

# Co-Occurring Substance Use and Behavioral Health in an Integrated System of Care

November 2018



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## INTRODUCTION

This report focuses on substance use among the highest risk children, adolescents, and young adults in Oklahoma based on Systems of Care (SOC) client data over an approximately three-year period inclusive of 2015, 2016, and 2017. While select groups of clients were excluded from analysis, the study group is essentially the whole SOC client population as described in the following narrative. The analysis is based on client or parent/guardian responses to an intake survey, provided as Appendix A.

## BACKGROUND

Oklahoma Systems of Care (OK-SOC) provides services to children, youth, and young adults experiencing serious emotional disturbance. Their families also receive services and supports. State and federal financing and the active sponsorship of the Oklahoma Department of Mental Health and Substance Abuse Services (ODMHSAS) have helped OKSOC expand across the state and

increase the number of families and youths served. OKSOC supports, maintains, and grows local systems of care communities by providing infrastructure, training and technical assistance, and staff professional development.

Care is delivered using an integrated team that comprehensively addresses physical and mental health and

substance use disorder treatment needs. The goal is to ensure access to appropriate services, improve health outcomes, reduce preventable hospitalizations and emergency room visits, and avoid unnecessary care.

## INTEGRATED SYSTEMS OF CARE

Many individuals experience a substance use disorder and a mental health disorder. When these occur at the same time it is often referred to as a co-occurring disorder. National trends and Oklahoma specific efforts are moving towards integrated care. Integration is the systematic coordination of general and behavioral health care. Integrating services for

primary care, mental health, and substance use-related problems produces the best outcomes and provides the most effective approach for supporting whole person health and wellness. Integrating substance misuse services with medical care is especially critical considering substance use disorders are often associated with other medical conditions.

Integrating mental health, substance abuse, and primary care services produces the best outcomes and proves the most effective approach to caring for people with multiple healthcare needs (SAMHSA, 2016).

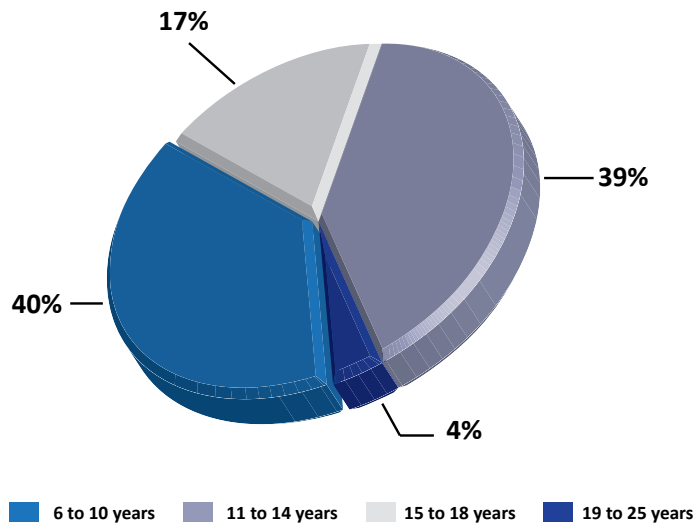


## **STUDY POPULATION**

## Age and Gender

The total study population described in this report consists of 11,730 clients ages 6 through 25 entering the program between January 8, 2015 and April 17, 2018. Just under eighty percent (78.9%) of clients were split between the two youngest age categories of 6 to 10 (4,642 elementary school age students) and ages 11 to 15 (4,607 middle school age students). An additional seventeen percent of clients were between ages 16 and 18 (2,029 high school age students). Small percentages of clients were college age (296, or 2.5%) or young adults (156, or 1.3%), combined, comprising the 19-to-25 age grouping in the study.

Figure 1. Client Age Groupings - All Years



Given the clustering of clients at the elementary and middle school age levels, it follows that mean client age for the study population is 12.0.

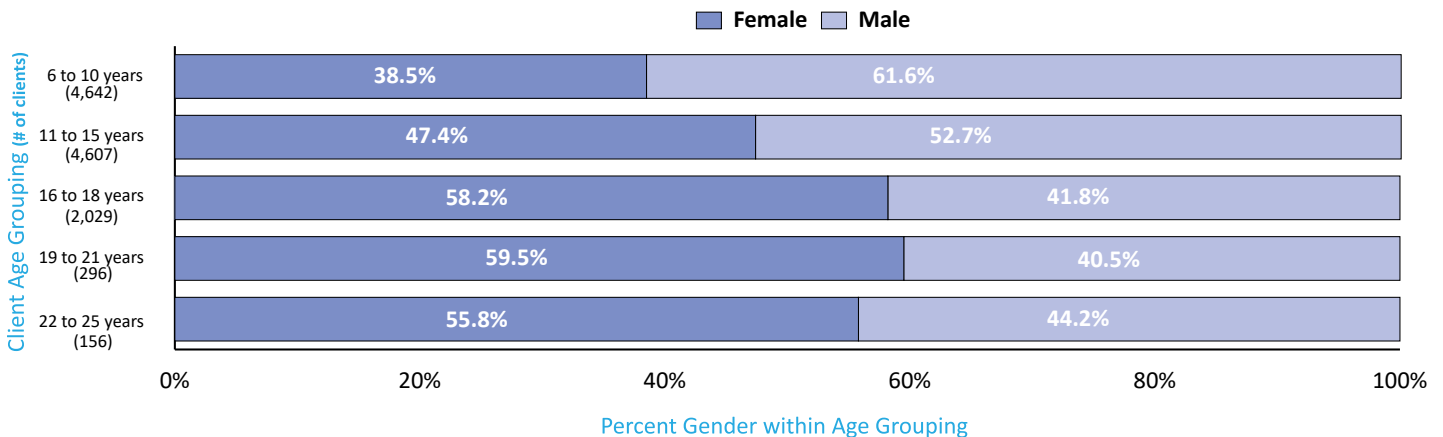
Just over half (53.9%) of those served in the program were male and 46.1% were female. This gender distribution holds true for each enrollment year. The percent of females each year rounds to 46% and the percent of

males to 54%. However, this pattern shifts when gender distribution is examined within categories of age.

Gender distribution has a strong influence on the client profile, whether the topic is age distribution or the use of substances. For instance, nearly two-thirds (61.6%) of clients

ages 6 to 10 are males compared to 38.4% female. Among clients ages 16 to 18, a larger percentage are females (58.2%) than males (41.8%)—a pattern that appears to continue through the young adult age groupings.

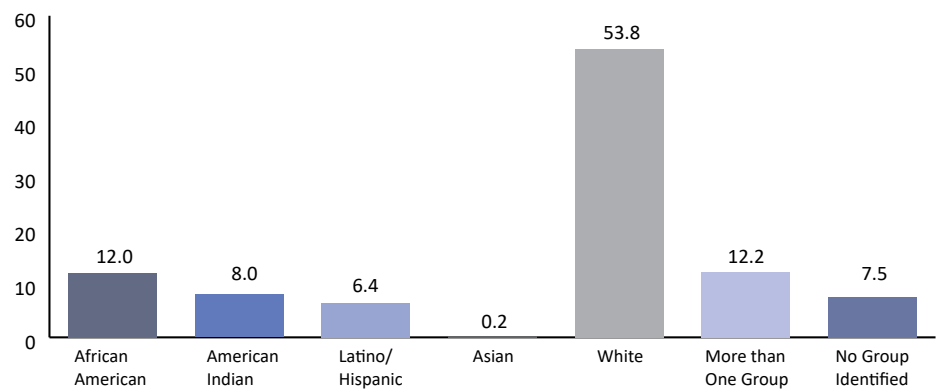
Figure 2. Client Age Grouping by Gender Percentage Distributions



## Race, Ethnicity and Gender

Clients were given the opportunity to select more than one race or ethnicity (i.e., Latino/Hispanic) at intake, therefore the sum of percentages exceeds 100. While 80% of clients (or their parents or guardians) identified with one race or ethnic grouping, 12 percent identified membership in more than one group and 8% did not identify any group to which they belonged.

Figure 3. Race/Ethnic Groupings by Gender and Total - Percentage Distributions



*“Gender distribution has a strong influence on the client profile, whether the topic is age distribution or the use of substances. For instance, nearly two-thirds (61.6%) of clients ages 6 to 10 are males compared to 38.4% female. Among clients ages 16 to 18, a larger percentage are females (58.2%) than males (41.8%)—a pattern that appears to continue through the young adult age groupings.”*

## Geographic Distribution

Between January 8, 2015 and April 17, 2018, clients lived in and/or received services in 69 of the 77 counties in Oklahoma. Clients are distributed across urban and rural counties, with half (51.1%) in “Mostly Urban” counties and 36.8% in “Mostly Rural” counties. The remaining small percentages reside or are served in completely rural counties (1.2%) or counties that are rural and urban equally combined (12.2%).

The definitions of rural and urban are derived from the U.S. Department of Commerce’s (DOC) Census Bureau

designation of two types of urban areas and the Oklahoma Department of Commerce’s (ODOC) classifications of rural Oklahoma, which are based on the DOC designations. Figure 5 provides a map corresponding to the rural and urban designations listed below.

The eight counties where there were no clients receiving services during the intake period included in this study were in three clusters, all of which tended to be rural or mostly rural. These were Alfalfa, Grant, Major, and Woods Counties in northern

central Oklahoma, Haskell and Latimer Counties in eastern Oklahoma, and Cotton and Jefferson Counties in southern Oklahoma. By combining the first two categories (Mostly Urban and Rural/Urban) into a single category, “Urban” and the latter two categories (Mostly Rural and Completely Rural) into a single category of “Rural,” it’s possible to look more comprehensively at the client profile represented in this report.



Figure 4. Urban and Rural Distribution of Clients within Counties of Services and/or Residence

## Completely Rural

**Completely Rural:** 100% of population lives in areas that have lower population density with <1,000 per square mile (example Ellis County)

# 1.2%

139 Clients



## Mostly Rural

**Mostly Rural:** 50.1% to 99.9% of the population lives in area with lower population density (example Pittsburg County)

# 35.6%

4,173 Clients



## Rural/Urban

**Rural/Urban:** Counties with populations < 50,000 people that have >50% of people in higher population density (example Custer County)

# 12.2%

1,428 Clients



## Mostly Urban

**Mostly Urban:** Counties with Populations > 50,000 people that have >50% of people in higher population density (example Canadian County)

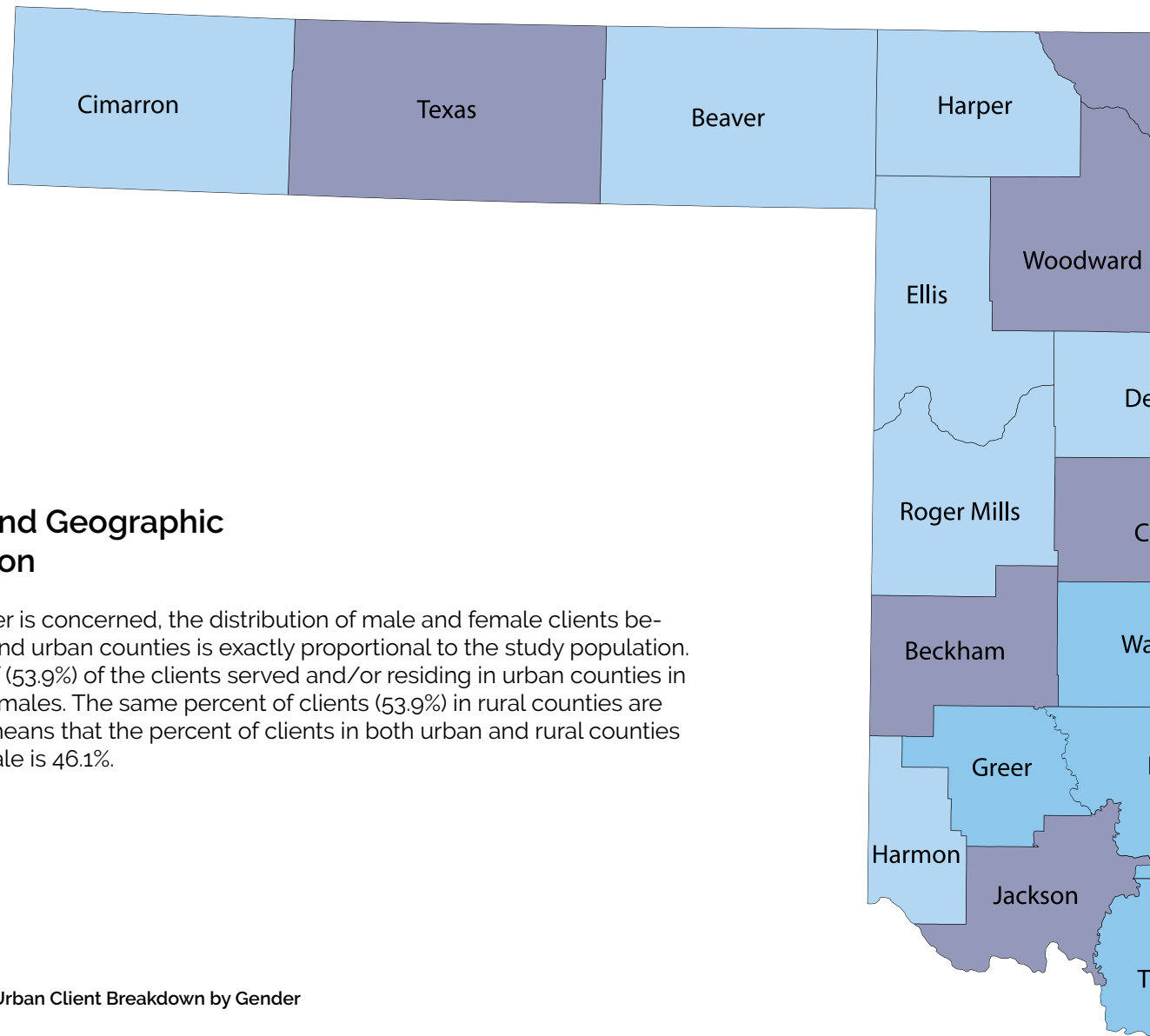
# 51%

5,990 Clients



Commons, M., and Zanoni, J. (2017). Rural Census Data and Trends in Oklahoma and the Nation. Presentation to the Oklahoma Rural Development Conference and Workshop, Oklahoma City. Geography Division. US Census Bureau.

