Findings from the Adolescent Kentucky Treatment Outcome Study (AKTOS)

2022 Report

Project Acknowledgments

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Executive Summary

This report summarizes client outcomes from a statewide evaluation of publicly funded substance abuse treatment programs for adolescents (i.e., under 18 years old) through the Community Mental Health Centers in Kentucky. The goal of the Adolescent Kentucky Treatment Outcome Study (AKTOS) is to examine client satisfaction and outcomes for specific targeted factors including: (1) substance use including severity of substance use, (2) mental health and stress, (3) school attendance and performance, and employment, (4) caregiver involvement and living situation, (5) involvement with the justice system, and (6) recovery support. Report findings support continued funding of substance abuse treatment programs, which improve the lives of clients.

State-funded substance abuse treatment programs in Kentucky are required by Kentucky Revised Statute (222.465) to collect data on substance abuse clients in a client outcome study. AKTOS is an important part of the Kentucky Division of Behavioral Health's performance-based measurement of treatment outcomes in Kentucky's communities. Data collected in the study includes an evidence-based assessment administered by substance abuse treatment staff at treatment intake (n = 300).

This report describes the sample of adolescents in two main ways: (1) providing characteristics of the 300 adolescents who completed an intake interview in FY 2019 and FY 2020, and (2) the presentation of outcomes for a subsample of 52 youth who completed a 12-month follow-up telephone interview conducted by the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) in FY 2020 and FY 2021. Of the adolescents who agreed to be contacted and were eligible for the follow-up survey (n = 93), the CDAR research team completed follow-up surveys with 52 individuals—a follow-up rate of 55.9%.

Results show that most adolescent clients were satisfied with the treatment services they received. The majority of clients (74.0%) gave a highly positive rating between 8 and 10 of their satisfaction with the treatment program, with 1 representing the worst treatment and 10 representing the best treatment. The majority of clients agreed with the following statements about their treatment episode: they had input into their treatment goals, plans, how their progress; their expectations and hopes for treatment and recovery were met; they felt the program staff cared about them and their treatment progress; the program staff believed in them and believed that treatment would work for them; when clients told staff personal things they felt listened to and heard by their counselor/program staff; they worked on and talked about things that were most important to the clients; they had a connection with a counselor or staff person during treatment; the treatment approach and method was a good fit for the client; and the length of the program was just right.

At follow-up, there were significant reductions in use of illegal drugs from intake (92.3%) to follow-up (26.9%).

Cannabis/marijuana was the most commonly used class of substance, with a 67% decrease from intake to follow-up for the past 12 months. Additionally, there was significant reduction in the percent of adolescents who reported using drug classes other than cannabis/marijuana: from 38.5% at intake to 11.5% at follow-up. Polydrug use also decreased from intake to follow-up. The percent of adolescents who reported alcohol and smokeless tobacco use decreased from intake to follow-up. Furthermore, at intake, 40.4% met criteria for no substance use disorder, while at follow-up, the majority (84.6%) met criteria for no SUD.

The percent of youth who reported suicide ideation and/or attempts decreased from 30.8% at intake to 11.5% at follow-up. Adolescents' self-reported ratings of stress decreased significantly from intake to follow-up.

Youth's academic performance improved while the number of individuals with school disciplinary action decreased from intake to follow-up. Among adolescents who were enrolled in school at intake and follow-up, the mean Grade Point Average (GPA) increased significantly from 2.0 at intake to 2.9 at follow-up. Self-reported school absences for any reason in the past 3 months decreased significantly from intake (13.8) to follow-up (2.4). The percent of youth enrolled in school in the past 3 months who reported missing school because they were in detention, under suspension, or expulsion decreased significantly from 41.2% at intake to 8.8% at follow-up.

Because 18 is the typical age at which individuals graduate from high school, education status at follow-up was examined for the 18 individuals who were 18 years old or older at follow-up. More than half of individuals who were at least 18 years old at follow-up (n = 18) had obtained a high school diploma or GED (61.1%), and 33.3% were enrolled in secondary school. None of the followed-up individuals who were 18 years old at follow-up had less than a high school diploma or GED and were not enrolled in school (i.e., dropout). The class of dropouts would suggest a need for far more intensive school-based programs to retain and successfully intervene with at-risk youth. At follow-up, two-thirds of individuals who had less than a high school diploma or GED (66.7%) reported they were unemployed and two-thirds of individuals with a high school diploma or GED (66.7%) were also unemployed.

The majority of youth reported their primary caregiver(s) was their biological parent(s) at intake (76.0%) and follow-up (60.0%). Less than one-fourth of individuals reported their caregiver was other family (including kinship foster care and adoptive parents). None of the adolescents in the follow-up sample reported that their caregiver was DCBS or foster parents. Also, at intake, none of the individuals reported that they did not have a primary caregiver, but at follow-up, 16.0% reported they did not have a caregiver. At intake and follow-up, adolescents rated their primary caregiver's involvement in their lives as high, on average, with a significant increase at follow-up. With regard to their living situation in the past 12 months, significantly fewer individuals reported they had lived in an institutional facility (e.g., juvenile detention, residential treatment, group home) at follow-up (12.2%) than at intake (32.7%). Youth's involvement with the justice system decreased from intake to follow-up. The percent of youth who reported being arrested and charged with any type of offense, the percent of youth who reported being in detention or incarcerated, and the number of youths

Overall, Kentucky adolescent clients made significant strides in all of the targeted areas

REPORTED ANY ILLEGAL DRUG USE***

92% at intake | **27%** at follow-up

REPORTED SUICIDAL IDEATION AND/OR ATTEMPTS**

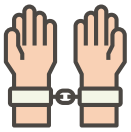
31% at intake | **12%** at follow-up

REPORTED AVERAGE GPA**

2.0 at intake | **2.9** at follow-up

AVERAGE RATING OF CAREGIVER INVOLVEMENT***
(MIN. SCORE = 5, MAX. SCORE = 17)

13.4 at intake | **14.9** at follow-up



REPORTED AN ARREST**

39% at intake | **14%** at follow-up

who were under supervision of the justice system decreased significantly.

Attendance at mutual help recovery meetings is not a major source of recovery support for adolescents in the AKTOS sample. Nonetheless, adolescents' rating of their overall satisfaction with the level of recovery support in their lives.

Consistent with the perspective that recovery is a multidimensional construct, encompassing several dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives. At intake, about 15% of adolescents were classified as having better functioning, while at follow-up, 61.5% were classified as having better functioning, which was an increase of 46.1%.

Overall, results from this outcome evaluation study provide evidence that publicly-funded substance abuse treatment for adolescents facilitated positive changes for the vast majority of clients in a variety of areas including decreased substance use, decreased severity of substance use disorders, decreased suicidality and stress, improved school performance and decreased disciplinary issues at school, improved relationships with caregivers, reduced residence in institutional settings, and decreases in involvement in the justice system. Results also suggest clients appreciate their experiences in the community mental health center (CMHC) substance abuse treatment programs. Investment in treatment for today's substance using adolescents may translate into not only avoidance of substantial health care, mental health care, public benefit, and criminal justice system costs, but may also lead to gains in education, employment, health, and other less tangible qualities (e.g., social capabilities, parenting, quality of life) of adolescents who grow into tomorrow's adults.

Introduction

Kentucky's Community Mental Health Centers (CMHC) provide substance abuse treatment (including outpatient, intensive outpatient, residential, and case management) to adolescents (ages 12 - 17 years old). The Commonwealth of Kentucky funds substance abuse treatment programs using both federal block grants and state general fund dollars. To measure treatment effectiveness, the Division of Behavioral Health within the Department for Behavioral Health, Developmental and Intellectual Disabilities (DBHDID) funds the Adolescent Kentucky Treatment Outcome Study (AKTOS).

The goal of AKTOS is to provide a biannual outcome evaluation for the DBHDID in partnership with the Behavioral Health Outcome Studies team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR).

This report presents the results of the outcome evaluation in ten sections:

Section 1: Overview and Description of Adolescent Clients in Substance Abuse Treatment in Kentucky. This section briefly describes publicly-funded substance abuse treatment in Kentucky and the Adolescent Kentucky Treatment Outcome Study (AKTOS) including how clients are selected into the outcome evaluation. In addition, this section describes characteristics of clients who participated in publicly-funded substance abuse treatment in Kentucky's Community Mental Health Centers in FY 2019 and 2020 as well as clients who completed a 12-month follow-up interview.

Section 2: Substance Use. This section examines substance use changes which include use of any illegal drugs or alcohol, and then separately for illegal drugs, alcohol, and tobacco at intake and follow-up. In addition to examining the overall use of illegal drugs, several specific categories of illegal drugs were examined including: (a) cannabis/marijuana, (b) drugs other than cannabis/marijuana. Analysis is presented in detail for study participants who were not in a controlled environment for the entire period of 12 months and/or 30 days before entering treatment. Additionally, the average number of months individuals reported using each substance are presented for those individuals who reported any use at each period (i.e., intake and follow-up). Finally, change in polydrug use and DSM-5 substance use disorder severity based on symptom criteria from intake to follow-up is presented.

Section 3: Mental Health. This section examines change from pre-program to 12-month follow-up on seven mental health measures: (1) internalizing problems, (2) externalizing problems, (3) attention problems, (4) suicidality, (5) disordered eating, and (6) stress and coping. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients.

Section 4: Education and Employment. This section examines changes in education and employment from pre-program to 12-month follow-up. Specifically, this section presents data on: (1) enrollment in school, (2) grade point average, (3) school absences for any reason and specifically for disciplinary reasons, (4) detention, suspension, and expulsion, (5) satisfaction with school situation, (6) education status for individuals 18 years old and older at follow-up, and (7) employment status among those who were attending school and among those who

were not attending school.

Section 5: Caregiver Involvement and Living Situation. This section of target factors examines the adolescent's perception of their primary caregiver's involvement in their life and the adolescent's living situation in two periods: pre-program and 12-month follow-up. Specifically, clients were asked about: (1) their primary caregiver, (2) their primary caregiver's involvement in their life, and (3) the types of residences they had lived in the past 12 months (i.e., parents' home, other relatives' home, foster care, institutional facility, on their own).

Section 6: Justice System Involvement. This section describes change in client involvement with the justice system during the 12-month period before entering treatment and during the 12-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest, (2) types of criminal offenses (status offenses vs. public offenses), (3) any detention or incarceration; (4) the number of nights in detention or incarceration; and (5) supervision by the justice system.

Section 7: Recovery Supports. This section focuses on three main changes from pre-program to 12-month follow-up in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) the number of people the participant said they could count on for recovery support, and (3) satisfaction with their recovery support.

Section 8: Multidimensional Functioning. This section focuses on change in multidimensional functioning for the 2022 AKTOS follow-up sample.

Section 9: Client Satisfaction with Substance Abuse Treatment Programs. This section describes three aspects of client satisfaction: (1) client involvement in the program and how they left, (2) recommendation to the program, and (3) overall client satisfaction and client ratings of program experiences.

Section 10: Summary and Conclusions. This section presents, summarizes, and discusses the implications of the major findings from the AKTOS Follow-Up 2022 Report.

Section 1. Overview and Description of AKTOS Clients

This section briefly describes publicly-funded substance abuse treatment in Kentucky and the Adolescent Kentucky Treatment Outcome Study (AKTOS) including how clients are selected into the outcome evaluation. In addition, this section describes characteristics of clients who participated in publicly-funded substance abuse treatment in Kentucky's Community Mental Health Centers in FY 2019 and 2020 as well as clients who completed a 12-month follow-up interview.

Publicly Funded Substance Abuse Treatment for Adolescents

Adolescence is a critical period of vulnerability to substance use. The neurodevelopment of the brain renders adolescents more vulnerable to addiction than adults.[1] Furthermore, the effects of substance use are more damaging to adolescents' brains than to adults' brains in many ways, and in some cases may have long-lasting effects.[2, 3, 4, 5] Early use of alcohol and drugs is a robust predictor of substance use disorders in adulthood.[6, 7] Even though the majority of adolescents who experiment with drug use curtail their use in young adulthood, most adults with a substance use disorder begin their substance use in adolescence.[8] Moreover, symptomatic substance use disorder in adolescence is associated with SUD in middle age. For example, a longitudinal research has found that most adolescents with severe substance use disorder (SUD) at age 18 continued to have symptomatic substance use disorder at age 50.[9] Thus, early and effective treatment for substance abuse among adolescents is a high priority for public health.

Kentucky's sociocultural context includes some of the highest rates in the United States

[1] Volkow, N., & Li, T.K. (2004). Drug addiction: The neurobiology of behavior gone awry. *Neuroscience, 5*, 963-970.

[2] Clark, D., Thatcher, D., & Tapert, S. (2008). Alcohol, psychological dysregulation, and adolescent brain development. *Alcohol Clinical and Experimental Research, 32*(3), 375-385.

[3] Crews, F., He, J., & Hodge, C. (2007). Adolescent cortical development: A critical period of vulnerability for addiction. *Pharmacology, Biochemistry and Behavior, 86*(2), 189-199.

[4] National Center on Addiction and Substance Abuse [CASA]. (2009). *Shoveling up II: The impact of substance abuse on federal, state and local budgets.* New York: The national Center on Addiction and Substance abuse at Columbia University.

[5] Squeglia, L. M., Jacobus, J., & Tapert, S. F. (2009). The influence of substance use on adolescent brain development. *Clinical EEG Neuroscience, 40*(1), 31-38.

[6] Grant, B. F., & Dawson, D. A. (1997). Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: Results from the National Longitudinal Alcohol Epidemiologic Survey. Journal of Substance Abuse, 9, 103-110.

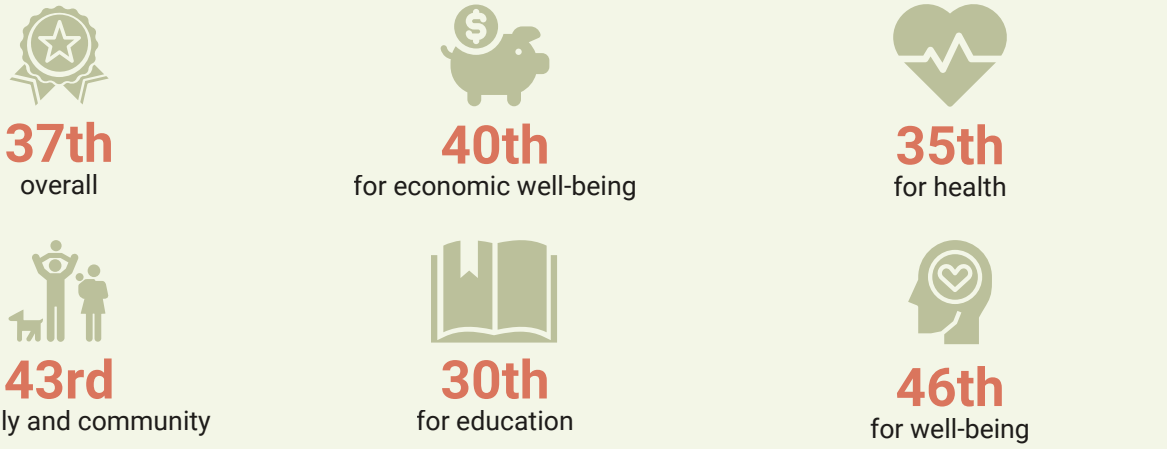
[7] Lopez-Quintero, C., Perez de los Cobos, J., Hasin, D.S., Okuda, M., Wang, S., Grant, B.F., & Blanco, C. (2011). Probability and predictors of transition from first use to dependence on nicotine, alcohol, cannabis, and cocaine: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Drug & Alcohol Dependence, 115*(1-2), 120-130. DOI: 10.1016/j.drugalcdep.2010-11-004.

[8] King, K.M., & Chassin, L. (2007). A prospective study of the effects of age of initiation of alcohol and drug use on young adult substance dependence. *Journal of Studies on Alcohol and Drugs, 68*(2), 256-265.

[9] McCabe, S.E., Schulenberg, J.E., Schepis, T.S., McCabe, V.V., & Veliz, P.T. (2022). Longitudinal analysis of substance use disorder symptom severity at age 18 years and substance use disorder in adulthood. JAMA Network Open. DOI: 10.1001/jamanetworkopen.2022.5324

for teen smoking, teen births, and obesity in 10- to 17-year-old individuals.[10, 11, 12] In 2021, Kentucky was ranked 46th in the U.S. for tobacco use among youth.[13] In 2019, 26.1% of youth in Kentucky reported current use of electronic vapor products. Drug overdose deaths increased by more than 50% between 2019 and 2020 in Kentucky and in 2020, Kentucky had the second highest overdose death rate (age-adjusted) in the U.S. at 49.2 per 100,000 total population.[14] In 2019, Kentucky had the highest rate for child victimization in the U.S. with 20.1% of children.[15] In 2020, Kentucky ranked 32nd in the U.S. for health rankings, in which states are ranked across 34 measures of social and economic factors, physical environment, clinical care, health behaviors, and health outcomes. The Annie E. Casey KIDS COUNT profile in 2021 ranked Kentucky as 37th overall, with the state's economic well-being as 40th, health as 35th, family and community as 43rd, and education as 30th as they relate to children.[16] In fact, in 2020, Kentucky ranked as 46th of the states for well-being, based on an index of well-being that evaluates health risk across 10 domains including five individual indicators of well-being: physical, financial, social, community, and purpose along with five social determinants of health: healthcare access, food access, resource access, housing and transportation, and economic security.[17]

Kentucky National Rankings as It Relates to Children



[10] Centers for Disease Control and Prevention (CDC). *National Vital Statistics Reports (NVSR), Vol. 70, No. 2: Births: Final Data for 2019*, March 23, 2021.

[11] Centers for Disease Control and Prevention. (2022). High School Youth Risk Behavior Survey, 2019 results, Kentucky.

[12] United Health Foundation. (2022). America's Health Rankings, Kentucky Summary 2021. Retrieved March 18, 2022 from https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/child_maltreatment/state/KY

[13] United Health Foundation. (2022). America's Health Rankings, Kentucky Summary 2021. Retrieved March 18, 2022 from https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/child_maltreatment/state/KY.

[14] Centers on Disease Control and Prevention, National Center for Health Statistics. (2022). Drug overdose mortality by state. Retrieved on March 18, 2022 from https://www.cdc.gov/nchs/pressroom/sosmap/drug_poisoning_mortality/drug_poisoning.htm.

[15] U.S. Department of Health & Human Services, Children's Bureau. (2022). Child maltreatment report.

[16] Annie E. Casey Foundation. (2021). 2020 KIDS COUNT Profile, Kentucky. Retrieved on March 18, 2022 from https://assets.aecf.org/m/databook/2020KC_profile_KY.pdf.

[17] Sharecare. (2021). *Community well-being index: 2020 state rankings report.* Retrieved on March 18, 2022 from https://wellbeingindex.sharecare.com/wp-content/uploads/2021/05/Sharecare-Community-Well-Being-Index_2020-State-Rankings-vFINAL.pdf

The goal of AKTOS is to provide a biannual outcome evaluation of Community Mental Health Centers' substance abuse treatment programs for adolescents to the Department for Behavioral Health, Developmental and Intellectual Disabilities in partnership with the Behavioral Health Outcome Studies team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR). Specifically, the outcome evaluation examines client satisfaction and outcomes for several targeted factors including: (1) substance use including severity of substance use, (2) mental health, (3) school attendance and performance, and employment, (4) relationship with caregiver and living situation, (5) justice system involvement, and (6) recovery support. Data are self-reported by clients at treatment intake and 12-month follow-up using evidence-based assessments.[18]

This report describes the sample of adolescents in two main ways: (1) providing characteristics of the 300 adolescents who completed an intake interview in FY 2019 and FY 2020, and (2) the presentation of outcomes for 52 youth who completed an intake interview in FY 2019 and FY 2020 and a 12-month follow-up telephone interview in FY 2020 and FY 2021.

AKTOS includes a face-to-face intake interview conducted by treatment program staff using an evidence-based assessment to measure targeted factors. In FY 2019 and FY 2020, 300 unduplicated adolescent clients completed an intake survey.[19] At the completion of the intake interview, treatment staff informed clients about the opportunity to participate in the AKTOS follow-up telephone interview and asked if they were interested in participating. A little more than one-third of clients (36.7%, n = 110) gave consent to be contacted for the follow-up interview.[20] Then the follow-up sample was comprised of 105 who agreed to be contacted for the follow-up interview and gave the minimum amount of locator information.

Description of Adolescent Clients Who Completed an Intake Interview

Demographics

Table 1.1 shows the majority of clients with an intake survey submitted in FY 2019 and 2020 were male (71.3%), White (80.7%), and were 16 or 17 years old at intake (59.7%). Fewer than 1 in 10 clients reported they were multiracial, 5.7% were Hispanic, about 1 in 20 clients reported they were African American/Black (4.7%), and 0.3% were other races/ethnicities. Clients were, on average, 15.6 years old, ranging from 12 to 17 years old. Nearly one half of clients (48.7%) reported they were referred to treatment by the court (e.g., judge, court designated worker, probation officer), 16.7% reported they were referred to treatment by their school personnel, 12.7% reported they entered treatment on their own (or their families), and 10.7% reported they were referred to treatment by adult or child protective services.

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[18] Cole, J., Logan, T., Miller, J., & Scrivner, A. (2020). *Evidence base for the Adolescent Kentucky Treatment Outcome Study (AKTOS): Assessment and Methods.* Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research, Behavioral Health Outcome Studies.

[19] When a client had more than one intake survey in the two fiscal years included in this report, the survey with the earliest submission date was kept in the data file and the other intake surveys were deleted so that each client was represented once and only once in the data set

[20] The percent of adolescents who agreed to be contacted for the follow-up survey varied greatly by region.

TABLE 1.1. DEMOGRAPHICS FOR ALL AKTOS CLIENTS AT INTAKE (N = 300)

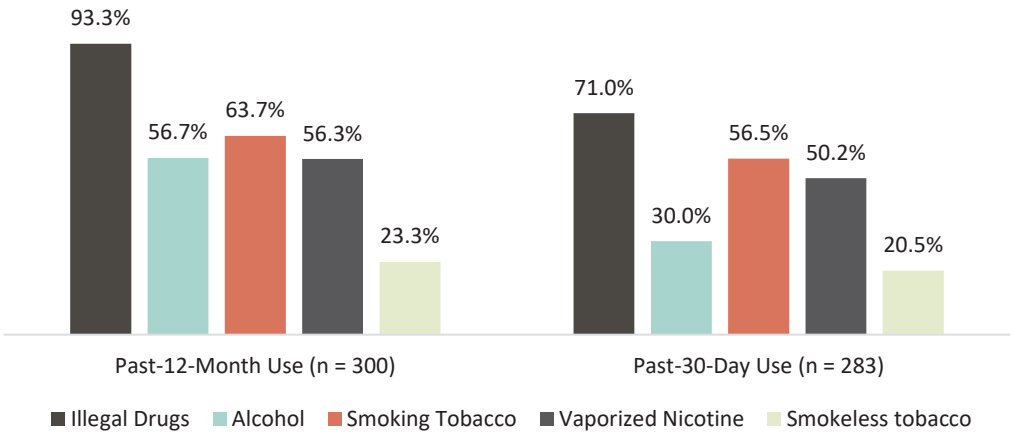
Age	15.6 years *(range of 12-17)*
Gender	
Female	28.7%
Male	71.3%
Transgender	0.0%
Race	
White	80.7%
African American	4.7%
Hispanic	5.7%
Other race/ethnicity (including Asian, American Indian)	0.3%
Multiracial	8.7%
Referred by	
The court (court designated worker, judge)	48.7%
School personnel	16.7%
Self	12.7%
Other sources	11.2%
Child or Adult Protective Services	10.7%

Substance Use

> ***"When I was in there I was going down a bad road, they gave me a different state of mind."***
>
> - AKTOS FOLLOW-UP CLIENT

The vast majority of adolescents who completed an intake survey (93.3%) reported using illegal drugs, 56.7% reported using alcohol, 63.7% reported smoking tobacco, 56.3% reported using vaporized nicotine, and 23.3% reported using smokeless tobacco in the 12 months before intake. Because being in a controlled environment decreases opportunities for substance use, adolescents who were in a controlled environment all 30 days before entering treatment (n = 17) are not included in the analysis of substance use in the 30 days before entering treatment. Of the 283 adolescents who were not in a controlled environment all 30 days, 71.0% reported using illegal drugs, 30.0% reported using alcohol, 56.5% reported smoking tobacco, 50.2% reported using vaporized nicotine, and 20.5% reported using smokeless tobacco in the 30 days before entering treatment.

FIGUE 1.1. ALCOHOL AND DRUG USE AMONG NOT IN A CONTROLLED ENVIRONMENT ALL 365 DAYS (N = 300) OR 30 DAYS (N = 283) BEFORE PROGRAM ENTRY



The drug classes reported by the greatest number of adolescents in the 12 months before entering treatment were marijuana (92.7%), stimulants (25.0%; methamphetamine, prescription stimulants), prescription opioids (23.0%), tranquilizers/ benzodiazepines/sedatives (22.0%), hallucinogens (12.3%), and synthetic/designer drugs (9.3%; i.e., bath salts, synthetic marijuana).

Figure 1.2 shows the percent of individuals who used no alcohol and or illegal drugs (4.3%), alcohol only (2.3%), illegal drugs only (39.0%), and both alcohol and illegal drugs (54.3%) in the 12 months before entering treatment.

FIGURE 1.2. ALCOHOL AND ILLEGAL DRUG USE IN THE 12 MONTHS BEFORE TREATMENT[21]

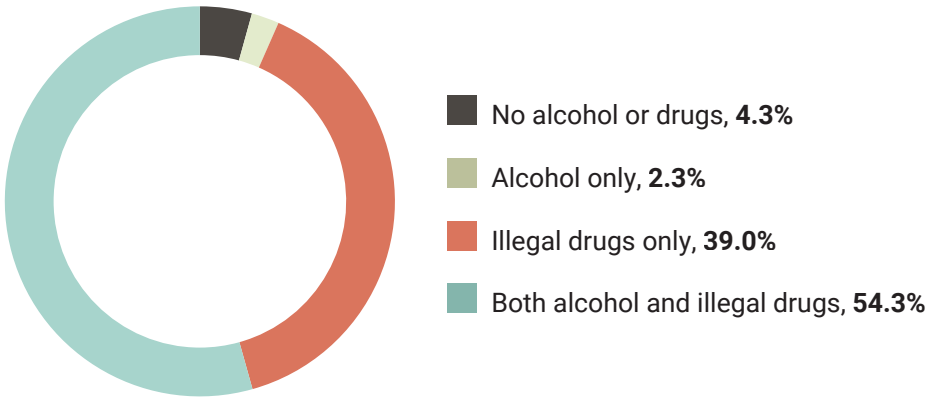
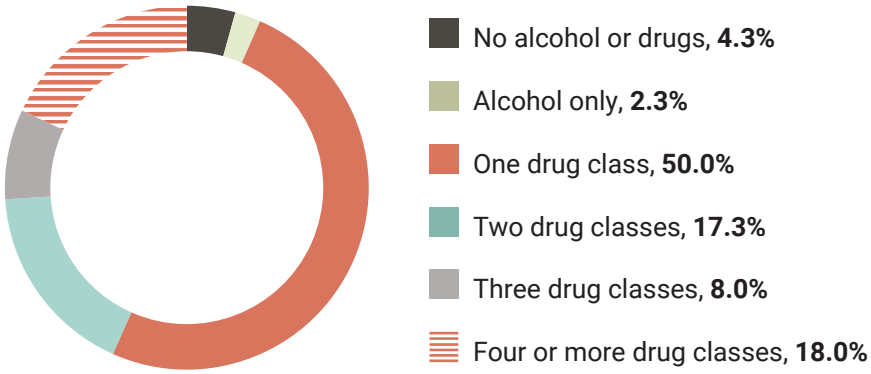


Figure 1.3 shows the percent of individuals who used no alcohol and or illegal drugs (4.3%), alcohol only (2.3%), one illegal drug class only (50.0%), two drug classes (17.3%), three drug classes (8.0%), and four or more drug classes (18.0%).

[21] The broad drug classes examined were (1) Marijuana/cannabis, (2) Opioids other than heroin, (3) CNS depressants, (4) Cocaine and stimulants, and (5) Other drugs (hallucinogens, inhalants, synthetic drugs).

FIGURE 1.3. POLYDRUG USE IN THE 12 MONTHS BEFORE TREATMENT[22]



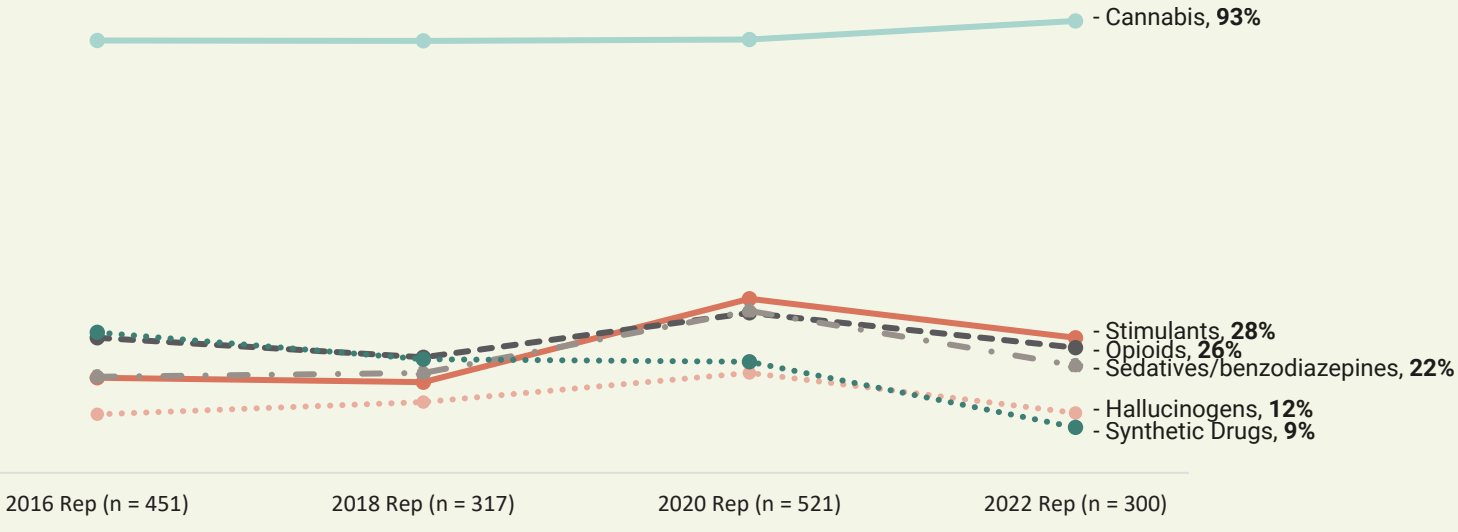
Among the 150 clients who reported using only one illegal drug class in the 12 months before entering treatment, all but one (n = 149) reported sole drug class they used was cannabis/marijuana. In other words, among the 300 adolescents clients who completed an intake interview, 49.7% reported the only illegal drug they used was cannabis/marijuana.

