The Legalization of Marijuana in Colorado: *The Impact*

Volume 6

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Rocky Mountain High Intensity
Drug Trafficking Area

REPORT AVAILABLE AT:
www.RMHIDTA.org

PREPARED BY THE ROCKY MOUNTAIN HIDTA
STRATEGIC INTELLIGENCE UNIT
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Executive Summary

The Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) program has published annual reports every year since 2013 tracking the impact of legalizing recreational marijuana in Colorado. The purpose is to provide data and information so that policy makers and citizens can make informed decisions on the issue of marijuana legalization.

Section I: Traffic Fatalities & Impaired Driving

- Since recreational marijuana was legalized, traffic deaths in which drivers tested positive for marijuana **increased 109 percent** while all Colorado traffic deaths **increased 31 percent.**
- Since recreational marijuana was legalized, traffic deaths involving drivers who tested positive for marijuana **more than doubled** from 55 in 2013 to 115 people killed in 2018.
    - This equates to one person killed every 3 days in 2018 compared to one person killed every 6 ½ days in 2013.
- Since recreational marijuana was legalized, the percentage of all Colorado traffic deaths that were marijuana related **increased from 15 percent** in 2013 **to 23 percent** in 2018.

Section II: Marijuana Use

Since recreational marijuana was legalized:

- Past month marijuana use for ages 12 and older **increased 58 percent** and is **78 percent** higher than the national average, currently ranked **4th** in the nation.
- Adult marijuana use **increased 94 percent** and is **96 percent higher** than the national average, currently ranked **4th** in the nation.
- College age marijuana use **increased 18 percent** and is **48 percent higher** than the national average, currently ranked **6th** in the nation.
- Youth marijuana use **decreased 14 percent** and is **40 percent higher** than the national average, currently ranked **6th** in the nation.

Section III: Public Health

- The yearly number of emergency department visits related to marijuana **increased 54 percent** after the legalization of recreational marijuana (2013 compared to 2017).
- The yearly number of marijuana-related hospitalizations **increased 101 percent** after the legalization of recreational marijuana (2013 compared to 2017).
- Marijuana *only* exposures more than **quadrupled** in the six-year average (2013-2018) since recreational marijuana was legalized compared to the six-year average (2007-2012) prior to legalization.
- The percent of suicide incidents in which toxicology results were positive for marijuana has **increased** from **14 percent** in 2013 to **23 percent** in 2017.

Section IV: Black Market

- RMHIDTA Colorado Drug Task Forces (10) conducted **257 investigations** of black market marijuana in Colorado resulting in:
    - **192** felony arrests
    - **6.08 tons** of marijuana seized
    - **60,091** marijuana plants seized
    - **25** different states the marijuana was destined
- Seizures of Colorado marijuana in the U.S. mail system has **increased 1,042 percent** from an average of 52 parcels (2009-2012) to an average of 594 parcels (2013-2017) during the time recreational marijuana has been legal.

Section V: Societal Impact

- Marijuana tax revenue represent approximately **nine tenths of one percent** of Colorado's FY 2018 budget.

  64 percent of local jurisdictions in Colorado have banned medical and recreational marijuana businesses.

Introduction

Purpose

The purpose of this annual report is to document the impact of the legalization of marijuana for medical and recreational use in Colorado. Colorado serves as an experimental lab for the nation to determine the impact of legalizing marijuana. This is an important opportunity to gather and examine meaningful data and identify trends. Citizens and policymakers nationwide may want to delay any decisions on this important issue until there is sufficient and accurate data to make informed decisions. Readers are encouraged to review previous volumes of this report for a comprehensive understanding of the topic. These reports were prepared to identify data and trends related to the legalization of marijuana so that informed decisions can be made regarding this issue.

Background

It is important to note that, for purposes of the debate on legalizing marijuana in Colorado, there are three distinct timeframes to consider: the early medical marijuana era (2000-2008), the medical marijuana commercialization era (2009 – current) and the recreational marijuana era (2013 – current).

- **2000 – 2008, Early Medical Marijuana Era:** In November 2000, Colorado voters passed Amendment 20 which permitted a qualifying patient, and/or caregiver of a patient, to possess up to 2 ounces of marijuana and grow 6 marijuana plants for medical purposes. During that time there were between 1,000 and 4,800 medical marijuana cardholders and no known dispensaries operating in the state.
- **2009 – Current, Medical Marijuana Commercialization Era:** Beginning in 2009 due to a number of events, marijuana became de facto legalized through the commercialization of the medical marijuana industry. By the end of 2012, there were over 100,000 medical marijuana cardholders and 500 licensed dispensaries operating in Colorado. There were also licensed cultivation operations and edible manufacturers.

- **2013 – Current, Recreational Marijuana Legalization Era:** In November 2012, Colorado voters passed Constitutional Amendment 64 which legalized marijuana for recreational purposes for anyone over the age of 21. The amendment also allowed for licensed marijuana retail stores, cultivation operations and edible manufacturers. Retail marijuana businesses became operational January 1, 2014.

NOTE:

DATA, IF AVAILABLE, WILL COMPARE PRE- AND POST-2009 WHEN MEDICAL MARIJUANA BECAME COMMERCIALIZED AND AFTER 2013 WHEN RECREATIONAL MARIJUANA BECAME LEGALIZED.

MULTI-YEAR COMPARISONS ARE GENERALLY BETTER INDICATORS OF TRENDS. ONE-YEAR FLUCTUATIONS DO NOT NECESSARILY REFLECT A NEW TREND.

PERCENTAGE COMPARISONS MAY BE ROUNDED TO THE NEAREST WHOLE NUMBER.

PERCENT CHANGES FOUND WITHIN GRAPHS WERE CALCULATED AND ADDED BY RMHIDTA.

THIS REPORT WILL CITE DATASETS WITH TERMS SUCH AS "MARIJUANA-RELATED" OR "TESTED POSITIVE FOR MARIJUANA." THAT DOES NOT NECESSARILY PROVE THAT MARIJUANA WAS THE CAUSE OF THE INCIDENT.

Section I: Traffic Fatalities & Impaired Driving

Some Findings

- Since recreational marijuana was legalized, traffic deaths in which drivers tested positive for marijuana **increased 109 percent** while all Colorado traffic deaths **increased 31 percent.**
- Since recreational marijuana was legalized, traffic deaths involving drivers who tested positive for marijuana **more than doubled** from 55 in 2013 to 115 people killed in 2018.
    - This equates to one person killed every 3 days in 2018 compared to one person killed every 6 ½ days in 2013.
- Since recreational marijuana was legalized, the percentage of all Colorado traffic deaths that were marijuana related **increased from 15 percent** in 2013 **to 23 percent** in 2018.

Definitions by Rocky Mountain HIDTA

Driving Under the Influence of Drugs (DUID): DUID could include alcohol in combination with drugs. This is an important measurement since the driver's ability to operate a vehicle was sufficiently impaired that it brought his or her driving to the attention of law enforcement. The erratic driving and the subsequent evidence that the subject was under the influence of marijuana helps confirm the causation factor.

Marijuana-Related: Also called "marijuana mentions," is any time marijuana shows up in the toxicology report. It could be marijuana only or marijuana with other drugs and/or alcohol.

Marijuana Only: When toxicology results show marijuana and no other drugs or alcohol.

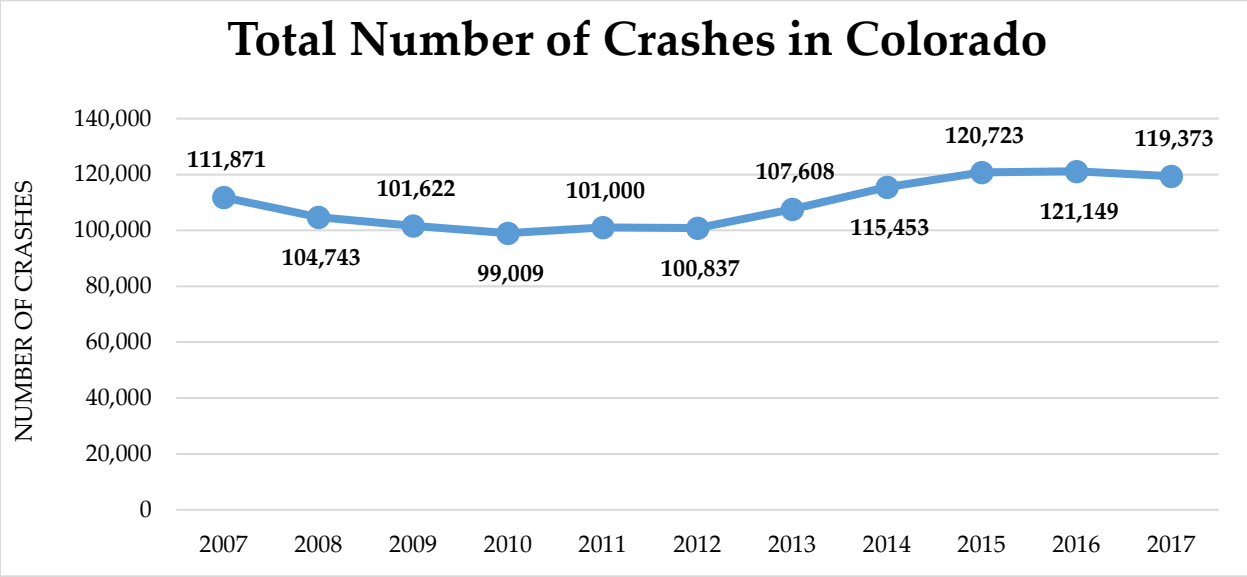
Fatalities: Any death resulting from a traffic crash involving a motor vehicle.

Operators: Anyone in control of their own movements such as a driver, pedestrian or bicyclist.

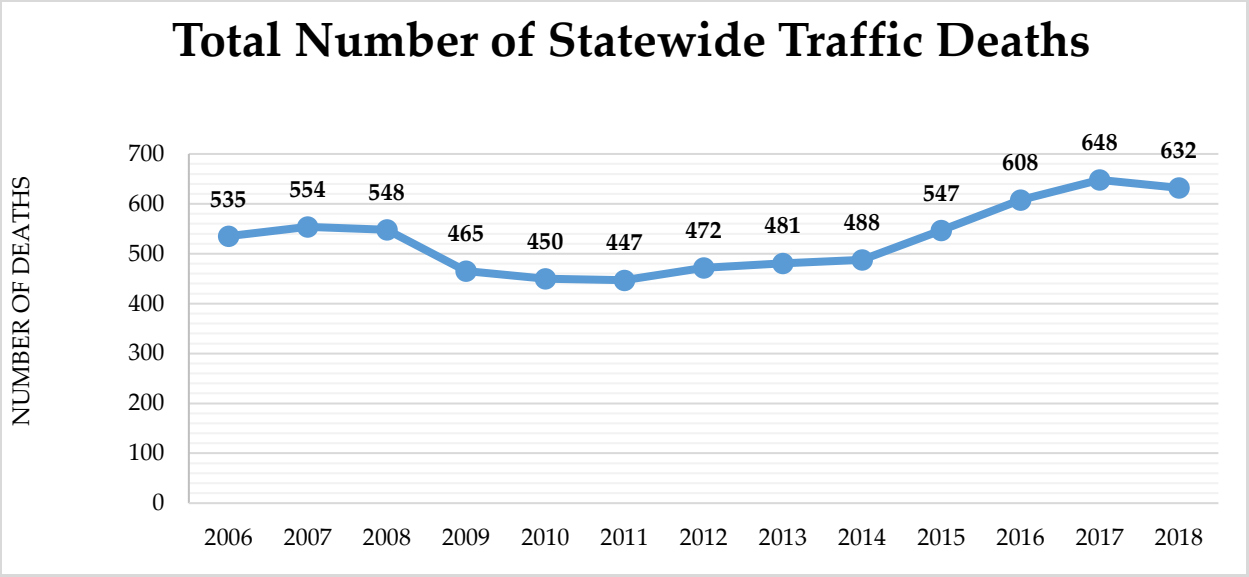
Drivers: An occupant who is in physical control of a transport vehicle. For an out-of-control vehicle, an occupant who was in control until control was lost.

Personal Conveyance: Non-motorized transport devices such as skateboards, wheelchairs (including motorized wheelchairs), tricycles, foot scooters, and Segways. These are more or less non-street legal transport devices.

Traffic Fatalities



SOURCE: Colorado Department of Transportation



- In 2018 there were a total of 632 traffic deaths. Of which:
  - 396 were drivers
  - 124 were passengers
  - 89 were pedestrians
  - 22 were bicyclists
  - 1 was a personal conveyance

SOURCE: **National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018**

Traffic Deaths Related to Marijuana When a DRIVER Tested Positive for Marijuana			
Crash Year	**Total Statewide Fatalities**	**Fatalities with Drivers Testing Positive for Marijuana**	**Percentage Total Fatalities**
2006	535	33	6.17%
2007	554	32	5.78%
2008	548	36	6.57%
2009	465	41	8.82%
2010	450	46	10.22%
2011	447	58	12.98%
2012	472	65	13.77%
2013	481	55	11.43%
2014	488	75	15.37%
2015	547	98	17.92%
2016	608	125	20.56%
2017	648	138	21.30%
2018	632	115	18.20%

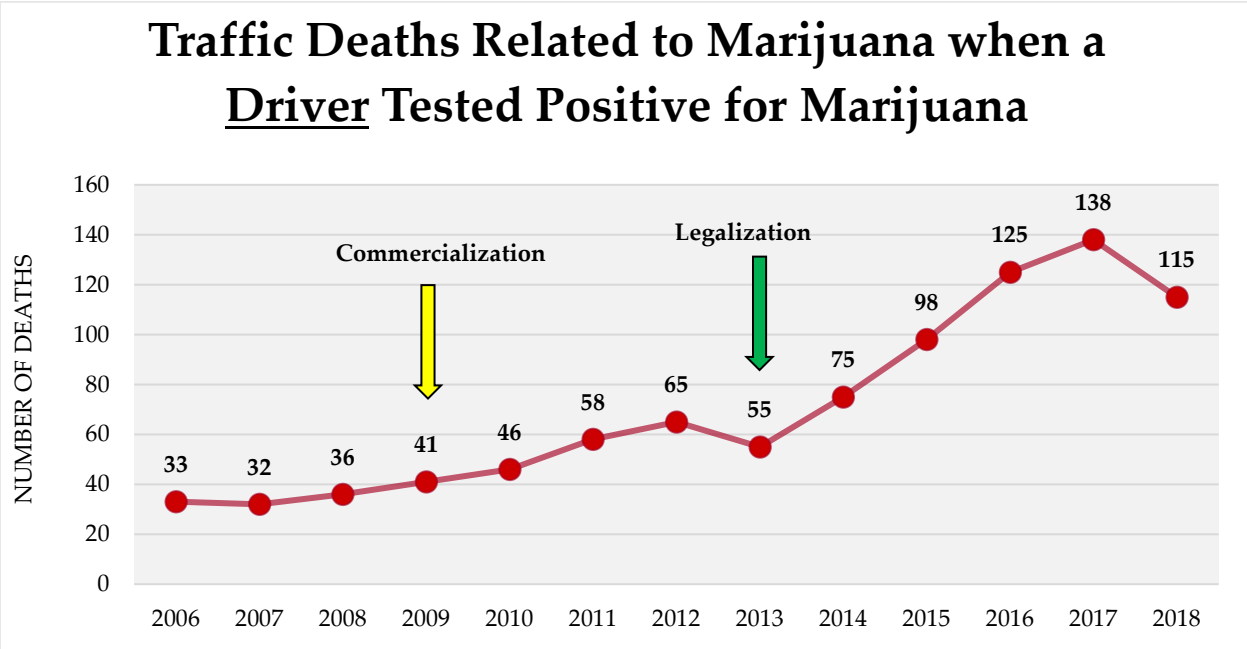
- In 2018 there were a total of 115 marijuana-related traffic deaths when a driver tested positive for marijuana. Of which:
  - 92 were drivers
  - 17 were passengers
  - 5 were pedestrians
  - 1 was a personal conveyance

SOURCE: National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018

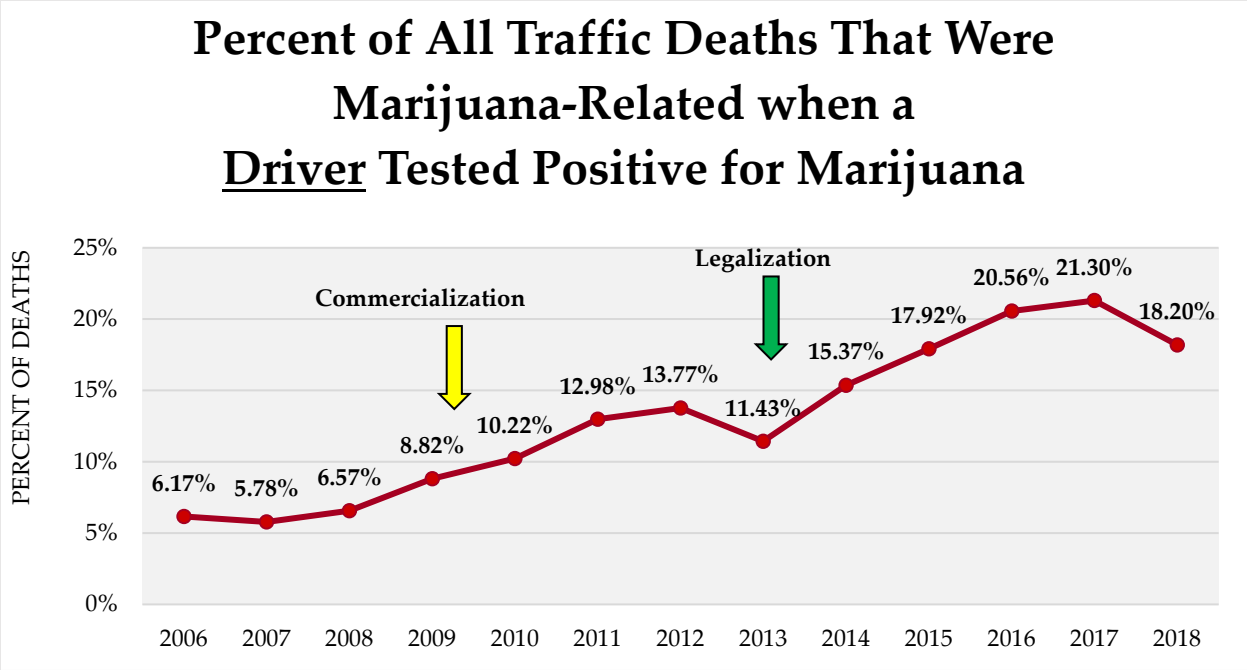
NOTE: In 2018, 87% of drivers' blood was tested after being involved in a fatal crash.

- **In 2018, of the 109 drivers in fatal wrecks who tested positive for marijuana use, 83 were found to have Delta 9 tetrahydrocannabinol, or THC, the psychoactive ingredient in marijuana, in their blood, <u>indicating use within hours</u>, according to state data. Of those, 43 percent were over 5 nanograms per milliliter, the state *per se* limit for driving.**

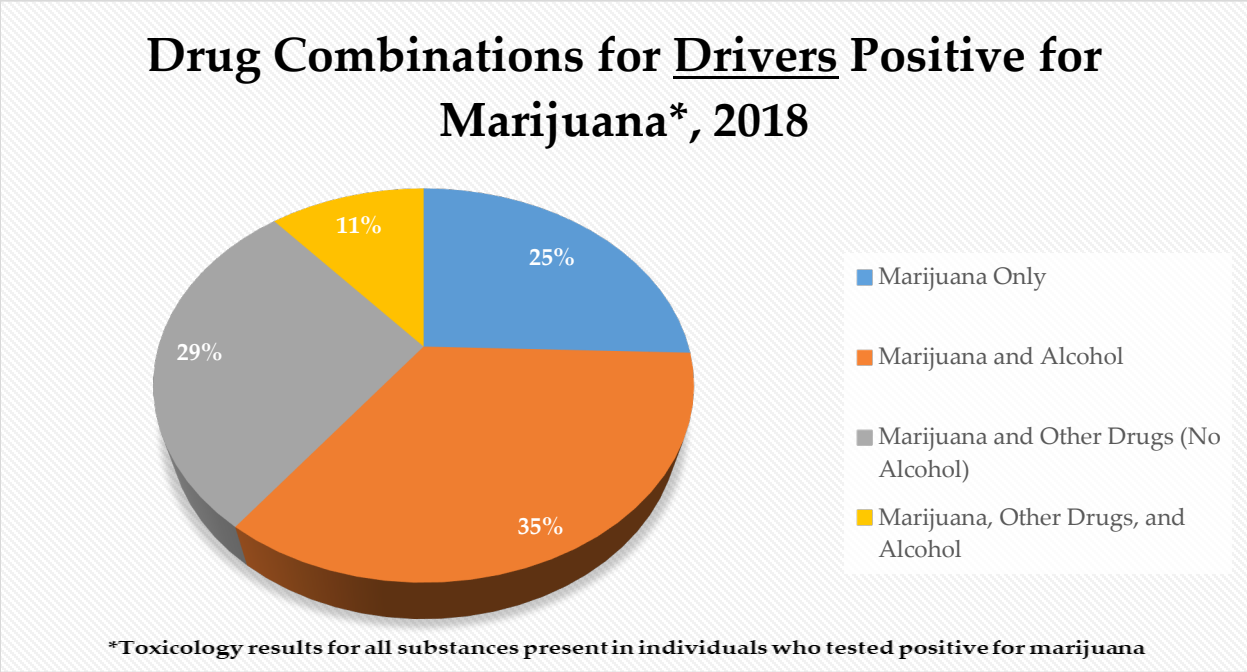
  -- Similar to findings from the August 2017 article by David Migoya, "Exclusive: Traffic fatalities linked to marijuana are up sharply in Colorado. Is legalization to blame?" *The Denver Post*.



SOURCE: National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018



SOURCE: **National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018**



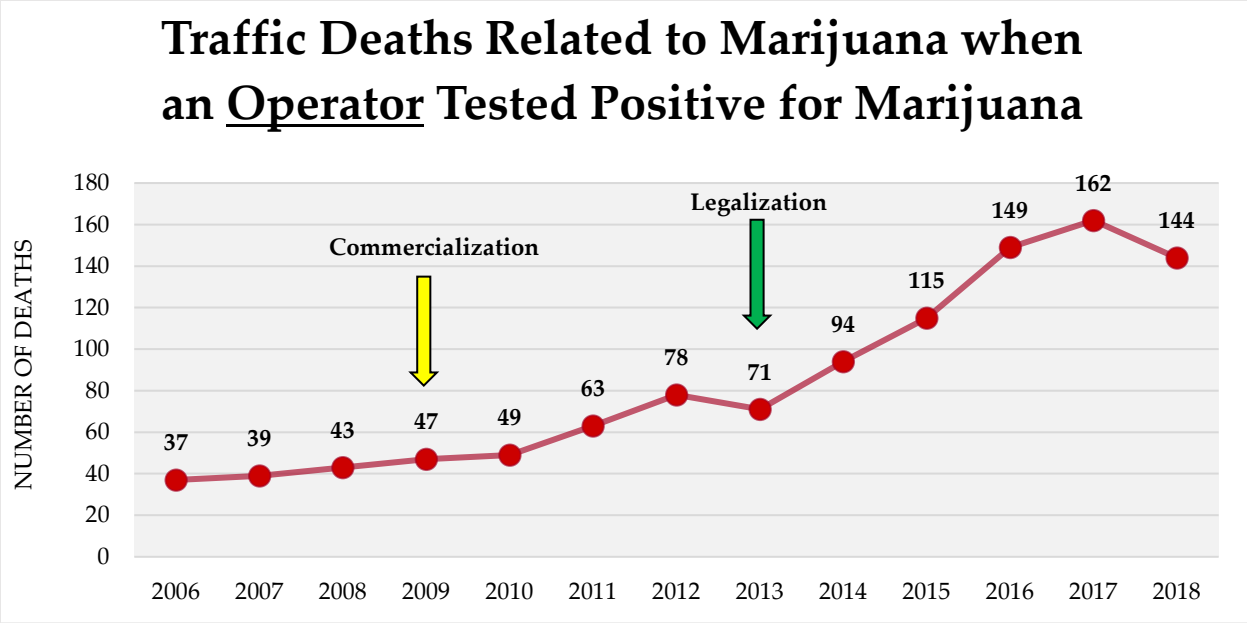
SOURCE: **National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018**

Traffic Deaths Related to Marijuana When an OPERATOR Tested Positive for Marijuana			
Crash Year	**Total Statewide Fatalities**	**Fatalities with Operators Testing Positive for Marijuana**	**Percentage Total Fatalities**
2006	535	37	6.92%
2007	554	39	7.04%
2008	548	43	7.85%
2009	465	47	10.10%
2010	450	49	10.89%
2011	447	63	14.09%
2012	472	78	16.53%
2013	481	71	14.76%
2014	488	94	19.26%
2015	547	115	21.02%
2016	608	149	24.51%
2017	648	162	25.00%
2018	632	144	23.00%

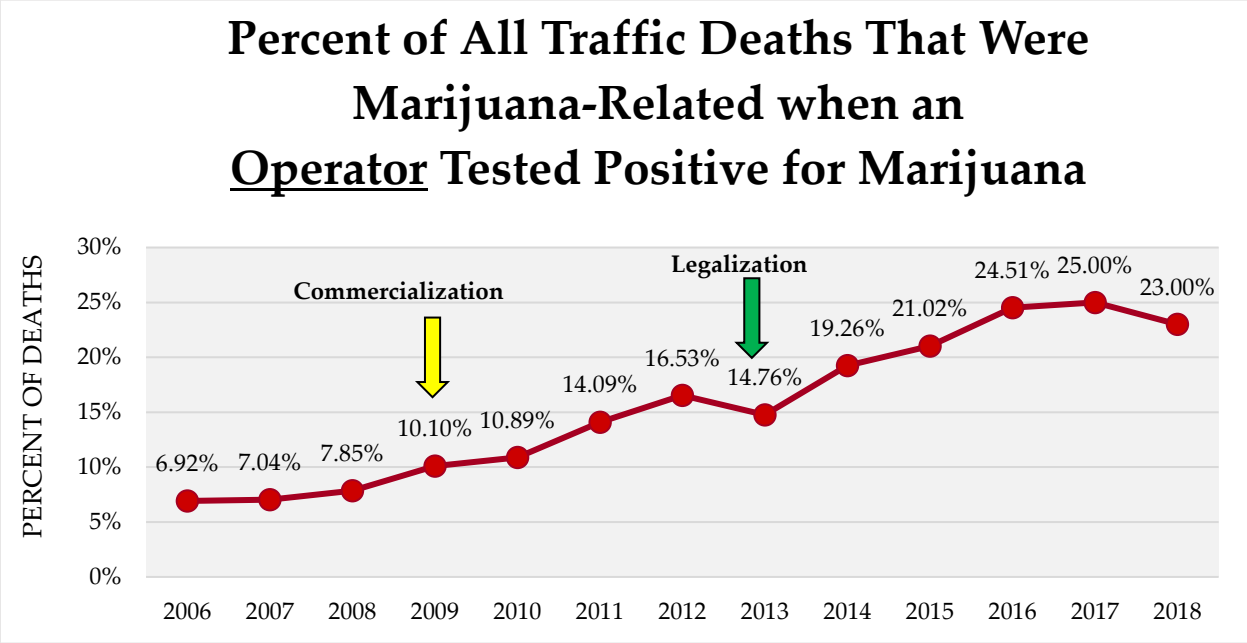
- In 2018 there were a total of 144 marijuana-related traffic deaths when an operator tested positive for marijuana. Of which:
  - 92 were drivers
  - 28 were pedestrians
  - 17 were passengers
  - 6 were bicyclists
  - 1 was a personal conveyance

SOURCE: National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018

NOTE: In 2018, 86% of operator's blood was tested after being involved in a fatal crash.



