




Findings from the
Adolescent Kentucky Treatment Outcome Study
(AKTOS)

2014 REPORT





Reductions in Substance Use

38%

Reduction in illegal drug use from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

27%

Reduction in alcohol use from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

EXECUTIVE SUMMARY

This report summarizes substance abuse treatment outcomes for the Adolescent Kentucky Treatment Outcome Study (AKTOS). The goal of AKTOS is to examine client satisfaction, recovery support, and outcomes for several specific targeted factors including: (1) substance use including severity of substance use, (2) mental health, (3) education and employment, (4) caregiver and living situation, and (5) involvement with the justice system.

In particular, this report presents data on 197 adolescent clients (ages 12-17 years old) who attended publicly-funded substance abuse treatment programs in Kentucky between July 1, 2010 and June 30, 2012 and then completed a follow-up survey approximately 12 months later. Of the adolescents who agreed to be contacted and were eligible for the follow-up survey (n = 225), the CDAR research team completed follow-up surveys with 197 individuals—a follow-up rate of 87.6%.

Results show that adolescent clients were satisfied with the treatment services they received. The vast majority of clients believed they received the services they needed to get better, they felt better about themselves as a result of treatment, they believed they

were treated with respect by treatment providers, they understood their treatment plan, their rights as a client, and treatment providers' expectations of them.

Results show that adolescent clients were overwhelmingly satisfied with the treatment services they received

At follow-up, there were significant reductions in substance use including significant reductions in use of marijuana, opioids/opiates, Central Nervous System (CNS) depressants, amphetamines, and alcohol. Furthermore, among alcohol and drug users, the number of youth who met criteria for self-reported severe substance use disorder decreased significantly from intake to follow-up.

At follow-up, there were significant reductions in substance use including significant reductions in use of marijuana, opioids/opiates, Central Nervous System (CNS) depressants, amphetamines, and alcohol

Adolescents self-reported mental health problems were significantly reduced at follow-up. Specifically, youth's scores on measures of depression, attention deficit, conduct disorder,



Reductions in Mental Health Symptoms

32%

Decrease in depression symptoms from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

41%

Decrease symptoms of conduct disorder and aggressive behavior from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

34%

Decrease symptoms of attention deficit from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

and general criminal behavior decreased significantly from intake to follow-up. The only mental health measure that did not show significant change was the anxiety-trauma scale. Boys and girls had significantly different scores on several mental health measures: depression, anxiety-trauma, behavior problem, and general crime scales, such that girls reported more internalizing behavior (i.e., higher scores on depression and anxiety-trauma symptoms) and boys reported more externalizing behavior (i.e., higher scores on behavior problem and general crime scales).

Youth's scores on measures of depression, attention deficit, conduct disorder, and general criminal behavior 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. Self-reported school absences decreased significantly from intake to follow-up. Because 18 is the typical age at which individuals graduate from high school, education status at follow-up was examined for the 70 individuals who were 18 years old or older at follow-up. The vast majority of individuals who were at least 18 years old at follow-up (n = 70) had already obtained a high school diploma or GED

(48.6%), were enrolled in secondary school (32.9%), or an even higher level of education (i.e., vocational/technical school or college; 7.1%). Only a small number of individuals were not enrolled in school and had less than a high school diploma or GED (i.e., dropout). The existence of this small percentage of dropouts in the follow-up sample suggests a need for far more intensive school-based programs to retain and successfully intervene with high risk kids.

Youth's academic performance improved where the mean Grade Point Average significantly increased and the average number of school absences and percentage of clients who were suspended, in detention, or expelled significantly decreased

At follow-up, the majority of individuals reported being unemployed; however, one fourth of individuals who had attained a high school diploma reported they were employed full-time compared to just 2.6% of individuals who had not yet attained a high school diploma.

The majority of youth reported living with their parents at intake and follow-up. Fewer youth reported living in institutional facilities at follow-up than at intake. The number of youth who reported living in an institutional facility (e.g., residential treatment, group home, juvenile detention) decreased significantly from intake to follow-up.



Improvement in School Performance

37%

Increase in grade point average from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

42%

Decrease in school absences from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

44%

Decrease in youths in detention, suspension or expelled from the 12 months before entering substance abuse treatment to the past 12 months at follow-up

Some aspects of youth's involvement with the justice system decreased significantly. For example, the number of adolescents who reported being arrested and charged with a status offense or a probation violation decreased significantly. The number of youth under the supervision of the criminal justice system also decreased significantly. Nonetheless, the number of youth who reported being arrested and charged with any type of offense and incarcerated remained stable at intake and follow-up.

Mutual help recovery meetings may play a less significant role in adolescents' recovery compared to adults for a number of reasons. Attendance at mutual help recovery meetings was reported by only a minority of adolescents at follow-up; yet this was a significant increase from intake. Importantly, youth also reported a significant increase in the number of people they could count on for recovery support. Looking at human capital indicators in the AKTOS 2014 follow-up sample there were

Importantly, youth reported a significant increase in the number of people they could count on for recovery support

important improvements in education—both academic and disciplinary factors and significant reductions in the number of youth who reported using drugs and alcohol at follow-up. Using Bureau of Labor

statistics that show different expected yearly earnings for individuals based on educational attainment, projected likely earnings in the year after treatment and lifetime earnings are estimated to illustrate the greater tax revenues that are expected from keeping children in school to high school graduation and to higher levels of education.

Overall, evaluation results indicate that publicly-funded substance abuse treatment for adolescents is successful in facilitating positive changes in clients in a variety of areas including decreased substance use, decreased severity of substance use disorders, decreased mental health problems, improved school performance and decreased disciplinary issues at school, and a decrease in supervision by the justice system. Results also suggest clients appreciate their experiences in the community mental health center (CMHC) substance abuse treatment programs and have more support for their recovery after participation. 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.

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FINDINGS FROM THE ADOLESCENT KENTUCKY TREATMENT OUTCOME STUDY (AKTOS) 2014 REPORT

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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 an annual 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).

Results are presented in seven main sections including:

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 2011 and 2012 as well as clients who completed a 12-month follow-up interview.

Section 2: Client Satisfaction with Substance Abuse Treatment Programs. This section describes two aspects of client satisfaction: (1) overall client satisfaction and (2) client ratings of program experiences.

Section 3: Substance Use. This section examines change in substance use (illegal drugs, alcohol, and tobacco) at 12 months prior to entering treatment compared to the 12 months after entering treatment. In addition, self-reported severity of alcohol and drug use based on the Teen Addiction Severity Index (T-ASI) alcohol and drug use composite scores are compared at intake and follow-up.

Section 4: Other Targeted Factors. This section examines change in targeted factors including mental health symptoms, education, employment, living situation, and involvement with the justice system from intake to follow-up.

Section 5: Recovery Supports. This section focuses on changes from intake to follow-up in recovery supports.

Section 6: Investing in Substance Abuse Treatment for Youth. This section discusses the importance of investing in adolescent substance abuse treatment and the implications for significant future cost savings to society termed the human capital approach.

Section 7: Summary and Recommendations. This section presents, summarizes, and discusses the major findings from the AKTOS Follow-Up 2014 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 2011 and 2012 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 the adolescent brain more vulnerable to addiction than the adult brain (Volkow & Li, 2004). Furthermore, the effects of substance use are more damaging to adolescents' brains than to the adults' brains in many ways, and in some cases may have long-lasting effects (Clark, Thatcher, & Tapert, 2008; Crews, He, & Hodge, 2007; National Center on Addiction and Substance Abuse [CASA], 2009). Thus, early and effective treatment for substance abuse among adolescents is a high priority public health problem.

