



# Marijuana and Prescription Drug Misuse and Abuse in Arizona

June 2016



**EPI**

Substance Abuse  
Epidemiology Work Group

of the Arizona Substance Abuse Partnership,  
Governor's Office of Youth, Faith and Family



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### About LeCroy & Milligan Associates:

Founded in 1991, LeCroy & Milligan Associates, Inc. is a consulting firm specializing in social services and education program evaluation and training that is comprehensive, research-driven and useful. Our goal is to provide effective program evaluation and training that enables stakeholders to document outcomes, provide accountability, and engage in continuous program improvement. With central offices located in Tucson, Arizona, LeCroy & Milligan Associates has worked at the local, state and national level with a broad spectrum of social services, criminal justice, education and behavioral health programs.

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# Executive Summary

Recent national attention focusing on the heroin epidemic, reported increases in marijuana and prescription drug misuse and abuse among youth and recent policy shifts in our state<sup>1</sup> have raised concerns among some policymakers and the public about the extent of the problem in Arizona and the implications for our communities. For example, data relating to Arizona high school students indicate steady increases in the percentage of 12<sup>th</sup> grade students reporting marijuana use in the past 30 days. In 2014, this percentage reached a five-year high of 23% among Arizona 12<sup>th</sup> graders, up from 18% in 2010. Nearly half (45%) of Arizona 12<sup>th</sup> grade students also reported using marijuana at least once in their lifetime, with little change occurring over the past five years. Similar trends can be seen among Arizona undergraduate students (ages 18-25), with annual increases reported in marijuana use in the past 30 days (increased from 15% in 2010 to 19% in 2014). Furthermore, Arizona has experienced steady increases in the rates of marijuana and opioid related emergency department and hospital visits.

In response to these trends, the Governor's Office of Youth, Faith and Family (GOYFF) requested data from the Arizona Substance Abuse Epidemiology Work Group regarding marijuana and prescription drug misuse and abuse. The Substance Abuse Epidemiology Work Group is a formal work group of the Arizona Substance Abuse Partnership (ASAP). The purpose of the report is to provide data on the current state of marijuana and prescription drug misuse and abuse in Arizona and, where data exists, show how Arizona compares to trends at the national and regional levels. This represents a first of its kind report for Arizona. The executive summary highlights key findings from descriptive data gathered across seven areas of interest for the Epidemiology Work Group.

## Youth Misuse & Abuse

The misuse or abuse of marijuana and prescription drugs by youth under the age of 18 is a concern because its use at an early age could negatively affect mental development, contribute to poorer educational outcomes and increase the chances they will become involved in the justice system and later become substance abusers.

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<sup>1</sup> In 2010, Arizona voters passed Proposition 203, which allowed marijuana to be distributed to those with a demonstrated medical need if approved by the Arizona Department of Health Services pursuant to *Arizona Revised Statute* § 36-2801.01 and A.A.C. R9-17-106.



- Overall, 10<sup>th</sup> grade and 12<sup>th</sup> grade have experienced a cumulative increase in marijuana misuse. Twenty-three percent of 12<sup>th</sup> grade students reported using marijuana in the past 30 days and that there has been a continued upward trend in this behavior among 12<sup>th</sup> graders since 2006.
- Nearly 45% Arizona 12<sup>th</sup> grader students report having used marijuana at least once in their lifetime.
- Almost half (45%) of the youth who reported using marijuana over the past 30 days also reported binge drinking (five or more drinks) compared to only 10% of the youth who did not use marijuana.
- Compared to 12<sup>th</sup> grader students nationwide, a slightly larger percentage (1.6%) of Arizona 12<sup>th</sup> graders reported using prescription drugs in 2014 without a doctor's prescription.

## Adult Misuse & Abuse

Understanding the impact of adult marijuana and prescription drug misuse and abuse can be used to inform substance abuse prevention and intervention strategies in Arizona.

- There has been a four percentage point increase in past 30-day marijuana use among Arizona undergraduate students (18-25 years old) from approximately 15% in 2010 up to 19.2% in 2014.
- The percentage of Arizona adults reporting use of marijuana in the past 30 days increased slightly each year, from 6.7% in 2010 to 8.8% in 2014, closely mirroring the annual increase in usage rates at the national level.
- The percentage of Arizona adults who reported using pain relievers for non-medical purposes in the past 30 days (4.7%) is higher than the national average (4.1%).

## Substance Abuse Treatment

Nationwide, the Substance Abuse and Mental Health Services Administration (SAMHSA) reports that more young adults (18-25) seek treatment for marijuana than alcohol. More Arizona youth (12-17) and young adults (18-25) receive substance abuse treatment for marijuana compared to treatment for heroin and other opioids combined.

- Nine percent of youth (12-17) and 13% of young adults (18-24) receiving substance abuse treatment had marijuana as a primary substance of misuse or abuse.
- Greater percentages of young adults (18-24) also indicated heroin or other opioids as their primary substances of misuse or abuse compared to youth (12-17).





## Emergency Department Use, Hospitalizations, and Deaths

Emergency room and hospital admissions are important indicators of drug abuse in a community. In recent years, there has been a steady increase in the rate of emergency department visits and hospital admissions related to marijuana or opioid misuse and abuse.

- Marijuana related emergency department visits have more than doubled from 104 per 100,000 population in 2010 to 242 per 100,000 in 2015.
- In 2015, emergency room visits related to marijuana misuse or abuse (242 per 100,000 population) are estimated to surpass those related to the misuse or abuse of opioids (203 per 100,000 population).
- Hospital admissions related to marijuana or opioid misuse or abuse has increased steadily over the last five years. In 2014, there were 269.8 hospitalizations per 100,000 population for opioid misuse or abuse and 247.3 per 100,000 for marijuana use. The hospitalization rate for opioid misuse and abuse has increased by 86% over the last five years.
- Arizona has averaged 8.6 marijuana related deaths per year over the last five years.

## Impaired Driving

A growing body of literature (see literature review) suggests that there is an association between marijuana use and impaired driving and that impaired drivers under the influence of marijuana have diminished sensory motor skills, have a greater risk for higher impact crashes and a greater likelihood of co-occurring conditions like drug or alcohol addiction.

The following points highlight the connection between the misuse and abuse of marijuana and prescription drugs and highway safety:

- In 2014, Arizona had the highest percentage of prescription drug related traffic fatalities (5.3%) than any neighboring state and the nation as a whole.
- Arizona consistently ranks near the top among neighboring states in the percentage of illegal/illicit prescription drug related traffic fatalities. In 2014, Arizona had the highest percentage, at 5.3%, with Utah (5.1%) and Nevada (4.2%) having the second and third highest percentage of traffic fatalities related to prescription drug use.
- The percentage of marijuana related traffic deaths has steadily increased since 2010, from 2.9% of all traffic-related deaths in 2010 to 5.1% in 2014.
- Arizona has seen an increase in the percentage of impaired drivers arrested for DUI's involving drugs. In 2014, 14.3% of all DUI arrests were drug-related.



- Marijuana was indicated in nearly half of all Arizona drug related DUI arrest reports between 2010 and 2015, and a slight increase (1.3%) in the percentage of prescription drugs were reported in DUI arrests between 2014 and 2015.

## Crime

The report provides descriptive data on the nature and extent of crime in Arizona, including the number of drug-related arrests of persons under 18 years of age between 2010 and 2014. According to data from the Arizona Department of Public Safety, overall we find that the proportion of youth arrested for drug-related crimes is increasing.

- Arrests relating to the sale, manufacturing and possession of marijuana comprise the largest number of juvenile drug arrests. We have seen a marked increase in arrests for the sale or manufacturing of synthetic narcotics in recent years.
- There has been an increase in drug-related delinquency referrals (age 8 to 17) from approximately 14% in 2011 to just over 16% in 2014.
- Approximately 25% of the youth who were committed to ADJC who previously misused or abused marijuana or prescription drugs admitted that they were under the influence of drugs or alcohol when they committed their offense.

## Homelessness and Suicide

Data on homelessness and suicide is another important consideration because drug misuse and abuse is often associated with causes of homelessness suicide and other risk factors. Our research found little change in either area. Findings include:

- Estimates on the number of homeless persons nationally and in Arizona have remained relatively stable over the last five years. In 2014, there were an estimated 578,424 homeless persons nationally and 7,256 homeless persons in Arizona and both counts have decreased slightly in recent years.
- Over the past five years, the number of suicides in the United States has increased from 38,364 in 2010 to over 42,773 in 2014. In Arizona, the number has increased slightly from 1,070 in 2010 to 1,116 in 2013<sup>2</sup>. Suicide ranks as the eighth leading cause of death in Arizona.

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<sup>2</sup> Homeless counts for Arizona in 2014 were not available at the time this report was published



## Summary and Recommendations

Overall, there is an upward trend in the use of marijuana and its effects in Arizona. More individuals of all ages are using marijuana in Arizona, which can negatively impact health and contribute to other risk factors. Marijuana has a heavy influence on Arizona's youth (age 12-17) and prescription drugs are more problematic for young adults (18-24) and adults.

To determine the full picture of marijuana and prescriptions drug misuse and abuse in Arizona it is recommended that a data-sharing plan and schedule be developed with state agencies to provide data for future reports. Establishing a coordinated approach among agencies allows for a more detailed and comprehensive examination to inform policymakers and the public and drive efforts to address the issue statewide.

Additional sources of data that might be beneficial to help determine the impact in Arizona include:

- Child neglect data, including drug-related child deaths, foster care removals and associated risk factors
- Child poisonings from drugs
- Arizona interdiction seizures
- Crime data related to specific drugs
- Drug use among Arizona's homeless population
- Drug use related suicide information
- THC potency in seized marijuana
- The route of obtaining drugs – this would include buying and stealing and from who. This is of considerable interest for both marijuana and prescription drugs as both can be legally obtained for medical reasons by one individual and then used by others.



# Introduction

Substance misuse and abuse can have long lasting negative impacts on an individual's life. The Governor's Office of Youth, Faith, and Family (GOYFF) is interested in the impact of marijuana and prescription drug misuse and abuse in Arizona with an emphasis on youth and young adults. The GOYFF requested marijuana and prescription drug misuse and abuse data from members of the Arizona Substance Abuse Epidemiology Work Group (Epi) to examine this issue. Epi is a formal work group of the Arizona Substance Abuse Partnership (ASAP) with a mission to provide data on the use of alcohol and illicit, over-the-counter, and prescription drugs to inform substance abuse prevention and intervention strategies.

LeCroy & Milligan Associates, Inc., an evaluation firm located in Tucson, Arizona, was contracted to facilitate the collection and synthesis of these data and provide an overall summary of the impact of marijuana and prescription drug misuse and abuse in Arizona. This descriptive report presents data that is currently available from Arizona, nationally, and neighboring states. The ultimate goal of this data request was to analyze the current trends in the misuse and abuse of marijuana and prescription drugs over the last five years. The final section of this report includes a comprehensive literature review detailing research findings from salient studies completed outside of Arizona to further inform ASAP's work on issues relating to the misuse and abuse of marijuana and prescription drugs in our state.



# Section 1: Youth Misuse & Abuse

## Key Findings

The misuse and abuse of marijuana or other drugs by youth should be cause for concern. The use of marijuana at an early age can have a negative impact on mental development, contribute to poorer educational outcomes and increase the likelihood of becoming addicted later in life.

- Results from the 2014 Arizona Youth Survey indicate that overall, 10<sup>th</sup> grade and 12<sup>th</sup> grade have experienced a cumulative increase in marijuana use within the last 30 days. Twenty-three percent of 12<sup>th</sup> grade students reported using marijuana in the past 30 days and that there has been a continued upward trend in this behavior among 12<sup>th</sup> graders since 2006 (Exhibit 2).
- Nearly 45% of 12<sup>th</sup> grade students reports having used marijuana at least one in their lifetime (Exhibit 5).
- Almost half (45%) of the youth who reported using marijuana over the past 30 days also reported binge drinking (five or more drinks) compared to only 10% of the youth who did not use marijuana (Exhibit 10).
- The percentage of Arizona 12<sup>th</sup> grade students using prescriptions drugs without a doctor's prescription in the past 30 days has decreased, but remains higher than the national percentage (Exhibit 6).

This section of the report highlights findings from three surveys<sup>3</sup> that examine drug misuse and abuse. Data on schools' self-reports of student suspensions and expulsions related to drug or illicit drug misuse or abuse are also provided.

The Arizona Youth Survey (AYS) is conducted every two years with students in grades 8, 10 and 12 at a sample of schools throughout the state and asks a series of questions regarding drug and alcohol use and perceptions. The AYS is an effective tool to measure youth behaviors because of its focus on Arizona students and at specific grade levels, compared to other surveys that use a national stratified sample of youth between 12-17 years of age, such as the National Survey on Drug Use and Health (NSDUH)<sup>4</sup>.

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<sup>3</sup> The three surveys covered in this report are the Arizona Youth Survey (AYS), the Youth Risk Behavior Survey (YRBS), and the Monitoring the Future Survey (MTF).

<sup>4</sup> The National Survey on Drug Use and Health (NSDUH) was considered, but not included in this section because it does not allow for comparisons at specific grade levels. Differences in survey protocols and



Results from the Monitoring the Future (MTF) survey are included to provide a comparison between a nationally representative sample of students and Arizona student responses on the AYS in grades 8, 10 and 12 to better understand student drug misuse and abuse. The MTF survey, sponsored by the National Institute on Drug Abuse (NIDA), is designed as an ongoing series of national surveys of adolescents<sup>5</sup> and adults in the United States with a primary emphasis on measuring attitudes about illicit drug use, alcohol use, tobacco use, and other health risk behaviors<sup>6</sup>.

The Youth Risk Behavior Survey (YRBS) is conducted every two years with high school students. The purpose of the YRBS is to assess and monitor behaviors that increase the risk of premature morbidity, and mortality for high school students. Topics cover violence, suicide, alcohol, tobacco, other drugs, sexual risks, HIV/AIDS, sexually transmitted diseases, body image, diet, and physical activity. For this report, four questions were used to describe the frequency of marijuana use and other drug misuse and abuse among high school students and relationships to high-risk behaviors such as suicide and binge drinking. These data highlight groups of students that may be at higher risk of engaging in risky behaviors relative to their frequency of marijuana use.

## Arizona Youth Survey

The AYS results indicate that marijuana misuse and abuse within the past 30 days among 8<sup>th</sup> and 10<sup>th</sup> graders has fluctuated in recent years. More notably, however, is the steady increase in the percentage of Arizona 12<sup>th</sup> graders who have reported using marijuana.