TREND REPORT: TRENDS IN DRUG USE

Over the years, cannabis/marijuana is, by far, the most frequently reported illegal drug adolescents report having used in the 12 months before entering treatment. Synthetic drugs was the second most frequently reported drug class in the 2016 report, and the least frequently reported drug class in this report. Stimulant use has increased in the 2020 and 2022 reports.

FIGURE 1.4. PERCENT OF ALL CLIENTS WITH A COMPLETED INTAKE SURVEY REPORTING CANNABIS, STIMULANT, NON-PRESCRIBED USE OF PRESCRIPTION OPIOIDS, NON-PRESCRIBED USE OF SEDATIVES/ BENZODIAZEPINES N THE 12 MONTHS BEFORE ENTERING TREATMENT AT THE CMHC (n = 1,589)[23]

Due to the proximity of the trends, percent is reported for the current report year only

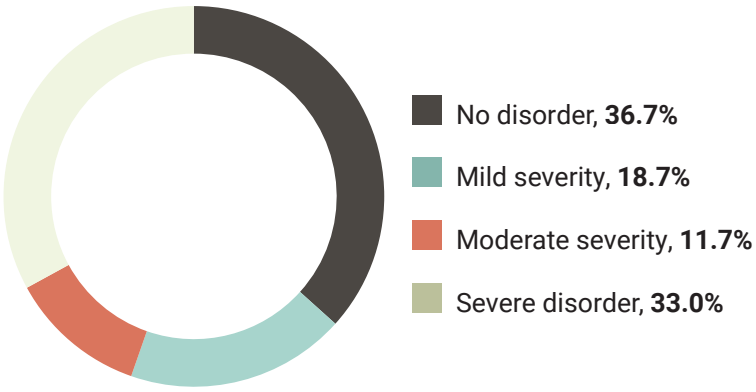


[22] The drug classes examined were (1) Marijuana/cannabis, (2) Prescription opioids, (3) Buprenorphine, (4) Methadone, (5) Heroin, (6) Tranquilizers/sedatives/benzodiazepines, (7) Stimulants, (8) Cocaine, (9) Hallucinogens, (10) Inhalants, (11) Synthetic drugs, and (12) Barbiturates.

[23] Clients who reported being in a controlled environment all 365 days before entering treatment are not included in this analysis.

One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met any of the 11 symptoms included in the DSM-5 criteria for diagnosing substance use disorder (SUD) in the past 12 months.[24] The DSM-5 substance use disorder diagnosis has four levels of severity which were used to classify severity groups in this study: (1) no SUD (0 or 1 criterion met), (2) mild SUD (2 or 3 criteria met), (3) moderate SUD (4 or 5 criteria met), and (4) severe disorder (6 or more criteria met). Client self-reports of DSM-5 criteria suggest, but do not diagnose, a substance use disorder. More than one-third of adolescents met criteria for no substance use disorder (SUD) at intake, while one-third (33.0%) met criteria for severe SUD (see Figure 1.5).

FIGURE 1.5. SEVERITY OF SUBSTANCE USE DISORDER IN THE PAST 12 MONTHS AT INTAKE (N = 300)



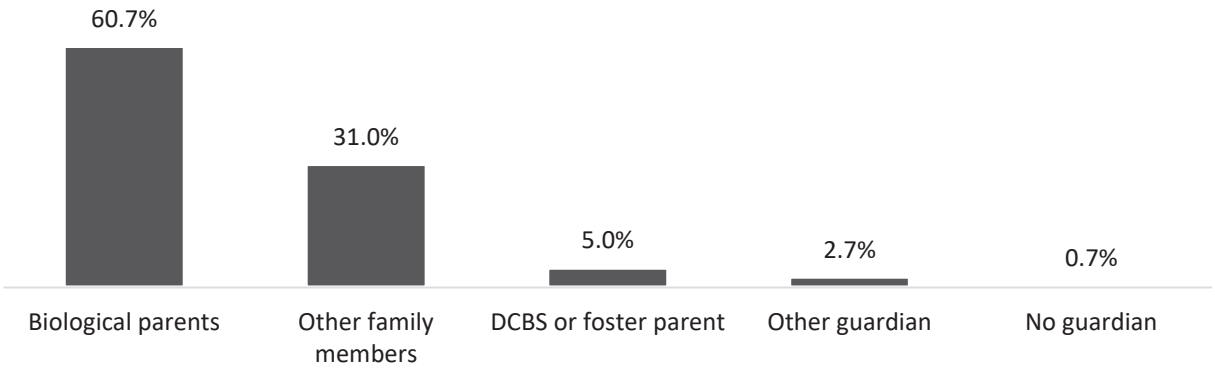
A little more than one-fourth of clients reported they had been in substance abuse treatment in the past (28.0%).

Caregiver and Living Situation

The vast majority of adolescents reported their current caregiver was a family member: their biological parents (60.7%), followed by other family members including grandparents, kinship care, adoptive parents (31.0%). One in 20 clients reported their primary caregiver was a foster parent or DCBS (5.0%), and 2.7% reported other guardian (such as ex-partner of parent, family friend). A very small percentage of clients (0.7%) reported they had no caregiver (i.e., emancipated minor; see Figure 1.6).

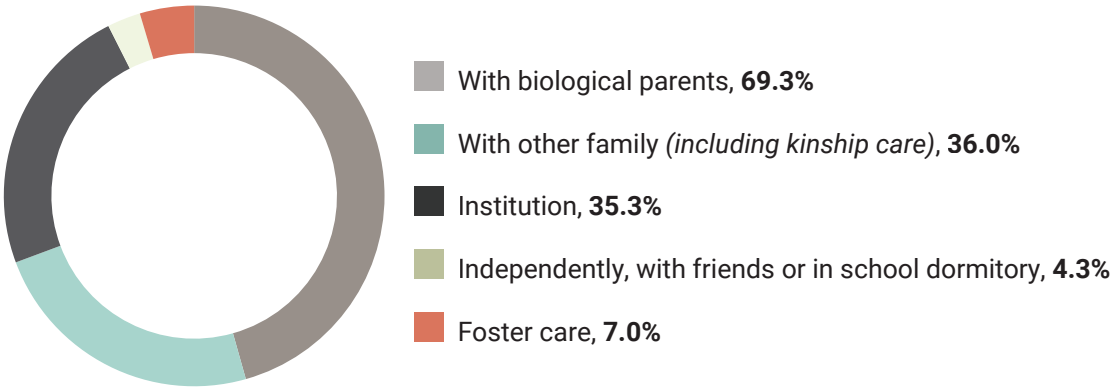
[24] The DSM-5 diagnostic criteria for substance use disorders included in the AKTOS intake and follow-up interviews are similar to the criteria for DSM-IV, which has evidence of excellent test-retest reliability and validity. However, the DSM-5 eliminates the distinction between substance abuse and dependence, substituting severity ranking instead. In addition, the DSM-5 no longer includes the criterion about legal problems arising from substance use but adds a new criterion about craving and compulsion to use.

FIGURE 1.6. CURRENT CAREGIVER AT INTAKE (N = 300)



The majority of adolescents reported they lived at home with their biological parents (69.3%; see Figure 1.7). Smaller percentages reported they lived with other family members in the 12 months before intake (36.0%), in an institution (35.3%; e.g., group home, residential treatment, or juvenile detention), independently (4.3%; including on their own, with peer roommates, or in a school dormitory), and in foster care (7.0%; i.e., non-kinship care).

FIGURE 1.7. USUAL LIVING ARRANGEMENT IN THE PAST 12 MONTHS AT INTAKE (N = 300)



Mental Health

Three subscales are included in the PSC-17: Attention Problems (i.e., attention deficits and hyperactivity), Internalizing Problems (i.e., depression and anxiety symptoms), and Externalizing Problems (i.e., conduct problems and aggressive behavior).

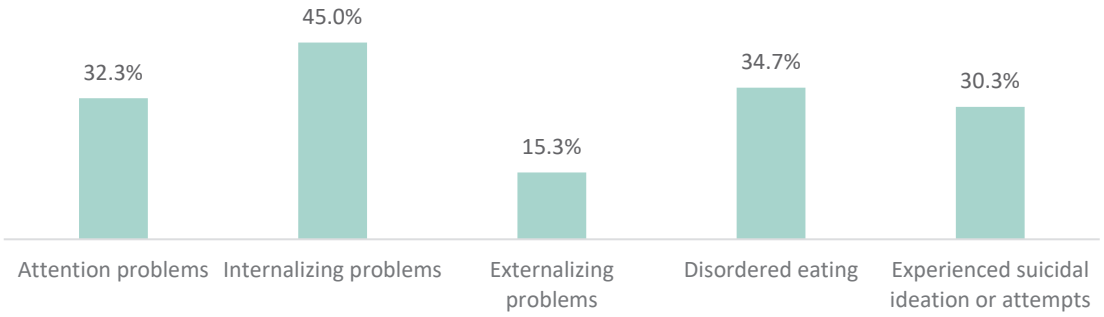
Two other mental health domains were measured in the assessment: disordered eating and suicide ideation/attempts. First, three items from the SCOFF Questionnaire, a screening for eating disorders, were included in the assessment: (1) Do you make yourself sick because you feel uncomfortably full? (2) Have you recently lost more than 14 lbs. in a three-month period? And (3) Do you believe yourself to be fat when others say you are too thin?[25] Response options were No or Yes. An answer of "Yes" to any of the items was classified as an indication

[25] Luck, A. J., Morgan, J. F., Reid, F., O'Brien, A., Brunton, J., Price, C., Perry, L., Lacey, J. H. (2002). The SCOFF questionnaire and clinical interview for eating disorders in general practice: Comparative study. *British Medical Journal, 325* (7367), 755-756.

of disordered eating. Second, clients were asked if they had thoughts of suicide or had attempted suicide in the 12 months before entering treatment. These two items were taken from the psychiatric domain of the Teen ASI.[26] An affirmative response to either question was classified as suicide ideation/attempts.

Figure 1.8 shows that 32.3% of adolescents had a score of 7 or higher (on a scale of 0 to 10) indicating significant impairments in attention and 45.0% of adolescents scored 5 or higher (on a scale of 0 to 10) for internalizing problems. On a scale of 0 to 14, 15.3% of clients had a score of 7 of higher for significant impairments from conduct problems indicating externalizing problems. About 35% of clients screen positive for disordered eating and 30.3% of adolescents reported suicidal ideation and/or attempts in the past 12 months at intake.

FIGURE 1.8 MENTAL HEALTH PROBLEMS IN THE PAST 12 MONTHS AT INTAKE (N = 300)



Adverse Childhood Experiences

Epidemiological studies have found that individuals who experience chronic childhood adversity have a greater likelihood of abusing alcohol and drugs as well as having other psychiatric disorders.[27] Adverse childhood experiences, defined as abuse and household dysfunction, are associated with increased risk of many health, mental health, and social problems in adulthood.[28] In the Adverse Childhood Experiences Study (ACES), which surveyed over 17,000 adults who were members of a health maintenance organization (HMO), the questionnaire asked about 10 major categories of adverse childhood experiences: (a) three types of abuse (e.g., emotional maltreatment, physical maltreatment, and sexual abuse, (b) two types of neglect (e.g., emotional neglect, physical neglect), and (c) five types of household dysfunction (e.g., parents living separately, witnessing partner violence victimization of a parent, a household member who abused alcohol or used illegal drugs, a household member with mental illness or had attempted suicide, a household member who was incarcerated).[29]

[26] Kaminer, Y., Bukstein, O., & Tarter, R. E. (1991). The Teen-Addiction Severity Index: Rationale and reliability. *Substance Use & Misuse, 26*(2), 219-226.

[27] McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2012). Childhood adversities and first onset of psychiatric disorders in a national sample of U.S. adolescents. *Archives of General Psychiatry, 69*(11), 1151-1160.

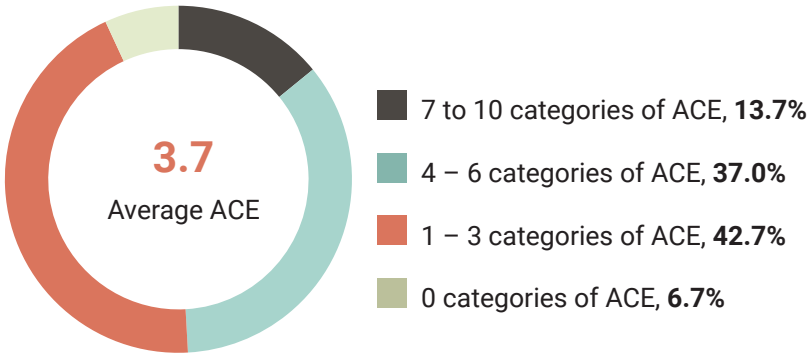
[28] Edwards, V. J., Anda, R. F., Dube, S. R., Dong, M., Chapman, D. F., & Felitti, V. J. (2005). The wide-ranging health consequences of adverse childhood experiences. In Kathleen Kendall-Tackett & Sarah Giacomoni (Eds.), *Victimization of children and youth: Patterns of abuse, response strategies*. Kingston, NJ: Civic Research Institute.

[29] Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine, 14*(4), 245-258.

Included in the intake interview were questions about a range of childhood adversities for which previous research has found associations with substance abuse such as child maltreatment and neglect, sexual abuse/assault as well as other types of household dysfunction (e.g., witnessing domestic violence, mental illness, substance abuse, and incarceration of household members) that were included in the Adverse Childhood Experiences (ACE) Study.[30, 31, 32]

The average number of categories of adverse childhood experiences adolescents reported was 3.7 (median = 3.0; see Figure 1.9). Only small percentages of male and female adolescents reported 0 of the 10 adverse childhood experiences. Girls reported a higher average number of ACE categories than boys reported (4.2 vs. 3.5; see Figure 1.10).

FIGURE 1.9. THE NUMBER OF CATEGORIES OF ADVERSE CHILDHOOD EXPERIENCES AT INTAKE (N = 300)

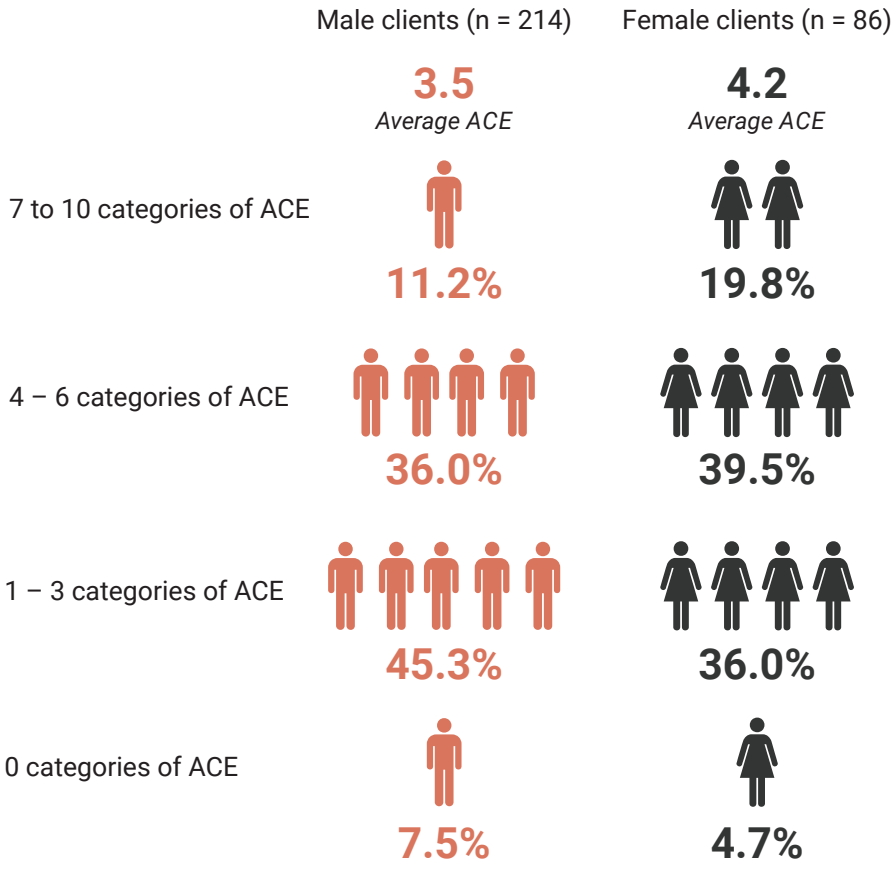


[30] Centers for Disease Control and Prevention. (2014). *Prevalence of individual adverse childhood experiences.* Atlanta, GA: National Center for injury Prevention and Control, Division of Violence Prevention.

[31] Straus, M. A., & Gelles, R. J. (1990). *Physical violence in American Families: Risk factors and adaptations to violence in 8,145 families.* New Brunswick, NJ: Transaction Press.

[32] Bernstein, D. P., Fink, L., Handelsman, L., Foote, J., Lovejoy, M., Wenzel, K., Sapareto, E., & Ruggiero, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *American Journal of Psychiatry, 151*, 1132-1136.

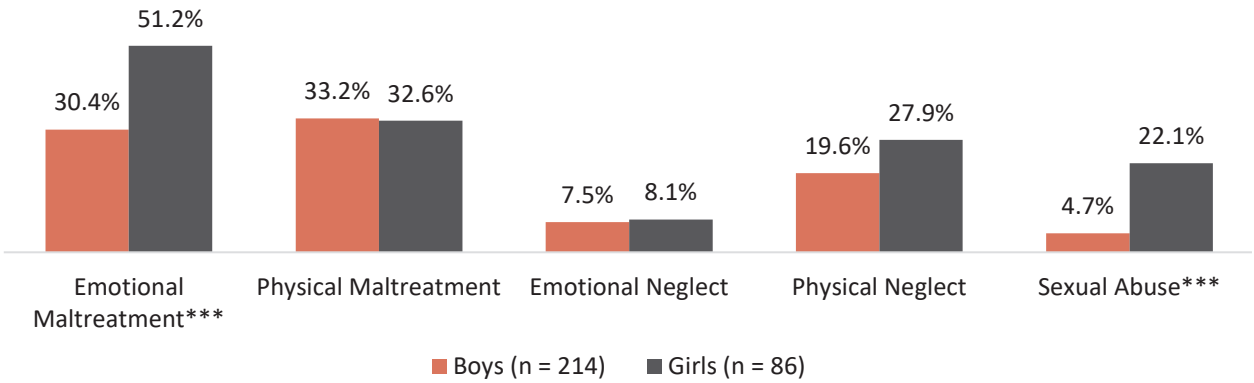
FIGURE 1.10. THE NUMBER OF CATEGORIES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER (N = 300)***



***p < .001.

Significantly more girls reported ever experiencing emotional maltreatment and sexual abuse[33] compared to boys (see Figure 1.11A). Specifically, more than half of girls (51.2%) reported they had experienced emotional maltreatment in their family homes compared to 30.4% boys. The most sizable difference in proportion was found for sexual abuse (by any type of perpetrator) with 22.1% of girls and 4.7% of boys reporting sexual abuse by an adult in their lifetime. About one-third of boys and girls reported they had experienced physical maltreatment in their home.

FIGURE 1.11A. ADVERSE CHILDHOOD EXPERIENCES OF MALTREATMENT AND ABUSE AT INTAKE BY GENDER (n = 300)

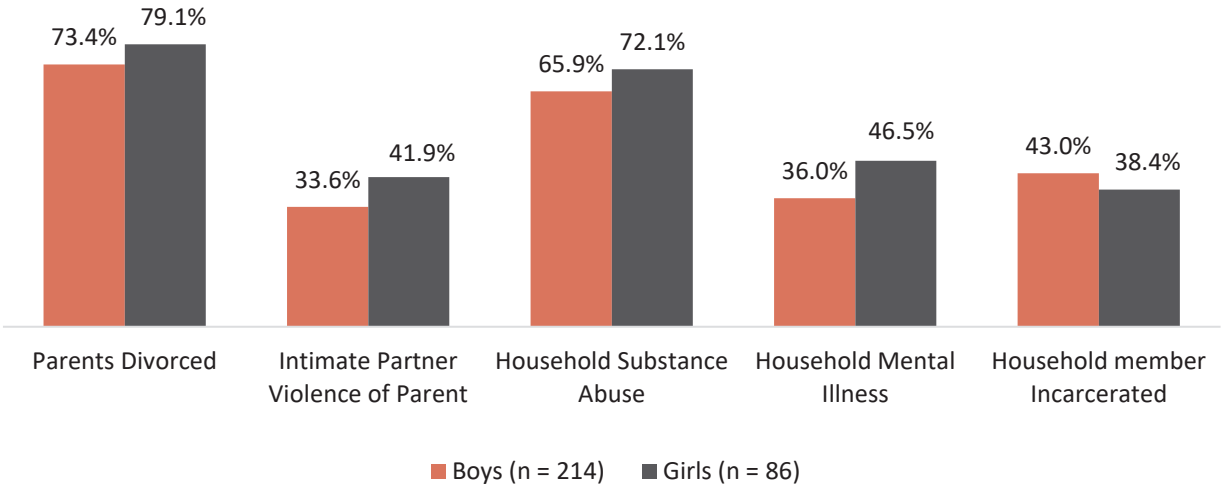


***p < .001 ,

[33] The items included here asked about forced sexual touching or acts by an adult (known or not known).

Most clients reported their parents were divorced or lived separately and that a household member abused alcohol and/or used illegal drugs (see Figure 1.11B). Similar percentages of boys compared to girls reported they had witnessed intimate partner violence (IPV) of a parent, a household member had been incarcerated, and a household member had been depressed or mentally ill (i.e., was seriously depressed, attempted suicide or had a mental illness).

FIGURE 1.11B. ADVERSE CHILDHOOD EXPERIENCES OF HOUSEHOLD RISK AT INTAKE BY GENDER (n = 300)

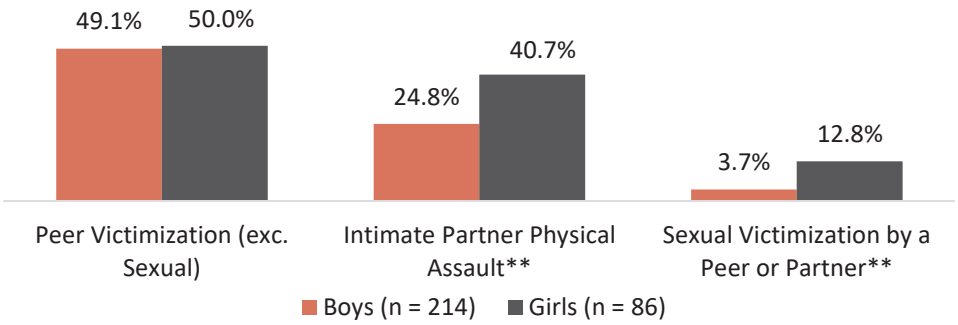


Other Interpersonal Victimization and Stressors

In addition to the items from the ACE study, other measures of interpersonal victimization and chronic stressors were taken from the Juvenile Victimization Questionnaire (e.g., peer bullying, intimate partner violence, and sexual abuse by a peer or partner) and from the literature on major childhood stressors (e.g., death of a caregiver, and a sense of abandonment by a parent).

Half of boys and girls reported emotional or physical victimization by peers (see Figure 1.12). Significantly more girls than boys reported they had experienced physical assault by a partner and sexual victimization by peers or partners.

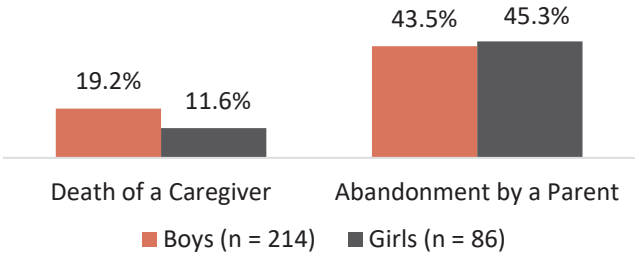
FIGURE 1.12. PEER VICTIMIZATION, INTIMATE PARTNER VIOLENCE, SEXUAL VICTIMIZATION BY PEERS AND OTHER MAJOR CHILDHOOD STRESSORS AT INTAKE BY GENDER (n = 300)



**p< .01.

There was no gender difference in the percent of boys and girls who reported a caregiver had died and they felt abandoned by a parent (see Figure 1.13). A sizable minority of boys and girls felt abandoned by a parent.

FIGURE 1.13. OTHER MAJOR CHILDHOOD STRESSORS AT INTAKE BY GENDER (n = 300)



ADVERSE CHILDHOOD EXPERIENCES, SUBSTANCE USE, AND MENTAL HEALTH

A greater number of adverse childhood experiences is associated with greater risk of drug abuse and alcohol abuse, including initiating use in adolescence, as well as smoking tobacco in adolescence. [34], [35] The association of substance use disorder, smoking tobacco, and mental health measures with the ACE score was examined among the 300 adolescents who received substance abuse treatment in Kentucky's CMHCs in 2019 and 2020 and completed an AKTOS intake survey.

Significant associations were found[36]:

The number of adverse childhood experiences were significantly associated with the age of initiation of alcohol and/or drug use ($r = -.308$, $p < .001$), such that adolescents with more ACE reported earlier ages of initiation.

The number of adverse childhood experiences clients reported was significantly different by severity of substance use disorder, even after controlling for gender. Specifically, individuals with no substance use disorder (2.8) had significantly lower number of adverse childhood experiences than individuals with moderate SUD (4.4) and severe SUD (4.7). Additionally, individuals with severe SUD (4.7) had significantly greater adverse childhood experiences than individuals with mild SUD (3.2).

[34] Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect and household dysfunction and the risk of illicit drug use: The Adverse Childhood Experience Study. *Pediatrics, 111*(3), 564-572.

[35] Anda, R. F., Croft, J. B., Felitti, V. J., Nordenberg, D., Giles, W. H., Williamson, D. F., & Giovino, G. A. (1999). *Journal of American Medical Association, 282*, 1652-1658.

[36] A one-way ANCOVA was conducted to determine a statistically significant difference between DSM 5 severity of SUD on the study ACES score controlling for gender. There was a significant effect of DSM 5 SUD severity and the number of adverse childhood experiences after controlling for gender, $F(3, 296) = 14.032$, $p < .001$. The means presented above are adjusted means.

The number of adverse childhood experiences individuals reported was significantly associated with the number of months individuals reported using the following substances in the 12 months before entering treatment:

cannabis/marijuana
(r = .199, p < .001)

opioids (not including heroin)
(r = .199, p < .001)

heroin
(r = .115, p < .05)

CNS depressants
(r = .163, p < .01)

stimulants/cocaine
(r = .170, p < .01)

alcohol
(r = .159, p < .01)

smoking tobacco
(r = .251, p < .001)

vaporized nicotine
(r = .145, p < .05)

In other words, individuals who reported more adverse childhood experiences reported more months of use of cannabis/marijuana, opioids, heroin, CNS depressants, stimulants/cocaine, alcohol, smoking tobacco, and vaporized nicotine.

The correlations between the study ACE score and the following mental health problems were statistically significant:

the number of attention problem symptoms
(r = .354, p < .001)

internalizing symptoms
(r = .420, p < .001)

externalizing symptoms
(r = .360, p < .001)

In other words, individuals with more adverse childhood experiences had more attention problem symptoms, internalizing symptoms, and externalizing symptoms.

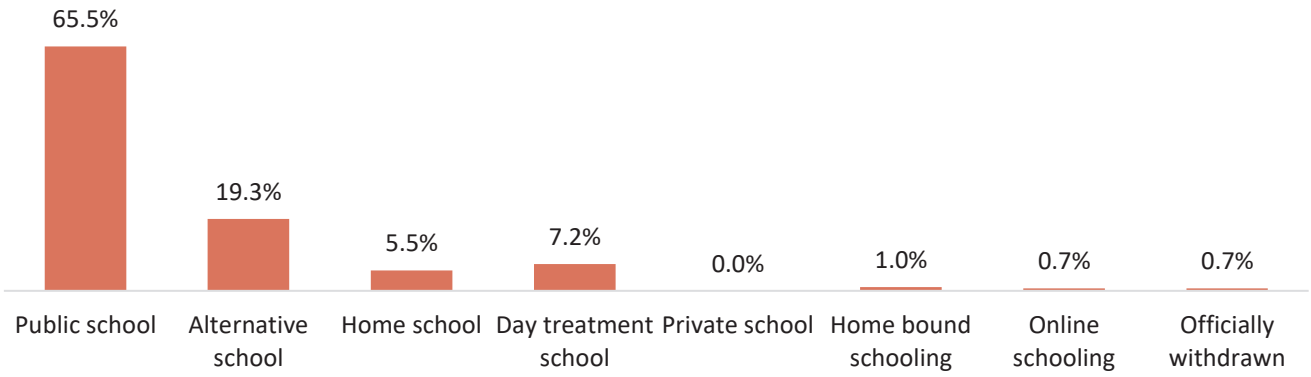
Adolescents' self-reported number of ACE and stress were significantly associated (r = .360, p < .001) as well as their inability to handle stress (r = .329, p < .001).

Education, Employment, and Free Time

At intake, 10 individuals (3.3%) reported they had a high school diploma or GED. Among the remaining 290 individuals, almost all (99.3%) were enrolled in school at intake. The majority of clients reported they were attending public school (65.5%; see Figure 1.14). The next most

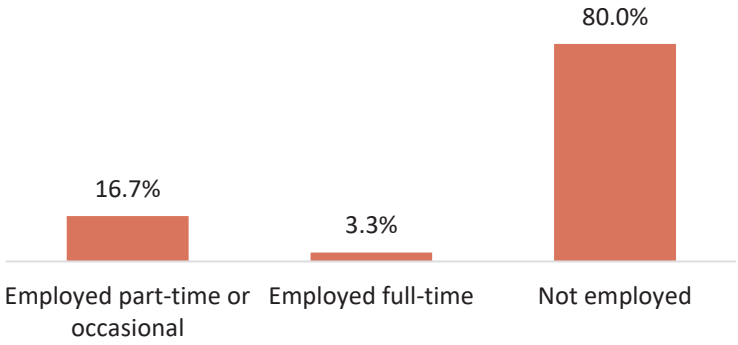
frequently mentioned type of schooling was alternative school (19.3%). Small percentages of clients reported the following types of schooling: day treatment (7.2%), home school (5.5%), home bound (1.0%), online schooling (0.7%), and officially withdrawn (0.7%).

FIGURE 1.14. SCHOOL STATUS AT INTAKE (n = 290)[37]



A minority of adolescents (20.0%) reported at intake they were currently employed part-time or had occasional or seasonal employment (16.7%), or employed full-time (3.3%; see Figure 1.15). Thus, the majority of youth were not employed at intake (80.0%). Of the ten individuals with a high school diploma or GED at intake, 70.0% were not employed, 20.0% (n = 2) were employed part-time, and 10.0% had part-time work (not depicted in a Figure).

FIGURE 1.15. EMPLOYMENT STATUS AT INTAKE (N = 300)



"Every time I've been there they've helped me with everything and they've always been really understanding."