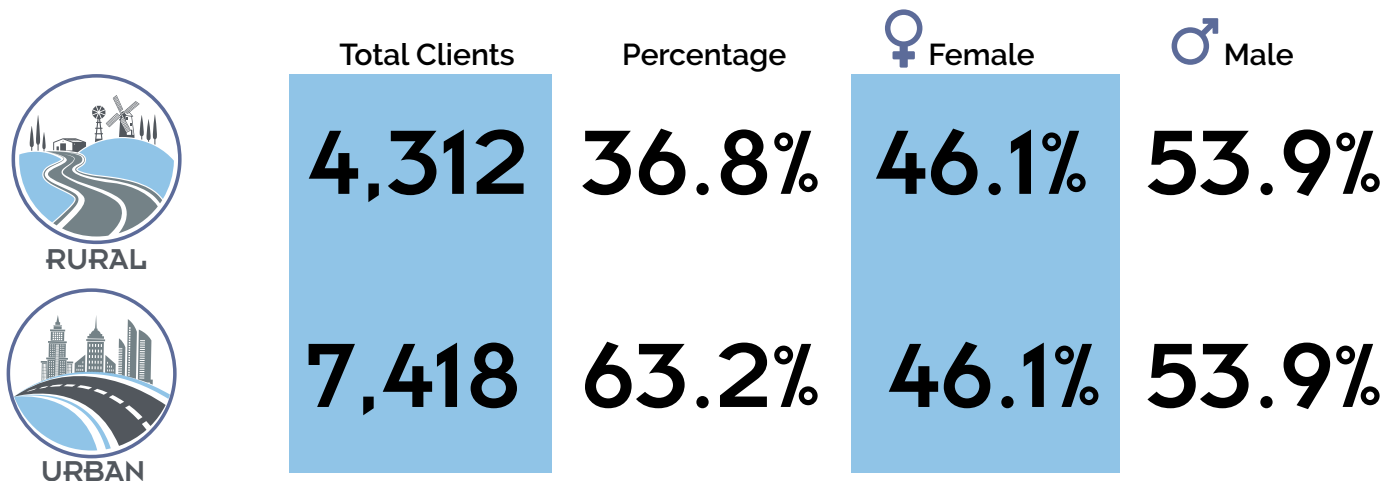
Figure 5. Rural and Urban Oklahoma (2010 U.S. Census)

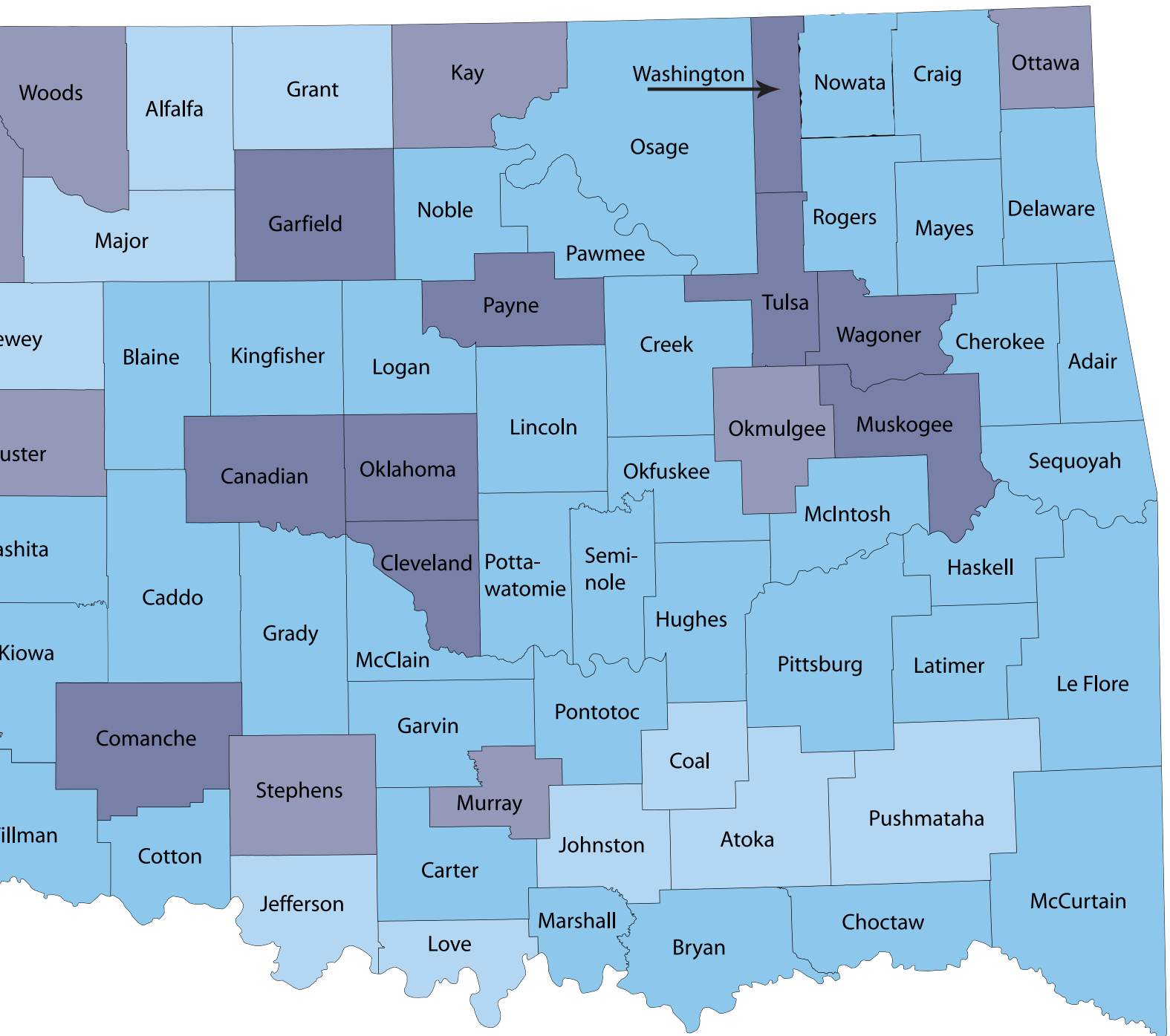


### Gender and Geographic Distribution

Where gender is concerned, the distribution of male and female clients between rural and urban counties is exactly proportional to the study population. Just over half (53.9%) of the clients served and/or residing in urban counties in the state are males. The same percent of clients (53.9%) in rural counties are males. This means that the percent of clients in both urban and rural counties who are female is 46.1%.

Figure 6. Rural and Urban Client Breakdown by Gender





Mostly Urban Rural/Urban Mostly Rural Completely Rural



**SUBSTANCE USE**

Upon entry to OKSOC, all clients (or their parents or guardians) were administered a survey that included questions concerning their recent use of fourteen substances. The instructions, shown in Exhibit 1, asked clients to indicate which of the substances listed were used by the child, youth or young adult for recreational purposes, and how often, in the past 90 days. Four frequency options provided were never, a few times, weekly, and daily.

Reported substance use levels

are provided in Table 1. Right away we see that most clients indicated they never used these substances in the 90 days prior to entering the program. Three substances were reported at a use rate (any level of frequency) of 10% to 11%. These were tobacco products (11.1%), alcoholic beverages (10%), and cannabis (10.1%). Due to their greater frequency of reported use, these three will be the primary substances focused on for analysis later in this report. Substances reported by 1% or more clients include cough syrup, pre-

scription stimulants, methamphetamine, sedatives or sleeping pills, and prescription opioids. Of 11,730 total clients for whom data were available in this study, 2,055 or eighteen percent (18%) reported ANY use/misuse of one or more substances within the 90-day period prior to entering the program. "Any substance use" could range from using one of the fourteen substances listed above only "A few times" to using multiple substances "Daily."

Exhibit 1. Table of Substances and Frequency of Use

Indicate which of the substances listed below the young adult has used <b>for recreational purposes</b> - and how often - in the past 90 days.	Never	A Few Times	Weekly	Daily
1-Tobacco products (e-cigarettes, cigarettes, chewing tobacco, cigars, etc.)	0	1	2	3
2-Alcoholic beverages (beer, wine, liquor, moonshine, etc.)	0	1	2	3
3-Cannabis (marijuana, pot, grass, hash, etc.)	0	1	2	3
4-Cocaine (coke, crack, etc.)	0	1	2	3
5-Cough syrup	0	1	2	3
6-Prescription Stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)	0	1	2	3
7-Methamphetamine (speed, crystal meth, ice, etc.)	0	1	2	3
8-Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)	0	1	2	3
9-Sedatives or sleeping pills (Valium, Ativan, Librium, Xanax, Rohypnol, GHB, etc.)	0	1	2	3
10-Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)	0	1	2	3
11-Street Opioids (heroin, opium, etc.)	0	1	2	3
12-Synthetic marijuana (T-K-2)	0	1	2	3
13-Prescription opioids (Fentanyl, Oxycodone, OxyContin, Percocet, Hydrocodone, Vicodin, Methadone, Buprenorphine, etc.)	0	1	2	3
14-Anti-freeze	0	1	2	3
99 Other - specify: _____	0	1	2	3

Table 1. Client Self-Reports of Substance Use at Program Entry

Type of Substance	Never		A Few Times		Weekly		Daily		Total Some Time	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Tobacco Products	10,427	88.9	600	5.1	189	1.6	514	4.4	1,303	11.1
Alcoholic Beverages	10,562	90.0	957	8.2	185	1.6	26	0.2	1,168	10.0
Cannabis	10,540	89.9	695	5.9	285	2.4	210	1.8	1,190	10.1
Cocaine	11,679	99.6	47	0.4	4	0.0	0	0.0	51	0.4
Cough Syrup	11,534	98.3	187	1.6	3	.0	6	0.1	196	1.7
Prescription Stimulants	11,573	98.7	125	1.1	32	0.3	0	0.0	157	1.3
Methamphetamine	11,583	98.7	105	0.9	31	0.3	11	0.1	147	1.3
Inhalants	11,690	99.7	35	0.3	2	0.0	3	0.0	40	0.3
Sedatives or sleeping pills	11,592	98.8	112	1.0	26	0.2	0	0.0	138	1.2
Hallucinogens	11,673	99.5	49	0.4	6	0.1	2	0.0	57	0.5
Street Opioids	11,697	99.7	25	0.2	4	0.0	4	0.0	33	0.3
Synthetic Marijuana	11,651	99.3	66	0.6	7	0.1	6	0.1	79	0.7
Prescription Opioids	11,617	99.0	95	0.8	12	0.1	6	0.1	113	1.0
Anti-freeze	11,723	99.9	6	0.1	0	0.0	1	0.0	7	0.1

***“Across all diagnostic categories (excluding ODD, diagnosis of which ends at 18) tobacco use maintains a rapid increase after high school, sometimes turning up at a steeper angle. Alcohol use also increases after adolescence – for all groups other than adjustment disorders, where there is an actual decline.”***



## Age and Gender Categories

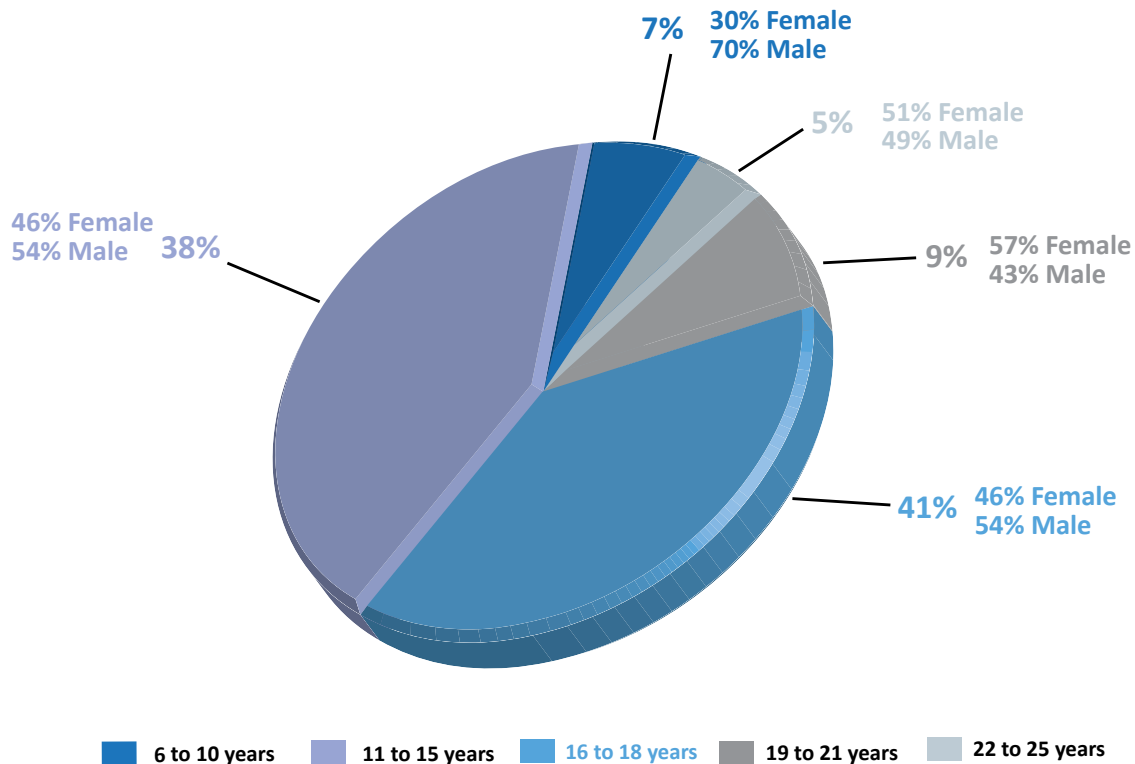
Again, ages ranged from 6 to 25<sup>1</sup>. Age was divided into categories of 6 to 10 (elementary school age), 11 to 15 (middle school), 16 to 18 (high school age), 19 to 21 (college age/under 21 young adults), and 22 to 25 (college age/over 21 young adults). Gender distributions within the substance use/misuse subgroup are reasonably representative of the entire study population, with proportions similarly divided. However, age groupings differ due to increased substance use with age. The overall study sample includes a 40% client subgroup aged 6 to 10, compared to

6.6 percent from that age group in the substance use/misuse subgroup. The majority categories seen in the overall study group (ages 6 to 10 and 11 to 15) shifts to the next two higher clusters (11 to 15 and 16 to 18) in the substance use/misuse subgroup.

The majority of OKSOC clients who have used a substance are in the age groupings of 11 to 15 and 16 to 18. The gender distribution demonstrated is consistent with historical observations of the OKSOC population by the external evaluators and case workers—and is supported by locally collected data. Younger clients tend

to be male, and as the client population matures, that ratio of females-to-males reverses. As shown here, among young adolescents in the 11-to-15 category, there are 46% females compared to 54% males reporting the use of any substance. Among older adolescents in the 16-to-18 age category, those percentages are exactly reversed—54% are females and 46% are males.

Figure 7. Gender Distribution Within Age Groupings



<sup>1</sup> Age was determined by calculating the difference between the date of birth and the date of enrollment in SOC. This study includes both discrete ages and age categories at various points in the analysis.



**SELF REPORTED TOBACCO,  
ALCOHOL, & CANNABIS USE**



As stated previously, the three most commonly used substance groupings reported among clients in the study are tobacco, alcohol, and cannabis (Table 2). While approximately 89 to 90% of clients said they "Never" used these three categories of harmful and in most cases, due to age, illegal substances, a sufficient number of clients admitted to their use to compel a deeper and meaningful analysis of OKSOC data.

Excluding ages 6 to 10, the mean age for tobacco use begins at 15.2 years with "A Few Times" (Table 2) and increases to 16.3 years at a frequency of "Weekly". The mean age for "Daily" use is 17.8. Mean age for alcoholic beverages (e.g., age 16.2 for using "A Few Times and age 17.7 for "Daily" use) and cannabis use (e.g., age 16.0 for using "A Few Times" and age 17.7 for "Daily" use) are similar and show a consistent pattern of age

increase corresponding to frequency of use. Tobacco use shows an approximately one-year delay (mean age of 15.2 compared to age 16.2 and 16.0 for alcohol and cannabis use) in using tobacco "A Few Times", which is consistent with the national and state surveys demonstrating trends in delayed initiation and use of tobacco products<sup>2</sup>.

Type of Substance	Never		A Few Times		Weekly		Daily		Overall	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Tobacco Products	10,427	88.9	600	5.1	189	1.6	514	4.4	1,303	11.1
	Mean age = 11.5		Mean age = 15.2		Mean age = 16.3		Mean age = 17.3		Mean age = 12.0	
Alcohol Beverages	10,562	90.0	957	8.2	185	1.6	26	0.2	1,168	10.0
	Mean age = 11.5		Mean age = 16.2		Mean age = 16.9		Mean age = 17.7		Mean age = 12.0	
Cannabis	10,540	89.9	695	5.9	285	2.4	210	1.8	1,190	10.1
	Mean age = 11.5		Mean age = 16.0		Mean age = 16.3		Mean age = 6.9		Mean age = 12.0	

## Tobacco Use and Age

Tobacco use continues to be the leading cause of preventable death in the United States. Nationally, 3.4% of adolescents (ages 12 to 17) in 2016 were current cigarette smokers (i.e., used tobacco in the previous 30 days). It should be noted that cigarette use comprised 80% adolescent tobacco use nationally, compared to other tobacco products, as reported in the 2016 National Survey on Drug Use and Health (NSDUS). Among the OKSOC clients, regular (i.e., "Daily") tobacco use was reported among 2% of adolescents ages 11 to 15 and

among 12% of those ages 16 to 18. Tobacco use shows a jump of 20 percentage points between ages 10 and 21 and again among the young adults of ages 22 to 25 who reported "Daily" tobacco use at 48%.

