

New Use of Bathrooms:

- “2 students were smoking marijuana in the restroom last year.”
- “8th grade male student had marijuana in his locker, classmates reported it. 8th grade female student smoked a joint in a school bathroom during school hours. Shared it with a friend.”
- “7th grade girl last year had hidden marijuana and a pipe in the girl’s restroom and told several friends who began getting bathroom break passes from various classrooms. Security noted an increased traffic flow to and from that restroom and found the weed and soon after the violators.”

It’s Legal:

- “3 or 4 times in the last school year, students have come to school under the influence after meeting at homes where parents were absent, sharing marijuana off campus and then bringing it on campus. 7th and 8th grade students have been involved, and most often their reaction when caught is ‘it’s legal’.”
- “I met with at least 5 students last year alone that have been showing significant signs of drug use or were caught and they all said they will not stop using weed on a daily basis. Their justification was it’s fine because it’s legal. If it’s legal it’s not as bad as what adults say about the risks.”

Grades Decline: “I would like to say that in general our Marijuana incidents have not gone up. We have a savvy population that knows to keep it away from school. However, I have seen a huge spike in talking with kids about it in my sessions. Last year I had two very intelligent students (above 4.0) that used marijuana 2-6 times a week. Both of them had grades decline and significant social emotional issues spike in the Spring of their Senior Year. They also both had violations at school.”

Dad Allows Pot Smoking: “We had reports of two students (brothers) appear to be high at school. Our officer assessed both of them and discovered that their father, who had a medical marijuana card, was having them both “smoke a bowl” before school. He thought it would make their school day easier.”

Parents High: “At our elementary school, we have noticed an increased number of parents showing up to school high. Kids have also brought [marijuana] to school to show their friends.”

Difficulty in Assessment: “For school personnel, it is more difficult to evaluate what substance a student is under the influence of. We can smell alcohol and smoked marijuana but the edibles and vapes are hard to detect.”

Warning: Drug Canines: “I would like to just offer that we need policy that allows for more use of drug dogs and not having to forewarn students or parents when these dogs will be present. Students and especially dealers, the ones we need to catch, are very vigilant in making adjustments when these resources are used.”

Youth Use Surveys Not Utilized and Why

- ❖ **After careful analysis and consideration, Rocky Mountain HIDTA did not use the following datasets in this report because of the following reasons:**

Healthy Kids Colorado Survey (HKCS)

The HKCS shows a 7.6 percent increase in student marijuana use from 2013 (19.7 percent) to 2015 (21.2 percent). According to a front page article in *The Denver Post* (June 21, 2016), the increase was not statistically significant and thus “Pot use among Colorado teens flat.” In fact, *The Denver Post* editorial board released an editorial on June 22, 2016 titled “Colorado’s good news on teen pot use.” An analysis of the data paints a different picture of student marijuana use in Colorado. For a detailed analysis and actual data, go to www.rmhidta.org and click on the Reports tab to read “Colorado Youth Marijuana Use: Up – Down – Flat? Examine the Data and You Decide!” Some of the data in this survey include the following:

Bad News

- Marijuana use among Colorado high school junior and senior students increased 19 percent and 14 percent respectively.
- One out of 3 Denver high school juniors and seniors surveyed are marijuana users, a 20 percent increase.
- There was nearly a 50 percent increase in the Boulder/Broomfield region high school junior and senior marijuana users.
- Colorado mountain resort communities (Region 12) saw a 90 percent increase in marijuana users among their high school seniors and a 54.7 percent increase among sophomores.
- Other rural mountain communities (Region 11) saw increases of 22.2 percent for freshmen, 72.0 percent for sophomores, 18.8 percent for juniors and 57.3 percent for seniors.
- Ten out of the 17 regions, with sufficient participation to be counted, saw an overall increase in marijuana use.

- Only 48 percent of high school students surveyed see marijuana as risky compared to 54 percent of those surveyed two years earlier.

Yes, There is Good News

- The rural western area (Region 10) had a major decrease in marijuana users in all four high school grades. This decrease was 51.8 percent among freshmen to 24.7 percent among seniors.
- Rural mountain communities (Region 17) saw an overall 17.1 percent decrease including a 53.7 percent drop in freshmen marijuana users and a 34.3 percent drop in senior users. However, the survey does show an increase in sophomore users (12.7 percent) and junior users (7.6 percent).
- Seven out of 17 regions, with sufficient participation to be counted, saw an overall decrease in marijuana users.
- The question should be raised as to what message is getting through to students in the regions experiencing overall decreases in marijuana use but missing in those regions experiencing increases in use.

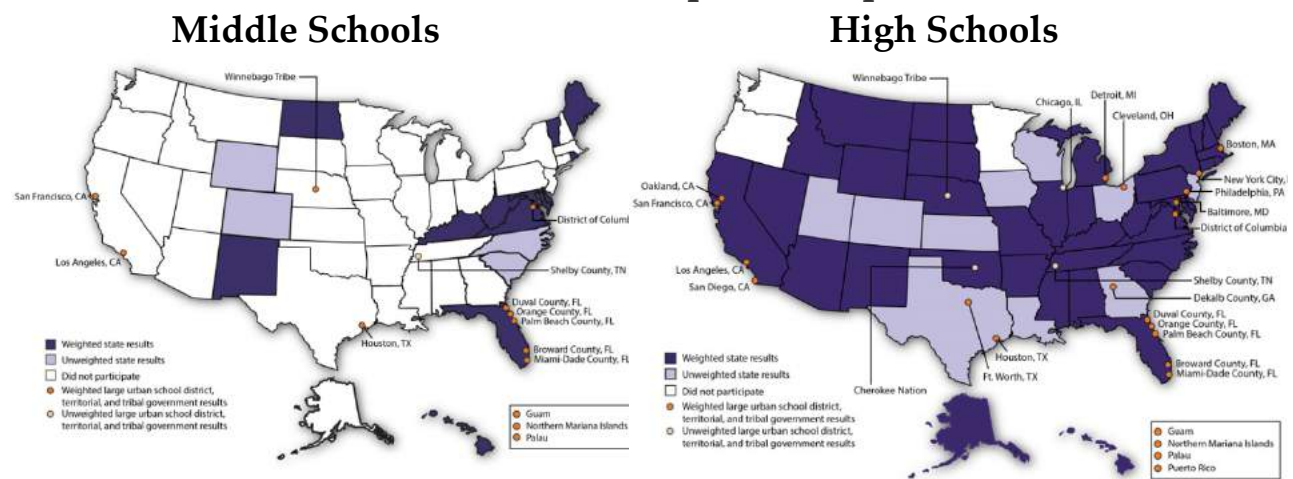
Other Potentially Pertinent Information

- The article cites the Centers for Disease Control's Youth Risk Behavior Survey (YRBS) to indicate that "marijuana use among teens nationwide also remains flat..." They failed to mention that Oregon and Washington, states with legalized marijuana, and Minnesota did not participate in the 2015 YRBS. There were also ten states, including Colorado, with unweighted results because their state survey participation rate did not meet the 60 percent participation standard set by YRBS.
- In 2015 the HKCS survey had a response rate of 46 percent. Even though HKCS samples a large number of students, their participation rate is below the industry standard for weighted data.
- Jefferson County (the 2nd largest school district), Douglas County (the 3rd largest school district), El Paso County (which includes Colorado Springs, 2nd largest metro area), and Weld County results were listed as N/A which means data not available due to low participation in the region. NOTE: This is a similar reason why Colorado results were considered unweighted by the national YRBS survey.

Centers for Disease Control Youth Risk Behavior Survey (YRBS)

In 2015, Colorado fell short of the required 60 percent participation rate and was, therefore, not included with weighted data in this survey. Additionally, upon further review, it was discovered that since 1991 the state of Colorado has only been represented in the High School YRBS survey with weighted data four times. Since 1995, Colorado has only been represented in the Middle School YRBS survey by weighted data twice. States that participated in the 2015 Middle School and High School YRBS surveys are represented in dark purple in the below maps. It should be noted, in 2015, high schools in the following ten states were not included with weighted high school data: Utah, Colorado, Kansas, Texas, Louisiana, Georgia, Iowa, Wisconsin, Ohio, and New Jersey. Washington, Oregon, and Minnesota did not participate in the survey.

Centers for Disease Control Youth Risk Behavior Survey
2015 YRBS Participation Map



SOURCE: Centers for Disease Control and Prevention, Adolescent and School Health, YRBS Participation Maps and History <<http://www.cdc.gov/healthyyouth/data/yrebs/participation.htm>>

Monitoring the Future (MTF) Study:

Monitoring The Future is designed to be nationally-represented and not state-represented. MTF does not provide usable estimates for the specific state of Colorado because of the state’s relatively small size. Colorado is only 1.6 percent of the total U.S. population; thus, the sampling would only be 1.6 percent of Colorado schools (400) or about 6 schools per year. Since 2010, the survey sampled an average of 4.6 Colorado schools. In 2014 and 2015, there were four schools surveyed each year of which three

were eighth grade. Therefore, the MTF study is not useful for state data pertaining to Colorado for school-age drug use data and trends.