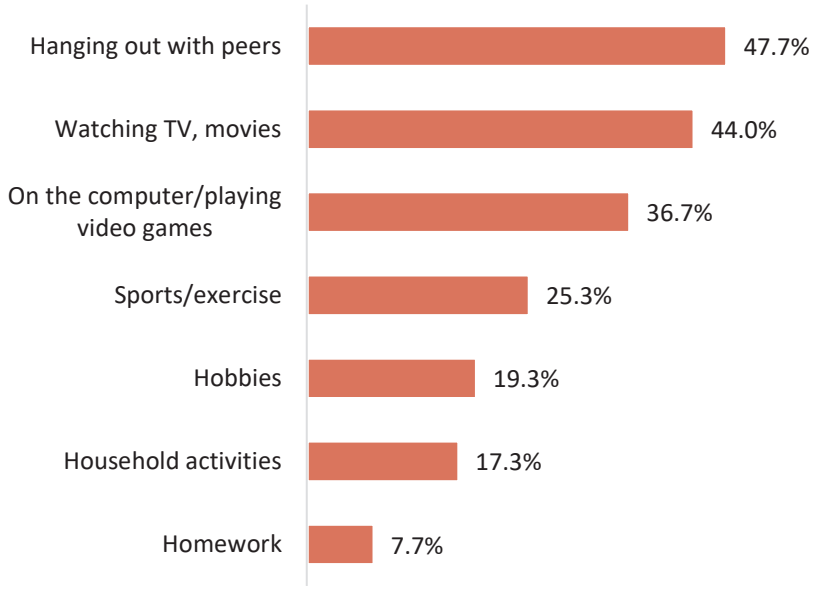
- AKTOS FOLLOW-UP CLIENT

[37] Ten individuals who reported they had a school diploma or GED at intake are not included in this Figure.

On weekdays, AKTOS clients reported spending an average of 7.1 hours per day on devices (e.g., watching streaming shows, TV, playing video games, on the internet via a computer or smart phone). On weekends, clients reported spending an average of 8.1 hours per day on devices.

AKTOS clients were asked to report the three types of activities we listed that they spent the most time in a typical week engaged in (outside of school and work). Figure 1.16 shows the percent of adolescents who reported spending most of their time (not in school or at work) on the activities in a typical week.

FIGURE 1.16. THREE ACTIVITIES CLIENTS SPENT THE MOST TIME ENGAGED IN (EXCLUDING SCHOOL/WORK) AT INTAKE (n = 300)



Justice System Involvement

One third of adolescents (33.0%) reported they had been arrested and charged with an offense in the 12 months before entering treatment. Among the 99 adolescents who reported at least one arrest, 40.4% reported a status offense and 76.8% reported a public offense. One-fourth of AKTOS clients who completed an interview (25.3%) reported they had been incarcerated in the 12 months before entering treatment. About one-half of the adolescents (52.7%) reported they were under supervision by the justice system (i.e., court diversion program, probation, drug court).

Description of Adolescents in the Follow-up Sample at Treatment Intake

Follow-up interviews are conducted with a selected sample of clients about 12 months after intake surveys are completed. All adolescents who agree to be contacted for the follow-up interview and have given a minimum amount of locator information, are pulled into the follow-up sample. The percent of clients who agreed to be contacted for the follow-up study

was lower for this report (36.7%) than in past reports (48-65%). The follow-up interviews are conducted over the telephone by an interviewer at UK CDAR. Clients' responses to the follow-up interviews are kept confidential to help facilitate the honest evaluation of client outcomes and satisfaction with program services. When interviewers contacted clients to complete the follow-up survey, individuals who are not eligible to participate in the follow-up survey (e.g., residential treatment, incarcerated, military service) are removed from the sample of eligible participants (n = 12). One person declined to complete the follow-up survey when contacted at the time of follow-up (1.1%). More than two-fifths of eligible participants (43.0%) were not successfully contacted to complete the follow-up surveys.[38]

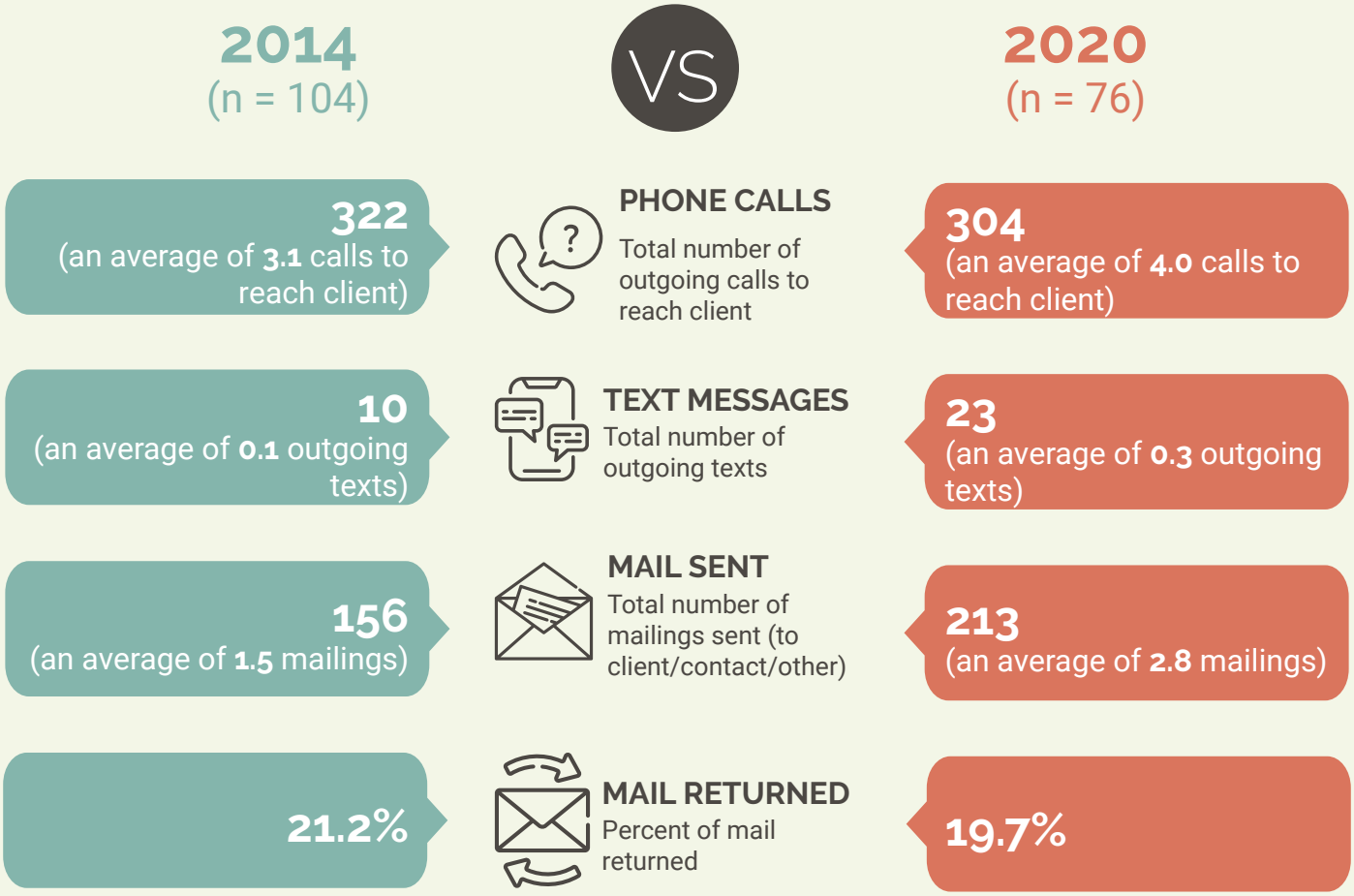
This report describes outcomes for 52 adolescents (ages 12-17 years old) who participated in publicly-funded substance abuse treatment and who completed an intake interview and a follow-up telephone interview about 12 months (average of 355.3 days) after the intake survey was completed. Detailed information about the methods and follow-up efforts can be found in Appendix A.

[38] Clients are not contacted for a variety of reasons including follow-up staff are not able to find a working address or phone number or are unable to contact any friends or family members of the client.

AKTOS LOCATING EFFORTS OF TOTAL SAMPLE

In 2014, 104[39] cases that were included in the follow-up sample were used to examine efforts in locating and contacting participants. In 2020, these efforts were repeated for the entire sample of 76 cases selected into the follow-up sample for the 2020 report to allow for comparison of locating efforts over time.[40]

Efforts to locate and contact potential follow-up clients have increased for two main reasons. First, because of the increase in robo and other scam calls people are more hesitant to pick up their phones and more skeptical when they do. Second, the quality of locator information is lower in recent years making it more difficult to make contact with clients. Comparison of the efforts interviewers put into conducting the follow-up interviews in 2014 and 2020 shows that the average number of calls had increased slightly, the average number of text messages has doubled, and the average number of mailings sent has increased by 87%.



[39] One file was missing at the time of extraction.

[40] In report year 2014, 220 clients completed an intake and 49.1% agreed to be contacted for the follow-up study (n = 108). In report year 2020, 225 completed an intake and 40.9% of clients agreed to be contacted for the follow-up study (n = 92).

Demographics

Of the 52 adolescents who completed a 12-month follow-up interview, 65.4% were male and 34.6% were female (see Table 1.2). The racial/ethnic distribution of the follow-up sample was: White (82.7%), Black/African American (3.8%), Hispanic (7.7%), and multiracial (5.8%). They were an average of 15.9 years old at the time of the intake interview. The majority of adolescents (67.3%) were 16 or 17 years old at intake.

TABLE 1.2. DEMOGRAPHICS FOR AKTOS FOLLOW-UP SAMPLE CLIENTS AT INTAKE (n = 52)

Age	15.9 years *(range of 13-17)*
Gender	
Male	65.4%
Female	34.6%
Race	
White	82.7%
Hispanic	7.7%
Multiracial	5.8%
Black/African American	3.8%

Adverse Childhood Experiences

Similar to the larger sample of individuals who completed an intake interview, the average number of categories of adverse childhood experiences adolescents in the follow-up sample reported was 3.3 (median = 3.0). In the follow-up sample, there was no difference in the average number of ACE girls and boys reported at intake (3.2 vs. 3.3; see Figure 1.18).

FIGURE 1.17. THE NUMBER OF CATEGORIES OF ADVERSE CHILDHOOD EXPERIENCES AT INTAKE (N = 52)

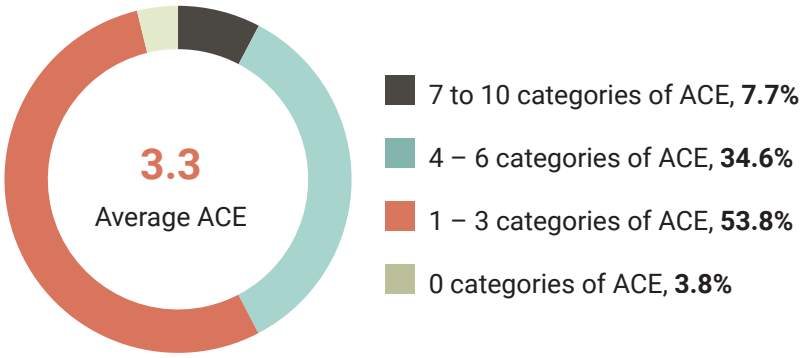
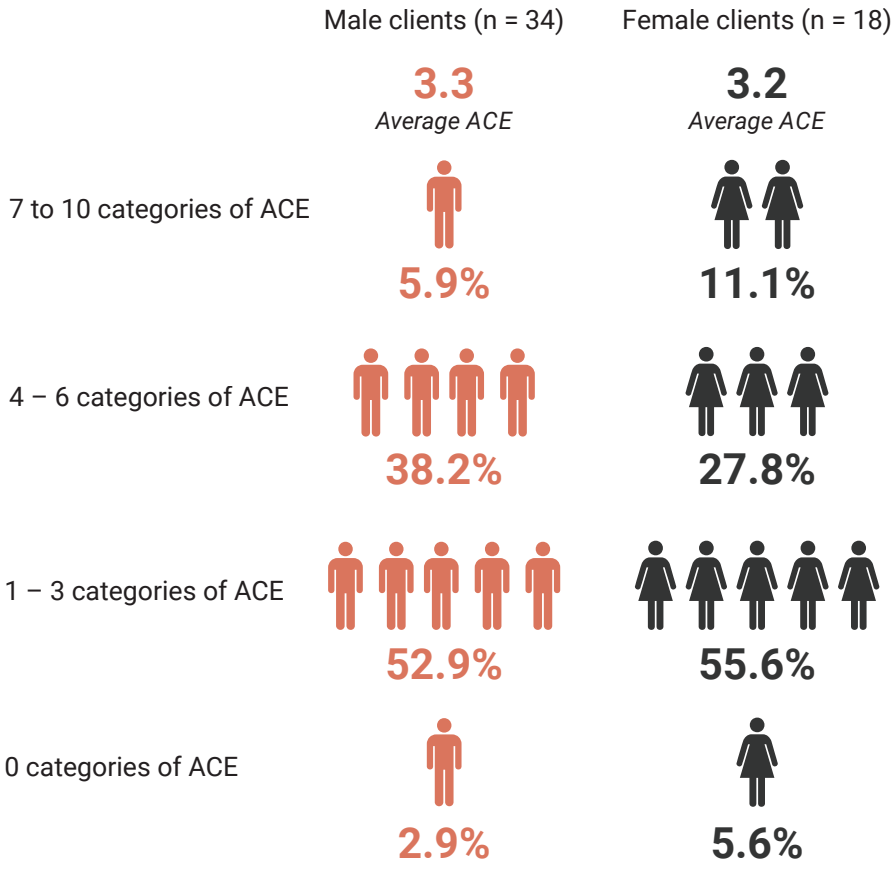
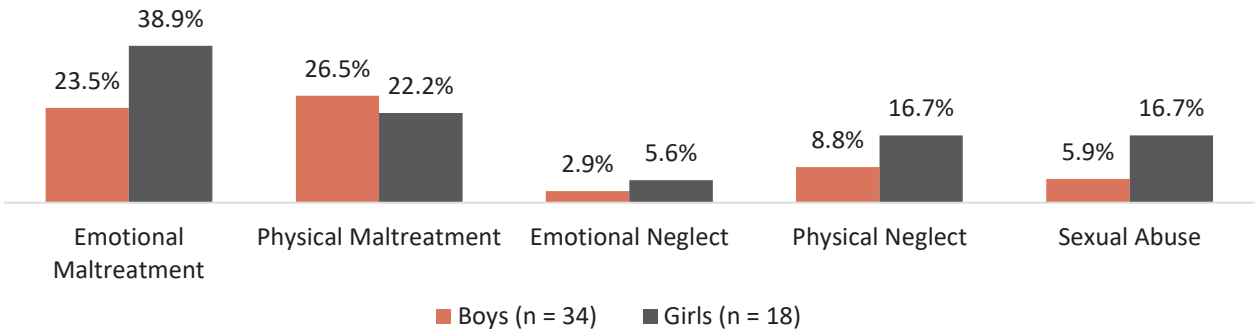


FIGURE 1.18. THE NUMBER OF CATEGORIES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER (N = 52)



There were no significant differences in the percent of boys and girls who reported the five types of child maltreatment measured in the ACE items (see Figure 1.19A). The most common type of maltreatment in the follow-up sample was emotional maltreatment for girls and physical maltreatment for boys.

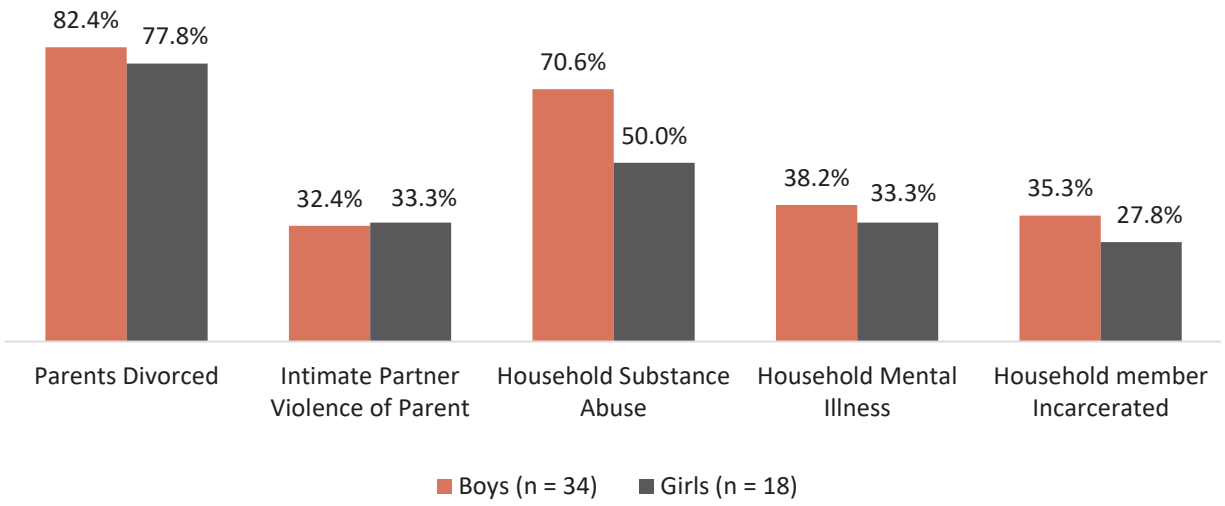
FIGURE 1.19A. ADVERSE CHILDHOOD EXPERIENCES OF MALTREATMENT AND ABUSE AT INTAKE BY GENDER (n = 52)



In addition to lifetime maltreatment and abuse, household risk adverse experiences were common in this sample of youth (see Figure 1.19B). There were no gender differences in household risks for the follow-up sample. The majority of youth reported that their parents were divorced or lived separately and that someone in their household abused alcohol or used illicit drugs. About one-third of boys and girls reported they had witnessed abuse of a parent

by a partner of their parent. More than one-third of followed-up boys reported the following household risks: someone in their household had a mental illness and a household member was incarcerated. One third of girls reported someone in their household had a mental illness and more than one-fourth reported a household member was incarcerated during their childhood.

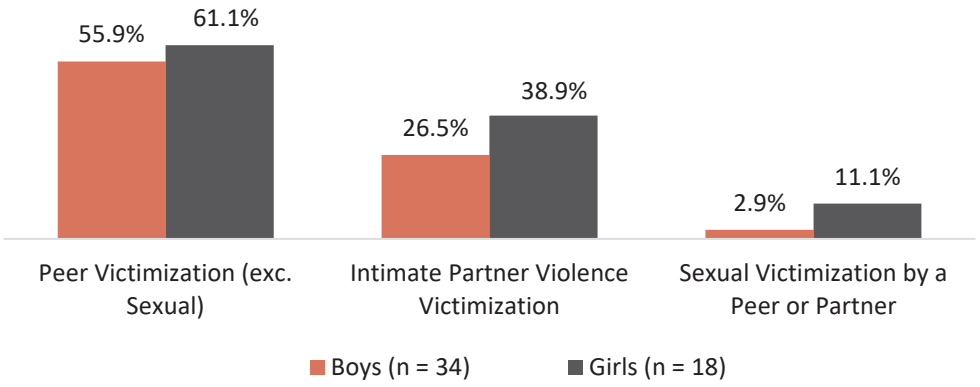
FIGURE 1.19B. ADVERSE CHILDHOOD EXPERIENCES OF HOUSEHOLD RISK AT INTAKE BY GENDER (n = 52)



Other Interpersonal Victimization and Chronic Stressors

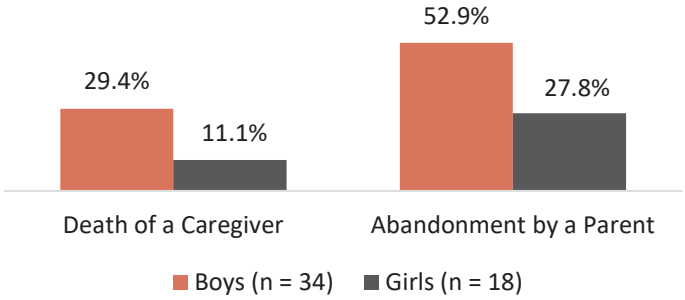
In addition to the items included in the ACE study, other measures of victimization and adverse experiences were taken from the Juvenile Victimization Questionnaire (e.g., peer bullying, intimate partner violence, and sexual abuse by a peer or partner) and from the literature on major childhood stressors (e.g., death of a caregiver, and a sense of abandonment by a parent). The majority of boys and girls reported emotional or physical victimization by peers (see Figure 1.20). Nearly two-fifths of girls and about one-fourth of boys reported intimate partner violence. About 1 in 10 girls reported sexual victimization by a peer or partner, whereas 2.9% of boys reported this; however, this was not statistically significant.

FIGURE 1.20. PEER VICTIMIZATION, INTIMATE PARTNER VIOLENCE, AND SEXUAL VICTIMIZATION BY PEERS AT INTAKE BY GENDER (n = 52)



There were no gender differences in the percent of clients who reported death of a caregiver (including a parent) and feeling that they were abandoned by a parent (see Figure 1.21).

FIGURE 1.21. OTHER MAJOR CHILDHOOD STRESSORS AT INTAKE BY GENDER (n = 52)



COMPARISON OF ADOLESCENTS WHO WERE FOLLOWED-UP WITH ADOLESCENTS WHO WERE NOT FOLLOWED-UP

When those with a follow-up interview were compared with those who did not have a follow-up interview on a variety of intake variables, there were few significant differences. Specifically, no differences were found in demographics, education, employment, mental health, caregiver and living situation, justice system involvement, and recovery supports. Significantly fewer individuals who were followed up reported using stimulants and synthetic drugs in the 12 months before entering treatment than individuals who were not followed up. See Appendix B for detailed comparisons of adolescents who completed a follow-up interview (n = 52) and adolescents who did not complete a follow-up interview (n = 248).

Section 2. Substance Use

This section describes pre-program compared to post-program change in illegal drug, alcohol, and tobacco use for adolescent clients. Past-12-month substance use is examined as well as past-30-day substance use for adolescent clients who were not in a controlled environment all 30 days before entering treatment or the follow-up interview. Results for the major substance classes are presented for the overall sample and by gender when there were significant gender differences.

This section examines substance use changes which include use of any illegal drugs or alcohol, and then separately for illegal drugs, alcohol, and tobacco at intake and follow-up. In addition to examining the overall use of illegal drugs, several specific categories of illegal drugs were examined including: (a) cannabis/marijuana, (b) drugs other than cannabis/marijuana. Change in use of the following classes of drugs are presented in Appendix C: (c) central nervous system (CNS) depressants [including tranquilizers, benzodiazepines, sedatives, and barbiturates], (d) opioids [i.e., prescription opiates, methadone, and buprenorphine], (e) stimulants/cocaine [i.e., cocaine, methamphetamine, Ecstasy, MDMA, Adderall, and Ritalin], and (f) other illegal drugs not mentioned above [i.e., hallucinogens, inhalants, and synthetic drugs]. Analysis is presented in detail for study participants who were not in a controlled environment for the entire period of 12 months and/or 30 days before entering treatment. Changes in substance use from intake to follow-up are presented in 5 main subsections and organized by type of substance use:

1. **Change in 12-month substance use from intake to follow-up.** Comparisons of the use of substances including ANY illegal drug use, cannabis/marijuana, and other illegal drugs, alcohol use, smoking tobacco, smokeless tobacco, and vaporized nicotine 12 months before the client entered the program and any use of these substances during the 12-month follow-up period (n = 52) are presented.

2. **Average number of months clients used substances at intake and follow-up.** For those who used each substance class, the average number of months used in the 12 months before treatment intake and during the 12-month follow-up period are reported.

3. **Change in 30-day substance use from intake to follow-up.** In addition to looking at past-12-month substance use, change in any use in the 30 days before program entry and the 30 days before the follow-up interview for the substance classes presented in this section (n = 49)[41] is also examined. Because some clients were in a controlled environment (e.g., detention center or residential facility) all 30 days before entering treatment (n = 3), changes in drug, alcohol, and tobacco use from intake to follow-up were analyzed only for clients who were not in a controlled environment all 30 days before entering treatment.

4. **Change in polysubstance use from intake to follow-up.** Because of the association

[41] Because some clients enter treatment after leaving jail or prison, substance use in the 30 days before entering the program was examined for clients who were not in a controlled environment all 30 days. The assumption for excluding clients who were in a controlled environment all 30 days before entering treatment from the change in past-30-day substance use analysis is that being in a controlled environment inhibits opportunities for alcohol and drug use.

of polydrug use with greater risk for substance use disorders and worse academic achievement, adolescents were classified into substance use classes based on polydrug use. Change in these classes from intake to follow-up is presented.

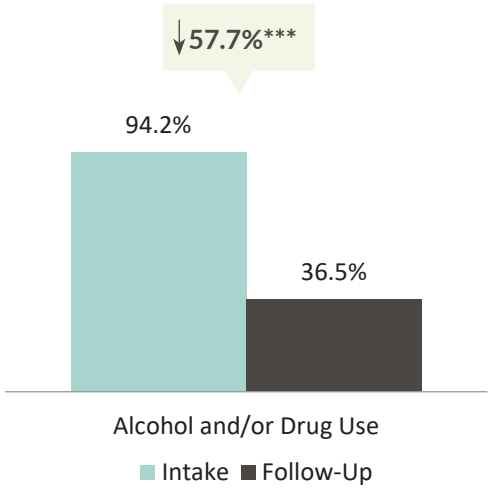
5. **Change in self-reported severity of substance use disorder from intake to follow-up.** Another way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met the 11 criteria included in the DSM-5 for diagnosing substance use disorder. Under DSM-5 anyone meeting any two of the 11 criteria during the same 12-month period would receive a diagnosis of substance use disorder (SUD). The severity of the substance use disorder (i.e., none, mild, moderate, or severe) is based on the number of criteria met. The percent of individuals in each of the four categories at intake and follow-up is presented.

Alcohol and/or Drug Use

Past-12-month Alcohol and/or Drug Use

The number of adolescents who reported using alcohol and/or drugs decreased significantly from 94.2% at intake to 36.5% at follow-up (see Figure 2.1). In other words, a total of 33 youth (63.5%) reported no use of alcohol or drugs in the 12-month follow-up period.

FIGURE 2.1. PERCENT OF CLIENTS REPORTING ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (n = 52)

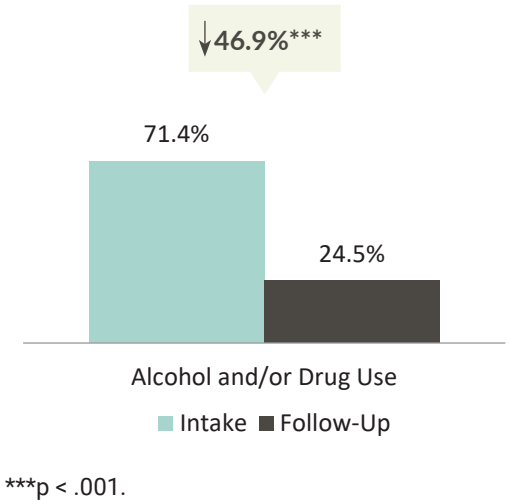


***p < .001.

Past-30-day Alcohol and/or Drug Use

The majority of adolescents (71.4%) reported using alcohol and/or drugs in the 30 days before intake, and at follow-up about one-fourth (24.5%) reported using alcohol or drugs (see Figure 2.2). In other words, a total of 37 adolescents (75.5% of those who were not in a controlled environment all 30 days) reported no use of alcohol and/or drugs in the 30 days before follow-up.

FIGURE 2.2. PERCENT OF CLIENTS REPORTING ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (n = 49)



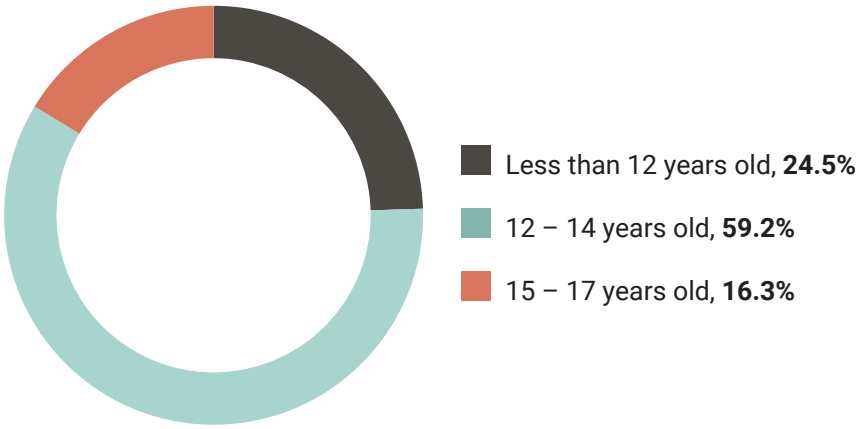
***p < .001.

AVERAGE AGE FIRST USED ALCOHOL OR DRUGS

The majority of youth in the follow-up sample (83.7%) were early initiators of substance use (i.e., before the age of 15; see Figure 2.3). The average age adolescents initiated alcohol or drug use was 12.5 years old.

The majority of adolescents were early initiators of alcohol or drug use

FIGURE 2.3. AVERAGE AGE CLIENT FIRST USED ALCOHOL OR DRUGS (n = 49)[42]



Any Illegal Drugs

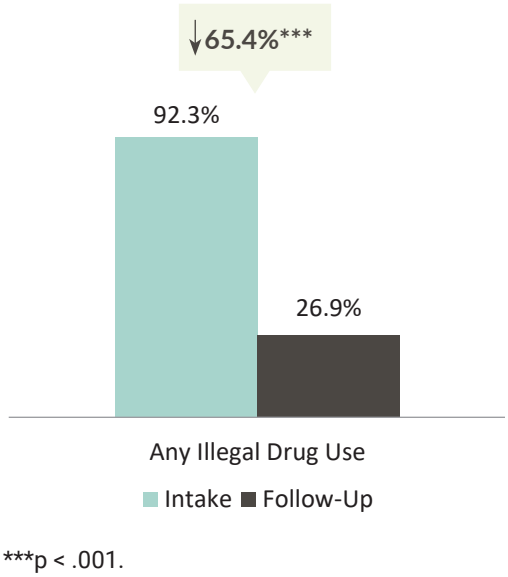
Past-12-month Illegal Drug Use

The vast majority of clients (92.3%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 26.9% at follow-up. Overall, for the adolescents in the AKTOS follow-up sample, there was a 65.4% decrease in the number of clients reporting use of any illegal drug (see Figure 2.4).

The number of clients reporting illegal drug use decreased 65%

[42] Age of first use of alcohol and/or drugs was missing for 3 clients.

FIGURE 2.4. PAST-12-MONTH USE OF ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 52)



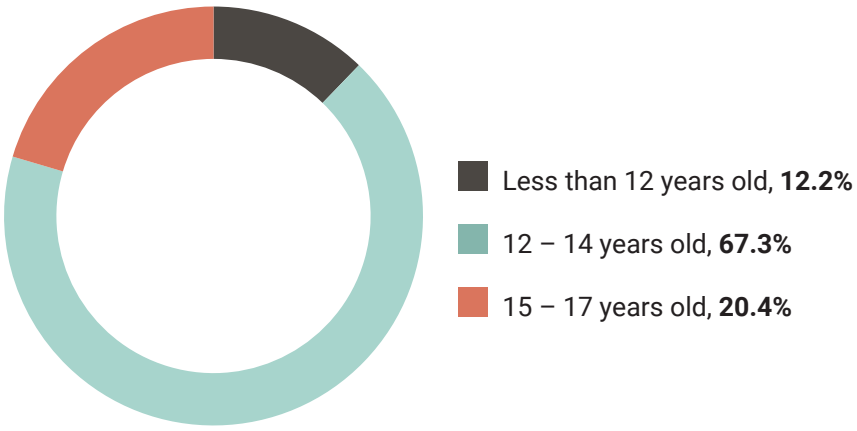
***p < .001.