SOURCE: **National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018**



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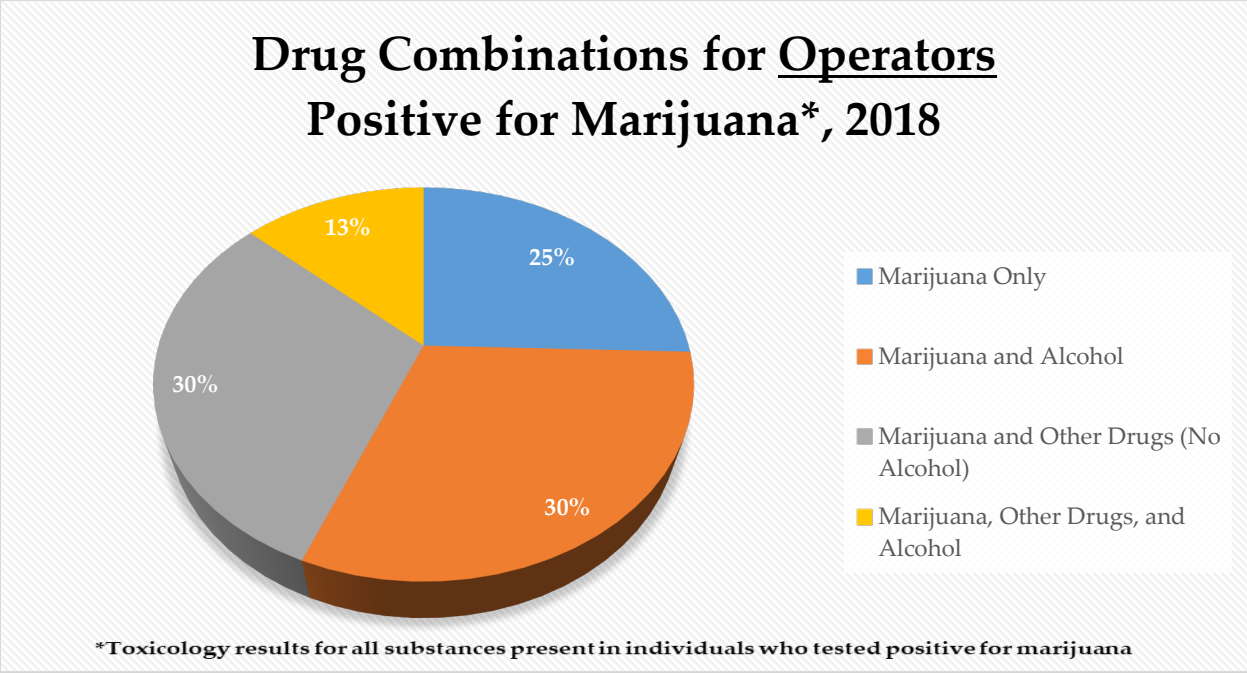
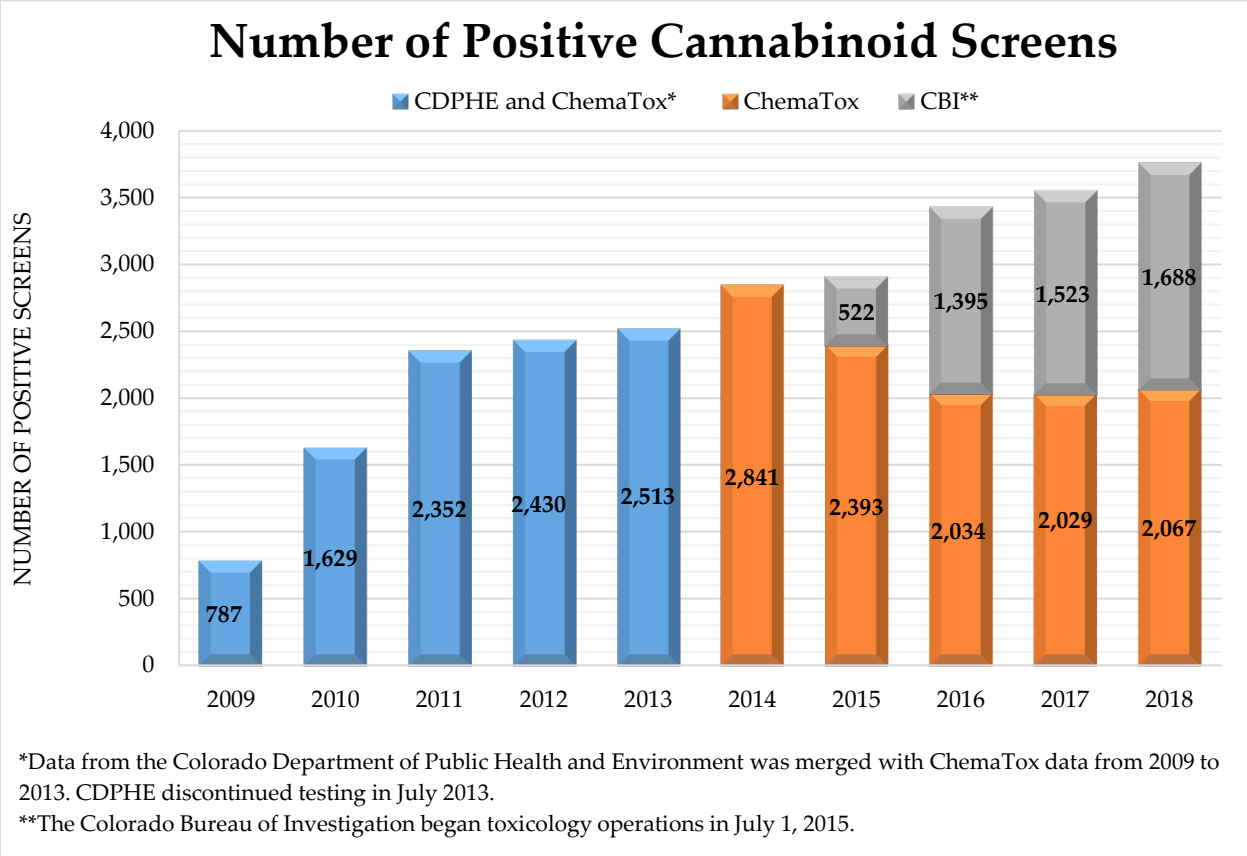


SOURCE: National Highway Traffic Safety Administration, Fatality Analysis Reporting System (FARS), 2006-2011 and Colorado Department of Transportation 2012-2018

Impaired Driving

NOTE: When a driver is arrested for impaired driving related to alcohol (usually 0.08 or higher blood alcohol content), typically tests for other drugs (including marijuana) are not requested since there is no additional punishment if the test comes back positive.



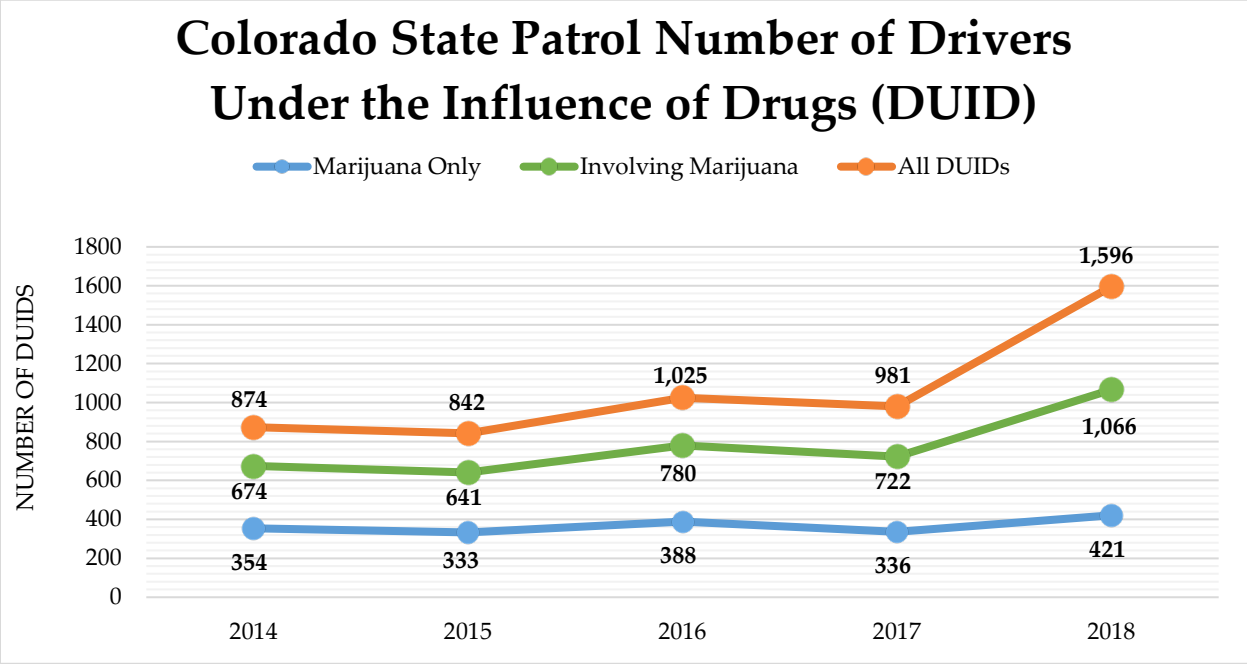
SOURCE: Colorado Bureau of Investigation, ChemaTox, and Rocky Mountain HIDTA

- The above graph is Rocky Mountain HIDTA's conversion of ChemaTox data as well as data from the Colorado Bureau of Investigation's state laboratory.

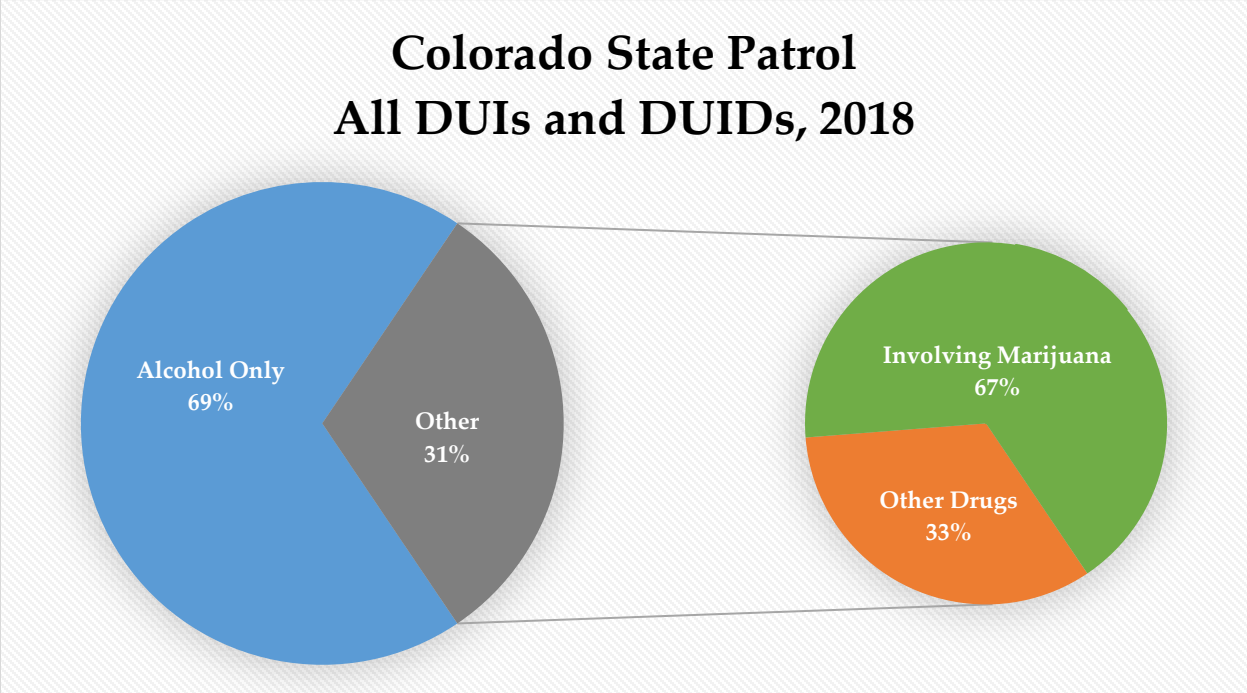
NOTE: The above graphs include data from ChemaTox laboratory which was merged with data supplied by the Colorado Department of Public Health and Environment – Toxicology Laboratory. The vast majority of the screens are DUID submissions from Colorado law enforcement.

NOTE: "Marijuana Citations are defined as any citation where the contact was cited for DUI or DWAI and marijuana information was filled out on the traffic stop form indicating marijuana & alcohol, marijuana & other controlled substances, or marijuana only present based on officer opinion only (no toxicological confirmation)."

-Colorado State Patrol



SOURCE: Colorado State Patrol



SOURCE: Colorado State Patrol, CSP Citations for Drug Impairment by Drug Type

Impaired Driving Information

Colorado Department of Public Health & Environment (Health Statements)

The following statements have been summarized for the purpose of brevity:

- Driving soon after using marijuana increases the risk of a motor vehicle crash.
- For less-than-weekly marijuana users, smoking, eating, or drinking marijuana containing 10mg or more of THC is likely to cause impairment that affects your ability to drive, bike, or perform other safety-sensitive activities.
- Use caution when driving, biking, or performing other safety-sensitive activities after using any form of marijuana or marijuana product.
- Using alcohol and marijuana together increases impairment and the risk of a motor vehicle crash more than using either substance alone.

SOURCE: Colorado Department of Public Health and Environment. (2019). *Public health statements* (summarized). Retrieved from https://www.colorado.gov/pacific/marijuanahealthinfo/public-health-statements

Colorado Division of Criminal Justice, Department of Public Safety, Driving under the Influence of Drugs and Alcohol (June 2019)

- "Drug impaired driving has tangible impacts on public safety. Nationally, drug detection in fatally-injured drivers with toxicology results has been steadily increasing…"
- "For cases in which law enforcement officers detect alcohol at or above the *per se* limit, they may not request additional drug testing, particularly since the cost associated with testing blood for drugs can be ten times the cost of testing for alcohol."
- "Most of the [2017 DUI] case filings that had an alcohol toxicology test had a Blood Alcohol Concentration (BAC) that was at or above the legal 0.08 per se limit…. Fewer cases… were screened for the presence of cannabinoids, and 66.2% of these… were confirmed for cannabis metabolites, including the psychoactive component of cannabis, Delta-9 THC. Of the 3,170 THC confirmation screens, approximately half (50.7% …) were at or above the legal 5 ng/mL permissible inference of impairment level. This was a 17.4% increase… from the number of defendants at or above the permissible inference of impairment level observed in the 2016… study."

SOURCE: Colorado Division of Criminal Justice, Department of Public Safety (2019). *Driving under the influence of drugs and alcohol*. http://cdpsdocs.state.co.us/ors/docs/reports/2019-DUI_HB17-1315.pdf

Recreational Marijuana and Traumatic Injury

Research published in February of 2019 examined cases in which patients were admitted to major trauma centers in Colorado (2012-2015), and the presence of marijuana among those patients. Researchers found that there was an overall increased rate of marijuana detection in Colorado hospitals, but not at non-Colorado hospitals. This data suggests that there is an increased use of marijuana and other drugs or an increased risk of injury in patients using marijuana and other drugs, after the commercialization of recreational marijuana in Colorado.

SOURCE: **Chung, C., Salottolo, K., Tanner, A.,II, Carrick, M. M., Madayag, R., Berg, G., . . . Bar-Or, D. (2019).** ***The impact of recreational marijuana commercialization on traumatic injury.*** **Injury Epidemiology, 6(1), 1-8. doi:10.1186/s40621-019-0180-4**

Legalization of Marijuana Associated with 6% Increase in Insurance Collision Claims

A 2018 report put out by the Insurance Institute for Highway Safety indicated that data regarding insurance collision claims show a 6% increase in claims in states allowing retail sales of recreational marijuana. Colorado, Washington, and Oregon legalization of retail marijuana sales were associated with a 5.2% higher rate of police-reported crashes as compared with their neighboring states without any legalization.

SOURCE: **Monfort, Samuel. (2018).** ***Effects of recreational marijuana sales on police-reported crashes in Colorado, Oregon, and Washington.*** **Insurance Institute for Highway Safety.**

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Section II: Marijuana Use

Some Findings

Since recreational marijuana was legalized:

- Past month marijuana use for ages 12 and older **increased 58 percent** and is **78 percent** higher than the national average, currently ranked **4th** in the nation.
- Adult marijuana use **increased 94 percent** and is **96 percent higher** than the national average, currently ranked **4th** in the nation.
- College age marijuana use **increased 18 percent** and is **48 percent higher** than the national average, currently ranked **6th** in the nation.
- Youth marijuana use **decreased 14 percent** and is **40 percent higher** than the national average, currently ranked **6th** in the nation.

National Survey on Drug Use and Health (NSDUH) Data

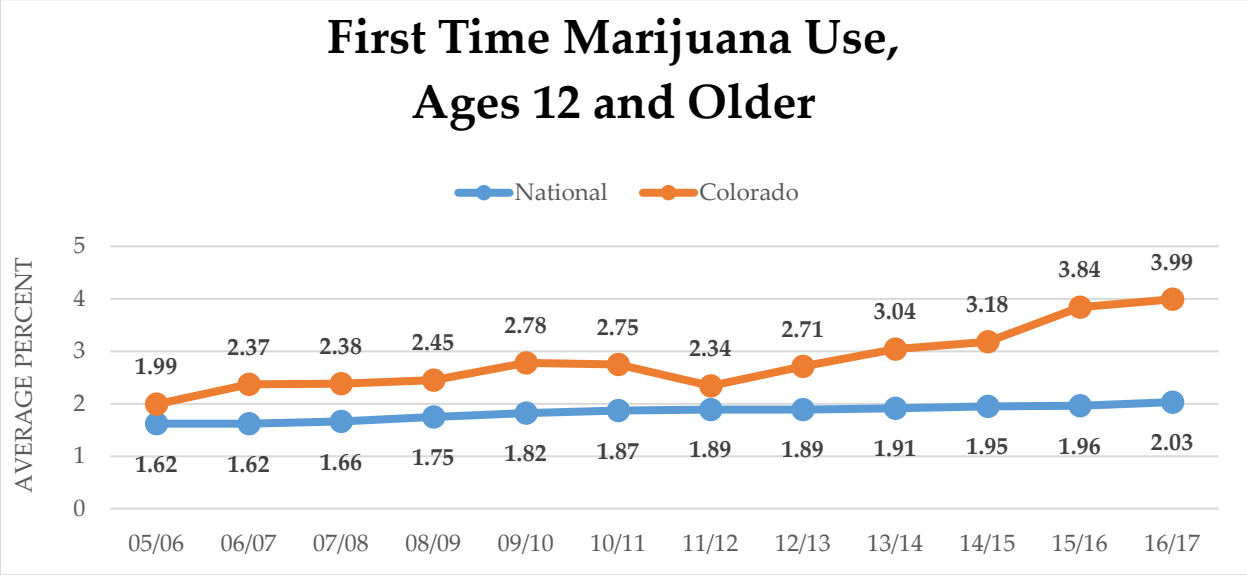
Colorado Averages Compared to National Averages, Ages 12 and Older (NSDUH 2016/2017)		
	Higher	**Lower**
Marijuana Past Month Use	78%	
Perceptions of Risk for Smoking Marijuana		39%
Age of First Use of Marijuana	97%	
Alcohol Past Month Use	16%	
Cigarette Past Month Use		14%
Perceptions of Risk for Smoking Cigarettes	2%	

SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2016 and 2017

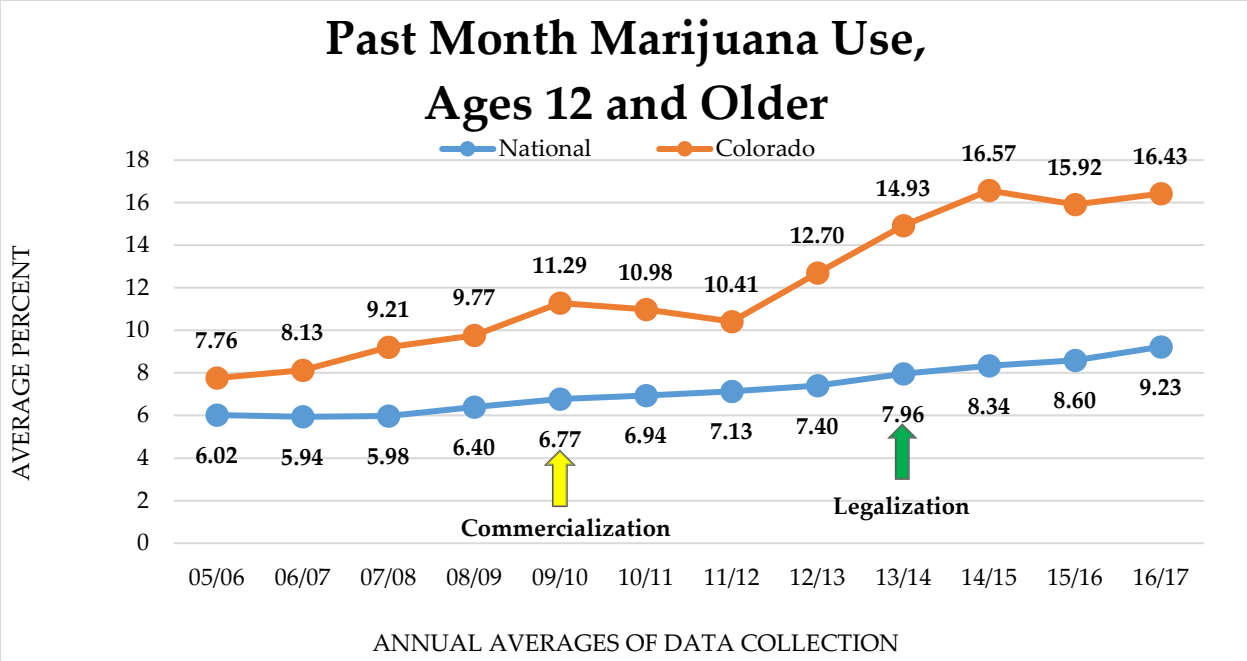
Marijuana First Time Use			
Age	**Colorado %**	**Rank**	**National %**
12 years +	**3.99%**	**1st (tied)**	**2.03%**
12 – 17	**7.89%**	**1st**	**5.22%**
18 – 25	**15.56%**	**1st**	**7.98%**
26+	**1.09%**	**2nd**	**0.45%**

SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2016 and 2017

- Colorado first time use ranks first in the nation for all age groups except for 26 and older in which it ranks second.