Unfortunately, only a minority of treatment facilities offer specialized care for adolescents (CASA, 2009). In the 2009 and 2010 National Survey on Drug Use and Health (NSDUH) it was estimated that 4% of adolescents in Kentucky needed but did not receive treatment for alcohol use and 4% of adolescents in Kentucky needed but did not receive treatment for illicit drug use in the past 12 months (SAMHSA, 2012b). A recent settlement Kentucky made with two pharmaceutical companies will provide the means to address limitations in the state's capacity for providing substance abuse treatment for juveniles. Embedded in the \$32 million settlement, which was announced in January 2014, is \$19 million that will be used to start a grant program to fund comprehensive juvenile substance abuse treatment programs. The goal is to fund expanding the treatment capacity of existing programs and to fund "new juvenile treatment programs to provide a full continuum of care, including intensive outpatient and follow-up care centers" (<http://kykidsrecovery.ky.gov>).

The goal of AKTOS is to provide an annual outcome evaluation for CMHCs' substance abuse treatment programs for 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, recovery support, substance use outcomes and several other targeted outcomes: (1) mental and physical health; (2) academic performance; (3) employment; (4) living situation; and (5) justice system involvement. In addition, estimates present the avoided costs to society in relation to the cost of publicly-funded substance abuse treatment. In addition, the importance of investing in publicly funded substance abuse treatment for youth in relation to increasing human capital and reducing the future costs to society are discussed.

This report describes the sample of adolescents in two main ways: (1) providing characteristics of the 372 adolescents who completed an intake interview and (2) presentation of the outcomes for 197 youth who completed an intake and 12-month follow-up telephone interview.

AKTOS includes a face-to-face intake interview conducted by program staff to assess targeted factors such as substance use, mental health symptoms, education, employment status, living situation, and justice involvement prior to entering substance abuse treatment (submitted to UK CDAR from July 1, 2010 through June 30, 2012). In FY 2011 and FY 2012, 372 adolescents completed an intake survey.¹ At the completion of the intake interview, staff persons inform individuals about the AKTOS follow-up telephone interview and ask if they are interested in participating.

¹ 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.

DESCRIPTION OF AKTOS CLIENTS AT TREATMENT INTAKE

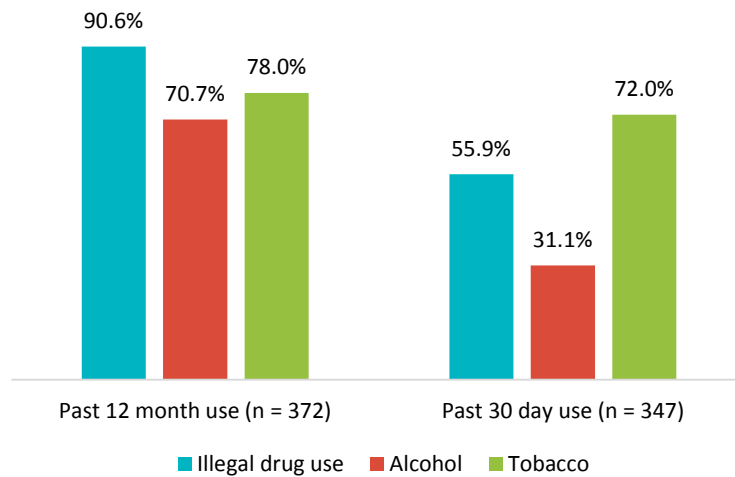
The majority of clients with an intake survey submitted in FY 2011 and 2012 were male (70.7%), White (81.2%), and were 16 or 17 years old at intake (65.6%) About one in ten clients reported they were African American/Black (10.5%) and 8.3% reported they were American Indian, Hispanic, or multiracial. Clients were, on average, 15.8 years old, ranging from 12 to 17 years old. More than half of clients (59.8%) reported they were referred to treatment by the court (e.g., judge, court designated worker, probation officer), and 1 in 10 (10.5%) reported they were referred to treatment by their school personnel.

TABLE 1.1. DEMOGRAPHICS FOR ALL AKTOS CLIENTS AT INTAKE

	(n = 372)
AGE	15.8 years (range of 12-17)
GENDER	
Female	29.3%
Male	70.7%
RACE	
White	81.2%
African American	10.5%
Other or multiracial	8.1%
REFERRED BY	
The court	59.8%
School personnel	10.5%
DCBS	7.8%
A treatment program	7.8%
A family member	6.5%
Self	4.0%
Other sources	3.6%

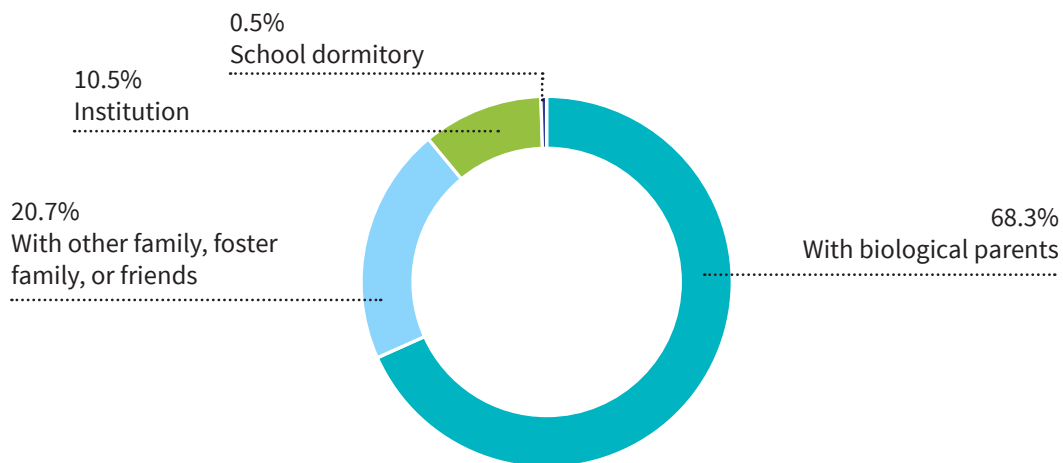
The vast majority of adolescents who completed an intake survey (90.6%) reported using illegal drugs in the 12 months before intake. The majority of adolescents reported they had used alcohol (70.7%) and tobacco (78.0%) in the 12 months before entering treatment. The drug classes reported by the greatest number of adolescents were marijuana (87.6%), prescription opioid/opiate (30.9%), and tranquilizers (26.6%). Because being in a controlled environment inhibits substance use, adolescents who were in a controlled environment all 30 days before entering treatment (n = 25) are not included in the analysis of substance use in the 30 days before entering treatment. Of the 347 adolescents who were not in a controlled environment all 30 days, 55.9% reported using illegal drugs, 31.1% reported using alcohol, and 72.0% reported using tobacco in the 30 days before entering treatment.