Related Material

American Academy of Pediatrics (AAP) – Oppose Legalization: In a policy statement issued by the American Academy of Pediatrics, the organization declares their recommendations regarding legalization of marijuana in regard to the effects on our youth:

“Given the data supporting the negative health and brain development effects of marijuana in children and adolescents, ages 0 through 21 years, the AAP is opposed to marijuana use in this population.” Additionally, the AAP declares that they, “Oppose legalization of marijuana because of the potential harms to children and adolescents. The AAP supports studying the effects of recent laws legalizing the use of marijuana to better understand the impact and define best policies to reduce adolescent marijuana use.” Furthermore, the AAP, “Opposes the use of smoked marijuana because smoking is known to cause lung damage, and the effects of secondhand marijuana smoke are unknown.” Lastly, the AAP discourages the use of marijuana by adults due to the influence on children and adolescent behavior.¹

American College of Pediatricians (ACP): Marijuana Harmful to Youth, Oppose Legalization: An article published and reviewed by the ACP states, “Although increasing legalization of marijuana has contributed to the growing belief that marijuana is harmless, research documents the risks of its use by youth are grave. Evidence indicates limited legalization of marijuana has already raised rates of unintended marijuana exposure among young children, and may increase adolescent use. Therefore, the American College of Pediatricians supports legislation that continues to restrict the availability of marijuana...”

Supporting evidence that the ACP cites regarding youth marijuana abuse includes:

- According to CDC data, more teens are now smoking marijuana than cigarettes.
- Researchers in Colorado found that approximately 74 percent of adolescents in substance abuse treatment had used someone else’s medical marijuana, a potential byproduct of legalization.
- The National Institute of Drug Abuse- (NIDA) funded *Monitoring the Future* study of the year 2012 showed that 12.7 percent of 8th graders, 29.8 percent of 10th graders, and 36.4 percent of 12th graders had used marijuana at least once in the year prior to being surveyed. They also found that 7, 18 and 22.7 percent respectively for these groups used marijuana in the past month.

- The number of current (past month) users aged 12 and up increased from 14.5 to 18.9 million since 2007.
- Marijuana is the leading illicit substance mentioned in adolescent emergency department admissions and autopsy reports, and is considered one of the major contributing factors leading to violent deaths and accidents among adolescents.
- Approximately 9 percent of users overall become addicted to marijuana, about 17 percent of those who start during adolescence become addicted.

In summary, marijuana use is harmful to children and adolescents. For this reason, the American College of Pediatricians opposes its legalization for recreational use and urges extreme caution in legalizing it for medicinal use. Likewise, the American Academy of Child and Adolescent Psychiatry (AACAP) recently offered their own policy statement opposing efforts to legalize marijuana.²

Pot Science – Top Marijuana Findings of 2015:³

- A study published in the journal *JAMA Psychiatry* examined brain scans in pairs of same-sex siblings, including some sets of twins. The researchers found that teens who had smoked marijuana – even once – had smaller brain volume in the amygdala compared with teens who never tried pot. The amygdala is involved in processing emotions and seeking rewards.
- Researchers have found that marijuana could play a role in cortical thinning (the cortex is the outer layer of the brain), which may alter brain development in teens.
- One in five high school students who use e-cigarettes has also tried using these devices to vape pot, reported a Connecticut study of nearly 4,000 teens (released September 2015).

Democrat Governor – Legalizing Pot Was ‘Reckless’: In a gubernatorial debate Colorado Governor John Hickenlooper stated, “I think for us to do that [legalize recreational use] without having all the data, there is not enough data, and to a certain extent you could say it was reckless.” A study that speaks to this sentiment was published in the *Journal of Addiction* by professor Wayne Hall of Kings College, London shows that marijuana is highly addictive, causes mental health problems and is a gateway drug to other illegal dangerous drugs. The study confirms that regular adolescent marijuana users have lower educational attainment than non-using peers, users are more likely to use other illegal drugs, adolescent use produces ‘intellectual impairment,’ marijuana use doubles the risk of being diagnosed with schizophrenia, and marijuana use increases the risk of heart attacks in middle-aged adults.⁴

Colorado Educators Concerned About Pot in Public Schools:⁵

- Authorities are referring to marijuana as the No. 1 issue Colorado schools face. According to Christine Harms, director of the Colorado School Safety Resource Center, “Our students are paying the price.”
- “At first, I thought it was similar to alcohol and that the kids would do it anyway and all that, but it’s like they’re disguising alcohol as Kool-Aid and marketing it to kids. These edibles are cookies and gummy bears, and they’re filled with high amounts of THC. There’s a shift in culture, kids see their parents smoking it and see it marketed everywhere, and they think it’s normal and OK for them to do.”
 - Jeff Whitmore, director of transportation for Bayfield School District in Southwestern Colorado

Teens Who Use Cannabis at Risk of Schizophrenia:⁶

- In a study performed by researchers from Western University in Ontario, Canada, long-term exposure to THC in mice was linked to several characteristics present in schizophrenics. Adolescent rodents with THC exposure were socially withdrawn and demonstrated increased anxiety, cognitive disorganization and abnormal levels of dopamine, all of which are features of schizophrenia. These changes continued into early adulthood, well past the initial exposure.
- “Adolescence is a critical period of brain development, and the adolescent brain is particularly vulnerable. Health policy makers need to ensure that marijuana, especially marijuana strains with high THC levels, stays out of the hands of teenagers.”
 - Steven Laviolette, PhD – led the research at Western University, Ontario, Canada

Something Interesting Happens to Weed After It’s Legal: Researchers from the Pardee RAND Graduate School and Carnegie Mellon University examined prices of marijuana in Washington over the course of the first two years of recreational legalization. As one might suspect, prices of both retail and wholesale marijuana have plummeted. Currently, prices are falling at about 2 percent per month, which equates to an approximate 25 percent drop every year going forward. For consumers of pot, the decrease in price will affect different populations in different ways. For example: young users are typically more “price sensitive” consumers; therefore, their use of inexpensive pot may rise over time, as might that of problematic marijuana users.⁷

America's Youth – The Marijuana Martyrs:⁸

- Colorado and Washington, the first two states to legalize, were among the top three states with the largest increases in youth homelessness from 2013 to 2014. In each state, the youth homelessness rate grew by 27 and 13.3 percent respectively in just one year.
- Colorado now ranks number one for regular marijuana use among youth (U.S. Department of Health and Human Services). This proud achievement only came incrementally, though; Colorado once ranked a distant 14th in the country for youth usage. Once again, this jump in the rankings coincided with Colorado's 2012 passage of Amendment 64, which legalized marijuana for recreational use.
- Average use among teens in recreational/medical marijuana states rests at 10.5 percent compared to 8.9 percent in states where it is only legal for medicinal purposes and 6.1 percent in states where the drug is banned altogether. In other words, there is a direct correlation between availability of marijuana and teen usage.
- According to Arapahoe House Treatment network in Colorado, teenage admissions for marijuana addiction in Colorado increased by 66 percent between 2011 and 2014, again correlating with the 2012 passage of Amendment 64.
 - Ninety-five percent of the teenagers treated for substance abuse and addiction in my adolescent substance-abuse treatment clinic at Denver Health are there because of their marijuana use, and because nationwide, 67 percent of teens are referred to substance treatment because of their marijuana use. Marijuana is the No. 1 reason why adolescents seek substance-abuse treatment in the United States. (*Dr. Christian Thurstone, University of Colorado*)
- A comprehensive New Zealand study of 1,000 individuals over many years found that participants who used cannabis heavily in their teens had an astonishing average loss of 8 IQ points.

Impact of Legalization on Youth: In a report written by Dr. Kenneth Finn, MD and Rochelle Salmore, MSN, RN, some effects of marijuana legalization on our youth in CO are described from the eyes of medical professionals:

“The effects on learning and education related to cannabis use have been documented extensively, and Colorado school expulsions for drug related reasons increased 40% between 2008 and 2014, citing marijuana as the most commonly abused substance. In addition, the American Academy of Neurology recently recommended no cannabis use for children, adolescents, or adults until further study is done. Cannabis has a known addictive potential, particularly in the developing brain, and has a well-described withdrawal syndrome. Nationally there are 7.15% adolescents using

cannabis, but in Colorado this figure is 11.16%. Furthermore, the addiction rate is higher for adolescents (approximately 18%) than for adults (approximately 9%).”⁹

Legalizing Marijuana and the Opiate Epidemic: New science suggests that teenagers who use marijuana increase their risk of opiate addiction later in life. For example, a 20-year-old who takes an opiate painkiller for a skiing injury or wisdom tooth removal may be much more at risk of becoming addicted to that painkiller as a result of his or her earlier marijuana use – no matter how insignificant that earlier use may seem. This science puts some teeth behind the old-school term “gateway drug.”

