

# Marijuana Use and Perception Compared to Other Substances among High School Students in Denver, CO in 2013 & 2015

*Healthy Kids Colorado Survey (HKCS)*

Denver Public Health

*Report Written By:*

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## Introduction

In an effort to protect the health and promote academic success of Colorado youth, the Colorado state government implements the Healthy Kids Colorado Survey (HKCS) every odd calendar year in public high schools and middle schools. The survey collects information on a wide range of youth health issues and risk factors. These data are collected at participating school districts and schools and aggregated to the regional and state levels. Aggregated reports are released online for public access.<sup>1</sup> This report describes Denver high school students' perceptions and use of marijuana over time and compared with alcohol, tobacco, and other substances.

## Key Findings

- In 2015, 46% of Denver high school students had used marijuana at some point in their lifetime, 26% had used marijuana one or more times in the past 30 days, and 15% of high school students in Denver had used marijuana before the age of 13. There was no statistical difference between the estimates for 2013 and 2015.
- While not statistically significant, it appears there may be a downward trend in perception of risk over time.
- Additionally, while efforts to prevent student marijuana use are important, alcohol continues to be the most prevalent substance abused in this population. It is also important to note that approximately 10% of students reported having ever used prescription drugs without a prescription.
- Significantly more Denver high school students rode in the past 30 days with a driver who had been using marijuana than drove themselves after using marijuana. The percent of high school students who did either is a concern because this poses a risk to students and others on the road.

## Methods

This report utilized the publicly available HKCS data for Health Statistics Region (HSR) 20, which represents public schools in the City and County of Denver. HKCS is collected voluntarily and anonymously at randomly selected schools from students in randomly selected classrooms. In 2015, 858 Denver high school students participated in HKCS with an overall response rate of 51% among schools and students offered the survey. Although middle school data were collected for HSR 20 in 2013, HKCS did not sample middle schools by region in 2015. Because of this, middle school data are not included in this report.

Results were weighted to adjust for sampling design, non-participation, and other key demographic differences between the sample and Denver's high school student population to make the results generalizable to the Denver high school population. The percent of participants who chose each answer might be different than the percent if every Denver high school student answered the questions.

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<sup>1</sup> All data are available on the Colorado Health and Environmental Data platform of the Colorado Department of Public Health and Environment: [http://www.chd.dphe.state.co.us/topics.aspx?q=Adolescent\\_Health\\_Data](http://www.chd.dphe.state.co.us/topics.aspx?q=Adolescent_Health_Data)

Therefore, the results reported are estimates and each has a range of possible values (also known as a confidence interval or margin of error). We can be 95% sure that the truth about Denver high school students lies within these ranges. On the graphs in this report, the ranges of possible values for each bar are indicated by black lines (see figure interpretation key below).

Data were downloaded from the Colorado Health and Environment Data platform of the Colorado Department of Public Health and Environment, and Excel was used to assess statistical difference between 2013 and 2015 estimates for a number of substance use and perception indicators. Relevant findings are discussed below.

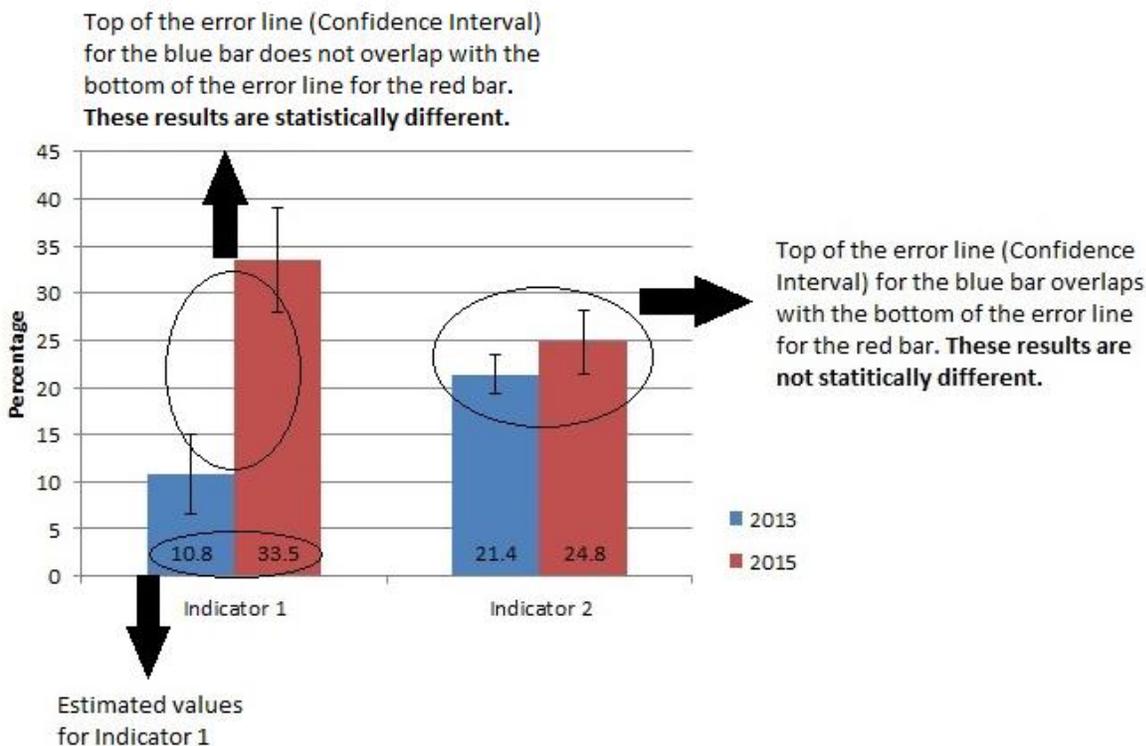
### Definitions:

#### Significance of Results

**“Statistically/significantly higher” or “Statistically/ significantly lower”:** When comparing two different survey results, if the ranges of possible values do not overlap, we **can** be confident that the results are truly different.