FIGURE 1.1 ALCOHOL AND DRUG USE AMONG NOT IN A CONTROLLED ENVIRONMENT ALL 365 DAYS (N = 372) OR 30 DAYS (N = 347) BEFORE PROGRAM ENTRY

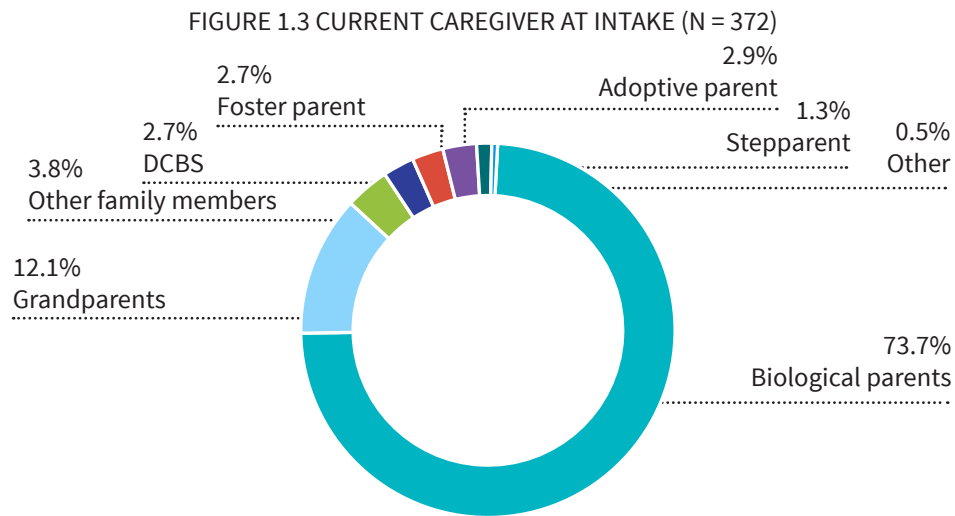


The majority of adolescents reported they lived at home with their biological parents (68.3%), and smaller percentages reported they lived with other family members, foster family, or friends at intake (20.7%), in an institution (10.5%; e.g., group home, residential treatment, or juvenile detention), or lived in a school dormitory (0.5%).

FIGURE 1.2. USUAL LIVING ARRANGEMENT IN THE PAST 12 MONTHS AT INTAKE (N = 372)

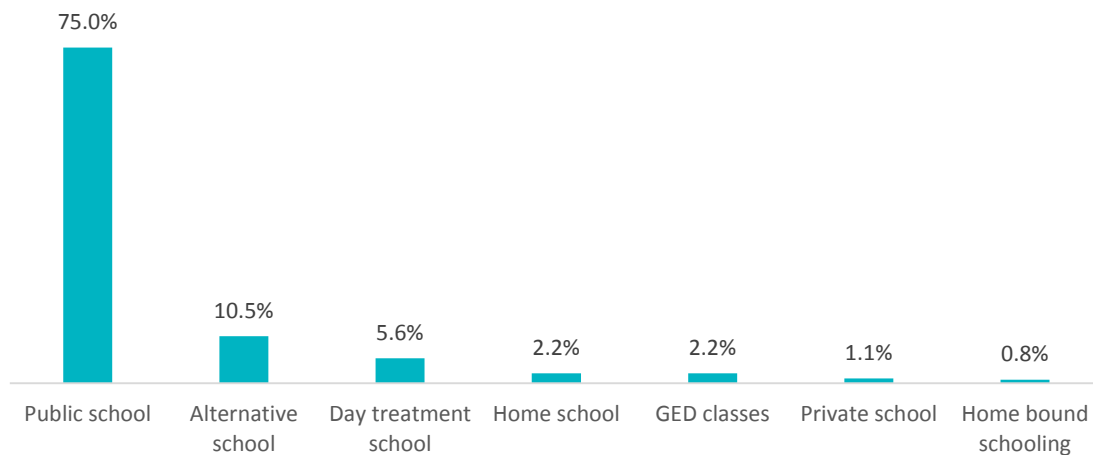


Nearly three fourths of adolescents (73.7%) reported their current caregiver was their biological parents. Other relationships to their current caregiver included grandparent (12.1%), other family members (3.8%), the Department of Community Based Services (2.7%), foster parent (2.7%), adoptive parent (non-kinship; 1.6%), adoptive parent (kinship; 1.3%), stepparent (1.3%), or other (0.5%).



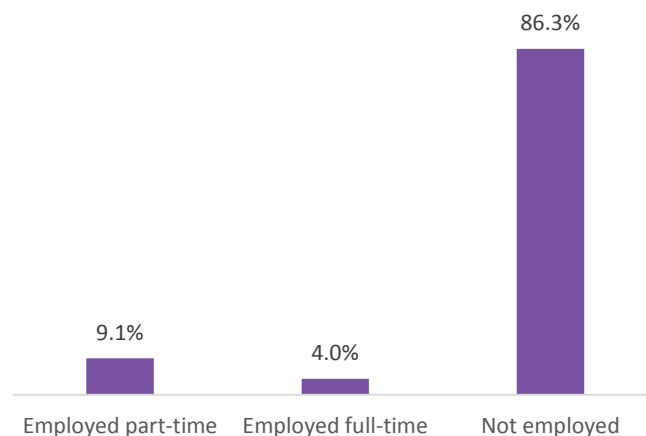
The vast majority of adolescents (97.3%) were enrolled in school at intake, with the majority reporting they were attending public school (75.0%). One in ten reported they were attending an alternative school (10.5%), 5.6% were in day treatment school, 2.2% were in home school, 2.2% were taking GED classes, 1.1% were enrolled in private school, and 0.8% reported they were in home bound schooling.

FIGURE 1.4 SCHOOL STATUS AT INTAKE (n = 372)



Only a minority of adolescents reported at intake they were currently employed part-time (9.1%), occasional or seasonally employed (4.0%), or employed full-time (0.5%). Thus, the majority of youth were not employed at intake (86.3%). Of the 11 individuals with a high school diploma or GED at intake, 27.3% were currently employed part-time and 72.7% were not employed.

FIGURE 1.5 EMPLOYMENT STATUS AT INTAKE (N = 372)



About half of the adolescents reported they had been arrested and charged with an offense in the 12 months before entering treatment. Two in five reported they had been incarcerated in the 12 months before entering treatment.

AKTOS FOLLOW-UP SAMPLE

Follow-up interviews are conducted with a selected sample of clients about 12 months after the intake survey is completed. All adolescents who agree to be contacted for the follow-up interview and have given at least one mailing address and one phone number, or two phone numbers if they do not have a mailing address in their locator information, are pulled into the follow-up sample. The follow-up interviews are conducted over the telephone by an interviewer at UK CDAR. Client responses to the follow-up interviews are kept confidential to help facilitate the honest evaluation of client outcomes and satisfaction with program services. The professionalism of the outcome study is reflected in a low refusal rate for follow-up participation (1.8%), and in the high follow-up rate (87.6%). This means that only 10.7% of individuals included in the sample to be followed up were not successfully contacted.² These elements all indicate AKTOS is a solid, dependable research study for publicly-funded substance abuse treatment programs with youth in Kentucky.

This report describes outcomes for 197 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 328.9 days) after the intake survey was submitted to UK CDAR.³ Detailed information about the methods and follow-up efforts can be found in Appendix A.

Of the 197 adolescents who completed a 12-month follow-up interview, 68.0% were male and 32.0% were female. The majority of follow-up clients were White (83.8%). A minority were African American/Black (8.6%) and 7.6% were Hispanic, American Indian, or multiracial. They were an average of 15.8 years old at the time of the intake interview. The majority of adolescents (66.0%) were 16 or 17 years old at intake.

TABLE 1.2 DEMOGRAPHICS FOR AKTOS FOLLOW-UP SAMPLE CLIENTS AT INTAKE

	(n = 197)
AGE	15.8 years (range of 12-17)
GENDER	
Male	68.0%
Female	32.0%
RACE	
White	83.8%
African American	8.6%
Other or multiracial	7.6%

² 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.

³ The actual date the intake interview was completed is not known. Some sites do the intake interviews on paper and submit them to UK CDAR through the website at a later date. Although UK CDAR requests that intake information be submitted within 7 days, it is not clear whether or not that is the case.