AVERAGE AGE FIRST USED ILLEGAL DRUGS

Adolescents who reported using illegal drugs in the 12 months before intake were asked how old they were when they first used illegal drugs. Of the 49 adolescents who reported using illegal drugs in the 12 months before intake, they were, on average, 13.1 years old when they first began using illegal drugs. Figure 2.5 shows the percent of adolescents who reported first using illegal drugs at different ages.

Youth were on average 13.1 years old when they first used illegal drugs

FIGURE 2.5. AVERAGE AGE FIRST USED ILLEGAL DRUGS (n = 49)

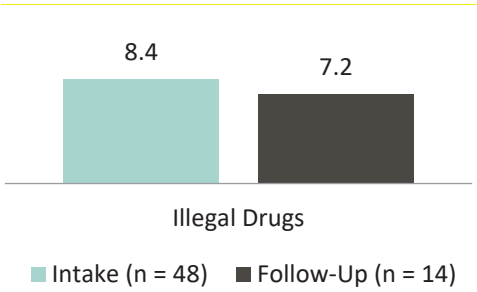


AVERAGE NUMBER OF MONTHS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 12 months before entering treatment (n = 48), they reported using illegal drugs on average 8.4 months (see Figure 2.6). Among clients who reported using illegal drugs at follow-up (n = 14), they reported using on average 7.2 months.[43]

[43] Because number of months of illegal drugs was measured separately for each class of substance, the value is a calculation of the maximum number of months clients used any class of substance.

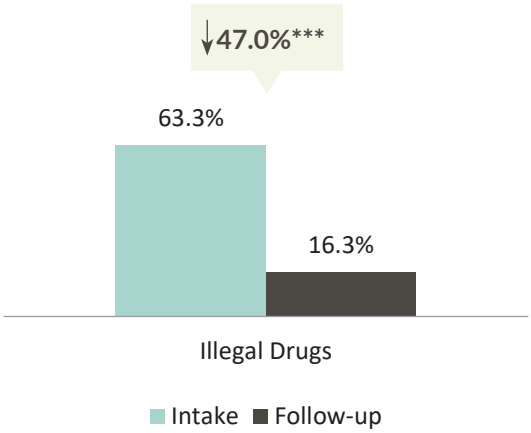
FIGURE 2.6. AMONG CLIENTS WHO USED ANY ILLEGAL DRUGS, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP



Past-30-day Illegal Drug Use

The majority of clients (63.3%) who were not in a controlled environment all 30 days reported they had used illegal drugs in the 30 days before entering treatment (see Figure 2.7). At follow-up, 16.3% of clients reported they had used illegal drugs in the past 30 days, which was a 47.0% decrease.

FIGURE 2.7. PAST-30-DAY USE OF ANY ILLEGAL DRUG AT INTAKE AND FOLLOW-UP (n = 49)



***p < .001.

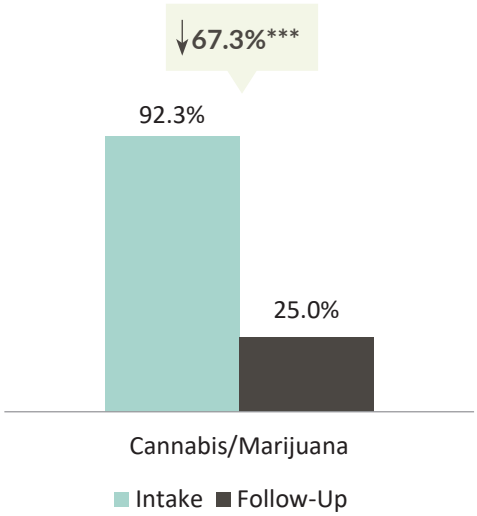
Cannabis/Marijuana

Past-12-month Cannabis/Marijuana Use

The most commonly reported illegal drug class used was cannabis/marijuana. The vast majority of clients (92.3%) reported using marijuana in the 12 months before entering treatment. At follow-up, the percent was 25.0%, which was a 67.3% decrease (see Figure 2.8).

The number of clients reporting marijuana use decreased 67%

FIGURE 2.8. PAST-12-MONTH USE OF MARIJUANA AT INTAKE AND FOLLOW-UP (n = 52)

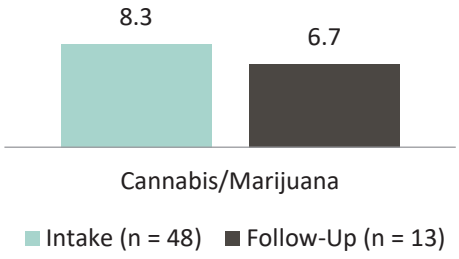


***p < .001.

AVERAGE NUMBER OF MONTHS USED CANNABIS

Among the clients who reported using cannabis/marijuana in the 12 months before entering treatment (n = 48), they reported using marijuana on average 8.3 months (see Figure 2.9). Among clients who reported using cannabis/marijuana at follow-up (n = 13), they reported using an average of 6.7 months.

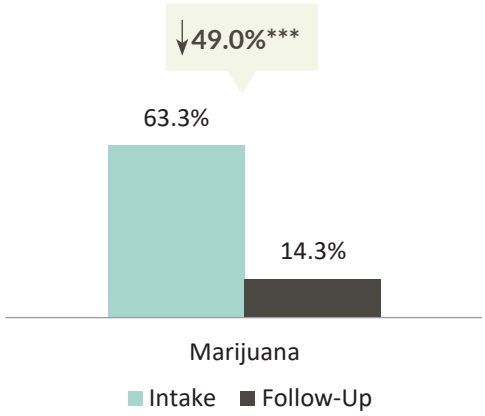
FIGURE 2.9. AMONG ADOLESCENTS WHO USED CANNABIS/MARIJUANA, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED MARIJUANA AT INTAKE AND FOLLOW-UP



Past-30-day Cannabis/Marijuana Use

The number of clients who reported using cannabis decreased 49.0%, from 63.3% at intake to 14.3% at follow-up (see Figure 2.10).

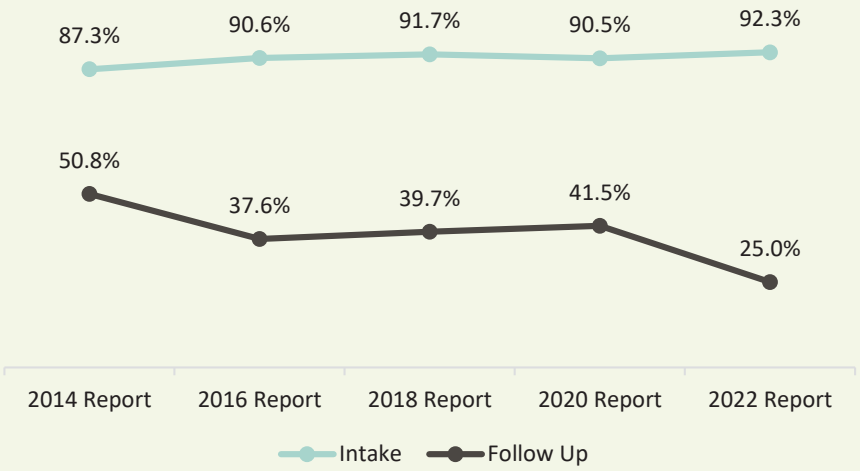
FIGURE 2.10. PAST-30-DAY USE OF CANNABIS/MARIJUANA AT INTAKE AND FOLLOW-UP (n = 49)



***p < .001.

TREND REPORT: MARIJUANA USE AT INTAKE AND FOLLOW-UP

Adolescents in the follow-up sample report that marijuana is the most commonly used substance. There was a decrease in the percent of adolescents reporting 12-month marijuana use at follow-up in the 2016 report from the 2014 report (50.8%), with similar percentage in the 2018 and 2020 reports, with a decrease in the 2022 report (25.0%).



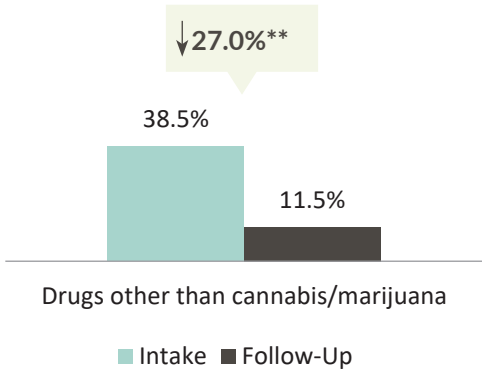
Illegal Drugs Other Than Cannabis/Marijuana

Past-12-month Use of Drugs Other Than Cannabis/Marijuana

In the 12 months before entering treatment 38.5% of adolescents reported using drugs other than cannabis/marijuana (e.g. opioids, stimulants, CNS depressants, cocaine, hallucinogens, synthetic drugs, heroin, inhalants). The number of adolescents who reported using any drug class other than cannabis decreased to 11.5% at follow-up (see Figure 2.11).

The number of clients reporting use of drugs other than cannabis decreased 27%.

FIGURE 2.11. PAST-12-MONTH USE OF DRUGS OTHER THAN CANNABIS/MARIJUANA AT INTAKE AND FOLLOW-UP (n = 52)



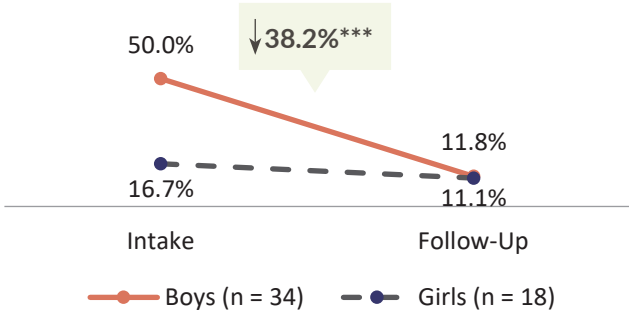
**p < .01.

GENDER DIFFERENCE IN USE OF DRUGS OTHER THAN CANNABIS/MARIJUANA

Compared to girls, significantly more boys reported using drugs other than cannabis at intake (see Figure 2.12). The number of boys who used drugs other than cannabis/marijuana decreased significantly from intake to follow-up.

Significantly more boys reported using drugs other than cannabis/marijuana at intake when compared to girls

FIGURE 2.12. GENDER DIFFERENCE IN USE OF DRUGS OTHER THAN CANNABIS[a]

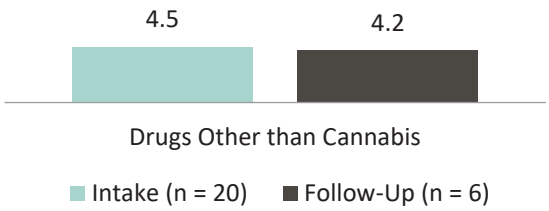


a—Statistical difference by gender at intake (p < .05).
***p < .001.

AVERAGE NUMBER OF MONTHS USED DRUGS OTHER THAN CANNABIS/MARIJUANA

Among the clients who reported using drugs other than cannabis in the 12 months before entering treatment (n = 20), the maximum number of months they reported using any of these other drug classes was, on average, 4.5 months (see Figure 2.13). Among the 6 clients who reported using drugs other than cannabis at follow-up, the maximum number of months they reported using any of these drug classes was, on average, 4.2 months.

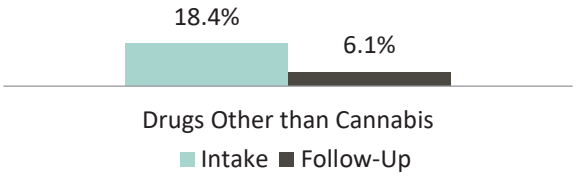
FIGURE 2.13. AMONG ADOLESCENTS WHO USED DRUGS OTHER THAN CANNABIS, THE AVERAGE MAXIMUM NUMBER OF MONTHS ADOLESCENTS USED OTHER DRUGS



Past-30-day Use of Drugs Other Than Cannabis/Marijuana

A little less than 1 in 5 clients reported past-30-day use of drugs other than cannabis, with a non-significant decrease at follow-up (see Figure 2.14).

FIGURE 2.14. PAST-30-DAY USE OF DRUGS OTHER THAN CANNABIS/MARIJUANA AT INTAKE AND FOLLOW-UP (n = 49)



Alcohol Use

There were three measures of alcohol use including: (1) any alcohol use, (2) alcohol use to intoxication, and (3) binge drinking, which is defined as having 5 or more alcoholic drinks for males and 4 or more for females in a period of about 2 hours.[44]

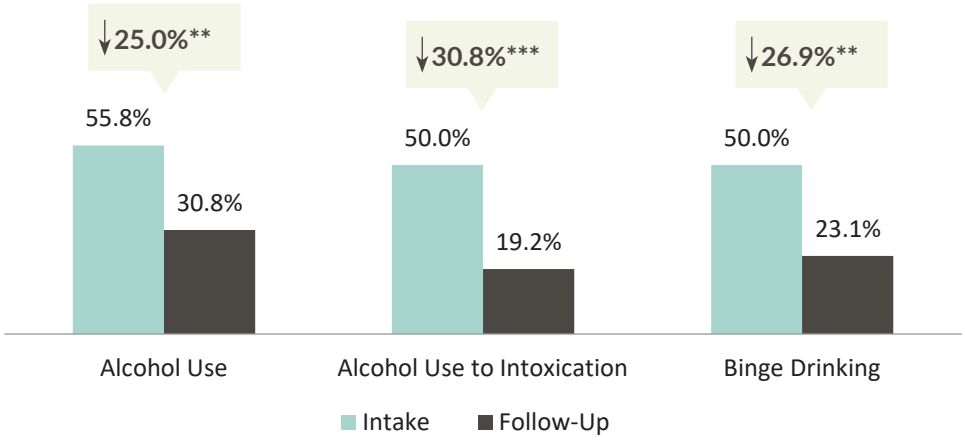
Past-12-month Alcohol Use

The number of clients reporting alcohol use, alcohol use to intoxication, and binge drinking decreased significantly

The majority of clients (55.8%) reported using alcohol in the 12 months before entering treatment while there was a significant decrease to 30.8% at follow-up (see Figure 2.15). For the AKTOS follow-up sample, there was a 25.0% decrease in the number of clients reporting any alcohol use. Half of adolescents reported using alcohol to intoxication and binge drinking at intake. The number of adolescents who reported using alcohol to intoxication decreased 30.8% to 19.2% at follow-up. Similarly, there was a significant decrease of 26.9% in the percent of clients who reported binge drinking from intake to follow-up.

[44] National Institute on Alcohol Abuse and Alcoholism [NIAAA]. (2004, Winter). *NIAAA council approves definition of binge drinking. NIAAA Newsletter, Winter 2004* (3). Rockville, MD: Department of Health and Human Services, National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism.

FIGURE 2.15. PAST-12-MONTH USE OF ALCOHOL AT INTAKE AND FOLLOW-UP (N = 52)

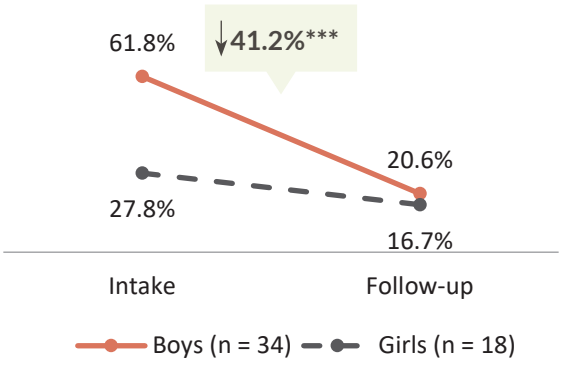


**p < .01, ***p < .001.

GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE TO INTOXICATION

Significantly more boys than girls reported using alcohol to intoxication in the 12 months before intake (see Figure 2.16). At follow-up, there were no gender differences in alcohol use to intoxication. The percent of boys who reported using alcohol to intoxication decreased significantly from intake to follow-up.

FIGURE 2.16. GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE TO INTOXICATION, AND BINGE DRINKING AT INTAKE AND FOLLOW-UP

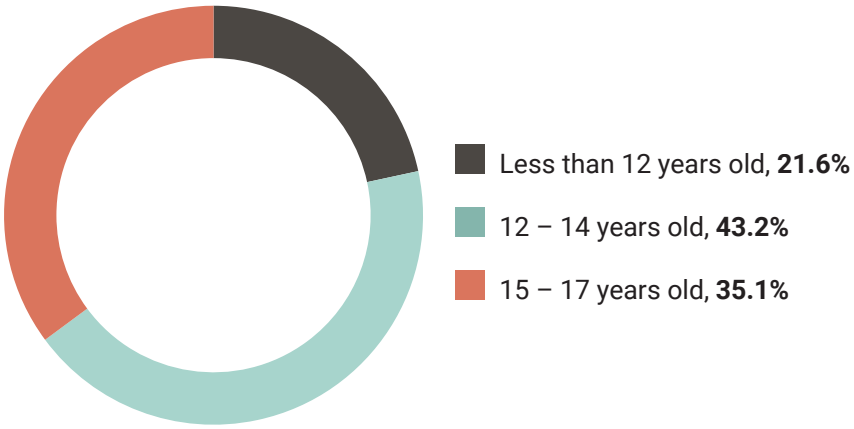


a—Significant difference by gender at intake, p < .05.
***p < .001.

AVERAGE AGE FIRST DRANK ALCOHOL (OTHER THAN A FEW SIPS)

Adolescents who reported using alcohol in the 12 months before intake were asked how old they were when they first had an alcoholic drink (other than a few sips). They were on average 13.0 years old when they had their first alcoholic drink (other than a few sips). Figure 2.17 shows the percent of adolescents who reported having their first alcohol drink at different ages.

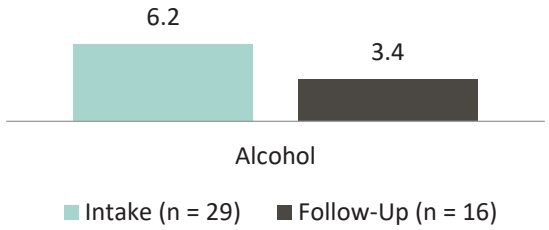
FIGURE 2.17. AVERAGE AGE CLIENT HAD FIRST ALCOHOLIC DRINK (n = 37)



AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2.18 shows the number of months alcohol users reported using alcohol at intake and follow-up. Among the clients who reported using alcohol in the 12 months before entering treatment (n = 29), they reported using alcohol, on average, 6.2 months. Among clients who reported using alcohol in the 12 months before follow-up (n = 16), they reported using, on average, 3.4 months.

FIGURE 2.18. AMONG ADOLESCENTS WHO USED ALCOHOL, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED ALCOHOL AT INTAKE AND FOLLOW-UP

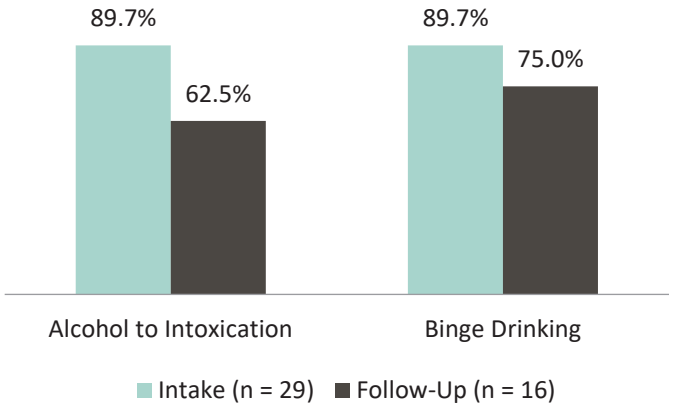


PAST-12-MONTH ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL

Of the clients who used alcohol in the 12 months before entering treatment (n = 29), 89.7% used alcohol to intoxication and binge drank in the 12 months before intake (see Figure 2.19). Of the clients who used alcohol in the 12 months before follow-up (n = 19), 62.5% of clients reported alcohol use to intoxication and 75.0% binge drank alcohol.

> ***"I felt like they really understood me. I felt like I could tell her anything."***
>
> - AKTOS FOLLOW-UP CLIENT

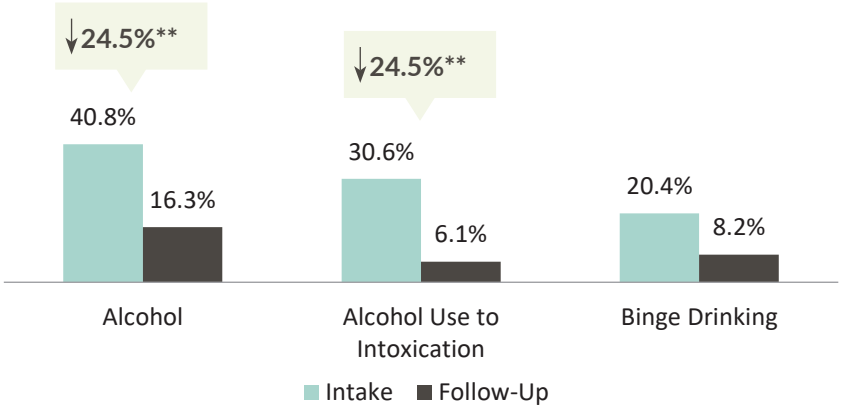
FIGURE 2.19. PAST-12-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Past-30-day Alcohol Use

The number of individuals who reported using any alcohol and alcohol to intoxication decreased significantly from the 30 days before entering the program to the 30 days before follow-up (see Figure 2.20).

FIGURE 2.20. PAST-30-DAY USE OF ALCOHOL AT INTAKE AND FOLLOW-UP (n = 49)



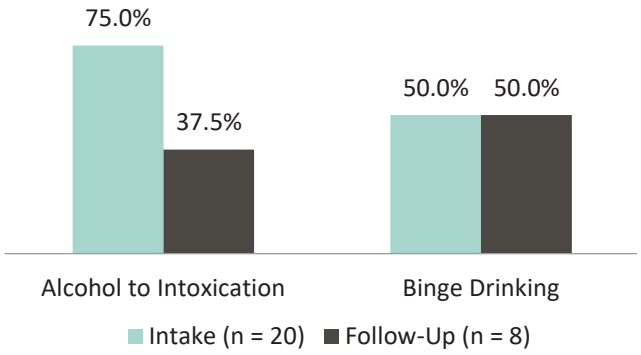
**p < .01.

PAST-30-DAY ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL

Of the 20 adolescents who used alcohol in the 30 days before intake, 75.0% used alcohol to intoxication and 50.0% binge drank in the 30 days before intake (see Figure 2.21).

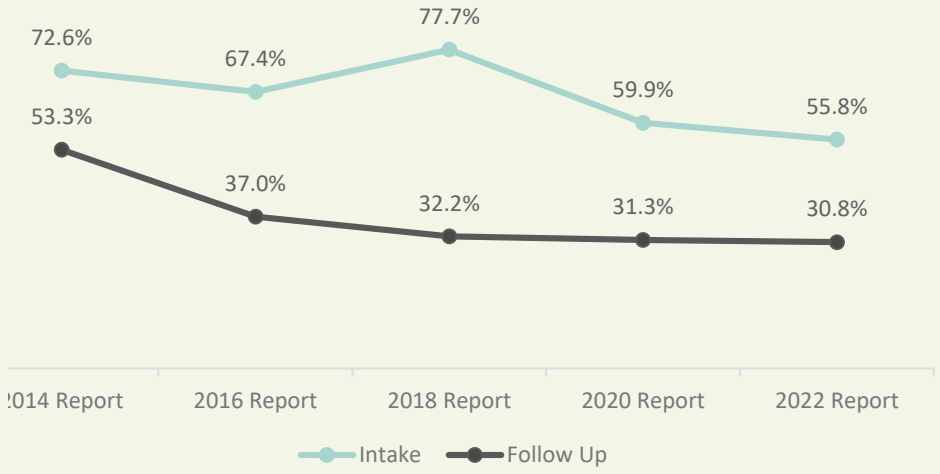
Of the 8 adolescents who reported using alcohol in the 30 days before follow-up 37.5% reported using alcohol to intoxication and 50.0% reported binge drinking in the 30 days before follow-up.

FIGURE 2.21. PAST-30-DAY USE OF ALCOHOL TO INTOXICATION AND BINGE DRINKING, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



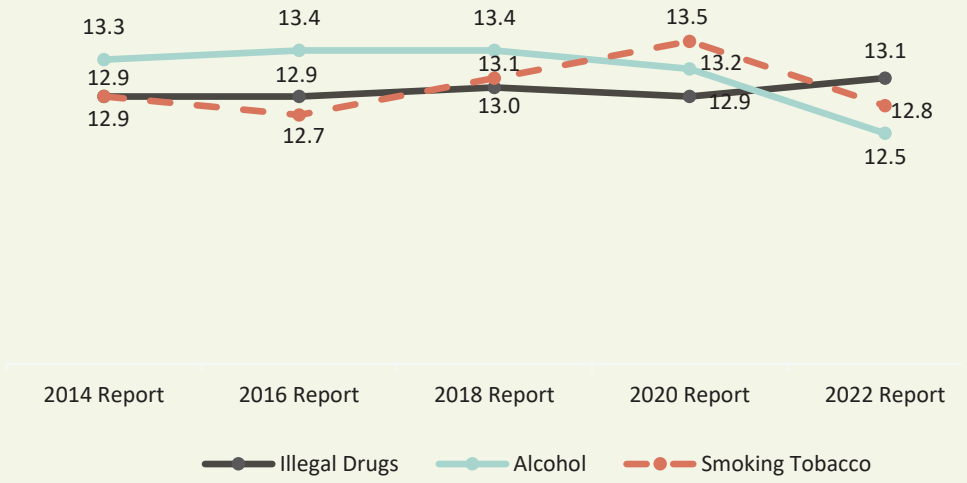
TREND REPORT: ALCOHOL USE AT INTAKE AND FOLLOW-UP

The difference in the percent of adolescents who reported using alcohol in the past 12 months at intake and at follow-up increased in the 2016 report and then again in the 2018 report. In each biannual report, there was a significant decrease from intake to follow-up in the percent of adolescents who reported using alcohol. In the 2020 and 2022 reports, the percent of adolescents who reported using alcohol was smaller at intake than it had been in previous years.



TREND REPORT: AGE OF FIRST USE

Youth were asked, at intake, how old they were when they first began to use illegal drugs, when they had their first alcoholic drink (more than a few sips), and when they began smoking regularly. The age of first use for illegal drugs and alcohol remained relatively steady for the first four biannual reports for individuals included in the follow-up sample. The age of first regular use of smoking tobacco was 13.5 in the 2020 report and 12.8 in 2022. Age of first use of alcohol was lower in 2022 than in previous years.



Polydrug Use

Polydrug use in adolescence is associated with substance use disorders in young adulthood.[45, 46] Adolescents were classified into groups based on their self-reported use of alcohol and the classes of illegal drugs in the 12 months before intake and follow-up (see Figure 2.22). A little more than half of adolescents reported that the only illegal drug class they used was marijuana (with or without alcohol use). Nearly two-fifths of adolescents reported using multiple drug classes (with or without alcohol use), and only a small percent of adolescents reported no alcohol/drug use or alcohol use only at intake. At follow-up, the majority of adolescents (63.5%) reported no alcohol or drug use, nearly 10% reported using alcohol only, nearly 10% reported using multiple drug classes, and 15.4% reported that the only drug class they used was cannabis in the past 12 months.

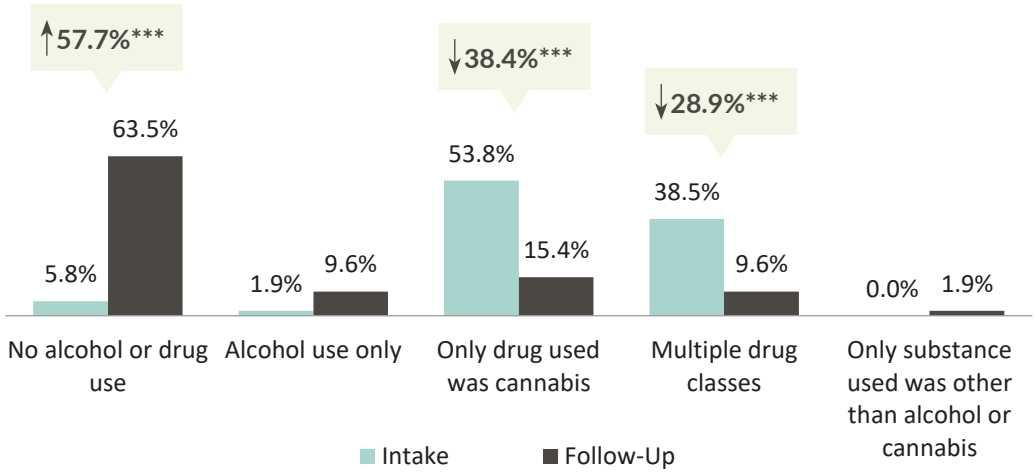
The number of individuals who met criteria for no SUD increased significantly from intake to follow-up

There was a significant increase in the number of adolescents who reported no alcohol or drug use at follow-up, and significant decrease in the number of adolescents reporting cannabis use only, and polydrug use at follow-up.

[45] Moss, H.B., Chen, C. M., Yi, H. (2014). Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample. *Drug & Alcohol Dependence, 136* (51-62).

[46] Hopfer, S., Tn, X., & Wylie, J.L. (2014). A social network-informed latent class analysis of patterns of substance use, sexual behavior, and mental health: Social Network Study III Winnipeg, Manitoba, Canada. *American Journal of Public Health, 104* (5), 834-839.

FIGURE 2.22. POLYDRUG USE AT INTAKE AND FOLLOW-UP (n = 52)



a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).

Self-reported Severity of Substance Use Disorder (SUD)

The DSM-5 criteria for SUD included in the Kentucky Kids Recovery intake and follow-up interviews are similar to the criteria for DSM-IV, which has evidence of excellent test-retest reliability and validity.[47, 48] However, the DSM-5 does away with the distinction between substance abuse and dependence, substituting severity ranking instead as well as deleting the criterion about legal problems arising from substance use and adds a new criterion about craving and compulsion to use.[49]

Clients were asked if they experienced the 11 symptoms listed in the DSM-5 for substance use disorder. The severity of substance use disorder is based on the number of criteria met: none (0-1), mild (2-3), moderate (4-5), or severe (6+). Experiencing at least 2 of the 11 criteria during the same 12-month period met criteria for substance use disorder (SUD).