A study of rodents, conducted at the Hurd Laboratory at the Mount Sinai School of Medicine, showed that rodents exposed to THC in the adolescent years had offspring that were primed for addiction. The research has yet to be reproduced in humans, but other studies on trans-generational effects of other drugs in humans appear consistent with the discoveries in rodents.¹⁰

Sources

¹ Committee on Substance Abuse, Committee on Adolescence, Pediatrics 2015;135;584; originally published online January 26, 2015; DOL: 10.1542/peds 2014-4146, “The Impact of Marijuana Policies on Youth: Clinical, Research, and Legal Update,” <<http://pediatrics.aappublications.org/content/pediatrics/135/3/584.full.pdf>>, accessed June 10, 2016

² American College of Pediatricians, April 2016, “Marijuana Use: Detrimental to Youth,” <<http://www.acped.org/marijuana-use-detrimental-to-youth>>, accessed June 20, 2016, accessed June 10, 2016

³ Cari Nierenberg, Live Science, December 29, 2015, “Pot Science: Top Marijuana Findings of 2015,” <<http://www.livescience.com/53218-top-marijuana-scientific-findings-2015.html>>, accessed December 29, 2015

⁴ Charles “Cully” Stimson, *The Daily Signal*, October 8, 2014, “Democrat Governor: Legalizing Pot Was ‘Reckless.’ A New Study Proves Him Right,” <<http://dailysignal.com/2014/10/08/dem-gov-legalizing-pot-colo-reckless-new-study-proves-right/>>, accessed June 9, 2016

⁵ Elizabeth Hernandez, October 14, 2015, *The Denver Post*, "Colorado educators concerned about pot in public schools," <<http://www.denverpost.com/2015/10/14/colorado-educators-concerned-about-pot-in-public-schools/>>, accessed October 15, 2015

⁶ Yvette Brazier, Medical News Today (MNT), January 17, 2016, "Teens who use cannabis at risk of schizophrenia," <<http://www.medicalnewstoday.com/articles/305151.php>>, accessed June 9, 2016

⁷ Keith Humphreys, *The Washington Post*, May 4, 2016, "So, something interesting happens to weed after it's legal," <<https://www.washingtonpost.com/news/wonk/wp/2016/05/04/the-price-of-legal-pot-is-collapsing/>>, accessed May 4, 2016

⁸ Kayleigh McEnanny, Above the Law, December 31, 2015, "America's Youth: The Marijuana Martyrs," <<http://abovethelaw.com/2015/12/americas-youth-the-marijuana-martyrs/>>, accessed January 25, 2016

⁹ Kenneth Finn, M.D., "The Hidden Costs of Marijuana Use in Colorado: One Emergency Department's Experience," *The Journal of Global Drug Policy and Practice*, <http://www.globaldrugpolicy.org/Issues/Vol%2010%20Issue%202/Articles/The%20Hidden%20Costs%20of%20Marijuana%20Use%20in%20Colorado_Final.pdf>, accessed May 17, 2016

¹⁰ Heidi Heilman, *New Boston Post*, March 4, 2016, "Legalizing marijuana will increase our opiate epidemic," <<http://newbostonpost.com/2016/03/03/legalizing-marijuana-will-increase-our-opiate-epidemic/>>, accessed March 4, 2016

SECTION 3: Adult Marijuana Use

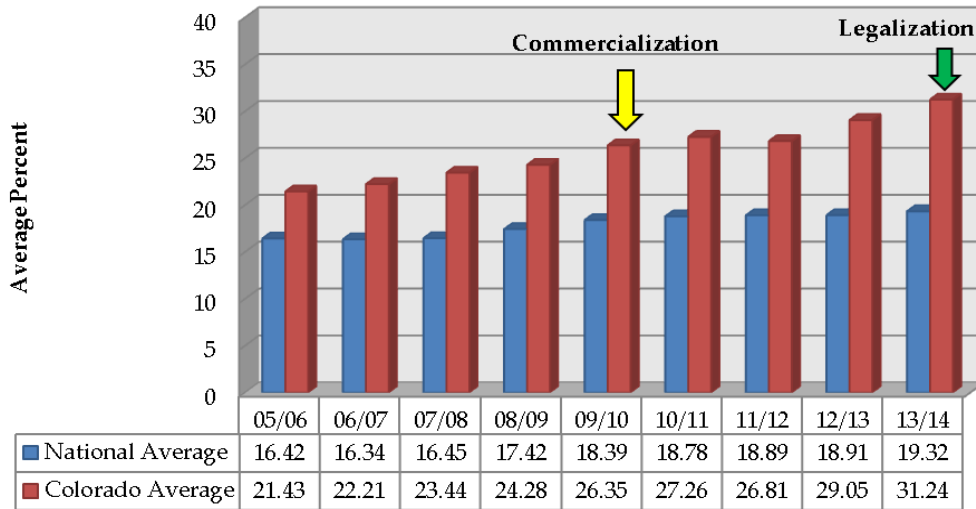
Some Findings

- College age past month marijuana use increased **17 percent** in the two-year average (2013/2014) since Colorado legalized recreational marijuana compared to the two-year average prior to legalization (2011/2012).
 - Nationally college age past month marijuana use **increased 2 percent** during the same timeframe.
- The latest 2013/2014 results show Colorado college age adults ranked **#1** in the nation for past month marijuana use, up from **#3** in 2011/2012 and **#8** in 2005/2006.
- Colorado college age past month marijuana use for 2013/2014 was **62 percent higher** than the national average compared to **42 percent higher** in 2011/2012.
- Adult past-month marijuana use **increased 63 percent** in the two-year average (2013/2014) since Colorado legalized recreational marijuana compared to the two-year average prior to legalization (2011/2012).
 - Nationally adult past month marijuana use **increased 21 percent** during the same timeframe.
- The latest 2013/2014 results show Colorado adults ranked **#1** in the nation for past month marijuana use, up from **#7** in 2011/2012 and **#8** in 2005/2006.
- Colorado adult past month marijuana use for 2013/2014 was **104 percent higher** than the national average compared to **51 percent higher** in 2011/2012.
- The top ten states for the highest rate of current marijuana use for 2013-2014 were all medical-marijuana states.

Data

College Age 18 to 25 Years Old

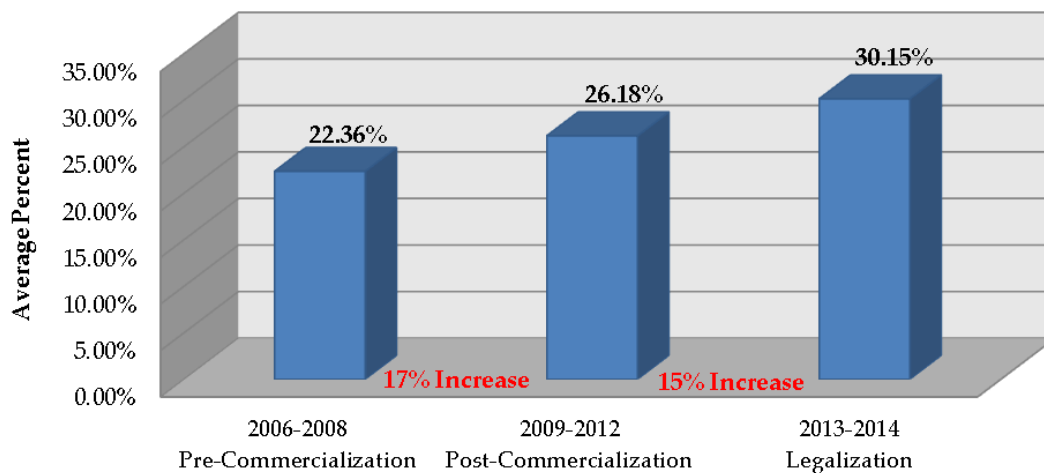
Past Month Marijuana Use
College Age 18 to 25 Years Old



Annual Averages of Data Collection

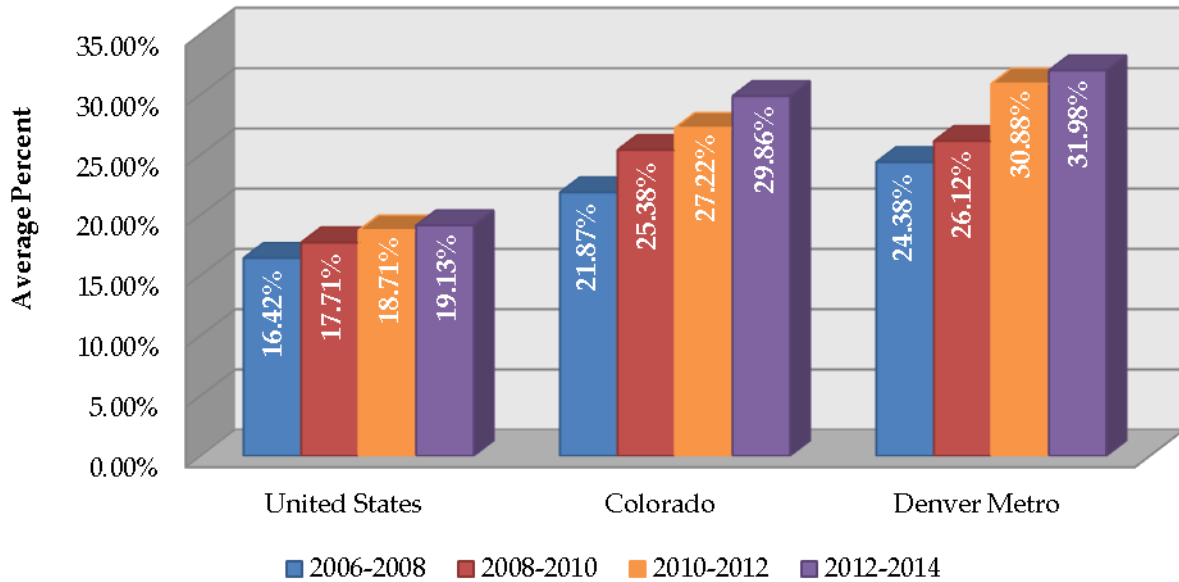
SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