**“Not statistically/significantly different”:** When comparing two different survey results, such as one indicator measured in two different years or one substance compared to another, if the ranges of possible values overlap, we **cannot** be confident that the results are truly different.

#### Figure Interpretation Key



## Population Described in Report

This report considers the following demographic factors among HSR 20 high school students: biological sex (male or female), grade (9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, or 12<sup>th</sup>), and race/ethnicity (Non-Hispanic Black or African American; Non-Hispanic White; Hispanic; Multiple race; or Other).

## Indicator Definitions

**“Ever use”:** Having used a substance at least once in their lifetime; any answer other than zero to questions that asked “during your life, on how many days have you used....”

**“Recent use”:** Having used a substance at least once in the past 30 days; any answer other than zero to questions that asked “during the past 30 days, how many times did you....”

**“Early use”:** Having used a substance for the first time before age 13; an answer of “8 years old or younger,” “9 or 10 years old,” or “11 or 12 years old” to questions that asked “how old were you when you....”

**“Use on school property”:** Having used a substance on school property; any answer other than zero to questions that asked “during the past 30 days, on how many days did you \_\_\_\_\_ on school property....”  
*Only available for marijuana and alcohol*

**“Driving under the influence”:** In the past 30 days, having driven a car or other vehicle after using a substance; any answer other than zero to questions that asked “during the past 30 days, how many times did you drive a car or other vehicle when you had been....”  
*Only available for marijuana and alcohol*

**“Riding in a car with a driver under the influence”:** In the past 30 days, having ridden in a car or other vehicle with a driver who had been using a substance; any answer other than zero to questions that asked “during the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been....”  
*Only available for marijuana and alcohol*

**“Perception of risk”:** Thinking that there is a risk of harm associated with using marijuana; answered “moderate risk” or “great risk” to the question “how much do you think people risk harming themselves {physically or in other ways} if they use marijuana regularly?”  
*The risk question for regular marijuana use lacked a specific definition of “regular use.” The risk questions for alcohol and tobacco did (“one to two drinks per day” for alcohol and “one or more packs of cigarettes per day” for tobacco), so these are not directly comparable to the marijuana question.*

**“Ease of access”:** Thinking it is easy to access a substance; answered “sort of easy” or “very easy” to questions that asked “if you wanted to get some \_\_\_\_\_, how easy would it be for you to get some?”

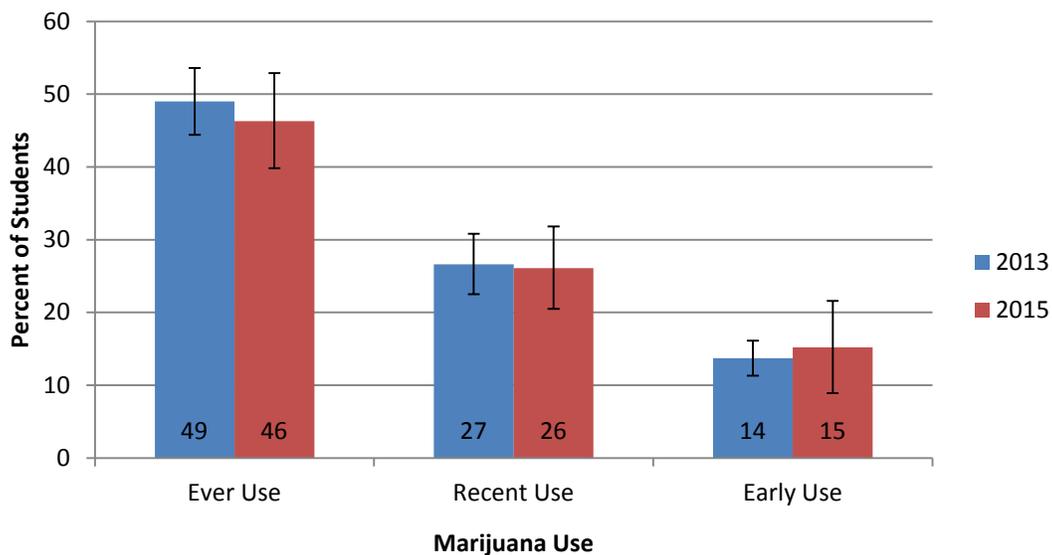
**“Parental disapproval”:** Thinking parents or guardians would feel it would be wrong for them to use a substance; answered “wrong” or “very wrong” to questions that asked “how wrong do your parents or guardians feel it would be for you to....”

**“Personal disapproval”:** Thinking it would be wrong for peers to use a substance; answered “wrong” or “very wrong” to questions that asked “how wrong do you think it is for someone your age to....”) *Personal disapproval questions were only asked for marijuana and alcohol and they are not directly comparable. The question about personal disapproval of marijuana use did not specify a frequency of use, while the alcohol question did (“one to two drinks per month”).*

## Substance Use

In 2015, 46% of Denver high school students had used marijuana at some point in their lifetime, 26% had used marijuana one or more times in the past 30 days, and 15% of high school students in Denver had used marijuana before the age of 13. There was no statistical difference between the estimates for 2013 and 2015 (see figure 1).