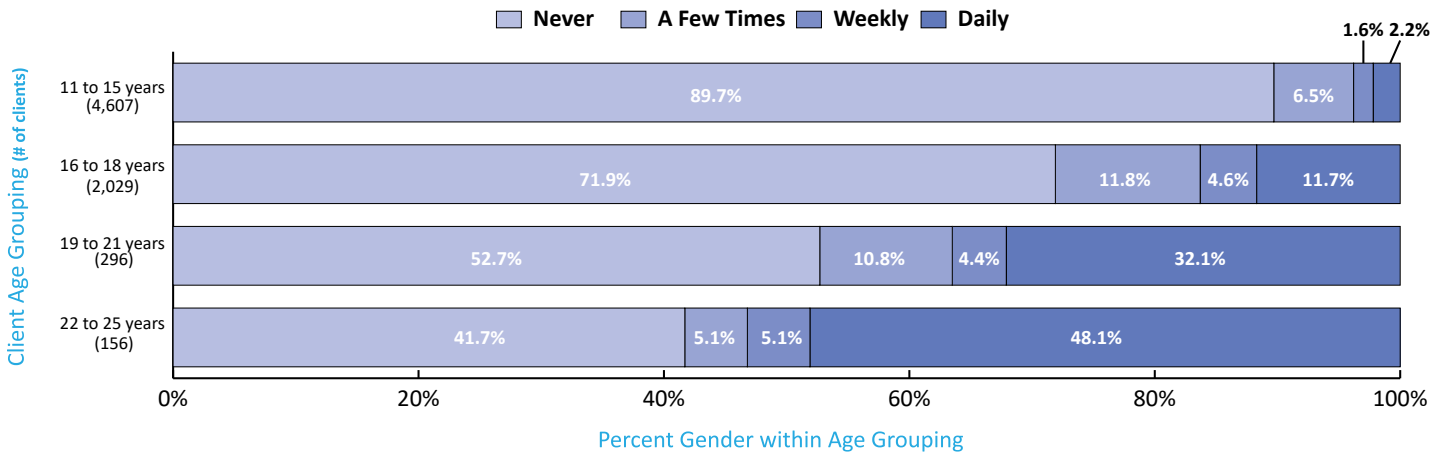
A very small percentage (1%) of OKSOC clients in the age group of 6 to 10 reported using tobacco. All reports were for using the drug "A Few Times". Given the size of this group and the weight and therefore influence of the "Never" responses, much of the remainder of the analyses reported in this narrative will exclude

this age grouping.

For the OKSOC population, tobacco use began in the early adolescent years (10.3% among 11-to-15-year-olds) and escalated to more than half of the young adults ages 22 to 25. In the interim, 28.1% of the older adolescents ages 16 to 18 used tobacco at least "A Few Times" and nearly half (47.3%) of the young adults 19 to 21 admitted to using tobacco at enrollment.

<sup>2</sup> U.S. Department of Health and Human Services. (2014, January). The health consequences of smoking—50 years of progress: A report of the Surgeon General. 2014. Retrieved from <https://www.surgeongeneral.gov/library/reports/50-years-of-progress/>. In Substance Abuse and Mental Health Services Administration. (2017). Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>.

Figure 8. Frequency of Tobacco Use Among SOC Youths and Young Adults



### Alcohol Use and Age

Alcohol use has a different distribution pattern of use across age groups than tobacco use. Among adolescent and adult clients, the of use consists of the response option “A Few Times” for all age categories. Consider, for example, 8% of 11-to-15-year-olds and 27.7% of 19-to-21-year-olds. Client responses do indicate probable binge drinking. Five percent (5%) of high school age youths, 6.8% of young adults 19 to 21, and 8.3% of young adults 22 to 25 indicated they use alcohol weekly. Since amounts were not reported, it is not possible to equate weekly alcohol use with binge drinking. However, given what

is known about alcohol use among Oklahoma’s youth population more generally from other sources, this indicator of weekly alcohol use among OKSOC youth and young adults raises an important issue.

According to the 2016 Oklahoma Prevention Needs Assessment Survey<sup>3</sup>, 11.6% of adolescents in a statewide sample admitted to having, at least once in the past two weeks, “five or more alcoholic drinks in a row.” This percentage increased as grade level increased, beginning with the 6th grade: 3.7% among 6th graders, 8.3% among 8th graders,

13.8% among 10th graders, and 21.8% among 12th graders. According to a SAMHSA online article entitled Binge Drinking: Terminology and Patterns of Use (2016)<sup>4</sup>, Adolescent binge drinkers are three times more likely than those who do not binge drink to develop an alcohol-related disorder as an adult, according to Reducing Underage Drinking: A Collective Responsibility<sup>5</sup>. The younger a person is when they begin to binge drink, the greater their risk for developing an alcohol use disorder.

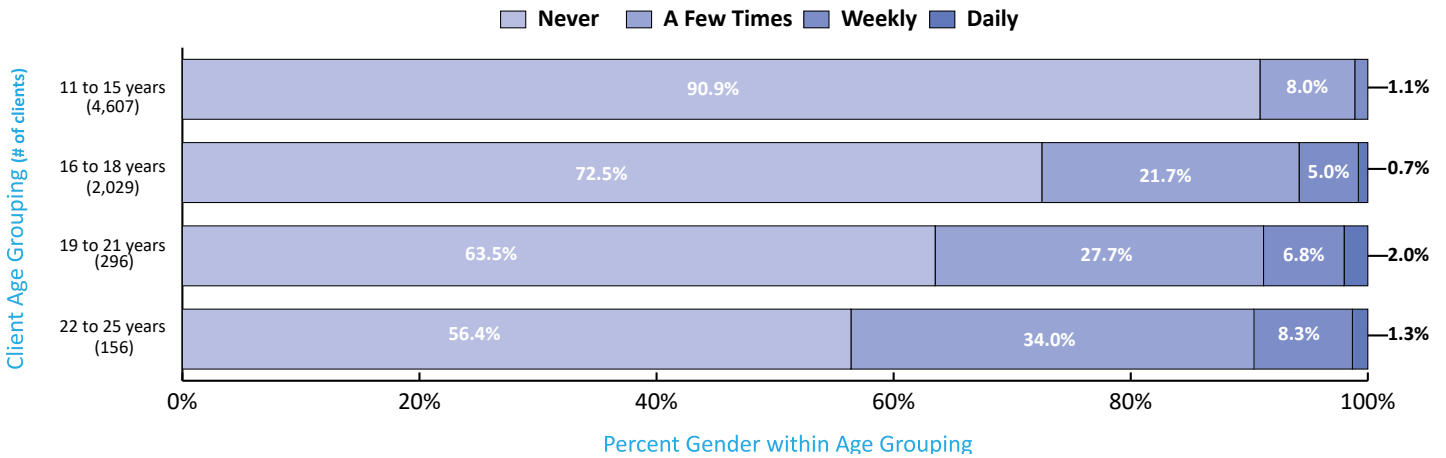
*“Through high school the extent of alcohol and cannabis use are nearly identical, but frequency of use is quite different, with more youths reporting weekly or daily use of cannabis, while alcohol use remains more casual and occasional. Alcohol and cannabis use expand after high school, following the same patterns – alcohol increasing primarily in extent of use, cannabis showing more growth in frequency (weekly/daily).”*

<sup>3</sup> Oklahoma Department of Mental Health and Substance Abuse Services. 2016. Oklahoma Prevention Needs Assessment Survey Results for State of Oklahoma. Bach Harrison. Retrieved from <https://ok.gov/odmhsas/documents/2016%20State%20of%20Oklahoma%20Profile%20Report%20Final.pdf>

<sup>4</sup> Substance Abuse and Mental Health Services Administration. 2016. Binge Drinking: Terminology and Patterns of Use. Retrieved from <https://www.samhsa.gov/capt/tools-learning-resources/binge-drinking-terminology-patterns>

<sup>5</sup> National Research Council and Institute of Medicine. 2004. Reducing Underage Drinking: A Collective Responsibility. Washington, DC: The National Academies Press. <https://doi.org/10.17226/10729>.

Figure 9. Frequency of Alcohol Use Among SOC Youths and Young Adults



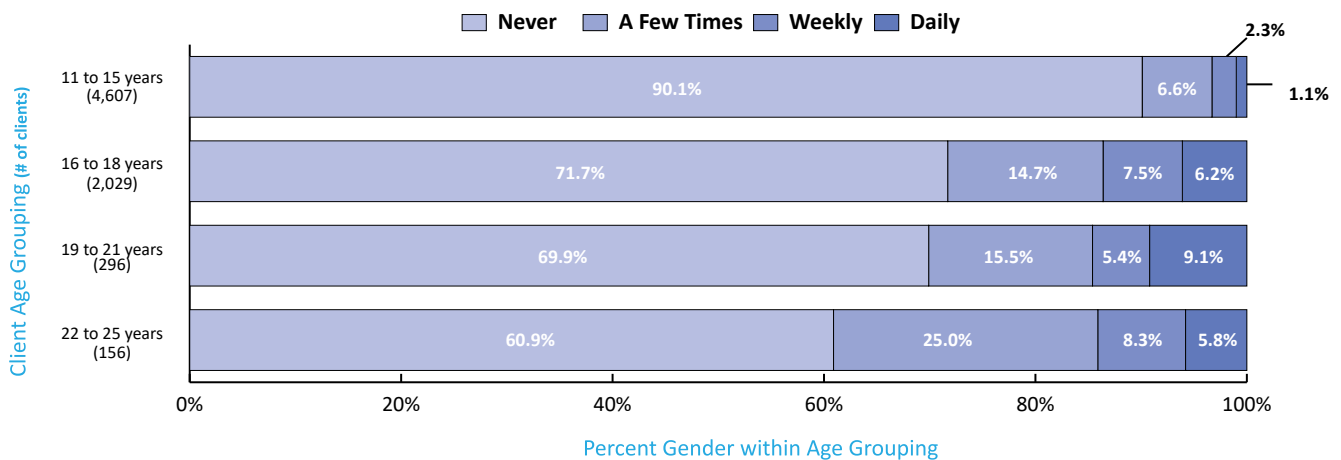
### Cannabis Use and Age

Figure 10 illustrates the distribution of cannabis use among clients aged 11 to 25 90 days prior to entering the program. As shown here, the most intensive use among clients appears to have occurred among young adults 19 to 21, 9.1% of whom reported daily

use and 5.4% reported weekly use. Both older adolescents (ages 16 to 18) and adults (22 to 25) had similar responses regarding daily use (6.2% and 5.8% respectively), and weekly use (7.5% and 8.3% respectively). Overall, the pattern is one of gradual-

ly increasing youths' experience with using the drug at least "A Few Times" at an average rate approaching 30% by the end of high school.

Figure 10. Frequency of Cannabis Use Among SOC Youths and Young Adults



*“Cannabis shows an actual decline in the extent of use among young adults. The reasons for this are undoubtedly numerous, and it may simply be an artifact of the availability of alcohol and tobacco – since they are legal. But it could mean that adolescents who use cannabis to self-medicate in school may be inclined to substitute other, more easily acquired substances after leaving school.”*

A close-up photograph of a person's face, focusing on the eyes and nose. The image is overlaid with a blue, semi-transparent molecular structure consisting of interconnected hexagons, resembling a honeycomb or crystal lattice. The overall color palette is dominated by shades of blue and teal, with the person's skin tones providing a natural contrast.

**SUBSTANCE USE WITHIN  
CATEGORIES OF RACE/ETHNICITY**

As previously stated, three of the fourteen substances offered as options for self-reported use were selected by 10 to 11% of the total population of clients included in this study. These were tobacco products (e-cigarettes, cigarettes, chewing tobacco, cigars, etc.), alcoholic beverages (beer, wine, liquor, moonshine, etc.), and cannabis (marijuana, pot, grass, hash, etc.). The next section examines the use of these three substances across categories of race and ethnicity among OKSOC clients ages 11 to 25. The selection of the 11-to-25 age grouping provided for a population subset consisting of 7,088 clients.

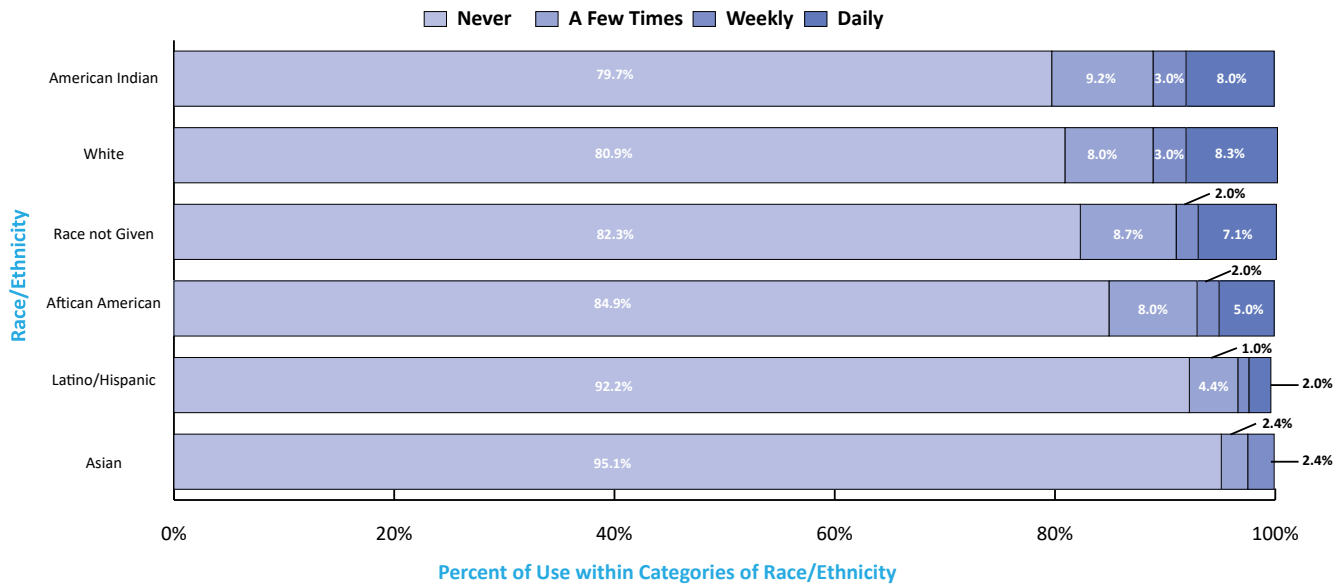
### Tobacco Use and Race/Ethnicity

According to national studies, tobacco use by adolescents has declined substantially in the last 40 years<sup>6</sup>. Oklahoma youth (6th, 8th, 10th, and 12th grade) survey statistics also showed a decline in both cigarette and smokeless tobacco use between 2012 and 2016, dropping by an average of 4.5 percentage points for cigarettes and 1.9 percentage points for smokeless tobacco<sup>7</sup>. National surveys suggest that racial/ethnic and regional differences in tobacco use rates exist as well. For instance, white high school students are more likely to smoke cigarettes than their

black or Hispanic peers<sup>8</sup>. Figure 11 provides data that indicate consistencies between the OKSOC youth population and the national survey findings. Clients who indicated they were White reported more tobacco use than clients who were African American, Latino/Latina, or Asian.

These findings are important in understanding OKSOC youths because percentages of use at enrollment appear to be larger than national and state findings and therefore, may indicate an increased risk for lifetime health consequences<sup>9</sup>. Tobacco use is started and established primarily during adolescence<sup>10</sup>. Nearly 9 out of 10 adult cigarette smokers first

Figure 11. Frequency of Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25 within Categories of Race and Ethnicity



<sup>6</sup> Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E. & Patrick, M.E. (2018). Monitoring the Future national survey results on drug use, 1975-2017: Overview, key findings on adolescent drug use. Ann Arbor: Institute for Social Research, The University of Michigan. Retrieved July 3, 2018, from <http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2017.pdf> - PDF

<sup>7</sup> Ibid

<sup>8</sup> Kann, L., McManus, T., William, A. H., et al. (2015). Youth Risk Behavior Surveillance-United States, 2015. MMWR Surveillance Summaries, 2016;65(No. SS-6). Retrieved July 3, 2018, from [http://www.cdc.gov/healthyyouth/data/yrbs/pdf/2015/ss6506\\_updated.pdf](http://www.cdc.gov/healthyyouth/data/yrbs/pdf/2015/ss6506_updated.pdf) - PDF.

<sup>9</sup> See "Conclusions and Discussion" section of this report for a more detailed analysis of this issue.

<sup>10</sup> U.S. Department of Health and Human Services. 2014. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. Accessed 7-9-2018: <https://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>

tried smoking by age 18, and 98% first tried smoking by age 26. Further, there is evidence that youth may be sensitive to nicotine and that teens can feel dependent on nicotine sooner than adults<sup>11</sup>.

### Alcohol Use and Race/Ethnicity

With the exception of the small number of OKSOC youths and young adults who identify as Asian, at least 14% of the individuals within each race/ethnic category indicated they used alcohol from “a few times” to “daily” within 90 days prior to entering the program.

According to SAMHSA, youth transitioning into adulthood have some of the highest rates of alcohol and substance abuse<sup>12</sup>. For instance, rates of binge drinking (drinking five or more

drinks on a single occasion) in 2014 were: (a) 28.5% for people ages 18 to 20; and (b) 43.3% for people ages 21 to 25.