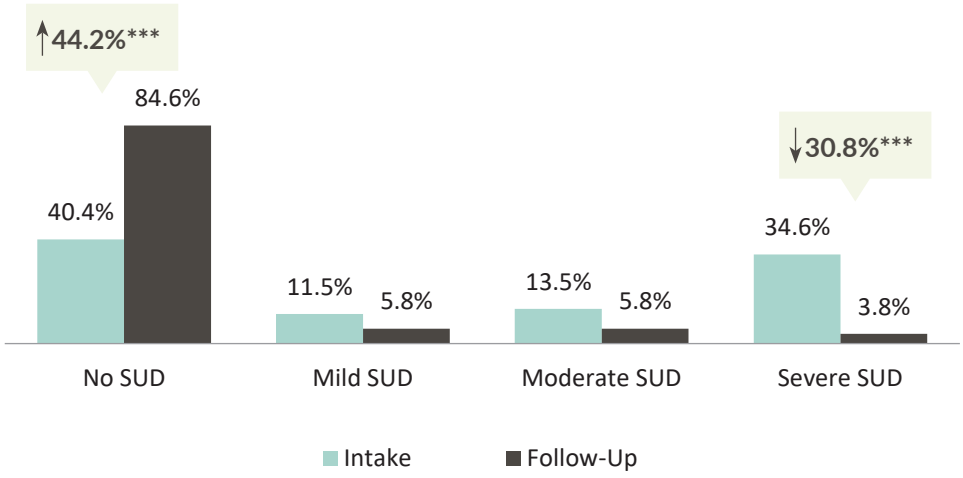
Change in the severity of SUD in the prior 12 months was examined for adolescents at intake and follow-up. Figure 2.23 displays the change in the percent of individuals in each SUD severity classification, based on self-reported criteria in the preceding 12 months. At intake, 40.4% met criteria for no substance use disorder (meaning they reported 0 or 1 DSM-5 criteria for SUD), while at follow-up, the majority (84.6%) met criteria for no SUD--a significant increase. At the other extreme of the continuum, more than one-third of individuals (34.6%) met criteria for severe SUD at intake, while at follow-up, only 3.8% met criteria for severe SUD, which was a significant increase.

[47] Hasin, D., & Paykin, A. (1999). Alcohol dependence and abuse diagnoses: Concurrent validity in a nationally representative sample. *Alcoholism: Clinical and Experimental Research, 23*(1), 144-150.

[48] Hasin, D., Trautman, K.,Miele, G., Samet, S., Smith, M., & Endicott, J. (1996). Psychiatric Research Interview for Substance and Mental Disorders (PRISM): Reliability for substance abusers. *American Journal of Psychiatry, 153*(9), 1195-1201.

[49] Malone, M., & Hoffmann, N. (2016). A comparison of DSM-IV versus DSM-5 substance use disorder diagnoses in adolescent populations. *Journal of Child & Adolescent Substance Abuse, 25*(5), 399-408.

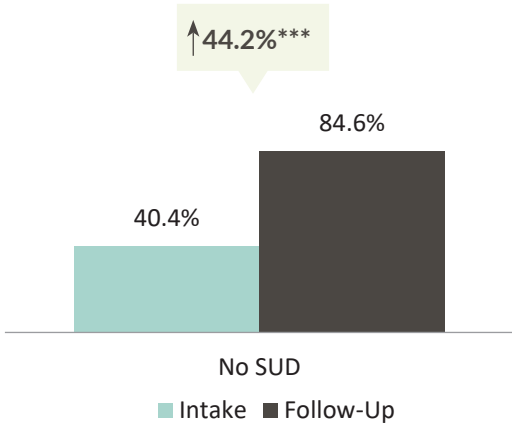
FIGURE 2.23. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (n = 52)



a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).

Because the McNemar test can be conducted only on dichotomous variables, individuals were classified into one of two categories to examine change in severity of SUD from intake to follow-up: No SUD and Mild, Moderate, or Severe SUD. Figure 2.24 shows that there was a significant increase in the number of individuals who met criteria for no SUD.

FIGURE 2.24. MET CRITERIA FOR NO SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP (N = 52)



***p < .001.

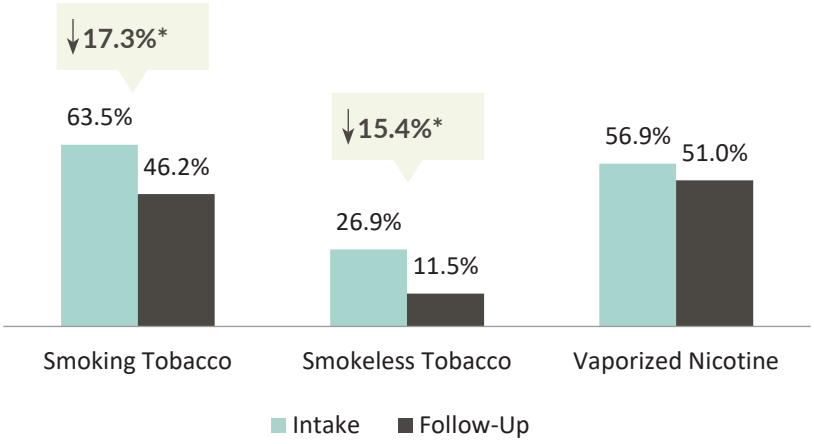
Smoking Tobacco, Smokeless Tobacco, and Vaporized Nicotine

Past-12-month Smoking Tobacco, Smokeless Tobacco, and Vaporized Nicotine

There were significant decreases in the percent of adolescents reporting smoking tobacco and smokeless tobacco, but no significant reduction in the percent of adolescents who reported using vaporized nicotine use (see Figure 2.25). The majority of clients reported smoking tobacco in the 12 months before entering treatment (63.5%), with a significant decrease

of 17.3% to 46.2% at follow-up. A smaller percent of individuals reported using smokeless tobacco, with a significant decrease, from intake (26.9%) to follow-up (11.5%). The majority of adolescents reported using vaporized nicotine in the 12 months before intake and follow-up (see Figure 2.25).

FIGURE 2.25. PAST-12-MONTH TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 52)[50]

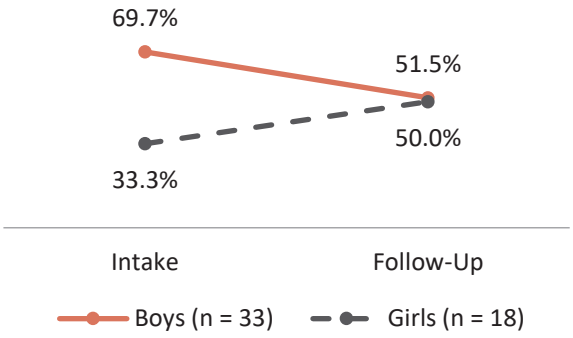


*p < .05.

GENDER DIFFERENCES IN PAST-12-MONTH VAPORIZED NICOTINE USE

Significantly more boys than girls reported using vaporized nicotine in the 12 months before intake (see Figure 2.26). The percent of girls who reported using vaporized nicotine increased non-significantly, and the percent of boys who reported using vaporized nicotine decrease non-significantly, such that at follow-up, similar percentages of boys and girls reported use.

FIGURE 2.26. GENDER DIFFERENCE IN VAPORIZED NICOTINE USE AT INTAKE AND FOLLOW-UP (n = 51)[a]



a—Significantly more boys than girls reported using vaporized nicotine at intake (p < .05).

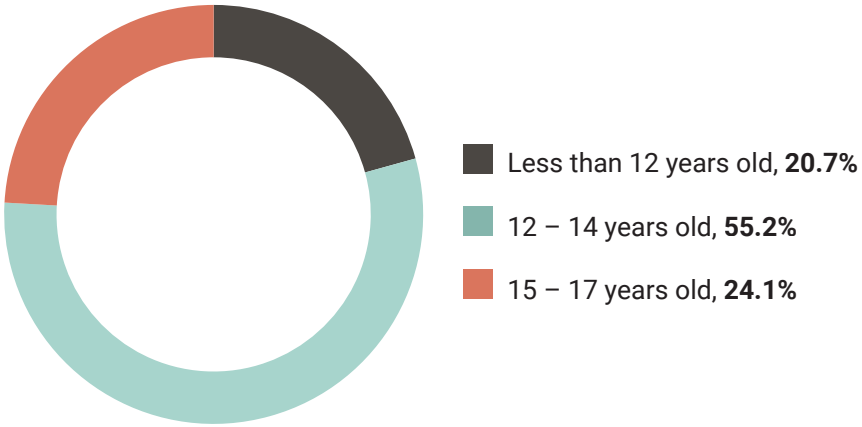
AVERAGE AGE BEGAN SMOKING REGULARLY

Individuals who reported smoking tobacco products in the 12 months before intake were

[50] One client had missing data for vaporized nicotine use at follow-up.

asked how old they were when they began smoking regularly (i.e., on a daily basis). Among the individuals who reported smoking tobacco products (n = 29), they began smoking regularly on average at age 12.8 years old.[51] Figure 2.27 shows the percent of individuals who reported beginning smoking regularly at different ages.

FIGURE 2.27. AVERAGE AGE BEGAN SMOKING TOBACCO REGULARLY (n = 29)

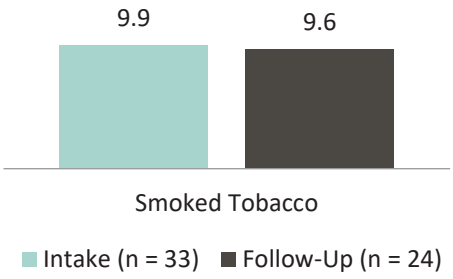


AVERAGE NUMBER OF MONTHS OF TOBACCO USE

Figure 2.28 shows the number of months clients reported using tobacco at intake and follow-up among those who reported any use. Among the clients who reported using tobacco in the 12 months before entering treatment (n = 33), they reported using tobacco, on average, 9.9 months. Among clients who reported using tobacco in the 12 months before follow-up (n = 24), they reported using, on average, 9.6 months.

Significantly more boys than girls used vaporized nicotine at intake

FIGURE 2.28. AMONG INDIVIDUALS WHO USED TOBACCO, THE AVERAGE NUMBER OF MONTHS OF TOBACCO USE AT INTAKE AND FOLLOW-UP



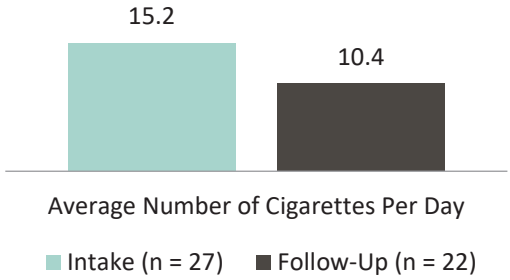
AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY

The average number of cigarettes clients reported smoking at intake and follow-up remained

[51] Four individuals who reported smoking tobacco in the 12 months before intake reported they had never begun smoking regularly, thus they did not report an age they began smoking.

stable (see Figure 2.29). Of those who smoked tobacco at intake, clients reported smoking an average of 15.2 cigarettes in a day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 10.4 cigarettes in a day.

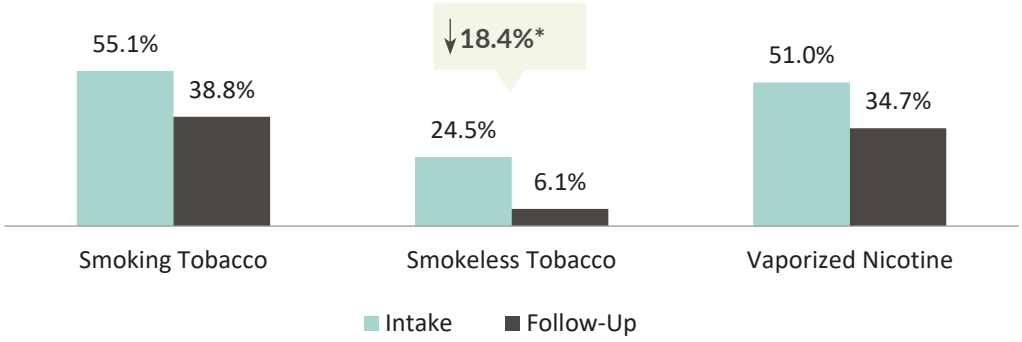
FIGURE 2.29. AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO SMOKED[52]



Past-30-day Smoking Tobacco, Smokeless Tobacco, and Vaporized Nicotine Use

The number of individuals who reported any past-30-day smoking tobacco and vaporized nicotine use did not change significantly from intake to follow-up (see Figure 2.30). However, the number of adolescents who reported using smokeless tobacco decreased significantly from intake to follow-up.

FIGURE 2.30. PAST-30-DAY SMOKING TOBACCO, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE AT INTAKE AND FOLLOW-UP (N = 49)



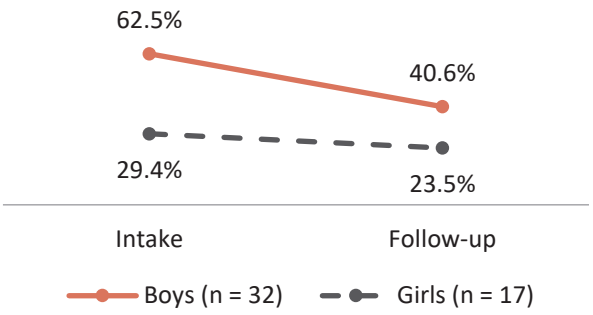
*p < .05.

GENDER DIFFERENCE IN PAST-30-DAY VAPORIZED NICOTINE USE

Significantly more boys than girls reported using vaporized nicotine at intake (see Figure 2.31). At follow-up, the difference in percent of boys and girls using vaporized nicotine was no longer statistically significant.

[52] Six individuals had missing data on the number of cigarettes they smoked on an average day at intake. Two individuals had missing data on the number of cigarettes they smoked on an average day at follow-up.

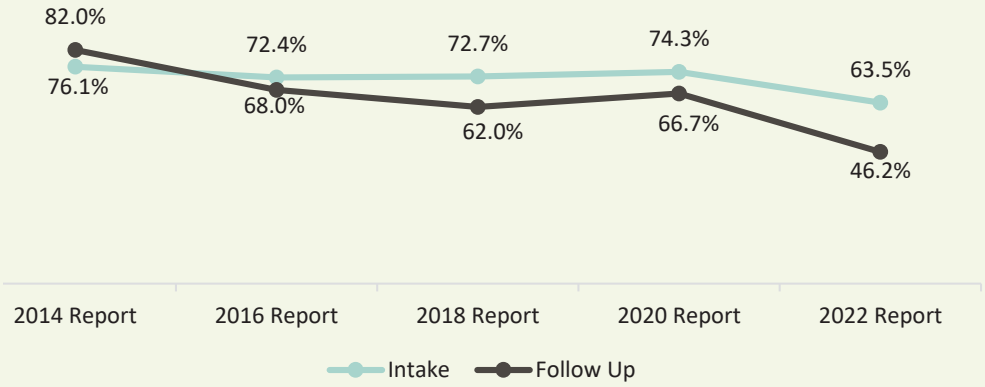
FIGURE 2.31. GENDER DIFFERENCE IN VAPORIZED NICOTINE USE AT INTAKE AND FOLLOW-UP (n = 49)[a]



a—Significantly more boys reported using smokeless tobacco at intake ($p < .05$) compared to girls.

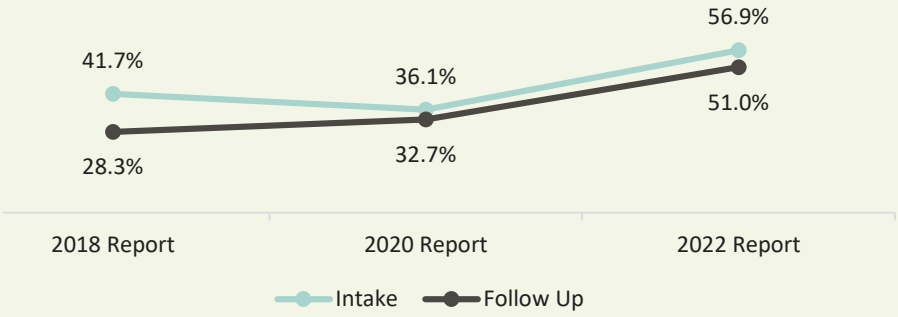
TREND REPORT: SMOKING TOBACCO

High percentages of youth reported smoking tobacco in the past 12 months at intake and follow-up in all report years; however, the percentages decreased in 2022 for intake and follow-up.



TREND REPORT: VAPORIZED NICOTINE

The percent of adolescents who have reported using vaporized nicotine in the past 12 months at intake and follow-up increased from the 2020 report to the 2022 report.



Section 3. Mental Health

This section examines change from pre-treatment compared to 12-month follow-up on seven mental health measures: (1) attention problems, (2) internalizing problems, (3) externalizing problems, (4) disordered eating, (5) suicidal ideation or attempts, and (6) stress and coping. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients.

The brief 17-item version of the Pediatric Symptom Checklist (PSC-17), which was included in this study to measure mental health problems, has been validated in detecting psychosocial impairment among youth.[53, 54, 55] Data from past studies using the PSC indicates that 68% of children who screen positive on the PSC will be correctly identified as having moderate to serious impairment in psychosocial functioning. Meanwhile, 95% of individuals who are classified as not having moderate or serious impairment are unlikely to be impaired.[56] Items ask youth to report how often they experienced the listed problems. Response options are: 0 (Never), 1 (Sometimes), and 2 (Often). The values are summed to calculate the subscale scores. Three subscales are included in the PSC-17: Attention Problems (i.e., attention deficits and hyperactivity), Internalizing Problems (i.e., depression and anxiety symptoms), and Externalizing Problems (i.e., conduct problems and aggressive behavior).

Two other mental health domains were measured in the assessment: disordered eating and suicide ideation/attempts. First, three items from the SCOFF Questionnaire, a screening for eating disorders, were included in the assessment: (1) Do you make yourself sick because you feel uncomfortably full? (2) Have you recently lost more than 14 lbs. in a three-month period? And (3) Do you believe yourself to be fat when others say you are too thin?[57] Response options were No or Yes. An answer of "Yes" to any of the items was classified as an indication of disordered eating. Second, clients were asked if they had thoughts of suicide or had attempted suicide in the 12 months before entering treatment. These two items were taken from the psychiatric domain of the Teen ASI.[58] An affirmative response to either question was classified as suicide ideation/attempts.

[53] Borowsky, I. W., Mozayeny, S., & Ireland, M. (2003). Brief psychosocial screening at health supervision and acute care visits. *Pediatrics, 112*(1 Pt 1), 129-33.

[54] Duke, N., Ireland, M. & Borowsky, I.W. (2005). Identifying psychosocial problems among youth: factors associated with youth agreement on a positive parent-completed PSC-17. *Child: Care, Health, and Development, 31*(5), 563-573.

[55] Gardner, W., Lucas, A., Kolko, D. J., & Campo, J. V. (2007). Comparison of the PSC-17 and alternative mental health screens in an at-risk primary care sample. *Journal of the American Academy of Child & Adolescent Psychiatry, 46*(5), 611-618.

[56] Jellinek, M. S., Murphy, J. M., Robinson, J., Feins, A., Lamb, S., & Fenton, T. (1988). The Pediatric Symptom Checklist: Screening school-age children for psychosocial dysfunction. *Journal of Pediatrics, 112*, 201-209.

[57] Luck, A. J., Morgan, J. F., Reid, F., O'Brien, A., Brunton, J., Price, C., Perry, L., Lacey, J. H. (2002). The SCOFF questionnaire and clinical interview for eating disorders in general practice: Comparative study. *British Medical Journal, 325* (7367), 755-756.

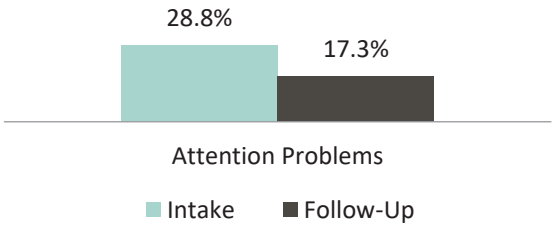
[58] Kaminer, Y., Bukstein, O., & Tarter, R. E. (1991). The Teen-Addiction Severity Index: Rationale and reliability. *Substance Use & Misuse, 26*(2), 219-226.

Attention Problems

The number of individuals who had significant attention problems did not change significantly

To assess adolescents' self-reported attention problems at intake and follow-up, five items from the PSC-17 were included in the intake and follow-up surveys. The five items ask youth how often they have experienced the following problems: (1) fidgety, unable to sit still, (2) daydreams too much, (3) distracted easily, (4) has trouble concentrating, and (5) acts as if driven by a motor. For the Attention Problems subscale, the lowest possible score is 0 and the highest possible score is 10. Children with scores of 7 or higher usually have significant impairments in attention. Figure 3.1 presents the percent of adolescents who had scores of 7 or higher on the Attention Problems subscale at intake and follow-up.

FIGURE 3.1. HAD SIGNIFICANT ATTENTION PROBLEMS AT INTAKE AND FOLLOW-UP (n = 52)

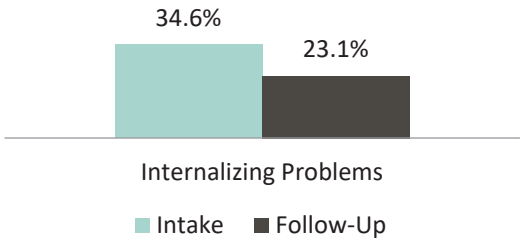


Internalizing Problems

The number of individuals who met study criteria for internalizing problems did not change significantly from intake to follow-up

To assess for internalizing symptoms, the five items from the Internalizing Problems subscale of the PSC-17 were included in the intake and follow-up surveys: (1) Feels sad, unhappy, (2) Feels hopeless, (3) Is down on him or herself, (4) Worries a lot, and (5) Seems to be having less fun. For the Internalizing Problems subscale, the lowest possible score is 0 and the highest possible score is 10. Children with scores of 5 or higher usually have significant internalizing problems. Figure 3.2 presents the percent of adolescents who had scores of 5 or higher on the Internalizing Problems subscale at intake and follow-up.

FIGURE 3.2. HAD SIGNIFICANT INTERNALIZING PROBLEMS AT INTAKE AND FOLLOW-UP (N = 52)

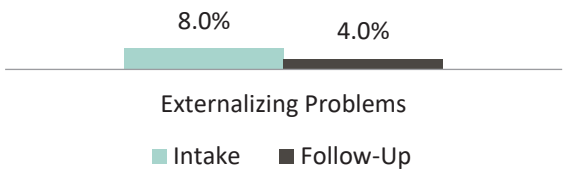


Externalizing Problems

The number of individuals who met study criteria for externalizing problems was very small at intake and follow-up

To assess for externalizing symptoms, the seven items from the Externalizing Problems subscale of the PSC-17 were included in the intake and follow-up surveys: (1) Fights with others, (2) Does not listen to rules, (3) Does not understand other people's feelings, (4) Teases others, (5) Blames others for his or her troubles, (6) Takes things that do not belong to him or her, and (7) Refuses to share. For the Externalizing Problems subscale, the lowest possible score is 0 and the highest possible score is 14. Children with scores of 7 or higher usually have significant impairments with conduct. Figure 3.3 presents the percent of adolescents who had scores of 7 or higher on the Externalizing Problems subscale at intake and follow-up.

FIGURE 3.3. HAD SIGNIFICANT EXTERNALIZING PROBLEMS AT INTAKE AND FOLLOW-UP (N = 50)[a59]

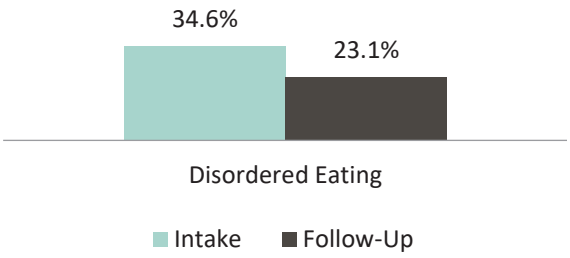


Disordered Eating

About one-third of adolescents had a positive screen for disordered eating at intake

An answer of "Yes" for any of the three items was a positive screening for disordered eating. There was a significant decrease in the percent of individuals who had a positive screen for eating disorder (see Figure 3.4).

FIGURE 3.4. POSITIVE SCREEN FOR DISORDERED EATING AT INTAKE AND FOLLOW-UP (n = 52)



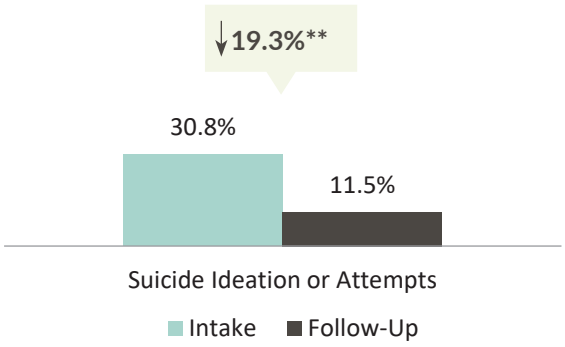
Suicidal Ideation and/or Attempts

The number of individuals who reported suicidal ideation and/or attempts decreased 19% from intake to follow-up

Suicidal ideation and attempts were measured with self-reported questions about thoughts of suicide and actual attempts to commit suicide (e.g., suicidality). The number of individuals who reported suicidality decreased significantly from intake to follow-up (see Figure 3.5).

[59] Two individuals had missing values for at least one of the items used to compute externalizing problems at follow-up.

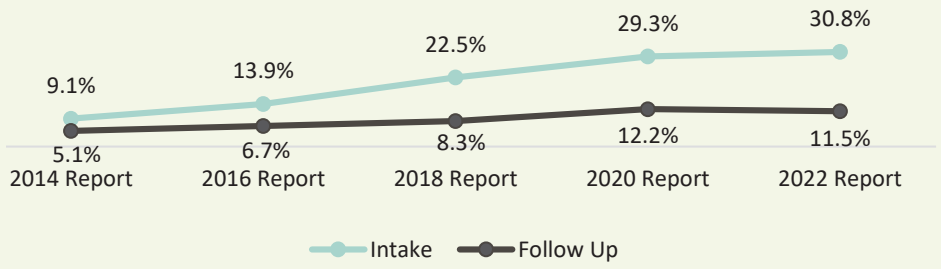
FIGURE 3.5. ADOLESCENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (n = 52)



**p < .01.

TREND REPORT: THOUGHTS OF SUICIDE AND/OR SUICIDE ATTEMPTS

The percent of adolescents who have reported thoughts of suicide and/or suicide attempts in the past 12 months at treatment intake is 3.4 times higher in the 2022 report compared to the 2014 report. Also, the percent of adolescents who reported suicidality at follow-up has increased in the 2020 and 2022 reports.

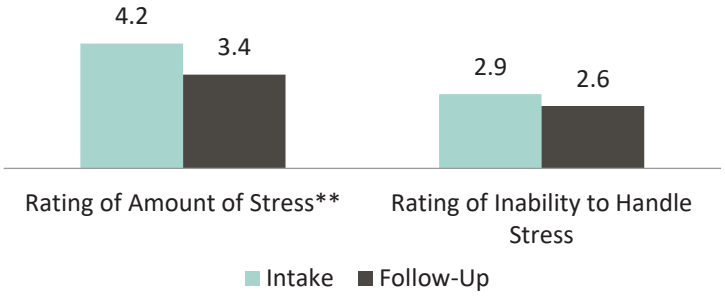


Stress and Coping

Adolescents' perceptions of the amount of stress in their lives and their ability to handle stress were measured in the intake and follow-up surveys. Individuals were asked to think about the past 12 months when rating the amount of stress in their life. Response options range from 1 (No stress) to 6 (Extreme stress). Then adolescents were asked to rate their ability to handle stress, with response options ranging from 1 ("I can shake off stress") to 6 ("Stress eats away at me"). Thus, higher scores on both scales indicate worse states (i.e., more stress and poorer coping ability).

Figure 3.6 shows significant decreases in stress from intake to follow-up but no change in their rating of their inability to handle stress. In other words, individuals' level of stress decreased and their ability to cope with stress did not change significantly over time.

FIGURE 3.6. RATING OF STRESS AND COPING AT INTAKE AND FOLLOW-UP (N =52)

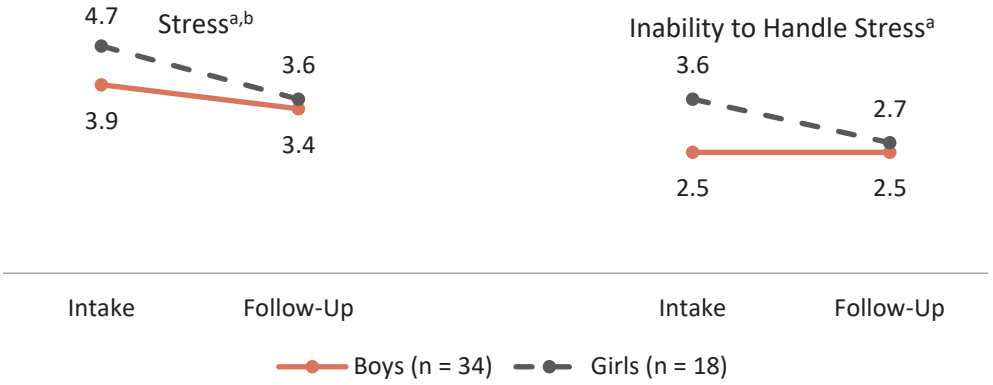


**p < .01.

Gender Differences in Stress and Coping

Compared to boys, girls rated their stress and inability to handle stress, on average, significantly higher at intake (see Figure 3.7). The decrease in girls' self-reported stress decreased from intake to follow-up, while the boys' self-reported stress did not change significantly. The decrease in girls' average rating of their inability to handle stress was not statistically significant.

FIGURE 3.7. GENDER DIFFERENCES IN STRESS AND COPING AT INTAKE AND FOLLOW-UP (n = 52)



a—Compared to boys, girls had significantly higher scores at intake; p < .05.
b—Paired t-test for mean change from intake to follow-up was statistically significant for girls (p < .01).

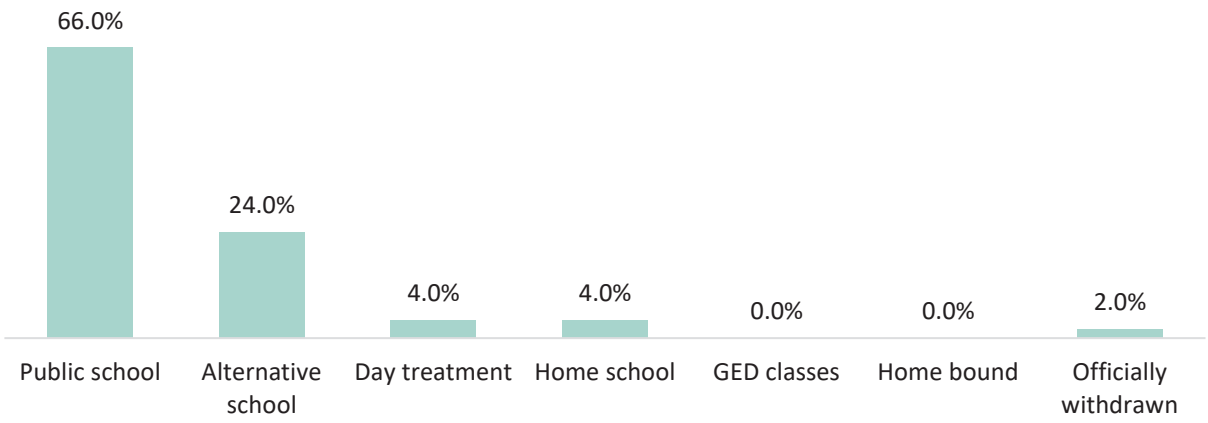
Section 4. Education and Employment

This section examines changes in education and employment from pre-program to 12-month follow-up. Specifically, this subsection presents data on: (1) attending school, (2) grade point average, (3) school absences for any reason and specifically for disciplinary reasons, (4) detention, suspension, and expulsion, (5) satisfaction with school, (6) education status for individuals 18 years old and older at follow-up, and (7) employment status among those who were attending school and among those who were not attending school. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients.