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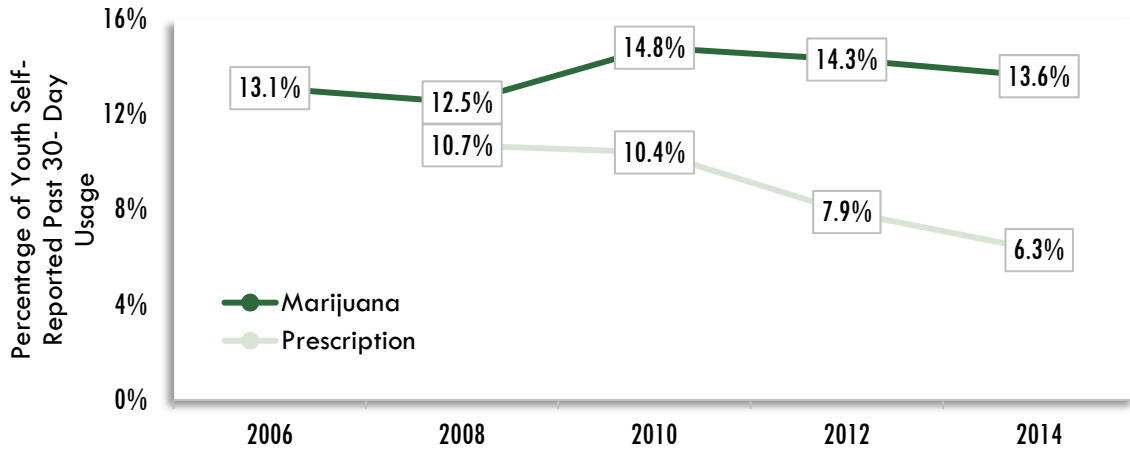
methodology also yield lower percentages of students using marijuana and prescription drug use on the NSDUH compared to the AYS.

<sup>5</sup> Initially, MTF only included results for high school seniors but was later expanded to include students in 8<sup>th</sup> and 10<sup>th</sup> grades as well.

<sup>6</sup> Questions regarding HIV risk behaviors, leisure activities, participation in organized activities, religious affiliations and practices and political views are also asked in order to make the study of interest to parents, students and school principals when considering their participation in the survey.



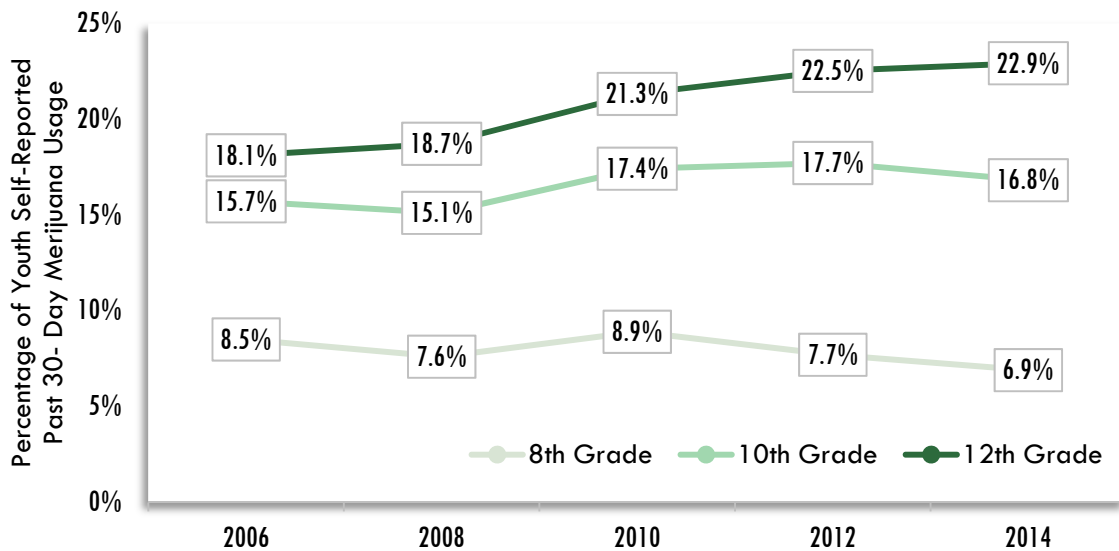
**Exhibit 1. Percentage of Arizona Youth Reporting Past 30-Day Misuse and Abuse of Marijuana and Prescription Drugs**



Data from the Arizona Youth Survey

- Overall, youth reporting prescription drug use in the past 30-days has decreased from 10.7 percentage points in 2008 to 6.3 percentage points in 2014.
- Overall, youth who have reported using marijuana has remained relatively stable since 2006. However, the percentage reporting marijuana use within the last 30 days in 2012 and 2014 is approximately twice as large compared to the percentage of youth reporting prescription drug misuse or abuse.

**Exhibit 2. Percentage of Arizona Youth Reporting Past 30-Day Marijuana Misuse and Abuse by Grade**

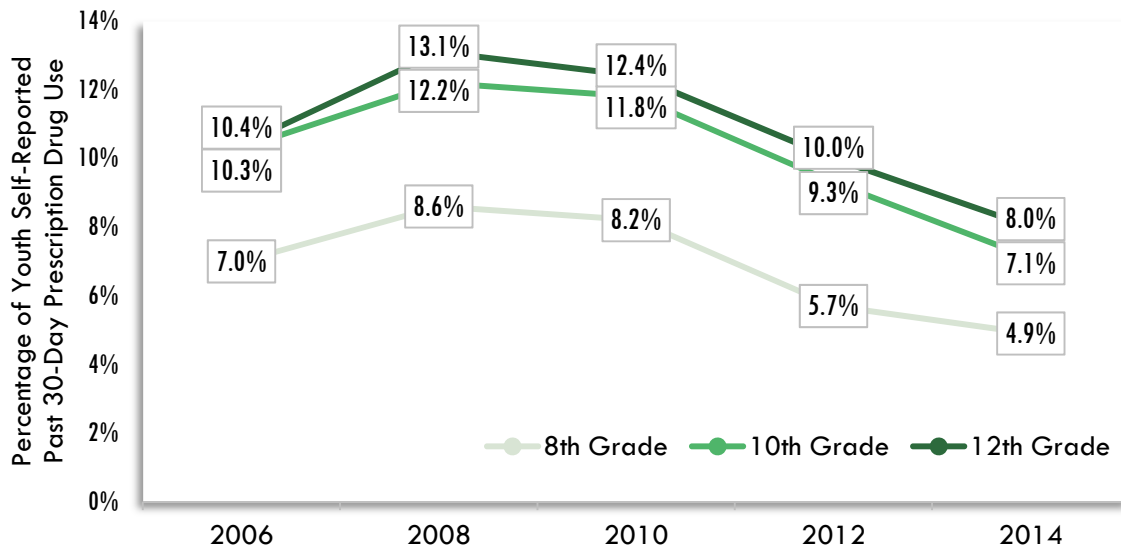


Data from the Arizona Youth Survey



- Disaggregating AYS results by grade highlights important differences in marijuana use, which are masked when aggregated. For example, exhibit 2 above reflects that overall, 10<sup>th</sup> grade and 12<sup>th</sup> grade have experienced a cumulative increase in marijuana use within the last 30 days.
- Twenty-three percent of 12<sup>th</sup> grade students reported using marijuana in the past 30 days and that there has been a continued upward trend in this behavior among 12<sup>th</sup> graders in recent years. Also noteworthy is the reduction in self-reported past 30-day marijuana use among 8<sup>th</sup> grade students.

**Exhibit 3. Percentage of Arizona Youth Reporting Past 30-Day Prescription Drug Misuse and Abuse by Grade**



Data from the Arizona Youth Survey

Note: Monitoring the Future did not have reliable data for 8<sup>th</sup> and 10<sup>th</sup> grades, and subsequently was not included in this graph.

- Following an initial increase, there was an overall reduction in prescription drug misuse and abuse among all surveyed Arizona students.





## Monitoring the Future

The following tables provide data from three recent Monitoring the Future (MTF) and Arizona Youth Survey (AYS) administrations to compare marijuana and alcohol misuse and abuse with national trends among Arizona youth in grades 8, 10, and 12.

**Exhibit 4. Percentage of Students Reporting They Have Used Marijuana or Alcohol in the Past 30 days, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)**

	8 <sup>th</sup> Grade			10 <sup>th</sup> Grade			12 <sup>th</sup> Grade		
	2010	2012	2014	2010	2012	2014	2010	2012	2014
<b>Alcohol</b>									
Arizona (AYS)	21.9	17.1	13.4	34.7	32.1	27.8	45.0	43.5	40.6
National (MTF)	13.8	11.0	9.1	28.9	27.6	23.5	41.2	41.5	37.4
<b>Marijuana</b>									
Arizona (AYS)	8.9	7.7	6.9	17.4	17.7	16.8	21.3	22.5	22.9
National (MTF)	8.0	6.5	6.5	16.7	17.0	16.6	21.4	22.9	21.2

- A larger percentage of Arizona eighth, tenth or twelfth grade students reported misusing and abusing alcohol in the past month than did students nationally.
- For past 30-day marijuana misuse and abuse, the Arizona student percentages are comparable to the national percentages.
- From 8th grade to 10th grade, the percentage of Arizona students who reported misusing and abusing marijuana or alcohol in the past 30 days more than doubled. This important finding suggests that discussions about substance abuse prevention efforts and subsequent supports may be timely.



**Exhibit 5. Percentage of Students Reporting They Have Used Marijuana or Alcohol At Least Once in Their Lifetime, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)**

	8 <sup>th</sup> Grade			10 <sup>th</sup> Grade			12 <sup>th</sup> Grade		
	2010	2012	2014	2010	2012	2014	2010	2012	2014
<b>Alcohol</b>									
Arizona (AYS)	45.1	37.3	31.5	64.1	59.1	52.9	72.8	69.2	67.0
National (MTF)	35.8	29.5	26.8	58.2	54.0	49.3	71.0	69.4	66.0
<b>Marijuana</b>									
Arizona (AYS)	17.8	16.2	14.9	34.3	34.7	32.4	44.7	44.8	44.7
National (MTF)	17.3	15.2	15.6	33.4	33.8	33.7	43.8	45.2	44.4

- The percentage of Arizona students, regardless of grade, reporting that they have used marijuana at least once in their lives is twice the percentage of students who have used marijuana in the past 30 days.
- Arizona students compare similarly in terms of using marijuana at least once in their lifetime relative to national figures. By the time youth are in 12<sup>th</sup> grade, nearly 45% of youth reported misusing marijuana at least once in their lifetime, with percentages increasing sharply from 8<sup>th</sup> grade to 10<sup>th</sup> and 12<sup>th</sup> grades, suggesting that more students may be experimenting with alcohol and marijuana once they enroll in high school.

Exhibits 6 and 7 provide data on the percentage of 12<sup>th</sup> grade students in Arizona and nationally who reported using prescription drugs without a doctor’s prescription in the past 30 days and at least once in their lifetime. These data further inform the degree to which substance misuse and abuse occurs among youth during high school and in 12<sup>th</sup> grade in particular.

**Exhibit 6. Percentage of 12th Grade Students Reporting They Have Used Prescription Drugs Without a Doctor’s Prescription in the Past 30 days, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)**

	2010	2012	2014
Arizona (AYS)	12.4	10.0	8.0
National (MTF)	6.9	7.0	6.4



- Despite a decline in recent years, a higher percentage of Arizona 12<sup>th</sup> grade students report misusing prescription drugs without a doctor's prescriptions in the past 30 days compared to the national percentage.<sup>7</sup>

**Exhibit 7. Percentage of 12th Grade Students Reporting They Have Used Prescription Drugs Without a Doctor's Prescription in their Lifetime, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)**

	2010	2012	2014
Arizona (AYS)	27.3	23.9	18.7
National (MTF)	21.6	21.2	19.9

- Overall, the lifetime misuse or abuse of prescription drugs without a doctor's prescription among Arizona 12<sup>th</sup> grade students has dropped between 2010 and 2014.

## Drug Related Suspensions/Expulsions

The Arizona Department of Education has provided the number of students assigned to suspension or expulsion due to drug<sup>8</sup> or illicit drug<sup>9</sup> misuse or abuse. These are self-reported data from the schools and the accuracy of the information is not validated by the State. Drug and illicit drug-related suspensions and expulsions have decreased since 2010.

**Exhibit 8. Number and Rate of Suspensions/Expulsions per 1,000 Youth due to Drug and Illicit Drug Misuse and Abuse in Arizona by School Year (Rate in parentheses)**

	2010-2011	2011-2012	2012-2013	2013-2014
Drug Related	7,216 (12.8)	7,620 (13.5)	6,429 (11.3)	5,892 (10.3)
Illicit Drug Related	4,417 (7.8)	4,868 (8.6)	4,066 (7.1)	3,855 (6.7)

Data provided by the Arizona Department of Education

<sup>7</sup> Neither the Arizona Youth Survey nor Monitoring the Future asked specific questions regarding the misuse or abuse of any or all prescription drugs. Instead, the surveys analyzed data from the individual questions pertaining to specific drugs and drug categories to determine the percentage for overall prescription drug use.

<sup>8</sup> The "Drug" category includes drug paraphernalia, inhalants, over the counter drugs, prescription drugs, substances represented as an illicit drug, illicit drugs, and unknown drugs. Schools are not required to report violations of drug paraphernalia and substances represented as illicit drugs.

<sup>9</sup> The "Illicit drug" category includes optional fields of cocaine/crack, ecstasy, hallucinogen, heroin, marijuana, methamphetamine, other illicit drug paraphernalia, inhalants, over the counter drugs, prescription drugs, substances represented as illicit drug, illicit drugs and unknown drugs. Schools are not required to report violations of drug paraphernalia and substances represented as illicit drugs.



## Youth Risk Behavior Survey

Results from the Youth Risk Behavior Survey (YRBS) indicate that lifetime and past 30-day marijuana use have remained relatively stable for the past several years. In 2013, the percentage of Arizona youth using marijuana within the past 30 days and over one’s lifetime was 24% and 43% respectively. Exhibit 8 below reflects YRBS results for the percentage of first time marijuana use before the age of 13 and school property involvement among Arizona youth.