Figure 1: Marijuana Use in 2013 & 2015

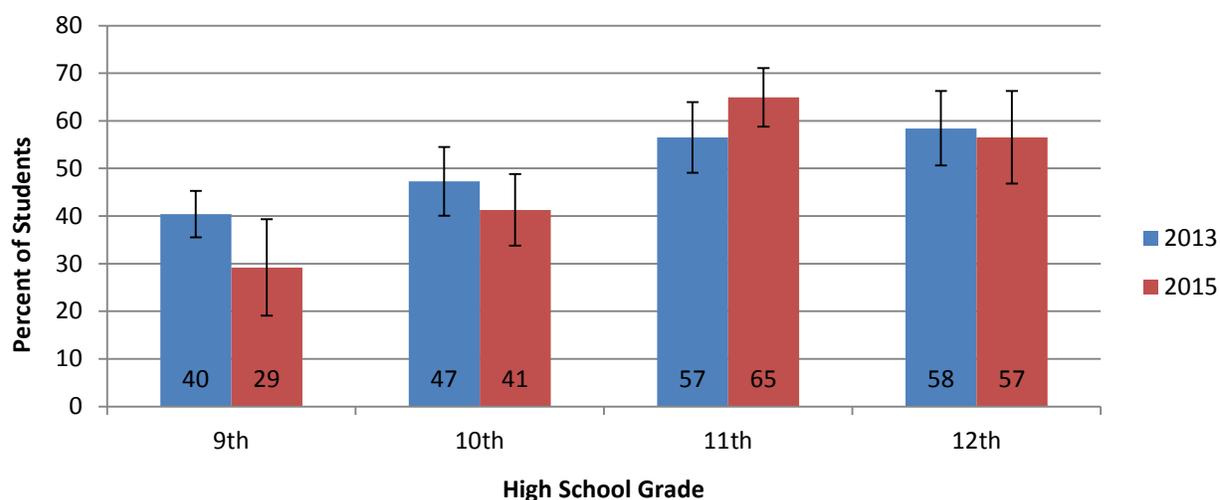


The following sections focus on five marijuana use metrics: ever use, recent use, early use, use on school property, and driving or riding in a car with a driver under the influence of marijuana.

## Ever Use

According to the 2015 HKCS results, **approximately 46% of Denver high school students had used marijuana one or more times in their life**. This was not statistically different from the 2013 estimate. There was no significant change over time within each grade (Figure 2). However, the percent of 11<sup>th</sup> grade students who had ever used marijuana in 2015 was statistically higher than the percent of 9<sup>th</sup> and 10<sup>th</sup> grade students (65% versus 40% and 47%, respectively).

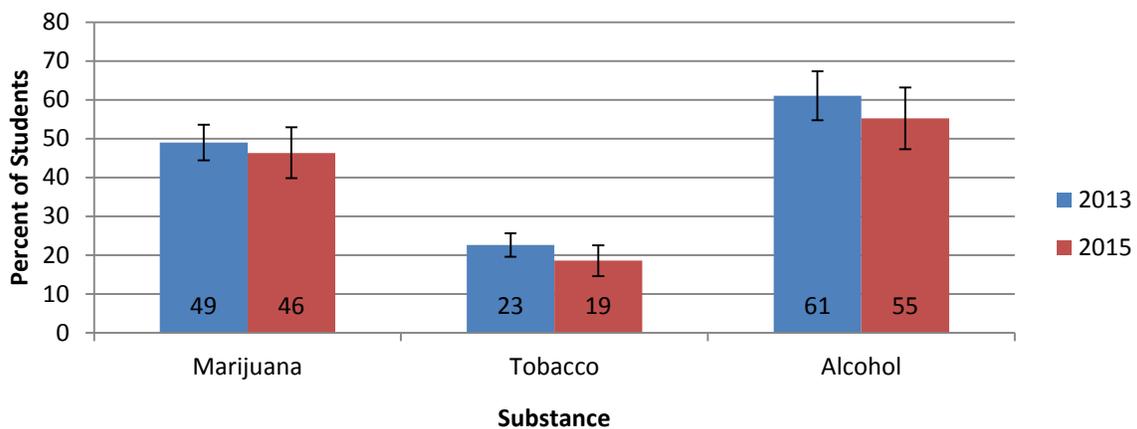
Figure 2: Percent of Denver High School Students Who Have Ever Used Marijuana, Stratified by Grade



There was no statistically significant difference in the percent of Denver high school students who had ever used marijuana when stratified by sex or race/ethnicity.