Although drinking by persons under the age of 21 is illegal, people aged 12 to 20 years drink 11% of all alcohol consumed in the United States<sup>13</sup>. More than 90% of this alcohol is consumed in the form of binge drinking<sup>14</sup>.

The National Institute of Alcohol and Alcoholism (NIAAA) defines binge drinking as a pattern of drinking that brings blood alcohol concentration (BAC) at 0.08 grams percent or above, which generally occurs as men consume 5 or more drinks or women consume 4 or more drinks in about 2 hours<sup>15</sup>.

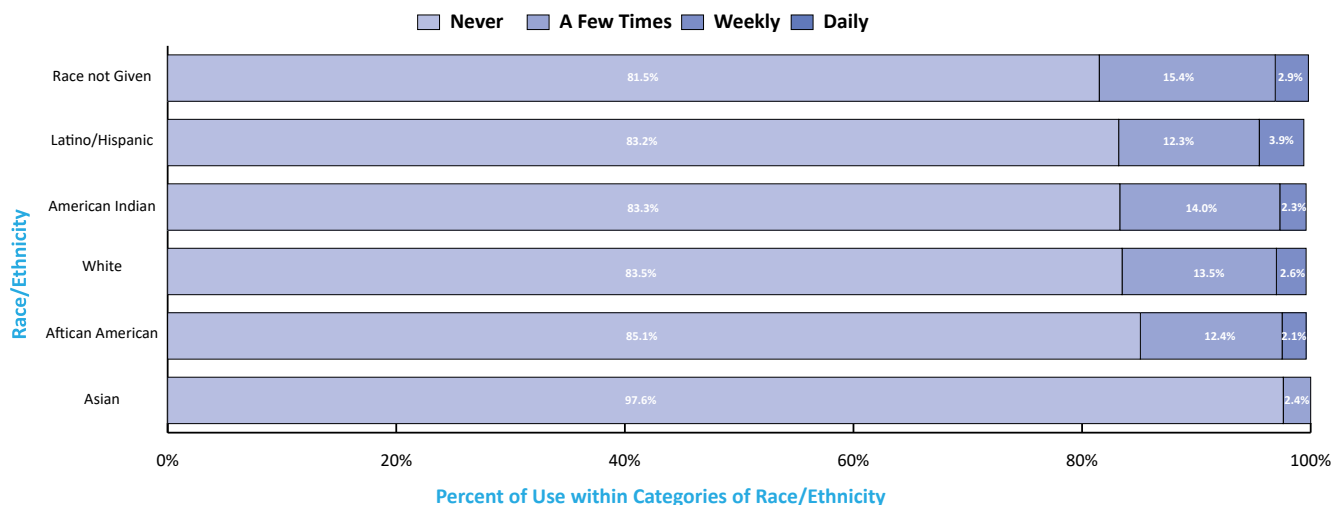
In Figure 12, binge drinking may be included within the measure

of “Weekly” alcohol use. Since the SOC measure does not indicate the number of drinks consumed or the amount of time within which it was consumed—only the frequency—it is only potentially part of the equation that makes up binge drinking. We can see from the distributions that between 2% and 3% of the youths and young adults in each race and ethnic grouping admit to using alcoholic beverages weekly.

### Cannabis Use and Race/Ethnicity

According to the Centers for Disease Control, cannabis use can negatively affect adolescents’ and young adults’ health and well-being, including their school performance, education level, social lives, and future employment and income<sup>16</sup>. Marijuana use directly affects the brain — specifically the

Figure 12. Frequency of Alcohol Use Among SOC Youths and Young Adults Ages 11 to 25 within Categories of Race and Ethnicity



<sup>11</sup> Ibid

<sup>12</sup> Substance Abuse and Mental Health Services Administration. 2018. Specific Populations search: Age- and Gender-Based Populations. Retrieved July 13, 2018. <https://www.samhsa.gov/specific-populations/age-gender-based>

<sup>13</sup> Office of Juvenile Justice and Delinquency Prevention. Drinking in America: Myths, Realities, and Prevention Policy [http://web.archive.org/web/20150910124238/http://www.udetc.org/documents/Drinking\\_in\\_America.pdf](http://web.archive.org/web/20150910124238/http://www.udetc.org/documents/Drinking_in_America.pdf) (PDF-599KB). 2005. Washington, DC: U.S. Department of Justice, Office of Justice Programs. Retrieved from <https://www.cdc.gov/alcohol/fact-sheets/under-age-drinking.htm>.

<sup>14</sup> Ibid. 12

<sup>15</sup> Centers for Disease Control and Prevention (CDC). 2018. Fact Sheets: Binge Drinking. Retrieved from <https://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm>.

<sup>16</sup> Centers for Disease Control and Prevention (CDC). 2018. Fact Sheets: Marijuana and Public Health. Retrieved from <https://www.cdc.gov/marijuana/nas/adolescents.html>.

parts of the brain responsible for memory, learning, attention, decision making, coordination, emotions, and reaction time<sup>17</sup>. Marijuana use, especially frequent (daily or near daily) use and use in high doses, can cause disorientation, and sometimes cause unpleasant thoughts or feelings of anxiety and paranoia<sup>18</sup>.

Cannabis use in all its forms (marijuana, pot, grass, hash, etc.) is presented according to race/ethnicity for OKSOC youths and young adults between the ages of 22 and 25. The lowest percentage of use (15.9%) was reported for African American youths and young adults who may have used the drug "a few times" (8.2%), "weekly," (The highest percentages of use by one category was for "two or more races" with 9% "a few

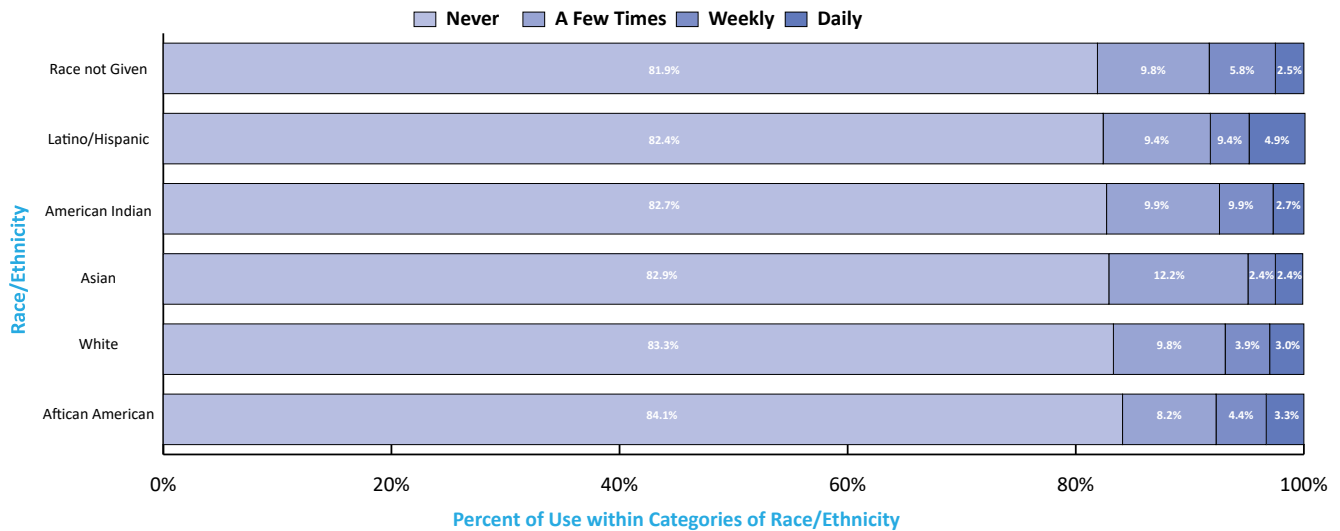
times" plus 5% "weekly" plus 4.5% "daily" use, totaling 18.8% who used cannabis during the 90 days prior to enrolling in OKSOC. Latino/Hispanic youths and young adults reported a similar breakout, totaling 17.7% who used cannabis 90 days before enrollment. In sequence from most to least frequent are:

- White youths and young adults at 16.3% use;
- African American youths and young adults at 15.7% use;
- American Indian youths and young adults at 15.6% use; and
- 18.1% use among those with no identified race/ethnicity.

Among youths and young adults who entered the OKSOC program and used cannabis at least "a few times"

during the 90 days prior to enrollment, 454 were between the ages of 11 and 15. Across the race/ethnic categories, percentages of use at "a few times" range from 63.2 (adolescents of two or more races) to 69.8% (American Indian adolescents). Daily use of cannabis ranges from, excluding the "no race given category," 7.0% (for American Indian adolescents) to 26.5% (Latino adolescents). Weekly use of cannabis (an approximation for binge use) is substantial given the young age of this grouping. Reports exceeding 20% occurred for African American (28.6%), American Indian (23.3%), White (22.3%), Two or more race/ethnic groups (22.8%), and those without a race/ethnicity provided (31.6%).

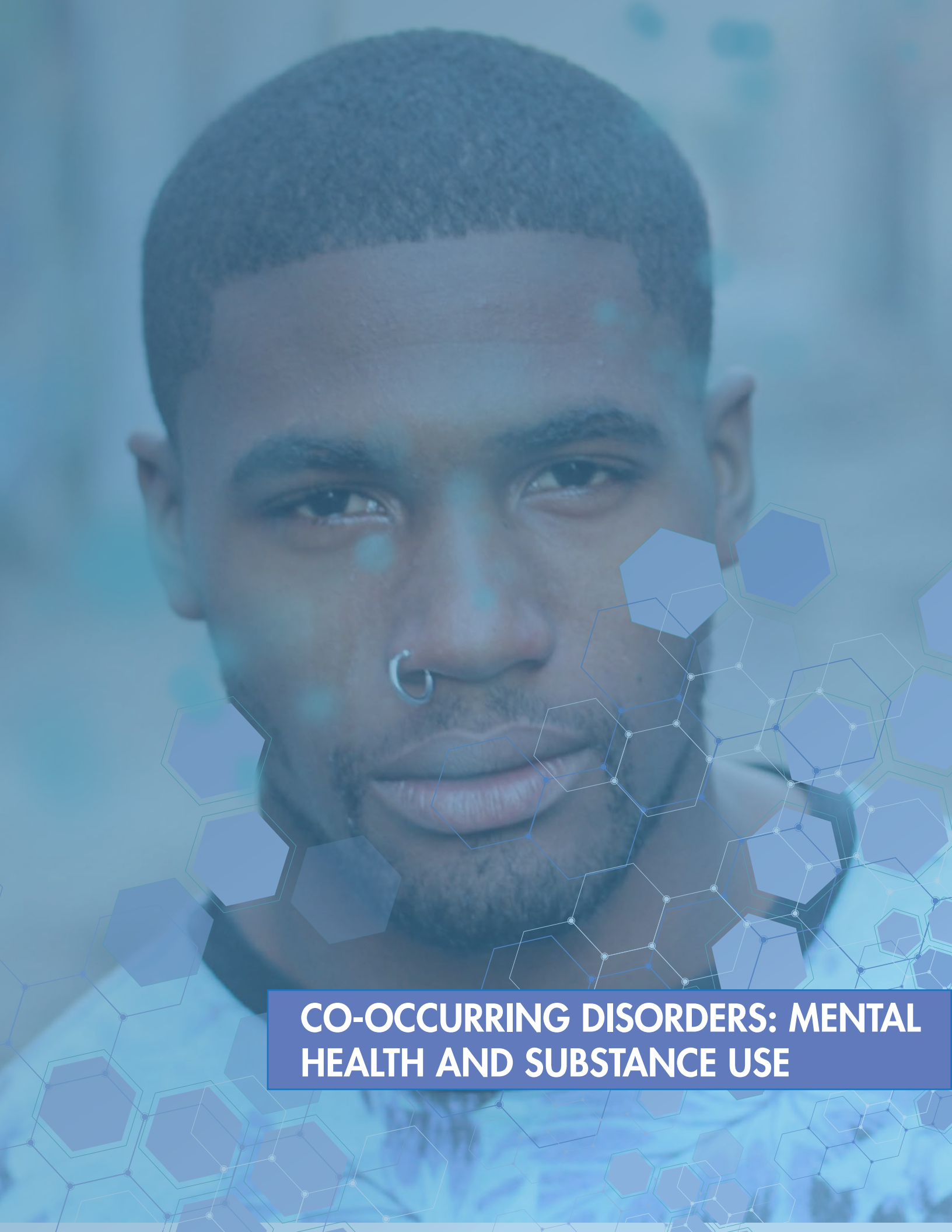
Figure 12. Frequency of Cannabis Use Among SOC Youths and Young Adults Ages 11 to 25 within Categories of Race and Ethnicity



***"Across all diagnostic categories (excluding ODD, diagnosis of which ends at 18) tobacco use maintains a rapid increase after high school, sometimes turning up at a steeper angle. Alcohol use increases after adolescence – for all groups other than adjustment disorders, where there is an actual decline."***

<sup>17</sup> Batalla A, Bhattacharyya S, Yücel M, et al. (2013). Structural and functional imaging studies in chronic cannabis users: a systematic review of adolescent and adult findings. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0055821>. In *Ibid.* 15

<sup>18</sup> National Academies of Sciences Engineering, and Medicine. (2017). *The health effects of cannabis and cannabinoids: Current state of evidence and recommendations for research*. Washington, D.C. In *Ibid.* 15



**CO-OCCURRING DISORDERS: MENTAL  
HEALTH AND SUBSTANCE USE**



Of the 11,730 clients included in this study, a diagnosis was provided in the OKSOC database for 10,069 (85.8%). Diagnostic categories are from the American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM5). The diagnoses are listed according to their frequency of occurrence among OKSOC clients, across age groupings. Five diagnoses are each reported by more than 1,000 clients.

These are:

- Reaction to Severe Stress and Adjustment Disorders
- Depressive Disorders
- Attention Deficit Hyperactivity Disorder
- Post-traumatic Stress Disorder
- Conduct / Oppositional Defiant Disorder

Concurrently, 1,342 (17%) clients reported (by self or parent/guardian) having used one or more of the fourteen substances listed on the intake survey within 90 days prior to program entry at some level (a few times, weekly, or daily). The next portion of the narrative will look at the three most frequently reported substances, tobacco, alcohol, and cannabis--and their co-occurrence with six mental health diagnosis categories within three age groupings: young adolescents (ages 11 to 15), older adolescents (ages 16 to 18), and young adults (ages 19 to 25). This younger subgroup is excluded because very little substance use is reported for this group, and substance use is a major focus of the remaining discussion. However, The selected six categories were diagnosed for at least 100 clients and were associated with 20% or more reports of substance use.