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 for demographics, socio-economic status indicators (education, employment, living situation), substance abuse, mental health, justice system involvement, and treatment history. Specifically, fewer African American adolescents completed a follow-up interview than did not. Youth who completed a follow-up interview had significantly lower Grade Point Average (GPA), missed more days of school, and had higher scores on the behavioral problem scale and general crime scale compared to adolescents who did not complete a follow-up interview. See Appendix B for detailed comparisons of adolescents who completed a follow-up interview (n = 197) and adolescents who did not complete a follow-up interview (n = 175).

SECTION 2:

CLIENT SATISFACTION WITH SUBSTANCE ABUSE TREATMENT PROGRAMS

One of the important outcomes assessed during the follow-up interview is the client's perception of the treatment experience. This section describes two aspects of client satisfaction: (1) overall client satisfaction; and (2) client ratings of program experiences.

OVERALL CLIENT SATISFACTION

A key element in the evaluation of using public funds to address health or social problems is client satisfaction with the services they receive. Higher levels of satisfaction are generally associated with positive treatment outcomes (Waxman, 1996). 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 (58.9%) gave a positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table). The mean rating was 7.5.

CLIENT RATINGS OF PROGRAM EXPERIENCES

When asked about specific aspects of their treatment program, the vast majority of clients reported they either agreed or strongly agreed with each aspect of the program that was assessed (see Figure 2.1).⁴ The vast majority of clients understood what staff expected of them, believed they were treated with respect, understood their treatment plan, understood their rights as clients of substance abuse treatment, believed they had received the services they needed to help them get better, and felt better about themselves as a result of their treatment. Appendix C presents data on the services adolescents received in the 12 months following their treatment intake.

FIGURE 2.1. PERCENTAGE OF CLIENTS WHO AGREED/STRONGLY AGREED WITH THE FOLLOWING STATEMENTS ABOUT THE TREATMENT PROGRAM AT FOLLOW-UP (n = 197)



“ It helped me a lot. 10 months clean now. ”

- AKTOS Client quote

⁴ Answers of don't know/don't remember were treated as missing on these items. Only one client reported "don't know" for one item: "Staff explained your rights as a client."

SECTION 3: 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 each substance class 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 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 separately including: (a) marijuana, (b) opioids [i.e., prescription opiates, methadone, and buprenorphine], (c) heroin, (d) central nervous system (CNS) depressants [including tranquilizers, benzodiazepines, sedatives, and barbiturates], (e) stimulants [i.e., methamphetamine, Ecstasy, MDMA, Adderall, and Ritalin], and (f) other illegal drugs not mentioned above [i.e., cocaine, hallucinogens, and inhalants]. Analysis is presented in detail for AKTOS 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 4 main groups 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, marijuana, opioids, heroin, CNS depressants, stimulants, and other illegal drug use, alcohol use, and tobacco use 12 months before the client entered the program and any use of these substances during the 12-month follow-up period (n = 197) are presented.
- 2. Average number of months clients used substances at intake and follow-up.** For those who used any of the substances, 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 any illegal drug use (including marijuana, prescription opioids, heroin, CNS depressants, stimulants, and other illegal drugs), alcohol use, and tobacco use (n = 184)⁵ 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 = 13), changes in drug, alcohol, and tobacco use from intake to follow-up was analyzed for only clients who were not in a controlled environment all 30 days before entering treatment.
- 4. Change in self-reported alcohol and drug severity composite scores from intake to follow-up.** The Addiction Severity Index (ASI) composite scores based on self-reported severity of drug or alcohol problems are also examined for change over time for illegal drugs (n = 120), alcohol (n = 87), and those with both alcohol and illegal drug use (n = 135). The alcohol and drug composite scores assess addiction severity even among those reporting no substance use in the past 30 days. The alcohol and drug severity composite scores are computed from items about 30-day alcohol (or drug) use and number of days clients used multiple drugs in a day, as well as the impact of substance use on an individual's life, such as money spent on alcohol, number of days individuals had alcohol (or drug) problems, how troubled or bothered individuals were by their alcohol (or drug) problems, and how important treatment was to them.

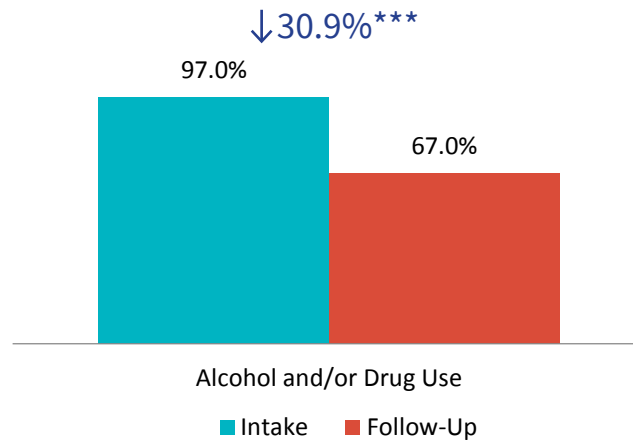
ALCOHOL AND DRUG USE

The number of youth who reported using alcohol and/or drugs decreased significantly by 30.9% from intake to follow-up (see Figure 3.1). Nearly all of the youth reported using alcohol and/or drugs in the

⁵ 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.

12 months before intake, and at follow-up 67.0% reported using alcohol and/or drugs. In other words, a total 65 youth reported abstaining from alcohol and drugs in the 12 month follow-up period

FIGURE 3.1. PERCENTAGE OF CLIENTS REPORTING ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (n = 197)



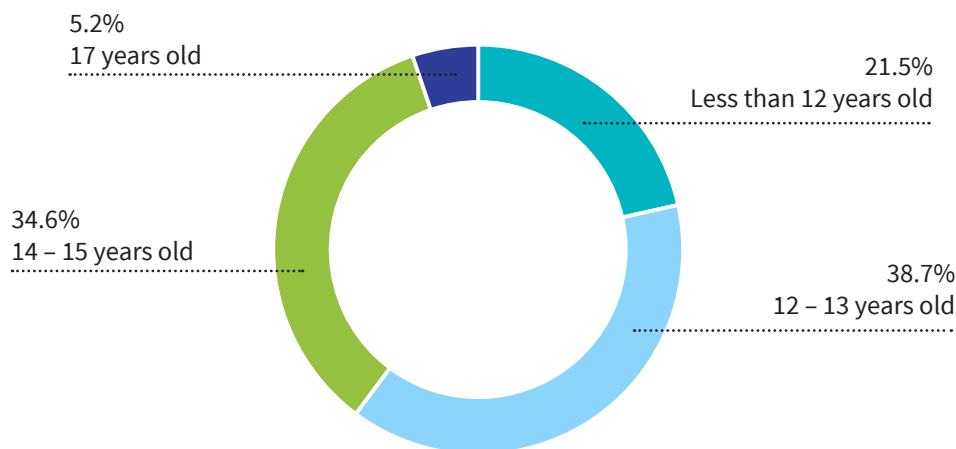
*p < .05, **p < .01, ***p < .001.

Average Age First Used Alcohol Or Drugs

The majority of youth in the AKTOS sample (60.2%) were early initiators of substance use (i.e., before the age of 14; see Figure 3.2). The average age youth initiated alcohol or drug use was 12.6 years old.