**Exhibit 9. Percentage of First Marijuana Use Prior to Age 13 and School Property Involvement Among Arizona Youth, 2003 – 2013**

	2003	2005	2007	2009	2011	2013	2015
Students who tried marijuana for the first time before age 13 years	12.9	12.6	13.0	11.8	11.4	9.8	10.0
Students who were offered, sold, or given an illegal drug by someone on school property during the past 12 months	28.6	38.7	37.1	34.6	34.6	31.3	29.3

Data from the Youth Risk Behavior Survey

- The percentage of students who tried marijuana before age 13 has declined since 2003. However, despite fluctuations in recent years, the percentage of students who were offered, sold, or given an illegal drug on school property may suggest that access to illegal substances is a consistent threat to youth and communities across Arizona.

The data used for the following figures were derived from the 2015 Youth Risk Behavior Survey, contrasting past 30-day marijuana frequency of use with behaviors and incidents relating to violence, mental health, and substance use<sup>10</sup>. Because not all youth responded to every question, there are different sample sizes for each set of responses. Only persons who responded to *both* sets of questions are included in the data below.

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<sup>10</sup> This analysis was modeled after the Vermont Department of Health’s *Health impact assessment: Marijuana regulation in Vermont (2013)*.



**Exhibit 10. Percentage of Arizona High School Students Reporting Certain Risk Behaviors, by Frequency of Marijuana Use Within the Past 30 Days**

<b>Marijuana Use Frequency in the Past 30 Days</b>						
<b>Violence</b>	<b>0 times (n=1,196)</b>	<b>1 or 2 times (n=117)</b>	<b>3 to 9 times (n=77)</b>	<b>10 to 19 times (n=40)</b>	<b>20+ times (n=117)</b>	<b>Any Use (n=351)</b>
Attempted Suicide in the Past 12 Months	6.6	15.4	15.6	22.5	14.5	<b>16.0</b>
Been in a Physical Fight in the Past 12 Months	17.1	32.5	37.7	45.0	41.0	<b>37.9</b>
<b>Mental Health Indicators</b>						
Made a Suicide Plan in the Past 12 Months	12.5	25.6	24.7	32.5	30.8	<b>27.9</b>
Felt Sad for 2 or More Weeks in the Past 12 Months	32.0	50.4	41.6	45.0	47.9	<b>47.0</b>
<b>Substance Misuse and Abuse</b>						
If had sex in the past 3 months, Used Drugs and/or Alcohol prior	3.0	9.4	18.2	27.5	39.3	<b>23.4</b>
Had 5+ Drinks in a Short Time in the Past 30 Days	10.7	32.5	51.9	50.0	52.1	<b>45.3</b>

- Arizona youth who reported any use of marijuana in the past 30 days were also more likely to engage in certain risk behaviors, including binge drinking, being in a physical fight or attempting suicide compared to youth who reported no marijuana use in the past 30 days.
- The percentage of youth using marijuana one or more times in the past month who also reported making suicide plans in the last 12 months is more than double the percentage of youth who did not use marijuana at all in the past month.



## Section 2: Adult Misuse & Abuse

### Key Findings

Understanding the prevalence of adult marijuana and prescription drug misuse and abuse in Arizona can help inform substance abuse prevention and intervention strategies in Arizona.

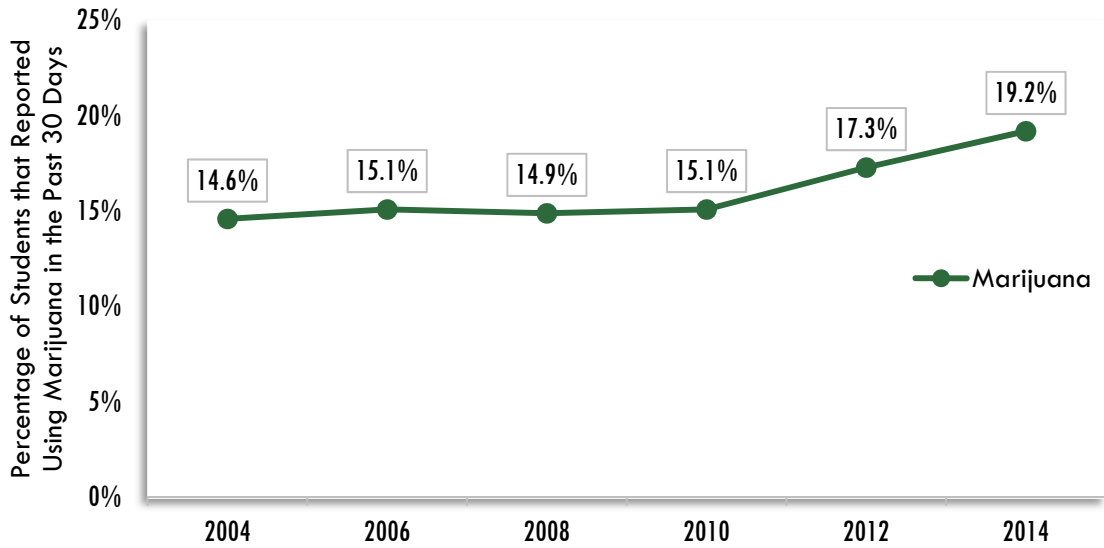
- There has been a four percentage point increase in past 30-day marijuana misuse among Arizona undergraduate students (18-25 years old) from approximately 15% in 2004 through 2010 up to 19.2% in 2014 (Exhibit 11).
- The percentage of Arizona undergraduate students misusing prescription drugs is lower than that for marijuana, but varies by drug type. Sedatives are misused by the lowest percentage of students (3.6% in 2014), with stimulant use being the highest percentage among students (8.5%) in 2014 overall (Exhibit 12).
- The percentage of Arizona adults reporting using marijuana in the past 30 days has increased slightly each year from 6.7% in 2010 to 8.8% in 2014, closely mirroring the annual increase in usage rates at the national level (Exhibit 14).
- In 2014, the percentage of Arizona adults who reported using pain relievers for non-medical purposes in the past 30 days (4.7%) is higher than the national average (4.1%) (Exhibit 17).

### Arizona Institutions of Higher Education Alcohol and Other Drug Use and Violence Online Survey

Arizona Institutions of Higher Education Alcohol and Other Drug Use and Violence in Arizona (AZIHE) Online Survey is administered every two years to a random sample of undergraduate students (ages 18-25) at Arizona State University, Embry-Riddle Aeronautical University, Northern Arizona University, and the University of Arizona. The survey captures students' behaviors regarding use of alcohol, drugs and related behaviors, violence and mental health. Comparable data for neighboring states is unavailable.



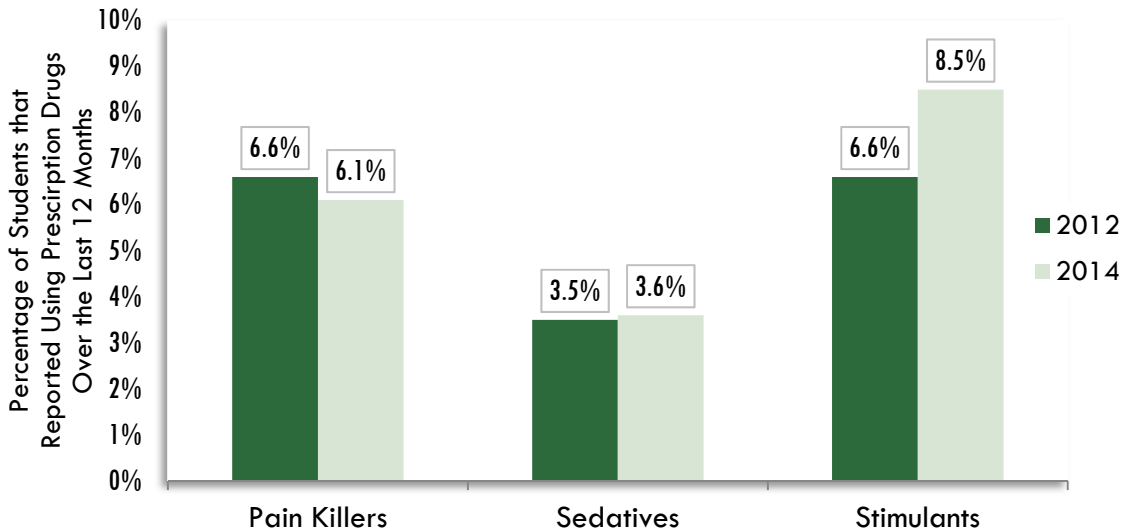
**Exhibit 11. Percentage of Arizona Undergraduates who Used Marijuana in the Last 30 Days**



Data provided by Arizona Institutions of Higher Education Network

- Past 30 day marijuana use among Arizona undergraduate students has increased nearly five percentage points since 2004. In 2014, nearly one in five college students (19%) report current marijuana usage.

**Exhibit 12. Percentage of Arizona Undergraduates who Misused Prescription Drugs in the Last 12 Months**



Data provided by Arizona Institutions of Higher Education Network



In 2012, AZIHE included questions asking undergraduates about their non-doctor ordered prescription drug misuse over the last 12 months. Prescription drug use includes the misuse and abuse of painkillers (Oxycontin, Vicodin, and Codeine), sedatives (Xanax, Valium, Ambien), and stimulants (Ritalin, Adderall). Exhibit 12 above reflects the percentage of Arizona undergraduate students reporting prescription drug within the last 12 months.

- Between 2012 and 2014, more Arizona college students were misusing stimulants. College students often misuse and abuse stimulants as a means to increase focus on academic tasks, but it is unclear from the data whether or not this is a reason for its use among students.

**Exhibit 13. Percentages of Arizona Undergraduates by Age Group who Used Marijuana in the Past 30 Days in Arizona**

Age	2004	2006	2008	2010	2012	2014
Under 21	15.4	16.8	16.9	16.3	20.3	22.3
21-25 Years	15.1	15.1	12.9	14.7	12.2	18.5

Data provided by Arizona Institutions of Higher Education Network

- The percentage of Arizona undergraduates under the age of 21 reporting that they have used marijuana within the past 30 days has increased since 2004. In 2014, more than one in five undergraduates (22%) under the age of 21 reported using marijuana in the past 30 days.
- For undergraduate students between 21 and 25 years of age, marijuana use generally decreased from 2004 until 2012, but they reported an increase to 18.5% in 2014.

## The National Survey on Drug Use and Health

The National Survey on Drug Use and Health (NSDUH) is a survey conducted annually with approximately 70,000 randomly selected individuals ages 12 and older across the United States. Exhibits 14-17 below reflect the percentage of youth reporting drug misuse and abuse in Arizona and neighboring states.





**Exhibit 14. Percentage of Respondents in Arizona and Neighboring States Who Used Marijuana in the Past 30 Days (12 or older)**

	2010	2011	2012	2013	2014
<b>Arizona</b>	<b>6.5</b>	<b>7.0</b>	<b>7.2</b>	<b>7.9</b>	<b>8.8</b>
California	8.2	8.6	9.1	8.9	9.2
Colorado	11.3	11.0	10.4	12.7	14.9
Nevada	7.0	7.6	8.4	8.0	7.8
New Mexico	7.7	8.3	9.1	9.0	9.6
Utah	3.1	3.6	4.4	5.1	5.6
National	6.8	6.9	7.1	7.4	8.0

Data from the National Survey on Drug Use and Health

- Arizona respondents report a higher percentage of past 30 day marijuana usage relative to the national figures, but has remained in the middle compared to neighboring states.

**Exhibit 15. Percentage of Respondents in Arizona and Neighboring States Who Reported Trying Marijuana for the First Time between the Ages of 12 and 17**

	2010	2011	2012	2013	2014
<b>Arizona</b>	<b>6.3</b>	<b>6.6</b>	<b>6.5</b>	<b>6.5</b>	<b>6.6</b>
California	6.9	7.3	7.5	6.1	6.2
Colorado	9.3	9.2	6.6	7.9	9.1
Nevada	6.5	7.2	7.1	6.1	6.1
New Mexico	8.3	8.7	8.9	8.0	6.9
Utah	4.0	4.3	3.7	3.5	3.5
National	6.6	6.1	6.0	5.8	5.6

Data from the National Survey on Drug Use and Health

- In 2014, the percentage of Arizona respondents reporting first time marijuana usage between ages 12 and 17 (6.6%) was the third highest among neighboring states behind Colorado and New Mexico, and has remained relatively constant over time.
- Nationally the percentage of respondents trying marijuana for the first time between the ages of 12 and 17 has decreased a full percentage point from 6.6% in 2010 to 5.6% in 2014, while Arizona has remained relatively stable over the past five years.



**Exhibit 16. Percentage of Respondents in Arizona and Neighboring States Who Reported Trying Marijuana for the First Time Between the Ages of 18 and 25**

	2010	2011	2012	2013	2014
<b>Arizona</b>	<b>6.4</b>	<b>7.2</b>	<b>7.6</b>	<b>7.3</b>	<b>8.0</b>
California	7.4	8.3	8.8	8.4	8.6
Colorado	9.6	10.3	9.4	9.9	10.2
Nevada	6.4	8.4	9.1	7.5	8.8
New Mexico	8.1	9.6	7.9	7.0	6.6
Utah	4.0	3.9	4.2	4.1	4.7
National	6.8	7.3	7.6	7.5	7.7

Data from the National Survey on Drug Use and Health

- Arizona percentages of first time marijuana usage between the ages of 18 and 25 were comparable to the national average until 2014, and lower relative to most neighboring states.
- In 2014, 8.0% of Arizona respondents stated that they first tried marijuana between the ages of 18 and 25, which is higher than the national percentage of 7.7%.

**Exhibit 17. Percentage of Respondents in Arizona and Neighboring States Who Misused or Abused Pain Relievers for Non-Medical Purposes in the Past Year (12 or older)**

	2013	2014
<b>Arizona</b>	<b>5.8</b>	<b>4.7</b>
California	5.2	4.3
Colorado	5.1	4.9
Nevada	5.3	4.5
New Hampshire	5.2	4.4
Utah	4.1	3.9
National	4.5	4.1

Data from the National Survey on Drug Use and Health

- The misuse and abuse of pain relievers was added to the NSDUH in 2013. Arizona percentages were greater than national and regional percentages, except for Colorado, in 2014.



## Section 3: Substance Abuse Treatment

### Key Findings

Nationwide, the Substance Abuse and Mental Health Services Administration (SAMHSA) reports that more young adults (18-25) seek treatment for marijuana than alcohol. In Arizona, more youth (12-17) and young adults (18-25) receiving substance abuse treatment have marijuana as their primary substance of use than for heroin and other opioids combined.