Average Past Month Use of Marijuana
College Age 18 to 25 Years Old



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

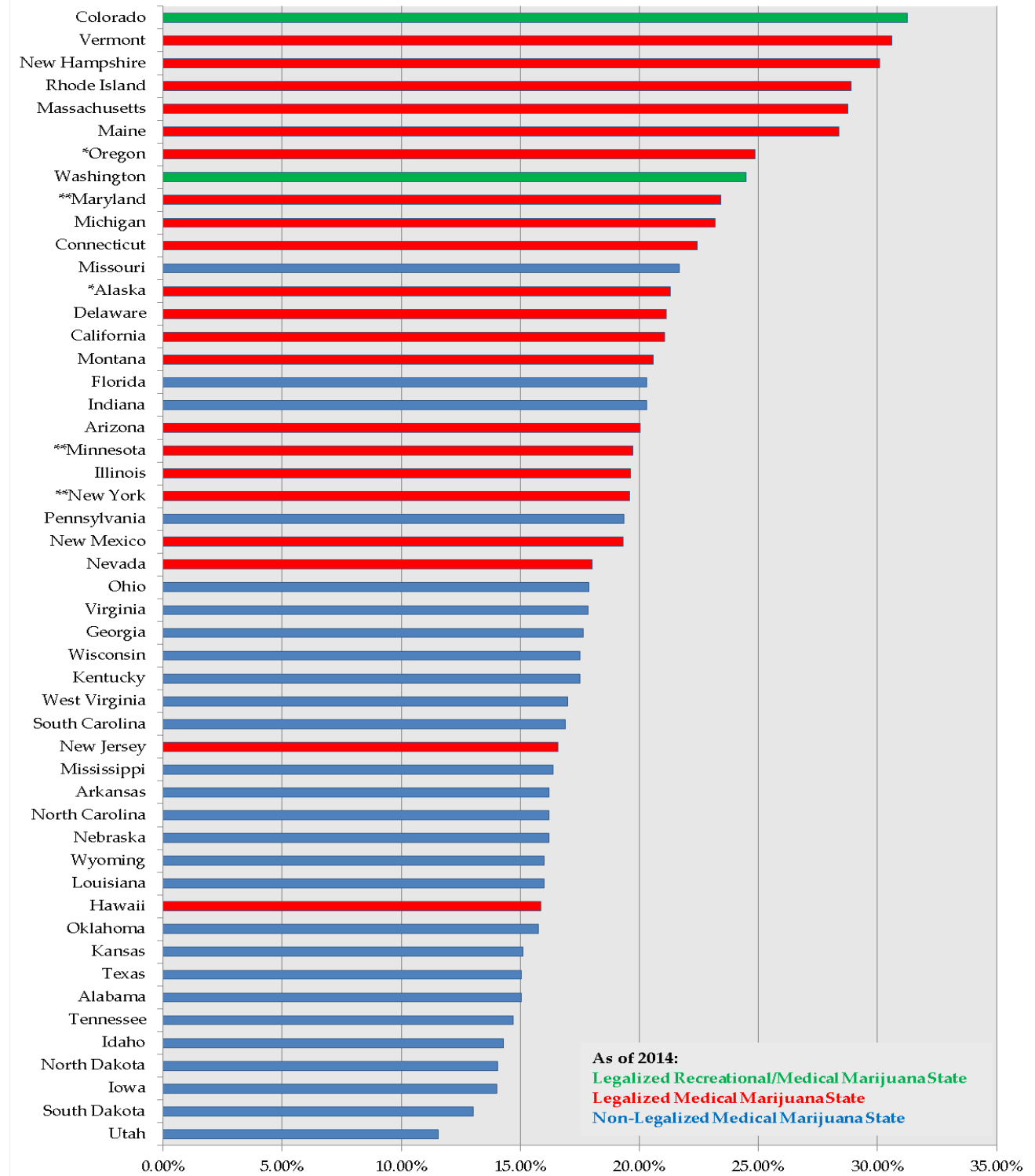
Prevalence of Past 30-Day Marijuana Use College Age 18 to 25 Years Old



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health, Substate Region Estimates 2006-2014

NOTE: SUBSTATE DATA IS ONLY AVAILABLE FROM THE NATIONAL SURVEY ON DRUG USE AND HEALTH IN THE ABOVE TIMEFRAMES.

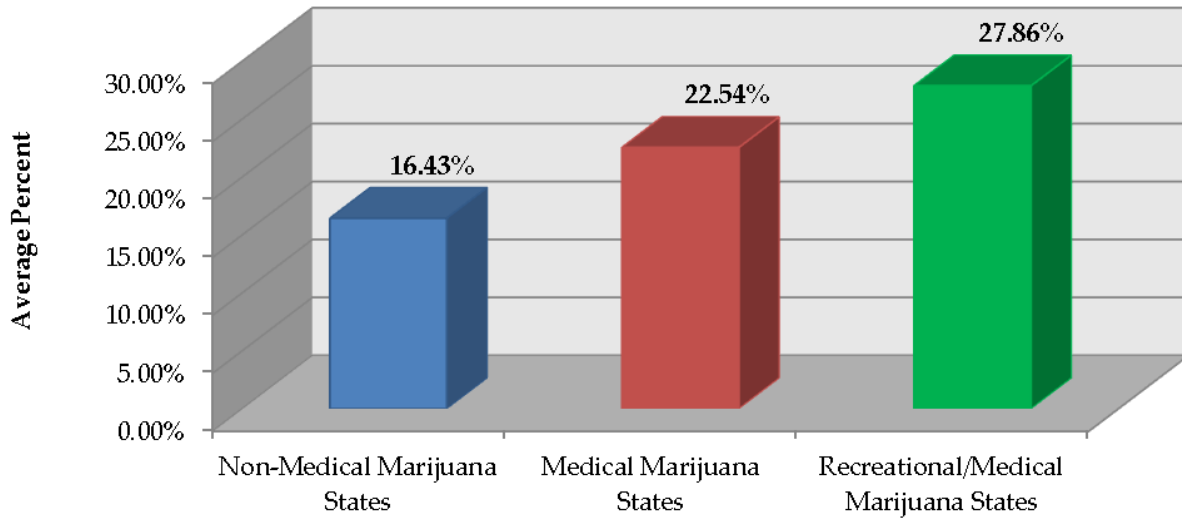
Past Month Usage, 18 to 25 Years Old, 2013/2014



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

NOTE: *Oregon and Alaska voted to legalize recreational marijuana in November 2014
 **States that had legislation for medical marijuana signed into effect during 2014

Average Past Month Use College Age 18 to 25 Years Old, 2013/2014



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

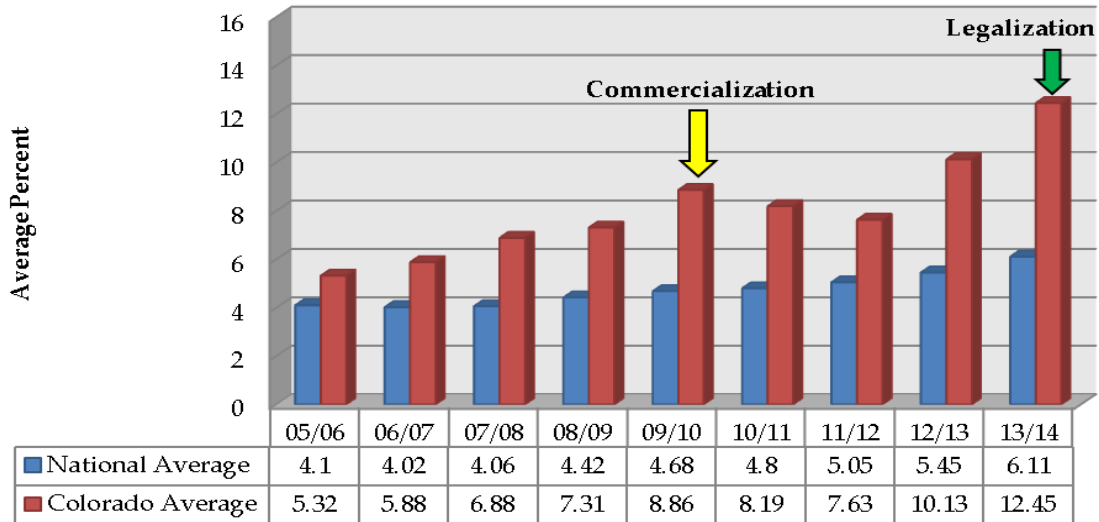
States for Past Month Marijuana Use College Age 18 to 25 Years Old, 2013/2014

<u>Top 10</u> (Medical/Recreational States)	<u>Bottom 10</u> (Non-Medical or Recreational States)
National Average = 19.32%	
<ol style="list-style-type: none"> 1. Colorado – 31.24% 2. Vermont – 30.60% 3. New Hampshire – 30.09% 4. Rhode Island – 28.90% 5. Massachusetts – 28.74% 6. Maine – 28.38% 7. Oregon – 24.85% 8. Washington – 24.47% 9. Maryland – 23.42% 10. Michigan – 23.17% 	<ol style="list-style-type: none"> 41. Oklahoma – 15.76% 42. Kansas – 15.11% 43. Texas – 15.06% 44. Alabama – 15.04% 45. Tennessee – 14.72% 46. Idaho – 14.28% 47. North Dakota – 14.05% 48. Iowa – 14.01% 49. South Dakota – 13.02% 50. Utah – 11.55%

SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

Adults Age 26+ Years Old

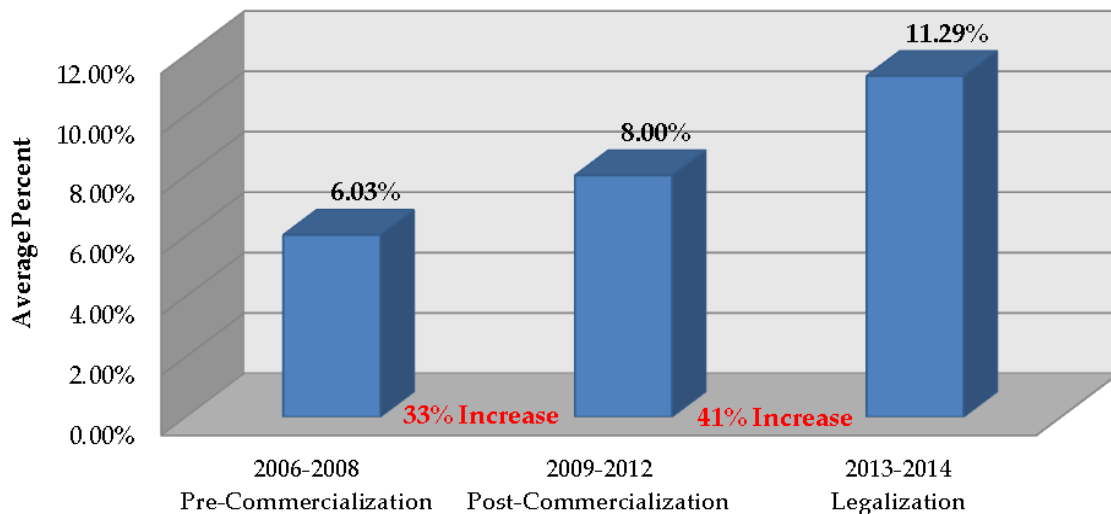
Past Month Marijuana Use Adults Age 26+ Years Old



Annual Averages of Data Collection

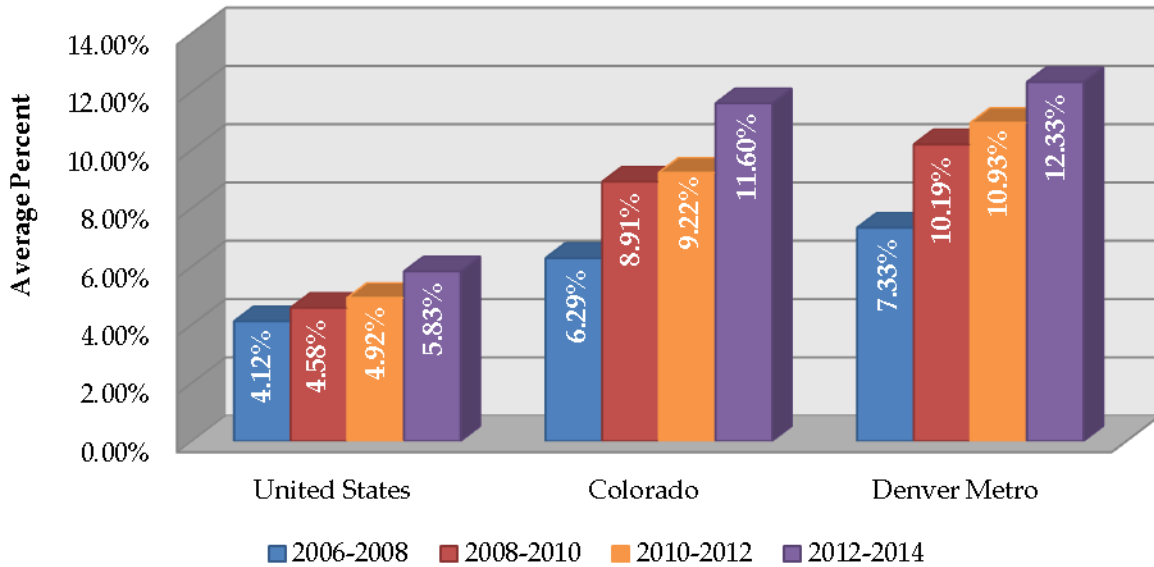
SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014.

Average Past Month Use of Marijuana Adults Age 26+ Years Old



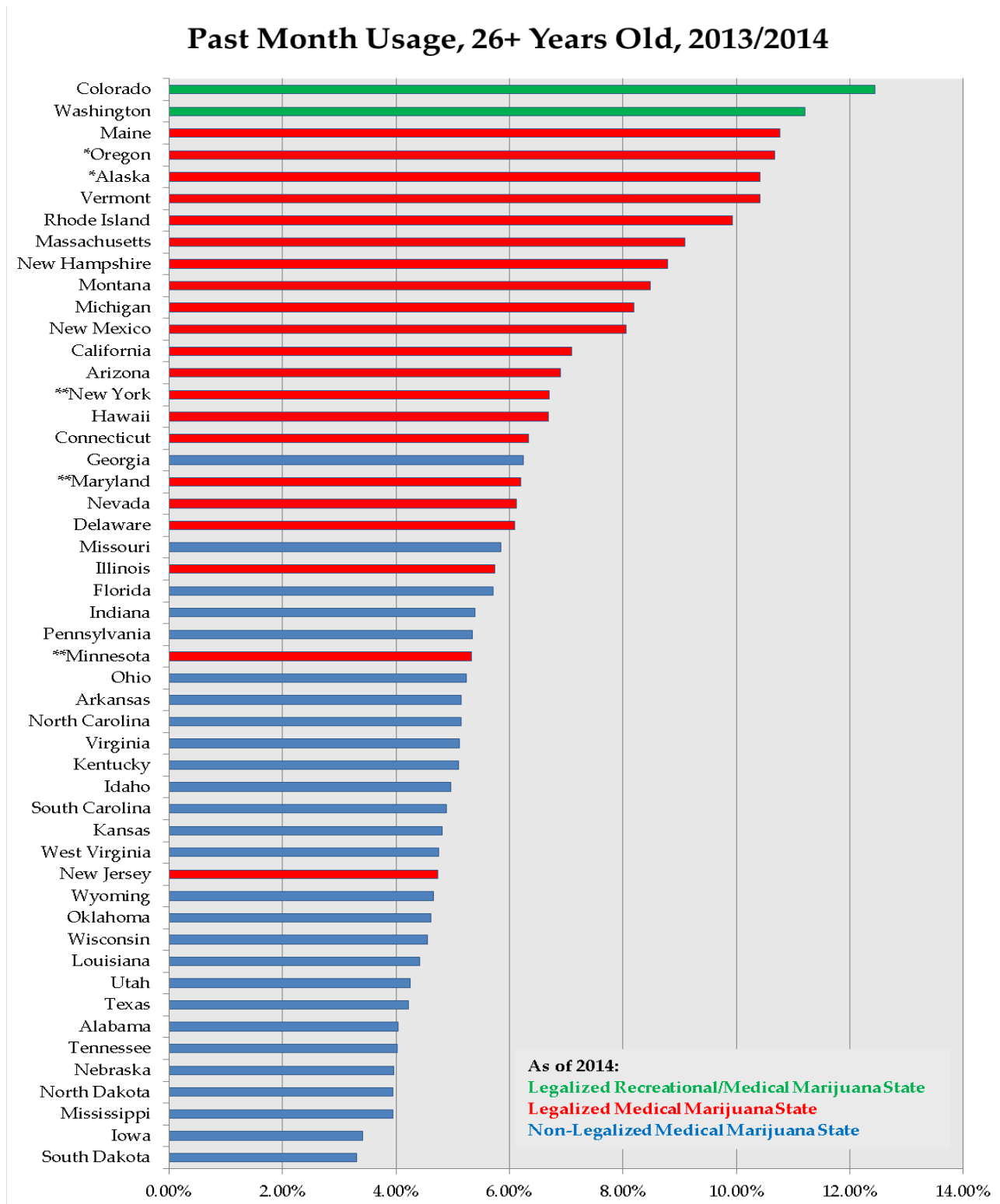
SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014.

Prevalence of Past 30-Day Marijuana Use Adults Age 26+ Years Old



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health, Substate Region Estimates 2006-2014

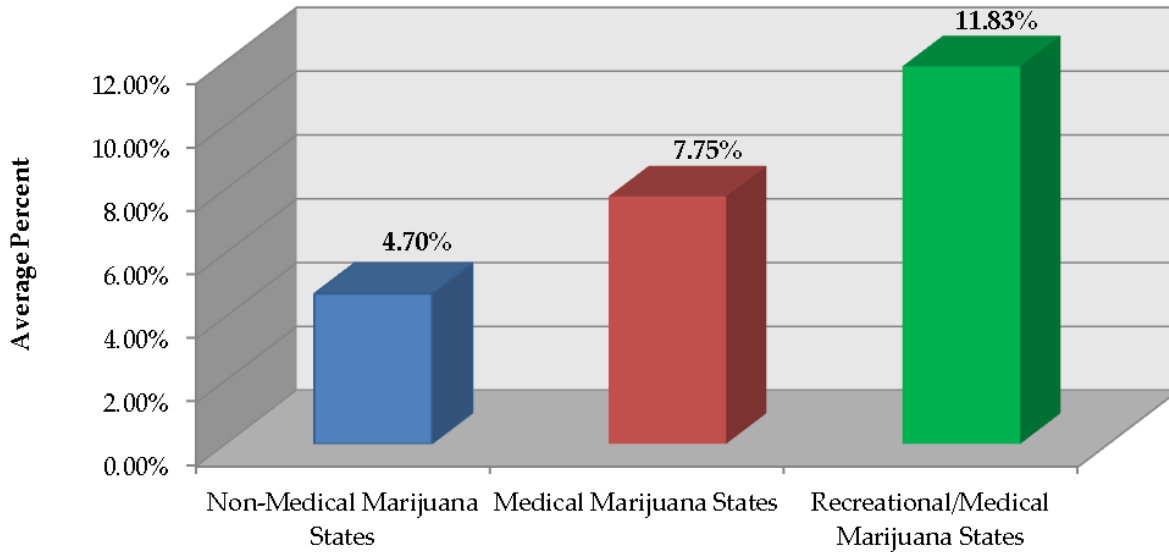
NOTE: SUBSTATE DATA IS ONLY AVAILABLE FROM THE NATIONAL SURVEY ON DRUG USE AND HEALTH IN THE ABOVE TIMEFRAMES.