## Depressive Disorders

### Age and Gender

A total of 1,461 youths and young adults, ages 11 to 25, entering OKSOC during the study period received a primary diagnosis of a Depres-

sive Disorder (DD). Over half (54.6%) of these OKSOC clients consist of young adolescents between 11 and 15 years of age; more than a third (37.2%) are older adolescents ages 16 to 18; and 8.3% are young adults. Two out of three are females (a mean of 67.5% across age groups). There is a

Figure 13. SOC Youths and Young Adults Diagnosed with Depressive Disorders - Percent of Females and Males within Age Categories

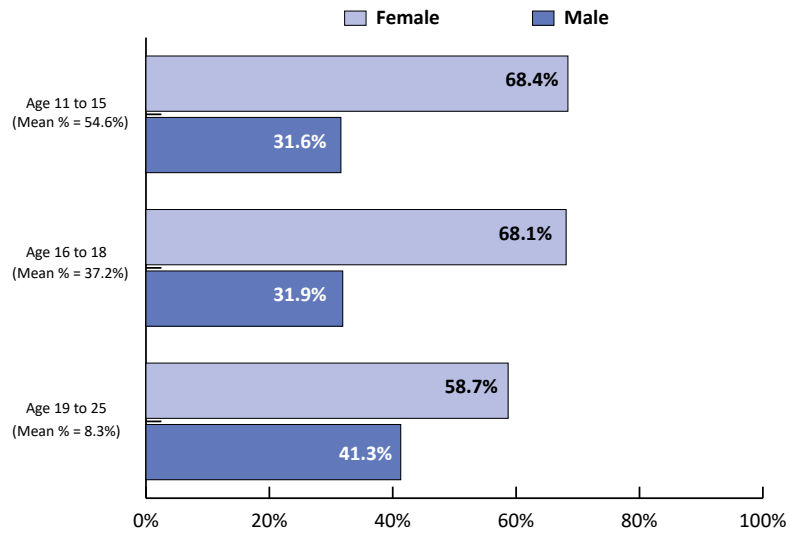
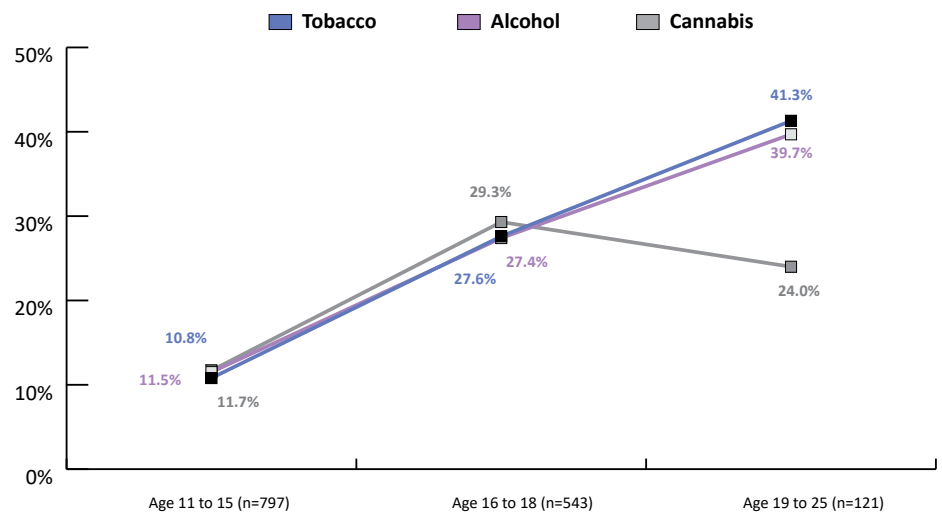
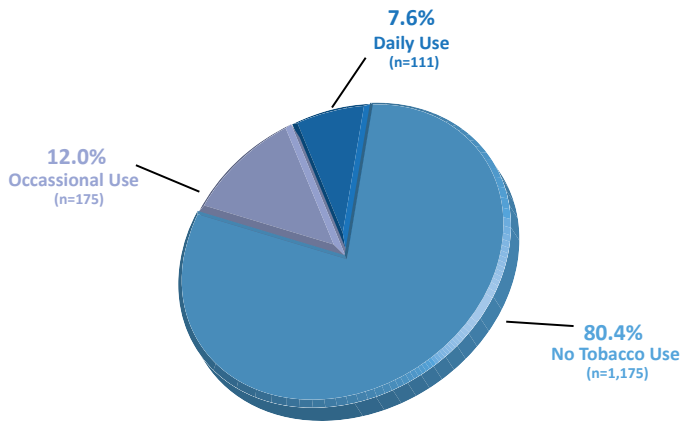


Figure 14. SOC Youths and Young Adults Diagnosed with Depressive Disorders - Percent of Females and Males within Age Categories



*“Unsurprisingly, measurable substance use does not emerge until middle school age. Extent and frequency of use patterns, for the three substances focused on in this report, ratchet up steadily with age.”*

Figure 15. Depressive Disorders Co-Occurring with Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25



2-to-1 ratio of females to males among youths in both adolescent age groupings diagnosed with DD. Within the age category of young adults (19 to 25), the gender gap is consistent but not as wide as with the younger groups, with females at 58.7% and males at 41.3%.

Again, 455 (31%) of OKSOC clients with a diagnosis of DD reported using some type of substance at least “A Few Times” within 90 days prior to entering SOC. If we break that number down to specific substances, we see that the most frequently used (reported) are tobacco, alcohol, and cannabis, all reported by 19.2% to 19.8% of youths and youth adults. Small percentages (approximately 2%, rounded) reported the use of sedatives, methamphetamine, prescription stimulants, and cough syrup.

OKSOC adolescents with a diagnosis of DD increasingly used tobacco, alcohol, and cannabis as age increased. However, young adult use of cannabis appears to have declined while tobacco and alcohol continued to increase. Use of tobacco and alcohol, reported as “a few times” to “daily” use, among OKSOC youths and young adults diagnosed with DD began for many at middle school age (a mean of 10.8% and 11.5% respectively). Use continued to increase through high school and young adulthood so that approximately 40% reported using these two substances. Cannabis was reportedly used by slightly older adolescents (29.3%) with the DD diagnosis, but then dropped among young adults (24.0%).

**Tobacco Use**

Tobacco product (e-cigarettes, cigarettes, chewing tobacco, cigars, etc.) use accounts for 286 (19.6%) substance-use reports among the 1,461 OKSOC youths and

Figure 16. Depressive Disorders Co-Occurring with Alcohol Use Among SOC Youths and Young Adults Ages 11 to 25

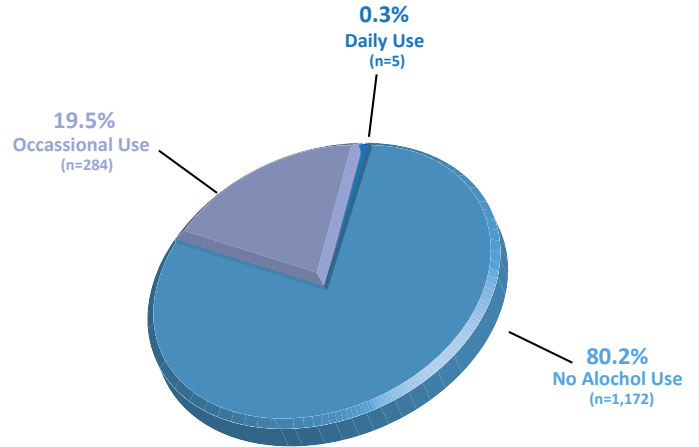
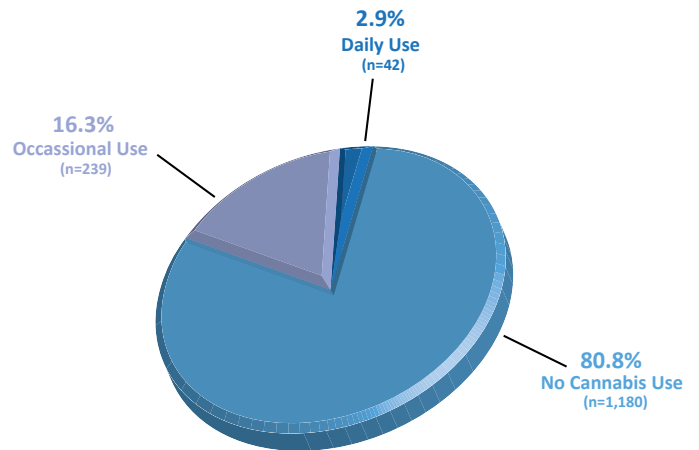


Figure 17. Depressive Disorders Co-Occurring with Cannabis Use Among SOC Youths and Young Adults Ages 11 to 25



young adults ages 11 to 25 who received the DD diagnosis. Nearly two-thirds (61.2%) of the tobacco use was reported as “occasional use” (i.e., “a few times” or “weekly”) compared to over one-third (38.8%) reported as daily use.

**Alcohol Use**

Nearly 20% of youth ages 11-25 who were also diagnosed with a DD reported having used alcoholic beverages (beer, wine, liquor, moonshine, etc.) during 90 days prior to entering the program. It should be noted that, for most of these individuals, alcohol use is an illegal drug. Only 2.9% of those in the Depressive Disorders subgroup were 21 or older. Alcohol use among the SOC youths diagnosed with a DD nearly matched the general pattern of tobacco use. On closer look, however, the frequency of use is quite different for the two substances. Within the category of alcohol itself, nearly all reported use (98.3%)

was “occasional use”—primarily identified as such with a response of drinking “A Few Times” plus those reporting “Weekly” drinking. A very small percentage among alcohol users reported “daily” use of alcohol (1.7%), compared to 38.8% of “daily” use among those who reported using tobacco.

**Cannabis Use**

Cannabis (marijuana, pot, grass, hash, etc.) use accounts for 281 (19.2%) substance-use reports among SOC youths and young adults age 11 to 25 who were diagnosed with DD. Among youth and young adults who reportedly use the drug, most (85.1%) indicated “occasional use” (i.e., “a few times” or “weekly”) compared to 14.9% who reported using cannabis daily.

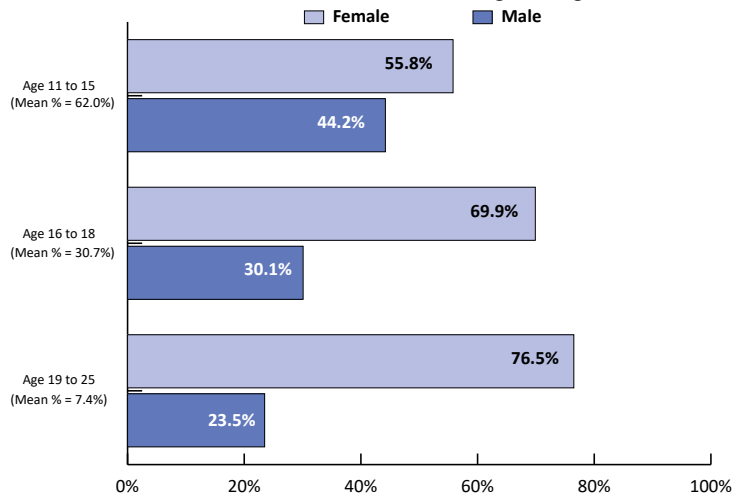
**Posttraumatic Stress Disorder**

In posttraumatic stress disorder (PTSD), exposure to a traumatic event or situation produces symptoms that are intrusive, such as frightening thoughts linked to the experience; dreams or nightmares about the trauma; or flashbacks, which are episodes or symptoms related to reliving the experience over and over<sup>19</sup>. According to SAMHSA, anyone can experience PTSD, including children and adolescents. PTSD occurs in about 8% of people and women are more likely than men to have PTSD.

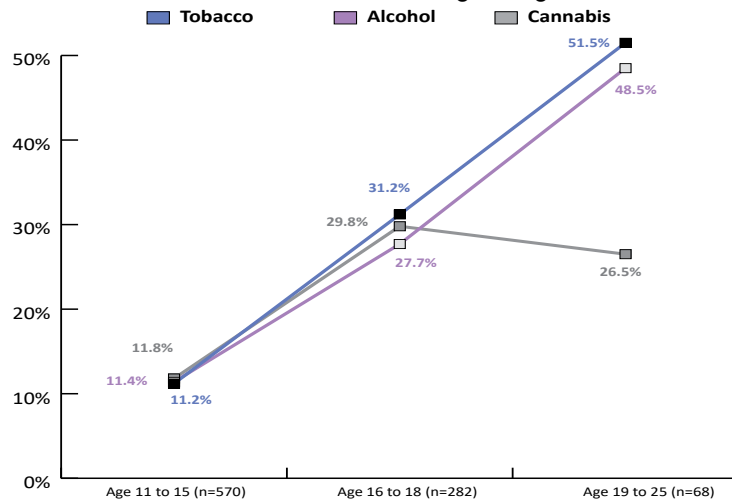
**Age and Gender**

A total of 920 youths and young adults ages 11 to 25 entering the OKSOC during the study period received a primary diagnosis in the category of Posttraumatic Stress Disorders (PTSD). Over half (62%)

**Figure 18. SOC Youths and Young Adults Diagnosed with Post-traumatic Stress Disorder - Percent of Females and Males within Age Categories**



**Figure 19. SOC Youths and Young Adults Diagnosed with Post-traumatic Stress Disorder - Percent of Females and Males within Age Categories**



of this subgroup consists of young adolescents between 11 and 15 years of age, more than a third (30.7%) are older adolescents ages 16 to 18, and 7.4% are young adults. A majority of this subgroup are females (mean of 61.6% across age groups), with a nearly equal age disparity between the two adolescent age groupings of 68%. Among the age category of young adults (19 to 25), the gender gap is not as wide as with the younger groups, with males at 41.3% and females at 58.7%.

a diagnosis of Posttraumatic Stress Disorder reported using some type of substance at least “A Few Times” within 90 days prior to entering SOC. If we break that number down to specific substances, we see that the most frequently used substances (reported) are tobacco, alcohol, and cannabis, all reported by 18.4% to 20.3% of youths and youth adults. Small percentages (approximately 2%, rounded) reported the use of prescription stimulants, sedatives, methamphetamine, and cough syrup.

Again, 278 (30.2%) of SOC clients with

**Tobacco Use**

<sup>19</sup> SAMHSA, Behavioral Health and Treatment Services: Treatments for Mental Disorders. <https://www.samhsa.gov/treatment/mental-disorders/depression>. Accessed 8-21-2018.

Reports indicating tobacco use make up 187 (20.3%) of the overall tobacco use indicators among OKSOC youths and young adults ages 11 to 25 in the category of PTSD. Nearly two-thirds (61.0%) of that tobacco use is "occasional use" (i.e., "a few times" or "weekly") compared to over one-third who reported using tobacco daily (39.0%).

The substance use patterns reflected closely mimic, except that the upper values for tobacco and alcohol use among young adults are much higher for those with a PTSD diagnosis. OKSOC adolescents and young adults with a diagnosis of PTSD increasingly used tobacco, alcohol, and cannabis as age increased. However, beginning in adolescence and continuing through young adulthood, use of cannabis appears to have declined to some extent while tobacco and alcohol continued to increase. Use of tobacco and alcohol, reported as "a few times" to "daily" use, among SOC youths and young adults diagnosed with PTSD began for many at middle school age (a mean of 11.2% and 11.4% respectively). Use continued to increase through high school and young adulthood so that approximately 50% reported using these two substances. Cannabis use was reported by slightly older adolescents (29.8%) with the PTSD diagnosis, but then dropped among young adults (26.5%).

**Alcohol Use**

Alcohol use accounts for 176 (19.1%) substance-use reports among OKSOC youths and young adults ages 11 to 25 diagnosed with PTSD. Nearly all (98.3%) of alcohol use was "occasional use" (i.e., "a few times" or "weekly") compared to a small percentage (1.7%) who reported drinking daily.

**Cannabis Use**

Cannabis use accounts for 169 (18.4%) substance-use reports among SOC youths and young adults ages 11 to 25 diagnosed with PTSD. Most (82.2%) cannabis use is "occasional use" (i.e., "a few times" or "weekly") compared to 17.8% who reported using cannabis daily.

