescent marijuana use is an unintended effect of state medical marijuana laws seem unfounded.”¹⁹

While there are fewer years of data available on the impact of adult-use legalization laws on youth usage rates, initial data shows that these laws have not resulted in increased youth marijuana usage. In fact, states that have already implemented recreational marijuana laws have seen youth usage rates decline across the board.

- *Colorado:* Between 2009 and 2015, the percent of adolescents who have tried marijuana at least once in their lifetime fell from 43 percent to 38 percent. Over this same period, the percent of adolescents who reported using marijuana in the past month fell from 25 percent to 21 percent.²⁰
- *Alaska:* Between 2007 and 2015, the percent of adolescents who have tried marijuana at least once in their lifetime fell from 44.7 percent to 38.8 percent. Over this same period, the percent of adolescents who reported using marijuana in the past month fell from 20.5 percent to 19.0 percent.²¹
- *Oregon:* Between 2011 and 2015, the percent of 8th graders who reported using marijuana in the past month fell from 11.1 percent to 8.8 percent. Over this same period, the percent of 11th graders who reported using marijuana in the past month fell from 20.6 percent to 19.1 percent. Note that Oregon’s survey of adult marijuana use only covers 8th and 11th graders.²²
- *Washington:* Between 2012 and 2016, the percent of 6th, 8th, 10th, and 12th graders who reported using marijuana at least once in their life or within the past 30 days either remained constant or declined. At most grade levels, usage rates declined.²³

¹⁸ US Centers for Disease Control. [Trends in the Prevalence of Marijuana, Cocaine, and Other Illegal Drug Use National YRBS: 1991-2015](#).

¹⁹ Hasin et. al. “Medical Marijuana Laws and Adolescent Marijuana Use in the USA from 1991 to 2014: Results from Annual, Repeated Cross-Sectional Surveys,” in *Lancet Psychiatry*, 2015, 2, p. 607.

²⁰ Colorado. Health Kids Colorado Survey, Marijuana Use Among Youth in Colorado, 2015.

²¹ Alaska Department of Health and Social Services. 2015 Youth Risk Behavior Survey Results, p. 10.

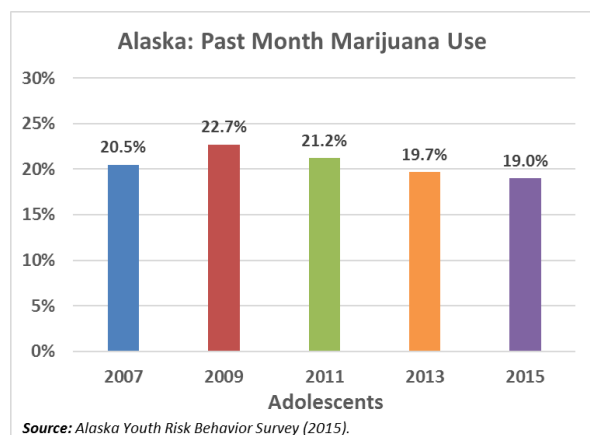
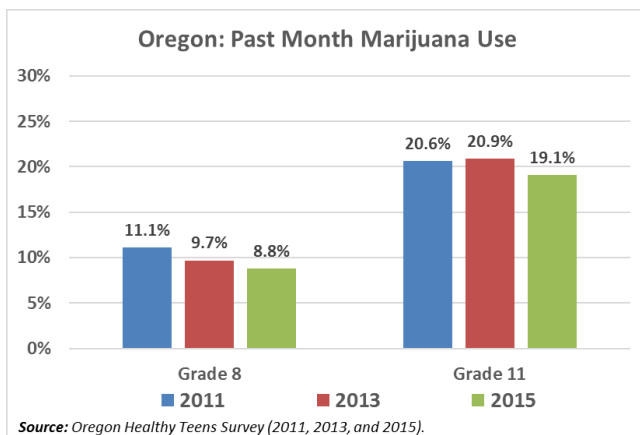
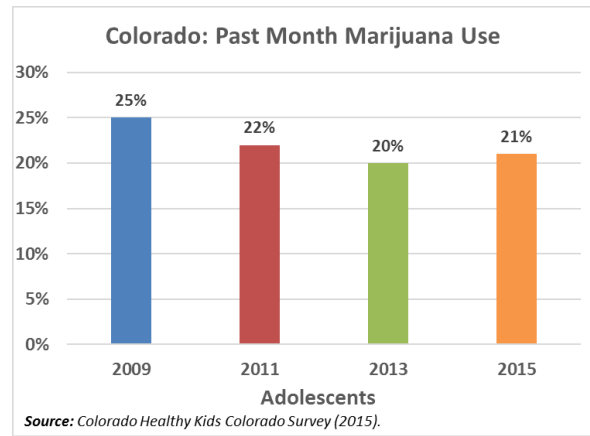
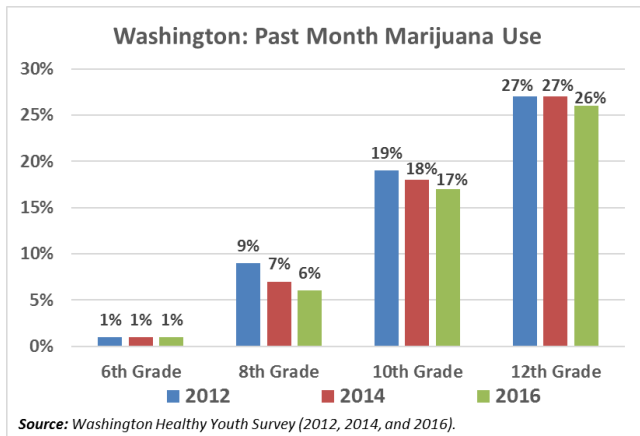
²² Oregon Health Authority. 2011 Oregon Healthy Teens Survey (8th and 11th Grade Survey Data), p. 48/53; Oregon Health Authority. 2013 Oregon Healthy Teens Survey, p. 58; and Oregon Health Authority. 2015 Oregon Healthy Teens Survey, p. 56-59.