- In 2014, 10% of all youth (12-17) and 20% of young adults (18-24) that received substance abuse treatment in Arizona had marijuana as a substance of abuse (Exhibits 18 & 19).
- For those receiving substance abuse treatment in Arizona, greater percentages of young adults have marijuana, heroin, or other opioids as substances of misuse or abuse compared to youth (Exhibits 18 & 19).

The Arizona Department of Health Services, Division of Behavioral Health, provided data on substance use disorder treatment. This includes data for all youth (12-17) and young adults (18-24) receiving substance abuse treatment services paid for with state or federal funds. The following exhibits show the percentage of all treatment admissions where marijuana, heroin, and other opioids are the substances of abuse. Other drugs are not included in this report.

**Exhibit 18. Percentage of Arizona Treatment Admissions by Primary Substance of Misuse or Abuse and Any Mention of Substance of Misuse or Abuse, Youth (12-17)**

	2010	2011	2012	2013	2014
<b>Primary Substance of Use</b>					
Marijuana	15.8	12.6	12.1	11.3	8.7
Heroin	1.0	0.2	0.2	0.2	0.1
Other Opioids	0.3	0.1	0.1	0.1	0.1
<b>Any Mention of Substance</b>					
Marijuana	20.0	15.3	14.6	13.7	10.4
Heroin	1.5	0.5	0.4	0.4	0.3
Other Opioids	1.0	0.6	0.7	0.6	0.4

Data provided by Arizona Department of Health Services, Division of Behavioral Health Services



- In Arizona, reports of marijuana, heroin, or other opioids as primary or any aspect of treatment admissions for substance use disorders among youth (12-17) have decreased every year since 2010.
- Marijuana was a substance of misuse or abuse for more than 10% of Arizona youth (12-17) who received substance abuse treatment services.

**Exhibit 19. Percentage of Arizona Treatment Admissions by Primary Substance of Misuse or Abuse and Any Mention of Substance of Misuse or Abuse, Young Adults (18-24)**

	2010	2011	2012	2013	2014
<b>Primary Substance of Use <sup>11</sup></b>					
Marijuana	15.4	16.1	15.5	14.2	12.9
Heroin	6.6	6.0	5.9	5.4	5.2
Other Opioids	2.1	2.0	2.0	1.9	1.3
<b>Any Mention of Substance <sup>12</sup></b>					
Marijuana	26.1	25.8	24.8	22.4	20.1
Heroin	8.0	7.1	6.9	6.5	6.2
Other Opioids	3.7	3.7	4.0	3.6	2.8

Data provided by Arizona Department of Health Services, Division of Behavioral Health Services

- Marijuana is a substance of misuse or abuse for 1 in 5 young adults (18-24) receiving substance abuse treatment in Arizona.
- Overall, despite both groups showing steady decreases for admissions relating to marijuana, heroin, or other opioids, more young adults than youth indicate that marijuana is their substance of abuse when seeking treatment.

<sup>11</sup> The primary substance of abuse is self-reported by patients and indicates the primary reason a patient believes he or she is seeking treatment.

<sup>12</sup> Any mention of a substance(s) is self-reported by the patient and indicates what he or she believes to be the substance of use in possible combination with other drugs when seeking treatment.



## Section 4: Emergency Department Visits, Hospitalizations, and Deaths

### Key Findings

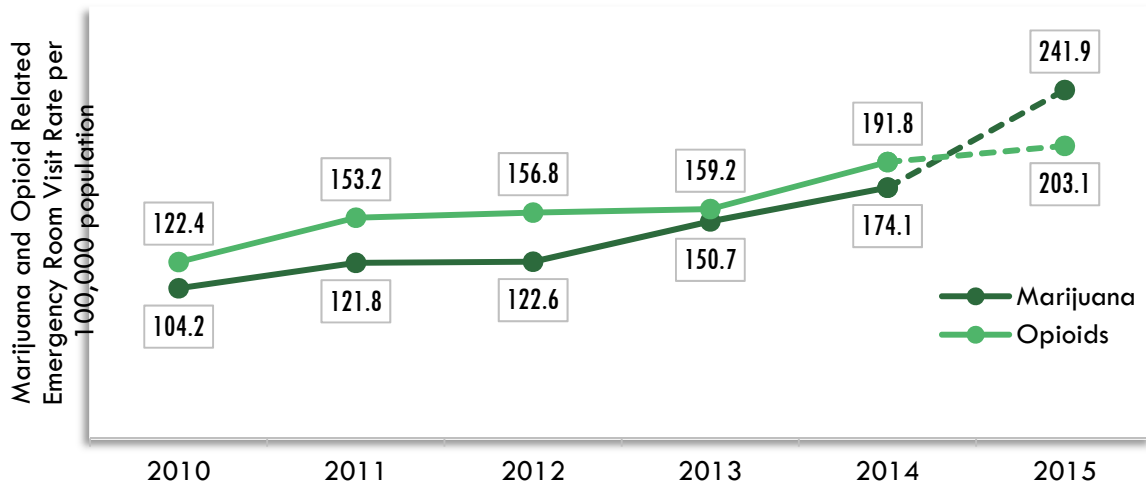
Emergency department visits, hospitalizations, and death rates are important indicators of drug misuse and abuse in a community. In recent years, there has been a steady increase in marijuana or opioid related emergency department visits and hospital admissions, which may be related to overall marijuana and opioid misuse or abuse in Arizona.

- Marijuana related emergency department visits have more than doubled from 104 per 100,000 population in 2010 to 242 per 100,000 in 2015 (Exhibit 20).
- In 2015, emergency room visits related to marijuana misuse or abuse (242 per 100,000 population) are estimated to surpass those related to the misuse or abuse of opioids (203 per 100,000 population) (Exhibit 20).
- Hospital admissions related to marijuana or opioid misuse or abuse have increased steadily over the last five years. In 2014, there were 269.8 hospitalizations per 100,000 population for opioid use and 247.3 per 100,000 for marijuana misuse or abuse (Exhibit 21).
- Arizona has averaged 8.6 marijuana related deaths per year over the last six years (Exhibit 22).

The Arizona Department of Health Services provides state-level data for the emergency department visits, hospital admissions, and deaths. Comparable data for neighboring states was unavailable. Emergency department visits and hospital admissions data include multiple diagnoses including drug use and abuse related diagnosis codes (based on the International Classification of Diseases, ninth revision known as ICD-9). Starting in October 2015, both emergency department and hospital records will switch to using codes from the International Classification of Diseases, tenth revision (ICD-10). Death certificates in Arizona already use the ICD-10 codes. For future studies, due to the changes in diagnostic codes, emergency department and hospital data for the second half of 2015 and beyond may not be directly comparable to the data included in the report.

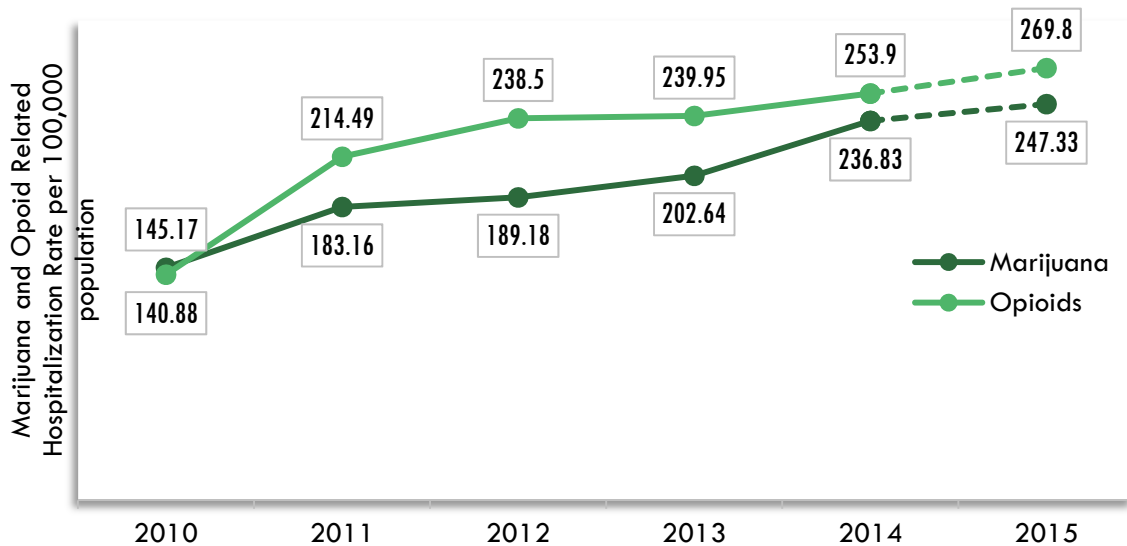


**Exhibit 20. Estimated Rate per 100,000 population of Marijuana or Opioid Related Emergency Room Visits in Arizona**



Note: 2015 rates use 2014 Population estimates and YTD counts to project the estimated annual rates  
Data provided by the Arizona Department of Health<sup>13</sup>

**Exhibit 21. Estimated Rate per 100,000 population of Marijuana and Opioid Related Hospitalizations in Arizona**



Note: 2015 Rates use 2014 Population estimates, and YTD counts to project estimated annual rates  
Data provided by the Arizona Department of Health<sup>14</sup>

<sup>13</sup> Opioids include prescription drugs as well as heroin and other opioids.

<sup>14</sup> Opioids include prescription drugs as well as heroin and other opioids.



- There has been a steady increase in emergency department visits and hospital admissions related to marijuana or opioid misuse and abuse.
- The rate of marijuana related emergency department visits have more than doubled from 2010 to 2015, which have surpassed emergency department visits related to opioid misuse and abuse in 2015.
- Hospitalizations related to the misuse and abuse of marijuana or opioids have both increased between 2010 and 2015.

**Exhibit 22. Arizona Marijuana or Opioid Related Deaths (N / Rate per 100,000)**

	2010	2011	2012	2013	2014	2015
Marijuana	7 (0.11)	8 (0.12)	8 (0.12)	12 (0.18)	7 (0.10)	10 (0.16)
Opioids	683 (10.69)	641 (9.96)	556 (8.56)	608 (9.24)	643 (9.64)	465 (9.30)

Note: 2015 rates use 2014 Population estimates and YTD counts to project the estimated annual rates  
 Data provided by the Arizona Department of Health

- There were a total of 52 deaths in Arizona related to marijuana use between 2010 and 2015, and Opioid related deaths in the state accounted for a total of 3,596 deaths over the same period.
- Despite the large differences in the total number of opioid and marijuana related deaths, it is important to note that Arizona has averaged 8.6 marijuana related deaths per year over the last five years, which highlights the reality that marijuana can indeed be a dangerous substance.



## Section 5: Impaired Driving

### Key Findings

The connection between driving under the influence of marijuana or prescription drugs and the impact on our roadways includes:

- In 2014, Arizona had the highest percentage of illegal/illicit drug related traffic fatalities (5.3%) among neighboring states and the nation as a whole (Exhibit 24).
- In Arizona, marijuana related traffic deaths have been steadily increasing since 2010, from 2.9% in 2010 to 5.1% in 2014. On the other hand, Arizona has the lowest percentage of marijuana-related traffic fatalities compared to neighboring states and Arizona is below the national average<sup>15</sup> (Exhibit 23).
- Arizona has seen an increase in the percentage of impaired drivers arrested for DUI's involving drugs. In 2014, 14.3% of all DUI arrests were drug-related (Exhibit 25).
- Marijuana was reported in nearly half of all Arizona drug related DUI arrest reports between 2011 and 2015 and a noticeable increase (+48%) is evident in the number of prescription drugs reported in drug related DUI arrests between 2014 and 2015 (Exhibit 27).

### Traffic Deaths

Traffic death data are provided by the National Highway Traffic Safety Administration's Fatal Accident Reporting System (FARS), which represents nationwide census data regarding fatal injuries associated with motor vehicle traffic crashes on U.S. roadways.

**Exhibit 23. Percentage of Marijuana Related Traffic Fatalities in Arizona, Surrounding States, and the National Average**

	2010	2011	2012	2013	2014
<b>Arizona</b>	<b>2.9</b>	<b>4.2</b>	<b>4.1</b>	<b>6.5</b>	<b>5.1</b>
California	7.5	7.9	11.7	12.6	12.2
Colorado	3.6	3.8	11.4	14.1	18.2
Nevada	4.0	5.7	5.7	11.6	12.0
New Mexico	1.2	4.5	11.1	14.3	13.1
Utah	0.0	0.0	3.7	6.4	12.5
National	4.5	4.3	7.3	7.7	8.1

<sup>15</sup> The national percentage has nearly doubled between 2010 and 2014, from 4.5% to 8.1%.





Data from the National Highway Traffic Safety Administration Fatal Accident Reporting System (FARS)

- The percentage of traffic fatalities involving marijuana appears to be on the increase both in Arizona and nationally.
- Overall, Arizona remained below the national percentage for traffic fatalities involving marijuana, as well as among most neighboring states.

**Exhibit 24. Percentage of Illegal/Illicit Prescription Drug Related Traffic Fatalities in Arizona, Surrounding States, and the National Average**

	2010	2011	2012	2013	2014
<b>Arizona</b>	<b>4.9</b>	<b>7.6</b>	<b>4.5</b>	<b>5.5</b>	<b>5.3</b>
California	3.2	3.7	4.6	4.2	3.7
Colorado	1.3	3.1	4.6	4.1	3.7
Nevada	2.6	3.7	3.8	2.6	4.2
New Mexico	0.4	0.8	1.1	1.1	1.4
Utah	0.0	0.8	2.3	4.5	5.1
National	3.7	4.2	4.0	4.2	3.8

Data from the National Highway Traffic Safety Administration Fatal Accident Reporting System (FARS)

- Arizona consistently exceeded both neighboring states and the national percentage for the percentage of illegal/illicit prescription drug related traffic fatalities.
- In 2014, among southwest states, Arizona had the highest percentage, at 5.3%. Utah (5.1%) and Nevada (4.2%) had the second and third highest percentage of traffic fatalities related to prescription drug misuse and abuse.

## Driving Under the Influence

The Governor’s Office of Highway Safety (GOHS) reports on Arizona Driving Under the Influence (DUI)<sup>16</sup> enforcement statistics entered by statewide agencies on the GOHS reporting system. See exhibits 25-27 below.