The majority of youth were early initiators of substance use

FIGURE 3.2. AVERAGE AGE CLIENT FIRST USED ALCOHOL OR DRUGS (n = 191)



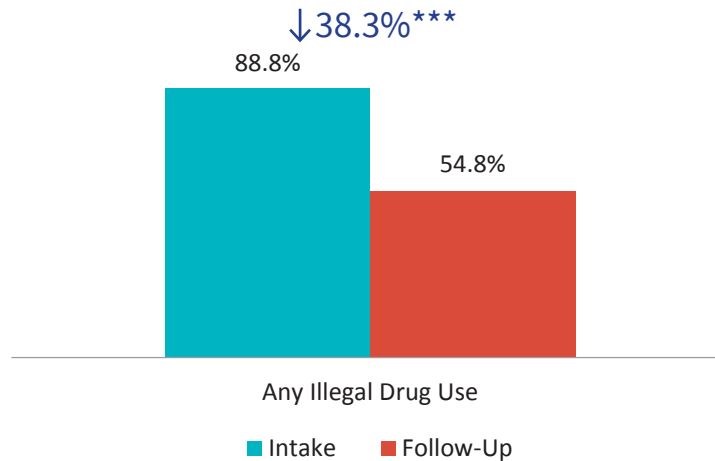
ANY ILLEGAL DRUGS

Any Illegal Drug Use, Past 12 Months

The vast majority of clients (88.8%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 54.8% at follow-up. Overall, for the adolescents in the AKTOS follow-up sample, there was a 38.3% decrease in the number of clients reporting use of any illegal drug (see Figure 3.3).

The number of clients reporting illegal drug use decreased by 38%

FIGURE 3.3. PAST-12-MONTH USE OF ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 197)



*p < .05, **p < .01, ***p < .001.

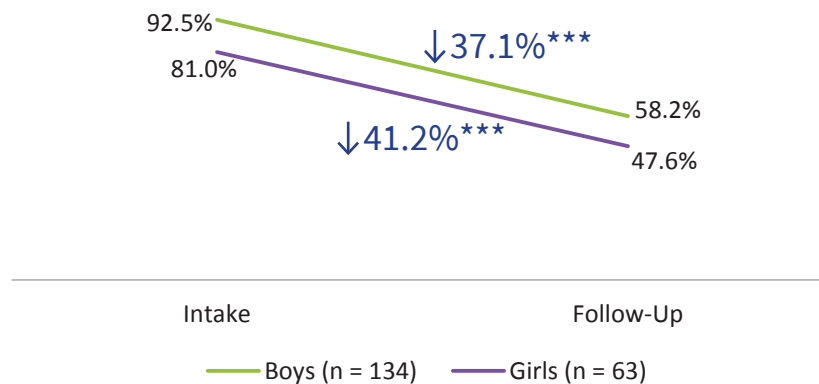
GENDER DIFFERENCES IN OVERALL ILLEGAL DRUG USE, PAST 12 MONTHS

Significantly more boys than girls reported any illegal drug use at intake, 92.5% vs. 81.0% (see Figure 3.4). The number of boys and girls who reported illegal drug use significantly decreased from intake to follow-up by 37.1% and 41.2% respectively.



Significantly more boys than girls reported using any illegal drugs at intake

FIGURE 3.4. GENDER DIFFERENCES IN ILLEGAL DRUG USE AT INTAKE TO FOLLOW-UP^a



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

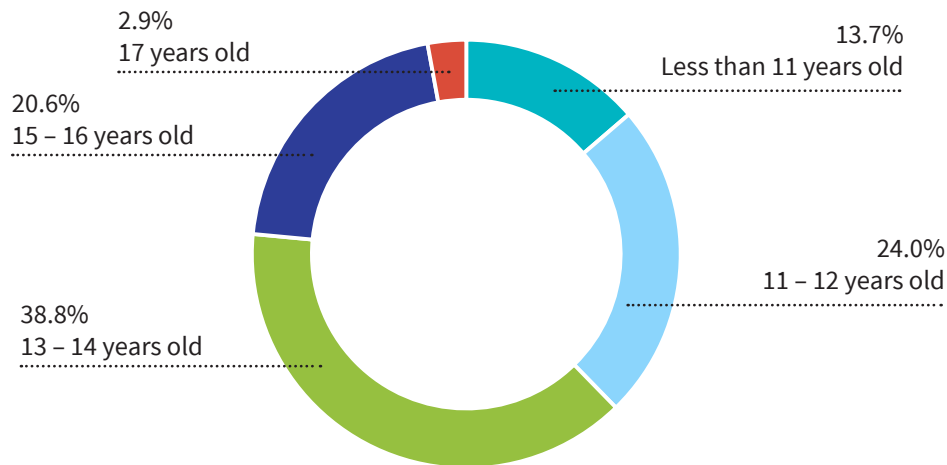
*p < .05, **p < .01, ***p < .001.

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 175 adolescents who reported using illegal drugs in the 12 months before intake, they were on average 12.9 years old when they first began using illegal drugs. Figure 3.5 shows the percentage of adolescents who reported first using illegal drugs at different ages.

Youth were on average 12.9 years old when they first used illegal drugs

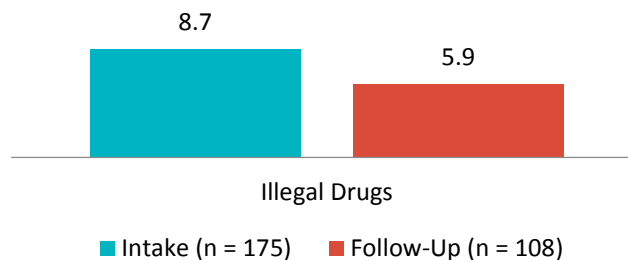
FIGURE 3.5. AVERAGE AGE FIRST USED ILLEGAL DRUGS (n = 175)



AVERAGE NUMBER OF MONTHS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 12 months before entering treatment (n = 175), they reported using illegal drugs on average 8.7 months (see Figure 3.6). Among clients who reported using illegal drugs at follow-up (n = 108), they reported using on average 5.9 months.⁶

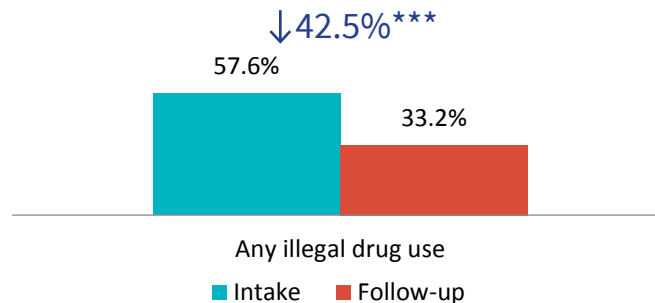
FIGURE 3.6. AMONG CLIENTS WHO USED ANY ILLEGAL DRUGS, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP



Any Illegal Drug Use, Past 30 Days

More than one half of clients (57.6%) 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 3.7). At follow-up, only 33.2% of clients reported they had used illegal drugs in the past 30 days—a significant decrease of 42.5%.

FIGURE 3.7. PAST 30 DAY USE OF ANY ILLEGAL DRUG AT INTAKE AND FOLLOW-UP (n = 184)



*p < .05, **p < .01, ***p < .001.

⁶ 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.

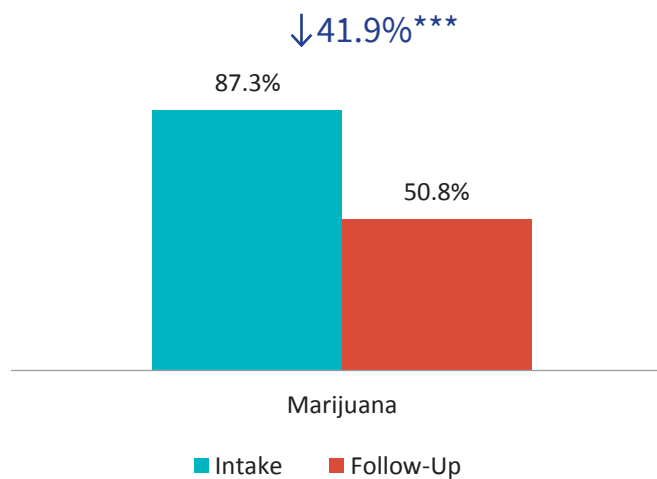
MARIJUANA

Marijuana, Past 12 Months

The majority of clients (87.3%) reported using marijuana in the 12 months before entering treatment, which decreased to 50.8% at follow-up. Overall, for the AKTOS follow-up sample, there was a 41.9% decrease in the number of clients reporting marijuana use (see Figure 3.8).