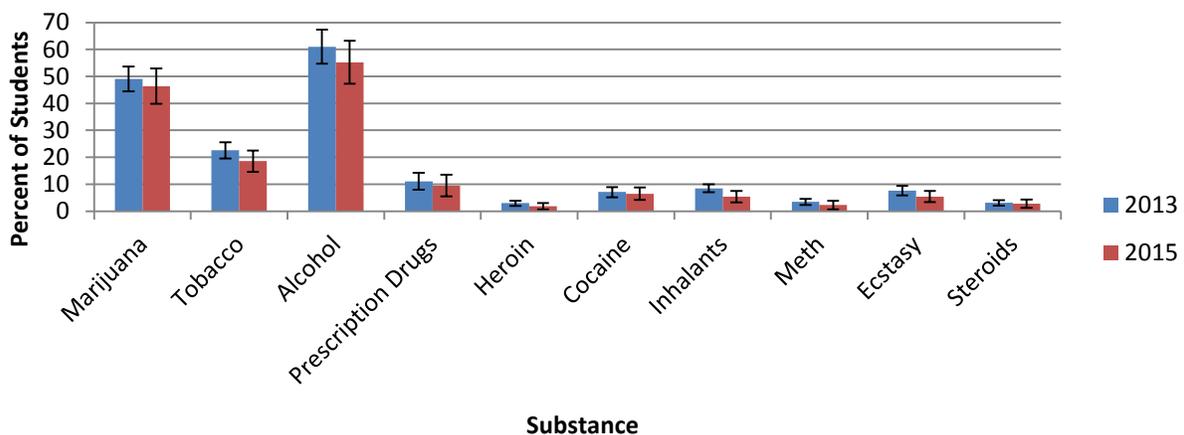
Comparing ever use of marijuana with ever smoking cigarettes or ever drinking alcohol, significantly more Denver high school students had ever used marijuana than cigarettes in both years. Significantly fewer students had ever used marijuana than alcohol in 2013, but this was not significantly different in 2015.

Figure 3: Percent of Denver High School Students Who Have Ever Used Marijuana, Smoked Cigarettes, or Drank Alcohol



In both 2013 and 2015, significantly more Denver high school students had ever used marijuana and alcohol than other illicit drugs (Figure 4). After alcohol, marijuana, and cigarette smoking, the most common substance ever misused by Denver high school students was prescription drugs (i.e. the use of a prescription drug such as OxyContin, Percocet, Vicodin, Codeine, Adderall, Ritalin, or Xanax *without* a prescription). **In 2013 and 2015, approximately 10% of students had ever used a prescription drug without a prescription.** This poses a risk of addiction and can be a pathway to injection drug use for some. It will be important to continue to monitor this trend in the coming years.

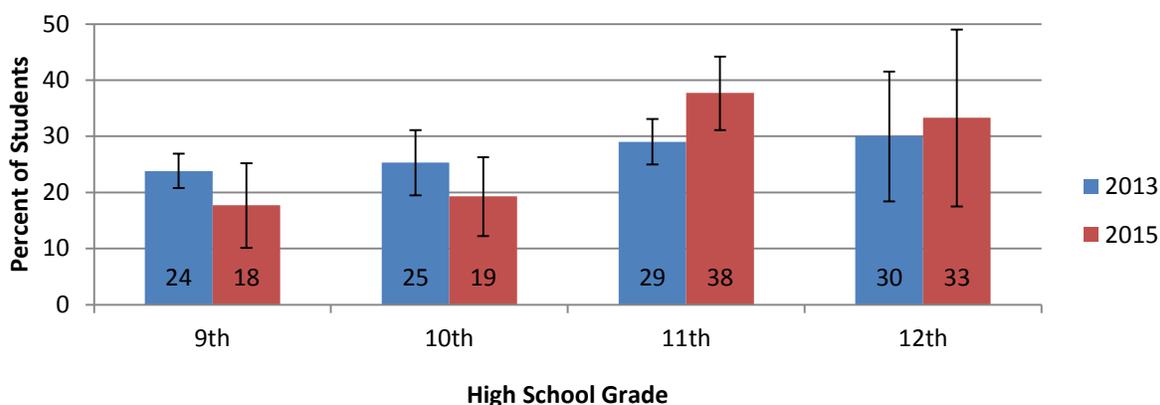
Figure 4: Percent of Denver High School Students Who Ever Used a Listed Substance



## Recent Use

In the 2015 HKCS, **26% of Denver high school students had used marijuana one or more times in the past 30 days**. This was not significantly different than the 2013 estimate. As with the ever use metric, there was no statistical difference within each grade over time, but significantly more 11<sup>th</sup> grade students had used marijuana in the past 30 days than 9<sup>th</sup> and 10<sup>th</sup> grade students (38% versus 18% and 19%, respectively).

Figure 5: Percent of Denver High School Students Who Used Marijuana in the Past 30 Days, Stratified by Grade

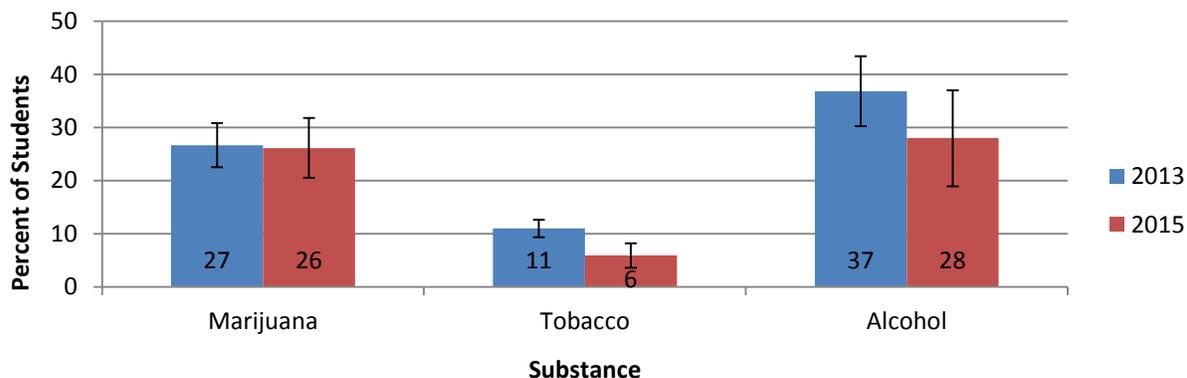


There was no statistical difference in the percent of Denver high school students who had used marijuana one or more times in the past 30 days between 2013 and 2015 when stratified by sex or by race/ethnicity.