Figure 20. Posttraumatic Stress Disorder Co-Occurring with Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25

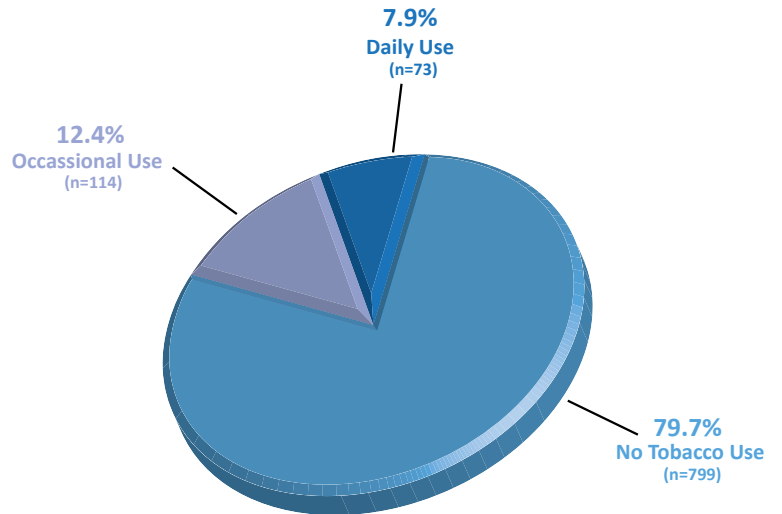


Figure 21. Posttraumatic Stress Disorders Co-Occurring with Alcohol Among SOC Youths and Young Adults Ages 11 to 25

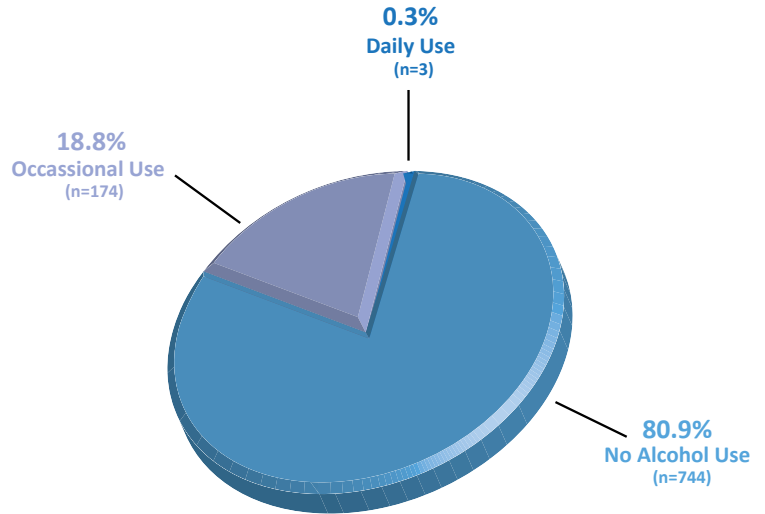
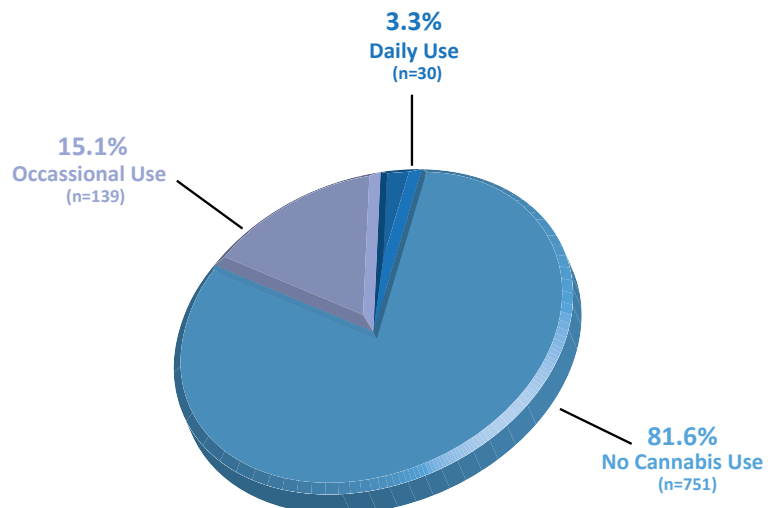


Figure 22. Posttraumatic Stress Disorder Co-Occurring with Cannabis Use Among SOC Youths and Young Adults Age 11 to 25



## Reaction to Severe Stress and Adjustment Disorders

According to SAMHSA<sup>20</sup>, Adjustment Disorder has many symptoms in common with depression, but occurs following a stressful period, such as the death of a friend or family member, the divorce of parents, illnesses, or unexpected catastrophes. While depression typically manifests between 18 and 25, it can occur at any age, and SAMHSA's National Survey on Drug Use and Health (NSDUH) has generated studies designed to demonstrate characteristics and associations (e.g., with substance use) of depression among adolescents between the ages of 12 and 17<sup>21</sup>. "Alcohol use and other substance use disorders often co-occur with depression<sup>22</sup>."

### Age and Gender

A total of 859 OKSOC youths and young adults ages 11 to 25 entering the program statewide received a primary diagnosis in the category of Reaction to Severe Stress (RSS)<sup>23</sup> and Adjustment Disorders (AD). Three-fourths (75.9%) of this subgroup consisted of young adolescents between 11 and 15 years of age, 22.2% were older adolescents ages 16 to 18, and 1.9% were young adults. In terms of gender, this group overall was near evenly split with 49.8% females and 50.2% males. As shown here, behavior indicative of this diagnosis suggests an age and gender association. As adolescent males in the OKSOC population aged, the percent who received this diagnosis decreased. Conversely, as the age of female clients rose, the percentage who received this diagnosis

Figure 23. SOC Youths and Young Adults Diagnosed with Reaction to Severe Stress and Adjustment Disorders: Percent of Females and Males within Age Categories

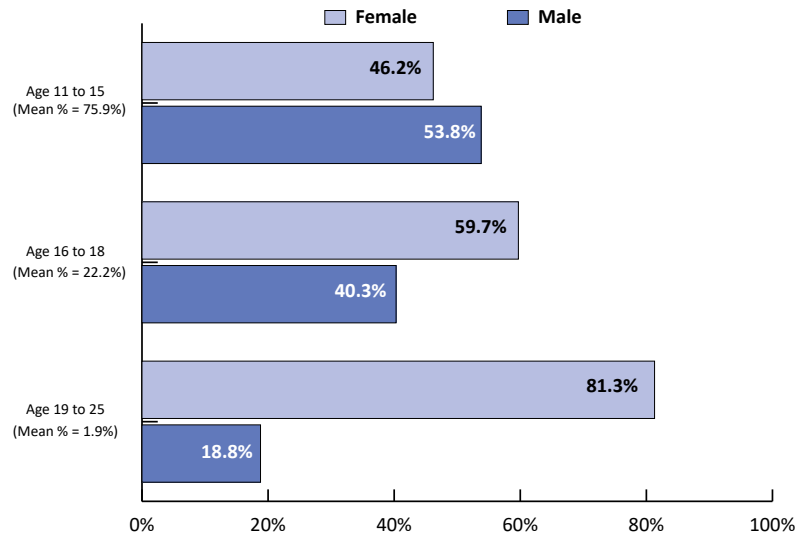
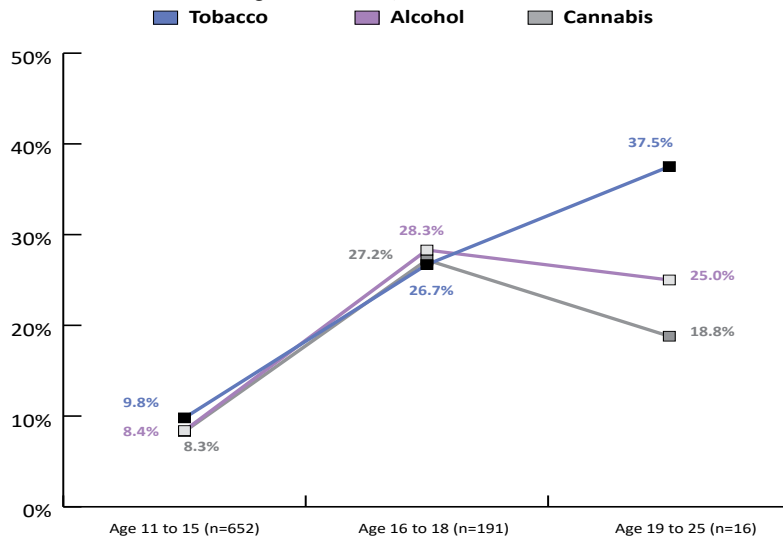


Figure 24. Tobacco, Alcohol, and Cannabis Use by Age Grouping Among SOC Clients with a Reaction to Severe Stress Diagnosis and Adjustment Disorder



increased.

Again, 185 (21.5%) of OKSOC clients with a diagnosis of Reaction to Severe Stress and Adjustment Disorders reported using some type of substance at least "A Few Times" within 90 days prior to entering OKSOC. If we look at the specific

substances reported by clients and their frequencies, we see that, as reported throughout this discussion, the most commonly used (reported) were tobacco products, alcoholic beverages, and cannabis, used by 14.1%, 13.2%, and 12.7% (respectively) by youths and young adults. Small percentages (from 1% to 2%) reported

<sup>20</sup> SAMHSA, Behavioral Health and Treatment Services: Treatments for Mental Disorders. <https://www.samhsa.gov/treatment/mental-disorders/depression>. Accessed 8-21-2018.

<sup>21</sup> Ibid 2.

<sup>22</sup> Ibid 1.

<sup>23</sup> Reaction to Severe Stress is a classification inclusive of responses to traumatic and highly stressful events, including PTSD, Adjustment Disorders, and Other Reactions to Severe Stress Disorders.

the use of prescription opioids, prescription stimulants, sedatives, and cough syrup. Slightly fewer (rounded to 1%) were methamphetamines and synthetic marijuana.

**Tobacco Use**

Tobacco use accounts for 121 (14.1%) substance-use reports among OK-SOC youths and young adults ages 11 to 25. Over two-thirds (71.1%) of tobacco use was “occasional use” (i.e., “a few times” or “weekly”) compared to over one-fourth who reported using tobacco daily (28.9%).

Tobacco use increased as age increased, with 9.8% of young adolescents admitting to its use, 26.7% of older adolescents, and 37.5% of young adults reporting tobacco use

**Alcohol Use**

Alcohol use accounted for 113 (13.2%) of substance-use reports among OK-SOC youths and young adults ages 11 to 25. Nearly all (98.2%) of alcohol use was “occasional use” (i.e., “a few times” or “weekly”) with “daily” use at 1.8%.

**Cannabis Use**

Cannabis use accounts for 109 (12.7%) substance-use reports among OKSOC youths and young adults ages 11 to 25 with a diagnosis of. A large percentage (86.2%) of cannabis use was “occasional use” (i.e., “a few times” or “weekly”) compared to 13.8% who reported using cannabis daily.

Figure 25. Reaction to Severe Stress and Adjustment Disorders Co-Occurring with Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25

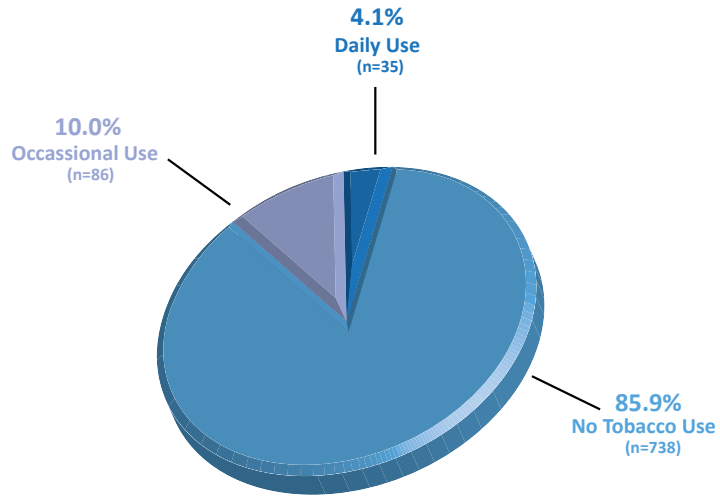


Figure 26. Reaction to Severe Stress and Adjustment Disorders Co-Occurring with Alcohol Among SOC Youths and Young Adults Ages 11 to 25

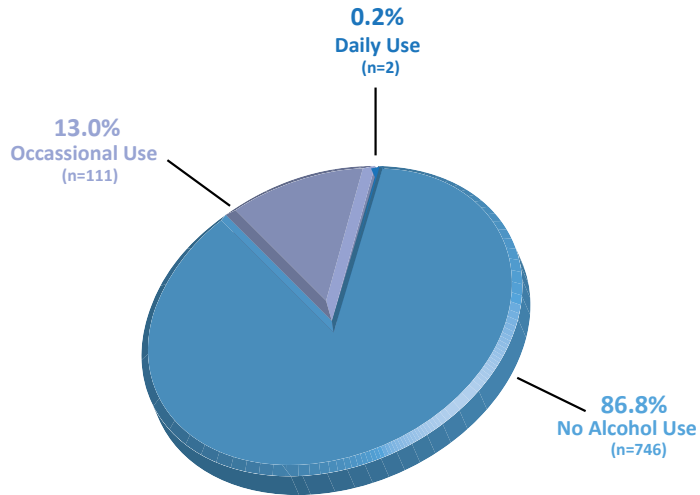
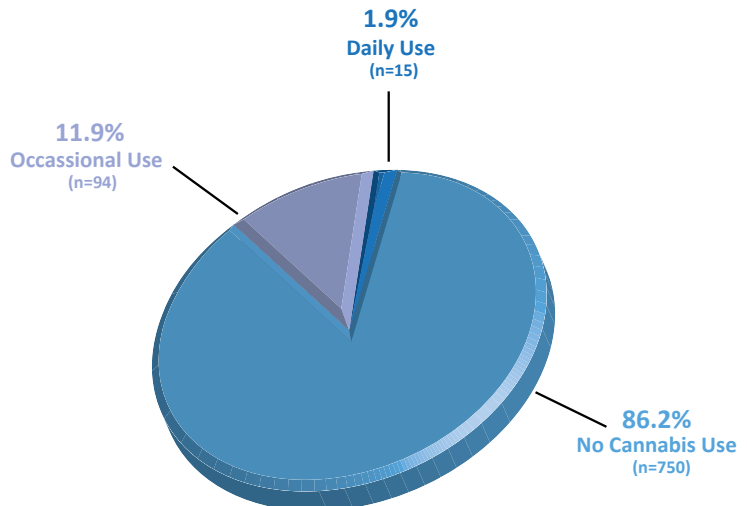


Figure 27. Reaction to Severe Stress and Adjustment Disorders Co-Occurring with Cannabis Use Among SOC Youths and Young Adults Age 11 to 25



## Conduct/Oppositional Defiant Disorder

According to SAMHSA's online Behavioral Health Treatments and Services resource, located at <https://www.samhsa.gov/topics>, conduct disorder (CD) and oppositional defiant disorder (ODD) are the two most common disruptive behavior disorders. ODD occurs among children younger than age five through older childhood and early adolescence. These two disorders are more common among males than females in childhood, but as children approach adolescence, they become about equally distributed among males and females.

Conduct disorder, states SAMHSA, usually starts in middle childhood or adolescence, becoming more common in adolescence. It is more common among males than females and more prevalent in the adolescent population than ODD. "Males with CD usually have problems such as fighting, stealing, vandalism, and school discipline. Females with CD tend to show symptoms such as lying, running away, truancy, spreading rumors, and misusing friendships<sup>24</sup>." Co-occurring disorders may include ADHD, anxiety disorders, depression, bipolar disorder, or substance use disorders. SAMHSA states that "disruptive behaviors can be hard to treat if other disorders are not treated" and that skills-based interventions, parent training, and behavioral family therapy are common approaches woven into an adolescent's plan of care.

### Age and Gender

A total of 709 (13.8%) of OKSOC youths and young adults ages 11 to 25 entering OKSOC statewide during the study period received a primary diagnosis in the category

Figure 28. SOC Youths and Young Adults Diagnosed with Conduct/Oppositional Defiant Disorder: Percent of Females and Males within Age Categories

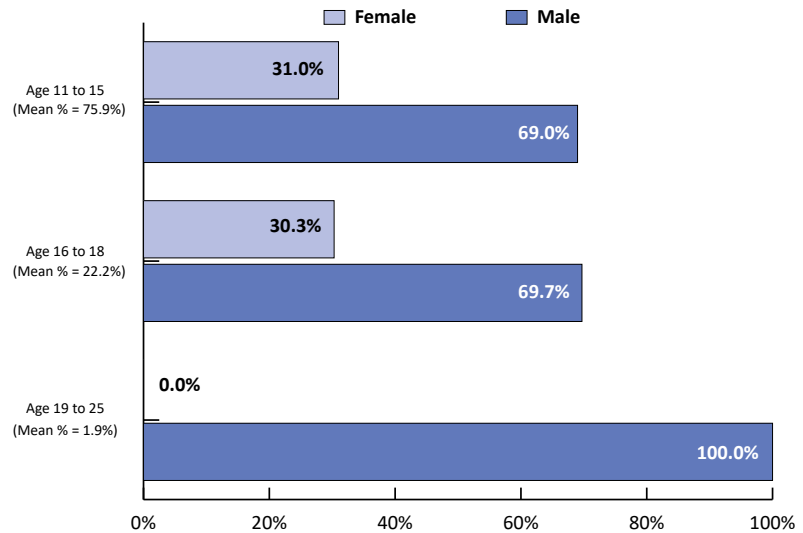
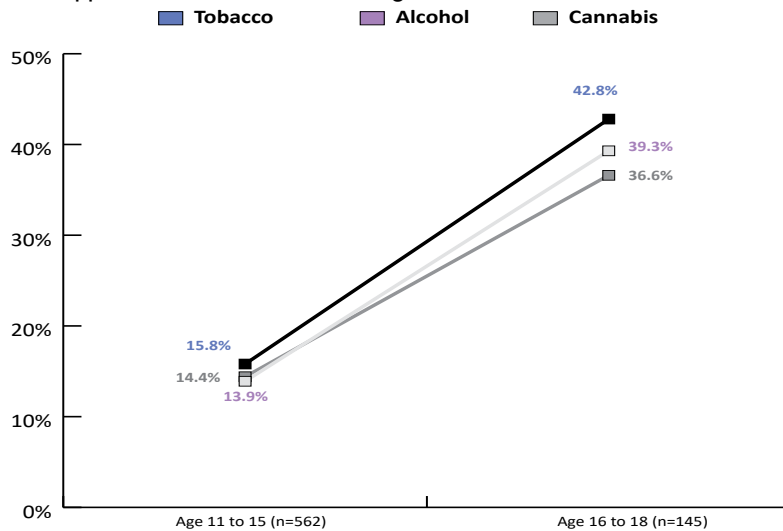


Figure 29. Tobacco, Alcohol, and Cannabis Use by Age Grouping Among SOC Clients with a Conduct/Oppositional Defiant Disorder Diagnosis



of Conduct/Oppositional Defiant Disorders. A majority of this subgroup (79.3%) consisted of young adolescents between the ages of 11 and 15 years, two-thirds (69%) of which were males; and 20.5% were older adolescents between the ages of 16 to 18, two-thirds of which were males (69.7%). Only a small percentage (<1%) were 19 to 25, all of which (100%) were males).