The number of clients reporting marijuana use decreased by 42%

FIGURE 3.8. PAST-12-MONTH USE OF MARIJUANA AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

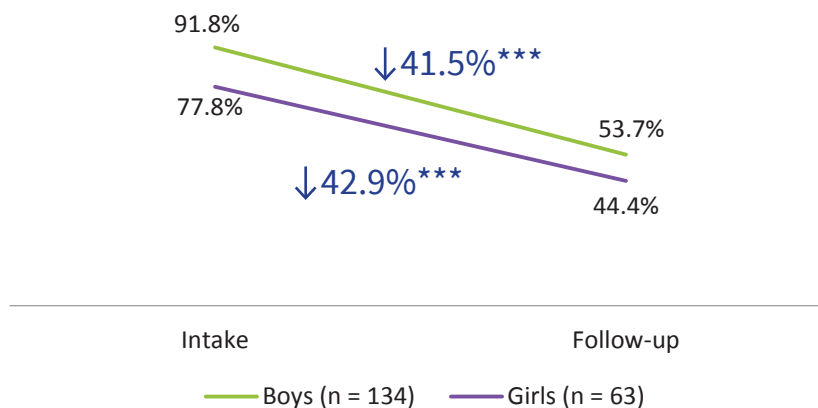
GENDER DIFFERENCES IN MARIJUANA USE, PAST 12 MONTHS

Significantly more boys than girls reported marijuana use in the 12 months before intake, 91.8% vs. 77.8% (see Figure 3.9). The number of boys and girls who reported marijuana use significantly decreased from intake to follow-up by 41.5% and 42.9% respectively.



Significantly more boys than girls reported marijuana use at intake

FIGURE 3.9. GENDER DIFFERENCES IN PAST 12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP^a

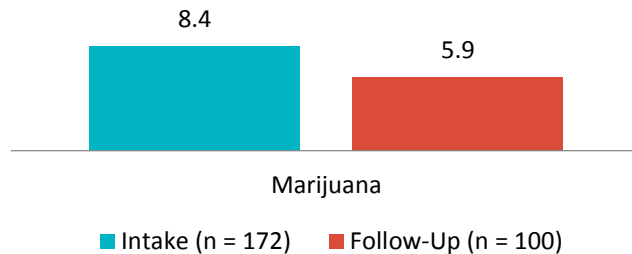


a—Significant difference by gender at intake; *p < .01.
*p < .05, **p < .01, ***p < .001.

AVERAGE NUMBER OF MONTHS USED MARIJUANA

Among the clients who reported using marijuana in the 12 months before entering treatment (n = 172), they reported using marijuana on average 8.4 months (see Figure 3.10). Among clients who reported using marijuana at follow-up (n = 100), they reported using an average 5.9 months.

FIGURE 3.10. AMONG ADOLESCENTS WHO USED MARIJUANA, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED MARIJUANA AT INTAKE AND FOLLOW-UP

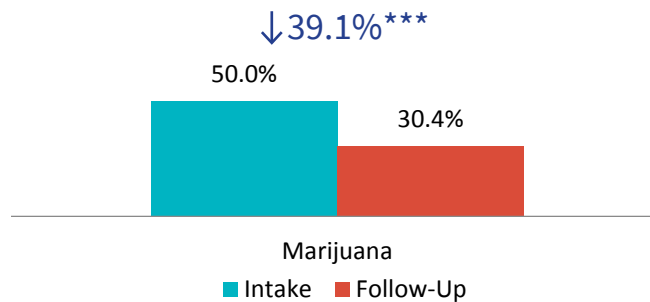


Marijuana Use, Past 30 Days

The number of clients who reported using marijuana decreased significantly by 39.1%, from 50.0% at intake to 30.4% at follow-up (see Figure 3.11).

The number of clients who used marijuana in the past 30 days decreased significantly by 39%

FIGURE 3.11. PAST-30-DAY USE OF MARIJUANA AT INTAKE AND FOLLOW-UP (n = 184)



*p < .05, **p < .01, ***p < .001.

OPIOID/OPIATE

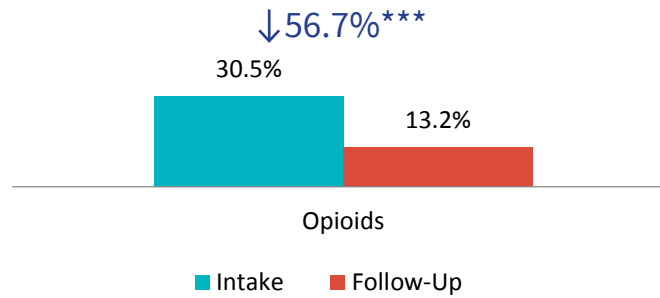
Opioid/Opiate Use, Past 12 Months

In the 12 months before entering treatment 30.5% of adolescents reported using opioids/opiates⁷ other than heroin, including prescription opiates, methadone, and buprenorphine. The number of adolescents who reported using opioids decreased by 56.7% to 13.2% at follow-up (see Figure 3.12).

The number of clients reporting opioid use decreased by 57%

⁷ For brevity's sake, we will refer to this class of substance including prescription opiates and opioids as opioids.

FIGURE 3.12 PAST-12-MONTH USE OF OPIOIDS AT INTAKE AND FOLLOW-UP (n = 197)

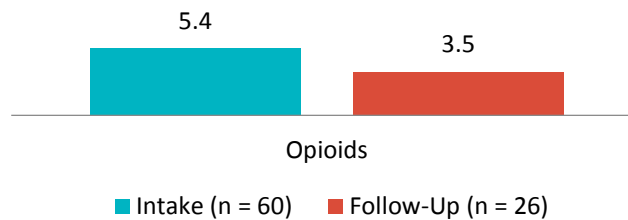


*p < .05, **p < .01, ***p < .001.

AVERAGE NUMBER OF MONTHS USED OPIOIDS

Among the clients who reported using opioids in the 12 months before entering treatment (n = 60), they reported using opioids on average 5.4 months (see Figure 3.13). Among clients who reported using opioids at follow-up (n = 26), they reported using an average 3.5 months.⁸

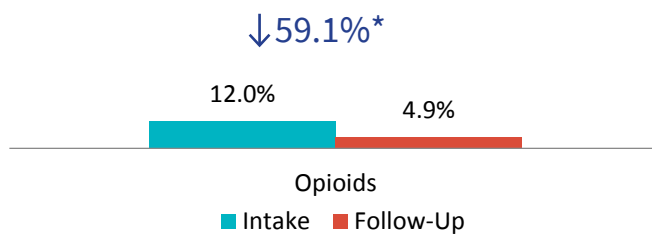
FIGURE 3.13. AMONG ADOLESCENTS WHO USED OPIOIDS, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED OPIOIDS



Opioid Use, Past 30 Days

The number of clients who reported using opioids decreased significantly by 59.1%, from 12.0% at intake to 4.9% at follow-up (see Figure 3.14).