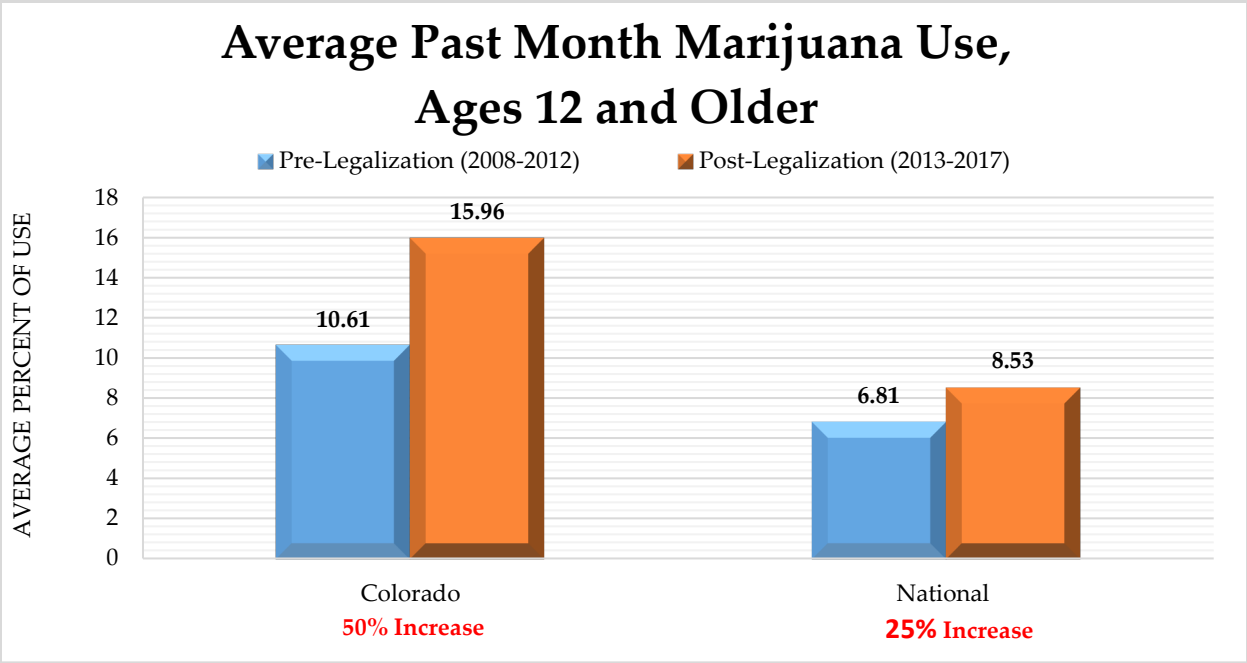


SOURCE: SAMHSA.gov, National Survey on Drug Use and Health



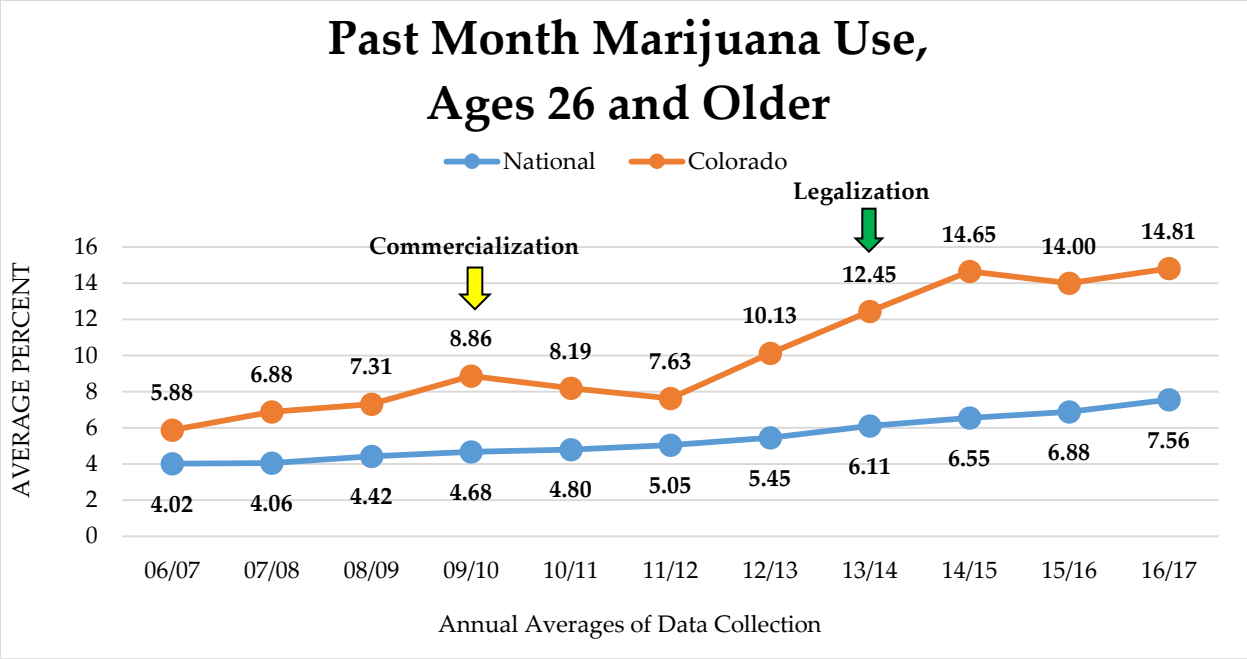
SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

- Colorado was <u>**78% higher**</u> than the National average in 2016/2017



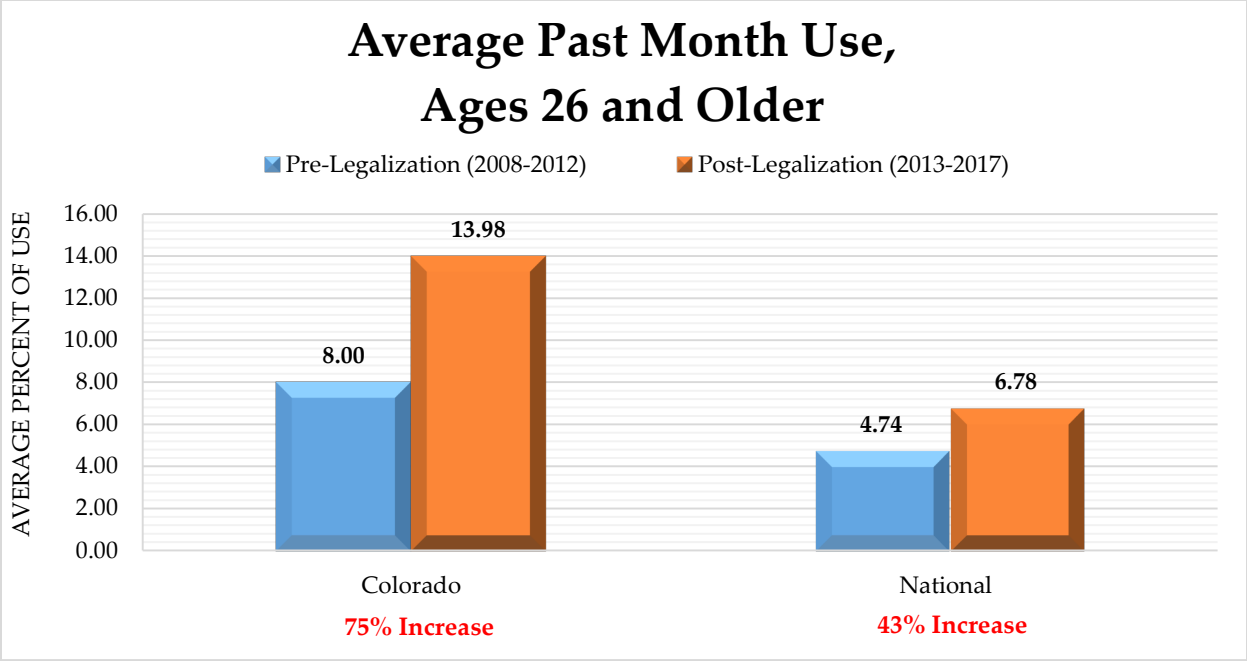
SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

NOTE: When comparing the three year averages, the years for pre-legalization include: 2009/2010; 2010/2011; and 2011/2012. Post-legalization years include: 2013/2014; 2014/2015; 2015/2016; and 2016/2017. The data for 2012/2013 was not include since it represents a year with and a year without legalization.



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

- Colorado was **96% higher** than the National average in 2016/2017



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

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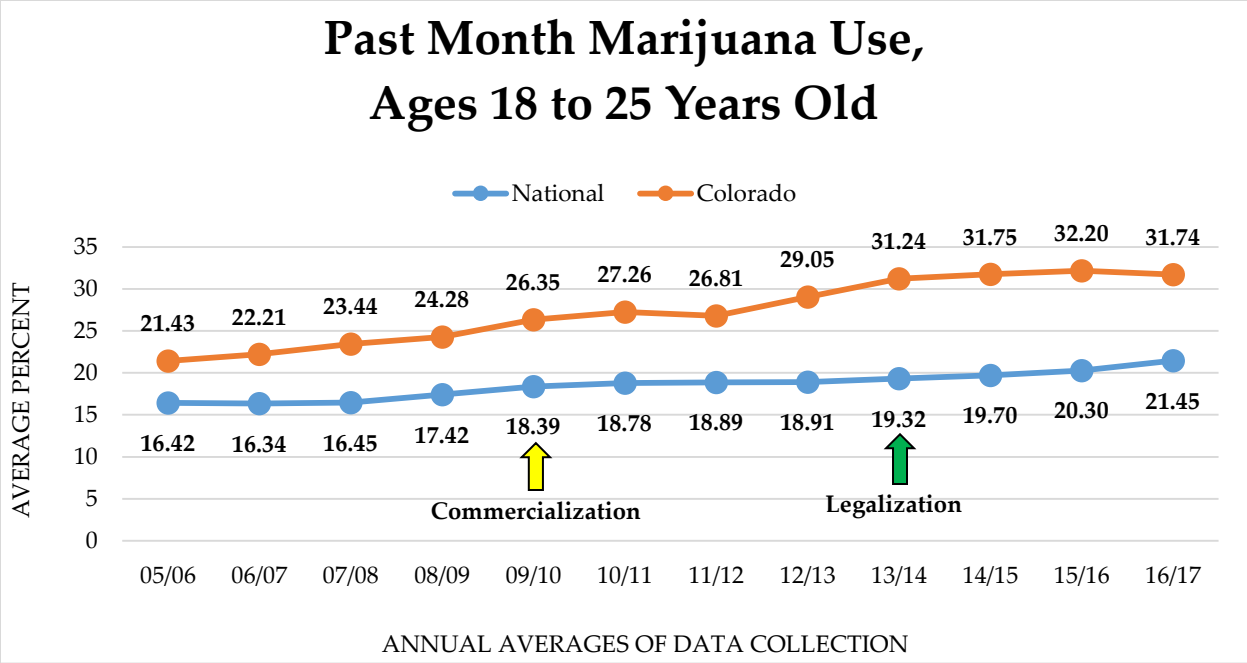
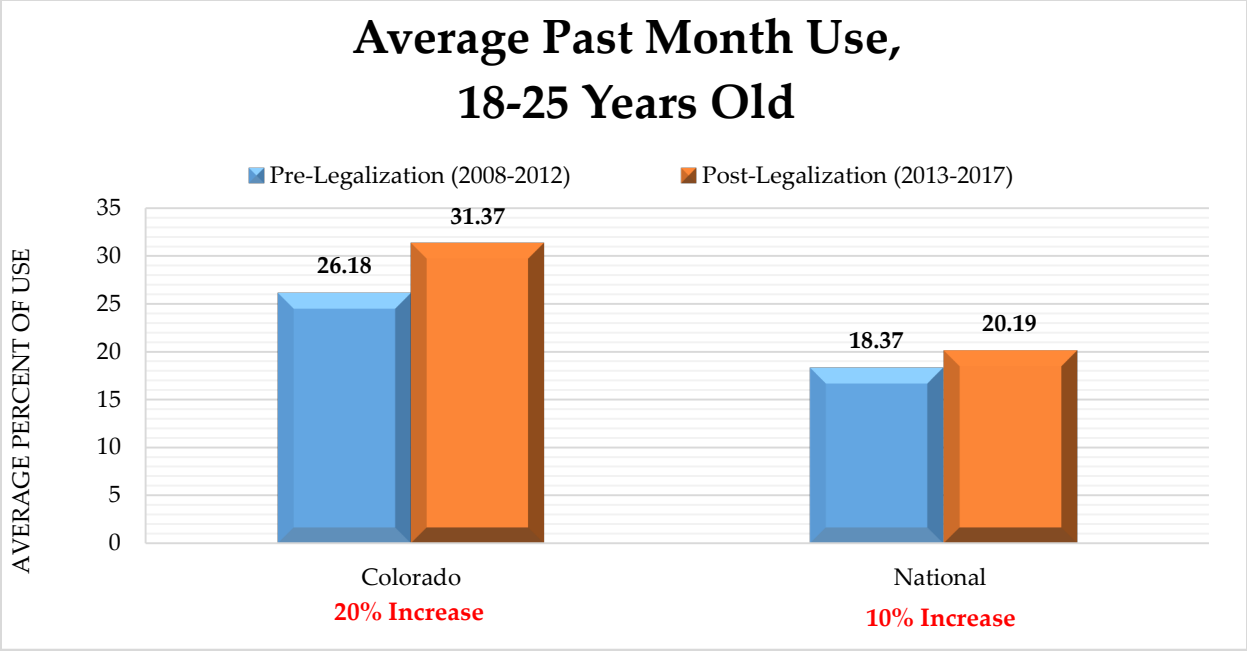


SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

- Colorado was **48% higher** than the National average in 2016/2017



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

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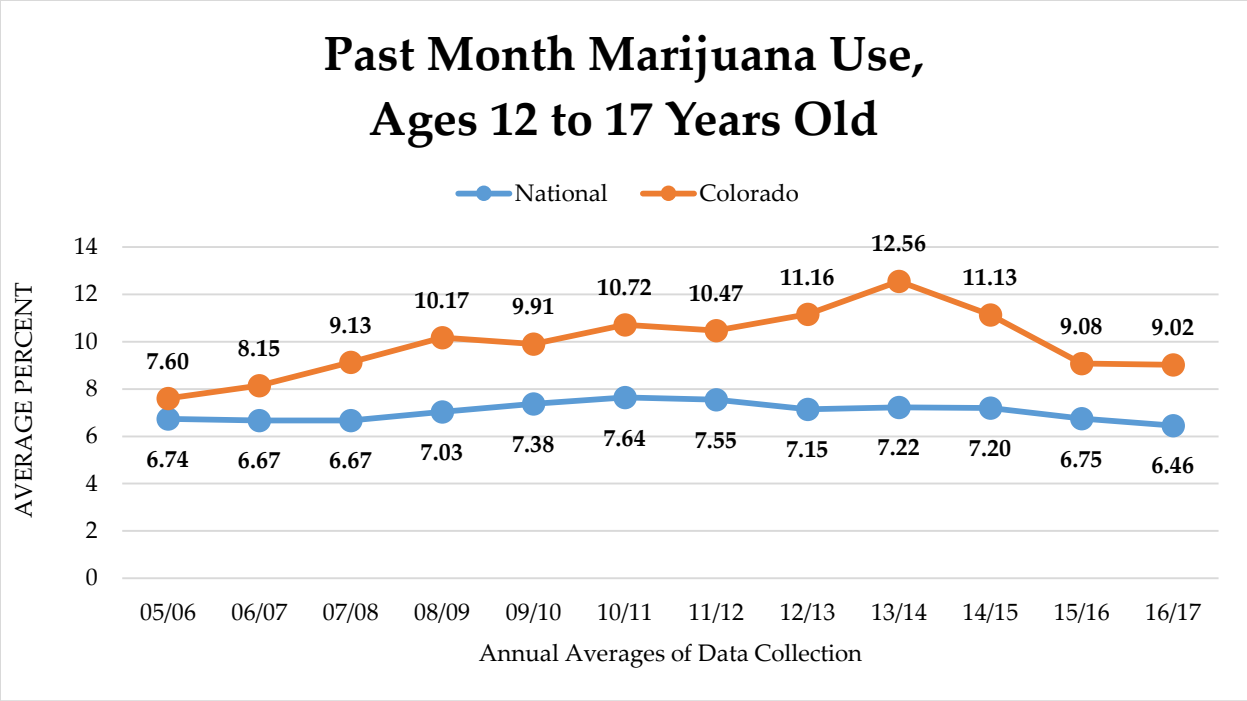
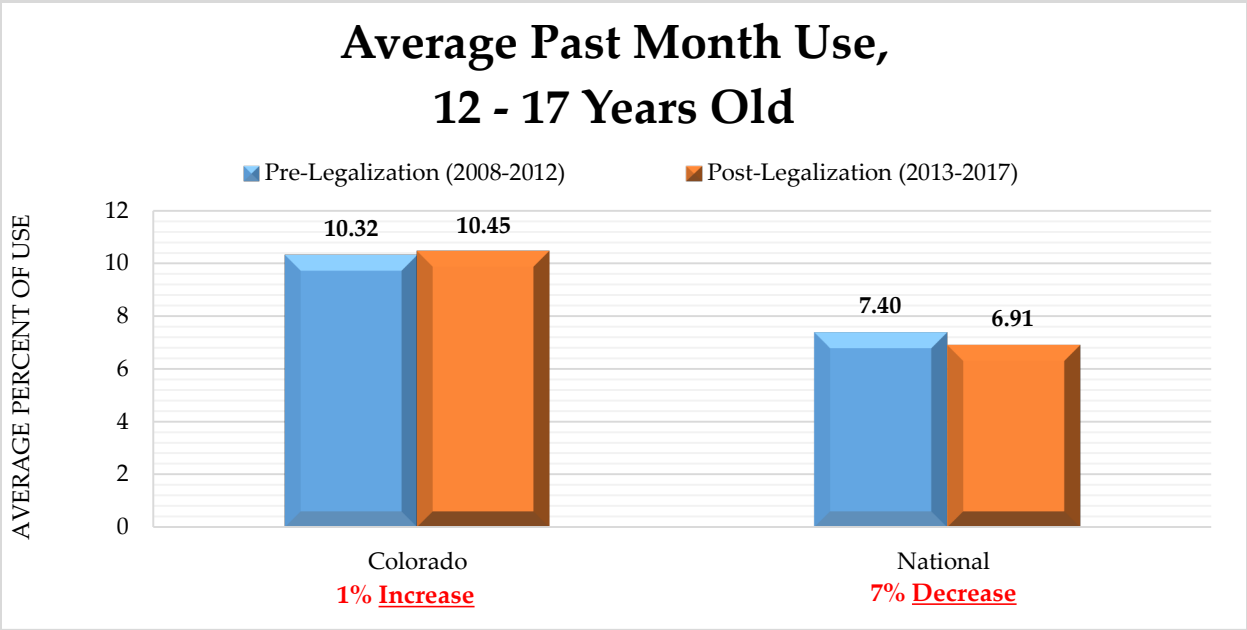


SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

- Colorado was **40% higher** than the National average in 2016/2017

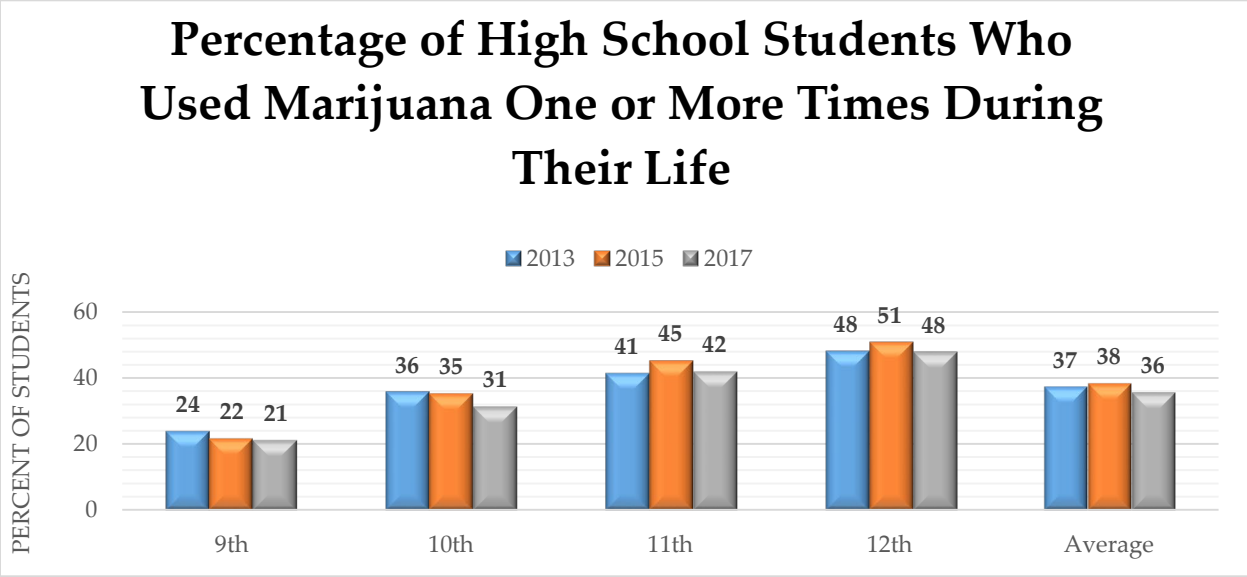


SOURCE: SAMHSA.gov, National Survey on Drug Use and Health

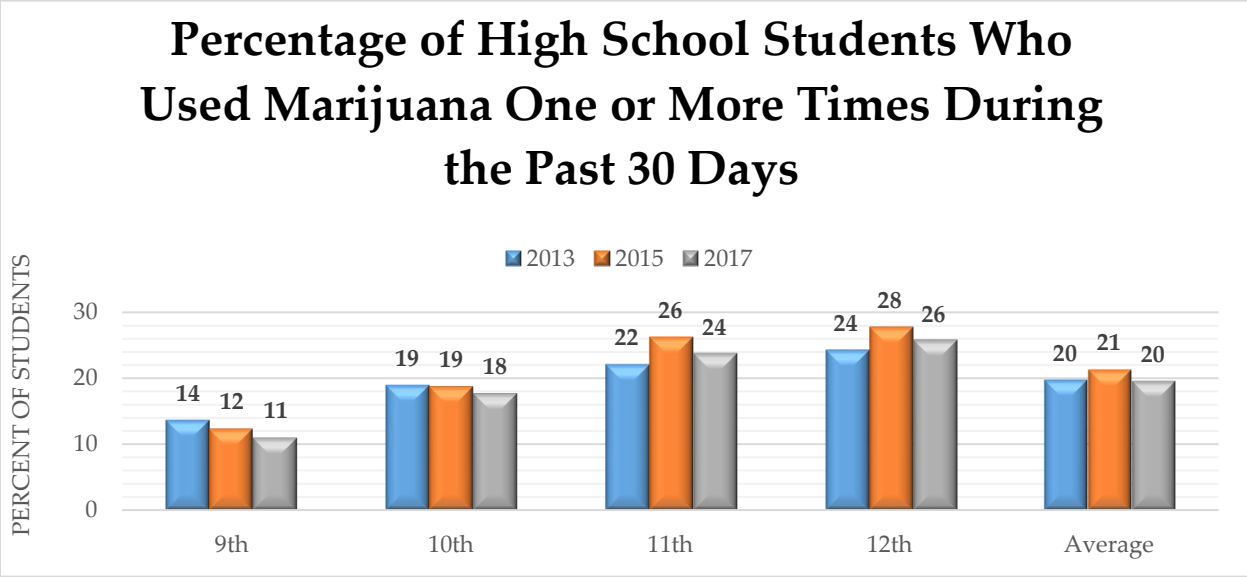
NOTE: When comparing the three year averages, the years for pre-legalization include: 2009/2010; 2010/2011; and 2011/2012. Post-legalization years include: 2013/2014; 2014/2015; 2015/2016; and 2016/2017. The data for 2012/2013 was not include since it represents a year with and a year without legalization.

Healthy Kids Colorado Survey (HKCS) Data

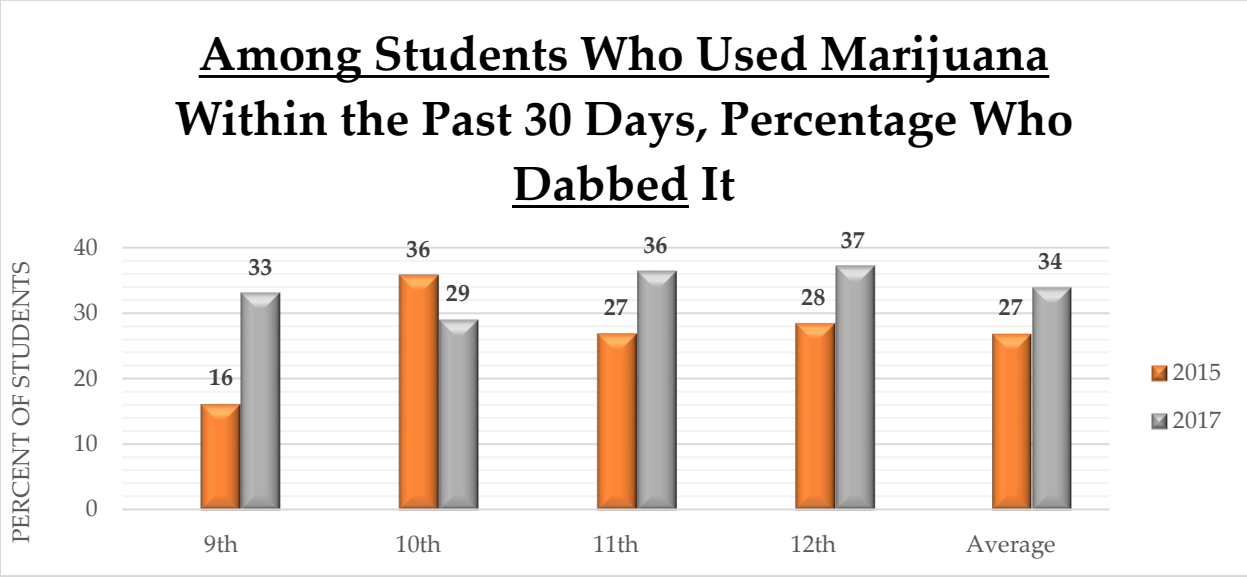
- Data is collected in the odd years and released in even years and, therefore, no new data will be available until 2020.



SOURCE: Colorado Department of Public Health and Environment, Healthy Kids Colorado Survey

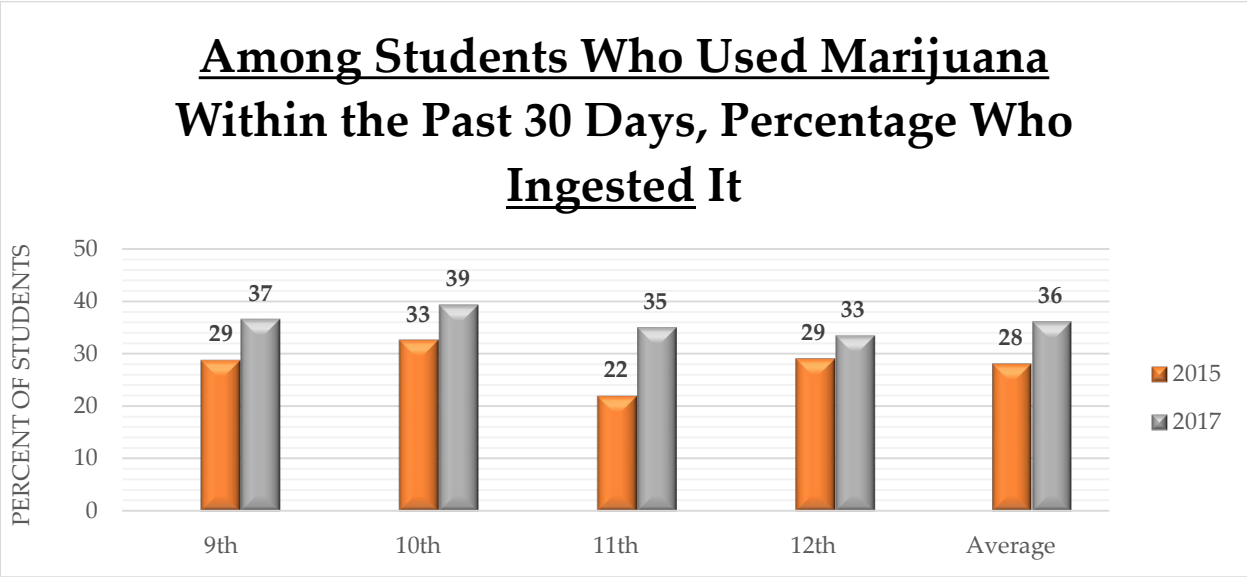


SOURCE: Colorado Department of Public Health and Environment, Healthy Kids Colorado Survey



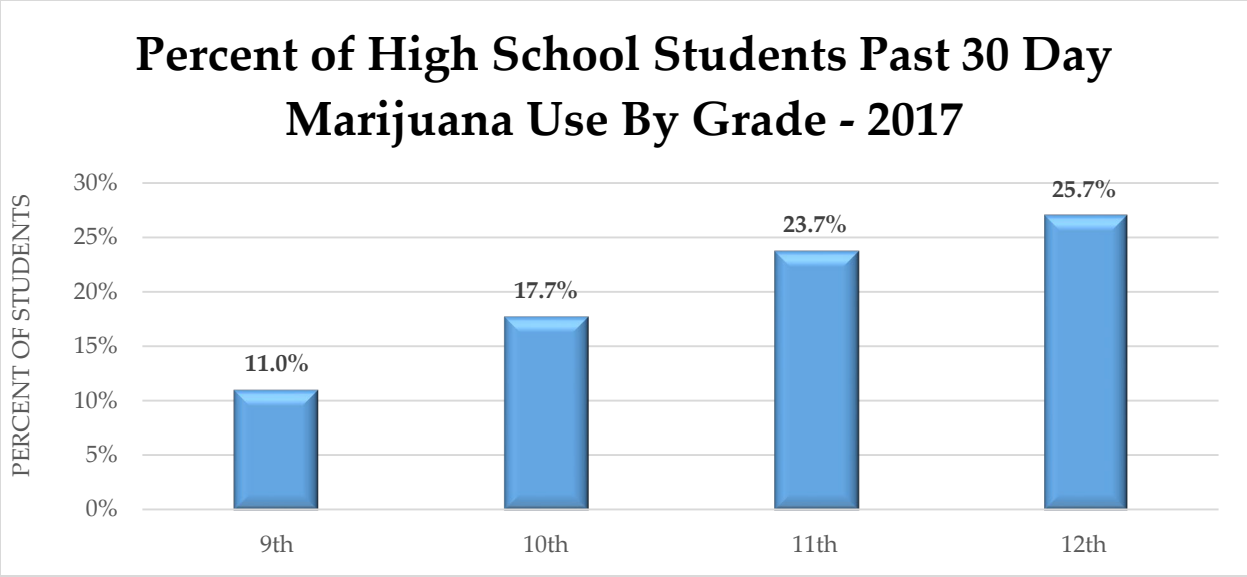
SOURCE: Colorado Department of Public Health and Environment, Healthy Kids Colorado Survey

NOTE: Dabbing is the process of vaporizing concentrated marijuana, usually in the form of wax or resin, by placing it on a heated piece of metal and inhaling the vapors. Concentrated marijuana is known to often contain 70 percent or higher levels of THC, the psychoactive component of marijuana.