²³ Washington State. Healthy Youth Survey, Youth Marijuana Use in Washington State, 2012; Washington State. Healthy Youth Survey, Youth Marijuana Use in Washington State, 2014; and Washington State. Healthy Youth Survey, Youth Marijuana Use in Washington State, 2016.

Despite initial concerns that youth access to marijuana will increase following the passage of legalization laws, the CDC found that the perceived availability of marijuana among adolescents has declined considerably in recent years. Between 2002 and 2014, the percent of adolescents reporting that marijuana is either "very easy" or "fairly easy" to obtain fell from 55.0 percent to 47.8 percent.²⁴

As more states pass medical and adult-use marijuana laws, the United States has also seen a decline in marijuana use disorders among adolescents. In a June 2016 article published in the *Journal of the American Academy of Child & Adolescent Psychiatry*, researchers at the Washington University School of Medicine analyzed data from the National Survey on Drug Use and Health. Overall, the study found that marijuana use disorders among adolescents declined 24 percent between 2002 and 2013.²⁵ The study also found noteworthy decline in the number of teenagers with marijuana-related issues; enjoying a drop in disciplinary issues with both parents and schools, and a seemingly diminished interest in getting high.

State-Level Youth Marijuana Usage Rate Data



²⁴ Centers for Disease Control and Prevention. *National Estimates of Marijuana Use and Related Indicators — National Survey on Drug Use and Health, United States, 2002–2014*, September 2016, p. 1-25.

²⁵ Richard Gruzca et al. "Declining Prevalence of Marijuana Use Disorders Among Adolescents in the United States, 2002 to 2013," in *Journal of the American Academy of Child & Adolescent Psychiatry*, 55.6, June 2016.

Myth: Legalizing marijuana will empower black market activity.
Fact: Effective marijuana regulation can help eliminate black markets.