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<sup>16</sup> In Arizona, a driver must have a blood alcohol level of .08 or greater or have a drug metabolite in their system in order to be arrested for a DUI.



**Exhibit 25. National and Arizona DUI Statistics**

		2010	2011	2012	2013	2014	2015 *
Total DUI Arrests	National	1,412,200	1,215,100	1,283,000			
	<b>Arizona</b>	<b>19,482</b>	<b>31,561</b>	<b>32,174</b>	<b>31,905</b>	<b>29,250</b>	<b>24,674</b>
Arizona	DUI Aggravated	2,007	3,473	3,698	3,645	3,525	
	DUI Misdemeanor	17,475	28,088	28,476	28,260	25,725	
	DUI Extreme (.15 or above)	5,943	9,466	9,002	8,217	8,414	6,742
	Under 21 DUI Arrests	910	1,337	1,532	1,464	1,461	
	Average Blood Alcohol Content (BAC)	0.152	0.152	0.151	0.151	0.152	0.158
	<b>DUI Drug Arrests</b>	<b>1,679</b>	<b>3,579</b>	<b>4,511</b>	<b>4,520</b>	<b>4,190</b>	

Data from the Governor's Office of Highway Safety  
Preliminary data as of December 2015

- While total DUI arrests have declined both nationally and in Arizona, there has been an extraordinary increase in the number of drug related DUI arrests in Arizona. In fact, the total number of drug-related DUI arrests in Arizona has more than doubled over the last four years.

The National Survey on Drug Use and Health (NSDUH) used comprehensive surveys to determine, among other things, self-reports of driving under the influence or illegal drug use. Exhibit 26 below reflects the percentage of Arizona self-reports of driving under the influence of drugs for youth<sup>17</sup> and young adults.

**Exhibit 26. Percentage of Arizona Self-Reports of Driving Under the Influence of Drugs for Youth (12-17), Young Adults (18-24), and Adults (26+) (NSDUH)**

Age	2010	2011	2012	2013
12-17 years old	13.0	13.1	13.4	10.9
18-25	29.2	28.1	27.7	25.7
26+	19.0	18.0	18.4	18.5
<b>Average</b>	<b>22.7</b>	<b>21.9</b>	<b>22.0</b>	<b>20.3</b>

Data from the National Survey on Drug Use and Health (NSDUH)

<sup>17</sup> Data for youth ages 12-17 includes respondents who reported receiving a DUI as unlicensed, under-aged drivers at the time of their arrest.



- According to NSDUH, one in five Arizona drivers reported in 2013 that they drove a motor vehicle while under the influence of drugs.
- This rate was the highest for young adults between 18 and 25, where one in four (26%) self-reported that they drove while under the influence of drugs.

**Exhibit 27. Controlled Substances Identified on DUI Arrest Reports in Arizona, 2011–2015<sup>18</sup>**

Substance	2011		2012		2013		2014		2015	
	N	%	N	%	N	%	N	%	N	%
<b>Cannabis</b>	<b>15,406</b>	<b>52.4</b>	<b>13,429</b>	<b>47.8</b>	<b>12,252</b>	<b>45.5</b>	<b>12,972</b>	<b>45.9</b>	<b>11,675</b>	<b>42.2</b>
Methamphetamine	5,290	18.0	4,745	16.9	5,263	19.6	5,744	20.3	5,835	21.1
Heroin	1,315	4.5	1,476	5.3	1,769	6.6	2,170	7.7	2,799	10.1
Opiates	1,193	4.1	1,186	4.2	1,139	4.2	1,058	3.7	1,354	4.9
Cocaine	1,767	6.0	1,701	6.1	1,174	4.4	1,393	4.9	1,288	4.7
Inconclusive/ Negative	1,071	3.6	1,331	4.7	1,323	4.9	1,429	5.1	1,148	4.1
<b>Prescription Drugs<sup>19</sup></b>	<b>732</b>	<b>2.5</b>	<b>695</b>	<b>2.5</b>	<b>565</b>	<b>2.1</b>	<b>687</b>	<b>2.4</b>	<b>1,016</b>	<b>3.7</b>
Depressants	716	2.4	784	2.8	747	2.8	792	2.8	828	3.0
Spice	285	1.0	1,235	4.4	1,353	5.0	432	1.5	653	2.4
Hallucinogens	614	2.1	332	1.2	218	0.8	277	1.0	296	1.1
RNA/not counted	538	1.8	591	2.1	583	2.2	717	2.5	252	0.9
Non- Controlled	184	0.6	129	0.5	122	0.5	139	0.5	166	0.6
Stimulants	118	0.4	176	0.6	113	0.4	166	0.6	153	0.6
Synthetic Narcotics	94	0.3	94	0.3	61	0.2	65	0.2	121	0.4
Other	46	0.2	64	0.2	90	0.3	97	0.3	86	0.3
Bath Salt	8	0.0	111	0.4	138	0.5	94	0.3	24	0.1
<b>Total</b>	<b>29,377</b>		<b>28,079</b>		<b>26,910</b>		<b>28,232</b>		<b>27,694</b>	

Data provided by the Arizona Department of Public Safety

- Marijuana is, by far, the drug most often used by Arizona drivers who are arrested for a DUI.
- Twice as many drivers who received a DUI drug arrest in 2015 used marijuana than used methamphetamines.
- Arizona drivers who received a DUI arrest were nine times more likely to have used marijuana than cocaine.

<sup>18</sup> Figures represent the number of items as reported by DPS

<sup>19</sup> Prescription drugs is expanded to include the categories of stimulants, depressants, and synthetic narcotics



## Section 6: Crime

### Key Findings

- Arrests relating to the sale, manufacturing, and possession of marijuana comprise the largest number of juvenile arrests in Arizona compared to other drug-related arrests (Exhibit 29).
- Arizona has seen a marked increase in the sale or manufacturing of synthetic narcotics since 2010 (Exhibit 28).
- There has been an increase in drug-related offenses for delinquency referrals (age 8 to 17) from approximately 14% to just over 16% from 2011 to 2014 (Exhibit 30).
- Data from the population of juveniles committed to the Arizona Department of Juvenile Corrections (ADJC) as of June 29, 2015 shows that 26.4% of the crimes committed by ADJC youth who previously used marijuana and 24.6% of the crimes of ADJC youth who previously used prescription drugs were committed while under the influence of marijuana or prescription drugs (Exhibits 32 & 33).

Each year, the Arizona Department of Public Safety (DPS) participates as the coordinating agency for the Arizona Uniform Crime Reporting Program to support the state's local law enforcement agencies with the collection and reporting of crime data. The *Crime in Arizona* report, published annually by DPS, represents the culmination of this effort, which includes descriptive data on the nature and extent of reported crimes and arrests throughout Arizona.

**Exhibit 28. Number of Drug-Related Arrests in Arizona for Adults (age 18 and older)**

	2010	2011	2012	2013	2014
<b>DRUGS, SALE OR MANUFACTURING</b>					
Opium, Cocaine, Derivatives	1,254	1,231	989	1,004	821
Marijuana	1,659	1,756	1,499	1,580	1,415
Synthetic Narcotics	535	601	631	777	780
Other Dangerous Non-narcotics	720	746	656	794	742
<b>DRUGS, POSSESSION</b>					
Opium, Cocaine, Derivatives	1,980	2,244	2,326	2,657	2,588
Marijuana	18,076	16,416	15,001	16,656	19,177
Synthetic Narcotics	2,750	3,044	3,207	3,413	3,590
Other Dangerous Non-narcotics	4,981	5,512	4,626	4,330	4,341
Driving Under the Influence	37,981	35,907	32,987	31,727	27,455
Liquor Law Violations	25,493	22,413	20,556	17,881	14,425

Data from the Uniform Crime Reports



- There has been a decrease in the number of adult arrests related to the sale or manufacturing of opium, cocaine, and derivatives, and marijuana. However, there has been an increase in the number of arrests due to the sale or manufacturing of synthetic narcotics.
- Other than DUI, adult arrests relating to the sale, manufacturing, and possession of marijuana continue to comprise the largest number of arrests across the state compared to those for other drug-related offenses.

**Exhibit 29. Number of Drug-Related Arrests in Arizona for Juveniles (8-17)**

	2010	2011	2012	2013	2014
<b>DRUGS, SALE OR MANUFACTURING</b>					
Opium, Cocaine, Derivatives	84	57	44	49	37
Marijuana	369	353	294	272	214
Synthetic Narcotics	39	27	96	192	177
Other Dangerous Nonnarcotics	81	102	74	74	52
<b>DRUGS, POSSESSION</b>					
Opium, Cocaine, Derivatives	95	118	143	63	77
Marijuana	3,967	3,506	3,255	2,995	2,665
Synthetic Narcotics	222	192	146	85	105
Other Dangerous Non-narcotics	654	754	498	249	239
Driving Under the Influence	453	402	347	291	224
Liquor Law Violations	5,116	4,875	4,296	3,280	2,711

Data from the Uniform Crime Reports

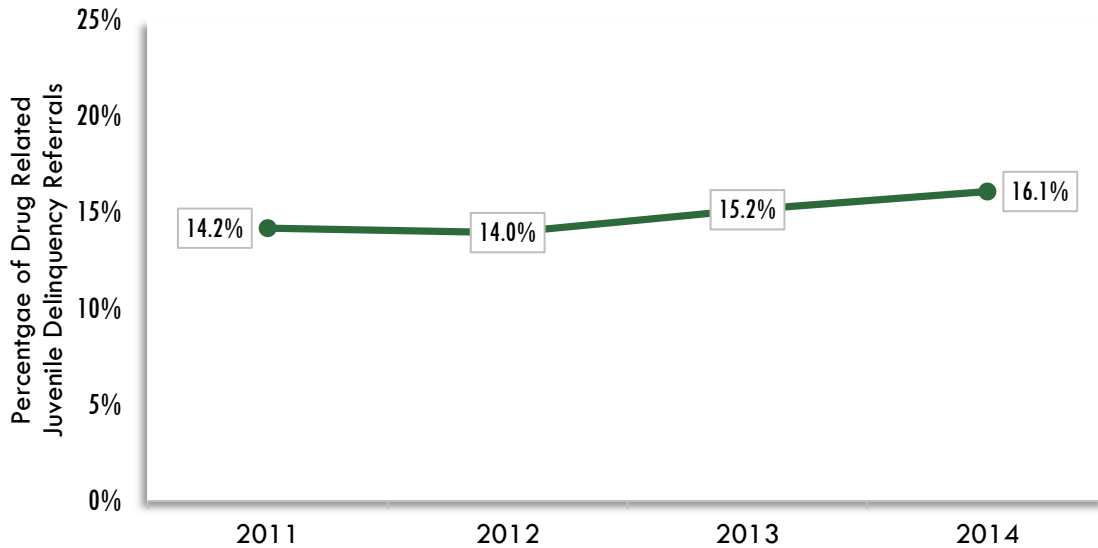
- Overall, there has been a decrease in the number of arrests for drug possession over the last five years.
- There has been a decrease in the number of juvenile arrests related to the sale or manufacturing of marijuana, while there has been an increase in the number of arrests due to the sale or manufacturing of synthetic narcotics.
- Overall, juvenile arrests relating to the sale, manufacturing, and possession of marijuana comprise the largest number of drug related arrests across the state compared to the number of arrests for other drug-related offenses.



## Juvenile Delinquency and Probation

The ADJC and the State of Arizona Administrative Office of the Courts provide data on juveniles (ages 8–17) in the juvenile justice system.

**Exhibit 30. Percentage of Juvenile Delinquency Referrals with Drug Allegations in Arizona**



Data provided by the State of Arizona Administrative Office of the Courts

- There has been an increase in drug-related offenses for juvenile delinquency referrals<sup>20</sup> (age 8 to 17) in Arizona from approximately 14% to just over 16% from 2011 to 2014.

Juvenile Probation conducts a risk assessment<sup>21</sup> on juveniles who have been adjudicated delinquent. These risk assessments occur at five different stages of the juvenile justice system and are submitted to the Court to help guide decision-making on what consequences should be ordered. The full results for 2013 and 2014 are available along with the first six months of assessments for 2015.

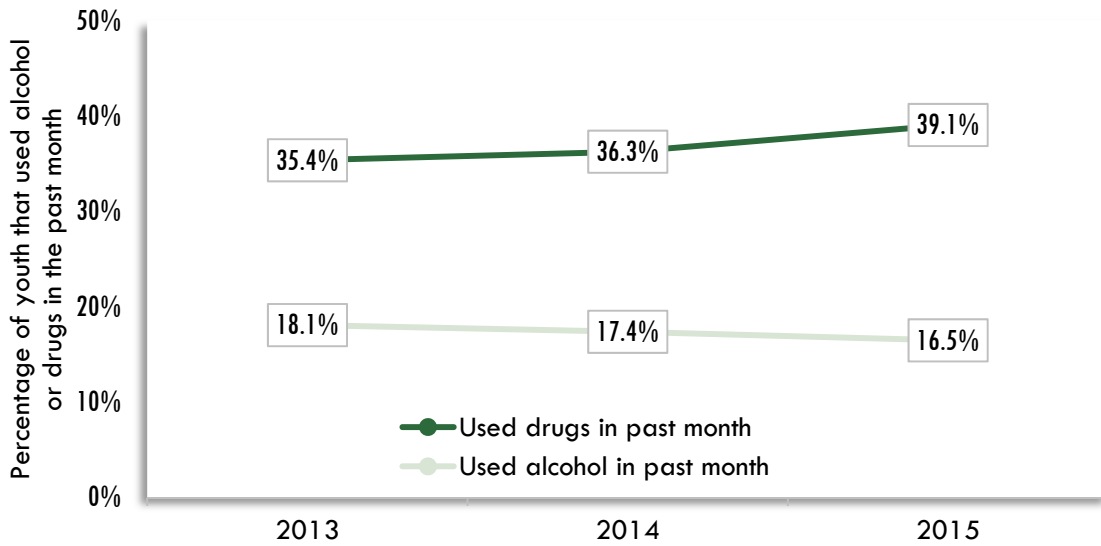
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<sup>20</sup> A delinquency referral is a report submitted to the County Attorney alleging a juvenile has committed a delinquent or incorrigible act. In order for a delinquency referral to be made, the juvenile must be between the ages of eight and seventeen.