Again, 214 (30.2%) of OKSOC clients

with a diagnosis of Conduct/Oppositional Defiant Disorder reported using some type of substance at least "A Few Times" within 90 days prior to entering OKSOC. If we break that number down to specific substances, we see that the most frequently used (reported) were tobacco, alcohol, and cannabis, all reported by 19.2% to 19.8% of youths and youth adults. Small percentages (approximately 2%, rounded) reported the use of sedatives, methamphetamine,

<sup>24</sup> <https://www.samhsa.gov/treatment/mental-disorders/disruptive-behavior-disorders>, downloaded 8/11/2018.

prescription stimulants, and cough syrup.

**Tobacco Use**

Tobacco use accounts for 152 (21.4%) substance-use reports among OKSOC youths and young adults ages 11 to 25 with a diagnosis of CD/ODD. Two-thirds (67.8%) of tobacco use was “occasional use” (i.e., “a few times” or “weekly”) compared to one-third who reported using tobacco daily (32.2%).

In summary, Figure 30 shows us that:

- One in five youths and young adults with CD/ODD use tobacco;
- Of those who use, one in three are daily, perhaps heavy, tobacco users;
- The majority of (four in five) of OKSOC clients between 11 and 25 with a diagnosis of CD/ODD do NOT use tobacco.

**Alcohol Use**

Alcohol use accounts for 135 (19.0%) substance-use reports among OKSOC youths and young adults ages 11 to 25 with a diagnosis of CD/ODD during the 90 days prior to enrollment in the program. Virtually all (99.3%) of alcohol use was “occasional use” (i.e., “a few times” or “weekly”) rather than “daily” use, which is consistent with its prevalence among older adolescents (ages 16 to 18) diagnosed with a conduct disorder.

**Cannabis Use**

Cannabis use accounts for 134 (18.9%) substance-use reports among OKSOC youths and young adults ages 11 to 25 with a diagnosis of CD/ODD. More than eighty percent (81.2%) of cannabis use was “occasional use” (i.e., “a few times” or “weekly”) compared to nearly 20% (18.9%) reported “daily” use.

Figure 30. Conduct/Oppositional Defiant Disorder Co-Occurring with Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25

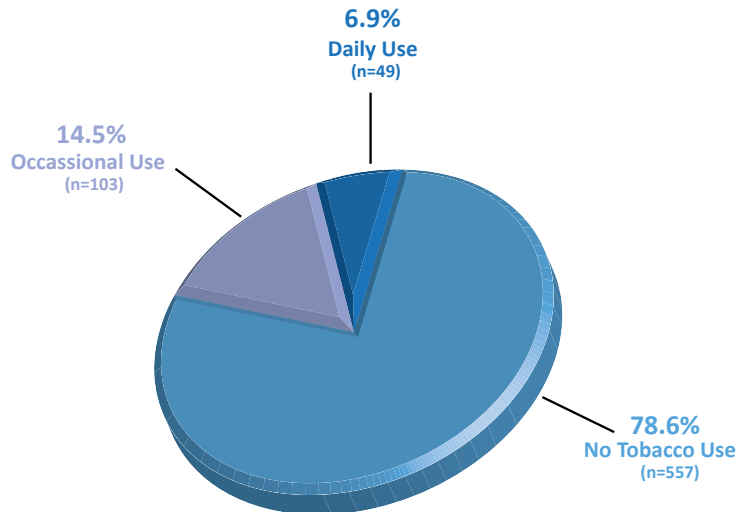


Figure 31. Conduct/Oppositional Defiant Disorder Co-Occurring with Alcohol Among SOC Youths and Young Adults Ages 11 to 25

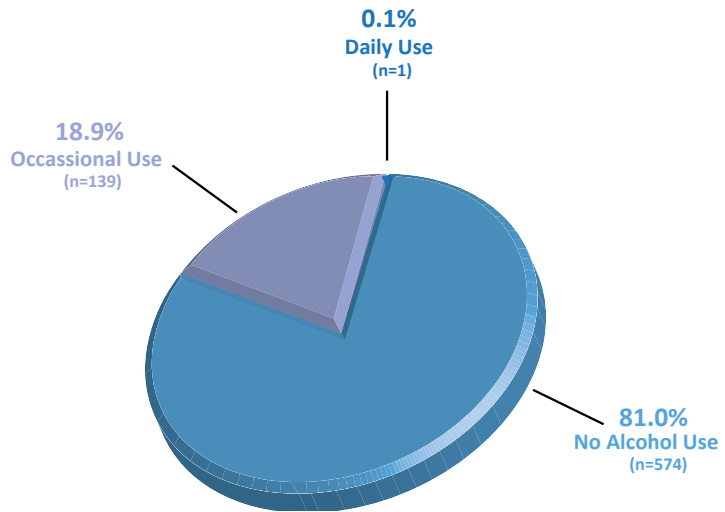
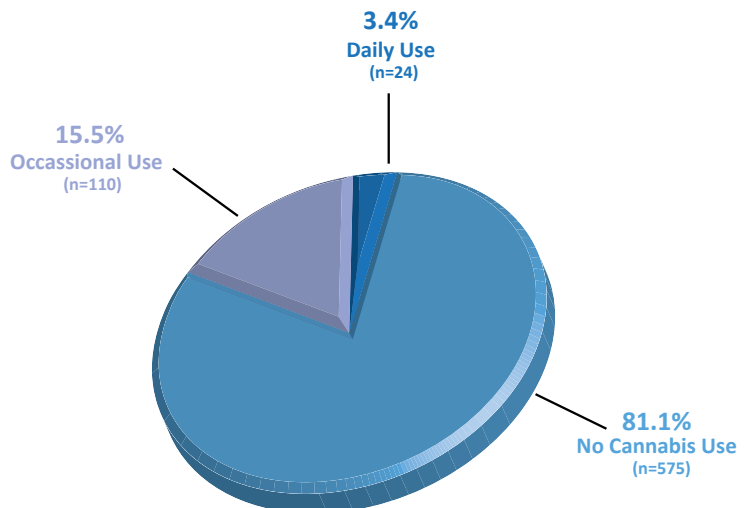


Figure 32. Conduct/Oppositional Defiant Disorder Co-Occurring with Cannabis Use Among SOC Youths and Young Adults Age 11 to 25





## Persistent Mood Disorders

According to The National Comorbidity Survey – Adolescent Supplement (NCS-A)<sup>25</sup>, a survey of youth ages 13 to 18 conducted between 2001 and 2004 using DSM-IV diagnoses, “lifetime prevalence of mood disorders (including major depressive disorders, dysthymia, and bipolar I and II) with severe impairment was the most common class of disorders (11.2 percent).”<sup>26</sup> According to SAMHSA’s Children’s Mental Health Initiative (CMHI), which provides the national Systems of Care framework, in 2015 the five most common diagnoses were mood disorders (such as depression at 29.3%), attention deficit hyperactivity disorders<sup>27</sup> (24.9%), oppositional defiant disorder (15.8%), adjustment disorders (15.3%), and post-traumatic stress disorder (PTSD) or acute stress disorder (12.6%)<sup>28</sup>. In persistent mood disorder, the individual’s moods are chronic and regularly low.

### Age and Gender

A total of 343 (14.1%) youths and young adults ages 11 to 25 entering the OKSOC program received a primary diagnosis of a Persistent Mood Disorder (PMD). Of that number, 70% were young adolescents between 11 and 15 years of age, 27.7% were older adolescents ages 16 to 18, and a small percentage (2.3%) were young adults. The distribution of females and males overall was nearly equal (51% female, 49% male). A slight difference in gender distribution is apparent within the 16 to 18

Figure 33. SOC Youths and Young Adults Diagnosed with Persistent Mood Disorders: Percent of Females and Males within Age Categories

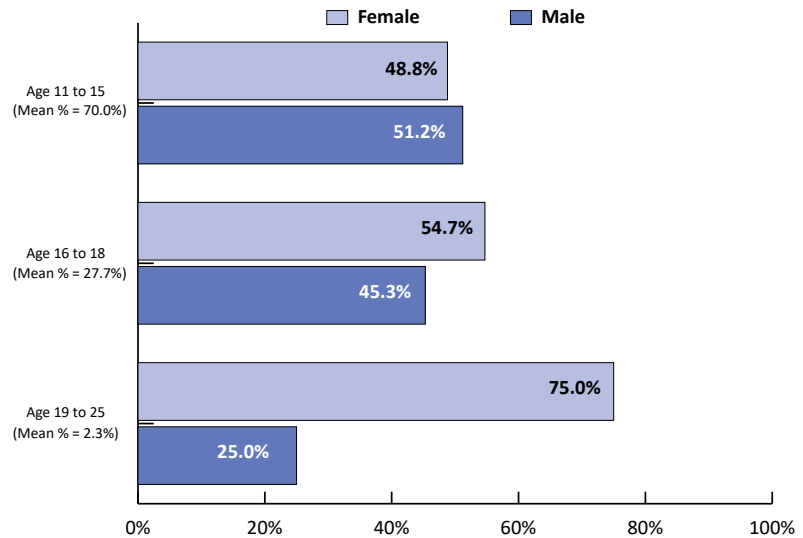
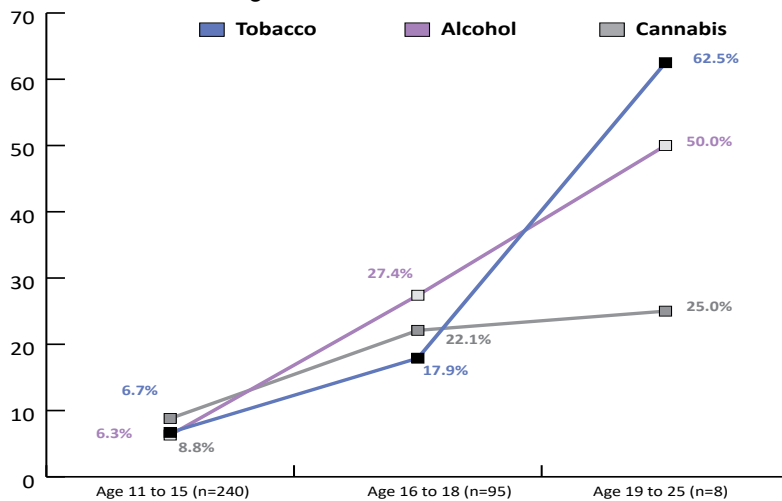


Figure 34. Tobacco, Alcohol, and Cannabis Use by Age Grouping Among SOC Clients with a Persistent Mood Disorder Diagnosis



age group, with a 5% skew in favor of females. However, among the small percentage of young adults (age 19 to 25), there is a clear 3 to 1 ratio of females to males.

Again, 69 (20.1%) of OKSOC youths and young adults with a diagnosis of a PMD reported using some type of substance at least “A Few Times”

<sup>25</sup> Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., . . . & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980-989.

<sup>26</sup> In Interdepartmental Serious Mental Illness Coordinating Committee. (2017, December 13). The way forward: Federal action for a system that works for all people living with SMI and SED and their families and caregivers. Retrieved from <https://www.samhsa.gov/about-us/advisory-councils/ismicc>

<sup>27</sup> In the current study, attention deficit hyperactivity disorder, or ADHD, is excluded because this disorder primarily affects children under the age of 11 in Oklahoma. Our study focuses on ages 11 to 25.

<sup>28</sup> Center for Mental Health Services (CMHS). Substance Abuse and Mental Health Services Administration (SAMHSA). (2016). The evaluation of the comprehensive community mental health services for children with serious emotional disturbances program. report to Congress. 2015 (SAMHSA Publication No. PEP16-CMH12015). Retrieved from [https://www.samhsa.gov/sites/default/files/programs\\_campaigns/nitt-ta/2015-report-to-congress.pdf](https://www.samhsa.gov/sites/default/files/programs_campaigns/nitt-ta/2015-report-to-congress.pdf). In *Ibid* 7.

within 90 days prior to entering OK-SOC. If we break that number down to specific substances, we see that the most frequently used (reported) are consistent throughout this narrative—tobacco, alcohol, and cannabis are reportedly used by 11.1%, 13.1%, and 12.8% of youths and youth adults. Small percentages (approximately 2%, rounded) reported the use of sedatives, methamphetamine, prescription stimulants, and cough syrup.

**Tobacco Use**

Tobacco use accounts for 38 (11.1%) of substance-use reports among OKSOC youths and young adults ages 11 to 25 diagnoses with a PMD. Nearly two-thirds (61.2%) of tobacco use was “occasional use” (i.e., “a few times” or “weekly”) compared to over one-third who reported using tobacco daily (38.8%).

**Alcohol Use**

Alcohol use accounts for 45 (13.1%) substance-use reports among OK-SOC youths and young adults ages 11 to 25 with a Persistent Mood Disorder diagnosis in the 90 days prior to enrollment. Nearly all (95.6%) of alcohol use was “occasional use” (i.e., “a few times” or “weekly”) compared to 4.4% who reported who reported using tobacco “daily.”

**Cannabis Use**

Cannabis use accounts for 44 (12.8%) substance-use reports among OKSOC youths and young adults ages 11 to 25. Most (88.6%) cannabis use was “occasional use” (i.e., “a few times” or “weekly”) with 11.4% reported use as “daily.”

Figure 35. Persistent Mood Disorders Co-Occurring with Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25

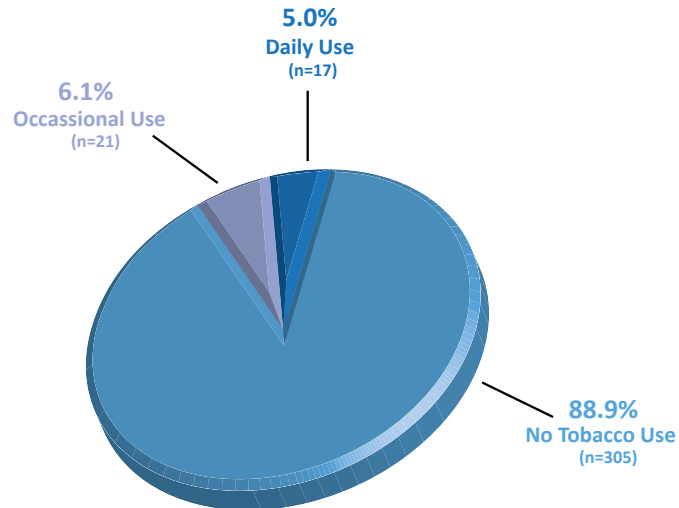


Figure 36. Persistent Mood Disorders Co-Occurring with Alcohol Among SOC Youths and Young Adults Ages 11 to 25

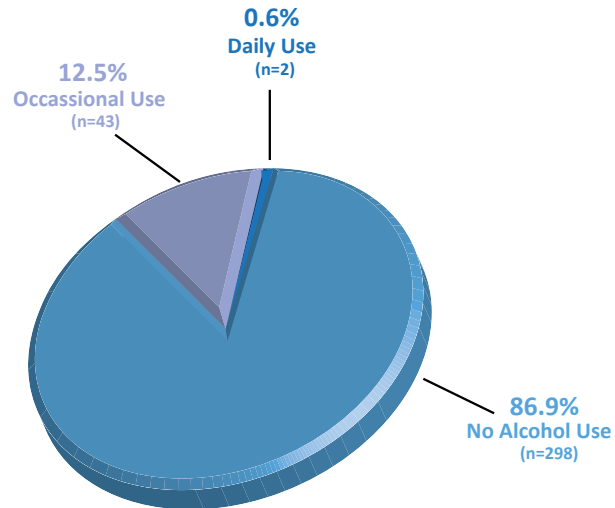
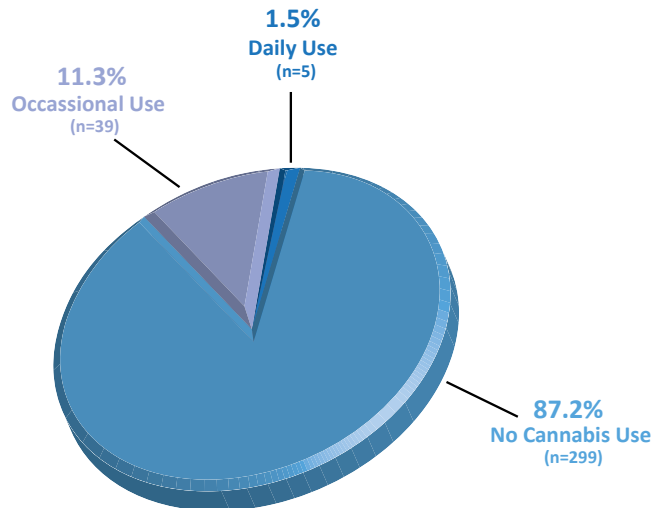


Figure 37. Persistent Mood Disorders Co-Occurring with Cannabis Use Among SOC Youths and Young Adults Age 11 to 25



## Bipolar Disorder

SAMHSA's online resource, Behavioral Health Treatments and Services, defines bipolar disorder as a "mental disorder that involves unusual shifts in mood, energy, activity levels, and the way a person thinks. These shifts include periods when the person feels manic (extremely 'up,' energized, irritable) and periods when the person feels depressed ('down,' hopeless, irritable, sad, and apathetic)."<sup>29</sup> The first symptoms of bipolar disorder can occur in childhood. Bipolar disorders often start in the teenage years or in the early 20s.