As can be seen in both Figure 2 and Figure 5 above, statistically significant differences in use metrics were often seen when variables were stratified by grade. Recognizing that behaviors related to marijuana may change with age helps highlight that it may be helpful to tailor marijuana interventions to specific grades.

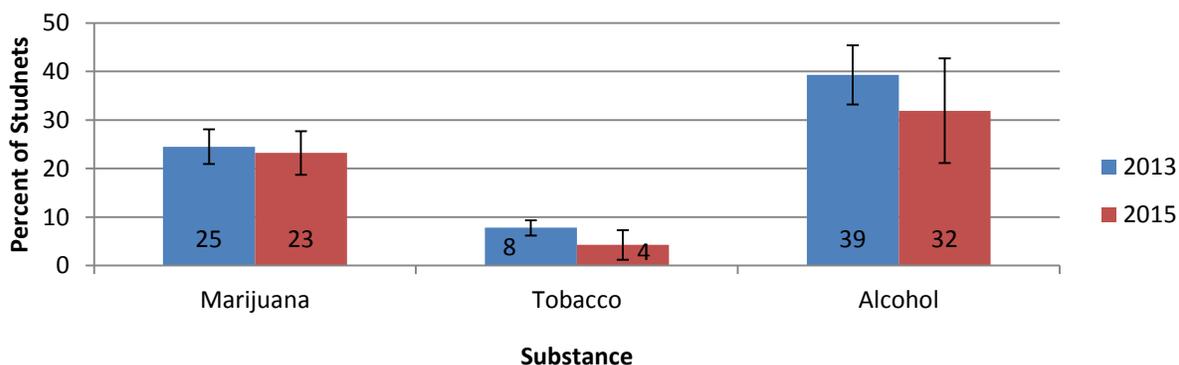
**Significantly more Denver high school students had recently used marijuana than cigarettes in both 2013 and 2015.** Recent use of marijuana was not statistically different from alcohol in either 2013 or 2015 (Figure 6).

Figure 6: Percent of Denver High School Students Who Used a Listed Substance One or More Times in the Past 30 Days



In 2013, significantly more female high school students had used marijuana in the past 30 days than had smoked cigarettes, while **significantly more female high school students had used alcohol than marijuana or tobacco** (Figure 7). The percent of females who had recently used these substances did not change significantly between 2013 and 2015, and recent alcohol use remained significantly higher than recent marijuana use in 2015.

Figure 7: Percent of Female Denver High School Students Who Used a Listed Substance One or More Times in the Past 30 Days

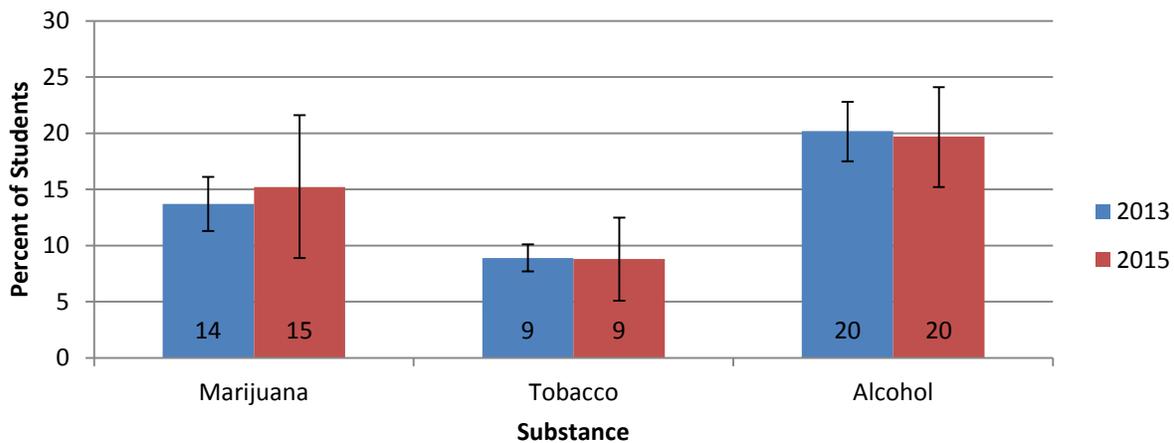


There was no significant difference in the percent of male high school students who had used marijuana in the past 30 days compared to tobacco or alcohol in either 2013 or 2015.

## Early Use

The 2015 HKCS found that **15% of Denver high school students had tried marijuana for the first time before age 13** (Figure 8). This was not significantly different from the 2013 estimate. There was no statistical difference within each grade over time or between grades. There was also no significant difference in the percent of students who had used marijuana before age 13 by sex or race/ethnicity. In 2013, significantly more Denver high school students had used alcohol before age 13 than marijuana or cigarettes, while significantly more had used marijuana before age 13 than had used cigarettes before age 13. In 2015 there was no significant difference in the percent of Denver high school students who used any of these three substances before age 13.