Attending School

At intake, two individuals (3.8%) had a high school diploma. Of the remaining 50 adolescents, the vast majority reported they were currently attending school or taking GED classes at intake (98.0%), with only 2.0% reporting they were officially withdrawn from school (see Figure 4.1). The largest percentage of youth were enrolled in public school (66.0%), followed by 24.0% in alternative school, 4.0% in day treatment, and 4.0% in home school.

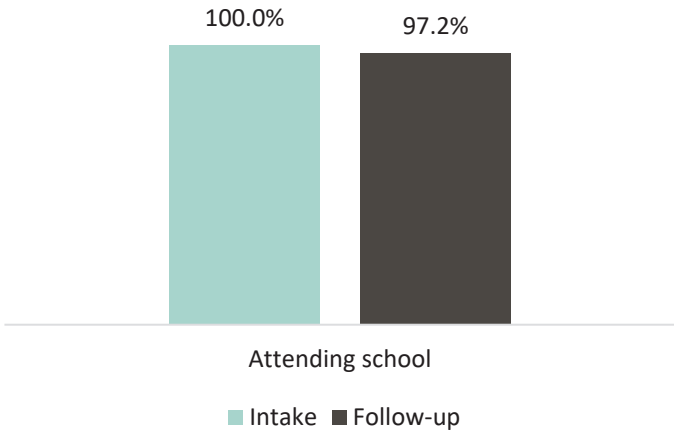
FIGURE 4.1. PERCENT OF INDIVIDUALS ATTENDING DIFFERENT TYPES OF SCHOOLS AT INTAKE, AMONG THOSE WITH LESS THAN A HIGH SCHOOL DIPLOMA (n = 50)



Of the 32 individuals who had not received their high school diploma by follow-up, Figure 4.2 shows the percent enrolled in school (including public, private, alternative, day treatment, home school, and GED classes) at intake and follow-up. There was no significant change in the number of adolescents attending school.

Among the individuals who had not completed their high school diploma, the majority were enrolled in school at intake and follow-up

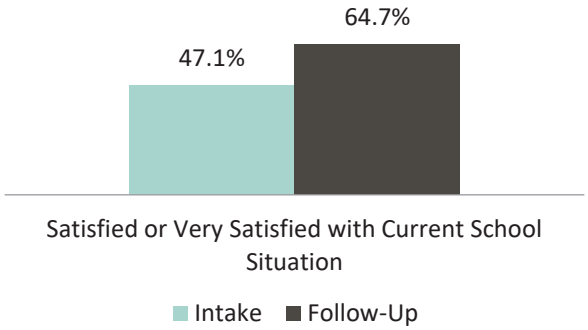
FIGURE 4.2. AMONG INDIVIDUALS WITH LESS THAN A HIGH SCHOOL DIPLOMA AT FOLLOW-UP, THE PERCENT ATTENDING SCHOOL AT INTAKE AND FOLLOW-UP (n = 32)



Satisfaction with School Situation

Individuals who were enrolled in school were asked to rate how satisfied they were with their current school situation (including the quality of classes, quality of teaching, and relationships with peers). Responses ranged from 1 'Very dissatisfied' to 5 'Very satisfied'. The number of individuals who reported being satisfied or very satisfied with their current school situation was a little less than half at intake (47.1%) and 64.7% at follow-up (see Figure 4.3).

FIGURE 4.3. AMONG THOSE ENROLLED IN SCHOOL AT INTAKE AND FOLLOW-UP (n = 34), THE PERCENT OF CLIENTS WHO WERE SATISFIED OR VERY SATISFIED WITH THEIR CURRENT SCHOOL SITUATION

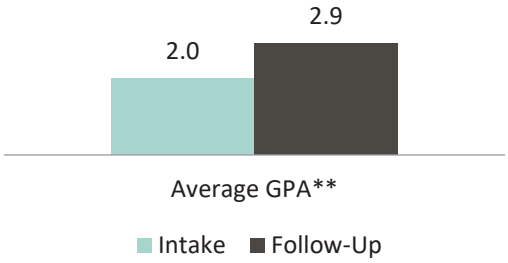


Grade Point Average

Among individuals who were enrolled in school at intake and follow-up, students' academic performance was assessed by examining their self-reported grade point average (GPA; see Figure 4.4). The highest GPA is 4.0, equivalent to an A, and the lowest GPA is a 0.0, equivalent to an F or E. At intake, the average GPA was 2.0 (a C). At follow-up, adolescents' average GPA had increased significantly to 2.9 (closer to a B than a C).

Self-reported GPA increased significantly from intake to follow-up

FIGURE 4.4. AMONG THOSE ENROLLED IN SECONDARY SCHOOL AT INTAKE AND FOLLOW-UP (N = 24)[60], SELF-REPORTED AVERAGE GPA



**p < .01.

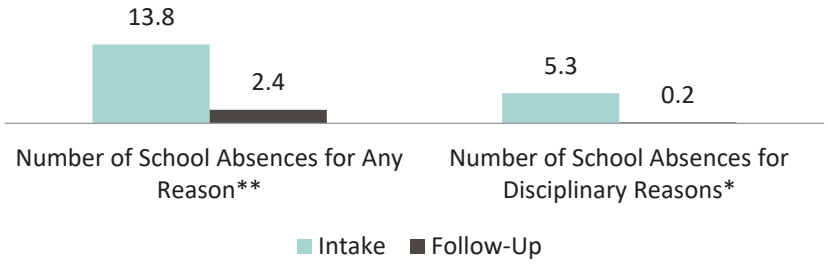
School Absences for Any Reason and for Disciplinary Reasons

Individuals who had less than a high school diploma or GED were asked if they had attended school in the past 3 months it was in session. For those who answered yes, they were asked several questions in the intake and follow-up surveys about the number of days they missed for various reasons in the past 3 months.

Among those who were enrolled in school in the past 3 months at both intake and follow-up, the average number of school absences decreased significantly from 13.8 days at intake to 2.4 days at follow-up (see Figure 4.5). Not only was there a significant decrease in total school absences, but also there was a significant decrease in the average number of absences for disciplinary reasons (e.g., in-school and out-of-school suspension and expulsion).

The average number of school absences decreased significantly from 13.8 at intake to 2.4 at follow-up

FIGURE 4.5. AMONG THOSE ENROLLED IN SCHOOL IN THE PAST 3 MONTHS SCHOOL WAS IN SESSION AT INTAKE AND FOLLOW-UP (n = 34)[61], AVERAGE NUMBER OF SCHOOL ABSENCES



*p < .05, **p < .01.

[60] At follow-up, 26 adolescents had less than a high school diploma or GED at follow-up and were enrolled in school at intake and follow-up. Data on grades was missing for 2 students at follow-up.

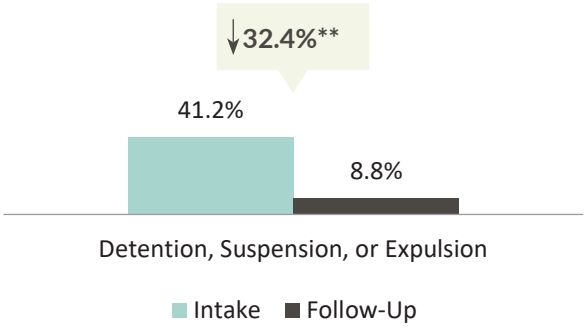
[61] 34 individuals reported they were enrolled in school at in the 3 months before intake and the 3 months before follow-up.

Detention, Suspension, and Expulsion

The number of adolescents who reported being in detention, suspended, or expelled in the past 3 months that school was in session decreased significantly 32.4% (see Figure 4.6). At intake, about two-fifths of individuals (41.2%) reported they had been in detention, suspended, or expelled, whereas at follow-up, this had decreased to 8.8%.

The number of youth in detention, suspended, or expelled decreased 32%

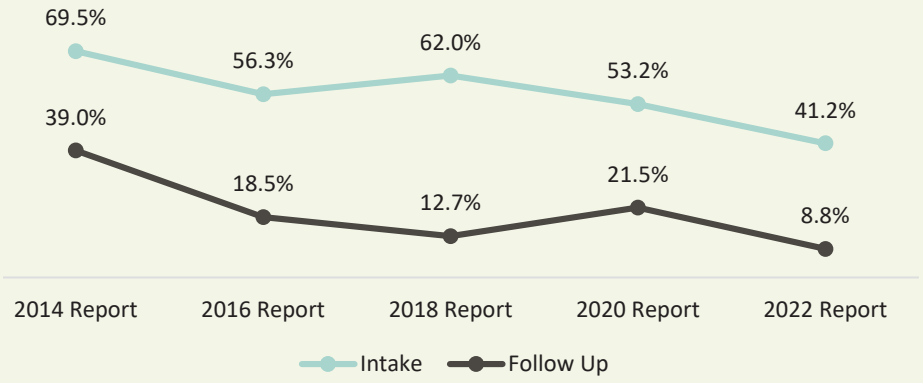
FIGURE 4.6. AMONG THOSE ENROLLED IN SCHOOL IN THE PAST 3 MONTHS SCHOOL WAS IN SESSION AT INTAKE AND FOLLOW-UP (n = 34), THE PERCENT OF CLIENTS WHO WERE IN DETENTION OR EXPELLED



**p < .01.

TREND REPORT: DETENTION, SUSPENSION, AND EXPULSION

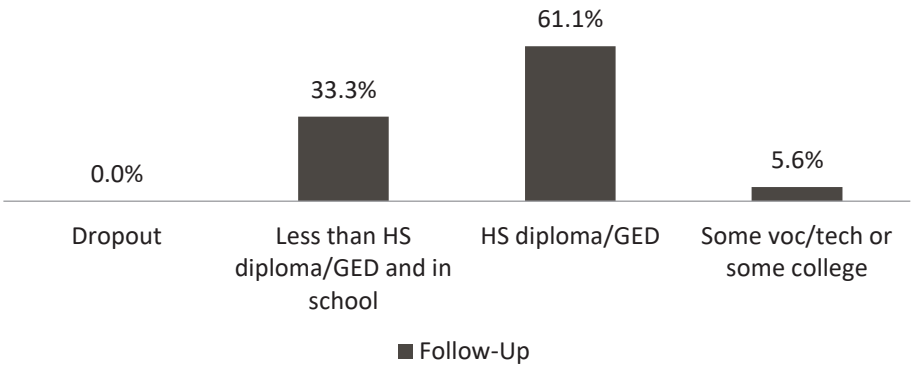
Among the adolescents who reported being in school the last 90 days school was in session, the majority reported they had missed school because they were in detention, suspended, or expelled at intake. Significant decreases in the percent of enrolled youth who reported they missed school because of detention, suspension, or expulsion were found at follow-up for all four biannual reports, with the decreases increasing in the 2016, 2018, and 2022 reports.



Education Status Among Individuals 18 Years Old and Older

Because all of the individuals eligible for participation in the follow-up study were under 18 years old at intake, it was expected that only a small number of individuals would already have a high school diploma or GED. In fact, two individuals (3.8%) reported they had already attained a high school diploma or GED at intake. However, by follow-up, 18 individuals were 18 or 19 years old. Because this is an age when a typical individual graduates from high school, we examined the education status at follow-up of this subsample (see Figure 4.7). Among these individuals, none of them reported they were not enrolled in school and had less than a high school diploma or GED (i.e., dropout); this is the category of individuals that would cause the greatest concern. One-third (33.3%) had less than a high school diploma or GED and they were enrolled in secondary public school or home school. The majority of the 18-year-old individuals (61.1%) had attained a high school diploma or GED by follow-up and were not enrolled in school, with one person reporting that they were enrolled in post-secondary school.

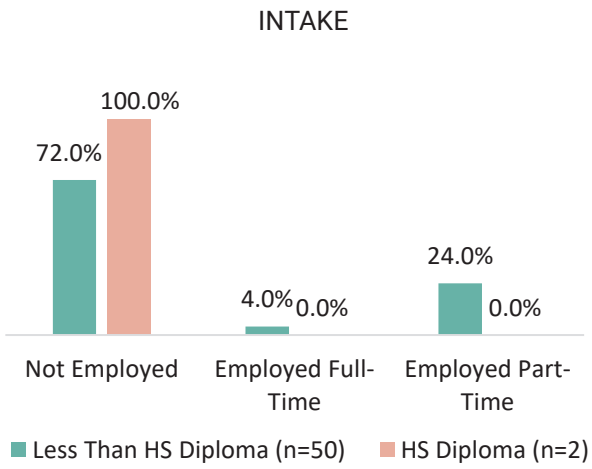
FIGURE 4.7. EDUCATION STATUS AT FOLLOW-UP AMONG CLIENTS 18 YEARS OLD AND OLDER (N = 18)

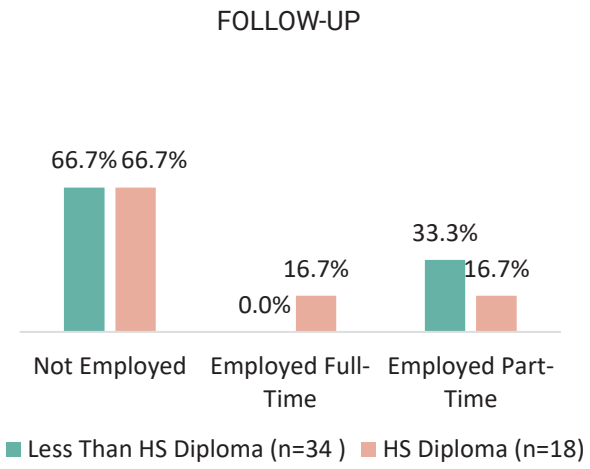


Employment

For the two individuals who reported they had a high school diploma or GED at intake, neither reported they were employed full-time or part-time. Among the 50 adolescents who reported they had less than a high school diploma or GED, the majority reported they were not employed at intake, with 24.0% reporting part-time work and 4.0% reporting full-time work.

FIGURE 4.8A & 4.8B. EMPLOYMENT STATUS BY COMPLETION OF HIGH SCHOOL DIPLOMA/GED AT INTAKE AND FOLLOW-UP





"It really changed how I looked at life."

- AKTOS FOLLOW-UP CLIENT

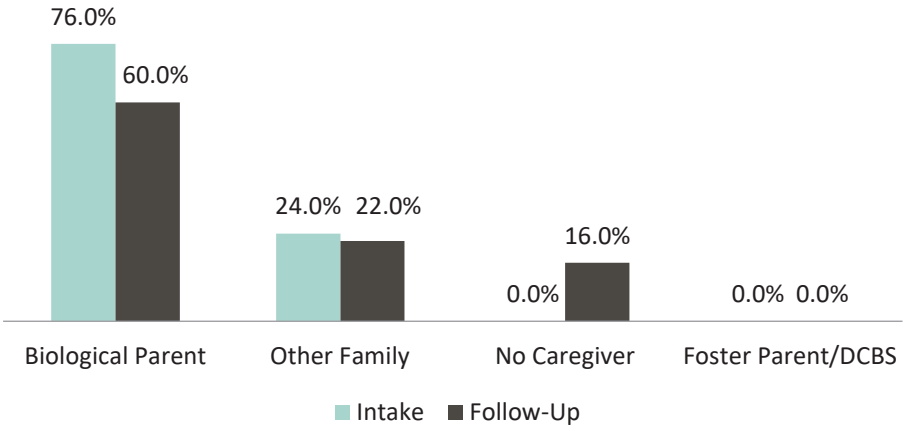
Section 5. Living Situation

This section of targeted factors examines change in clients' living situation before they entered treatment and at 12-month follow-up. Specifically, clients are asked at both periods about: (1) their primary caregiver, (2) their primary caregiver's involvement in their life, and (3) the types of residences they had lived in the past 12 months (i.e., parents' home, other relatives' home, foster care, institutional facility, on their own). Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients.

Primary Caregiver

The majority of adolescents reported at intake and follow-up that their primary caregiver was their biological parent (see Figure 5.1).[62] At intake and follow-up, the next most frequently reported caregiver was other family (including kinship foster care and adoptive parents). None of the adolescents reported at intake that they did not have a primary caregiver, and 16.0% reported this (i.e., being an emancipated minor or 18 years old) at follow-up. Of the 8 individuals who reported at follow-up that they had no primary caregiver, all of them were 18 or 19 years old at the time of the follow-up survey. None of the adolescents included in the follow-up sample reported their primary caregiver was DCBS or a foster parent at intake or follow-up.

FIGURE 5.1. PRIMARY CAREGIVER AT INTAKE AND FOLLOW-UP (n = 50)[63]



Caregiver Involvement

Parental involvement is an important mediating factor for substance use among adolescents, such that greater parental involvement is associated with lower substance use and risk for

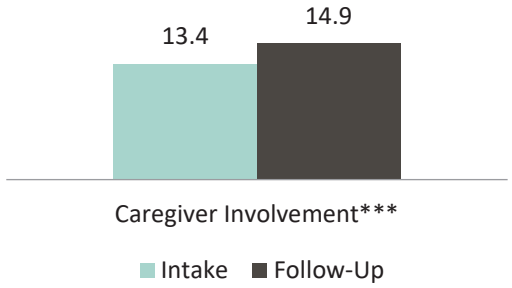
[62] The percent of individuals with the different types of caregivers at intake and follow-up are presented for descriptive purposes. No statistical test was appropriate to examine change over time for this variable.

[63] Two individuals had missing data for primary caregiver at follow-up.

addiction.[64, 65] A brief measure of parental involvement that assesses the quality and quantity of interactions between parents and adolescents was included in the intake and follow-up interviews.[66] Five items from a 6-item parental involvement scale that was used in the national Survey of Children (NSC) were included. The first three items assess the affective quality of the child's relationship to his/her primary caregiver. The remaining three items assess the behavioral dimension of parental involvement by asking about spending time together and supportive types of communication and interaction. The minimum score is 5 and the maximum score is 17. Higher scores indicate greater involvement of the caregiver in the child's life.

Adolescents' ratings of their primary caregiver's involvement in their lives significantly increased from intake to follow-up (see Figure 5.2).

FIGURE 5.2. CAREGIVER INVOLVEMENT IN CHILD'S LIFE AT INTAKE AND FOLLOW-UP (n = 39)[67]



**p < .01.

Living Situation

Individuals were asked to report all the types of residences they lived in the prior 12 months at intake and follow-up; because individuals could report more than one type of residence the categories presented in Figure 5.3 are not mutually exclusive. The majority of youth reported at intake and follow-up that they had lived with their biological parents at home in the prior 12 months. Nearly one-third of adolescents and about one-fourth at follow-up reported they had lived with other relatives (including kinship foster care). A small number of individuals reported living in foster care at intake and none reported this at follow-up. Small percentages reported living independently or in a school dormitory at intake and follow-up. Finally, the number of individuals who reported they had lived in an institutional setting (e.g., juvenile detention, residential treatment, group home) significantly decreased 20.5% at follow-up.

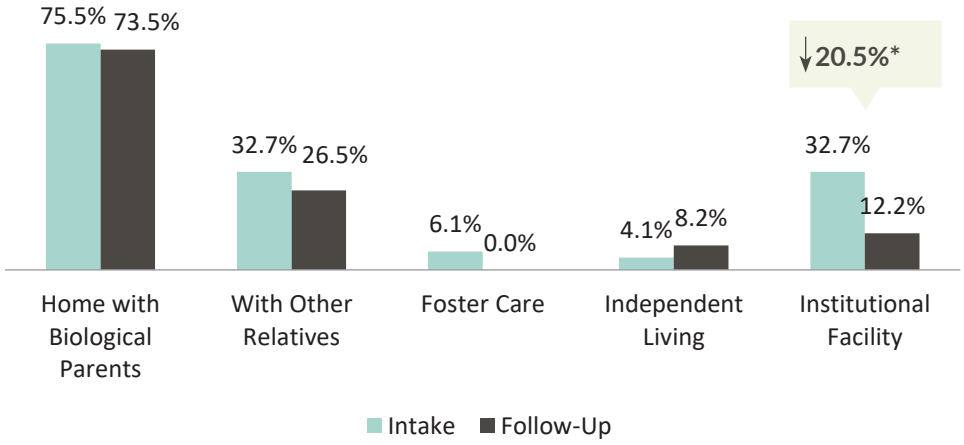
[64] Broman, C.L.; Reckase, M.D. & Freeman-Doan, C.R. (2006). The role of parenting in drugs use among Black, Latino, and White adolescents. *Journal of Ethnicity in Substance Abuse, 5*(1), 39–50.

[65] Choquet, M.; Hassler, C.; Morin, D.; Falissard, B. & Chau, N. (2008). Perceived parenting styles and tobacco, alcohol and cannabis use among French adolescents: Gender and family structure differentials. *Alcohol & Alcoholism, 43*(1), 73–80.

[66] Harris, K. M., Furstenberg, F. F., & Marmer, J. K. (1998). Paternal involvement with adolescents in intact families: The influence of fathers over the life course. *Demography, 35*(2), 201-216.

[67] Ten individuals reported they did not have a caregiver or this data was missing at either intake or follow-up. Furthermore, two additional cases had missing data for the caregiver involvement scale at follow-up.

FIGURE 5.3. LIVING SITUATION IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (n = 49)[68]



*p < .05.

[68] Three individuals had missing values on variables for living situation at follow-up.

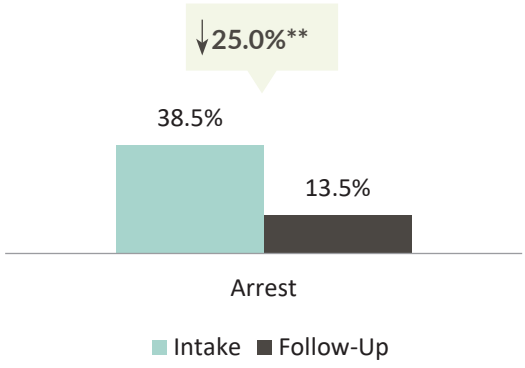
Section 6. Criminal Justice System Involvement

This section describes self-reported change in client involvement with the juvenile justice system during the 12-month period before entering treatment and the 12-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest, (2) the number of times arrested, (3) types of juvenile offenses among those with arrests, (4) incarceration, and (5) supervision by the juvenile justice system. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients.

Arrests

At intake, clients were asked about their arrests in the 12 months before they entered treatment. At follow-up, clients were asked about their arrests in the 12 months prior to the follow-up interview. Almost 2 in 5 adolescents reported an arrest in the 12 months before entering treatment, with a significant decrease of 25.0% in the follow-up period (see Figure 6.1).

FIGURE 6.1. PERCENT OF CLIENTS REPORTING ARRESTS IN THE PAST 12 MONTHS AT INTAKE AND FOLLOW-UP (n = 52)

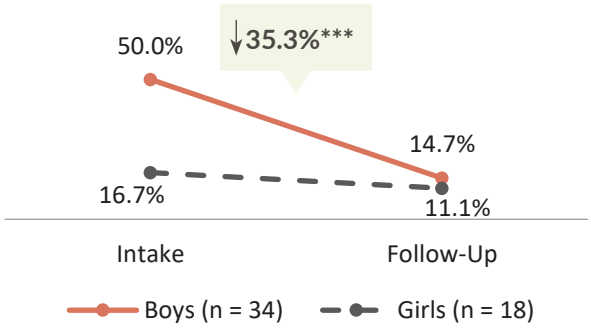


**p < .01.

Gender Differences in Arrests

At intake, significantly more boys reported they were arrested in the prior 12 months compared to girls (see Figure 6.2). The number of boys who reported they were arrested decreased from intake to follow-up. There was no significant change in the percent of girls who reported an arrest, and no gender difference at follow-up.

FIGURE 6.2. GENDER DIFFERENCE IN ARRESTS IN THE PAST 12 MONTHS AT INTAKE AND FOLLOW-UP (n = 52)

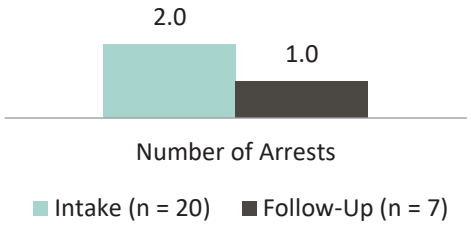


a—Statistical difference by gender at intake ($p < .05$).
***$p < .001$.

Average Number of Arrests, Among Those with an Arrest

Among those individuals who reported any arrests at each period, the average number of arrests are presented in Figure 6.3. Not only did the percent of individuals who reported being arrested decrease from intake to follow-up, but the average number of arrests reported by those with an arrest also decreased from 2.0 at intake to 1.0 at follow-up.

FIGURE 6.3. AVERAGE NUMBER ARRESTS AT INTAKE AND FOLLOW-UP, AMONG THOSE WITH AT LEAST ONE ARREST

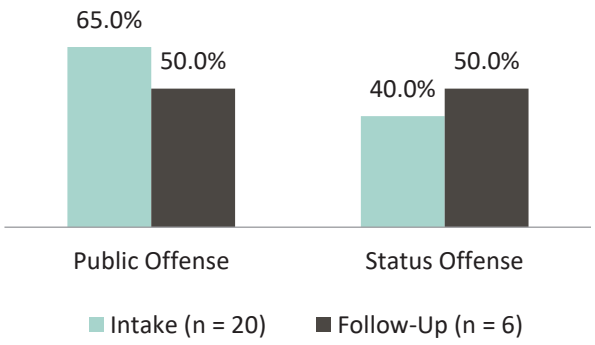


Types of Criminal Charges

Adolescents who reported being arrested were asked to report the number of status offenses and public offenses in the 12 months before intake and follow-up.[69] Figure 6.4 shows the percent of adolescents who reported being charged with different types of offenses among those who reported being arrested at intake and follow-up.

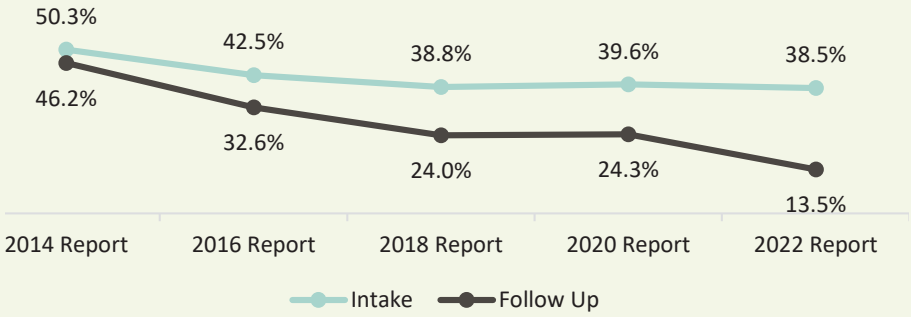
[69] One or more charges for each offense type was recoded into a categorical variable (Yes/No).

FIGURE 6.4. PERCENT OF ADOLESCENTS WHO WERE CHARGED WITH DIFFERENT TYPES OF CRIMINAL OFFENSES, AMONG THOSE WHO REPORTED BEING ARRESTED AT INTAKE AND FOLLOW-UP[70]



TREND REPORT: ARRESTS

Among the adolescents who were in the follow-up samples for AKTOS across the years, the percent who have reported being arrested in the past 12 months at intake and follow-up, has decreased since the 2014 report, with the percentages in this 2022 report being the lowest, which also corresponds to the report with the smallest sample size.



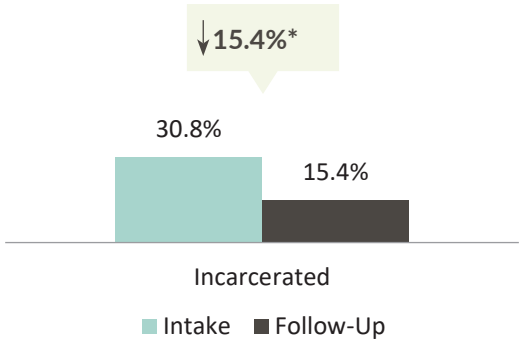
Incarceration

A minority of adolescents (30.8%) reported spending at least one night incarcerated in the 12 months prior to entering treatment (See Figure 6.5). At follow-up, only 15.4% of adolescents reported spending at least one night incarcerated in the past 12 months, which was a statistically significant decrease.

The number of adolescents who reported being incarcerated in the past 12 months decreased significantly

[70] One individual who reported they were arrested in the 12 months before follow-up had missing values for types of criminal charges.

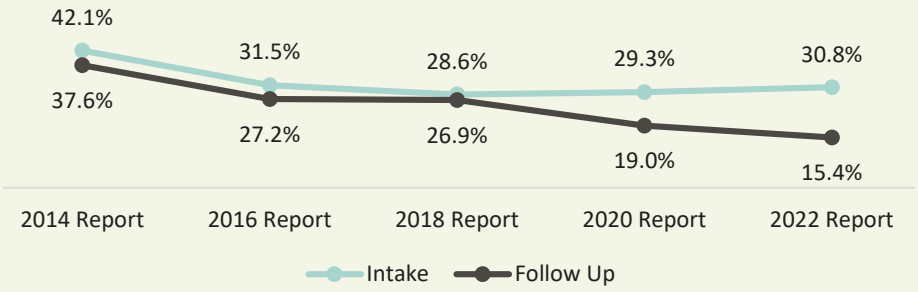
FIGURE 6.5. PERCENT OF CLIENTS REPORTING INCARCERATION IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (n = 52)



*p < .05.

TREND REPORT: DETENTION

Among the adolescents who were in the follow-up samples for AKTOS across the years, decreases from intake to follow-up in detention were significant in only the 2020 and 2022 report samples. The first three biannual reports had no significant changes in detention rates from increase to follow-up. At intake, the percent of adolescents who reported detention has been around 30% for the past four biannual reports. The percentage of adolescents who reported past-12-month detention has fluctuated more for the follow-up period over the years.

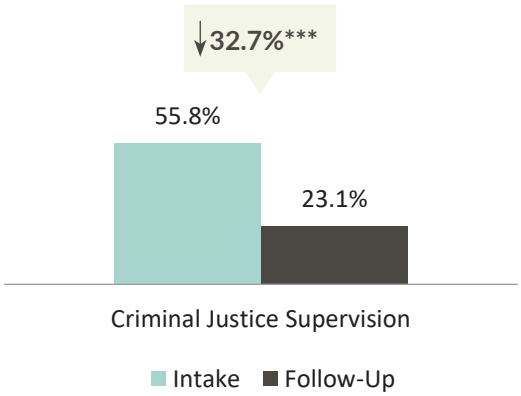


Self-reported Criminal Justice System Supervision

The number of adolescents who self-reported they were under juvenile justice system supervision (e.g., drug court or probation) decreased significantly from 55.8% at intake to 23.1% at follow-up (see Figure 6.6).

The number of adolescents who reported they were under supervision by the criminal justice system decreased significantly 33%

FIGURE 6.6. PERCENT OF CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (n = 52)



***p < .001.

"I liked how open and non-judgmental they were."