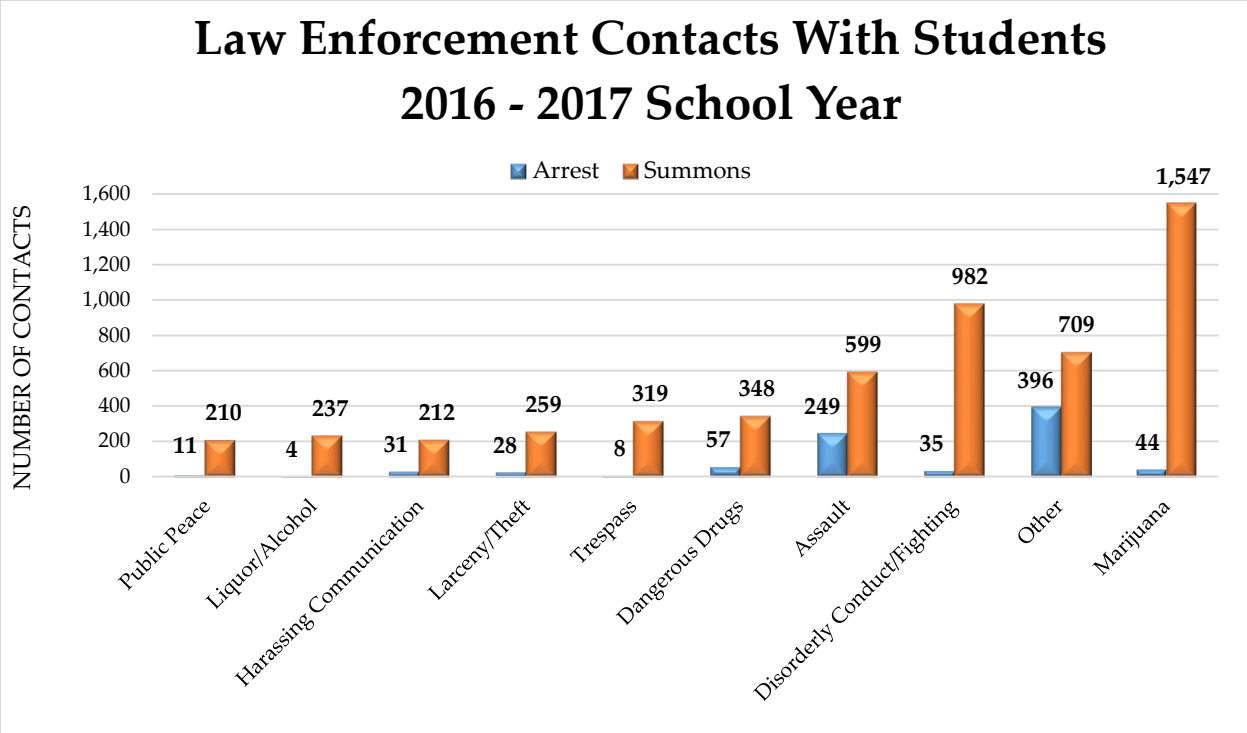
SOURCE: Colorado Department of Public Health and Environment, Healthy Kids Colorado Survey

NOTE: Eating marijuana most commonly refers to edible products. Edible products contain marijuana concentrates and extracts that have been made for the use of being mixed with food or other products.

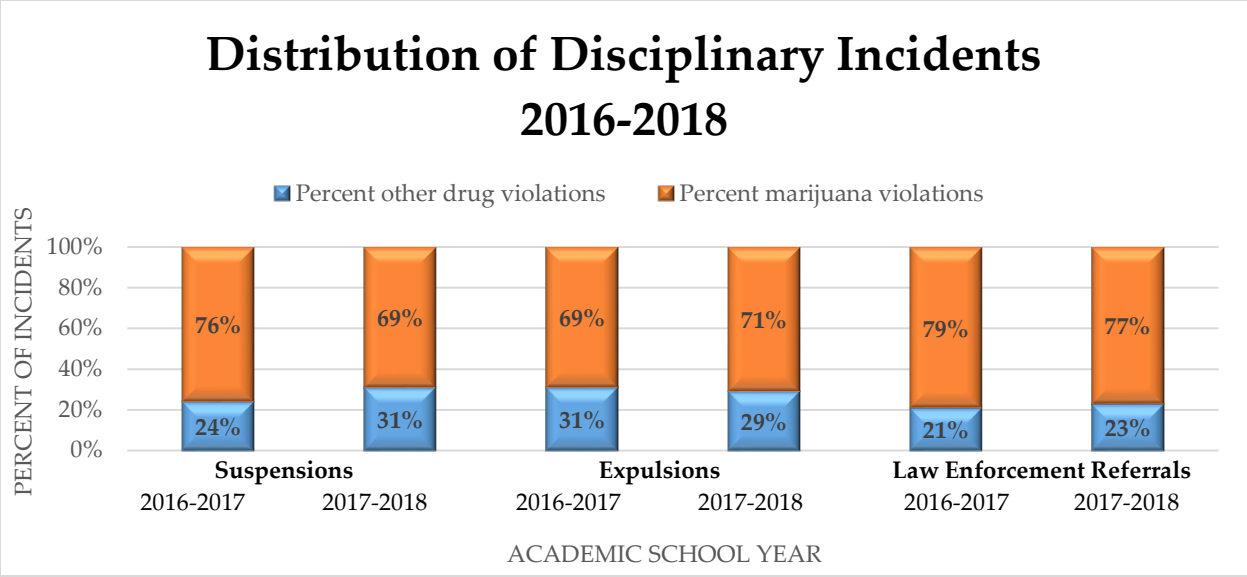


SOURCE: Colorado Department of Public Health and Environment, Healthy Kids Colorado Survey

Marijuana in Schools



SOURCE: Colorado Division of Criminal Justice



SOURCE: Colorado Department of Education

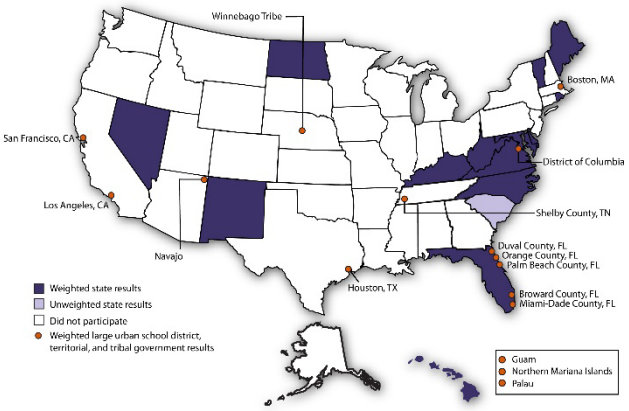
- For additional information regarding schools and incidents with marijuana, see "The Legalization of Marijuana in Colorado: *The Impact* Volume 5", at www.rmhidta.org for statements made by Colorado school resource officers.

Youth Risk Behavior Surveillance System (YRBSS) Data

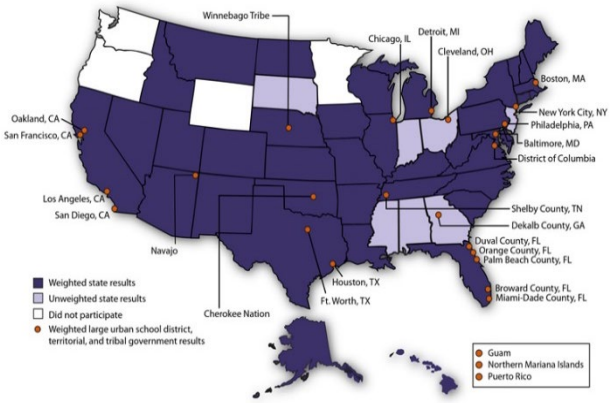
Although 2017 Colorado high school data was represented in YRBSS, in 2015, Colorado fell short of the required 60 percent participation rate and was, therefore, not included with weighted data (states included with weighted data are represented in dark purple below). This has been a common occurrence for Colorado data over the past decade. Additionally, states that meet the minimum participation requirements for inclusion with weighted data varies from year to year, making national comparisons inconsistent. States that participated in the 2017 Middle School and High School YRBSS surveys are represented in dark purple in the below maps. – Data is collected in the odd years and released in even years and, therefore, no new data will be available until 2020.

2017 YRBSS Participation Map

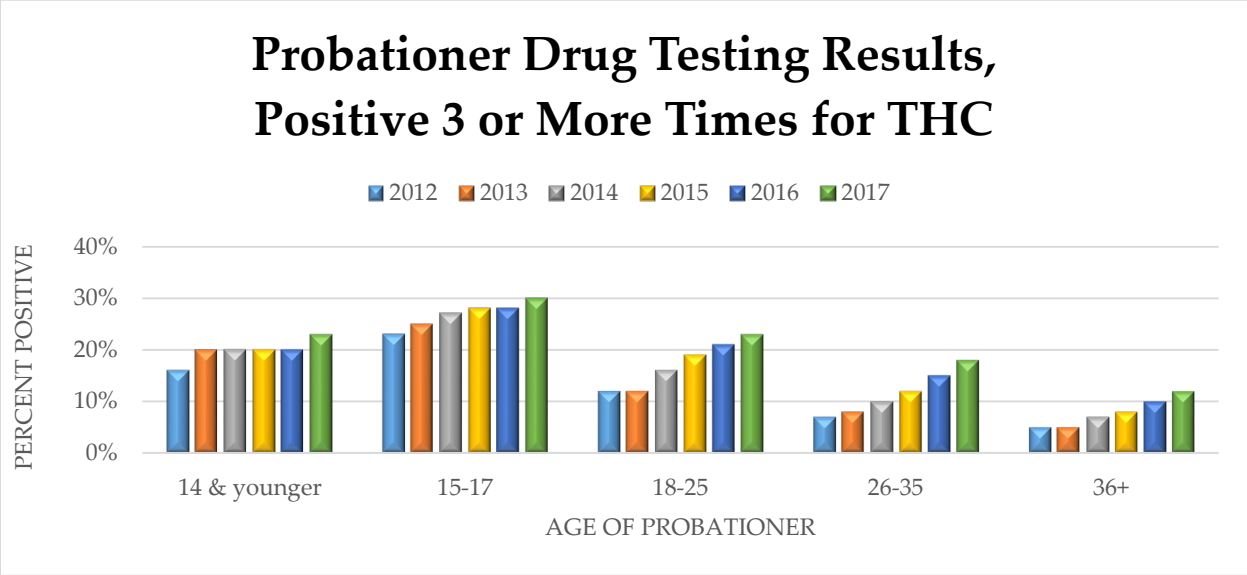
Middle Schools



High Schools



Probationer Marijuana Use



SOURCE: Colorado State Judicial Branch, Division of Probation Services

NOTE: Data reflects drug test results for probationers required to undergo drug testing. This does not reflect all probationers in Colorado. Probationers who have a medical marijuana card are not prohibited from using marijuana while on probation. It is possible that some positive results may come from probationers using marijuana for medical reasons.

Marijuana Use Information

Colorado Department of Public Health & Environment (Health Statements)

The following statements have been summarized for the purpose of brevity:

- Adolescents and young adults who quit marijuana use have a lower risk of developing cognitive impairment or mental health disorders than those who continue to use.
- Daily or near-daily marijuana use by adolescents and young adults is associated with developing a psychotic disorder such as schizophrenia in adulthood.
- Marijuana use by adolescents and young adults is strongly associated with developing psychotic symptoms in adulthood, such as hallucinations, paranoia and delusional beliefs.
- Weekly or more frequent marijuana use by adolescents and young adults is associated with impaired learning, memory, math and reading achievement, even 28 days after last use.

SOURCE: Colorado Department of Public Health and Environment. (2019). *Public health statements* (summarized). Retrieved from https://www.colorado.gov/pacific/marijuanahealthinfo/public-health-statements

Marijuana, a Report by the National Institute on Drug Abuse (NIDA)

The following excerpts are from a recent report published by NIDA in July of 2019:

- Marijuana significantly impairs judgment, motor coordination, and reaction time, and studies have found a direct relationship between blood THC concentration and impaired driving ability.
- The risk of being involved in a motor-vehicle crash significantly increases after marijuana abuse.
- 30% of those who use marijuana may have some degree of marijuana use disorder.
- People who begin using marijuana before the age of 18 are four to seven times more likely to develop a marijuana use disorder.
- Marijuana exposure during development can cause long-term or possibly permanent adverse changes in the brain.
- Considerable evidence suggests that students who smoke marijuana have poorer educational outcomes than their nonsmoking peers.
- *Cannabinoid Hyperemesis Syndrome*, marked by recurrent bouts of nausea, vomiting and dehydration can result from chronic marijuana use. This syndrome may resolve when a person stops using marijuana.
- Opioid overdose mortality rates between 1999 and 2010 in states allowing medical marijuana use were 21% lower than expected. When the analysis was extended through 2017, however, they found that the trend reversed, such that states with medical cannabis laws experienced an overdose death rate 22.7% higher than expected. More research is needed on this topic.

SOURCE: National Institute on Drug Abuse. (2019). *Marijuana*. Retrieved from https://www.drugabuse.gov/node/pdf/1380/marijuana

Just One or Two Instances of Youth Marijuana Use

With the increasing use of marijuana among adolescents alongside the changing legal status and shifting societal attitudes in favor of legalized recreational marijuana, it is critically important that long-term health consequences of youth marijuana use be understood. Research published March 6th (2019) in the Journal of Neuroscience indicates that structural brain and cognitive effects can be observed in association with just one or two instances of adolescent marijuana use.

SOURCE: Orr, C., Spechler, P., Cao, Z., Albaugh, M., Chaarani, B., Mackey, S., . . . Garavan, H. (2019). *Grey matter volume differences associated with extremely low levels of cannabis use in adolescence.* Journal of Neuroscience, 39(10). doi: 10.1523/JNEUROSCI.3375-17.2018

More Women Using Marijuana During Pregnancy

Between 2002 and 2016 the amount of pregnant women using marijuana increased from 3% to 5%. By comparison both alcohol and cigarette use by pregnant women fell during the same time period by 2% and 7.5% respectively. While more research is needed to know the effects of a pregnant mother's marijuana use, the CDC and other health organizations have warned against using the drug while pregnant.

SOURCE: Ducharme, Jamie. (2018). ***More women are using marijuana during pregnancy, report says.*** **Time Magazine.**

One Month of Abstinence from Marijuana Improves Memory in Adolescents

The Massachusetts General Hospital conduced a research study in which they found that adolescents using marijuana see an improvement in their memories with one month of abstinence. "Our findings provide two pieces of convincing evidence, the first is that adolescents learn better when they are not using cannabis. The second – which is the good news part of the story – is that at least some of the deficits associated with cannabis use are not permanent and actually improve pretty quickly after cannabis use stops."

SOURCE: Schuster, Randi. (2018). ***One month of abstinence from cannabis improves memory in adolescents, young adults.*** **Massachusetts General Hospital.**

More High Schoolers Consuming Edibles than Before

A study looking into the different methods that high school students use to consume marijuana found that while the rate of students smoking marijuana has decreased, the rate at which they are consuming edibles or dabbing has increased from 2015 to 2017. In 2017, the number of students that usually consumed marijuana as edibles was 10% which was up from 2% in 2015. Further, the students that reported dabbing marijuana increased from 4% in 2015 to 7.5% in 2017.

SOURCE: Tormohlen, Kayla; Schneider, Kristin; Johnson, Renee. (2019). ***Changes in prevalence of marijuana consumption modes among Colorado high school students from 2015 to 2017.*** **JAMA Pediatric.**

College Student Marijuana Use Highest in 35 Years

According to a University of Michigan survey, about 43% of college students indicated they used marijuana at least once in the past year, the highest amount since 1983. Approximately 6% indicated that they used marijuana 20 or more times in the past month. According to the survey use in college students has been on the rise for over a decade.

SOURCE: Stobbe, Mike. (2019). ***Marijuana Use by US College Students Up, Highest in 35 Years.*** **Associated Press.**

Section III: Public Health

Some Findings

- The yearly number of emergency department visits related to marijuana **increased 54 percent** after the legalization of recreational marijuana (2013 compared to 2017).
- The yearly number of marijuana-related hospitalizations **increased 101 percent** after the legalization of recreational marijuana (2013 compared to 2017).
- Marijuana *only* exposures more than **quadrupled** in the six-year average (2013-2018) since recreational marijuana was legalized compared to the six-year average (2007-2012) prior to legalization.
- The percent of suicide incidents in which toxicology results were positive for marijuana has **increased** from **14 percent** in 2013 to **23 percent** in 2017.

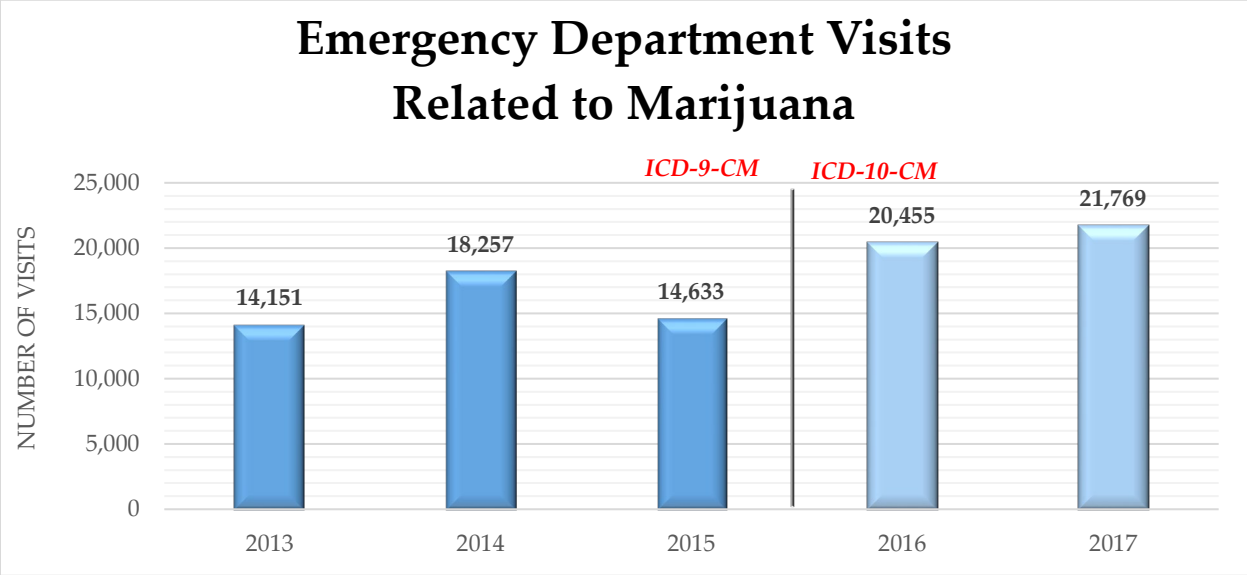
Definitions by Rocky Mountain HIDTA

Marijuana-Related: Also referred to as "marijuana mentions." Data could be obtained from lab tests, patient self-admission or some other form of validation obtained by the provider. Being marijuana-related does not necessarily prove marijuana was the cause of the emergency department admission or hospitalization.

International Classification of Disease (ICD): A medical coding system used to classify diseases and related health problems.

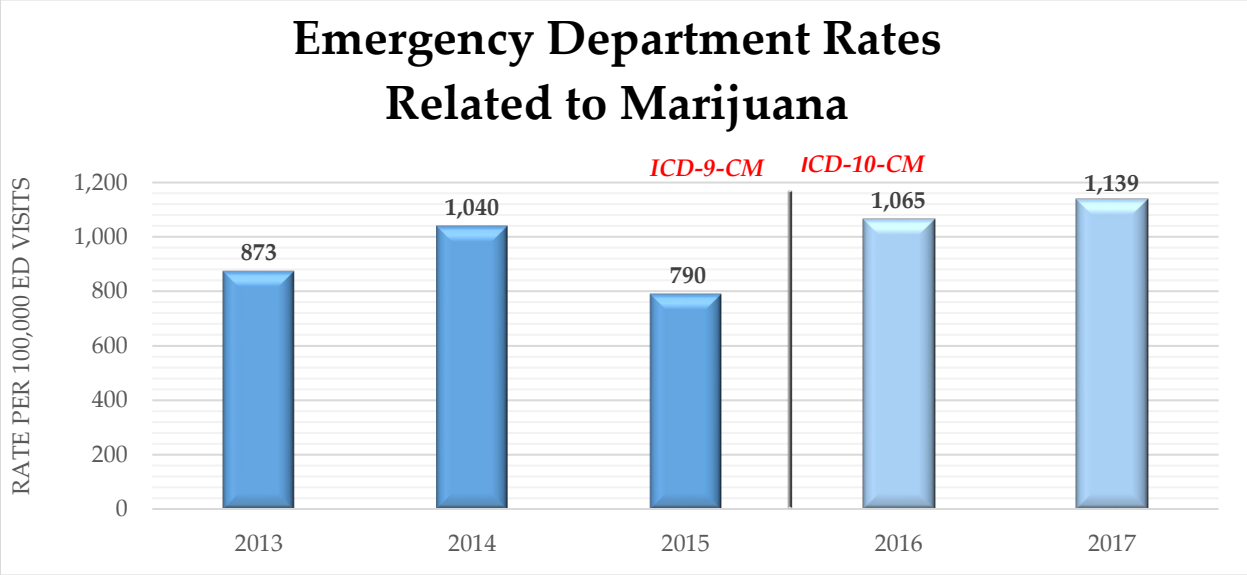
- **In 2015, ICD-10 (the tenth modification) was implemented in place of ICD-9. Although ICD-10 will allow for better analysis of disease patterns and treatment outcomes for the advancement of medical care, comparison of trends before and after the conversion can be made difficult and/or impossible. The number of codes increased from approximately 13,600 codes to approximately 69,000 codes. For the above reasons, hospitalization and emergency department data was only provided pre-conversion to ICD-10 for the 2017, Volume 5 report. However, some preliminary data for rates per 100,000 individuals was provided by the Colorado Department of Public Health and Environment (CDPHE) for this update.

Emergency Department Data



SOURCE: Emergency Department Discharge Dataset, as analyzed by the Colorado Department of Public Health and Environment; 2013-2017

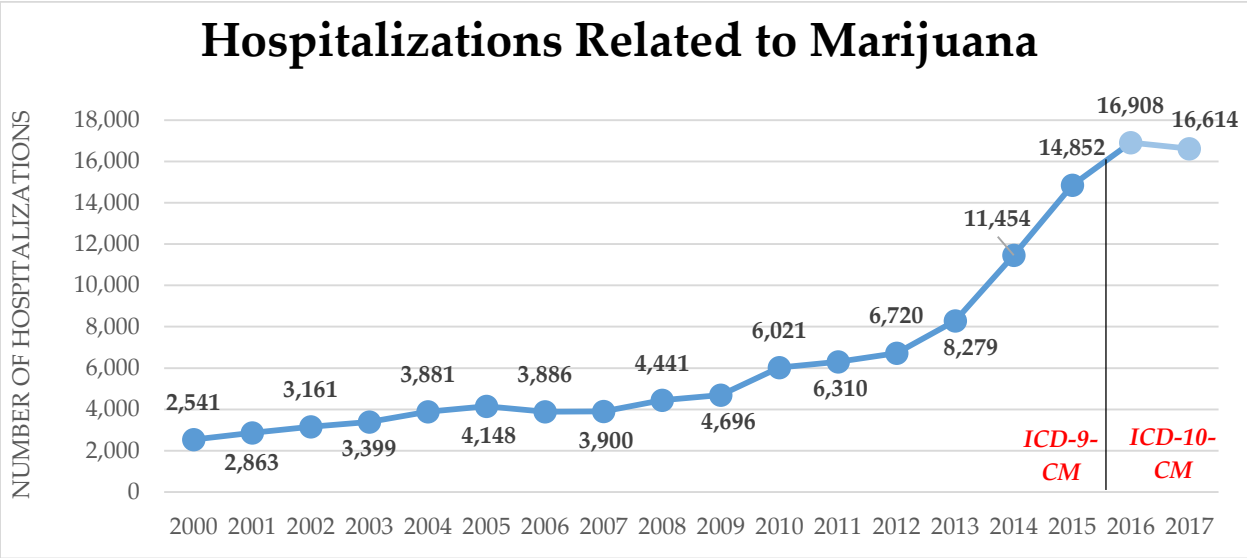
NOTE: 2015 data refers to data collected between October of 2014 & September of 2015 due to the ICD-10 CM transition; all other years are in the calendar year. The ICD-10 CM coding scheme is fundamentally different than the ICD-9 CM coding scheme; CDPHE does not recommend comparing trends between the two time periods.