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

NOTE: *Oregon and Alaska voted to legalize recreational marijuana in November 2014
 **States that had legislation for medical marijuana signed into effect during 2014

Average Past Month Use Adults Ages 26+ Years Old, 2013/2014



SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

States for Past Month Marijuana Use Adults Ages 26+ Years Old, 2013/2014

<u>Top 10</u> (Medical/Recreational States)	<u>Bottom 10</u> (Non-Medical or Recreational States)
National Average = 6.11%	
1. Colorado – 12.45%	41. Louisiana – 4.42%
2. Washington – 11.21%	42. Utah – 4.25%
3. Maine – 10.77%	43. Texas – 4.21%
4. Oregon – 10.68%	44. Alabama – 4.03%
5. Alaska – 10.42%	45. Tennessee – 4.01%
6. Vermont – 10.42%	46. Nebraska – 3.97%
7. Rhode Island – 9.92%	47. North Dakota – 3.95%
8. Massachusetts – 9.08%	48. Mississippi – 3.95%
9. New Hampshire – 8.78%	49. Iowa – 3.40%
10. Montana – 8.49%	50. South Dakota – 3.30%

SOURCE: SAMHSA.gov, National Survey on Drug Use and Health 2013 and 2014

Colorado Adult Marijuana Use Demographics¹

According to the Colorado Behavior Risk Factor Surveillance System, 2014:

- 13.6 percent of adults (18+ years old) are current users of marijuana
- Approximately 1 out of 3 current users report using marijuana daily
- A little less than 1 in 5 (18.8 percent) report driving after using marijuana
- Highest current use demographics:
 - Younger adults (18 to 24 years old)
 - Less than high school education
 - Lower household income
 - Black
 - Gay/Lesbian/Bisexual adults
 - Men
- Three highest current use areas in Colorado:
 - Boulder 18.9 percent
 - Denver 18.5 percent
 - Mountain Area West of Denver 15.6 percent

Related Material

Pot Science: Top Marijuana Findings of 2015:²

- A study this year published in the journal of *JAMA Psychiatry* found a doubling of marijuana use among American adults and almost a doubling of problematic use between 2002 and 2013. Earlier studies of adult marijuana use showed a much smaller increase.
 - Alan Budney, professor of psychiatry at the Geisel School of Medicine
- Another big concern on the topic of marijuana is the increase in sales of high-potency products, arriving with the advent of marijuana dispensaries in some states. “Little is known about the impact of these high-potency products compared with the lower-potency marijuana that people may have been using in the past 30 years. It’s too early, using the data that’s currently available, to know the effects.”
 - Alan Budney, professor of psychiatry at the Geisel School of Medicine
- A 2014 survey of more than 1,000 U.S. college students found that the percentage of students who smoked marijuana every day or nearly every day reached its highest level in more than 30 years.

- Young men who smoked pot more than once a week had sperm counts which were about 30 percent lower, on average, than males who used the drug less frequently or not at all. One possible reason for this has to do with the way THC may interact with certain receptors found in the testes.
- A study published in September of 2015 in the journal *Diabetologia*, found that people who used marijuana 100 times or more as young adults were 40 percent more likely to develop prediabetes in middle age compared with individuals who never used the drug.

Number of U.S. Pot Users Doubles Over Three Years: According to a recent Gallup poll, "...the percentage of American adults who say they currently smoke marijuana has nearly doubled over the past three years." The first time the poll was conducted in 2013, only 7 percent of adults said they were marijuana smokers. However, when the poll was taken again in 2016, 13 percent of adults admitted to being current users, which according to the article, works out to be about 33 million adult marijuana users in the United States. "There are currently about 40 million cigarette smokers in the U.S., according to the Centers for Disease Control and Prevention. Given that cigarette use is in decline, marijuana use could become more prevalent than cigarette use in just a few years' time."³

Marijuana Does Not Help You Get Good Grades: A study following college students over years to measure the impact of marijuana use found those who smoked it often were more likely to skip class, get worse grades, and take longer to graduate. As use became more frequent, grades tended to drop – as use declined, grades tended to bounce back.⁴

Harvard Scientists Studied the Brains of Pot Smokers, and the Results Don't Look Good: According to a study performed by researchers at Harvard and Northwestern (published 4/15/2014), 18-25 year olds who smoked marijuana only a few times a week had significant brain abnormalities in the areas that control emotion and motivation. Noticeable abnormalities were even observed for those study participants who smoked marijuana only one time per week. Those who smoked more had more significant variations.⁵

Marijuana Use Among U.S. College Students at 35 Year High: A study from the University of Michigan reports that daily marijuana use has surpassed daily cigarette use among students at American universities. Daily, or near daily, pot smoking is at a record high: nearly 6 percent of all college students polled reported that they had used marijuana 20 or more times in the past 30 days. That's close to double the number (3.5 percent) of students in 2007 who said they smoke pot daily. Researchers behind the

Michigan study suggest that the increase in marijuana use is due to decreasing fears of the drugs ill effects. There was a marked decrease in the number of high school graduates who viewed pot as dangerous over the past eight years – from a majority of all students (55 percent) in 2006, to just over a third in 2014.⁶

Long-term Marijuana Use Associated with Worse Verbal Memory in Middle Age:

A recent study published in the *JAMA International Medicine* journal examined cognitive performance of subjects who had used marijuana to varying degrees beginning in early adulthood using standardized tests of verbal memory, processing speed and executive function. Of the subjects, 86.3 percent reported past marijuana use but only 11.6 percent reported using marijuana into middle-age. According to Reto Auer, M.D., and co-authors, past exposure to marijuana was associated with diminished verbal memory.

“The public health challenge is to find effective ways to inform young people who use, or are considering using, marijuana about the cognitive and other risks of long-term daily use,” said Wayne Hall, Ph.D., of the University of Queensland, Australia, and Michael Lynskey, Ph.D., of Kings College London, in a related commentary.⁷

Smoking Most Prevalent Mode of Lifetime Marijuana Use Among Adults:

Slightly more than one-third (35 percent) of adults reported ever using marijuana in 2014. Among these adults, smoking was reported as the most prevalent mode of marijuana use. A majority of users reported smoking joints (89 percent), around one-half reported using bong, water pipes, or hookahs (49 percent) or bowls or pipes (48 percent), and one-fourth (25 percent) smoked marijuana in blunts. Other modes of marijuana use included ingesting marijuana in edibles or drinks (30 percent) and vaporizing marijuana (10 percent).⁸

2015 National Poll Finds More Than Four in Ten U.S. Adults Report Ever Trying Marijuana: Forty-four percent of U.S. adults have ever tried marijuana, according to a nationwide July 2015 telephone poll. When the question was first asked in 1969, only 4 percent admitted to trying marijuana. The percentage increased sharply from 1973 (12 percent) to 1985 (33 percent), and then remained relatively stable until reaching a high of 44 percent in 2015.⁹

Marijuana Use More than Doubles from 2001 to 2013: The estimated prevalence of adults who used marijuana in the past year more than doubled in the United States between 2001 and 2013, according to an article published online by *JAMA Psychiatry*. Increases were particularly notable among women and individuals who were black, Hispanic, living in the South, middle-aged or older, according to the authors. Additionally, nearly 3 of every 10 Americans who used marijuana in the past year had a diagnosis of a marijuana use disorder, which equates to about 6.8 million Americans.