Marijuana legalization and regulation can be tools to neutralize illegal marijuana sales. As the Institute on Taxation and Economic Policy highlighted in its official testimony before the Vermont Senate Committee on Finance, “one primary motivation behind legalizing retail marijuana is to eliminate the illegal black market for marijuana and its social ills.”²⁶

Both legal and illegal markets for marijuana are driven by consumer demand and, like the markets for any other good, are influenced by ease of access, price, and product quality. These principles are supported by the Colorado Department of Revenue, which commissioned a report regarding the market size and demand for marijuana within the State. The report noted “If the price of regulated marijuana remains high, as it has in early 2014, black-market production could continue if it could compete with the regulated market on price, but the regulated market is likely to reduce market share held by the black market.” The Department also pointed out that if prices between the legal and illegal market are similar, “consumers would likely shift to the regulated market because the selection, quality, and product safety is generally much higher at a licensed retail provider.”²⁷

While there is certainly room for improvement, states that regulate medical and adult-use cannabis have made considerable progress towards reducing the size of the black market. According to a recent article in *The Economist*, Colorado's legal market has captured 70 percent of total cannabis sales.²⁸ In an economic impact analysis commissioned by the State of Colorado, the Marijuana Policy Group predicts that the black market's share of total cannabis sales will eventually fall to a mere 10 percent.²⁹

As governments consider passing medical and adult-use cannabis laws, policy experts forecast major declines in the size of the illegal market should politicians adopt the appropriate tax and regulatory levels. In an April 2017 policy brief, C.D. Howe Institute predicted that the passage of adult-use cannabis laws in Canada could result in the regulated market capturing as much as 90 percent of the country's black market.³⁰

Prohibition is not an effective means of eliminating illegal markets for marijuana. Unlike other illegal drugs, consumer feelings about marijuana have changed and progressed significantly over time. Over the years, public polling by Pew Research Center has found that 57 percent of American adults are in favor of marijuana legalization, 49 percent of Americans have tried marijuana, 69 percent of Americans believe alcohol is more harmful to a person's health than marijuana, and 63 percent believe alcohol would still be more harmful to society if marijuana were legalized.³¹

In light of existing consumer attitudes toward marijuana, prohibition in and of itself will not eliminate demand. In the absence of an effective regulatory framework, patients and consumers have few options other than the black market.

²⁶ Carl Davis and Richard Phillips (Institute on Taxation and Economic Policy). [Tax Policy Issues Associated with Legalized Retail Marijuana: Testimony before the Vermont Senate Committee on Finance](#), January 19, 2016.

²⁷ Colorado Department of Revenue (Provided by the Marijuana Policy Group). [Market Size and Demand for Marijuana in Colorado](#), 2014, p. 27.

²⁸ Staff. ["Legalising Cannabis: Reeferegulatory Challenges,"](#) in *The Economist*, February 13, 2016.

²⁹ Marijuana Policy Group. [The Economic Impact of Marijuana Legalization in Colorado](#), October 2016, p. 6.

³⁰ Rosalie Wyonch. ["With Legal Weed the Government Must Choose Revenue or Regulated Market, Not Both,"](#) in *Intelligence Memos*, April 10, 2017, p. 1.

³¹ Abigail Geiger (Pew Research Center). ["Support for Marijuana Legalization Continues to Rise,"](#) in *FactTank*, October 12, 2016; and Seth Motel (Pew Research Center). ["6 Facts about Marijuana,"](#) in *FactTank*, April 14, 2015.

Myth: Legalizing marijuana will double traffic fatalities.

Fact: Preliminary data on traffic fatalities is mixed at best.

In states that have legalized recreational or medical marijuana, traffic collisions involving drivers testing positive for marijuana have increased. Opponents of legalization often site these statistics as one of the dangers of normalizing marijuana. Driving while impaired by any drug is dangerous and should be prohibited, but it is irresponsible to make incorrect inferences from the limited data.

In exploring potential connections between marijuana use and traffic fatalities, the National Highway Traffic Safety Administration (NHTSA) cautions that "drug presence does not necessarily imply impairment."³² Since marijuana can be detected for a period of days or weeks after ingestion, drug presence remains long after impairment ends. Accordingly, any data associating the passage of medical and adult-use cannabis legislation with traffic fatalities warrants a degree of scrutiny.

That said, existing studies on marijuana legalization and highway safety are largely inconclusive.