SOURCE: Emergency Department Discharge Dataset, as analyzed by the Colorado Department of Public Health and Environment; 2013-2017

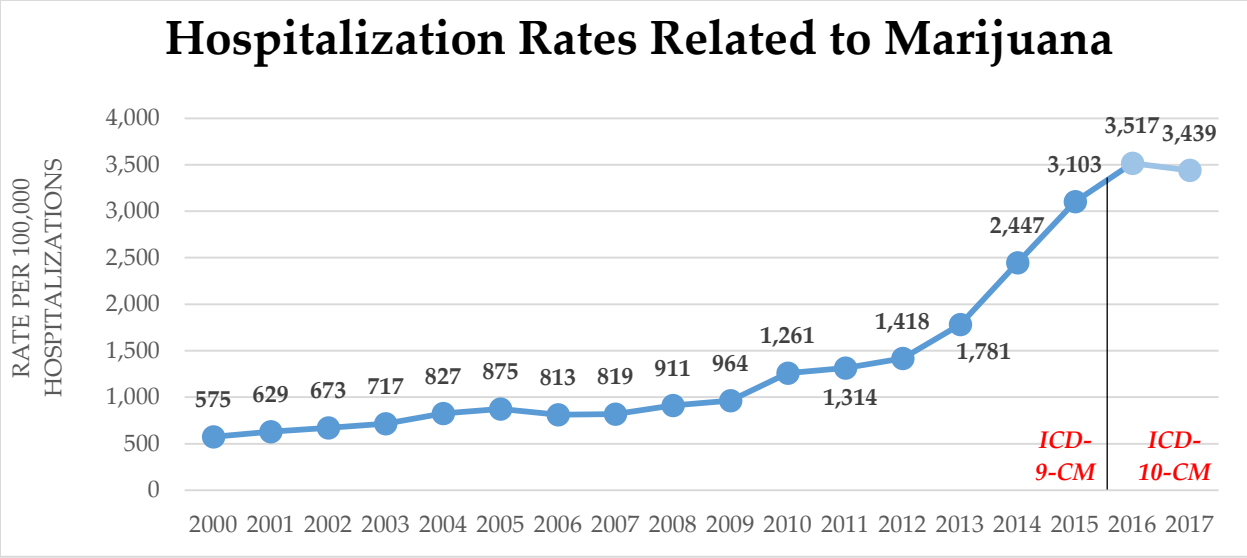
NOTE: 2015 data refers to data collected between October of 2014 & September of 2015 due to the ICD-10 CM transition; all other years are in the calendar year. The ICD-10 CM coding scheme is fundamentally different than the ICD-9 CM coding scheme; CDPHE does not recommend comparing trends between the two time periods.

Hospitalization Data



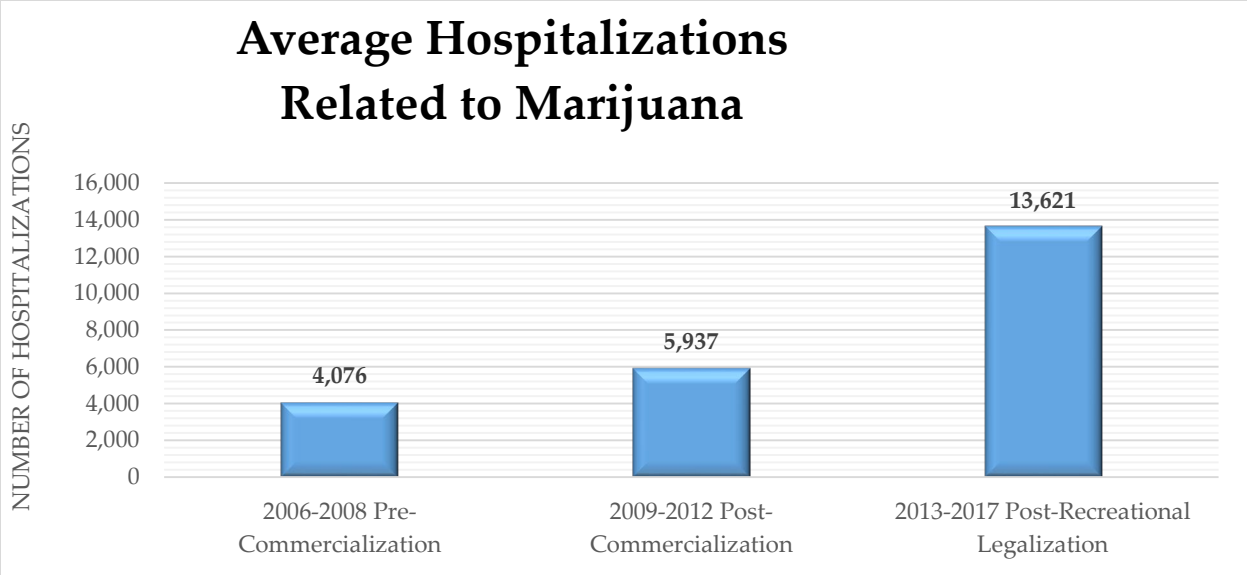
SOURCE: **Emergency Department Discharge Dataset, as analyzed by the Colorado Department of Public Health and Environment; 2013-2017**

NOTE: 2015 data refers to data collected between October of 2014 & September of 2015 due to the ICD-10 CM transition; all other years are in the calendar year. The ICD-10 CM coding scheme is fundamentally different than the ICD-9 CM coding scheme; CDPHE does not recommend comparing trends between the two time periods.



SOURCE: **Emergency Department Discharge Dataset, as analyzed by the Colorado Department of Public Health and Environment; 2013-2017**

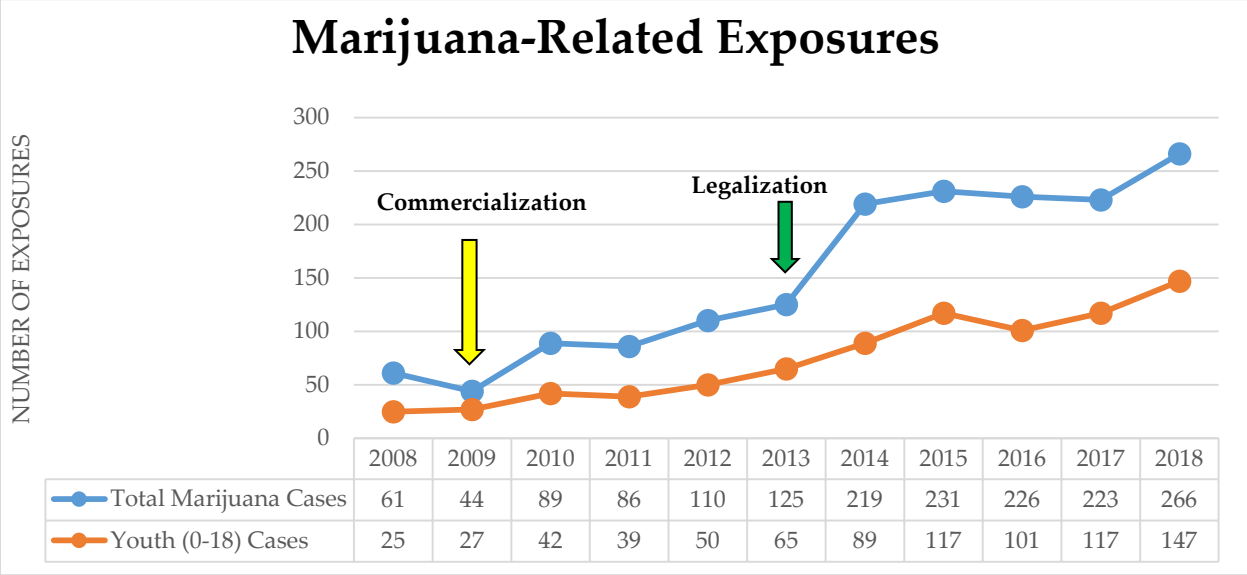
NOTE: 2015 data refers to data collected between October of 2014 & September of 2015 due to the ICD-10 CM transition; all other years are in the calendar year. The ICD-10 CM coding scheme is fundamentally different than the ICD-9 CM coding scheme; CDPHE does not recommend comparing trends between the two time periods.



SOURCE: Emergency Department Discharge Dataset, as analyzed by the Colorado Department of Public Health and Environment; 2013-2017

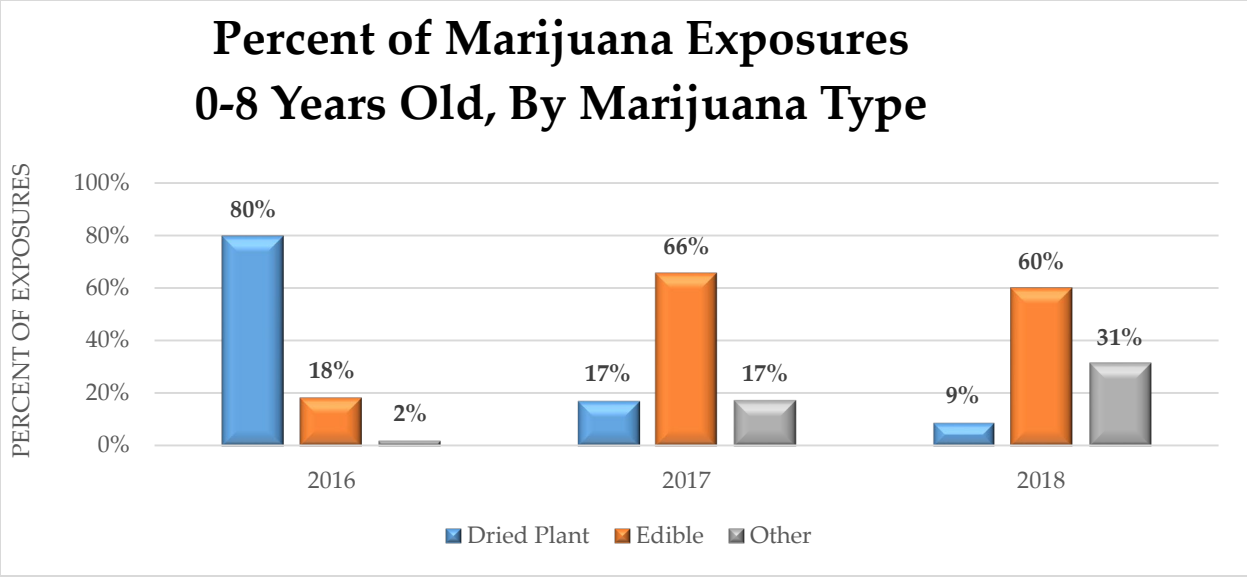
NOTE: 2015 data refers to data collected between October of 2014 & September of 2015 due to the ICD-10 CM transition; all other years are in the calendar year. The ICD-10 CM coding scheme is fundamentally different than the ICD-9 CM coding scheme; CDPHE does not recommend comparing trends between the two time periods.

Poison Control/Marijuana Exposure Data



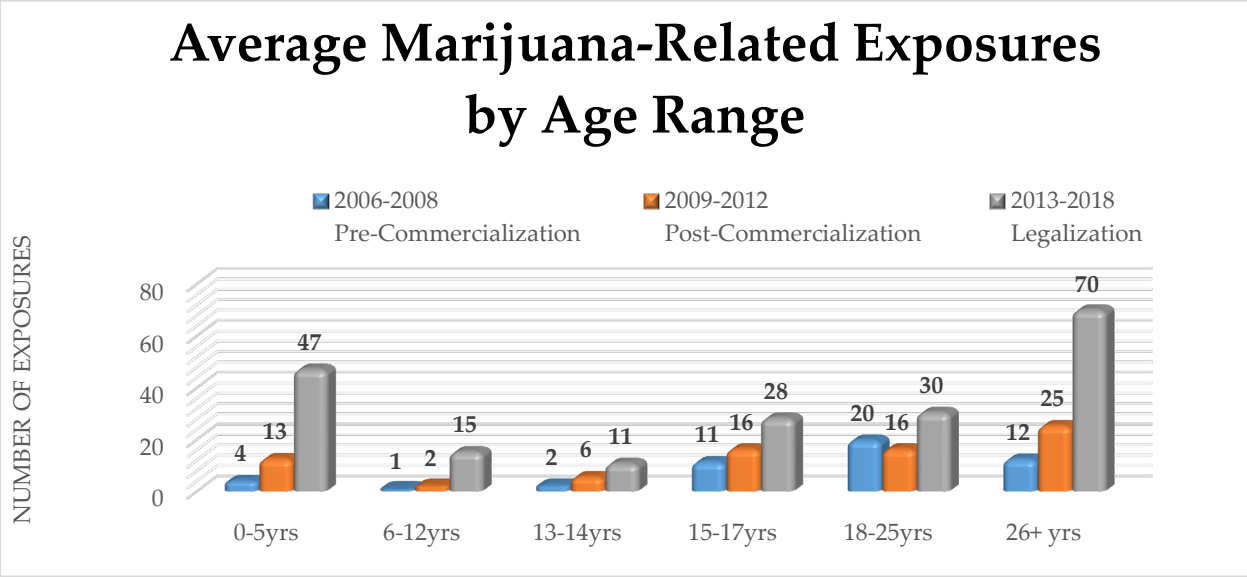
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Marijuana Cases	61	44	89	86	110	125	219	231	226	223	266
Youth (0-18) Cases	25	27	42	39	50	65	89	117	101	117	147

SOURCE: Rocky Mountain Poison and Drug Center

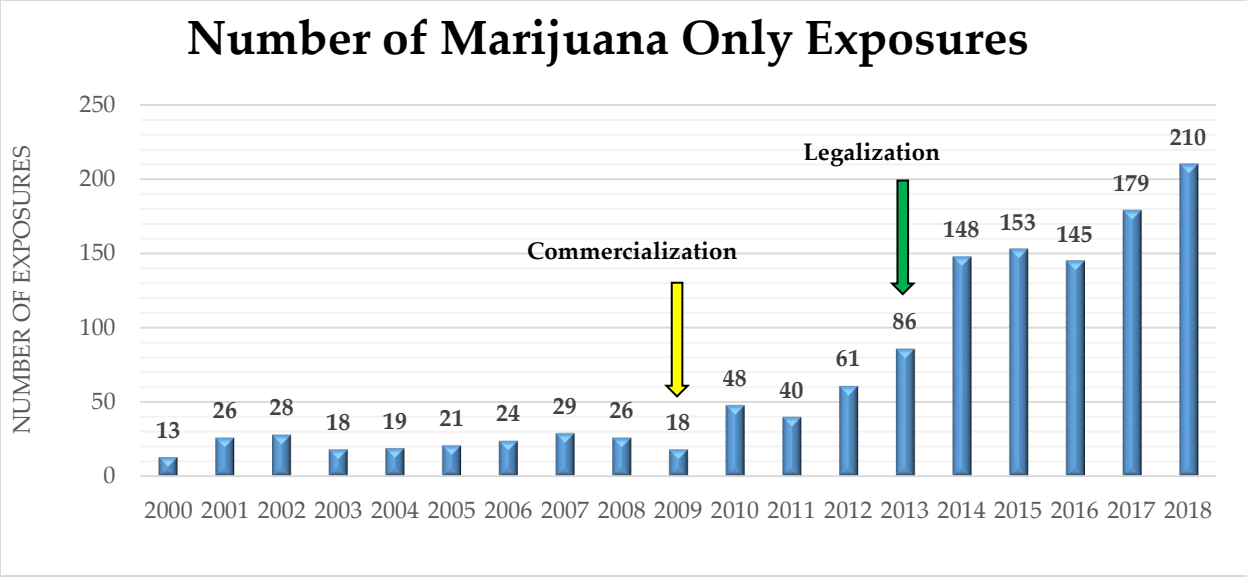


SOURCE: Rocky Mountain Poison and Drug Center

NOTE: The code for marijuana edibles did not go into effect until 2016. Therefore, any cases of edible marijuana exposure which occurred prior to 2016 were coded under "dry plant." Other marijuana includes oral pills/capsules, concentrated extracts (to include oils and tinctures), topical preparations, marijuana devices, and unknown/other forms of marijuana.



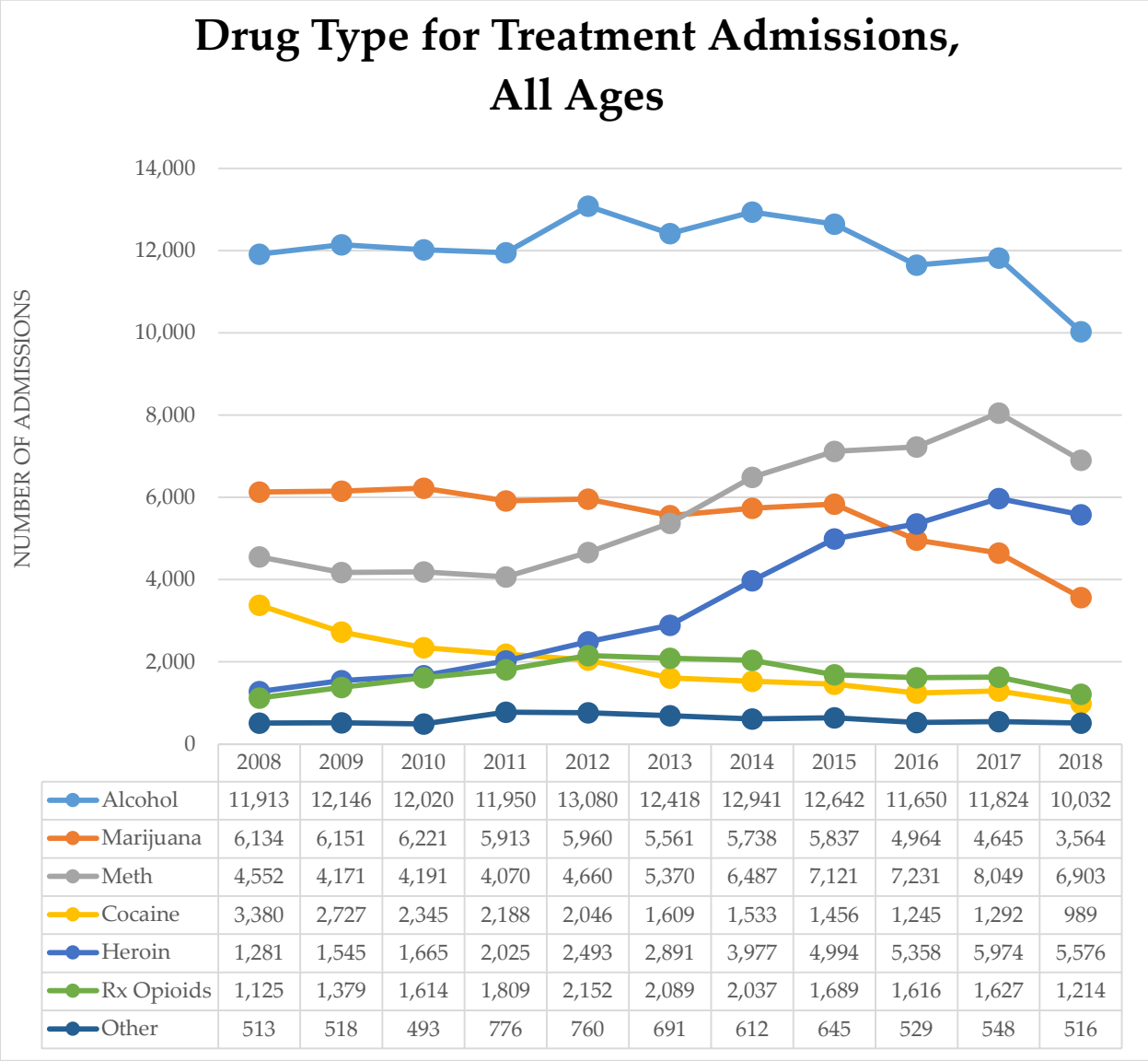
SOURCE: Rocky Mountain Poison and Drug Center



SOURCE: Rocky Mountain Poison and Drug Center

NOTE: Marijuana was the only substance referenced in the call to the poison and drug center.

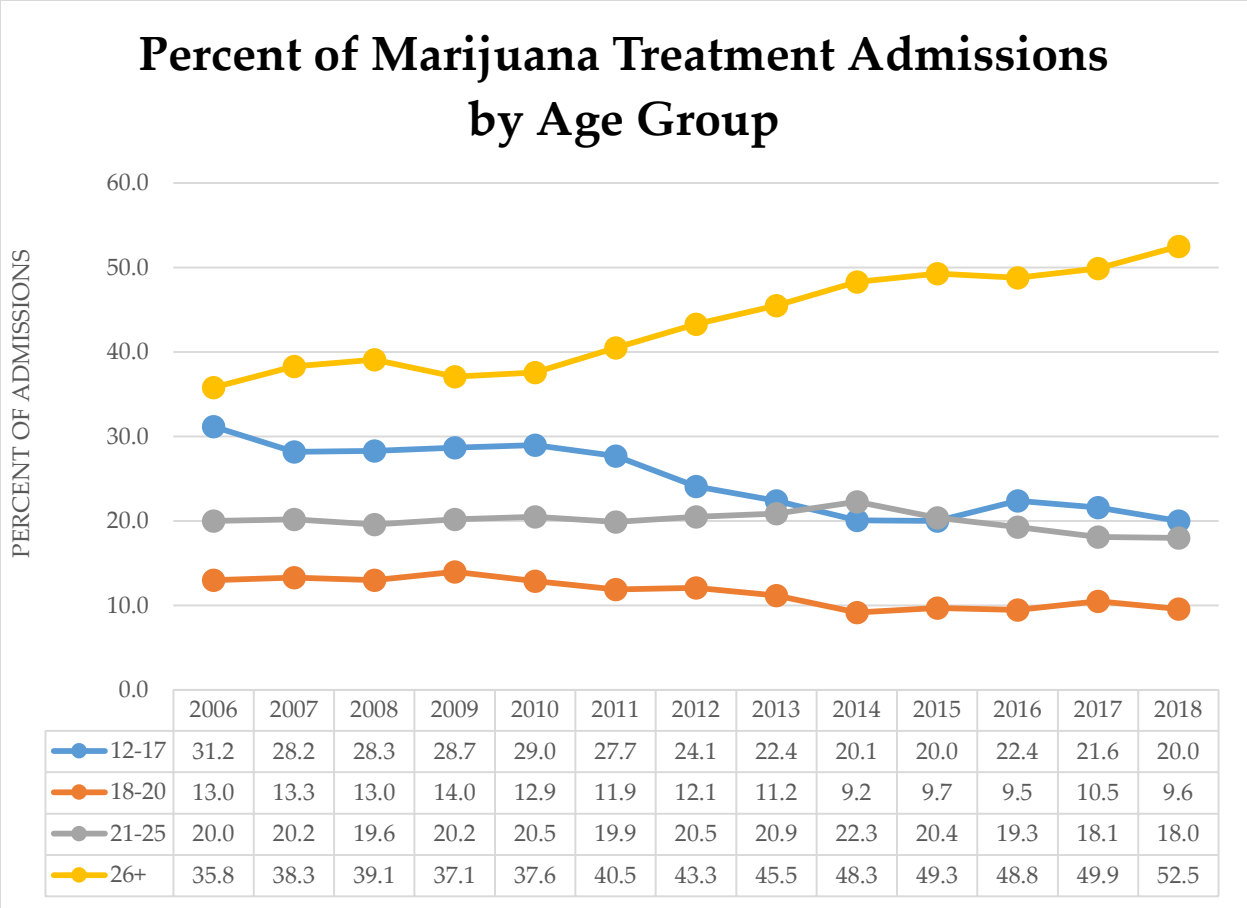
Treatment Data



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Alcohol	11,913	12,146	12,020	11,950	13,080	12,418	12,941	12,642	11,650	11,824	10,032
Marijuana	6,134	6,151	6,221	5,913	5,960	5,561	5,738	5,837	4,964	4,645	3,564
Meth	4,552	4,171	4,191	4,070	4,660	5,370	6,487	7,121	7,231	8,049	6,903
Cocaine	3,380	2,727	2,345	2,188	2,046	1,609	1,533	1,456	1,245	1,292	989
Heroin	1,281	1,545	1,665	2,025	2,493	2,891	3,977	4,994	5,358	5,974	5,576
Rx Opioids	1,125	1,379	1,614	1,809	2,152	2,089	2,037	1,689	1,616	1,627	1,214
Other	513	518	493	776	760	691	612	645	529	548	516

SOURCE: Colorado Department of Health Services, Office of Behavioral Health

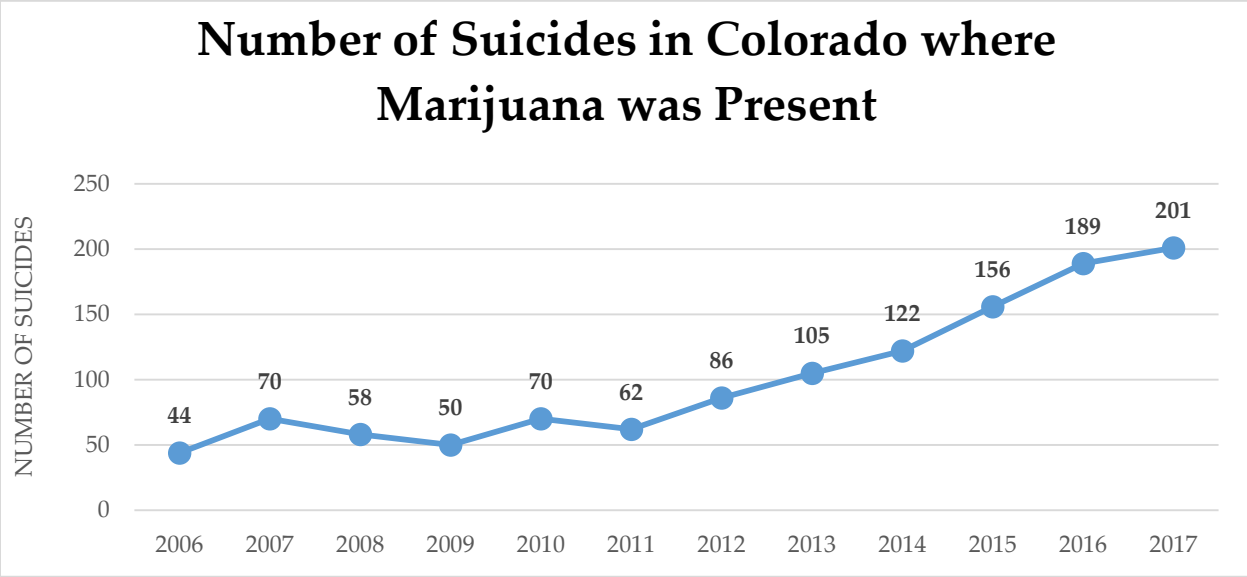
NOTE: Electronic reporting was initiated in 2008, therefore trend analysis on treatment admissions is not recommended prior to 2008.