FIGURE 3.14. PAST-30-DAY USE OF OPIOIDS AT INTAKE AND FOLLOW-UP (n = 184)



*p < .05, **p < .01, ***p < .001.

The number of clients who used opioids/opiates decreased significantly by 59%

⁸ 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.

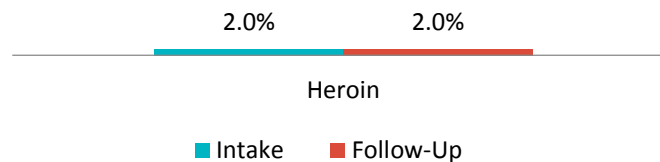
HEROIN

Heroin Use, Past 12 Months

In the 12 months before entering treatment 2.0% of adolescents reported using heroin. The number of adolescents who reported using heroin remained stable at follow-up, 2.0% (see Figure 3.15).

The number of clients reporting heroin use was very low at intake and follow-up

FIGURE 3.15. PAST-12-MONTH USE OF HEROIN AT INTAKE AND FOLLOW-UP (n = 197)



Because so few adolescents reported using heroin in the 12 months before intake and follow-up, data is not presented in this report on the number of months of heroin use among individuals who used heroin or 30-day heroin use.

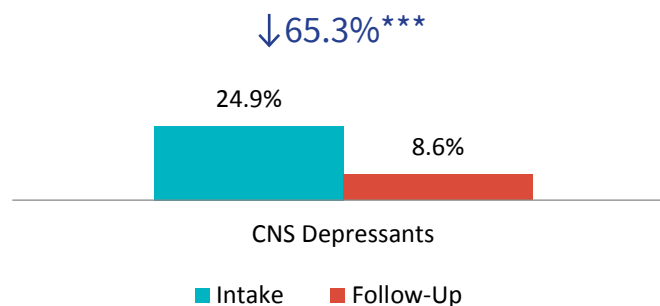
CENTRAL NERVOUS SYSTEM (CNS) DEPRESSANT

CNS Depressant Use, Past 12 Months

In the 12 months before entering treatment 24.9% of adolescents reported using CNS depressants (e.g., tranquilizers, sedatives, benzodiazepines). The number of adolescents who reported using CNS depressants decreased by 65.3% to 8.6% at follow-up (see Figure 3.16).

The number of clients reporting CNS depressant use decreased by 65%

FIGURE 3.16. PAST-12-MONTH USE OF CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP (n = 197)



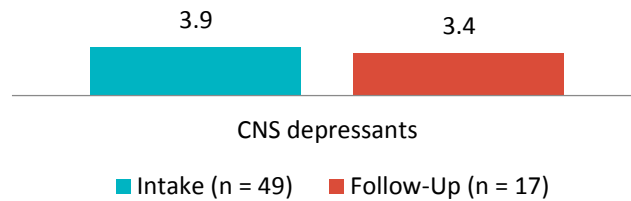
*p < .05, **p < .01, ***p < .001.

AVERAGE NUMBER OF MONTHS USED CNS DEPRESSANTS

Among the clients who reported using CNS depressants in the 12 months before entering treatment (n = 49), they reported using an average 3.9 months (see Figure 3.17). Among clients who reported using CNS depressants at follow-up (n = 17), they reported using an average 3.4 months.⁹

⁹ 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.

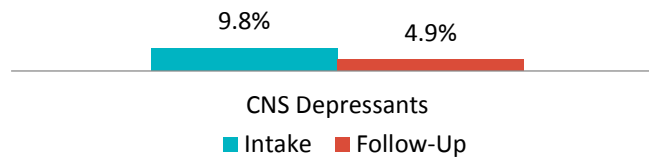
FIGURE 3.17. AMONG ADOLESCENTS WHO USED CNS DEPRESSANTS, THE AVERAGE NUMBER OF MONTHS CLIENTS USED CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP



CNS Depressant Use, Past 30 Days

The number of clients who reported using CNS depressants decreased, but not significantly, from 9.8% at intake to 4.9% at follow-up (see Figure 3.18).

FIGURE 3.18. PAST-30-DAY USE OF CNS DEPRESSANTS AT INTAKE AND FOLLOW-UP (n = 184)



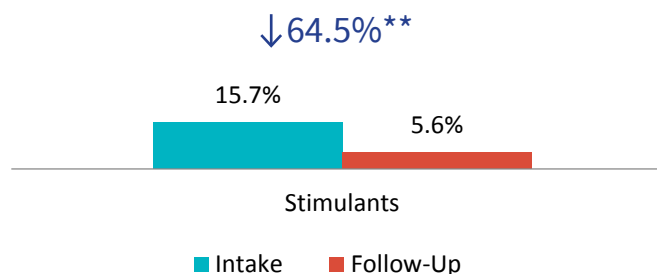
STIMULANTS

Stimulant Use, Past 12 Months

In the 12 months before entering treatment 15.7% of adolescents reported using stimulants (e.g., speed, methamphetamine, Ritalin). The number of adolescents who reported using stimulants decreased by 64.5% to 5.6% at follow-up (see Figure 3.19).

The number of clients reporting stimulant use decreased by 65%

FIGURE 3.19. PAST-12-MONTH USE OF STIMULANTS AT INTAKE AND FOLLOW-UP (n = 197)

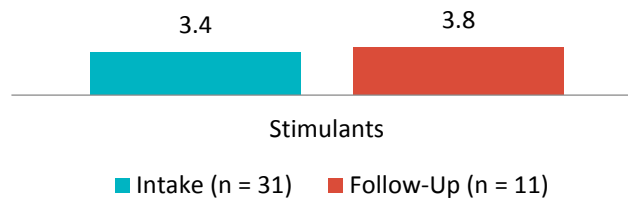


*p < .05, **p < .01, ***p < .001.

AVERAGE NUMBER OF MONTHS USED STIMULANTS

Among the clients who reported using stimulants in the 12 months before entering treatment (n = 31), they reported using stimulants on average 3.4 months (see Figure 3.20). Among clients who reported using stimulants at follow-up (n = 11), they reported using an average 3.8 months.

FIGURE 3.20. AMONG ADOLESCENTS WHO USED STIMULANTS, THE AVERAGE NUMBER OF MONTHS CLIENTS USED STIMULANTS AT INTAKE AND FOLLOW-UP



A small number of adolescents reported using stimulants in the 30 days before intake; thus examination of change from intake to follow-up is necessarily small (not depicted in a figure).

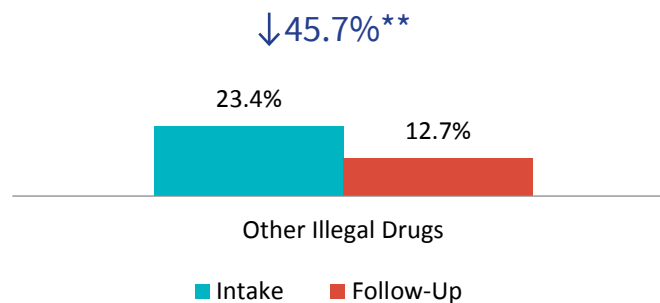
OTHER ILLEGAL DRUGS

Other Illegal Drug Use, Past 12 Months

Use of illegal drugs not included in any of the previous classes of substances (e.g., cocaine, inhalants, hallucinogens) are presented here. Nearly one in four adolescents reported using other illegal drugs in the 12 months before entering treatment. The number of adolescents who reported using other illegal drugs decreased by 45.7% to 12.7% at follow-up (see Figure 3.21).