In a recent examination of fatal car accidents, the Cato Institute found no major increase in fatal crashes following the passage of medical and adult-use cannabis laws in Colorado, Washington, Oregon, and Alaska.³³

The National Highway Traffic Safety Administration (NHTSA) conducted the largest and most comprehensive study on drug crash risk in the United States. Notably, the study found that after accounting for variables like age, gender, race/ethnicity, and alcohol consumption, "there was no significant contribution of drugs to crash risk."³⁴

Additionally, traffic data from Colorado and Washington is being misinterpreted. The Washington Traffic Safety Commission (WTSC) released data in 2015 indicating the number of drivers involved in fatal crashes with active THC in their blood increased from 38 in 2013 to 75 in 2014. However, the reasons for the increases are not entirely clear. As the Seattle Times reported, "One obvious reason is that state-regulated pot stores opened in 2014, providing access to legal weed. But the first few stores didn't open until July, and their supply was scarce."³⁵ The article went on to say, "What's more, there were more marijuana-involved fatal crashes in the first half of 2014, before stores opened, than in the second half of the year."³⁶ Half of these drivers were also under the influence of alcohol, and the majority of those were intoxicated. Shelly Baldwin, the spokesperson for the WTSC, acknowledged that the presence of marijuana in a driver's system is an important factor to monitor but that it does not necessarily lead to collisions.³⁷

In Colorado, the number of traffic fatalities has slightly increased since marijuana was legalized. In 2012, the year Colorado voters legalized recreational marijuana, there were 474 traffic fatalities.³⁸ This figure

³² US Department of Transportation, National Highway Traffic Safety Administration. *Results of the 2013-2014 National Roadside Survey of Alcohol and Drug Use by Drivers*, February 2015, p. 2.

³³ Angela Dills, Sietse Goffard, and Jeffrey Miron (Cato Institute). *Dose of Reality: The Effects of State Marijuana Legalizations*, September 2016, p. 18.

³⁴ US Department of Transportation, National Highway Traffic Safety Administration. *Drug and Alcohol Crash Risk: A Case-Control Study*, December 2016, p. 5.

³⁵ Bob Young. "[More Pot Use Found in Fatal Crashes, Data Says](#)," in *The Seattle Times*, August 19, 2015.

³⁶ Bob Young. "[More Pot Use Found in Fatal Crashes, Data Says](#)," in *The Seattle Times*, August 19, 2015.

³⁷ Bob Young. "[More Pot Use Found in Fatal Crashes, Data Says](#)," in *The Seattle Times*, August 19, 2015.

³⁸ Colorado Department of Transportation. [Drugged Drivers Involved in Car Crashes](#), 2014.

increased to 481 in 2013 and 488 in 2014. Traffic fatalities were significantly higher in Colorado in the years prior to the state establishing any marijuana regulations. Colorado established laws to regulate medical marijuana in 2009 and voters approved recreational sales in 2012. Between 2009 and 2014 the average number of traffic fatalities in Colorado was 467.5 compared to an average of 592 traffic fatalities between 2003 and 2008.³⁹ This does not necessarily suggest that legalizing marijuana is related to safer roads, but rather that traffic data varies significantly over time, and it is difficult to have definitive answers without more exhaustive studies. 52 percent of drivers in Colorado who tested positive for marijuana also tested positive for alcohol and an additional 15 percent tested positive for other drugs.⁴⁰ Regarding the available data on marijuana-impaired data Glenn Davis, the Colorado Department of Transportation's Highway Safety Manager, said "We really do not have accurate data. I recognize that marijuana impairment is going to be a challenge for us. Davis added "I would say the increased availability of marijuana to the driving public has some impact on crashes, but we don't know."⁴¹

³⁹ Colorado Department of Transportation. [Drugged Drivers Involved in Car Crashes](#), 2014.

⁴⁰ Rocky Mountain High Intensity Drug Trafficking Area. [The Legalization of Marijuana in Colorado: The Impact](#), September 2015.

⁴¹ Peter Hecht. ["What Stoned Driving Looks Like and How California Might Regulate It,"](#) in *The Sacramento Bee*, September 16, 2016.