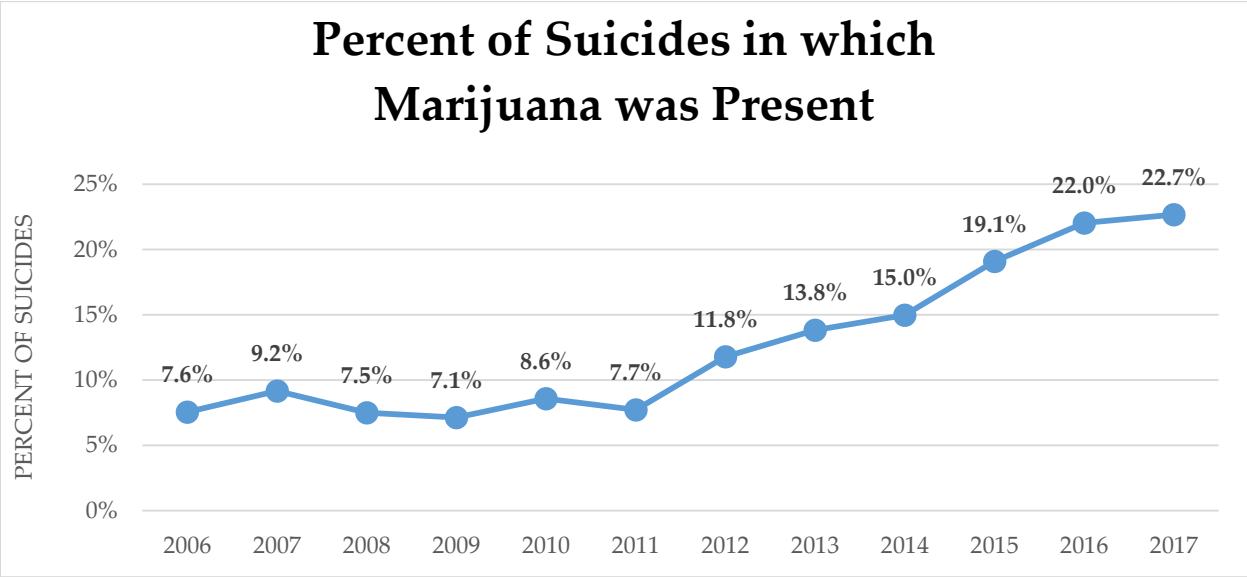
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
12-17	31.2	28.2	28.3	28.7	29.0	27.7	24.1	22.4	20.1	20.0	22.4	21.6	20.0
18-20	13.0	13.3	13.0	14.0	12.9	11.9	12.1	11.2	9.2	9.7	9.5	10.5	9.6
21-25	20.0	20.2	19.6	20.2	20.5	19.9	20.5	20.9	22.3	20.4	19.3	18.1	18.0
26+	35.8	38.3	39.1	37.1	37.6	40.5	43.3	45.5	48.3	49.3	48.8	49.9	52.5

SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS). Based on administrative data reported by states to TEDS through April 1, 2019.

Suicide Data

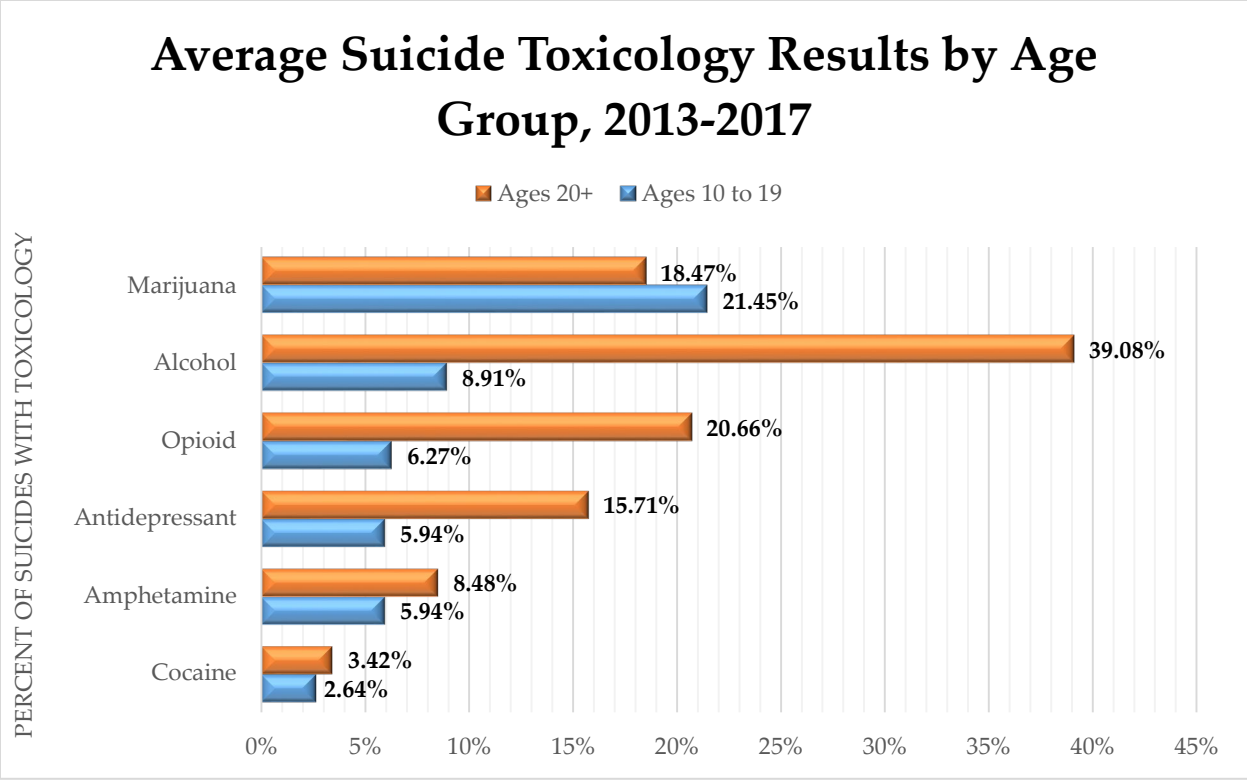


SOURCE: **Colorado Department of Public Health and Environment (CDPHE), Colorado Violent Death Reporting System**



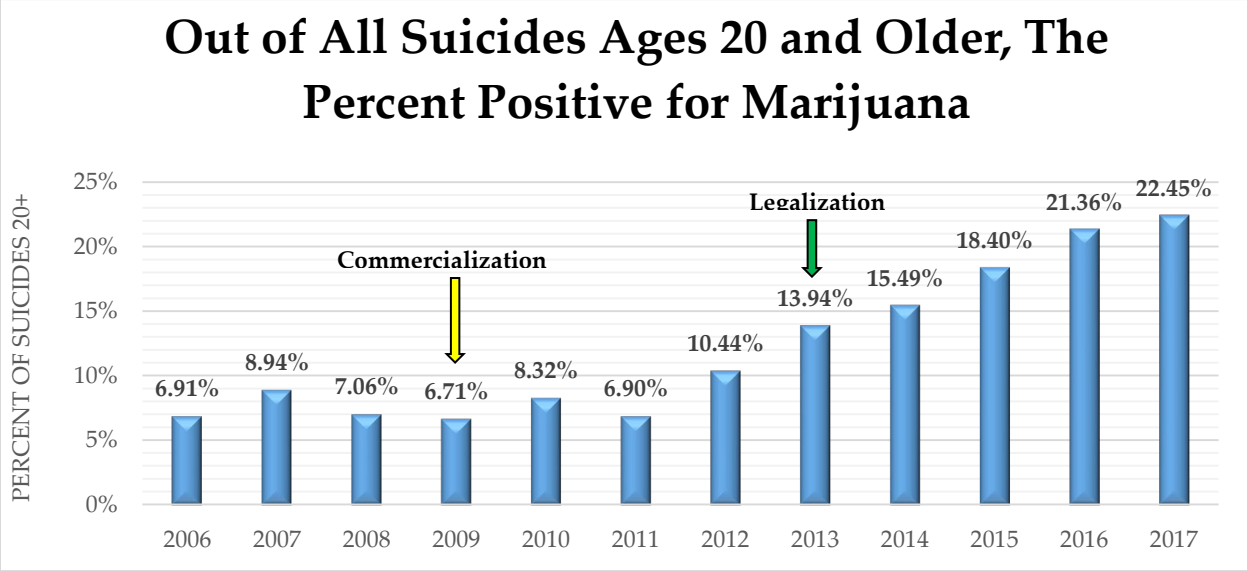
SOURCE: **Colorado Department of Public Health and Environment (CDPHE), Colorado Violent Death Reporting System**

NOTE: Toxicology is not available for every suicide. Only those suicides with toxicology available are represented above.



SOURCE: **Colorado Department of Public Health and Environment (CDPHE), Colorado Violent Death Reporting System**

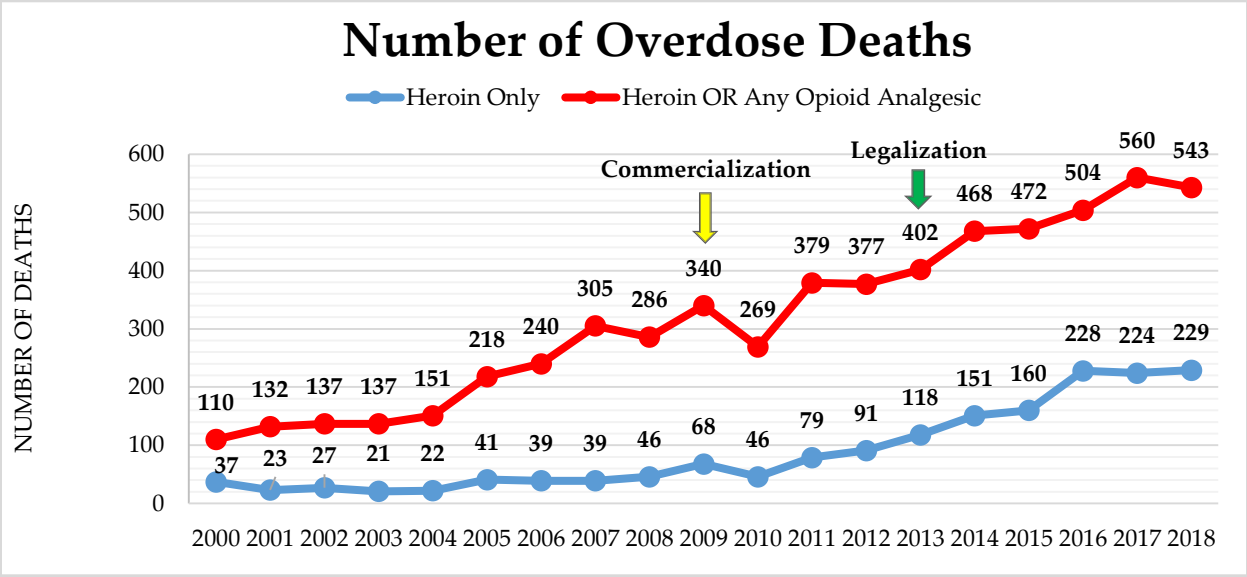
NOTE: The average percent was taken out of all suicides with toxicology results. The average covers a five year time span from 2013 – 2017.



SOURCE: **Colorado Department of Public Health and Environment (CDPHE), Colorado Violent Death Reporting System**

Colorado Opioid Overdose Deaths

- This data is included in response to reports of declining opioid overdose deaths post marijuana legalization.



Source: **Colorado Department of Public Health & Environment, Vital Statistics Program**

NOTE: Heroin cause of death codes include T40.1. Any Opioid Analgesic OR Heroin cause of death codes include T40.1-T40.4

Public Health Information

Colorado Department of Public Health & Environment (Health Statements)

The following statements have been summarized for the purpose of brevity:

- An association appears unlikely between marijuana smoking and lung cancer when used less than a joint per day for 10 years.
- Marijuana smoke from water pipes or bongs may contain more cancer-causing chemicals than smoke from a joint.
- Daily or near-daily marijuana smoking is strongly associated with pre-malignant lesions that may lead to cancer in the airways of your lungs.
- Acute marijuana use may be associated with increased risk of heart attack among adults.
- Marijuana use may be associated with increased risk of stroke in individuals younger than 55 years of age.
- Long-time, daily or near-daily marijuana use is associated with cyclic vomiting, which some medical experts have called cannabinoid hyperemesis syndrome.
- Marijuana users who experience cyclic vomiting may find relief by stopping marijuana use.

- Daily or near-daily use of marijuana is strongly associated with development of psychotic disorders such as schizophrenia.
- THC, a component of marijuana, can cause acute psychotic symptoms such as hallucinations, paranoia, delusional beliefs, and feeling emotionally unresponsive during intoxication. These symptoms are worse with higher doses.
- Maternal use of marijuana during pregnancy is associated with negative effects on exposed offspring, including decreased cognitive function and attention. These effects may not appear until adolescence.
- THC can be passed from the mother's breast milk, potentially affecting the baby.
- There are negative effects of marijuana use during pregnancy regardless of when it is used during pregnancy.
- There is no known safe amount of marijuana use during pregnancy.
- Marijuana smoke may deposit more particulate matter in the lungs per puff compared to tobacco smoke.
- Legal marijuana access is strongly associated with increased numbers of unintentional exposures in children which can lead to hospitalizations.

SOURCE: Colorado Department of Public Health and Environment. (2019). *Public health statements* (summarized). Retrieved from https://www.colorado.gov/pacific/marijuanahealthinfo/public-health-statements

Should Physicians Recommend Replacing Opioids with Cannabis?

An opinion piece published online by *JAMA* (February 1st, 2019), briefly explores the efficacy of marijuana use in the treatment of chronic pain and opioid use disorder:

"Cannabis and cannabis-derived medications merit further research, and such scientific work will likely yield useful results. This does not mean that medical cannabis recommendations should be made without the evidence base demanded for other treatments. Evidence-based therapies are available. For chronic pain, there are numerous alternatives to opioids aside from cannabis. Non-opioid medications appear to have similar efficacy, and behavioral, voluntary, slow-tapering interventions can improve function and well-being while reducing pain.

For the opioid addiction crisis, clearly efficacious medications such as methadone and buprenorphine are under-prescribed. Without convincing evidence of efficacy of cannabis for this indication, it would be irresponsible for medicine to exacerbate the problem by encouraging patients with opioid addiction to stop taking these medications and to rely instead on unproven cannabis treatment.

SOURCE: Humphreys, K., & Saitz, R. (2019). *Should physicians recommend replacing opioids with cannabis?* JAMA. doi:10.1001/jama.2019.0077

Marijuana Use and Acute Pain Management

Conflicting reports of marijuana effectiveness in the management of chronic pain have surfaced in recent years, alongside widespread efforts to legalize recreational marijuana. Until recently, the effects of marijuana use on pain tolerance and analgesic pain management in the acute care setting have not been reported. Researchers recently found that "marijuana use, especially chronic use, may affect pain response to injury by requiring greater frequency and dosing of opioid analgesia." This may indicate that rather than being a potential solution to acute pain management and/or the opioid use disorder epidemic, marijuana use might complicate both situations.

SOURCE: **Salottolo, K., Peck, L., Tanner, A.,II, Carrick, M. M., Madayag, R., McGuire, E., & Bar-Or, D. (2018).** ***The grass is not always greener: A multi-institutional pilot study of marijuana use and acute pain management following traumatic injury.*** **Patient Safety in Surgery, 12(16). doi:10.1186/s13037-018-0163-3**

Association between Medical Marijuana Laws and Opioid Overdose Deaths

Proponents of marijuana legalization have claimed that medical marijuana may help reduce opioid overdose deaths. This idea was based off a 2014 study examining this association using data from 1999 to 2010 which showed a 21% reduction in deaths per 100,000 when medical marijuana laws were introduced. A new study published in 2019 extending the data set through 2017, indicates that given the extended time frame the association between medical marijuana laws and opioid overdose deaths shows a 23% increase in overdose deaths from 1999 to 2017.

SOURCE: **Shover, Chelsea; Davis, Corey; Gordon, Sanford; Humphreys, Keith. (2019).** ***Association between medical cannabis laws and opioid overdose mortality has reversed over time.*** **Proceedings of the National Academy of Sciences of the United States of America, 116(26).**

Medical Marijuana Users More Likely to Use Prescription Drugs Medically and Non-Medically

A study reported in the Journal of Addiction Medicine found that medical marijuana users were "significantly more likely to report medical use of prescription drugs in the past 12 months." In addition to medical use, medical marijuana users were "also significantly more likely to report nonmedical use in the past 12 months of any prescription drug…, with elevated risks for pain relievers…, stimulants…, and tranquilizers."

SOURCE: **Caputi, Theodore L.; Humphreys, Keith. (2018).** ***Medical marijuana users are more likely to use prescription drugs medically and nonmedically.*** **Journal of Addiction Medicine, 12(4).**

Know the Risks of Marijuana

The following excerpts were obtained from the SAMHSA website which was last updated 5/17/2019:

- "Approximately 1 in 10 people who use marijuana will become addicted. When they start before age 18, the rate of addiction rises to 1 in 6."
- "Marijuana can cause permanent IQ loss of as much as 8 points when people start using it at a young age. These IQ points do not come back, even after quitting marijuana."
- "Studies link marijuana use to depression, anxiety, suicide planning, and psychotic episodes. It is not known, however, if marijuana use is the cause of these conditions."
- "People who drive under the influence of marijuana can experience dangerous effects: slower reactions, lane weaving, decreased coordination, and difficulty reacting to signals and sounds on the road."
- "Marijuana use during pregnancy may cause fetal growth restriction, premature birth, stillbirth, and problems with brain development, resulting in hyperactivity and poor cognitive function."
- "Research shows that people who use marijuana are more likely to have relationship problems, worse educational outcomes, lower career achievement, and reduced life satisfaction."

SOURCE: Substance Abuse and Mental Health Services Administration. (2019). *Know the risks of marijuana.* Retrieved from https://www.samhsa.gov/marijuana

Emergency Visits and Marijuana Use

According to recent research supported by Colorado Department of Public Health and Environment grant funds and published in the Annals of Internal Medicine, emergency room visits are more common for instances of inhaled marijuana use as opposed to edible marijuana ingestion. However, there are more severe psychiatric symptoms along with more emergency room visits than expected when emergency department patients self-report recent ingestion of edible marijuana products.

SOURCE: Monte AA, Shelton SK, Mills E, Saben J, Hopkinson A, Sonn B, et al. (2019). *Acute illness associated with cannabis use, by route of exposure: an observational study.* Ann Intern Med. doi: 10.7326/M18-2809

Children Ingesting Marijuana Increase after Legalization of Marijuana

From January 2000 through June 2017 there were nearly 3,000 ingestions of marijuana by children younger than six. Over 70% of those ingestions were by children under the age of 3 and more than half received some form of hospital-based care. Symptoms in the children ranged from drowsiness and confusion to seizures and coma. Before 2009 there was no significant change in either the number or rate of marijuana ingestions, however from 2009 to 2017 the mean annual increase was 27% per year rising to 742 ingestions per year. Over 70% of those ingestions occurred in states with legalized marijuana.

SOURCE: Wang, Sam. (2019). *Study shows increase in ingestions of marijuana by children in U.S.* Nationwide Children's Hospital.

U.S. Surgeon General's Advisory: Marijuana and the Developing Brain

On August 29th, 2019 the United States Surgeon General Jerome M. Adams issued an advisory on marijuana:

"I, Surgeon General VADM Jerome Adams, am emphasizing the importance of protecting our Nation from the health risks of marijuana use in adolescence and during pregnancy. Recent increases in access to marijuana and in its potency, along with misperceptions of safety of marijuana endanger our most precious resource, our nation's youth."

The advisory, which is available on the United States Department of Health & Human Services website, provides background information on marijuana, marijuana use during pregnancy, and marijuana use during adolescence.

"No amount of marijuana use during pregnancy or adolescence is known to be safe. Until and unless more is known about the long-term impact, the safest choice for pregnant women and adolescents is not to use marijuana."

SOURCE: Office of the Surgeon General. (2019). *U.S. General's advisory: marijuana use and the developing brain.* Retrieved from https://www.hhs.gov/surgeongeneral/reports-and-publications/addiction-and-substance-misuse/advisory-on-marijuana-use-and-developing-brain/index.html

Colorado Doctor Sounds Alarm on Marijuana Legalization

Dr. Karen Randall, an emergency room physician who specializes in cannabis science and medicine, recently said that "the legalization of marijuana has damaged, rather than helped, her home state." She goes on to say that "I think the public needs to know that we are not okay… The grand experiment is not going so well. I don't think the public is hearing about this as they should be."

"State government has not only ignored scientific findings about marijuana's effects to push sales, but failed in the regulatory responsibility it promised would accompany legalization," said Randall. In support of her statements, the Pueblo based emergency room physician discussed high potency marijuana products, a marked increase in medical problems, misguided impressions of marijuana benefits, increasing numbers of homelessness, and a growing population of chronic, marijuana dependent users.

SOURCE: Lehman, Charles. (2019). *Colorado Doctor Sounds Alarm on Marijuana Legalization*. The Washington Free Beacon.

Section IV: Black Market

Some Findings

- RMHIDTA Colorado Drug Task Forces (10) conducted **257 investigations** of black market marijuana in Colorado resulting in:
  - **192** felony arrests
  - **6.08 tons** of marijuana seized
  - **60,091** marijuana plants seized
  - **25** different states the marijuana was destined
- Seizures of Colorado marijuana in the U.S. mail system has **increased 1,042 percent** from an average of 52 parcels (2009-2012) to an average of 594 parcels (2013-2017) during the time recreational marijuana has been legal.

Definitions by Rocky Mountain HIDTA

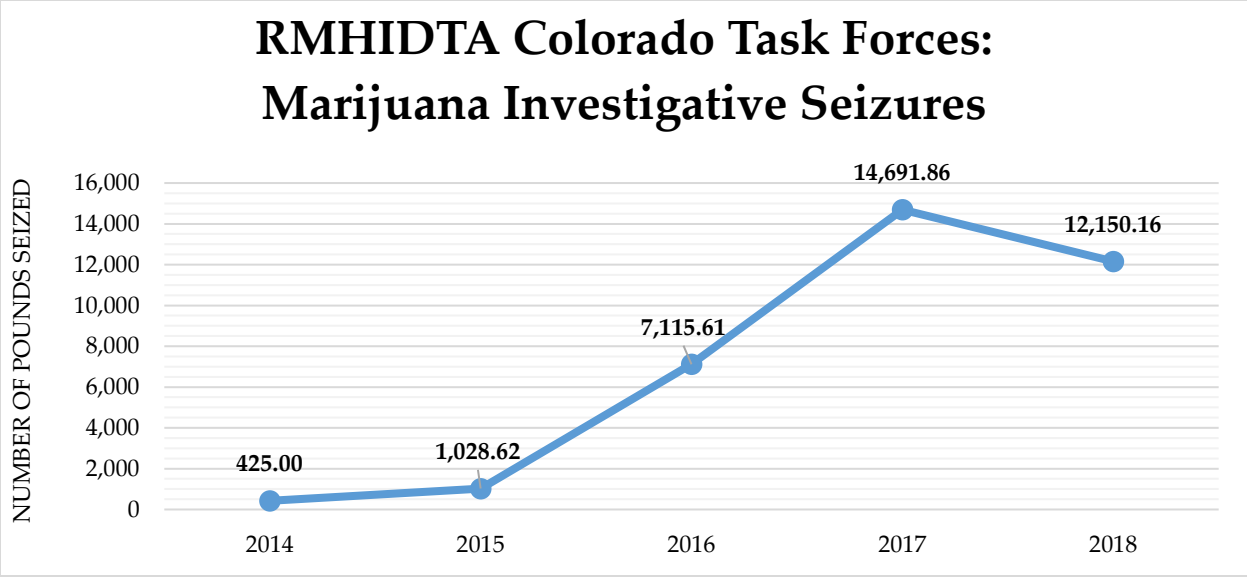
Colorado Marijuana Investigations: RMHIDTA Colorado drug task forces investigating individuals or organizations involved in illegally selling Colorado marijuana, both within and outside of the state. These investigations only include those reported by the ten RMHIDTA drug task forces.

Colorado Marijuana Interdictions: Interdictions include incidents where drugs are being transported, generally by vehicle or parcel, and the shipment is randomly seized by law enforcement.

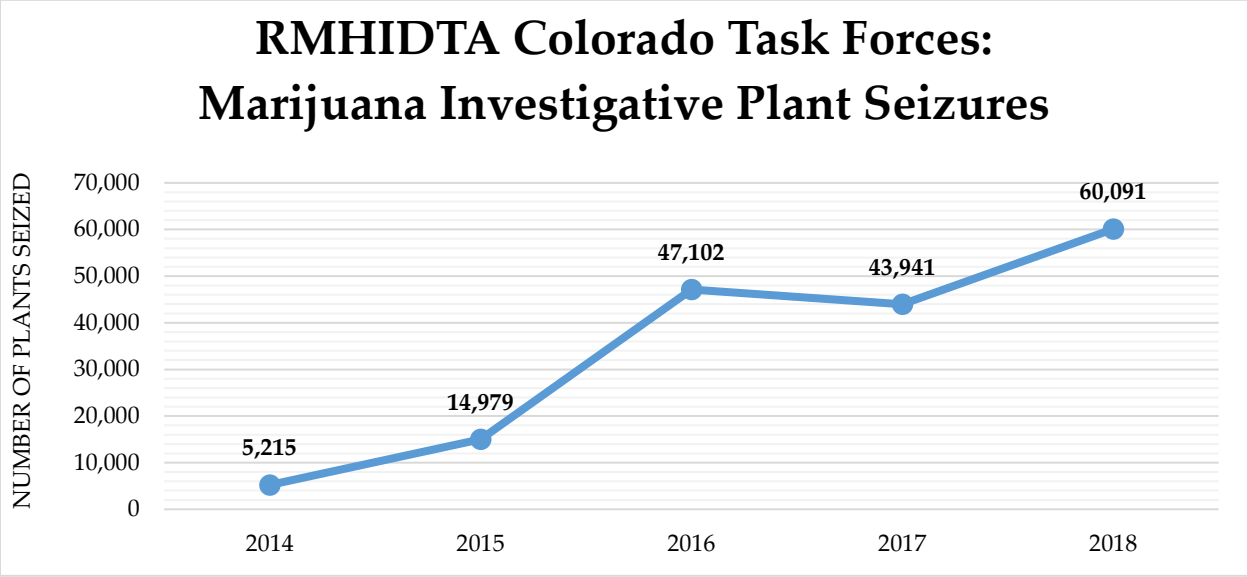
Task Force Investigations

Rocky Mountain HIDTA Colorado Task Forces			
	2016	**2017**	**2018**
Number of Completed Investigations	163	144	257
Number of Felony Arrests	241	239	192
Pounds of Bulk Marijuana Seized	7,116 (3.5 tons)	14,692 (7.3 tons)	12,150 (6.1 tons)
Number of Plants Seized	43,786	43,949	60,091
Number of Edibles Seized	2,111	6,462	2,894
Pounds of Concentrate Seized	232	102	319
Different States to Which Marijuana was Destined	29	24	25

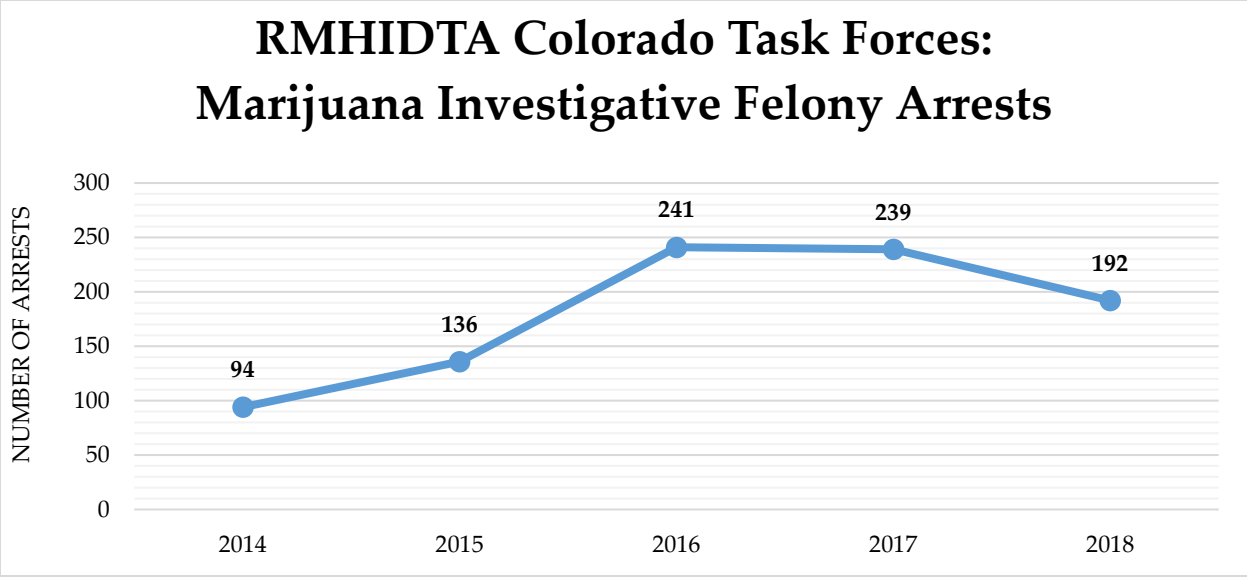
NOTE: Task force data only includes completed investigations reported by the RMHIDTA drug task forces (10). It is unknown how many of these types of investigations were completed by non-RMHIDTA drug units or task forces.