“In summary, while many in the United States think prohibition of recreational marijuana should be ended, this study and others suggest caution and the need for public education about the potential harms in marijuana use, including the risk for addiction. As is the case with alcohol, many individuals can use marijuana without becoming addicted. However, the clear risk for marijuana use disorders among users (approximately 30 percent) suggests that as the number of U.S. users grows, so will the numbers of those experiencing problems related to such use.”¹⁰

Poorer Users Smoking the Most: A study published “...in the *Journal of Drug Issues* found that the proportion of marijuana users who smoke daily has rapidly grown, and that many of those frequent users are poor and lack a high school diploma.” According to the study the profile of marijuana users is much closer associated to that of cigarette smokers than alcohol drinkers, “...and that a handful of users consume much of the marijuana used in the U.S.” Also, 29 percent of all marijuana use across the county is from households with an annual income of less than \$20,000. “The concentration of use among poorer households means that many marijuana users are spending a high proportion of their income on their marijuana habit. Users who spend fully one quarter of their income on weed account for 15 percent of all marijuana use.”¹¹

Sources

¹ Colorado Behavioral Risk Factor Surveillance System 2014, “Marijuana Use in Colorado,” Colorado Department of Public Health and Environment

² Cari Nierenberg, Live Science, December 29, 2015, “Pot Science: Top Marijuana Findings of 2015,” <<http://www.livescience.com/53218-top-marijuana-scientific-findings-2015.html>>, accessed December 29, 2015

³ *The Washington Post* as published in *The Denver Post*, August 9, 2016, “Poll: Number of pot users nearly doubles over three years,” <http://www.denverpost.com/2016/08/09/poll-number-of-pot-users-nearly-doubles-over-three-years/>, accessed August 9, 2016

⁴ Sylvia Svriuga, *The Washington Post*, December 28, 2015, “Can anyone answer this: Does marijuana help you get good grades and graduate from college on time?,” <<https://www.washingtonpost.com/news/grade-point/wp/2015/12/18/can-anyone-answer-this-does-marijuana-help-you-get-good-grades-and-graduate-from-college-on-time/>>, accessed January 18, 2016

⁵ Eileen Shim, News.Mic, April 16, 2014, "Harvard Scientist Studies the Brains of Pot Smokers, and the Results Don't Look Good," <<https://mic.com/articles/87743/harvard-scientists-studied-the-brains-of-pot-smokers-and-the-results-don-t-look-good#.EBTsOB51M>>, accessed January 19, 2016

⁶ Airel Key, *Independent*, September 4, 2015, "Marijuana use among US college students at 35 year high, says study," <<http://www.independent.co.uk/news/world/americas/marijuana-use-among-us-college-students-at-35-year-high-says-study-10487217.html>>, accessed June 10, 2016

⁷ Study author Reto Auer, M.D., M.A.S., The JAMA Network News Release/For the Media, February 1, 2016, "Long-Term Marijuana Use with Worse Verbal Memory in Middle Age," <<http://media.jamanetwork.com/news-item/long-term-marijuana-use-associated-with-worse-verbal-memory-in-middle-age/#>>, accessed June 15, 2016

⁸ CESAR, November 30, 2015, Vol. 24, Issue 15, "Smoking Most Prevalent Mode of Lifetime Marijuana Use Among Adults; 30% Report Consuming in Edibles and 10% Report Vaporizing", <<http://www.cesar.umd.edu/cesar/cesarfax/vol24/24-15.pdf>>, accessed June 7, 2016

⁹ Justin McCarthy, Gallup Poll, July 22, 2015, "More Than Four in 10 Americans Say They Have Tried Marijuana," <<http://www.gallup.com/poll/184298/four-americans-say-tried-marijuana.aspx>>, accessed June 7, 2016

¹⁰ Corresponding author Bridget G. Grant, Ph.D., The JAMA Network/For the Media, "Marijuana Use More than Doubles from 2001 to 2013; Increase in Use Disorders Too," <<http://media.jamanetwork.com/news-item/marijuana-use-more-than-doubles-from-2001-to-2013-increase-in-use-disorders-too/>>, accessed June 15, 2016

¹¹ *The Washington Post* as published in *The Denver Post*, August 14, 2016, "Study: Poorer marijuana users smoking the most," <<http://www.denverpost.com/2016/08/14/study-poorer-marijuana-users-smoking-the-most/>>, accessed August 15, 2016

SECTION 4: Emergency Department and Hospital Marijuana- Related Admissions

- ❖ 2015 marijuana-related emergency department and hospitalization data for the state of Colorado was not available at the time this publication was released.

Some Findings

- Colorado Emergency Department visits per year related to marijuana:
 - 2013 – 14,148
 - 2014 – 18,255
- Emergency Department rates likely related to marijuana increased **49 percent** in the two-year average (2013-2014) since Colorado legalized recreational marijuana compared to the two-year average prior to legalization (2011-2012).
- In 2014, when retail marijuana businesses began operating, the rate of emergency department visits likely related to marijuana increased **25 percent** in one year.
- Emergency Department visits related to marijuana per 100,000 in 2013:
 - Denver rate – 415.46
 - Colorado rate – 248.32
 - Denver's rate was **67 percent** higher than Colorado's rate and increased **25 percent** when recreational marijuana was legalized in 2013.

- Number of hospitalizations related to marijuana:
 - 2011 – **6,305**
 - 2012 – **6,715**
 - 2013 – **8,272**
 - 2014 – **11,439**

- Hospital rates likely related to marijuana increased **32 percent** in the two-year average (2013-2014) since Colorado legalized recreational marijuana compared to the two-year average prior to legalization (2011-2012).

- In 2014, when retail marijuana stores began operating, the rate of hospitalizations likely related to marijuana increased **20 percent** in only one year.

- Hospital discharges related to marijuana per 100,000 in 2013:
 - Denver rate – **245.94**
 - Colorado rate – **148.80**
 - Denver’s rate was over **65 percent higher** than Colorado’s rate and increased **29 percent** when recreational marijuana was legalized in 2013.

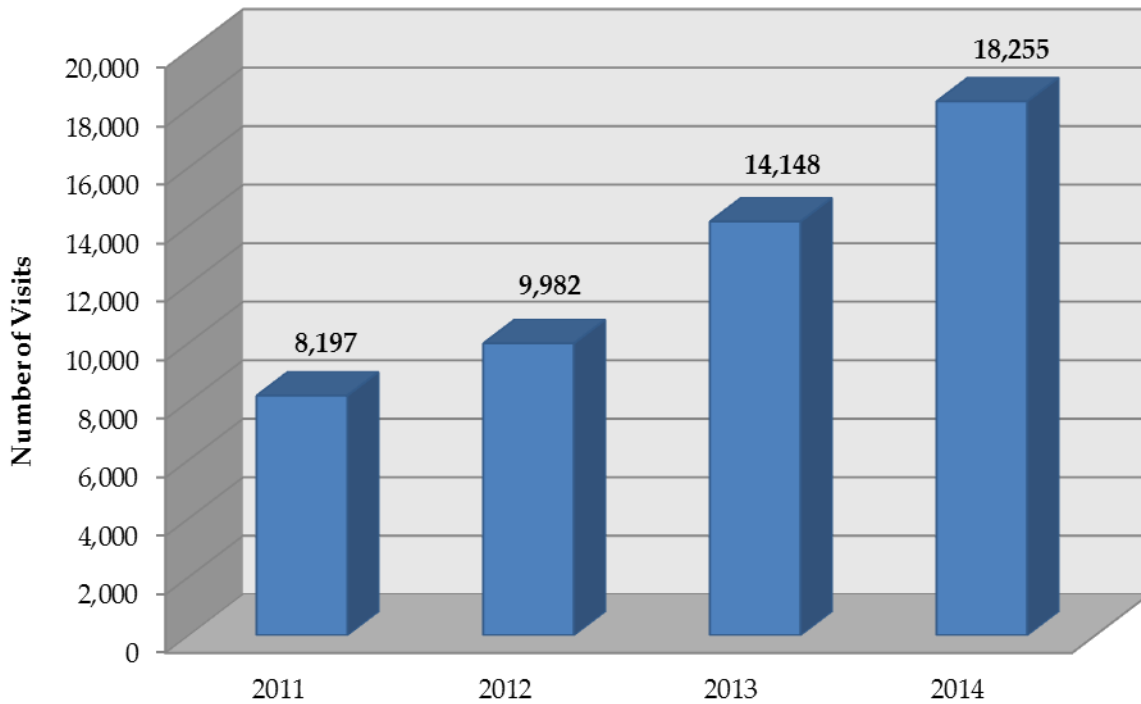
- Children’s Hospital Colorado reported **1** marijuana ingestion among children under 9 years old in 2009 compared to **16** in 2015.

Definitions

Marijuana-Related: Also referred to as “marijuana mentions.” This means the data could be obtained from lab tests, self-admitted or some other form of validation by the physician. That does not necessarily prove marijuana was the cause of the emergency admission or hospitalization.

Emergency Department Data

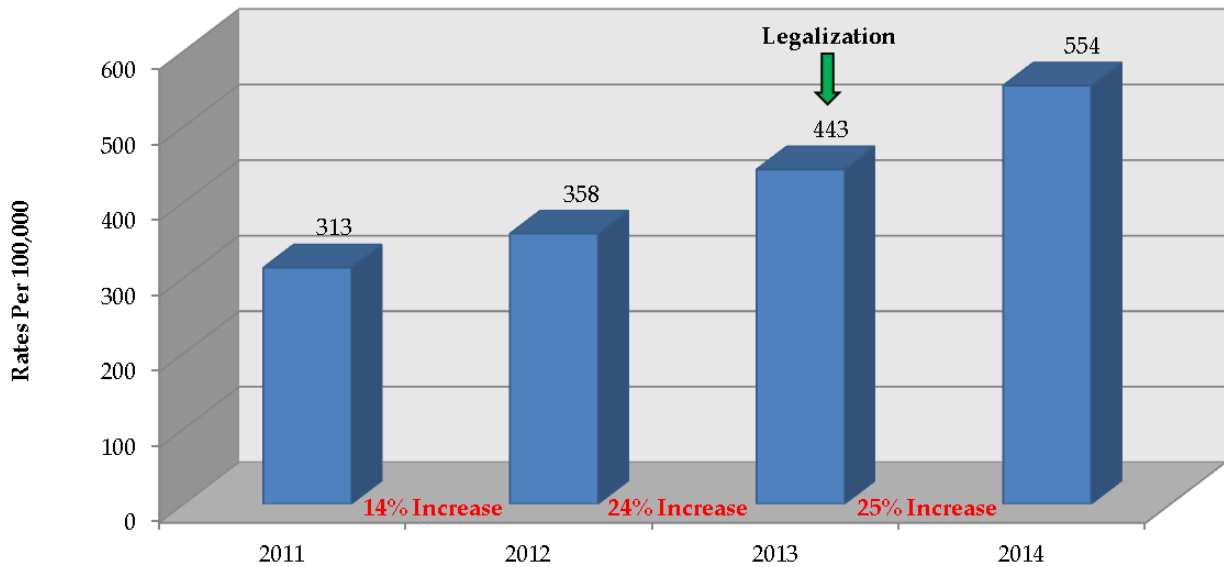
Marijuana-Related Emergency Department Visits



SOURCE: Colorado Hospital Association, Emergency Department Visit Dataset. Statistics prepared by the Health Statistics and Evaluation Branch, Colorado Department of Public Health and Environment

NOTE: 2011 AND 2012 EMERGENCY DEPARTMENT DATA REFLECTS INCOMPLETE REPORTING STATEWIDE. INFERENCES CONCERNING TRENDS, INCLUDING 2011 AND 2012, SHOULD NOT BE MADE.