Figure 8: Percent of Denver High School Students Who Used a Listed Substance for the First Time Before Age 13



## Use on School Property

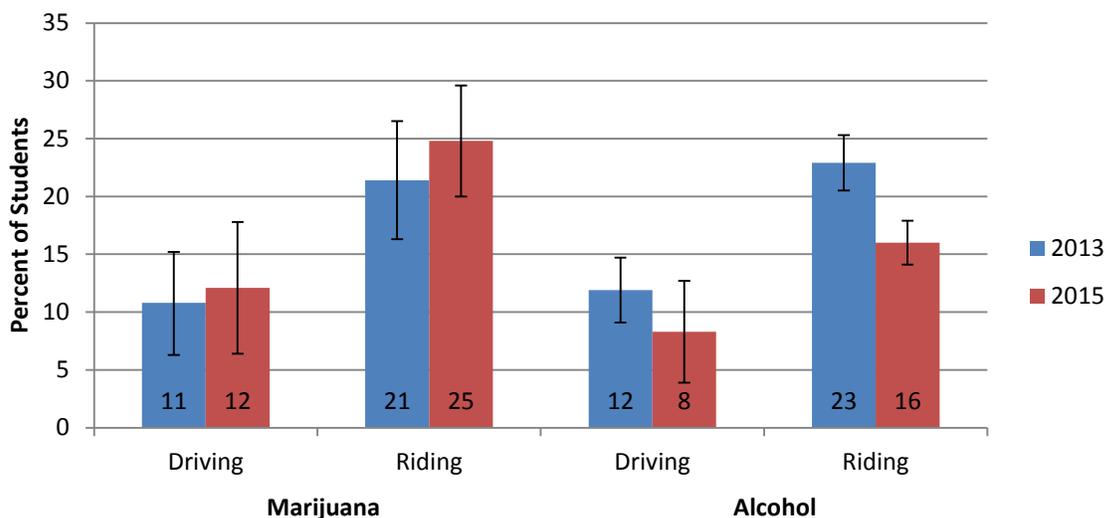
In 2015, 7% of Denver high school students had used marijuana on school property in the past 30 days. This was not statistically different from the 2013 estimate. There was no statistical difference within each grade over time, between grades, or when stratified by sex or race/ethnicity. Statistically, there was not difference between the percent of students who had used marijuana or alcohol on school property in either 2013 or 2015.<sup>2</sup>

<sup>2</sup> The Healthy Kids Colorado Survey did not ask about tobacco usage on school property.

## Driving or Riding with a Driver Who Had Been Using Marijuana or Alcohol

In 2015, **12.1% of students who drove a car or other vehicle in the past 30 days said they had driven after using marijuana**. This was statistically the same in 2013. Additionally, **25% of students in 2015 had ridden in the past 30 days with a driver who had been using marijuana**. This also remained statistically the same between the two years (Figure 9).

Figure 9: Percent of Denver High School Students Who Recently Drove After Using or Rode with a Driver Who Had Been Using a Listed Substance



There was no significant difference in the percent of Denver high school students who drove after using marijuana or rode with a driver who had been using marijuana in 2013 or in 2015 by grade, sex, or race/ethnicity. In both years, **significantly more Denver high school students rode in the past 30 days with a driver who had been using marijuana than drove themselves after using marijuana**. In 2015, **significantly more high school students rode in a car driven by someone who had been using marijuana than rode in a car driven by someone who had been drinking alcohol** (Figure 9).

In 2013, **12% of students who drove in the past 30 days had driven after using alcohol** (Figure 9). Between 2013 and 2015, there was a significant decrease in the percent of students who had ridden with a driver in the past 30 days who had been using alcohol. However, 16% is still too high.

These results reveal a critical prevention need to help students understand the risks associated with intoxicated driving – whether marijuana, alcohol, or other substances – and identify their alternatives.

## Perception Metrics

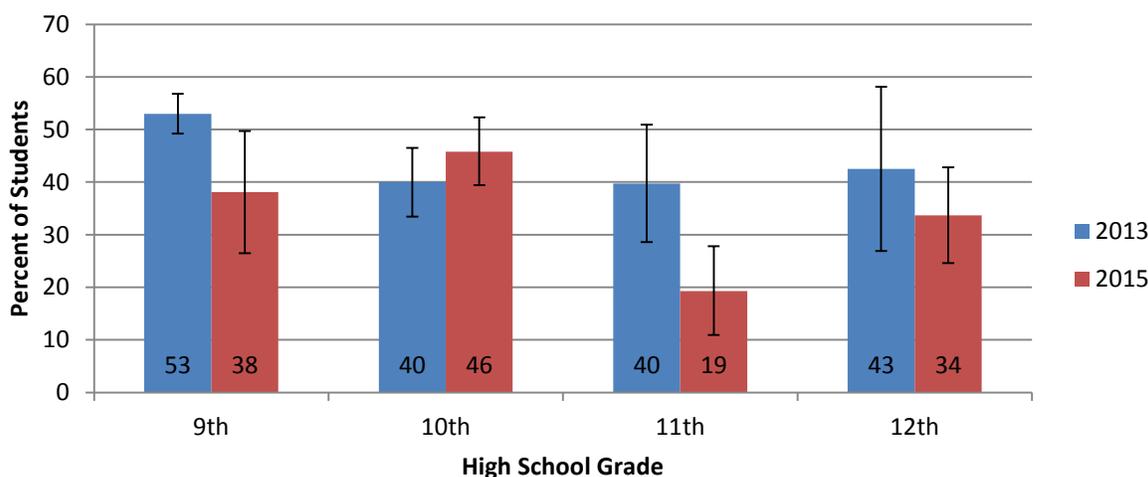
The following sections focus on four measures of students’ perceptions and thoughts about marijuana: perception of risk, ease of access, parental disapproval, and personal disapproval.