SOURCE: Rocky Mountain HIDTA Performance Management Process (PMP) Data

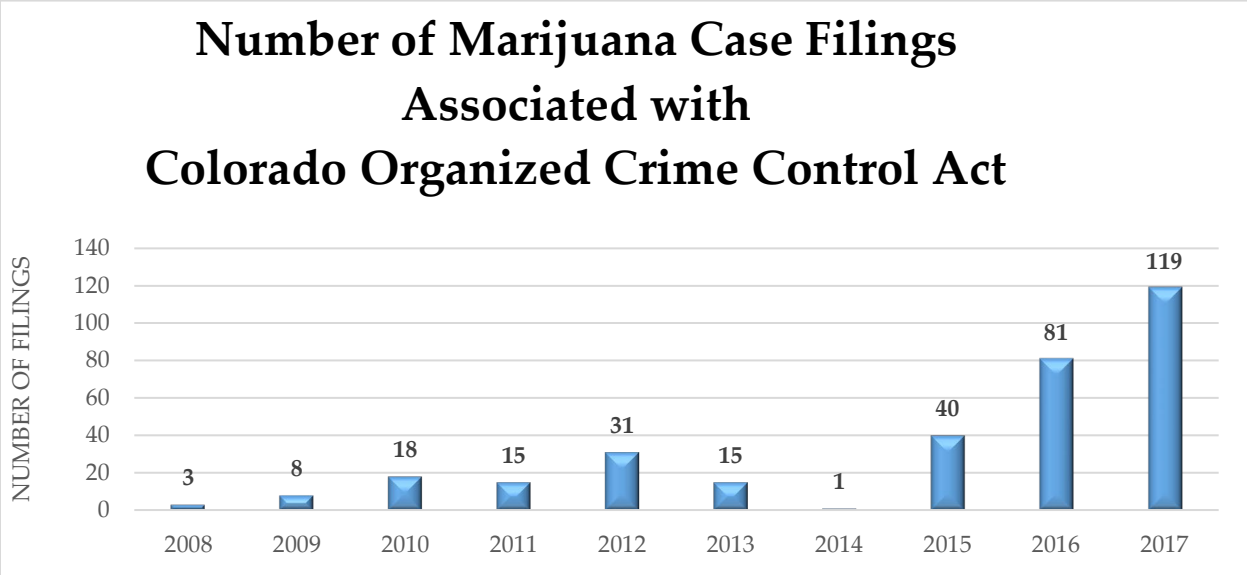


SOURCE: Rocky Mountain HIDTA Performance Management Process (PMP) Data



SOURCE: Rocky Mountain HIDTA Performance Management Process (PMP) Data

Colorado Organized Crime Control Act Filings

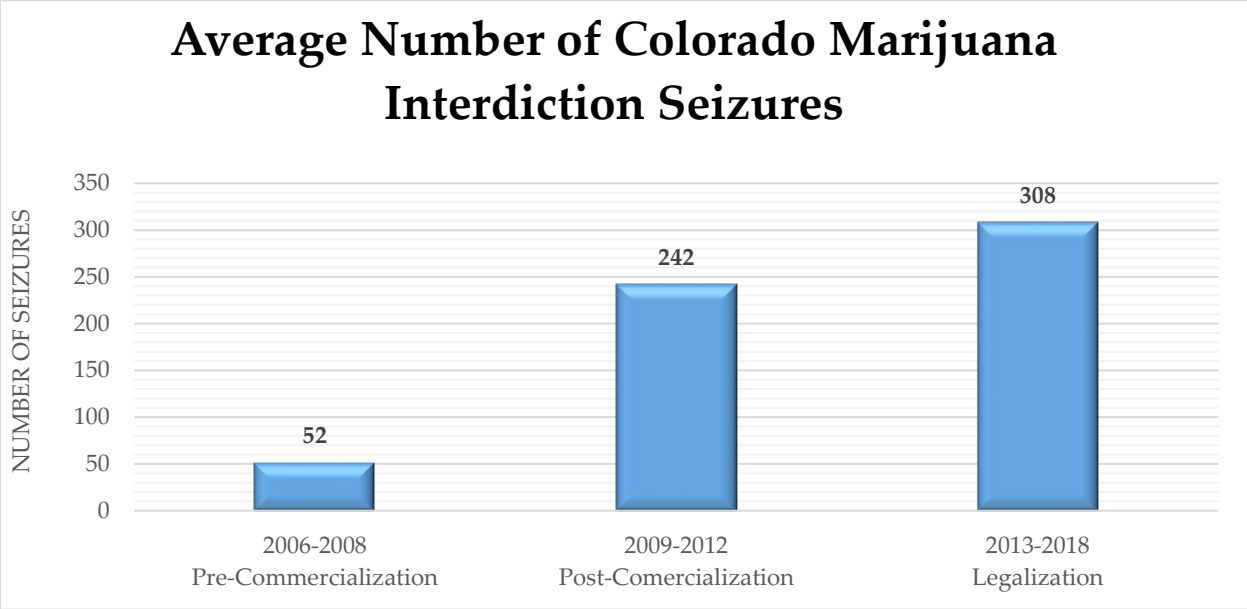


SOURCE: Colorado Department of Public Safety, Division of Criminal Justice, Office of Research and Statistics

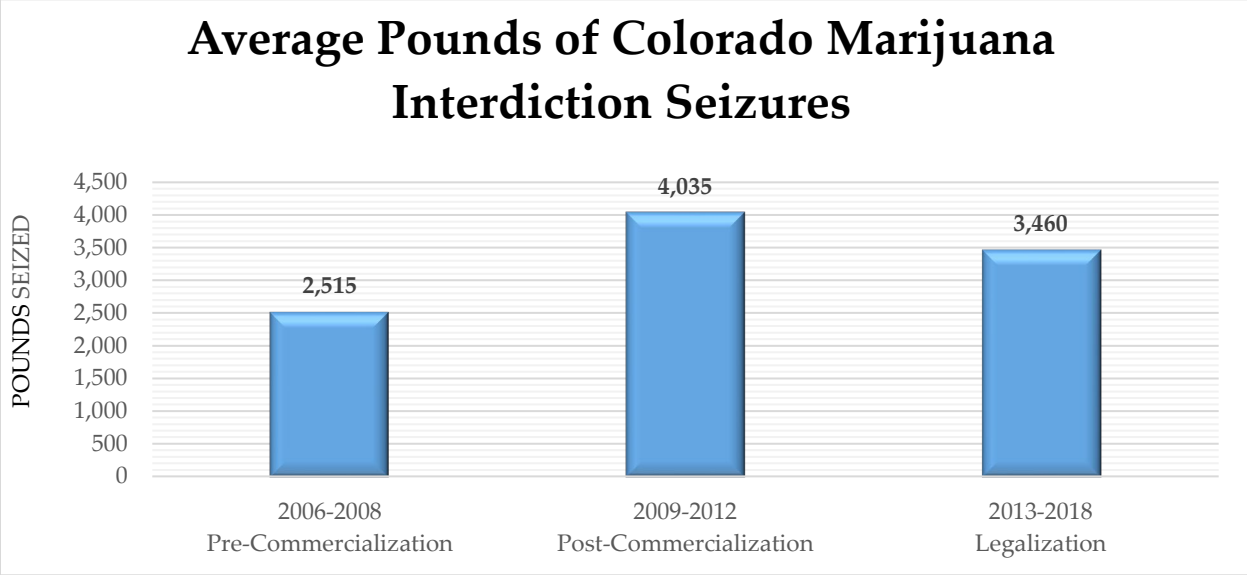
- Colorado Organized Crime Control Act (COCCA) filings are conspiracy cases in which there is potential for a larger sentence than other types of drug filings.

Highway Interdiction Data

NOTE: The charts below only include cases where Colorado marijuana was actually seized and reported. It is unknown how many Colorado marijuana loads were not detected or, if seized, were not reported. These are roadside interdictions voluntarily reported by state highway patrol.



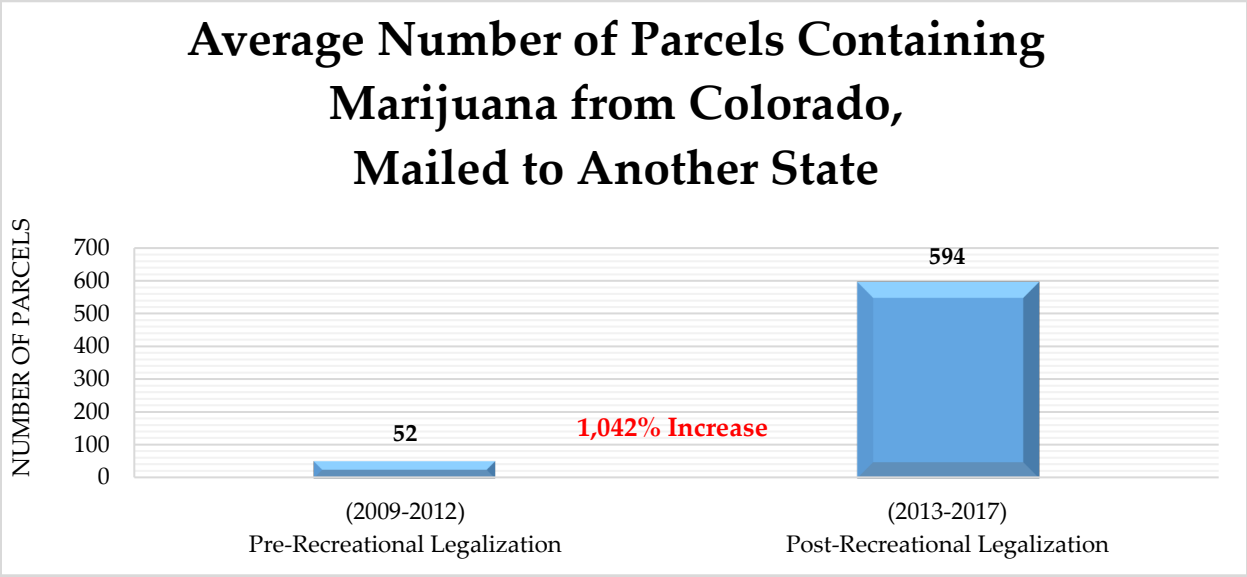
SOURCE: El Paso Intelligence Center, National Seizure System, as of July 2019



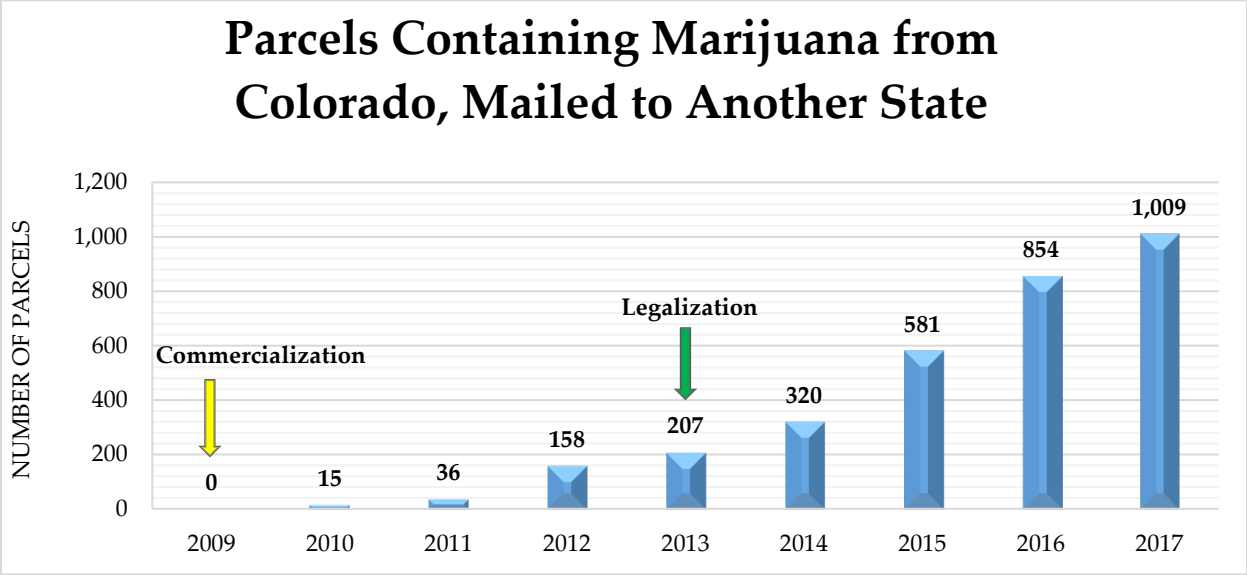
SOURCE: El Paso Intelligence Center, National Seizure System, as of July 2019

Parcel Interdiction Data

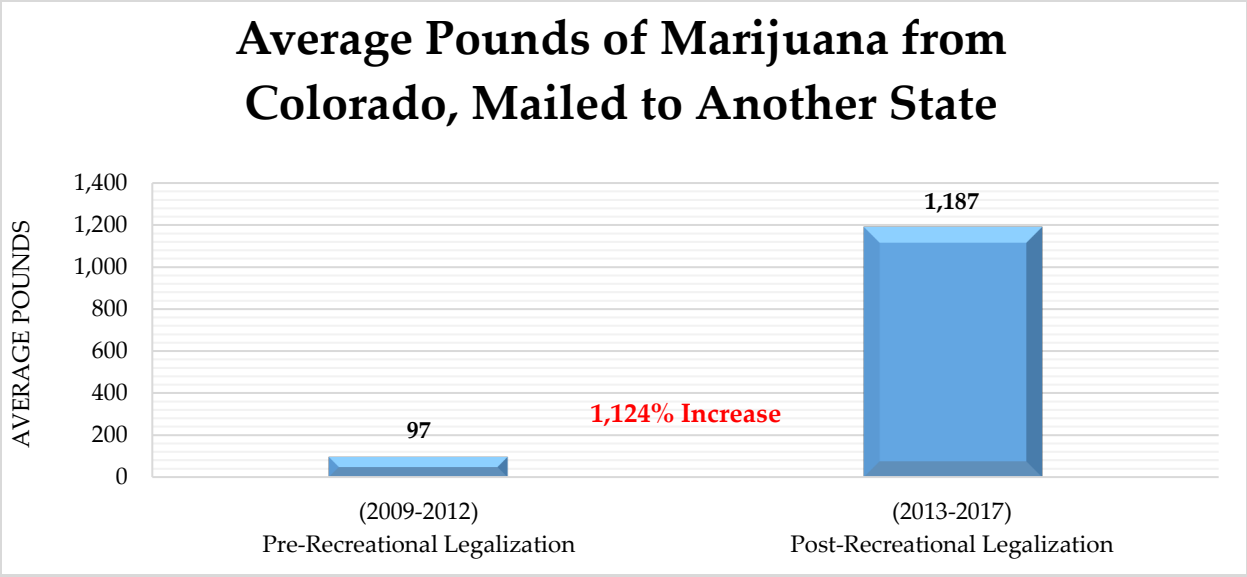
NOTE: These figures only reflect packages seized; they do not include packages of Colorado marijuana that were mailed and reached the intended destination. Interdiction experts believe the packages seized were just the "tip of the iceberg."



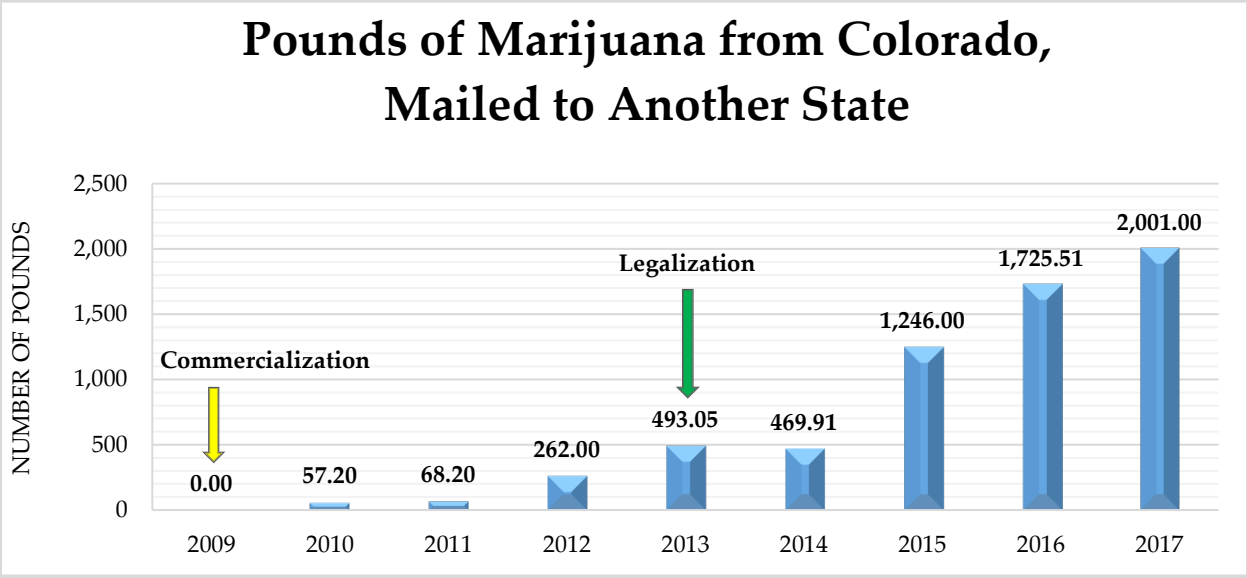
Source: **United States Postal Inspection Service, Prohibited Mailing of Narcotics**



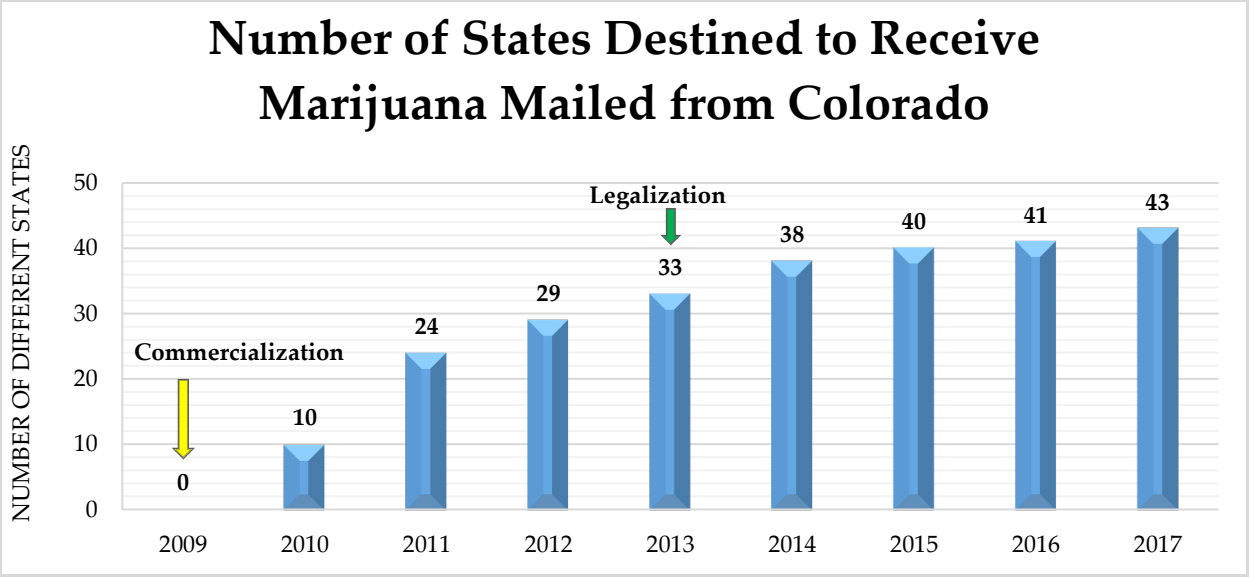
Source: **United States Postal Inspection Service, Prohibited Mailing of Narcotics**



Source: **United States Postal Inspection Service, Prohibited Mailing of Narcotics**



Source: **United States Postal Inspection Service, Prohibited Mailing of Narcotics**



SOURCE: **United States Postal Inspection Service, Prohibited Mailing of Narcotics**

Black Market Information

Sweet Leaf Marijuana Dispensary Chain Illegally Distributing Marijuana

Owners of a Colorado licensed marijuana retailer dispensary chain, Sweet Leaf, were sentenced to a year in prison for selling large quantities of pot to customers on the same day. Sweet Leaf was reported to have sold the maximum amount allowed to a customer 30 to 40 times a day which led to nearly 2.5 tons of marijuana from a licensed retailer going into the black market.

SOURCE: **Tabachnik, Sam. (2019)** ***Owners of Sweet Leaf dispensary chain sentenced to a year in prison for illegal marijuana distribution.*** **The Denver Post.**

Two Year Investigation Results in Largest Post Bust in Colorado History

In May 2019, local, state, and federal law enforcement partners served search warrants on 247 homes and eight restaurants in the Denver metro area. This was the result of a two-year investigation of a single black market marijuana ring. The operation resulted in 42 arrests, and the seizure of 80,000 marijuana plants, 4,500 lbs. of finished product (estimated value of $13.5 million), $2.2 million, and 25 vehicles.

SOURCE: **Mitchell, Kirk. (2019).** ***Feds arrest dozens of people, seize millions in property and cash as part of black market marijuana investigation.*** **Denver Post. https://www.denverpost.com/2019/05/24/illegal-marijuana-operation-denver-colorado/**

Colorado's Green Rush Lures Polydrug, Polycriminal Groups from South Florida

In July 2014, a tractor trailer transporting a shipment containing 8.9 million dosage units of hydrocodone was stolen from a truck stop in Cartersville, Georgia. The tractor trailer and its shipment were ultimately recovered by law enforcement officers in Georgia; however, the three individuals involved in the heist escaped. By late 2014, at least one of the three, Felipe Hurtado, had relocated to El Paso County, Colorado, and became involved in a largescale marijuana production network operated by a Florida-based Cuban drug trafficking organization (DTO).

During its investigation of this DTO, investigators identified dozens of residential marijuana grows operated by Cuban nationals who had relocated from Florida to Colorado for the purpose of producing large quantities of marijuana to sell in out-of-state markets throughout the Midwest and East Coast. The investigation revealed a widespread and sophisticated marijuana production and trafficking network orchestrated by DTO leadership in south Florida. Marijuana shipments from the DTO's indoor grow operations in Colorado were interdicted in various other states. Drug proceeds were laundered through front businesses operated by DTO leaders.

In August 2016, agents and officers of the DEA, the El Paso County Sheriff's Office, the Colorado Springs Police Department, and the Georgia Bureau of Investigations executed multiple search warrants on indoor grow operations associated with the DTO. Over 500 plants, five pounds of processed marijuana, and multiple firearms were seized from three different locations. Felipe Hurtado was arrested at one of the sites on six outstanding felony arrest warrants in Georgia in connection to the cargo theft.

In total throughout the multi-year investigation, eleven individuals were arrested and over 3,200 plants and 230 pounds of processed marijuana were seized, along with almost $4 million in cash and assets.

SOURCE: Drug Enforcement Administration, Denver Field Office.