Data from the National Comorbidity Survey, Adolescent Supplement (NCS-A), provides indicators (2001-2004) for lifetime prevalence of bipolar disorder among U.S. adolescents aged 13-18<sup>30</sup>. According to this data, an estimated 2.9% of adolescents had bipolar disorder. (Note: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria were used to determine impairment.) Further, the prevalence of bipolar disorder was higher for adolescent females (3.3%) than for adolescent males (2.6%).

### Age and Gender

A total of 163 (16.9%) OKSOC youths and young adults ages 11 to 25 enrolled in OKSOC during the study period received a primary diagnosis of Bipolar Disorder. The largest age group receiving this diagnosis was older adolescents from 16 to 18. Nearly half (47.2%) of OKSOC youths with a primary diagnosis of bipolar disorder were in this age grouping. Fewer young adolescents between

Figure 38. SOC Youths and Young Adults Diagnosed with Bipolar Disorder (N=163): Percent of Females and Males within Age Categories

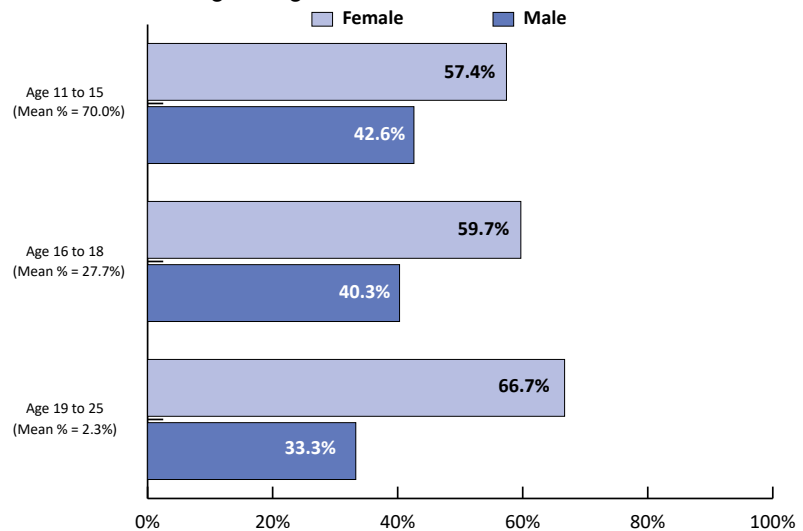
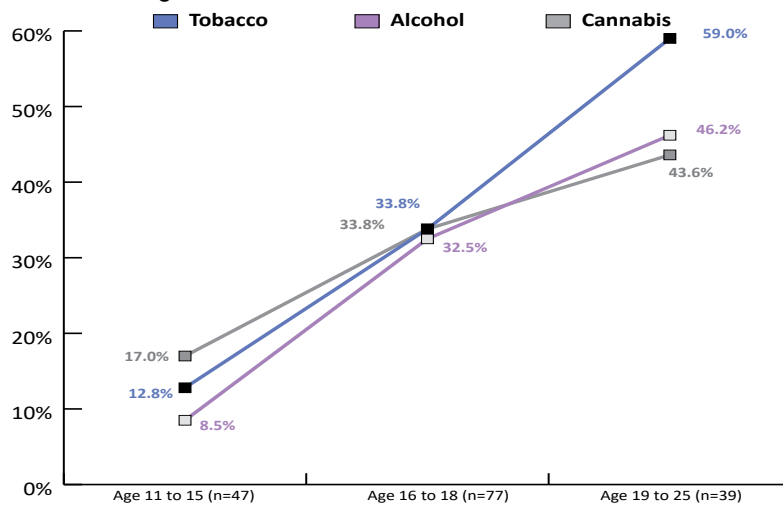


Figure 39. Tobacco, Alcohol, and Cannabis Use by Age Grouping Among SOC Clients with a Bipolar Disorder Diagnosis



11 to 15 received this diagnosis (28.8%) than other disorders examined so far in this narrative (e.g., PTSD, Conduct Disorder, Adjustment Disorders). By contrast, a larger percentage of young adults (23.9%) were reported to have received this diagnosis than most other disorders

examined so far except for depressive disorder.

Again, 77 (47.2%) of OKSOC clients with a diagnosis of Bipolar Disorder (BD) reported using some type of substance at least "A Few Times" within 90 days prior to entering

<sup>29</sup> Ibid 5

<sup>30</sup> Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L, Benjet C, Georgiades K, Swendsen J. Lifetime prevalence of mental disorders in U.S. adolescents: results from the National Comorbidity Survey Replication--Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry*. 2010 Oct;49(10):980-9.

OKSOC. If we break that number down to specific substances, we see that the most frequently used were tobacco, alcohol, and cannabis, all reported by 33.7%, 28.8%, and 31.3% respectively. Smaller percentages (from 2.5% to 7%) reported the use of methamphetamine, sedatives, prescription opioids, prescription stimulants, and hallucinogens.

**Tobacco Use**

Tobacco use accounts for 55 (33.7%) substance-use reports among OKSOC youths and young adults ages 11 to 25 diagnosed with BD. Unlike all previous comparisons of tobacco use in this narrative so far, frequency of use among those diagnosed with bipolar disorder is slightly more likely (56.4%) to be “daily use” than occasional use (i.e., “a few times” or “weekly”) (43.6% overall).

**Alcohol Use**

Alcohol use accounts for 47 (28.8%) reports among OKSOC youths and young adults with a diagnosis of bipolar disorder between the ages of 11 to 25. Nearly all (95.7%) of alcohol use was “occasional use” (i.e., “a few times” or “weekly”) compared to 4.3% who reported “daily” use.

**Cannabis Use**

Cannabis use accounts for 51 (31.3%) substance-use reports among OKSOC youths and young adults ages 11 to 25 diagnosed with BD. Over three-fourths (78.4%) of cannabis use was “occasional use” (i.e., “a few times” or “weekly”) compared to 21.6% of cannabis use reported as “daily.”

Figure 40. Bipolar Disorder Co-Occurring with Tobacco Use Among SOC Youths and Young Adults Ages 11 to 25

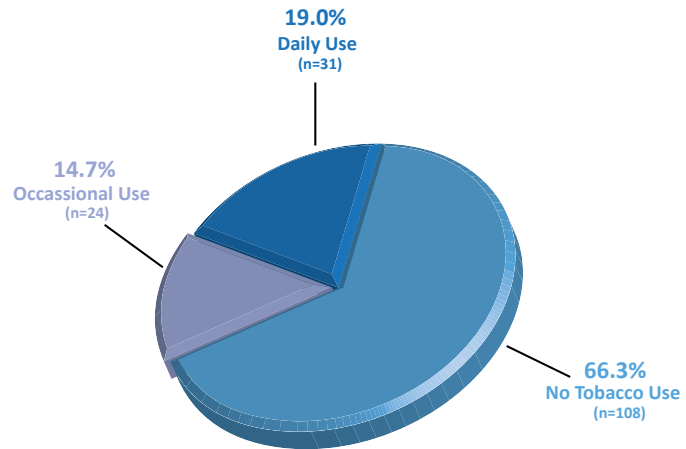


Figure 41. Bipolar Disorder Co-Occurring with Alcohol Among SOC Youths and Young Adults Ages 11 to 25

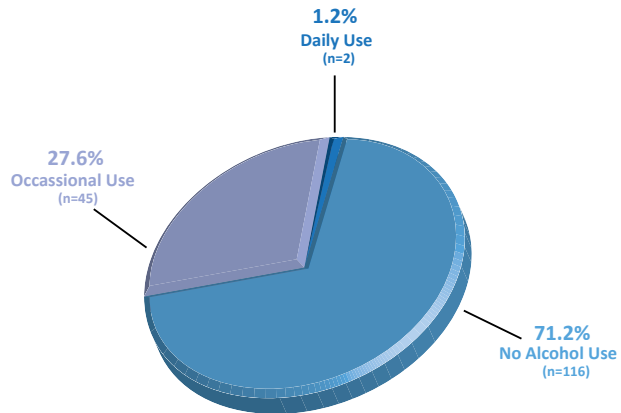
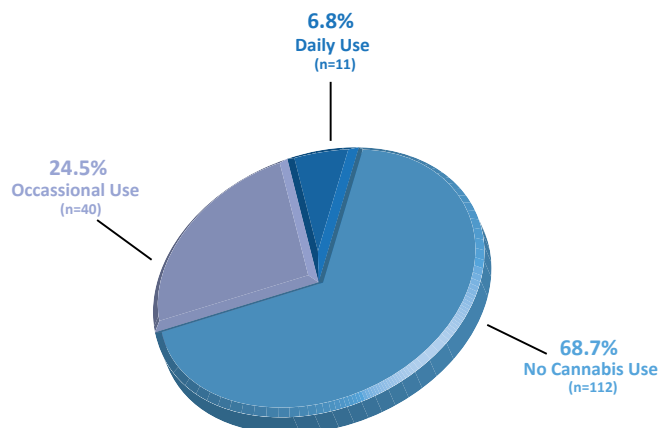


Figure 42. Bipolar Disorder Co-Occurring with Cannabis Use Among SOC Youths and Young Adults Age 11 to 25





# CONCLUSION

## Conclusion

These descriptive data provide insights into how common co-occurring disorders may be among OKSOC youths, what substances are likely to be involved, and the characteristics – age, gender, ethnicity, diagnosis – most often associated with co-occurrence. This knowledge can help OKSOC administrators and site managers to allocate resources efficiently and to target therapeutic and preventive interventions more effectively. The information in this report can inform future research aimed at identifying whether substance-using OKSOC youths respond better or worse to the wraparound approach than do other matched youths and whether these patterns of response vary by program or by youth characteristics.

What do the data tell us about substance use among OKSOC youths?

- Only three (3) of the substances monitored by the OKSOC assessment process – tobacco, alcohol, cannabis – are self-reported by enough youth and young adults to provide meaningful descriptive data.
- Unsurprisingly, measurable substance use does not emerge until middle school age. Extent and frequency of use patterns, for the three substances which merit focus, ratchet up steadily with age.
- Both extent and frequency of use escalates rapidly with age for tobacco. This is the only substance for which daily use ever exceeds 10% of OKSOC youths, with 11.7% of high school aged youth (and much higher percentages of young adults) smoking daily.
- Through high school the extent of alcohol and cannabis use are nearly identical, but frequency of use patterns is quite different, with more youths reporting weekly or daily use of cannabis, while alcohol use remains more casual and occasional. This might be evidence of early (high school) self-medication with cannabis. Alcohol and cannabis use expand after high school, following the same patterns – alcohol increasing primarily in extent of use, cannabis showing more growth in frequency (weekly/daily). This would seem to support the idea that these young adults may be responding to the self-medicative efficacy of cannabis.
- When we look at OKSOC youths and young adults from the perspective of race/ethnicity, only tobacco use shows much between-group variation. Youths and young adults identifying as American Indian or White are somewhat more likely to use tobacco regularly, when compared to Latino/Hispanic and African American youths and young adults. Latino/Hispanic youths and young adults are half as likely as others to report any tobacco use at all.
- When we look more closely at the issue of co-occurrence, by examining substance use in light of the DSM 5 diagnosis identified for each youth/young adult, we find interesting differences:
  - Those diagnosed with oppositional defiant disorder (ODD) – roughly two-thirds of which are male – have the highest substance use rates in high school of the five DSM 5 categories examined in this report. Members of this group reported use at around a 40% rate in high school on each of the substances of focus (tobacco, alcohol, cannabis). This is 8% to 12% higher than the use rates reported by youths/young adults with other diagnoses.
  - A diagnosis of either post-traumatic stress disorder or bipolar disorder – both majority female groups by about a 60/40 split – was associated with the next highest levels of substance use in high school and very steep increases in use from middle school to high school. Bipolar disorder was also associated with the highest overall rate of cannabis use in middle school, 17%, of all groups. Youths and young adults with a bipolar diagnosis were the only ones registering substantial spread of use rates (17% for cannabis down to 8.5% for alcohol) in middle school, though for this group like the others these differences disappeared in high school.
  - The size of the 'young adult' group (ages 25 to 29) is much smaller than the middle- and high-school groups and is recruited through rather different processes, so caution should be used in comparing the characteristics of this group with the adolescent groups. But the use rates for the young adults do show intriguing shifts that are worth pointing out. Across all diagnostic categories (excluding ODD, diagnosis of which ends at 18) tobacco use maintains a rapid increase after high school, sometimes turning up at a steeper angle. Alcohol use also increases after adolescence – for all groups other than adjustment disorders, where there is an actual decline. For cannabis, however, there is a very different trend.



Only the bipolar group shows an uninterrupted increase in cannabis use after high school; all others show an actual decline in the extent of use as young adults. The reasons for this are undoubtedly numerous, and it may simply be an artifact of the availability of alcohol and tobacco – since they are legal – being a larger factor, once school contacts become less reliable. But it could mean that adolescents who use cannabis to self-medicate in school may be inclined to substitute other, more easily acquired substances after leaving. Why (or even if) youths with bipolar disorder react differently is a topic for future research.


What do the data suggest for follow-up and investigation?

- Substance use data are collected every 6 months after

admission. The information in this report argues for using these follow-up datasets for two purposes:

1. To measure progress in reducing substance use for those youths who indicated use at admission; and
  2. To monitor closely the substance use of youths, particularly early adolescents or pre-adolescents, whose DSM 5 diagnosis – PTSD or ODD, for example – indicates elevated risk over time of co-occurring issues.
- For youths reporting consistent substance use, special attention should be paid to other outcome measures in the OKSOC assessment – the Ohio Scales, missed school days, etc. – to see if these measures track differently than those of similar youths without reported use. If significant differences in outcomes are identified, care coordination strategies

- could be adjusted accordingly. It would be useful to do comparisons between use patterns identified among OKSOC youths and those reported using other instruments in other settings, such as the National Survey on Drug Use and Health (NSDUH). Over the 2010-15 period the NSDUH has shown drug use by youths (12-17) in Oklahoma as generally in-line with or slightly below national rates for alcohol and cannabis, but consistently higher for tobacco. Since our OKSOC population is distinctive from Oklahoma youths in general, in the sense of being identified as exhibiting serious mental illness (SMI), comparison to general surveys would help us design strategies for our youth and young adults and would also challenge us to examine the expectations we bring to our work with their families.

The background of the entire page is a light blue color with a complex pattern of overlapping hexagons in various shades of blue and grey. Some hexagons are solid, while others are dashed outlines. White arrows of various sizes and directions are scattered throughout the pattern, creating a sense of movement and connectivity. A central white hexagon is highlighted with a bright glow.

The Educational Training, Evaluation, Assessment, and Measurement (E-TEAM) Department of the University of Oklahoma is a full service department with senior researchers, data analysts, technical writers, and data base developers and managers representing decades of experience in all phases of research data processing. E-TEAM has served as the evaluator for Oklahoma Systems of Care since 2002, implementing national and state evaluations. Belinda Biscoe, Ph.D., Interim Vice President, University Outreach at the University of Oklahoma, is the Director of E-TEAM. Geneva Strech, M.Ed., M.H.R., is the lead evaluator for Oklahoma Systems of Care. For more information please visit <https://systemsofcare.ou.edu/resources>.

**eteam**

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