### Perception of Risk

In 2015, 35% of Denver high school students thought that people who regularly use marijuana have a moderate or great risk of harm.<sup>3</sup> Although not statistically significant, there was a downward trend from 2013 to 2015 overall and when stratified by sex. It may be that the perception of risk is decreasing. The 2017 survey will help determine if this trend is statistically significant.

The percent of Denver high school students who think people who use marijuana regularly have a moderate or great risk of harm was not statistically different within most grades by year and across grades. It is important to note that perception of risk among 11<sup>th</sup> grade students decreased steeply (from 40% to 19%) between 2013 and 2015. Additionally, far fewer 11<sup>th</sup> graders in 2015 perceived marijuana to be risky than the same student cohort surveyed as 9<sup>th</sup> graders in 2013 (53% of 9<sup>th</sup> graders in 2013 vs 19% of 11<sup>th</sup> graders in 2015). This highlights that risk perception may indeed be decreasing over time.

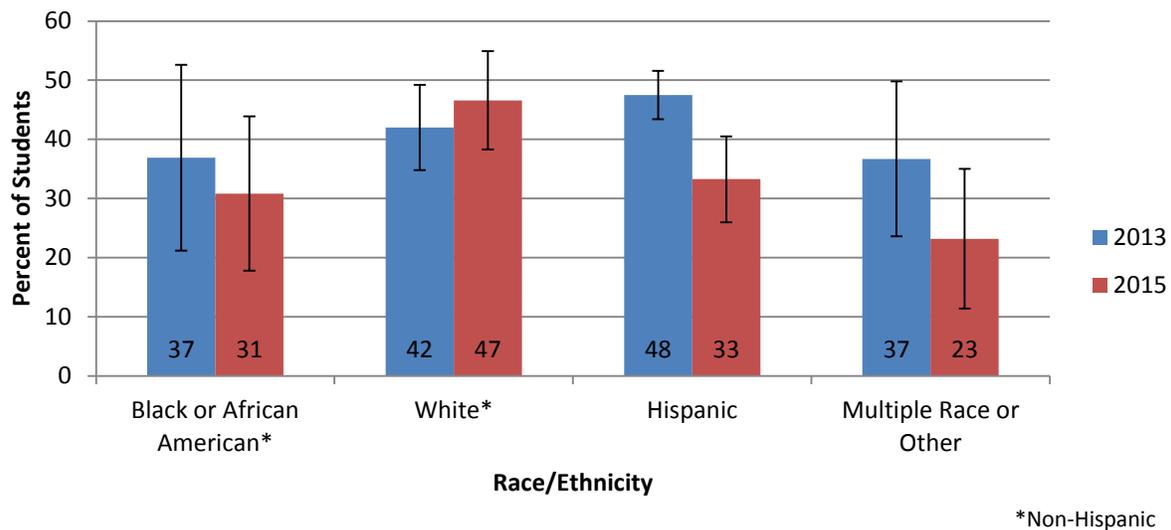
Figure 10: Percent of Denver High School Students Who Think People Using Marijuana Regularly Have a Moderate/Great Risk of Harming Themselves, Stratified by Year and Grade



<sup>3</sup> The Healthy Kids Colorado Survey does not quantify regular use

The percent of Denver high school students who perceived that marijuana use is risky was not statistically different within most race/ethnicities over time or across race/ethnicities (Figure 11). The one exception is that the percent of Hispanic students who perceived that marijuana use is risky decreased significantly from 48% in 2013 to 33% in 2015.

**Figure 11: Percent of Denver High School Students Who Think People Using Marijuana Regularly Have Moderate/Great Risk of Harming Themselves, Stratified by Year and Race/Ethnicity**