<sup>21</sup> Arizona Youth Assessment System (AZYAS)



**Exhibit 31. Arizona Juvenile Assessment Data on History of Drug Use within the Past Month, 2013 - 2015**



Data provided by the State of Arizona Administrative Office of the Courts

**Exhibit 32. Percentage of Primary Offense Patterns Related to Alcohol or Drug Misuse and Abuse among All Marijuana Users, 2011–2015**

	2011	2012	2013	2014	2015
Alcohol/Drugs were not used	21.4	15.0	8.5	10.8	6.5
Involved possession or use of alcohol/drugs	10.4	12.6	17.5	19.3	14.1
Committed while under the influence of drugs/alcohol	41.9	36.6	31.0	26.2	26.4
Involved stealing drugs/alcohol or stealing for drugs/alcohol	17.7	19.1	19.2	16.6	18.8
Involved selling drugs/alcohol	8.6	16.7	23.8	27.1	34.1

Data provided by the Arizona Department of Juvenile Corrections

- Overall, primary offenses related to alcohol and drugs for ADJC juveniles who previously used marijuana were mostly comprised of crimes committed under the influence of drugs or alcohol (26.4%), or selling drugs or alcohol (34.1%).
- Among ADJC youth who previously used marijuana, there was a substantial increase in the percentage of juveniles involved in selling drugs/alcohol among marijuana users, from 8.6% in 2011 to 34.1% in 2015.



**Exhibit 33. Percentages of Primary Offense Patterns Related to Alcohol or Drug Misuse and Abuse among All Prescription Medication Misusers, 2011–2015**

	2011	2012	2013	2014	2015
Alcohol/Drugs were not used	12.6	6.8	4.7	5.1	3.3
Involved possession or use of alcohol/drugs	8.5	11.6	15.9	16.5	12.6
Committed while under the influence of drugs/alcohol	46.9	37.7	29.1	26.0	24.6
Involved stealing drugs/alcohol or stealing for drugs/alcohol	22.4	25.3	22.2	20.1	20.8
Involved selling drugs/alcohol	9.6	18.5	28.1	32.3	38.8

Data provided by the Arizona Department of Juvenile Corrections

- Similar to the trends seen for ADJC juveniles using marijuana, there was a substantial increase (from 9.6% in 2011 to 38.8% in 2015) in the percentage of juveniles who misused prescription drugs who were involved in selling drugs or alcohol.
- In 2015, 25% of the youth committed to ADJC committed crimes while under the influence, and 39% of those youth were directly involved in selling drugs or alcohol.





## Section 7: Related Data

### Key Findings

State and national figures on homelessness and suicide are important to consider because both conditions are related either directly or indirectly to the misuse and abuse of drugs and their impact is often felt in homes and communities statewide.

- Estimates on the number of homeless persons nationally and in Arizona have declined over the last five years. There were an estimated 578,424 homeless persons nationally and 7,256 homeless persons in Arizona in 2014 (Exhibit 34).
- Over the past five years, the number of suicides in the United States has increased from 38,364 in 2010 to over 42,773 in 2014. This represents an 11.5% increase. In Arizona, the number has also increased by 4% between 2010 and 2013 (Exhibit 35).

### Homelessness

Data on the number of homeless in Arizona and nationally are derived from Point-in-Time estimates, which are one-night counts of both sheltered and unsheltered homeless populations. The one-night counts are conducted nationwide and occur during the last ten days in January to estimate annual sheltered and unsheltered counts. The Department of Housing and Urban Development (HUD) defines homelessness as lacking a fixed, regular, and adequate nighttime residence.<sup>22</sup>

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<sup>22</sup> HUD defines a regular, and adequate nighttime residence as: 1. a primary night-time residence that is a public or private place not meant for human habitation; 2. living in a publicly or privately-operated shelter designated to provide temporary living arrangements exiting an institution where (s)he has resided for 90 days or less and who resided in an emergency shelter or place not meant for human habitation immediately before entering that institution.



**Exhibit 34. Data on Shelter Status and Numbers of Homeless in Arizona and America**

	2010	2011	2012	2013	2014
<b>National</b>					
Sheltered	236,923	232,901	232,827	197,070	17,7373
Unsheltered	403,543	392,316	390,155	394,698	401,051
Total	640,466	625,217	622,982	591,768	578,424
<b>Arizona</b>					
Sheltered	5,911	2,836	2,656	2,225	2,218
Unsheltered	4,532	4,794	5,002	4,822	5,038
Total	10,443	7,630	7,658	7,047	7,256

Data from the United States Department of Housing and Urban Development

- Nationally, the homeless population has declined 10% over the last four years. The largest decrease was in the number of sheltered homeless individuals.
- Arizona recorded a 31% decrease in the number of homeless persons between 2010 and 2014. While the number of sheltered homeless has declined by 62%, the number of unsheltered homeless has increased by 11%.

## Suicide Data

Data on the total number of suicide deaths in Arizona were pulled from the Arizona Department of Health Services population health and vital statistics. National suicide injury deaths data are from the Center for Disease Control. Understanding the degree to which suicide occurs in Arizona and elsewhere among youth and the general population is an important issue that should be examined in greater detail in subsequent research.

**Exhibit 35. Number of Suicides in Arizona and Nationally, 2010-2014**

	2010	2011	2012	2013	2014
National	38,364	39,518	40,600	41,149	42,773
Arizona	1,070	1,113	1,070	1,116	

- Over the past five years, the number of suicides nationally has increased from 38,364 in 2010 to 42,773 in 2014, an 11.5% increase.
- In Arizona, the number has also increased by 4% between 2010 and 2013. Suicide ranks as the eighth leading cause of death statewide. Further research should be conducted to examine relationships between suicide and drug misuse and abuse in Arizona.



## Summary

This report provides a summary of the data currently available as received from members of the Epi Work Group as well as nationally available data collected by LeCroy & Milligan Associates. As is common with secondary data, not all of the data provided uses similar populations (youth only, youth and adult, total population, etc.) nor similar time scales, so it only provides a partial picture of the impact of marijuana and prescription drug use in Arizona. However, the overall trends and patterns can be determined from these data.

Both marijuana and prescription drugs have a wide ranging influence in many sectors in Arizona. Marijuana in particular has a heavy influence on Arizona's youth (age 12-17). Prescription drugs are used more by young adults (18-24) and adults than they are by youth (12-17) in Arizona. A few of the most notable findings from this report include:

1. Nearly one in four Arizona 12<sup>th</sup> grade students reported using marijuana in the past 30 days, and almost 45% have used marijuana at least once in their lifetime.
2. For Arizona youth, using marijuana in the past month is related to other behavioral risk factors such as physical violence, suicidal thoughts, and feelings of sadness. This is a serious substance abuse and mental health concern that should not be overlooked.
3. One in ten youth (12-17) and one in five young adults (18-24) receiving substance abuse treatment in Arizona listed marijuana as a substance of abuse.
4. There have also been steady increases in marijuana related emergency department and hospital admissions.
5. Arizona has the highest percent of prescription drug related traffic fatalities compared to any neighboring state and nationally. In addition, marijuana related traffic deaths have been steadily increasing from 2.9% in 2010 to 5.1% in 2014.

Assuming that policies and prevention efforts remain the same in Arizona, the upward trends in marijuana use will likely continue. The increases seen in the juvenile corrections population regarding crimes committed under the influence and crimes involving selling drugs and alcohol are also expected to continue. It is recommended that further research be conducted to help determine the underlying factors that contribute to the misuse of marijuana in Arizona. Understanding prescription drug misuse and abuse in Arizona is more challenging given the lack of available data separate from other data on opioids such as heroin and morphine. Despite these difficulties, combatting prescription drug misuse



and abuse remains a challenge worthy of efforts that help decrease drug dependence and increase health outcomes, public safety, and quality of life for all Arizonans.

## Recommendations for Next Steps

To determine a more comprehensive picture of marijuana and prescriptions drug misuse and abuse in Arizona it is recommended that a data-sharing plan and schedule be developed that is both intra- and inter-agency at the state, county and local levels. This will allow the agencies to develop the necessary data queries and allocate staff time to provide data at similar times. One of the challenges of this report was collecting data from each agency and obtaining similar types of data. Additional data that include both raw counts as well as the population served will allow for the creation of rates based on the population served within each agency by year. This will provide a more accurate picture of the trends in marijuana and prescription drug use over the past several years.

In order to ascertain the impact of marijuana and prescription drug use at the local level, data needs to be available at the local level. The data in this report focuses on Arizona statewide data and does not look at the county or regional level. We recommend obtaining agreements with county and local agencies as well as the state agencies in order to collect data for determining local trends. In addition, beyond the general trends, data specific to regions in Arizona where prevention and treatment pilot test programs are being conducted should be evaluated to determine the impact of the programs on the overall usage rates in the local population.

Additional sources of data that might be beneficial to help determine the impact in Arizona include:

- Child neglect data, including drug-related child deaths, foster care removals and associated risk factors
- Child poisonings from drugs
- Arizona interdiction seizures
- Crime data related to specific drugs
- Drug use among Arizona's homeless population
- Drug use related suicide information
- THC potency in seized marijuana
- The route of obtaining drugs – this would include buying and stealing and from who. This is of considerable interest for both marijuana and prescription drugs as both can be obtained legally for medical reasons by one individual and then used by others.



Finally, we recommend that as more data become available from states like Washington and Colorado, which are focusing on the effects of marijuana in their states, that Arizona continue to review the data that these states are collecting. This will allow Arizona to determine what additional data sources should potentially be included in future data collection efforts. In addition, this will allow for an examination of potential future trends in Arizona based on policy changes.



## References

- Abridge, M., Hayden, J., Cartwright, J., (2012), Acute cannabis consumption and motor vehicle collision risk: A systematic review of observational studies and meta-analysis, *British Journal of Medicine*, <http://dx.doi.org/10.1136/bjm.e536>.
- Anderson, D., Hansen, B., Rees, D., (2013), Medical marijuana laws, traffic fatalities and alcohol consumption, *Journal of Law and Economics*, 56, 333-369.
- Anderson, D., Hansen, B., Rees, D., (July 2014). Medical marijuana laws and teen marijuana use, National Bureau of Economic Research, Working Paper 20332.
- Arizona Prescription Drug Misuse and Abuse Initiative – <http://azcjc.gov/acjc.web/rx/default.aspx>.
- Baker, Joanne, *Juveniles in Crime, Part 1: Participation Rates and Risk Factors*, Sydney: NSW Bureau of Crime Statistics and Research, 1998.
- Caulkins, Jonathan; Kilmer, Beau; Kleiman; Mark; MacCoun, Robert; Midgette, Gregory; Oblesby, Pat; Pacula, Rosalie Liccardo and Reuter, Peter, (2015), *Considering Marijuana Legalization: Insights for Vermont and other jurisdictions*, Rand Corporation.
- Center for Behavioral Health Statistics and Quality, (2014), *A day in the life of young adults: Substance use facts*, The CBHSQ Report, Substance Abuse and Mental Health Services Administration.
- Compton, Richard and Berning, Amy, (2015), *Drug and alcohol crash risk*, Traffic Safety Facts: Research Note, National Highway Traffic Safety Administration, U.S. Department of Transportation.
- Cox, Shawn, Capobres, Steve and Twist, Steve, (2003), *In harms way: A report on the policy conflict that fails children and the system establish to protect them*.
- Dawkins, Marvin P., "Drug use and violent crime among adolescents," *Adolescence*, Vol. 32, No. 126, 1997, pp. 395-405.
- Dembo, Richard, Mark Washburn, Eric D. Wish, James Schmeidler, Alan Getreu, Estrellita Berry, Linda Williams, and William R. Blount, "Further examination of the association between heavy marijuana use and crime among youths entering a juvenile detention center," *Journal of Psychoactive Drugs*, Vol. 19, No. 4, 1987, pp. 361-373.



- Elvik, R., (2013), Risk of road accident associated with the use of drugs: A systematic review of and meta-analysis of evidence from epidemiological studies, *Accident Analysis and Prevention*, 60, 254-267.
- Hartman, R., Huestis, M. (2013), Cannabis effects on driving skills, *Clinical Chemistry*, 59 (3), 478-492.
- Karasz, Hilary and Garrard, Alexander, (2015), Increase in edible marijuana intoxication among King County children, unknown.
- Kleiman, M. (2014), Cannabis, conservatively, *National Review*, December 8, 2014.
- Li, M., Brady, J., DiMaggio, A, Lusardi, A., Tzong, K., and Li, G., (2012), *Epidemiological Review*, Vol. 34, No. 1, pp 65-72.
- Light, Miles, Orens, Adam, Lewandowski, Brian and Pickton, Todd, (2014), Market size and demand for marijuana in Colorado, The Marijuana Policy Group, Colorado Department of Revenue,
- Lukas, M., Orozco, S., (2001), Ethanol increases plasma delta-9-tetrahydrocannabinol (THC) levels and subjective effects after marijuana smoking in human volunteers, *Drug and Alcohol Dependence* 64 (2), 143-149.
- Lynskey, M.T., Heath, A.C., Bucholz, K.K. et al., (2003) Escalation of drug use in early onset cannabis users vs. co-twin controls, *Journal of American Medical Association*, 289(4), 427-433.
- Makkai, Toni, and Jacqueline Fitzgerald, *Drug Use Among Police Detainees*, Sydney: NSW Bureau of Crime Statistics and Research, 2000.
- McRostie, Helen, Carol Castle, and Jayne Marshall, *Drug-Related Property Crime in South Australia in 2000*, Adelaide: Office of Crime Statistics, 2001.
- Miech, R., Johnston, L., O'Malley, P., Bachman, J., Schulenberg, J., and Patrick, M. (2015), Trends in use of marijuana and attitudes toward marijuana among youth before and after decriminalization: The case of California 2007-2013, *International Journal of Drug Policy*, 26 (2015) 336-344.
- Moir, D., et al., A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions. *Chemical Research Toxicology*, 2008. 21(2): p. 494-502.
- Morris, R., TenEyck, M., Barnes, J.C., (2014), The effect of medical marijuana law on crime: Evidence from state panel data, 1990-2006, [www.plosone.org](http://www.plosone.org).