- AKTOS FOLLOW-UP CLIENT

Section 7. Recovery Supports

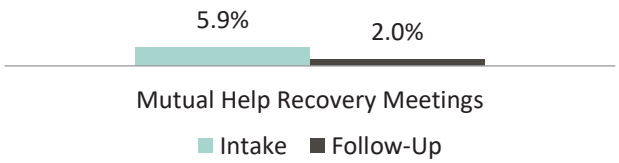
This section focuses on four main changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) recovery supportive interactions with family/friends in the past 30 days, (3) the number of people the participant said they could count on for recovery support, and (4) satisfaction with their recovery support. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences between male and female clients.

Mutual Help Recovery Group Meetings

At intake and follow-up, a small minority of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (See Figure 7.1).

The percent of clients reporting attending mutual help recovery groups remained low and stable from intake to follow-up

FIGURE 7.1. PARTICIPATION IN MUTUAL HELP RECOVERY GROUP MEETINGS AT INTAKE AND FOLLOW-UP (n=51)[71]



Average Number of People Adolescents Could Count on for Recovery Support

The average number of people adolescents reported that they could count on for recovery support increased, but not significantly, from 5.4 at intake to 10.9 at follow-up (see Figure 7.2).

FIGURE 7.2. AVERAGE NUMBER OF PEOPLE ADOLESCENTS COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (n = 50)[72]

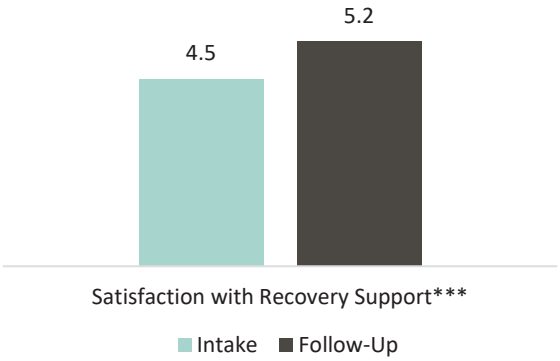
[71] One individual did not answer the question about number of mutual help recovery group meetings in the 30 days before follow-up.

[72] Two individuals had missing values for the number of people clients could count on for recovery support at follow-up.

Satisfaction with Recovery Support

Individuals were asked to rate their satisfaction with the level of recovery support they had in their life at intake and follow-up. Response options ranged from 1 (Extremely dissatisfied) to 6 (Extremely satisfied). Figure 7.3 shows individuals' ratings of their satisfaction with their recovery support, which increased significantly.

FIGURE 7.3. AVERAGE RATING OF SATISFACTION WITH RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (n = 51)[73]



***p < .001.

[73] One individual had missing values for their rating of satisfaction with their recovery support at follow-up.

Section 8. Multidimensional Functioning

This section focuses on change in multidimensional recovery from intake to follow-up.

Recovery from substance abuse is "a process of change through which an individual achieves abstinence and improved health, wellness and quality of life" (p. 5).[74] The SAMHSA definition of recovery is similarly worded and encompasses health (including but not limited to abstinence from alcohol and drugs), having a stable and safe home, a sense of purpose though meaningful daily activities, and a sense of a community.[75] Consistent with the perspective that recovery is a multidimensional construct, encompassing several dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives. Indicators of their status at intake and follow-up included severity of substance use disorder, the level of involvement of their primary caregiver in their lives, involvement in the justice system, suicidal ideation or attempts, ability to cope with stress, education, and recovery support (see Table 8.1).

TABLE 8.1. MULTIDIMENSIONAL FUNCTIONING

Indicator	Better Functioning	Poorer Functioning
Substance use severity	No substance use disorder (SUD)	Mild, moderate or severe substance use disorder (SUD)
Caregiver involvement	Higher score on caregiver involvement scale, or was 18 years old or older and had no caregiver	Lower score on caregiver involvement scale, or had no caregiver (and was less than 18 years old)
Justice system involvement	No arrest or detention	Any arrest or detention
Suicidality	No suicide ideation or attempts	Suicide ideation or attempts
Ability to handle stress	Rating of ability to handle stress of 1 to 5, with 1 being "I can shake stress off," and 6 "Stress eats away at me."	Rating of 6 = "Stress eats away at me"
Education	Had at least a high school diploma/ GED, or was still enrolled in school and had at least a C average	Had less than a high school diploma/ GED and was not enrolled in school, or if enrolled in school, had less than a C average
Recovery support	Had at least one person they could count on for recovery support	Had no one they could count on for recovery support

Table 8.2 presents the frequency of clients who reported each of the specific components of multidimensional functioning at follow-up.

[74] Center on Substance Abuse Treatment. (2007). *National summit on recovery: Conference report* (DHHS Publication No. SMA 07-4276). Rockville, MD: Substance Abuse and Mental Health Services Administration.

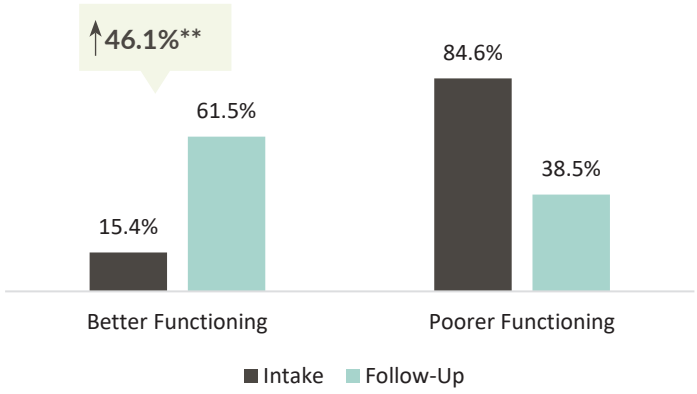
[75] Laudet, A. (2016). *Measuring recovery from substance use disorders.* Workshop presentation at National Academies of Sciences, Engineering, and Medicine (February 24, 2016). Retrieved from https://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_171025.pdf.

TABLE 8.2. PERCENT OF ADOLESCENTS WITH SPECIFIC COMPONENTS OF BETTER OR POORER FUNCTIONING AT FOLLOW-UP (n = 39)[76]

Components of Multidimensional Functioning	Better Functioning	Poorer Functioning
Severity of DSM-5 substance use disorder in the past 12 months.....	87.2%	12.8%
Score on the caregiver involvement scale.....	92.3%	7.7%
Arrests or detention/incarceration in the past 12 months.....	87.2%	12.8%
Thoughts of suicide or suicide attempts in the past 12 months.....	87.2%	12.8%
Ability to handle stress	92.3%	7.7%
Highest level of education and average grade, if enrolled in school ..	94.9%	5.1%
Recovery support	100%	0.0%

At intake, 15.4% of adolescents were classified as having better functioning, based on reporting all seven dimensions of better functioning, when entering treatment (see Figure 8.1). At follow-up, 61.5% were classified as having better functioning. This represents a 46.1% increase in adolescents with all seven dimensions of better functioning at follow-up.

FIGURE 8.1. MULTIDIMENSIONAL FUNCTIONING AT INTAKE AND FOLLOW-UP (n = 39)[77]



** p < .01.

[76] Thirteen individuals had missing values for at least one of the seven dimensions of multidimensional functioning at follow-up.

[77] Thirteen individuals had missing values for at least one of the seven dimensions of multidimensional functioning at follow-up.

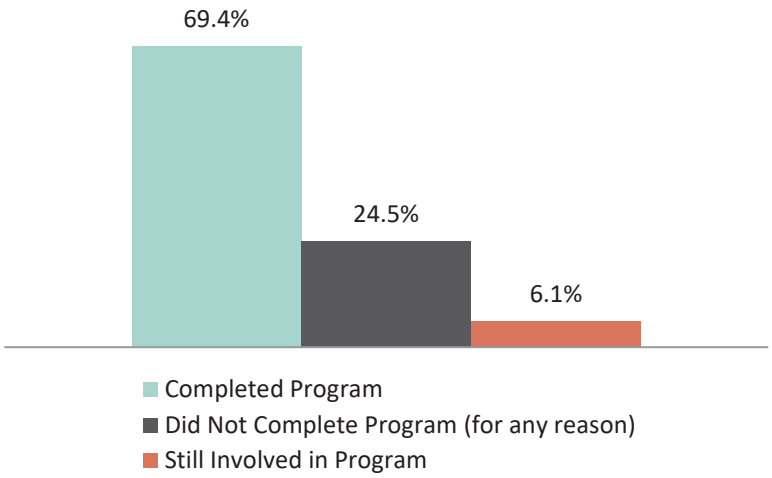
Section 9. Client Satisfaction with Treatment Programs

One of the important outcomes assessed during the follow-up interview is the client perception of the treatment program experience. This section describes three aspects of client satisfaction: (1) client involvement in the program and how they left, (2) recommendation to the program, and (3) overall client satisfaction and client ratings of program experiences.

Client Involvement in the Program

The majority of clients (69.4%) reported at follow-up that they had completed the program they attended or that the program agreed they were ready to leave. A small percent were still involved in the treatment program at follow-up. The following percentages of individuals reported they did not complete treatment and were not still involved (24.5%): 12.3% left before the program staff thought they should and they did not talk to staff about terminating treatment and 10.2% left before the program staff thought they should and they did talk to staff about terminating (see Figure 9.1). The average number of months individuals reported at follow-up they were involved in the program was 4.0.

FIGURE 9.1. CLIENTS WHO REPORTED HOW THE TREATMENT PROGRAM ENDED FOR THEM (n = 50)[78]



Overall, the majority of clients (73.5%) reported that the treatment episode was working/ worked pretty well or extremely well for them, 18.4% said the program worked somewhat well for them, and 8.2% said the program did not work for them at all.

A minority of individuals (14.0%) reported they had been in other treatment programs since they left this treatment episode. Of those clients (n = 7), they reported they had been involved in an average of 1.1 (Min. = 1, Max. = 2) other treatment programs or episodes.

[78] Two individuals had missing data or responses that could not be classified into a category for this variable.

Recommend Others to the Program

The majority of clients (75.5%) indicated they would refer a close friend or family member to their treatment provider. Of the clients who reported they would refer a close friend or family member to the program (n = 37), 32.4% reported they would warn their friend or family member about certain things or tell them who to work with or who to avoid.

Overall Client Satisfaction

At the beginning of the follow-up survey, interviewers asked participants questions about their satisfaction with the treatment programs where 1 represented the worst experience and 10 represented the best experience. Overall, the majority of clients (74.0%) gave a high positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table).[79] The average rating was 8.1.

Figure 9.2 shows that AKTOS clients in the follow-up sample were satisfied with the overall program services. About 4 in 5 individuals said they had input into their treatment goals, plans, and how they were progressing over time (82.0%), their expectations and hopes for treatment and recovery were met (80.0%), the program staff cared about them and their treatment progress (80.0%), and the program staff believed in them and believed that treatment would work for them (78.0%). The majority of individuals said that when they told their counselor or program staff personal things, they felt listened to and heard by them (76.0%), they worked on the things that were most important to them in treatment (76.0%), they had a connection with their counselor or staff person (70.0%), the treatment approach and method was a good fit for them (68.0%), and the length of the program was just right (67.3%). Less than half of individuals said they fully discussed or talked about everything they wanted to with their counselor or program staff.

[79] Two individuals had missing values for the treatment satisfaction items.

FIGURE 9.2. RATINGS OF 8, 9, or 10 OF SPECIFIC TREATMENT PROGRAM EXPERIENCES (N = 50)[80]

[80] Two individuals had missing values for the treatment satisfaction items.

Section 10. Summary and Recommendations

This section presents, summarizes, and discusses the implications of the major findings from the AKTOS 2022 Report.

Substance use disorders in youth are best understood within the context of several interrelated problems, [81, 82] such as childhood adversity and victimization,[83] comorbid psychiatric disorders,[84] and problem behaviors (i.e., delinquency).[85] The 52 youth who completed intake and follow-up interviews for the 2022 AKTOS Follow-Up Study were, on average, 15.9 years old at intake and came into treatment with significant adversities. At treatment intake 94.2% of the adolescents in the follow-up sample reported they had used alcohol and/or illegal drugs in the 12 months before entering treatment, and the average age adolescents began using drugs was 13.1 and 13.0 years old for alcohol. Adverse childhood experiences (ACE) were common; for example, about half of the followed-up adolescents reported experiencing any of the types of maltreatment/abuse at intake. Additionally, the percentages of youth reporting specific types of household risk factors measured within ACE were high, particularly for having a household member with an alcohol abuse problem or using illegal drugs and youth's parents living separately (due to divorce or never being married). Many youth's educational involvement was suboptimal: for example, an average GPA equivalent to a C grade, and two-fifths of adolescents enrolled in school (41.2%) had been in school detention, suspended, or expelled from school in the past 90 days school was in session at treatment intake. Further, more than one-half of adolescents reported they were under supervision by the justice system at treatment intake and nearly two-fifths had been arrested in the 12 months before intake. Finally, minorities of clients had clinically significant internalizing problems and attention problems, , as well as thoughts of suicide or attempts and disordered eating before entering treatment.

The outcomes data showed significant decreases in substance use and severity of substance use over time. The follow-up findings show that 94.2% of adolescents reported that they had used alcohol and/or drugs in the 12 months before intake. By follow-up, the number of adolescents who reported they had used alcohol and/or drugs decreased to 36.5%. Specifically, the number of adolescents who reported using alcohol in the past 12 months decreased from 55.8% at intake to 30.8% at follow-up. Looking specifically at drugs, a total of 92.3% of adolescents reported that they had used drugs in the 12 months before intake, compared to 26.9% that used drugs in the 12 months before follow-up. In other words, 69.2% of adolescents reported abstaining from alcohol and 73.1% of youth reported abstaining from drugs in the 12-month follow-up period. Other studies have found abstinence rates ranging from 14% to 54% at one-year follow-up, with most of these studies finding 12-month

[81] Jessor, R., and Jessor, S.L. (1997). *Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth.* New York: Academic Press.

[82] Teplin, L., Abram, K., McClelland, G., Dulcan, M., & Mericle, A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 59*, 1133-1143.

[83] Tonmyr, L., Thornton, T., Draca, J., & Wekerle, C. (2010). A review of childhood maltreatment and adolescent substance use relationship. *Current Psychiatry Reviews, 6*(3), 223-234.

[84] Rohde, P., Lewinsohn, P. M., & Seeley, J. R. (1996). Psychiatric comorbidity with problematic alcohol use in high school students. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*(1), 101-109.

[85] Kuperman, S., Schlosser, S., Kramer, J., Bucholz, K., Hesselbrock, V., Reich, T., et al. (2001). Developmental sequences from disruptive behavior diagnosis to adolescent alcohol dependence. *American Journal of Psychiatry, 158*, 2022-2026.

abstinence rates from 30% to 40%.[86] Not only did substance use decrease significantly, but so did severity of substance use, as measured by the number of DSM-5 criteria for substance use disorder (SUD) clients self-reported. At intake, only 40.4% met criteria for no SUD, with 11.5% meeting criteria for mild SUD, 13.5% for moderate SUD, and 34.6% for severe SUD. At follow-up, the number of individuals who met criteria for no SUD increased significantly to 84.6%. The American Society of Addiction Medicine (ASAM) has recommended that treatment outcome studies take into account that individuals with substance use disorders are not a uniformed group, differing in terms of severity of substance use.[87]

Adolescents who abuse substances are at higher risk of drop-out or non-completion of a degree.[88] Poor grades or school performance can be an indication of drop-out risk. Keeping youth in school until high school graduation has substantial impacts on their future earning capability. In fact, the rate of return is higher for completing a high school diploma than for completing college.[89] Individuals who complete a high school degree or obtain some college education have exponentially higher income than those who do not advance their education.[90, 91] Because of this, it is important to examine education in a substance abuse treatment outcome study. In the AKTOS follow-up sample, the vast majority of individuals who had not yet obtained a high school diploma at follow-up were still enrolled in school at follow-up (97.2%). Additionally, there was a significant increase in GPA from intake (2.0) to follow-up (2.9) and significant decreases in the number of school absences for any reason as well as school absences for disciplinary reasons. Not only were there improvements in academic performance and attendance among those enrolled in school, but fewer individuals enrolled in school had received disciplinary measures such as detention, suspension, or expulsion at follow-up (8.8%) as compared to intake (41.2%). Another positive finding is that when individuals who had reached the age that most individuals typically graduate from high school (18 years old) by follow-up were examined (n = 18), all were either still enrolled in secondary school (33.3%), had obtained a high school diploma or GED (61.1%), or were enrolled in post-secondary school (5.6%). None of the individuals who were 18 years old at follow-up had dropped out of school. How does this percent compare to the percent of youth in Kentucky who do not graduate from high school in four years? In the 2019-2020 school year, the five-year adjusted cohort graduation rate for Kentucky was 92.0%, meaning that 8.0% of students did not graduate in the five years.[92] Thus, the dropout rate for the individuals in the follow-up sample is lower than the rate for the general population of high school students in Kentucky.

Clients' involvement with the juvenile justice system decreased over time with significantly

[86] Williams, R. J., & Chang, S. Y. (2000). A comprehensive and comparative review of adolescent substance abuse treatment outcome. *Clinical Psychology: Science & Practice, 7*, 138-166.

[87] American Society of Addiction Medicine. (2005). *Principles for outcome evaluation: AMBHA-ASAM joint statement*. Chevy Chase, MD: American Society of Addiction Medicine.

[88] DuPont, R. L., Campbell, M. D., Campbell, T. G., Shea, C. L., & DuPont, H. S. (2013). Self-reported drug and alcohol use and attitudes toward drug testing in high schools with random student drug testing. *Journal of Child & Adolescent Substance Abuse, 22*(2), 104-119.

[89] Heckman, J., Lochner, P., & Todd, P. (2008). Earnings functions and rates of return. *Journal of Human Capital, 2*(1), 1-31.

[90] Autor, D. H., Katz, L.F. & Kearney, M.S. (2005). *Rising Wage Inequality: The Role of Composition and Prices.* NBER technical working paper 11627.

[91] Heckman, J.J., & LaFontaine, P.A. (2010). The American high school graduation rate: Trends and levels. *The Review of Economics and Statistics, 92* (2), 244-262.

[92] Kentucky Department of Education. (2021). https://education.ky.gov/comm/edfacts/Pages/default.aspx

fewer individuals reporting they had been arrested, incarcerated, or under supervision by the juvenile justice system in the 12 months before follow-up as compared to the 12 months before treatment intake. Families play an important role in the treatment of substance abusing juveniles, either positive or negative. Substance use or juvenile involvement among caregivers or lack of parental involvement are risk factors for substance abuse and delinquent behavior among adolescents.[93] In this sample of adolescent treatment clients, adolescents' ratings of their primary caregiver's involvement in their lives significantly increased from intake to follow-up. Given that 70.6% of the boys and 50.0% of the girls had a household member with a substance abuse problem and 35.3% of the boys and 27.8% of the girls had a household member who had ever been incarcerated, treatment that works to mitigate some of these risks to adolescents is necessary.

Psychiatric comorbidity is common in adolescents with substance use disorders.[94, 95] Because adolescents with substance use disorders and comorbid psychiatric disorders have poorer substance abuse treatment outcomes than those with only substance use disorders, there is growing evidence that integrated treatment of comorbid psychiatric disorders in substance abuse treatment may improve treatment engagement and treatment completion as well as treatment outcomes.[96, 97, 98] In this study, adolescents' self-reported suicidal thoughts/attempts decreased from intake to follow-up. Along these same lines, individuals' ratings of the amount of stress in their lives decreased significantly from intake to follow-up.

A number of studies on interpersonal victimization have found an association of interpersonal victimization, trauma exposure, and substance use/substance use disorders.[99, 100, 101] In this sample of adolescent clients of substance abuse treatment in Kentucky, interpersonal victimization and childhood adversities were relatively common experiences. High percentages of clients had experienced interpersonal victimization in their lives and had exposure to multiple household adversities, such as divorced parents/parents living apart and someone in their household abusing alcohol or using illicit drugs. Importantly, significant associations were found between the number of adverse childhood experiences individuals reported experiencing in their lifetime and substance use and mental health problems. Specifically, individuals with

[93] National Institute on Drug Abuse. (2014). *Principles of drug abuse treatment for juvenile justice populations: A research-based guide.* Retrieved December 20, 2016 from https://www.drugabuse.gov/publications/principles-drug-abuse-treatment-juvenile-justice-populations-research-based-guide.

[94] Armstrong, T. D., & Costello, E. J. (2002). Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. *Journal of Consulting and Clinical Psychology, 70,* 1224-1239.

[95] Turner, W.C., Muck, R.D., Muck, R.J., Stephens, R.L., & Sukumar, B. (2004). Co-occurring disorders in the adolescent mental health and substance abuse treatment systems. *Journal of Psychoactive Drugs, 36*, 455–462.

[96] Grella, C. E., Hser, Y. I., Joshi, V., & Rounds-Bryant, J. (2001). Drug treatment outcomes for adolescents with comorbid mental and substance use disorders. *Journal of Nervous & Mental Disease, 189*(6), 384-392.

[97] Wise, B. K., Cuffe, S. P., Fischer, T. (2001). Dual diagnosis and successful participation of adolescents in substance abuse treatment. *Journal of Substance Abuse Treatment, 21*(3), 161-165.

[98] Cornelius, J. R., Maisto, S. A., Martin, C. S., Bukstein, O. G., Salloum, I. M., Daley, D. C., Wood, D. S., & Clark, D. B. (2004). Major depression associated with earlier alcohol relapse in treated teens with AUD. *Addictive Behavior, 29*, 1035-1038.

[99] Kilpatrick, D. G., Saunders, B. E., & Smith, D. W. (2003). *Youth victimization: Prevalence and implications. Research in brief*. Washington, DC: US Department of Justice, Office of Justice Programs.

[100] McCart, M. R., Zajac, K., Danielson, C. K., Strachan, M., Ruggiero, K. J., Smith, D. W., Saunders, B. E., & Kilpatrick, D. G. (2011). Interpersonal victimization, posttraumatic stress disorder, and change in adolescent substance use prevalence over a ten-year period. *Journal of Clinical Child and Adolescent Psychology, 40*, 136-143. Doi:10.1080/15374416.2011.533411.

[101] Vermeiren, R., Schwab-Stone, M., Deboutte, D., Leckman, P. E., & Ruchkin, V. (2003). Violence exposure and substance use in adolescents: Findings from three countries. *Pediatrics, 111*, 535-540. doi: 10.1542/peds.111.3.535

no SUD had fewer adverse childhood experiences than individuals with moderate and severe SUD. Individuals with more adverse childhood experiences reported using cannabis/marijuana, opioids (other than heroin), heroin, CNS depressants, stimulants/cocaine, alcohol, smoking tobacco products, and vaporized nicotine more months in the 12 months before entering treatment. Individuals with more adverse childhood experiences had more attention problem symptoms, internalizing symptoms, and externalizing symptoms.

Early identification of those who experience adverse childhood experiences and intervention to address the trauma symptomatology, emotion regulation deficits, and cognitive effects could prevent a number of negative consequences. Substance abuse treatment could address these experiences, which may have profound and lasting effects on youth's emotion regulation, cognitive capacities, and interpersonal relationships. Assessment of a range of victimization experiences should be explored with youth entering substance abuse treatment, and because prior research has shown that youth may not disclose victimization experiences at intake, the Center for Substance Abuse Treatment (CSAT) TIP on child abuse and neglect issues recommends that properly trained substance abuse treatment providers' assessment for victimization should be carried out at intervals during the course of treatment.[102] Moreover, assessment of adverse childhood experiences and traumatic events should also be followed with trauma-integrated substance abuse treatment. Prior research shows that youth with trauma exposure and symptomatology do not do well in treatment that focuses only on substance use and does not also address trauma symptoms.[103, 104]

Not only do trauma and adverse childhood experiences act as risk factors for substance abuse, but substance abuse is also a risk factor for trauma exposure and victimization. Numerous epidemiological studies have found that substance use disorders precede the onset of trauma exposure for many adolescents.[105, 106] Furthermore, there is also evidence that youth who are already abusing substances may be less able to cope with a traumatic event because of the functional impairments in emotion and cognition associated with problematic substance use.[107] Therefore, it is critical that substance abuse treatment programs provide trauma-integrated treatment and psychoeducation to help youth develop more positive coping strategies and recognize risks and improve their decision-making regarding risks.

Youth reported high satisfaction with treatment providers, which is important because higher

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[102] Center for Substance Abuse Treatment. (2000). *Substance abuse treatment for persons with child abuse and neglect issues.* Treatment Improvement Protocol (TIP) Series, No. 36. Rockville, MD: Substance Abuse and mental Health Services Administration.

[103] Funk, R. R., McDermeit, M., Godley, S. H., & Adams, L. (2003). Maltreatment issues by level of adolescent substance abuse treatment: The extent of the problem at intake and relationship to early outcomes. *Child Maltreatment, 8*(1), 36-45.

[104] Grella, C. E., & Joshi, V. (2003). Treatment processes and outcomes among adolescents with a history of abuse who are in drug treatment. *Child Maltreatment, 8*(1), 7-18.

[105] Giaconia, R. M., Reinherz, H. Z., Hauf, A. C., Paradis, A. D., Wasserman, M. S., & Langhammer, D. M. (2000). Comorbidity of substance use and post-traumatic stress disorders in a community sample of adolescents. *American Journal of Orthopsychiatry, 70*(2), 253-262.

[106] Perkonigg, A., Kessler, R. C., Storz, S., & Wittchen, H. U. (2000). Traumatic events and post-traumatic stress disorder in the community: Prevalence, risk factors and comorbidity. Acta *Psychiatry of Scandanavia, 101*(1), 46-59.

[107] National Child Traumatic Stress Network. (2008). Understanding the links between adolescent trauma and substance abuse: A toolkit for providers (2nd ed.). National Child Traumatic Stress Network. http://www.nctsnet.org/sites/default/files/assets/pdfs/satoolkit_providerguide.pdf

levels of satisfaction with treatment are associated with positive treatment outcomes.[108] Specifically, the majority of youth gave a highly positive rating of 8 to 10 for their treatment experience on a scale of 1 to 10, with 10 representing the best experience. Additionally, the majority of clients agreed with the following statements about their treatment episode: they had input into their treatment goals, plans, how their progress; their expectations and hopes for treatment and recovery were met; they felt the program staff cared about them and their treatment progress; the program staff believed in them and believed that treatment would work for them; when clients told staff personal things they felt listened to and heard by their counselor/program staff; they worked on and talked about things that were most important to the clients; they had a connection with a counselor or staff person during treatment; the treatment approach and method was a good fit for the client; and the length of the program was just right.

Areas of Concern

Even with the significant positive changes in adolescents' functioning there was a minority of adolescents who continued to struggle with substance use, mental health problems, school attendance and performance, and juvenile justice system involvement. Moreover, there were important differences between male and female clients, which should inform treatment.

Gender differences. There were a number of gender differences that warrant attention. First, girls had more adverse childhood experiences when compared to boys. Specifically, within their family household, significantly more girls reported emotional maltreatment and sexual abuse than boys in their lifetime. Significantly more girls reported they had experienced physical assault perpetrated by an intimate partner and sexual victimization perpetrated by an intimate partner or peer when compared to boys. This finding is consistent with other research conducted with adolescents in substance abuse treatment, where female clients were more likely to report child maltreatment, neglect, and sexual abuse than boys.[109, 110, 111]

There were significant gender differences in alcohol and use of drugs other than cannabis/marijuana. Significantly more boys reported past-12-month use of drugs other than cannabis/marijuana and alcohol use to intoxication when compared to girls. At intake, significantly more boys than girls reported using vaporized nicotine in the 12 months and 30 days before intake. There was no gender difference in use of smoking tobacco and smokeless tobacco.

The relatively limited research that has been conducted on gender differences in psychiatric comorbidity with adolescents in substance abuse treatment has found that girls exhibit more

[108] Waxman, H.M. (1996). Using outcomes assessment for quality improvement. In L.I. Sederer & B. Dickey (Eds.), Outcomes assessment in clinical practice, (pp. 25-33), Boston, Massachusetts: Williams and Wilkins.

[109] Hodgins, S., Lovenhag, S., Rehn, M., & Nilsson, K. W. (2014). A 5-year follow-up study of adolescents who sought treatment for substance misuse in Sweden. *European Child & Adolescent Psychiatry, 23*, 347-360.

[110] Rosenkranz, S. E., Muller, R. T., & Henderson, J. L. (2012). Psychological maltreatment in relation to substance use problem severity among youth. *Child Abuse & Neglect, 36*(5), 438-448.

[111] Oshri, A., Tubman, J. G., & Jaccard, J. (2011). Psychiatric symptom typology in a sample of youth receiving substance abuse treatment services: Associations with self-reported child maltreatment sexual risk behaviors. *AIDS and Behavior, 15*(8), 1844-1856.

internalizing symptoms and suicidal behavior than boys.[112, 113] The findings from the AKTOS 2022 evaluation report found girls had higher ratings of stress and inability to cope with stress compared to boys at intake. Mitchell et al. (2016) note that because the number of males in substance abuse treatment is higher than the number of females many substance abuse treatment facilities for adolescents may be geared more toward responding to the needs of male clients than to female clients. Greater attention to the needs of female clients may improve the responsiveness of treatment facilities to female clients, such as even higher rates of psychiatric comorbidity, more victimization experiences, and higher smoking tobacco rates.

Tobacco/Nicotine Use. Tobacco smoking among adolescents increases the risk of other drug use and the risk of nicotine addiction.[114] In fact, of all addictions to substances, nicotine addiction is the one most likely to occur in adolescence.136 In contrast to the general population of Kentucky high school students (8.9%), the AKTOS follow-up sample of treatment clients had a significantly higher rate for smoking tobacco in the 30 days before treatment intake (55.1%) and follow-up (38.8%). The findings for tobacco use were not as positive as the findings for alcohol and drug use in terms of reductions in the number of adolescents who reported using in the 12 months before intake and follow-up. For example, in the 12 months before intake the majority of adolescents (63.5%) reported they had smoked tobacco. In the 12 months before follow-up, the percent of adolescents who reported smoking tobacco products had decreased significantly to 46.2%. Even though this was a statistically significant decrease, it is important to note that nearly half of clients who were followed up had smoked tobacco at follow-up.

What's more, of those who reported smoking tobacco products, the average age they began smoking tobacco regularly was 12.8 years old. Prior research has shown that individuals who began smoking tobacco before age 14 are significantly less likely to have stopped smoking in young adulthood than individuals who began smoking at age 14 or later.[115] These findings are consistent with other research on tobacco use among adolescents in substance abuse treatment.[116], [117] Nonetheless, substance use treatment offers a unique opportunity to intervene with tobacco-using adolescents by integrating tobacco cessation interventions with other substance use treatment, which can be important for attaining and continuing abstinence.[139] The belief that quitting smoking while attempting to quit alcohol or drugs may increase the risk of alcohol or drug relapse is pervasive and yet empirical evidence indicates that voluntary smoking cessation interventions with adults and adolescents do not negatively

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[112] Achenbach, T., Howell, C. Quay, H., & Conners, C. (1991). National survey of problems and competencies among four- to sixteen-year olds. *Monographs of the Society for Research in Child Development, 56*(3), 1-130.

[113] Mitchell, P. F., Kutin, J. J., Daley, K., Best, D., & Bruun, A. J. (2016). Gender differences in psychosocial complexity for a cohort of adolescents attending youth-specific substance abuse services. *Children and Youth Services Review, 68*, 34-43.