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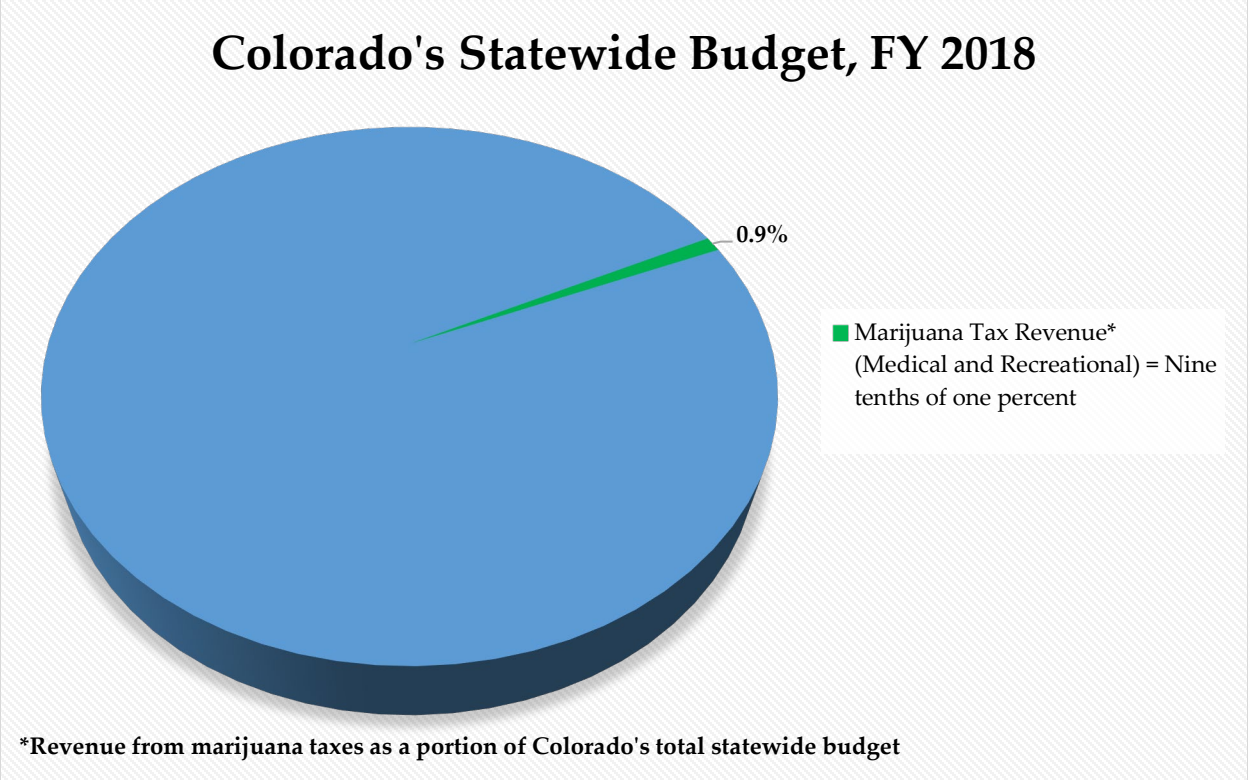
Section V: Societal Impact

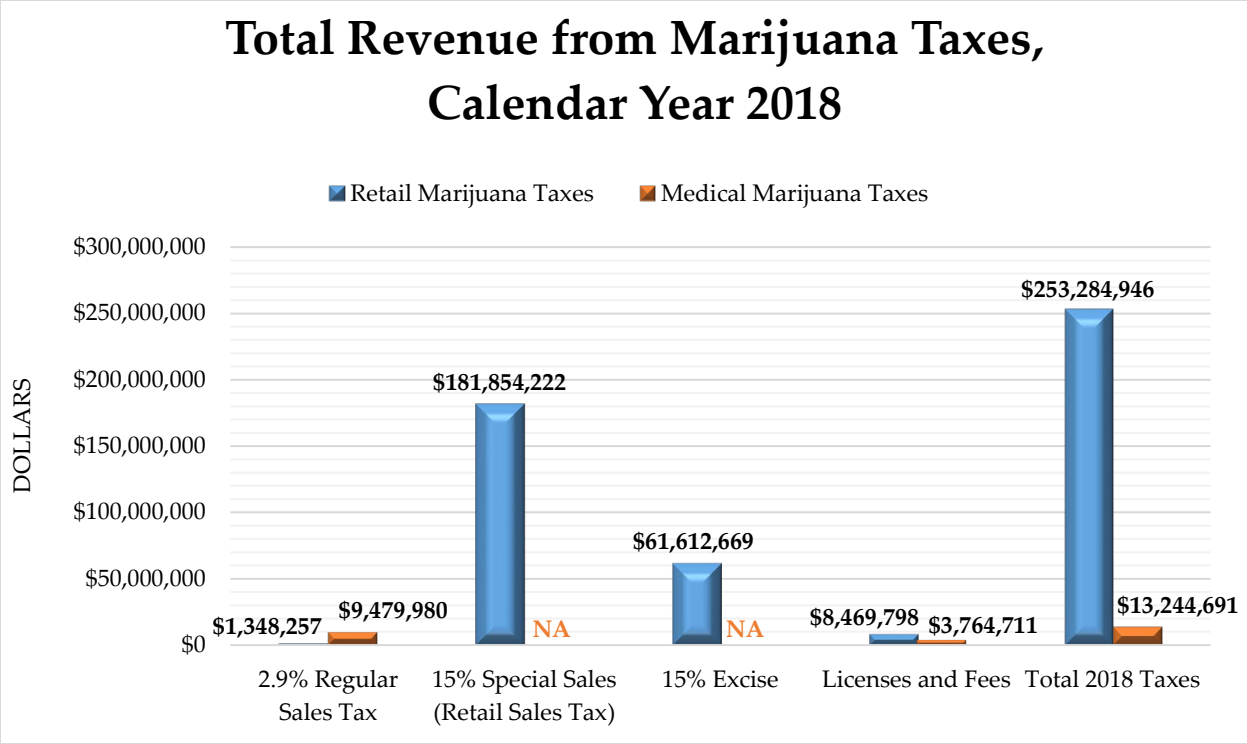
Some Findings

- Marijuana tax revenue represent approximately **nine tenths of one percent** of Colorado's FY 2018 budget.
- 64 percent of local jurisdictions in Colorado have banned medical and recreational marijuana businesses.

Tax Revenue



SOURCE: Governor's Office of State Planning and Budgeting



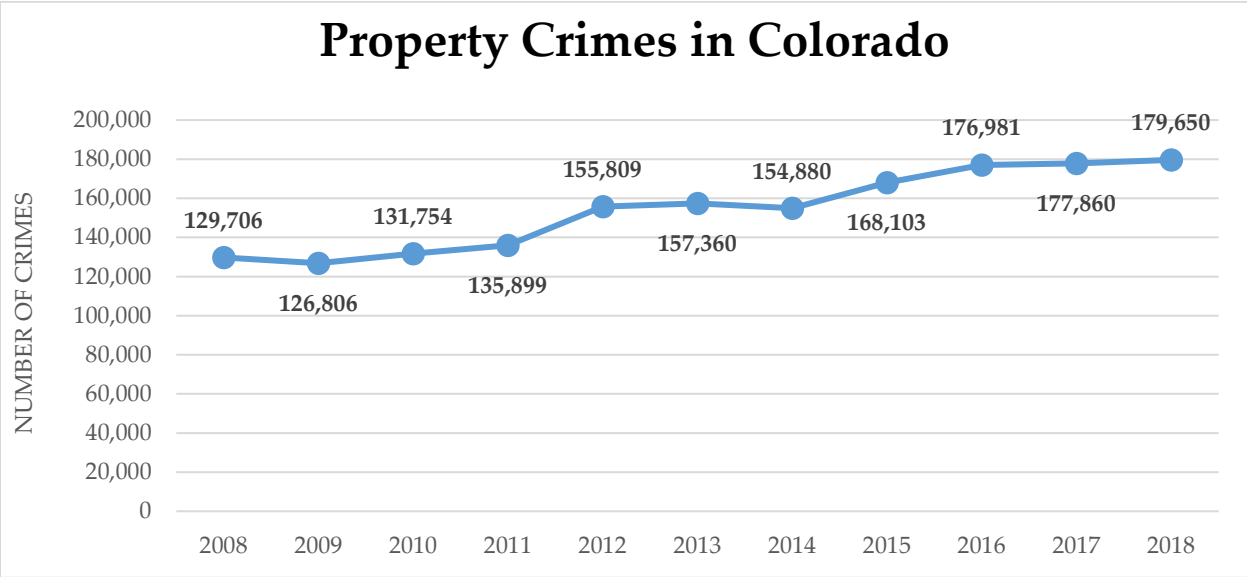
SOURCE: Colorado Department of Revenue

NOTE: Figures do not include any city taxes; the state does not assess or collect those taxes.

Per §39-26-729, C.R.S., retail marijuana, retail marijuana products, and retail marijuana concentrates are exempt from the 2.9% regular sales tax; however, products that do not contain marijuana (i.e., accessories) are still subject to the 2.9% regular sales tax.

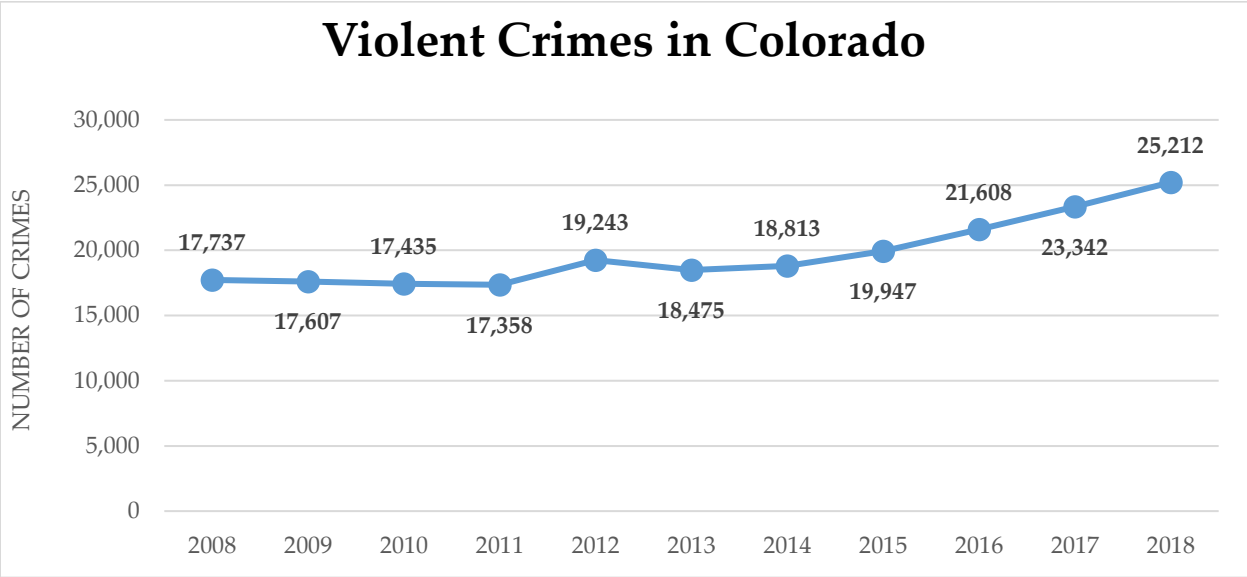
Licenses and fees includes the following categories: retail marijuana, individual, others, and collections not yet allocated.

Crime



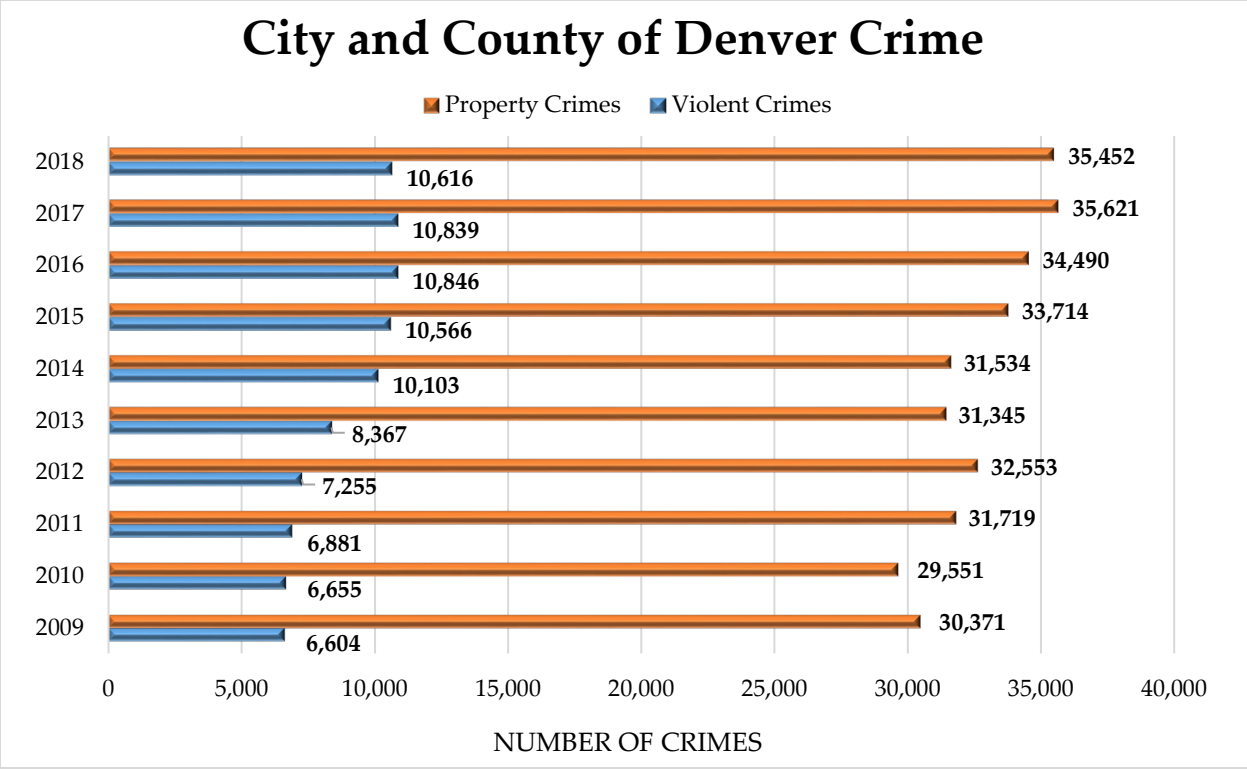
SOURCE: Colorado Bureau of Investigation

NOTE: Data collection methods for reporting crimes changed in 2018 and therefore numbers reported in this volume may vary from those reported in previous volumes.



SOURCE: Colorado Bureau of Investigation

NOTE: Data collection methods for reporting crimes changed in 2018 and therefore numbers reported in this volume may vary from those reported in previous volumes.



SOURCE: City and County of Denver, Denver Police Department

NOTE: In May 2013 the Denver Police Department implemented the Unified Summons and Complaint (US&C) process. This process unifies multiple types of paper citations, excluding traffic tickets, into an electronic process. That information is transmitted to the Denver Sheriff, County Court, City Attorney and District Attorney through a data exchange platform as needed. As a result of this process a reported offense is generated which was previously not captured in National Incident Based Reporting System (NIBRS).

Crime in Denver (City and County)					
	2014	2015	2016	2017	2018
All Reported Crimes (To include all categories listed below)	61,276	64,317	65,368	66,354	66,023

Denver Crime	From 2014 to 2018
Crimes Against Persons	5% Increase
Crimes Against Property	12% Increase
Crimes Against Society	44% Increase
All Other Offenses	12% Decrease
All Denver Crimes	8% Increase

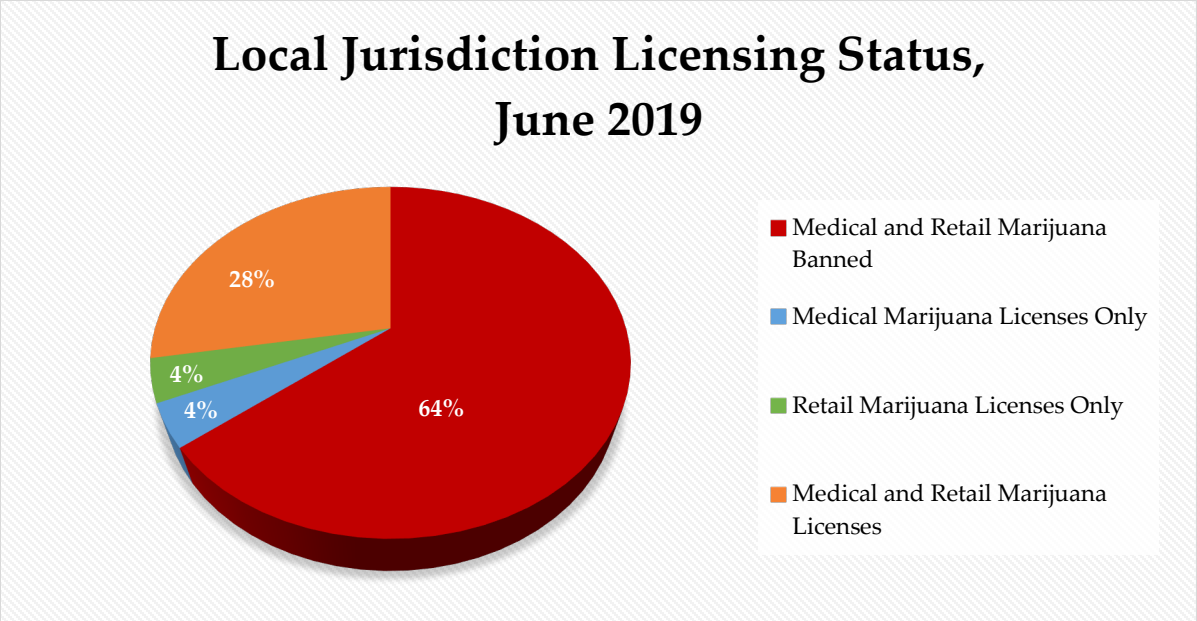
SOURCE: City and County of Denver, Denver Police Department

NOTE: New process began May 2013, therefore data prior to 2014 is not comparable and was not included here.

Local Response

Status of Local Jurisdictions Reporting Marijuana Licensing as of June 30, 2019	
	Number of Jurisdictions
Medical and Retail Marijuana Banned	209
Medical Marijuana Licenses Only	12
Retail Marijuana Licenses Only	12
Medical and Retail Marijuana Licenses	89
Total	322

SOURCE: Colorado Marijuana Enforcement Division



SOURCE: Colorado Marijuana Enforcement Division

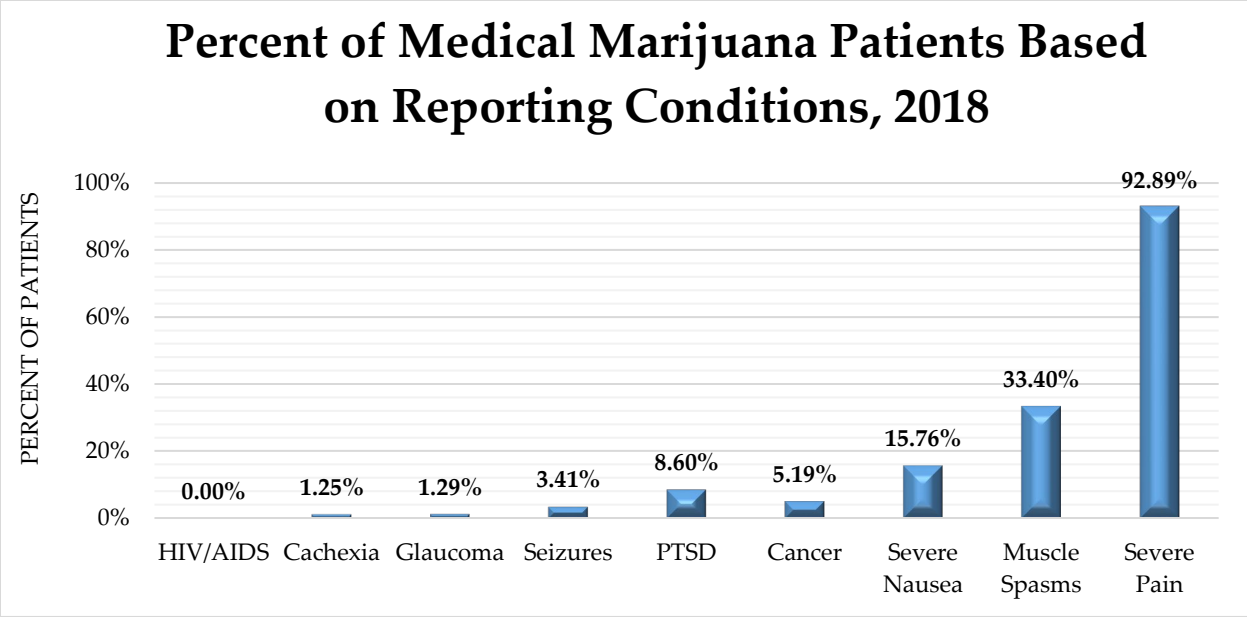
Medical Marijuana Statistics

Medical Marijuana Registry Identification Cards

- December 31, 2009 – 41,039
- December 31, 2010 – 116,198
- December 31, 2011 – 82,089
- December 31, 2012 – 108,526
- December 31, 2013 – 110,979
- December 31, 2014 – 115,467
- December 31, 2015 – 107,534
- December 31, 2016 – 94,577
- December 31, 2017 – 93,372
- December 31, 2018 – 86,641

Profile of Colorado Medical Marijuana Cardholders:

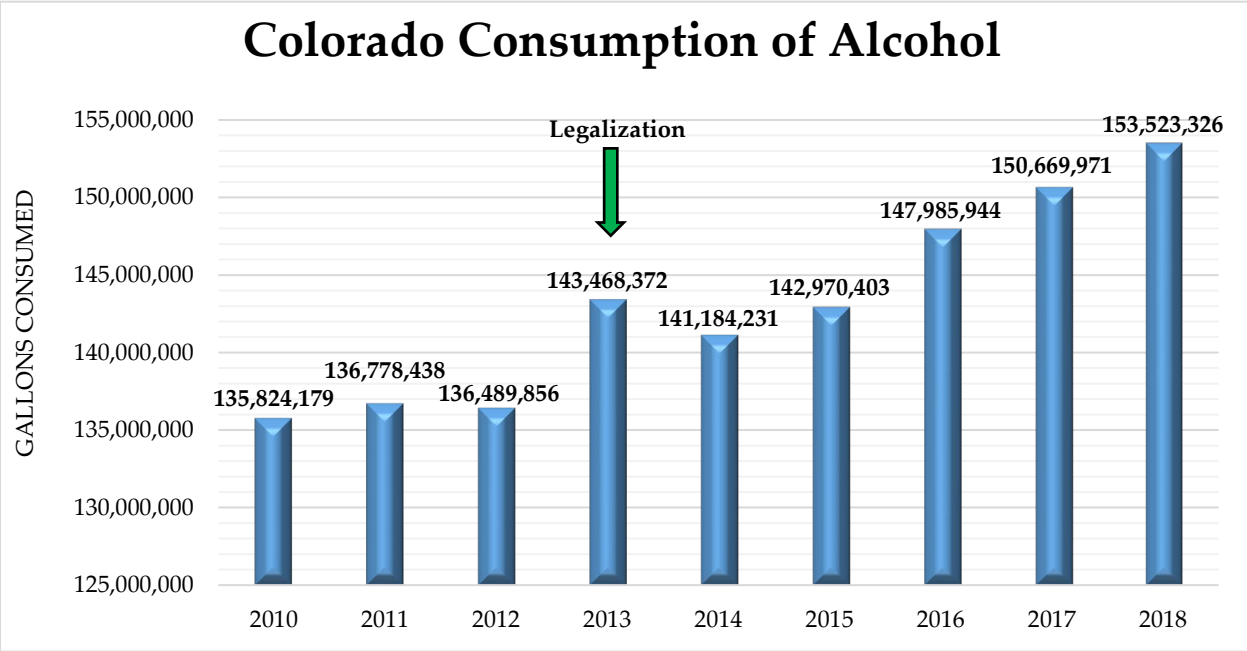
- Age of cardholder
  - 62 percent male, with an average age of 43 years
  - 0.4 percent between the ages of 0 and 17
  - 47 percent between the ages of 18 and 40
    - 21 percent between the ages of 21 and 30 (1 out of 5 patients)
- Reporting medical condition of cardholder
  - 93 percent report severe pain as the medical condition
  - 6 percent collectively report cancer, glaucoma and HIV/AIDS
  - 3 percent report seizures



SOURCE: Colorado Department of Public Health and Environment (CDPHE)

Alcohol Consumption

- **It has been suggested that legalizing marijuana would reduce alcohol consumption. Thus far that theory is not supported by the data.**



SOURCE: Colorado Department of Revenue, Colorado Liquor Excise Tax

Societal Impact Information

Colorado Violent Crime Increased 8% in Past Year

In 2018, violent crime in Colorado rose by 7.95% compared with 2017. Over half of the violent crime reported in 2018 was categorized as aggravated assault. In total, there were 211 murders (218 in 2017), 14,403 aggravated assaults (up 12.66% from 2017), and 6,834 sexual offenses (up 5.01% from 2017).

SOURCE: Hindi, Saja. (2019). ***Violent crime rose 8% in state last year.*** **The Denver Post.**

Compared to Other Large Cities, Denver Saw Largest Rise in Violent Crime

"The per-capita violent crime rate in Denver grew 9 percent between 2017 and 2018, while the bulk of large cities in the U.S. saw a decline… On average, violent crime rates in 25 of the nation's most populous cities dropped 4 percent in that time period. According to researchers with the Brennan Center for Justice, "Denver's rise in violent crime rate shows a true trend and not just a one-year blip on a chart..."

According to one researcher, "tracing the causes of changes in crime rates locally and nationally is difficult because data is often lacking or takes years to develop." Based on the first five months of 2019 data it appears the upward trend in violent crime may be shifting, but it's difficult to project what the violent crime statistics will look like in the future.

SOURCE: Schmelzer, Elise. (2019). ***Denver saw largest rise in violent crime rate last year of the nation's most compared to other large citeis; early 2019 data show improvement.*** **The Denver Post.**

Legalized Marijuana Does Not Impact Alcohol Sales

With the widespread recreational legalization of marijuana, there is a lot of misinformation being spread regarding the impact of recreational marijuana legalization on the alcohol market. More specifically, some proponents of recreational marijuana legalization have stated that legalized marijuana will lead to a decrease in the purchasing and consumption of alcohol. In January of 2019, the Distilled Spirits Council released new research that shows the sale of legalized marijuana does not impact alcohol sales in Colorado, Washington and Oregon – the earliest adopting states of recreational marijuana. According to the January report, an in-depth analysis of state-level alcohol tax receipt and actual alcohol shipment data shows that "…there has been no impact on spirits sales from recreational marijuana legalization."

SOURCE: Distilled Spirits Council of the United States. (2019). ***New Distilled Spirits Council study shows no impact on spirits sales from legalized recreational marijuana.*** **Retrieved from https://www.distilledspirits.org**

Economic and Social Costs of Legalized Marijuana

In November of 2018, the Centennial Institute at the Colorado Christian University commissioned a study to understand the impacts of marijuana legalization in Colorado. More specifically, the study aimed to understand the price that is being paid by Coloradans in order to mitigate the consequences of commercial marijuana. Some of the researcher's findings include:

- "For every dollar gained in tax revenue, Coloradans spent approximately $4.50 to mitigate the effects of legalization."
- "Costs related to the healthcare system and from high school drop-outs are the largest cost contributors."
- "Yearly cost-estimates for marijuana users: $2,200 for heavy users, $1,250 for moderate users, $650 for light users."
- "The estimated costs of DUIs for people who tested positive for marijuana only in 2016 approaches $25 million."
- "In 2016, the marijuana industry was responsible for approximately 393,053 pounds of CO2 emissions."

SOURCE: Centennial Institute, Colorado Christian University. (2018). ***Economic and social costs of legalized marijuana*****. Retrieved from http://cdn-centennial.pressidium.com/centennial/wp-content/uploads/2019/03/Economic-and-Social-Costs-of-Legalized-Marijuana-v1.3.pdf**