- Moskowitz, H., (1995), Marijuana and driving: Accident analysis and prevention, 17: 323-345.
- Polk, Sheila, (2015), Safe marijuana? Tell that to the 62 kids who died, Arizona Republic, My Turn, June 16, 2015.
- Pope, H.G., et al., Neuropsychological performance in long-term cannabis users. Archives of General Psychiatry, 2001. 58(10): p. 909-909.
- Rebound Solutions, (2014), Marijuana data discovery and gap analysis summary: Final version, September 4, 2014.
- Republic Editorial Board, (2015), Let other states fix the bugs in pot law, Opinions, June 22, 2015.
- Retail Marijuana Public Health Advisory Committee, (2015), Monitoring health concerns related to marijuana in Colorado: 2014, Changes in marijuana use patterns, systematic literature review, and possible marijuana-related health effects, Colorado Department of Public Health and Environment.
- Robbe, H., O'Hanlon, J., (1993) Marijuana and actual driving performance, (Report No. DOT HS808 078), Washington D.C., U.S. Department of Transportation.
- Rocky Mountain High Intensity Drug Trafficking Area, Vol. 2, (2014), The legalization of marijuana in Colorado: The impact.
- Rocky Mountain High Intensity Drug Trafficking Area, Vol. 3, (2015), The legalization of marijuana in Colorado, The impact.
- Salomonsen-Sautel, S., Min, S., Sakai, J, Thurstone, C., and Hopfer, C., (2014), Trends in fatal motor vehicle crashes before and after marijuana commercialization in Colorado, Drug and Alcohol Dependence, 140 (2014) 137-144.
- Sevigny, Eric L., Rosalie Liccardo Pacula, and Heaton, Paul, "The Effects of Medical Marijuana Laws on Potency," International Journal of Drug Policy, Vol. 25, No. 2, March 2014, pp. 308-319.
- Solowij, N., et al., Cognitive functioning of long-term heavy cannabis users seeking treatment. Journal of the American Medical Association, 2002. 287(9): p. 1123-1131.
- Sunnucks, Mike (2015), GOP poll: Marijuana legalization faces uphill climb in Arizona, BizJournals.com.
- Tashkin, D.P., et al., Respiratory symptoms and lung function in habitual heavy smokers of marijuana alone, smokers of marijuana and tobacco, smokers of tobacco alone, and nonsmokers. American Review of Respiratory Diseases, 1987. 135(1): p. 209-16.





Taylor, Bruce G., and Bennett, Trevor, Comparing drug use rates of detained arrestees in the United States and England, Washington, D.C.: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, NCJ 175052, April 1999. As of December 13, 2014: <http://purl.access.gpo.gov/GPO/LPS91299>

Vermont Department of Health, (2016), Health impact assessment: Marijuana regulation in Vermont.

Washington State Institute for Public Policy (2013), Legalization of recreational marijuana in Washington: Monitoring trends in use prior to implementation of I-502.

Washington State Institute for Public Policy (2015), I-502 Evaluation Plan and Preliminary Report on Implementation.

Wen, H., Hockenberry, J., and Cummings, J. (2015), The effect of medical marijuana laws on adolescent and adult use of marijuana, alcohol and other substances, *Journal of Health Economics*, 42 (2015) 64-80.



# Data Sources

## Section 1. Youth Misuse and Abuse

Exhibit 1. Percentage of Arizona Youth Reporting Past 30-Day Misuse and Abuse of Marijuana and Prescription Drugs

- Arizona Youth Survey (Internet, Report)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>

Exhibit 2. Percentage of Arizona Youth Reporting Past 30-Day Marijuana Misuse and Abuse by Grade

- Arizona Youth Survey (Internet, Report)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>

Exhibit 3. Percentage of Arizona Youth Reporting Past 30-Day Prescription Drug Misuse and Abuse by Grade

- Arizona Youth Survey (Internet, Report)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>

Exhibit 4. Percentage of Students Reporting They Have Used Marijuana or Alcohol in the Past 30 days, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)

- Arizona Youth Survey /Monitoring the Future (Internet, Reports)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>
  - <http://www.monitoringthefuture.org/data/15data.html#2015data-drugs>

Exhibit 5. Percentage of Students Reporting They Have Used Marijuana or Alcohol At Least Once in Their Lifetime, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)

- Arizona Youth Survey /Monitoring the Future (Internet, Reports)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>
  - <http://www.monitoringthefuture.org/data/15data.html#2015data-drugs>

Exhibit 6. Percentage of 12th Grade Students Reporting They Have Used Prescription Drugs Without a Doctor's Prescription in the Past 30 days, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)

- Arizona Youth Survey /Monitoring the Future (Internet, Reports)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>
  - <http://www.monitoringthefuture.org/data/15data.html#2015data-drugs>



Exhibit 7. Percentage of 12th Grade Students Reporting They Have Used Prescription Drugs Without a Doctor's Prescription in their Lifetime, Arizona Youth Survey and Monitoring the Future (2010, 2012, 2014)

- Arizona Youth Survey /Monitoring the Future (Internet, Reports)
  - <http://www.azcjc.gov/acjc.web/sac/ays.aspx>
  - <http://www.azed.gov/prevention-programs/resources/data/ays/>
  - <http://www.monitoringthefuture.org/data/15data.html#2015data-drugs>

Exhibit 8. Number and Rate of Suspensions/Expulsions per 1,000 Youth due to Drug and Illicit Drug Misuse and Abuse in Arizona by School Year

- Data provided by the Arizona Department of Education per specific request from the Epidemiology Work Group (Raw Totals)

Exhibit 9. Percentage of First Marijuana Use Prior to Age 13 and School Property Involvement Among Arizona Youth, 2003 – 2013

- Youth Risk Behavior Survey (Internet, Raw Database)
  - <http://www.cdc.gov/healthyyouth/data/yrbs/data.htm>

Exhibit 10. Percentage of Arizona High School Students Reporting Certain Risk Behaviors, by Frequency of Marijuana Use Within the Past 30 Days

- Youth Risk Behavior Survey (Internet, Raw Database)
  - <http://www.cdc.gov/healthyyouth/data/yrbs/data.htm>

## Section 2. Adult Misuse and Abuse

Exhibit 11. Percentage of Arizona Undergraduates Who Used Marijuana in the Last 30 Days

- Data provided by the Arizona Institutions of Higher Education per specific request from the Epidemiology Work Group (Survey Results)

Exhibit 12. Percentage of Arizona Undergraduates that Misused Prescription Drugs in the Last 12 Months

- Data provided by the Arizona Institutions of Higher Education per specific request from the Epidemiology Work Group (Survey Results)

Exhibit 13. Percentages of Arizona Undergraduates by Age Group Who Used Marijuana in the Past 30 Days in Arizona

- Data provided by the Arizona Institutions of Higher Education per specific request from the Epidemiology Work Group (Survey Results)

Exhibit 14. Percentage of Respondents in Arizona and Neighboring States Who Used Marijuana in the Past 30 Days

- National Survey on Drug Use and Health (Internet, Raw Database)
  - <https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/64>



Exhibit 15. Percentage of Respondents in Arizona and Neighboring States who Reported Trying Marijuana for the First Time between the Ages of 12 and 17

- National Survey on Drug Use and Health (Internet, Raw Database)
  - <https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/64>

Exhibit 16. Percentage of Respondents in Arizona and Neighboring States Who Reported Trying Marijuana for the First Time between the Ages of 18 and 25

- National Survey on Drug Use and Health (Internet, Raw Database)
  - <https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/64>

Exhibit 17. Percentage of Respondents in Arizona and Neighboring States Who Misused or Abused Pain Relievers for Non-Medical Purposes in the Past Year

- National Survey on Drug Use and Health (Internet, Raw Database)
  - <https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/64>

### Section 3. Substance Abuse Treatment

Exhibit 18. Percentage of Arizona Treatment Admissions by Primary Substance of Misuse or Abuse and Any Mention of Substance of Misuse or Abuse, Youth (12-17)

- Data provided by the Arizona Department Of Health Services, Division of Behavioral Health Services per specific request from the Epidemiology Work Group (Raw Database)

Exhibit 19. Percentage of Arizona Treatment Admissions by Primary Substance of Misuse or Abuse and Any Mention of Substance of Misuse or Abuse, Young Adults (18-24)

- Data provided by the Arizona Department Of Health Services, Division of Behavioral Health Services per specific request from the Epidemiology Work Group (Raw Database)

### Section 4. Emergency Department Visits, Hospitalizations, and Deaths

Exhibit 20. Estimated Rate per 100,000 population of Marijuana or Opioid Related Emergency Room Visits in Arizona

- Data provided by the Arizona Department Of Health Services per specific request from the Epidemiology Work Group (Raw Database)

Exhibit 21. Estimated Rate per 100,000 population of Marijuana and Opioid Related Hospitalizations in Arizona

- Data provided by the Arizona Department Of Health Services per specific request from the Epidemiology Work Group (Raw Database)

Exhibit 22. Arizona Marijuana or Opioid Related Deaths (N / Rate per 100,000)

- Data provided by the Arizona Department Of Health Services per specific request from the Epidemiology Work Group (Raw Database)



## Section 5. Impaired Driving

Exhibit 23. Percentage of Marijuana Related Traffic Fatalities in Arizona, Surrounding States, and the National Average

- National Highway Traffic Safety Administration Fatal Accident Reporting System (Internet, Raw Database)
  - <ftp://ftp.nhtsa.dot.gov/fars/>

Exhibit 24. Percentage of Illegal/Illicit Prescription Drug Related Traffic Fatalities in Arizona, Surrounding States, and the National Average

- National Highway Traffic Safety Administration Fatal Accident Reporting System (Internet, Raw Database)
  - <ftp://ftp.nhtsa.dot.gov/fars/>

Exhibit 25. National and Arizona DUI Statistics

- Homelessness in Arizona Annual Report 2014 (Internet, Report)
  - <https://des.az.gov/digital-library/23rd-annual-report-homelessness-december-2014>

Exhibit 26. Percentage of Arizona Self-Reports of Driving Under the Influence of Drugs for Youth (12-17), Young Adults (18-24), and Adults (26+) (NSDUH)

- National Center for Statistics and Analysis: Alcohol impaired driving: 2013 data (Internet, Report)
  - <http://www-nrd.nhtsa.dot.gov/Pubs/812102.pdf>

Exhibit 27. Controlled Substances Identified on DUI Arrest Reports in Arizona, 2011–2015

- Data provided by the Arizona Department of Public Safety per specific request from the Epidemiology Work Group (Raw Annual Totals)

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Exhibit 28. Number of Drug-Related Arrests in Arizona for Adults (age 18 and older)

- Data provided by the Arizona Department of Public Safety per specific request from the Epidemiology Work Group (Reports)

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- Data provided by the Arizona Department of Public Safety per specific request from the Epidemiology Work Group (Reports)

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- Data provided by the State of Arizona Administrative Office of the Courts per specific request from the Epidemiology Work Group (Memorandum Email with Totals)



Exhibit 31. Arizona Juvenile Assessment Data on History of Drug Use within the Past Month, 2013 - 2015

- Data provided by the State of Arizona Administrative Office of the Courts per specific request from the Epidemiology Work Group (Memorandum Email with Totals)

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- Data provided by the Arizona Department of Juvenile Corrections per specific request from the Epidemiology Work Group (Raw Annual Totals)

Exhibit 33. Percentages of Primary Offense Patterns Related to Alcohol or Drug Misuse and Abuse among All Prescription Medication Misusers, 2011–2015

- Data provided by the Arizona Department of Juvenile Corrections per specific request from the Epidemiology Work Group (Raw Annual Totals)

## Section 7. Related Data

Exhibit 34. Data on Shelter Status and Numbers of Homeless in Arizona and America

- Homelessness in Arizona Annual Report 2014 (Internet, Report)
  - <https://des.az.gov/digital-library/23rd-annual-report-homelessness-december-2014>

Exhibit 35. Number of Suicides in Arizona and Nationally, 2010-2014

- Arizona Department of Health Services (Internet, Report & Raw Annual Totals)
  - <http://www.azdhs.gov/plan/report/im/2012/3/index.htm>
  - <http://www.azdhs.gov/plan/report/ahs/>
- Center for Disease Control (Internet, Report)
  - <http://www.cdc.gov/injury/wisqars/leadingcauses.html>



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# Literature Review

## Executive Summary

Gathering current Arizona data on marijuana misuse and abuse should help inform ASAP members' decisions regarding what future actions should be taken on this matter. Given the limitations of that data, however, it may also be helpful for ASAP to review research findings from studies completed outside of Arizona. This literature review is intended to complement the data collected by the Epi Work Group on marijuana and prescription drug misuse and abuse. Understanding that many states across the nation have differing statutes concerning marijuana, the scope of this project seeks to examine the impact of marijuana on education, public health and public safety. Key research findings include the following:

- Marijuana use has been associated with impaired driving.
- Both Colorado (+3%) and Washington (+3.8%) have seen larger increases in adult (+21 years) usage of marijuana than was true nationally.
- In Colorado, the rates of emergency room visits *likely related* to marijuana increased 77% from 313 per 100,000 in 2011 to 554 per 100,000 in 2014. The Colorado Children's Hospital reported 16 youth (under 12 years) ingested marijuana in 2014, this represents a 45% increase from 2011.
- Marijuana users are more likely to abuse alcohol than nonusers.
- More young adults (18-25) seek treatment for marijuana than alcohol.
- The Washington State Institute for Public Policy (WSIPP) intends to complete an in-depth examination of the effects of marijuana use upon public safety and health in September of 2017. The WSIPP study should provide some crucial findings on marijuana in their state.

## Background

In 2010, Arizona voters passed Proposition 203, which allowed for marijuana to be dispensed to a registered designated caregiver or a registered qualifying patient<sup>23</sup> to be prescribed to patients with specific medical conditions. While sixteen states have decriminalized the possession of small amounts of marijuana and twenty-two states allow the use of marijuana by qualifying patients for medicinal use, state drug policy allowing

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<sup>23</sup> A.R.S. § 36-2806.02





other uses of marijuana is a recent development. This shift of drug policy in states allowing the use of marijuana by individuals over the age of 21, has encouraged the collection of more specified data concerning the effects of marijuana on education, public health and public safety. In 2012, Washington (Initiative 502) allowed the sale of marijuana and marijuana related products for non-medical purposes to individuals over the age of twenty-one. Beginning in 2013, the Colorado Marijuana Retail Code allowed marijuana to be cultivated and sold to individuals over the age of 21 for non-medical purposes. In 2015, both Alaska and Oregon passed legislation allowing for the non-medical sales of marijuana.