[114] Centers for Disease Control & Prevention (CDC). (1994). *Preventing tobacco use among young people: A report of the Surgeon General.* Atlanta, GA: U.S. Department of Health and Human Services.

[115] Breslau, N. & Peterson, E. L. (1996). Smoking cessation in young adults: age at initiation of cigarette smoking and other suspected influences. *American Journal of Public Health, 86*, 214–220.

[116] Campbell, C. I., Chi, F., Sterling, S., Kohn, C., & Weisner, C. (2009). Self-initiated tobacco cessation and substance use outcomes among adolescents entering substance use treatment in a managed care organization. *Addictive Behaviors, 34*(2), 171-179.

[117] Myers, M. G., & MacPherson, L. (2004). Smoking cessation efforts among substance abusing adolescents. *Drug and Alcohol Dependence, 73*(2), 209-213.

impact alcohol and drug recovery.[118, 119, 120]

In contrast to the general population of Kentucky high school students who reported smoking cigarettes/cigars in the past 30 days (13.0%) and using vaporized nicotine in the past 30 days (8.7%), larger numbers of AKTOS treatment clients had smoked tobacco (55.1%) and used vaporized nicotine (51.0%). Similar percentages of the AKTOS follow-up sample reported smoking tobacco and using vaporized nicotine at follow-up. The percent of AKTOS individuals who report using vaporized nicotine increased from the 2020 report to the 2022 report. A closer and more in-depth examination of the overlap between smoking tobacco products and using vaporized nicotine products is needed.

Recovery Supports. In this sample of adolescents, there was no significant increase in the number of individuals who reported attending mutual help recovery meetings from intake to follow-up. Participation in mutual help recovery meetings is an important recovery support that is associated with abstinence and lower risk of relapse among adults.[121] Nonetheless, limited research has examined the role of AA and NA meeting attendance among adolescents.[122] The few studies that have been conducted suggest that adolescents who attend AA/NA meetings after residential substance abuse treatment are more likely to remain abstinent.[123, 124, 125] Yet, adolescents' attendance at group meetings that are predominately composed of adults may not be helpful and may even be harmful.[126, 127] Many communities, including many if not most in Kentucky, may not have mutual help group meetings specifically for adolescents. Other forms of recovery support may be crucial to helping adolescents maintain their recovery, such as peer support, particularly in communities that lack mutual help group meetings that are specific for adolescents. Research shows that adolescents benefit from continuing care following treatment,[128] such as drug use monitoring, follow-up visits at home, and linking to

[118] de Dios, M. A., Vaughan, E. L., Stanton, C. A., & Niaura, R. (2009). Adolescent tobacco use and substance abuse treatment outcomes. *Journal of Substance Abuse Treatment, 37*(1), 17-24.

[119] Myers, M.G., & Brown., S.A. (2005). A controlled study of a cigarette smoking cessation intervention for adolescents in substance abuse treatment. *Psychology of Addictive Behaviors, 19*, 230–233.

[120] Reid, M. S., Fallon, B., Sonne, S., Flammino, F., Nunes, E. V., Jiang, H., Kourniotis, E., Lima, J., Brady, R., Burgess, C., Arfken, C., Pihlgren, E., Giordano, L., Starosta, A., Robinson, J., & Rotrosen, J. (2008). Smoking cessation treatment in community-based substance abuse rehabilitation programs. *Journal of Substance Abuse Treatment, 35*, 68-77.

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other family services. However, the research on recovery supports for adolescents is more limited than it is for adults.

Limitations of the Study

There are several limitations. First, this study examined adolescents who received substance abuse treatment in fiscal years 2019-2020, but did not examine a comparison group of similar adolescents who did not receive treatment, which prevents us from inferring that changes from intake to follow-up are due solely to treatment. Because adolescents may still be experimenting with substances, it is difficult to tease apart developmental and peer influences from the effects of treatment when examining outcomes for this age group. Second, both the intake data and the follow-up data were self-reported. While self-reports have been shown to be valid in comparison to urinalyses,[129] reliance on self-reports in this study may be an important limitation. Third, unlike many outcome studies, this study does not focus on a single treatment modality or a set of pre-selected treatment modalities such as residential treatment, or any one approach like social skills training. Likewise, this treatment outcome study is not a clinical trial that tests the efficacy of interventions. The AKTOS Outcome Evaluation examined treatment outcomes from everyday clinical practice among Kentucky's community mental health centers (CMHCs), which includes clients who have participated in many different treatment modalities including residential, intensive outpatient, and outpatient. Fourth, clinicians have varying interview skills and this might impact the reliability and validity of the data they collected for the intake. Fifth, even though the expectation was that clinicians would enter data into the AKTOS Client Information System for all adolescents clients receiving substance abuse treatment in the community mental health centers, we have no way of determining what percent of clients served were not included in the data set.

Conclusion

Findings from the AKTOS 2022 report indicate successful treatment experiences for many adolescents, with significant reductions in substance use and severity, decreases in mental health problems, improved relationships with caregivers, greater attainment of high school diplomas, improved academic performance fewer youth with school disciplinary problems, and reduced involvement in the justice system. Slowing down or stopping youth's substance use trajectories may lead to substantial increases in education, lower psychiatric comorbidities, and lower juvenile behavior and involvement in the justice system—all of which may have significant positive effects on the youth's long-term development.

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Appendix A. Method

The intake and follow-up interview instruments are based on the Adolescent Kentucky Treatment Outcome Study (AKTOS) assessment, which is based on theory and research about substance use-related comorbidities relevant to substance use among adolescents. The assessment has five core components (e.g., substance use, mental health, school attendance and performance, justice system involvement, and adverse childhood experiences and victimization) and two supplemental components (e.g., parental involvement and recovery supports) have demonstrated validity and reliability.[130] The assessments are brief, self-report instruments that document dynamic and changeable factors including substance use patterns as well as psychosocial symptoms, behavior, and events that have been identified in the literature as relevant to substance abuse. Additionally, the instruments have been developed in collaboration with key stakeholders to consider the context of Kentucky substance abuse treatment programs.

Intake interviews were collected by a clinician or staff person at the treatment center using a web-based survey tool, in which the identifying data were encrypted and submitted to the master database on the UK CDAR secure server. After intake interview data were collected, clients who received treatment services and were younger than 18 years old were asked if they would like to volunteer to participate in the 12-month follow-up study (i.e., the follow-up interview). Clients who were interested in participating in the follow-up study gave consent to be contacted by UK CDAR BHOS staff members approximately 12 months later to be given the opportunity to participate in the follow-up interview. Follow-up interviews were conducted via telephone using a questionnaire with items and questions similar to the ones used in the intake interview.

The target month for the follow-up interview was 12 months after the intake interview was completed. In other words, if a client completed an intake interview in May 2020, the target month for the follow-up interview was May 2021. The window for completing a follow-up interview with an individual selected into the follow-up sample began two months before the target month and spanned until two months after the target month. For example, if an intake interview was completed with an individual in May 2020, the target month for the follow-up survey was May 2021 and interviewers began working to locate and contact the individual in March 2021 and could work on the file until the end of July, 2021

A total of 300 adolescents completed an intake interview between July 1, 2018 and June 30, 2020. Of these 300 individuals, 110 (36.7%) agreed to be contacted for the follow-up interview. Five individuals were not included in the follow-up sample because they did not have the minimum amount of contact information submitted with their locator data (i.e., two unique phone numbers or one phone number and one mailing address.

UK CDAR BHOS faculty conducted monthly meetings with follow-up interviewers to monitor progress with locating participants and completing follow-up surveys to ensure consistent application of locating strategies and interview techniques. Of the 105 adolescents who were

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included in the sample of individuals to be followed up, 12 were ineligible to complete the follow-up interview when they were contacted (see Table AA.1). Reasons for ineligibility include being in residential treatment (n = 8), being incarcerated (n = 2), and the case have significant data errors (n = 2). Of the remaining 93 adolescents, interviewers completed follow-up surveys with 52 individuals, representing a follow-up rate of 55.9%. Of the eligible individuals, 40 were never successfully contacted or if they were contacted, interviewers were not able to complete a follow-up interview with them during the follow-up period: these cases are classified as expired (43.0%). One individual declined to complete the follow-up interview when the interviewer contacted him/her; thus, the refusal rate was 1.1%. The project interviewers' efforts accounted for 61.9% of the individuals (n = 65) included in the follow-up sample. The only cases not considered accounted for are those individuals who are classified as expired.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS

	Number of Records (n = 105)	Percent
Ineligible for follow-up survey	12	11.4%
	Number of cases eligible for follow-up (n = 93)	
Completed follow-up interviews	52	
Follow-up rate is calculated by dividing the number of completed surveys by the number of eligible cases and multiplying by 100		55.9%
Expired cases (i.e., never contacted, did not complete the interview during the follow-up period)	40	
Expired rate ((the number of expired cases/eligible cases)*100)		43.0%
Refusal	1	
Refusal rate ((the number of refusal cases/eligible cases)*100)		1.1%
Cases accounted for (i.e., records ineligible for follow-up + completed interviews + refusals)	65	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		61.9%

Appendix B compares adolescents who completed a follow-up interview with those who did not complete a follow-up interview. Few differences were found between the two groups.

Report Data Analysis

This report examines adolescents' self-reported changes from intake to follow-up in outcomes for substance abuse treatment such as substance use, mental health, justice system involvement, and recovery supports. To assess whether the change in a factor (e.g., tobacco use) was statistically significant, paired t-tests were run for continuous variables and McNemar non-parametric test for pre- to post-test dichotomous variables. McNemar is "a 2 X 2 cross classification of paired (or matched) responses to a dichotomous variable" (Adedokun

& Burgess, 2012, p. 125).[131] Additionally, all analyses presented in the main text of the report examined gender differences using t-test for continuous variables and chi square test of independence for categorical variables. All statistically significant ($p < .05$) differences by gender are reported when they were found.

[131] Because the McNemar test is designed for use with large samples, the Yates correction is automatically calculated in SPSS. However, because the sample size is large, a macro was run to calculate the McNemar statistic without the Yates correction. The macro was retrieved from http://www.how2stats.net/2011/09/two-proportions-test-related-spss.html

Appendix B. Client Characteristics at Intake for Those with Completed Follow-up Interviews and Those Without Completed Follow-up Interviews

Adolescents who completed a follow-up interview are compared in this section with adolescents who did not complete a follow-up interview for any reason[132] (e.g., client did not give consent to be contacted for the follow-up interview, client was ineligible for follow-up, and interviewers were unable to locate the client for the follow-up survey).

Demographic Characteristics

The majority of the sample for this annual report was male and White (see Table AB.1). There were no significant differences in sociodemographics by follow-up status.

TABLE AB.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP

	FOLLOWED UP	
	NO n = 248	YES n = 52
Age	15.6 years	15.9 years
Gender		
Male	72.6%	65.4%
Female	27.4%	34.6%
Race		
White	80.2%	82.7%
Black/African American	4.8%	3.8%
Other or multiracial	14.9%	13.5%

Substance Use at Intake

Use of illegal drugs, alcohol, and tobacco in the 12 months before entering treatment by follow-up status is presented in Table AB.2. Most adolescents reported using any illegal drug in the 12 months before entering the program. The drug class used by the greatest percentage of clients was cannabis/marijuana. The next most reported drug used by individuals who were not followed up was stimulants and opioids by individuals who were followed up. Significantly fewer followed up adolescents reported using stimulants than adolescents who did not complete a follow-up survey.. The majority reported using alcohol, smoking tobacco, and vaporized nicotine in the 12 months before intake.

[132] Significance is reported for $p < .05$.

TABLE AB.2. PERCENT OF INDIVIDUALS REPORTING SUBSTANCE USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 248	YES n = 52
Any illegal drug	93.5%	92.3%
Marijuana	92.7%	92.3%
Opioids (other than heroin)	26.2%	23.1%
CNS depressants	22.6%	21.2%
Stimulants including cocaine*	30.2%	15.4%
Other illegal drugs (e.g., hallucinogens, inhalants)	15.7%	19.2%
Synthetic drugs (synthetic marijuana, bath salts)*	10.5%	3.8%
Heroin	3.6%	1.9%
Alcohol	56.9%	55.8%
Smoking tobacco	63.7%	63.5%
Smokeless tobacco	22.6%	26.9%
Vaporized nicotine	56.0%	57.7%

*$p < .05$.

Similar patterns were found in the past-30-day substance use measures with fewer individuals reporting use of each substance (not depicted in a Table or Figure). Fewer clients who were followed-up reported using stimulants in the past 30 days than those clients who did not complete a follow-up interview (4.1% vs. 18.4%). There were no other differences in past-30-day reports of other substances by follow-up status.

Table AB.3 displays the percent of adolescents in each SUD severity classification, based on self-reported criteria for the preceding 12 months, by follow-up status. There was no significant difference by follow-up status. A sizable minority—about one-third—of both groups met criteria for severe substance use disorder. At the other extreme, about 2 in 5 adolescents who completed a follow-up interview and about 1 in 3 adolescents who did not complete a follow-up interview were classified as having no substance use disorder.

TABLE AB.3. SEVERITY OF SUBSTANCE USE DISORDER AT INTAKE

	FOLLOWED UP	
	NO n = 248	YES n = 52
No substance use disorder	35.9%	40.4%
Mild substance use disorder	20.2%	11.5%
Moderate substance use disorder	11.3%	13.5%
Severe substance use disorder	32.7%	34.6%

Mental Health at Intake

There were no significant differences in the percent of followed-up and not followed-up clients who met criteria for internalizing problems, externalizing problems, attention problems, disordered eating, and suicidality at intake (see Table AB.4).

TABLE AB.4. MET CRITERIA FOR MENTAL HEALTH PROBLEMS AT INTAKE

	FOLLOWED UP	
	NO n = 248	YES n = 52
Internalizing Problems (score of 5 or greater)	47.2%	34.6%
Externalizing Problems (score of 7 or greater)	16.9%	7.7%
Attention Problems	33.1%	28.8%
Disordered Eating	34.7%	34.6%
Suicidal Ideation/Attempted Suicide	30.2%	30.8%

Education

Table AB.5 describes clients' school involvement and academic performance when entering treatment. There were no statistically significant differences by follow-up status. The vast majority were enrolled in school when they entered treatment and reported they had attended school the last 3 months school was in session. The average GPA was equivalent to a C. Among those who attended school in the last 3 months school was in session, individuals in both groups reported similar average number of absences from school. There was no difference by follow-up status in the percent of adolescents who reported they were suspended, in detention, or expelled in the last 3 months school was in session.

TABLE AB.5. CLIENTS' SCHOOL INVOLVEMENT AND ACADEMIC PERFORMANCE AT INTAKE

	FOLLOWED UP	
	NO n = 248	YES n = 52
Enrolled in school (e.g., public, private, home school, alternative, GED classes)	98.8%	98.1%
Average GPA	2.1	2.1
Ever repeated a grade in school	35.5%	44.2%
Attended school in the last 3 months school was in session	84.3%	90.4%
Among those who attended school in the last 3 months school was in session:	n = 209	n = 47
Average number of days missed school for any reason in the last 3 months school was in session	11.9	13.6
Client was in detention, suspended, or expelled in the last 3 months school was in session	54.1%	38.3%

Caregiver Relationship and Living Situation

There were no significant differences in primary caregiver or living situation by follow-up status. The majority reported their primary caregiver was a biological parent (see Table AB.6). About one-fourth of individuals stated their primary caregiver was other family members. The scores on the caregiver involvement scale was similar for clients who were followed up and those who were not followed up. Clients were asked to report with whom or where they had lived in the 12 months before entering treatment. They could report as many places as were applicable in the 12-month period, thus the percentages sum to greater than 100%. The majority reported they had lived with their biological parents, more than one-third stated they had lived in institutional settings (e.g., group home, residential treatment, juvenile detention), and smaller percentages lived with other family members. A small percentage of the sample reported they had been in foster care or that they had lived independently in the past 12 months.

TABLE AB.6 CLIENTS' RELATIONSHIP WITH PRIMARY CAREGIVER AND LIVING SITUATION BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 248	YES n = 52
Current primary caregiver		
Biological parent	57.7%	75.0%
Other family including adoptive family	32.3%	25.0%
Foster parent or DCBS	6.0%	0.0%
Other caregiver (e.g., boyfriend's father, family friends)	3.2%	0.0%
No caregiver--emancipated minor	0.8%	0.0%
Average score on caregiver involvement scale	14.2	13.6
Where the client lived in the 12 months before entering the program		
Home with biological parent	68.1%	75.0%
In an institutional facility (e.g., group home, residential treatment, juvenile detention)	35.5%	34.6%
With other family (including adoptive family)	37.1%	30.8%
Foster care	7.3%	5.8%
Lived independently (including in a school dormitory)	4.4%	3.8%

Justice System Involvement at Intake

A minority of adolescents reported they had been arrested in the 12 months before entering treatment (see Table AB.7). Among adolescents who reported an arrest in the 12 months before intake, there was no significant difference in the average number of arrests and the percent of adolescents arrested for status offenses. More than one-half of clients were under supervision by the justice system (e.g., in Drug Court, probation, or court diversion) when they entered treatment, with no difference by follow-up status.

TABLE AB.7. JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 248	YES n = 52
Arrested for any charge in the 12 months before entering treatment	31.9%	38.5%
Of those with an arrest,	n = 79	n = 20
Average number of arrests	2.4 arrests	2.0 arrests
Charged with a status offense	40.5%	40.0%
Currently under supervision by the justice system	52.0%	55.8%

There was no difference in follow-up status for clients who reported being in juvenile detention for at least one day in the 12 months before entering treatment (See Table AB.8). Among the individuals who were in juvenile detention at least one night, the average number of days in detention in the 12 months before entering treatment was 47.2 days for individuals who were not followed up and 11.7 days for individuals who were followed up, with no significant difference by follow-up status.

TABLE AB.8. JUVENILE DETENTION HISTORY IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 248	YES n = 52
In juvenile detention at least one day	24.2%	30.8%
Of those in detention	(n = 60)	(n = 16)
Average number of days in detention	47.2	11.7

Recovery Supports at Intake

A small percent of youth reported they had been to a mutual help recovery meeting in the 30 days before intake, with no difference by follow-up status (see Table AB.9). Adolescents in both groups reported 5.5 to 5.6 people, on average, they could count on for recovery support. Individuals in the two groups had the same average rating of satisfaction with the level of recovery support at intake.

TABLE AB.9. RECOVERY SUPPORTS WHEN ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 248	YES n = 52
Attended a mutual help recovery meeting in the past 30 days.....	5.6%	5.8%
Average number of people youth can count on for recovery support.....	5.6	5.5
Average rating of satisfaction with level of recovery support in life	4.7	4.5

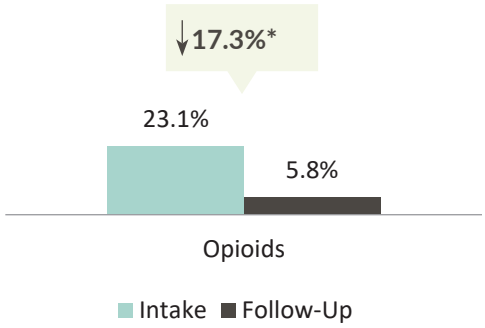
Appendix C. Change in Use of Specific Classes of Drugs from Intake to Follow-up

Opioid Use

Past-12-month Opioid Use

In the 12 months before entering treatment 23.1% of adolescents reported using opioids/opiates[133] other than heroin, including prescription opiates, methadone, and buprenorphine. The number of adolescents who reported using opioids decreased 17.3% to 5.8% at follow-up (see Figure 2.14).

FIGURE C.1. PAST-12-MONTH USE OF OPIOIDS AT INTAKE AND FOLLOW-UP (n = 52)

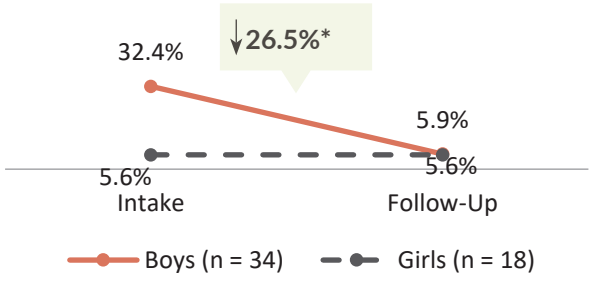


*p < .05.

GENDER DIFFERENCE IN USE OF OPIOIDS AT INTAKE AND FOLLOW-UP

At intake, significantly more boys than girls reported they had used opioids in the past 12 months (see Figure C.2). The number of boys who reported using opioids decreased significantly from intake to follow-up. At follow-up, similar percentages of boys and girls reported CNS opioid use.

FIGURE C.2. GENDER DIFFERENCE IN USE OF OPIOIDS AT INTAKE AND FOLLOW-UP[a]



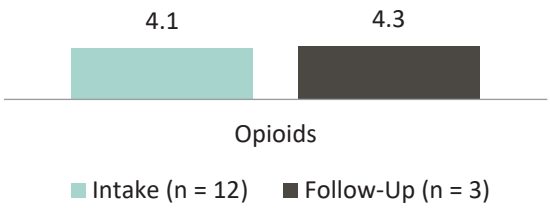
a—Statistical difference by gender at intake (p < .01).
*p < .05.

[133] For brevity's sake, we will refer to this class of substances including prescription opiates and opioids as opioids.

AVERAGE NUMBER OF MONTHS USED OPIOIDS

Among the clients who reported using opioids in the 12 months before entering treatment (n = 12), they reported using opioids on average 4.1 months (see Figure C.3). Among clients who reported using opioids at follow-up (n = 3), they reported using an average 4.3 months.[134]

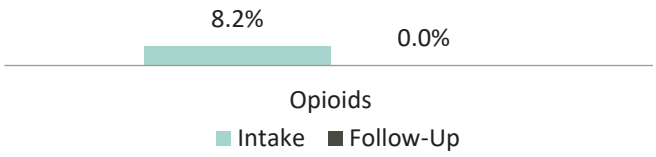
FIGURE C.3. AMONG ADOLESCENTS WHO USED OPIOIDS, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED OPIOIDS



Past-30-day Opioid Use

The number of clients who reported past-30-day use of opioids was 8.2% at intake and 0.0% at follow-up (see Figure C.4).

FIGURE C.4. PAST-30-DAY USE OF OPIOIDS AT INTAKE AND FOLLOW-UP (n = 49)a



a—Measures of association could not be computed because one of the cell values was 0.

Because only one adolescent reported using heroin in the 12 months before intake and none at follow-up, data is not presented for change in use.

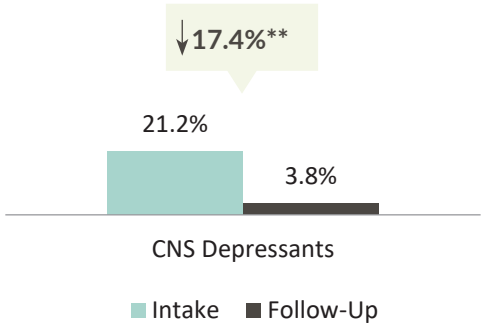
CNS Depressant Use

Past-12-month CNS Depressant Use

In the 12 months before entering treatment, 21.2% of adolescents reported using CNS depressants (e.g., tranquilizers, sedatives, benzodiazepines). The number of adolescents who reported using CNS depressants decreased to 3.8% at follow-up—a decrease of 17.4% (see Figure C.5).

[134] Because number of months of prescription opiates, methadone, and buprenorphine were measured separately, the value is a calculation of the maximum number of months clients used any of these specific types of opioids/opiates.

FIGURE C.5. PAST-12-MONTH USE OF CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP (n = 261)

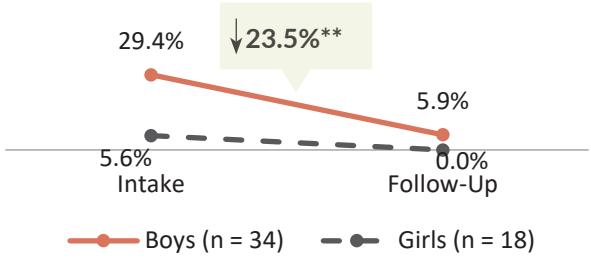


**p < .01.

GENDER DIFFERENCE IN USE OF CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP

At intake, significantly more boys than girls reported they had used CNS depressants in the past 12 months (see Figure C.6). The number of boys who reported using CNS depressants decreased significantly from intake to follow-up. At follow-up, similar percentages of boys and girls reported CNS depressant use.

FIGURE C.6. GENDER DIFFERENCE IN USE OF CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP[a]



a—Statistical difference by gender at intake (p < .01).

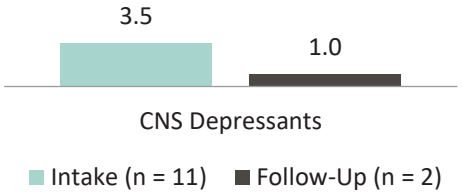
**p < .01.

AVERAGE NUMBER OF MONTHS USED CNS DEPRESSANTS

Among the clients who reported using CNS depressants in the 12 months before entering treatment (n = 11), they reported using an average 3.5 months (see Figure 2.19). Among clients who reported using CNS depressants at follow-up (n = 2), they reported using an average 1.0 month.[135]

[135] Because number of months of CNS depressants were measured separately (e.g., barbiturates, tranquilizers), the value is a calculation of the maximum number of months clients used any of these specific types of CNS depressants.

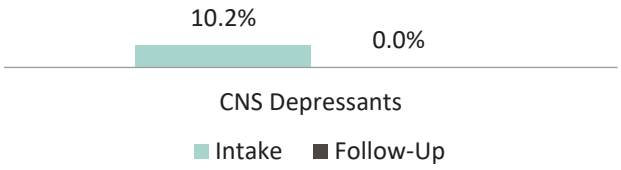
FIGURE C.7. AMONG ADOLESCENTS WHO USED CNS DEPRESSANTS, THE AVERAGE NUMBER OF MONTHS CLIENTS USED CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP



Past-30-day CNS Depressant Use

The number of clients who reported using CNS depressants decreased from 10.2% at intake to 0.0% at follow-up (see Figure C.8).

FIGURE C.8. PAST-30-DAY USE OF CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP (n = 49)[a]



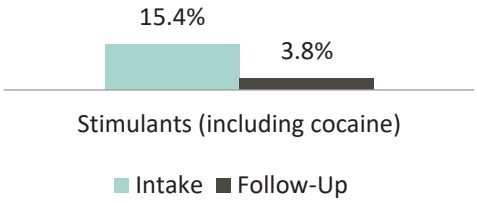
a—Measures of association could not be computed because one of the cell values was 0.

Stimulant Use

Past-12-month Stimulant Use

In the 12 months before entering treatment 15.4% of adolescents reported using stimulants (e.g., cocaine, speed, methamphetamine, Ritalin). The number of adolescents who reported using stimulants decreased to 3.8% at follow-up, which was not a significant decrease (see Figure C.9).

FIGURE C.9. PAST-12-MONTH USE OF STIMULANTS AT INTAKE AND FOLLOW-UP (n = 52)

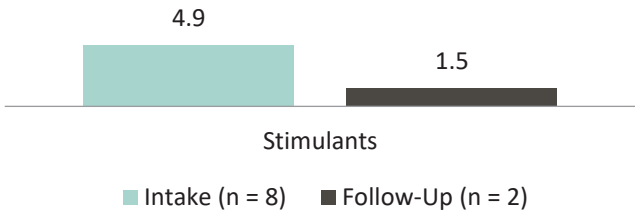


AVERAGE NUMBER OF MONTHS USED STIMULANTS

Among the clients who reported using stimulants in the 12 months before entering treatment (n = 8), they reported using stimulants on average 4.9 months (see Figure C.10). Among the two clients who reported using stimulants at follow-up, they reported using an average of 1.5

months.[136]

FIGURE C.10. AMONG ADOLESCENTS WHO USED STIMULANTS, THE AVERAGE NUMBER OF MONTHS CLIENTS USED STIMULANTS AT INTAKE AND FOLLOW-UP



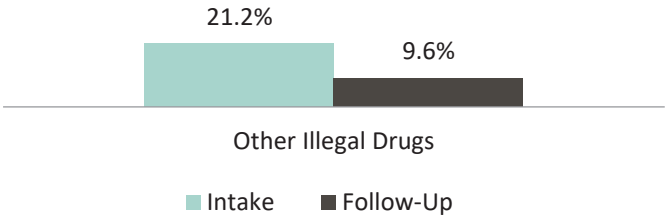
Because of the small number of adolescents who reported using stimulants (including cocaine) in the 30 days before intake (n = 2) and at follow-up (n = 1), data is not presented for change in use in a chart.

Other Illegal Drug Use

Past-12-month Use of Other Illegal Drugs

Use of illegal drugs not included in any of the previous classes of substances (e.g., inhalants, hallucinogens, synthetic drugs) are presented here. About 1 in 5 adolescents (21.2%) reported using other illegal drugs in the 12 months before entering treatment. The number of adolescents who reported using other illegal drugs was 9.6% at follow-up, which was not a statistically significant decrease (see Figure C.11).

FIGURE C.11. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (n = 52)

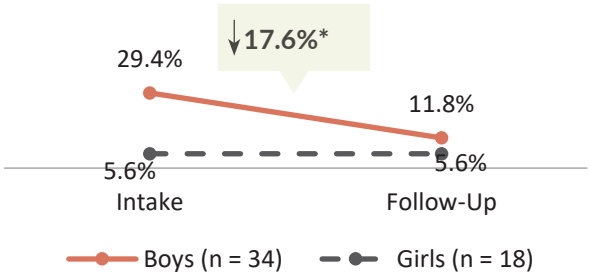


GENDER DIFFERENCE IN USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP

At intake, significantly more boys than girls reported they had used other illegal drugs in the past 12 months (see Figure C.12). The number of boys who reported using other illegal drugs decreased significantly from intake to follow-up. At follow-up, similar percentages of boys and girls reported use of other illegal drugs.

[136] Because number of months of cocaine and other stimulants were measured separately, the value is a calculation of the maximum number of months clients used either cocaine or other stimulants.

FIGURE C.12. GENDER DIFFERENCE IN USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP[a]

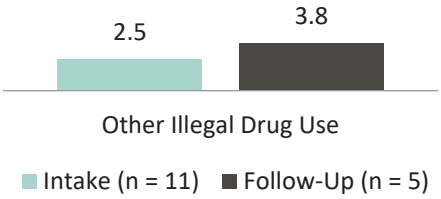


a—Statistical difference by gender at intake ($p < .05$).
*$p < .05$.

AVERAGE NUMBER OF MONTHS USED OTHER ILLEGAL DRUGS

Among the clients who reported using other illegal drugs in the 12 months before entering treatment (n = 11), they reported using other illegal drugs on average 2.5 months (see Figure C.13). Among clients who reported using other illegal drugs at follow-up (n = 5), they reported using an average of 3.8 months.

FIGURE C.13. AMONG ADOLESCENTS WHO USED OTHER ILLEGAL DRUGS, THE AVERAGE NUMBER OF MONTHS CLIENTS USED OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP



A small number of adolescents reported using other illegal drugs in the 30 days before intake; thus, examination of change in use of other illegal drugs from intake to follow-up is necessarily small and not appropriate for statistical tests used in this section of the report (not depicted in a figure).