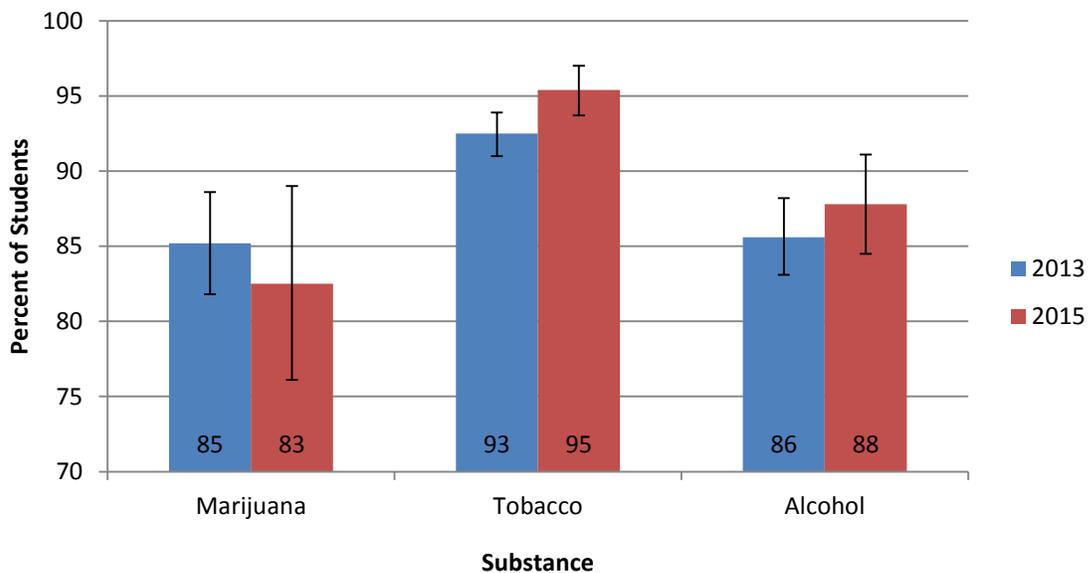
### Ease of Access

In 2015, 61% of Denver high school students felt it would be sort of or very easy to get marijuana if they wanted. This was not statistically different from the 2013 estimate and there were no statistical differences by sex, grade, or race/ethnicity. This metric was also statistically similar to the percent of students who felt it would be easy to get alcohol or cigarettes.

## Parental Disapproval

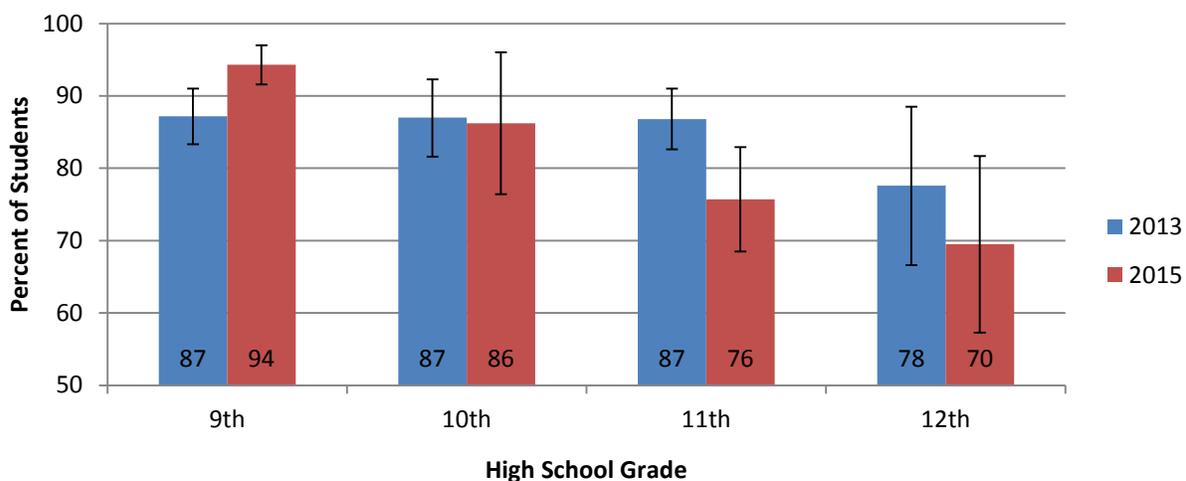
In the 2015 HKCS, 83% of Denver high school students reported that their parents would feel it was wrong or very wrong of them to use marijuana. This was not statistically different from the 2013 estimate. Significantly more students perceived that their parents would disapprove of them smoking cigarettes than believed their parents would disapprove of their using marijuana (Figure 12). As has successfully been done in anti-tobacco campaigns, empowering families to discourage adolescent marijuana use may reduce the percent of students who use marijuana.

Figure 12: Percent of Denver High School Students Who Think Their Parents Would Disapprove if They Used a Listed Substance, by Survey Year



Significantly more Denver 9<sup>th</sup> grade students stated that their parents would disapprove of them using marijuana in 2015 than 2013 (Figure 13). At the same time, perceived parental disapproval was significantly lower among 11<sup>th</sup> and 12<sup>th</sup> grade students than 9<sup>th</sup> grade students. There was also a clear downward trend in student perception of parental disapproval of marijuana across grades in 2015.

Figure 13: Percent of Denver High School Students Who Think their Parents Disapprove if They Use Marijuana, Stratified by Grade and Survey Year



There was no statistical difference over time, by sex, or by race/ethnicity in the percent of Denver high school students who thought their parents would disapprove if they used marijuana.

### Personal Disapproval

According to the 2015 HKCS, **53% of Denver high school students personally think it is wrong or very wrong for someone their age to use marijuana.** This was not statistically different from 2013. There was no statistical difference when stratified by grade, sex, or race/ethnicity.

## Conclusion

This report explored differences in marijuana use and perception metrics in 2013 and 2015 among Denver high school students. One key take away is that there is moderate evidence that recent use of marijuana has not increased in this population. However, while not statistically significant, it appears there may be a downward trend in perception of risk over time. It is important to continue monitoring whether the implementation of legalization for use among adults is associated with changes in use of marijuana or perception of risk among high school students.

Additionally, while efforts to prevent student marijuana use are important, alcohol continues to be the most prevalent substance abused in this population. Similarly, the fact that approximately 10 percent of students reported having ever used prescription drugs without a prescription is concerning, as it presents a risk of addiction and can be a pathway to heroin and injection drug use.

Finally, the percent of high school students who recently drove or rode with someone who had been using marijuana is a concern because this poses a risk to students and others on the road. There is a crucial need to help students that driving under the influence is dangerous and they have alternatives to driving or riding with a driver under the influence of marijuana or alcohol.

Questions about the content or the analyses included in this report can be directed to Abbie Steiner by email ([Abigail.Steiner@dhha.org](mailto:Abigail.Steiner@dhha.org)) or by phone (303-602-4808).