After the passage of the public initiatives in Colorado and Washington, both states launched extensive research projects to assess the impact of marijuana on those states. The WSIPP was charged with conducting three studies related to: public health, public safety, criminal justice, economic impacts, and agency administrative costs and revenues (Washington State Institute for Public Policy, 2013). The Colorado Department of Public Health and Environment (CDPHE) was charged with studying the potential health impacts of marijuana and a 13 member Retail Marijuana Public Health Advisory Committee (RMPHAC) was created to review the research literature and report their findings. Rebound Solutions, a private consulting firm, was also retained in Colorado for the purpose of assessing the current data and identifying any data gaps as they relate to assessing the impact of recreational marijuana use in that state. “The data available at this time cannot answer all of the important questions about whether or not marijuana use patterns are changing as a result of legalization” (The Retail Marijuana Public Health Advisory Committee, 2015, p.9). Each state may have unique statutes regarding marijuana, therefore, it is important to fund surveillance and research efforts that can effectively monitor the use and potency of marijuana as well as the overall social, economic and public impact of the drug.

## Methodology

This report presents a literature review based upon 43 related sources, which included peer reviewed journal articles, government publications, magazine and newspaper articles. The 42 sources were selected using a standard research process. Initial sources were determined through an examination of references contained in a recent RAND study on the effects of marijuana in Connecticut (Caulkins et al., 2015). Each referenced work was read and considered, followed by a review of linked references. In addition, the Arizona State University Library, Library One Search engine was used to locate additional relevant sources using the search word “marijuana.” Every attempt was made to include objective reviews rather than personal opinions or position papers. As stated earlier, Colorado and Washington provide an important backdrop for this literature review as they have made changes in statewide drug policies allowing for the non-medical use and possession of



specified amounts of marijuana. Due to the changes in drug policy, time elapsed since policy changes were implemented, and the availability of reliable source material, this review concentrates on research published on the social and public health effects of marijuana in Colorado and Washington. Considerable research (Pope, et al., 2001; Solowij, et al., 2002; Moir, et al., 2008; Tashkin, et al., 1987) is available on the physiological effects of marijuana, thus this review does not attempt to replicate that work. While insufficient time has passed to allow for definitive conclusions regarding the public safety and health effects of marijuana, some important research has been completed that the ASAP should consider. Findings from the literature reviewed are organized into the following sections:

1. impaired driving
2. youth marijuana use
3. emergency room, hospital admissions and poisonings
4. adult marijuana use
5. diversion
6. related data

## Impaired Driving

Many studies have found marijuana impairs driving (Asbridge, 2012, Salomonsen-Sautel et al., 2014; Robbe et al., 1993; Moskowitz, 1995; Hartman and Huestis, 2013). There is clear evidence from strictly controlled laboratory trials that marijuana use reduces psychomotor performance in ways that increase overall risk of accidents...” (Caulkins, et al., 2015, p. 33). “Research shows increased odds of crashing, crash culpability, and fatality with increasing blood THC levels. A THC concentration of 5 ng/mL increased the odds of crash responsibility from 2.7 to 6.6 – odds similar to that of a blood alcohol content of 0.15 percent” (Vermont Department of Health, 2016, pg. 5). Meta-analyses are frequently performed to summarize findings from numerous studies, and meta-analyses have found marijuana is associated with higher crash risks (Abridge, et al., 2012; Li et al., 2012). The RMPHAC found “...substantial evidence that the risk of motor vehicle crash doubles among drivers with recent marijuana use...(and) substantial evidence that the higher the level of tetrahydrocannabinol (THC) in the blood, the higher the crash risk (The Retail Marijuana Public Health Advisory Committee, 2015, p. 13).

It is important to note that not all studies have reached similar conclusions (Elvik, 2013). One study found that the association between THC levels and crash risk went away when demographic controls were used (Compton and Berning, 2015). “Cannabis smoking increases lane weaving and impaired cognitive function. Critical-tracking tests, reaction



times, divided-attention tasks, and lane-position variability all show cannabis-induced impairment.” (Harman and Huestis, 2013, pg. 478). Other than alcohol, marijuana is the most frequently detected drug for drivers involved in crashes (Compton and Berning, 2015). “The risk of an accident is doubled when a driver has THC in their bloodstream and may even be higher than that if they have also drunk alcohol” (Rebound Solutions, 2014).

Three factors compound the relationship between marijuana use and impaired driving: the increased potency of marijuana, the use of marijuana along with alcohol and the risk-taking habits of some marijuana users. The first factor that compounds the relationship between marijuana and impaired driving is that the marijuana consumed today is more potent than it was twenty years ago (Potency Monitoring Program, National Center for Natural Products Research, University of Mississippi cited in Rocky Mountain High Intensity Drug Trafficking Area, 2014, p 150), and the increased potency could result in more impaired drivers. Some historical studies on the effects of marijuana used marijuana, that was less potent than what is available today, therefore “...our current understanding of health effects is not accurate based on the potential THC potency under a regulated marijuana market...” (Vermont Department of Health, 2016, pg 31). One study (Anderson et al., 2013) found that states that allowed for medical marijuana experienced substantial increases in the availability of more potent marijuana for a variety of users in those states.

Some who use marijuana also drink alcohol. The combined use of alcohol and marijuana can be especially dangerous for drivers. Marijuana users are more likely than nonusers to abuse alcohol (Vermont Department of Health, 2016), and those who consume large amounts of alcohol, may combine alcohol with marijuana (Lukas and Orozco, 2001). Colorado has experienced an increase in alcohol sales after recreational marijuana was legalized (Rocky Mountain High Intensity Drug Trafficking Area, 2014, p. 148). “Indeed, simultaneous use is common...among the 15.4 million people who used both alcohol and marijuana at some time in the past 30 days, 54 percent reported using marijuana along with alcohol the last time they drank, a proportion that rises to 83 percent among daily or near-daily marijuana users” (Caulkins, et al., 2015, p. 44). While marijuana usage has been found to have limited effects upon the use of other drugs, it was found to correlate with a higher incidence of binge drinking among adults (Wen, et al., 2015).

The third factor that compounds the relationship between marijuana use and impaired driving is that many marijuana users also engage in other risk taking behaviors. “Cannabis smokers share demographic characteristics similar to those of other groups with a high crash risk, including youth (ages 18-25 years), male sex, risk taking , and high drunk driving incidence” (Hartman and Huestis, 2013, pg. 479).



## Youth Marijuana Use

Prevalence refers to both the total number of users of a particular substance as well as their age distribution. The increased use by youth of any substance is a special concern.

Marijuana use at an early age could negatively affect mental development, contribute to poorer educational outcomes, increase the chances youth will become involved in the justice system, may lead to youth engaging in other risky behaviors (Vermont Department of Health, 2016) and later becoming adult substance abusers (The Retail Marijuana Public Health Advisory Committee, 2015). A recent Department of Health and Human Services Report states that Colorado leads the nation in past 30-day marijuana use among youth (12-18). Colorado youth reported higher past month marijuana usage than is true nationally, and their increased use of marijuana has surpassed increases posted at the national level (Rocky Mountain High Intensity Drug Trafficking Area, 2015). Washington, meanwhile, has experienced an increase in the past 30 day usage of marijuana for both youth and adults (Washington State Institute for Public Policy, 2013). Among the 50 states, Colorado and Washington 12 to 17 year olds had the third and fourth highest past month usage of marijuana respectively (Rocky Mountain High Intensity Drug Trafficking Area, 2015). More youth in Colorado and Washington are deemed marijuana abusers or marijuana dependent than is true nationally (Washington State Institute for Public Policy, 2013 ). Research has indicated that marijuana usage may affect school performance. “There was a 40 percent increase in drug-related suspensions and expulsions in Colorado from school year 2008/2009 to 2013/2014.” (Rocky Mountain High Intensity Drug Trafficking Area, 2015, p. 36). “The research on the relationship between marijuana use and academic outcomes is almost sufficient to show a cause-and-effect link between the two” (Vermont Department of Health, 2016, pg. 6). Previous research has shown that those who initiate marijuana use at a younger age are more likely to use more heavily as adults and have poorer educational outcomes compared to those who initiate later (Lynskey, Heath, and Bucholz, 2003). The RMPHAC found:

- substantial evidence for associations between adolescent and young adult marijuana use and future addiction to illicit drugs when they get older;
- moderate evidence that teen marijuana users were less likely to graduate from high school and more likely to be addicted to marijuana; and
- substantial evidence for associations between adolescent and young adult marijuana use and future adult addiction to marijuana, alcohol or tobacco (Retail Marijuana Public Health Advisory Committee, 2015).



Dispensaries that sell marijuana may also provide marijuana related products in edible or concentrated form. Edibles can provide users with the high of THC without incurring the lung damage caused by smoking. Children or pets may acquire edibles and become poisoned. One study found an increase in edible marijuana poisonings among children residing in King County, Washington (Karasz and Garrard, 2015).

## Emergency Room, Hospital Admissions and Poisonings

Emergency room (ED), hospital admissions and calls to poison control authorities are important indicators of drug abuse in a community. The Colorado Department of Public Health and Environment (CDPHE) reports that the rates of emergency room visits likely related to marijuana increased 77% from 313 per 100,000 in 2011 to 554 per 100,000 in 2014. CDPHE also reported that hospitalizations likely related to marijuana increased 54% from 340 per 100,000 in 2008 to 524 per 100,000 in 2014 (Rocky Mountain High Intensity Drug Trafficking Area, 2015). Children who mistakenly ingest drugs are of particular concern, and the Colorado Children's Hospital reported 16 youth (under 12 years) ingested marijuana in 2014, this represents a 45% increase from 2011 (Rocky Mountain High Intensity Drug Trafficking Area, 2015). "Colorado has experienced an increase in young children admitted to EDs because of accidental ingestion of marijuana edibles" (Caulkins, et al., 2015, p. 32).

## Adult Marijuana Use

Adult marijuana use is more prevalent in Colorado than in most other states. Young adult (18-25) and adult (26+) past month use of marijuana was higher in Colorado than was true nationally (Rocky Mountain High Intensity Drug Trafficking Area, 2015). Both Colorado (+3%) and Washington (+3.8%) have seen larger increases in adult (+21 years) usage of marijuana than was true nationally (+.7%) (Washington State Institute for Public Policy, 2013). The Colorado Department of Revenue found demand for marijuana to be greater than originally estimated, and they attributed the increased demand to "heavy users". "Heavy users drive almost 70% of total marijuana demand" (Light, Orens, Lewandowski and Pickton, 2014, p. 3). A study of states that permitted medical marijuana found that adults using marijuana were not new users, but those who had tried it before its medical use became legal (Wen, Hockenberry, and Cummings, 2015).

## Diversion

Dr. Mark Kleiman of the University of California, Los Angeles (UCLA) has said that allowing adults access to marijuana should increase the grey market (individuals legally buying marijuana and providing it illegally to others) and could greatly increase the number of marijuana suppliers to youth (Kleiman, 2014). Surveys of Colorado school



resource officers and counselors conducted in 2015 found that 78% of the youth tell them the marijuana they have was given to them by their parents or someone else who had legally obtained it (Rocky Mountain High Intensity Drug Trafficking Area, 2014). Contrary to other research findings, one study (Anderson et al., 2014) found that when medical marijuana is permitted, that youth are less likely to use marijuana in the previous 30 days. Marijuana can also be diverted to out of state entities. Colorado law enforcement authorities have reported a significant increase in the amount of marijuana seized as it was being transported out of state. Moreover, for each of the past five years, the U.S. Postal Service has intercepted more parcels containing marijuana bound for destinations outside of Colorado than in the previous year (Rocky Mountain High Intensity Drug Trafficking Area, 2015).

## Related Data

The relationship between substance abuse and crime has been studied extensively, and while no definitive cause and effect conclusions have been reached, there is widespread consensus that substance abuse and crime co-occur. Research has found an association between marijuana use and crime (Dembo et al., 1987, Dawkins, 1997; Baker 1998). Researchers have found that marijuana users are more likely to commit criminal acts than non-users (Taylor and Bennett, 1999; Makkai and Fitzgerald, 2000). Contrary to other research findings, one recent study examined the association between medical marijuana and Uniform Crime Report (UCR) Part I offenses and found that "...medical marijuana was not found to have a crime enhancing effect for any of the crime types analyzed" (Morris et al., 2014 p. 4).

While preliminary data indicates that reported crime increased in Denver between 2013 and 2014 (Rocky Mountain High Intensity Drug Trafficking Area, 2015), too little time has passed to know with certainty how crime has been effected in Colorado and Washington. The WSIPP outcome study planned for completion in September of 2017 will provide the best indication of how marijuana affects crime. The WSIPP study will include five categories of outcome variables:

- Substance use: Youth and adult use and abuse of cannabis, alcohol and other drugs (ATOD);
- Health: Physical and mental health problems associated with substance abuse;
- Traffic safety: Traffic accidents and fatalities involving impaired drivers;
- Criminal justice: Arrests, convictions and sanctions for charges involving cannabis and alcohol;



- Education: Standardized test scores, disciplinary actions, grade retention, and high school graduation; and
- Workplace safety and productivity: Accidents, injuries and absenteeism (Washington State Institute for Public Policy 2015, p. 26).

When Colorado allowed for the non-medical use of marijuana they banned its use in public places. The one crime that clearly increased in Colorado involves citations for the public use of marijuana. The Denver Police Department issued 770 citations for unlawful public display/consumption of marijuana in 2014 – roughly ten times the number of citations (8) given in 2012 ((Rocky Mountain High Intensity Drug Trafficking Area, 2015, p. 141).

## Conclusions from the Literature Review

Considerable effort must be expended to fully understand the public safety and health effects of marijuana. Both Colorado and Washington have launched extensive research efforts to assess the impact that marijuana use is having upon those states. ASAP should consider waiting until Washington completes their first outcome study in September of 2017 to obtain authoritative findings on this topic. In addition, ASAP members might also want to consider the many recommendations provided by the Vermont Department of Health (2016). The Vermont Department of Health conducted a Health Impact Assessment concerning the benefits and consequences of marijuana. Some of those recommendations include:

- Fund surveillance and research to monitor more closely the type of use, frequency of use, and potency of marijuana used among users of all ages. Encourage and fund the scientific study of health effects among individuals who use marijuana;
- Require marijuana to be provided in child resistant packages – especially for the edible products;
- Restrict marijuana access to only those older than 25 years;
- Restrict advertising to insure youth and young adults are not exposed to, or targeted by marijuana advertising;
- Fund prevention from taxes on marijuana production and sales, expand prevention efforts in schools and launch a statewide campaign to educate youth, young adults and pregnant women;
- Set a blood level motor vehicle operating limit for THC based upon the best available evidence;
- Expand screening for substance use disorders and mental health problems.