Colorado Emergency Department Rates that are Likely Related to Marijuana*



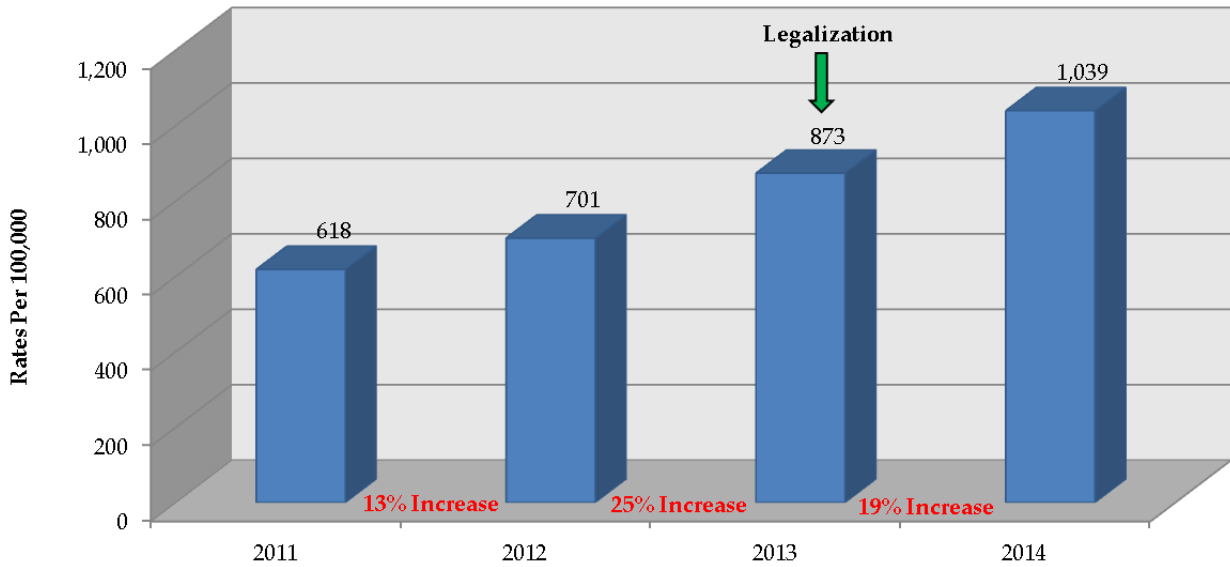
*Rates of Emergency Department (ED) Visits with Possible Marijuana Exposures, Diagnoses, or Billing Codes in the First Three Diagnosis Codes per 100,000 ED Visits by Year in Colorado

SOURCE: Colorado Department of Public Health and Environment, *Monitoring Health Concerns Related to Marijuana in Colorado: 2014*

NOTE: "POSSIBLE MARIJUANA EXPOSURES, DIAGNOSES, OR BILLING CODES IN THE FIRST THREE DIAGNOSIS CODES: THESE DATA WERE CHOSEN TO REPRESENT THE HD AND ED VISITS WHERE MARIJUANA USE WAS LIKELY A CAUSAL OR STRONG CONTRIBUTING FACTOR TO THE UNDERLYING REASON FOR THE HD AND ED VISIT. THESE DATA CONSISTED OF HD AND ED VISITS CODED WITH DISCHARGE CODES RELATED TO POISONING BY PSYCHODYSLEPTICS OR SEPARATE CODES RELATED TO CANNABIS ABUSE IN THE FIRST THREE DIAGNOSIS CODES WHICH ARE MORE LIKELY TO BE CLINICALLY SIGNIFICANT CODES." - COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, *MONITORING HEALTH CONCERNS RELATED TO MARIJUANA IN COLORADO: 2014*

NOTE: DATA NOT AVAILABLE PRE-2011.

Colorado Emergency Department Rates that Could be Related to Marijuana*



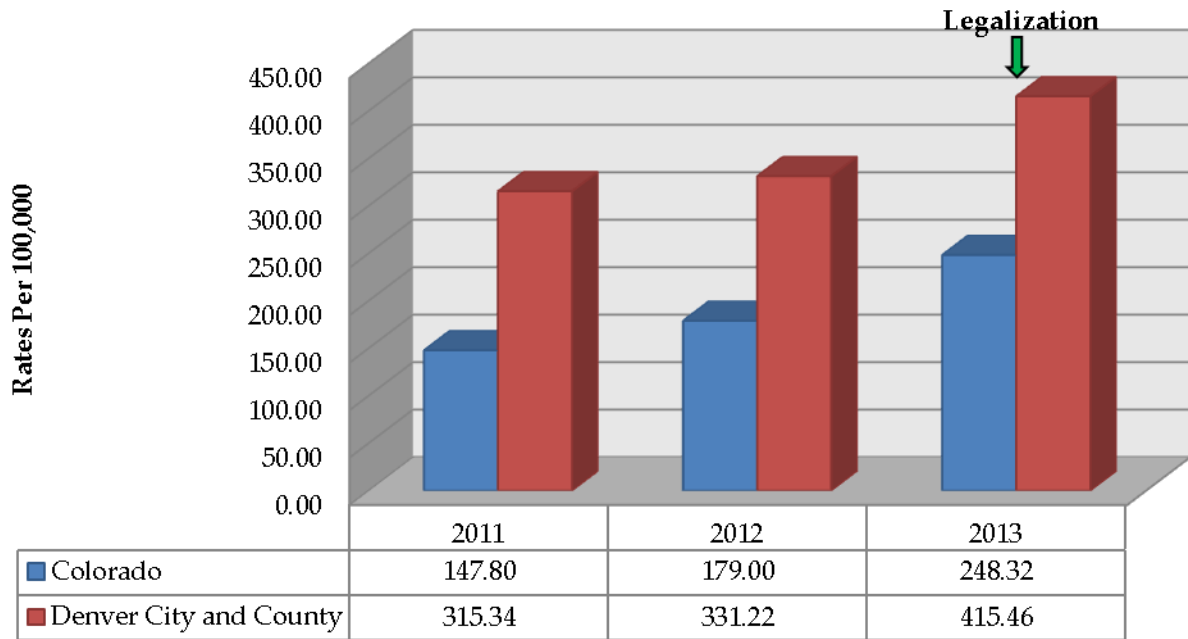
*Rates of Emergency Department (ED) Visits with Possible Marijuana Exposures, Diagnoses, or Billing Codes per 100,000 ED Visits by Year in Colorado

SOURCE: Colorado Department of Public Health and Environment, *Monitoring Health Concerns Related to Marijuana in Colorado: 2014*

NOTE: "POSSIBLE MARIJUANA EXPOSURES, DIAGNOSES, OR BILLING CODES IN ANY OF LISTED DIAGNOSIS CODES: THESE DATA WERE CHOSEN TO REPRESENT THE HD AND ED VISITS WHERE MARIJUANA COULD BE A CAUSAL, CONTRIBUTING, OR COEXISTING FACTOR NOTED BY THE PHYSICIAN DURING THE HD OR ED VISIT. FOR THESE DATA, MARIJUANA USE IS NOT NECESSARILY RELATED TO THE UNDERLYING REASON FOR THE HD OR ED VISIT. SOMETIMES THESE DATA ARE REFERRED TO AS HD OR ED VISITS WITH ANY MENTION OF MARIJUANA." - COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, *MONITORING HEALTH CONCERNS RELATED TO MARIJUANA IN COLORADO: 2014*

NOTE: DATA NOT AVAILABLE PRE-2011.

Emergency Department Rates Per 100,000 Marijuana-Related



SOURCE: Denver Office of Drug Strategy, The Denver Drug Strategy Commission, *Proceedings of the Denver Epidemiology Work Group (DEWG)*, October 29, 2014

❖ The highest rates from 2011 to 2013 were among young adults (18 to 25 years).

NOTE: 2011 AND 2012 EMERGENCY ROOM DATA DOES NOT REPRESENT COMPLETE, STATEWIDE PARTICIPATION. INCREASES OBSERVED OVER THESE THREE YEARS MAY BE DUE PARTLY, OR COMPLETELY, TO INCREASES IN REPORTING BY EMERGENCY ROOMS.