The number of clients reporting other illegal drug use decreased by 46%

FIGURE 3.21. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

AVERAGE NUMBER OF MONTHS USED OTHER ILLEGAL DRUGS

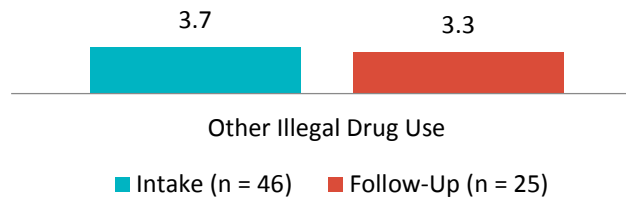
Among the clients who reported using other illegal drugs in the 12 months before entering treatment (n = 46), they reported using other illegal drugs on average 3.7 months (see Figure 3.22). Among clients who reported using other illegal drugs at follow-up (n = 25), they reported using an average 3.3 months.¹⁰

“I liked having someone to talk to about my problems.”

- AKTOS Client quote

¹⁰ Because number of months of other illegal drugs were measured separately (e.g., cocaine, inhalants, and hallucinogens), the value is a calculation of the maximum number of months clients used any of these specific types of other illegal drugs.

FIGURE 3.22. 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 (not depicted in a figure).

ALCOHOL USE

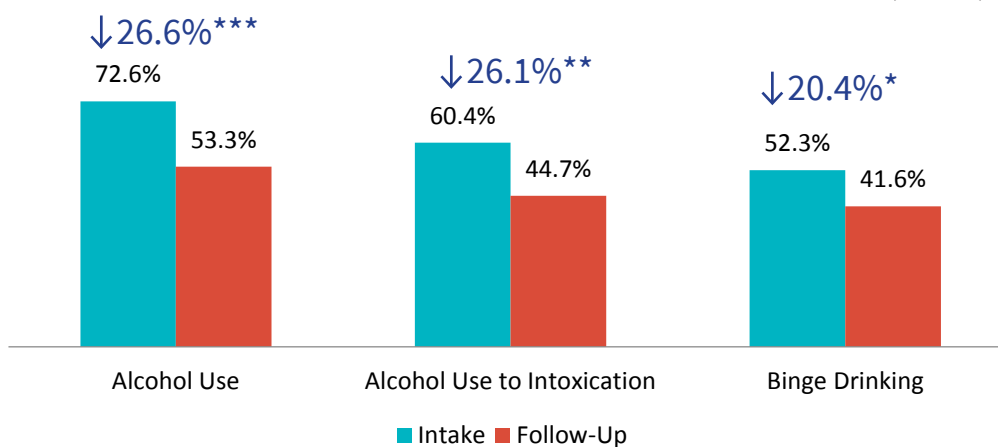
There were three measures of alcohol use including: (1) any alcohol use, (2) alcohol use to intoxication, and (3) binge drinking. Binge drinking was defined as having 5 or more alcoholic drinks for males and 4 or more for females in a period of about 2 hours (National Institute on Alcohol Abuse and Alcoholism, 2004).

Alcohol Use, Past 12 Months

The majority of clients (72.6%) reported using alcohol in the 12 months before entering treatment while a little more than one half of adolescents reported alcohol use in the 12 months before follow-up (see Figure 3.23). Overall, for the AKTOS follow-up sample, there was a 26.6% decrease in the number of clients reporting any alcohol use. Three in five adolescents reported using alcohol to intoxication at intake, with 44.7% reporting alcohol use to intoxication in the 12 months before follow-up—a significant decrease of 26.1%. Similarly there was a significant decrease of 20.4% in the number of clients who reported binge drinking from intake to follow-up (52.3% vs. 41.6%).

The number of clients reporting alcohol use decreased by 27%

FIGURE 3.23. PAST-12-MONTH USE OF ALCOHOL AT INTAKE AND FOLLOW-UP (N = 197)



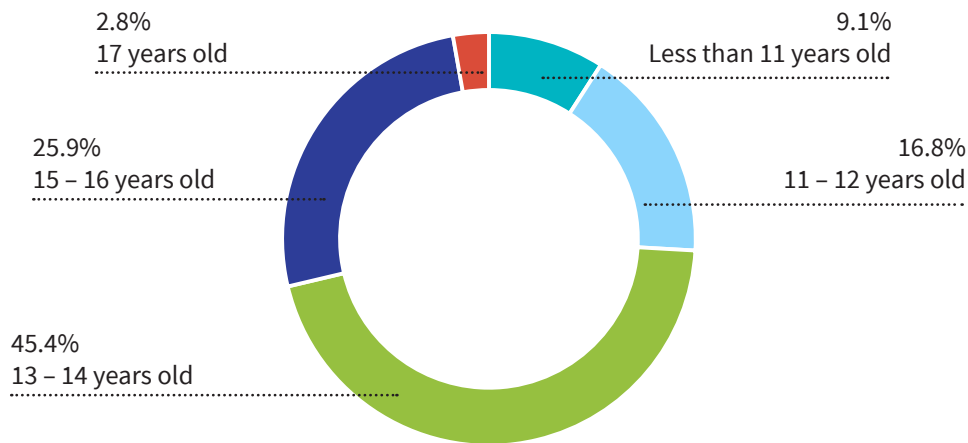
*p < .05, **p < .01, ***p < .001.

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

Adolescents were on average 13.3 years old when they first drank alcohol

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). Of the 143 adolescents who reported using alcohol in the 12 months before intake, they were on average 13.3 years old when they had their first alcoholic drink. Figure 3.24 shows the percentage of adolescents who reported having their first alcohol drink at different ages.

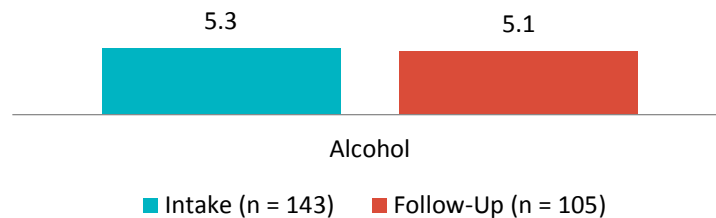
FIGURE 3.24. AVERAGE AGE CLIENT HAD FIRST ALCOHOLIC DRINK (n = 143)



AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 3.25 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 = 143), they reported using alcohol, on average, 5.3 months. Among clients who reported using alcohol in the 12 months before follow-up (n = 105), they reported using, on average, 5.1 months.

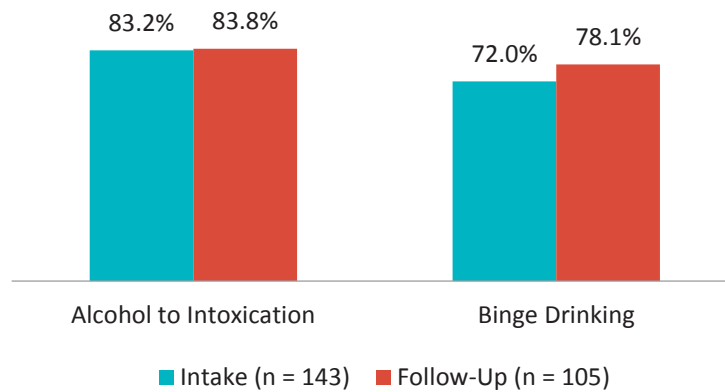
FIGURE 3.25. AMONG ADOLESCENTS WHO USED ALCOHOL, THE AVERAGE NUMBER OF MONTHS ADOLESCENTS USED ALCOHOL AT INTAKE AND FOLLOW-UP



ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL, PAST 12 MONTHS

Of the clients who used alcohol in the 12 months before entering treatment (n = 143), 83.2% used alcohol to intoxication in the 12 months before intake and 72.0% binge drank alcohol (see Figure 3.26). Of the clients who used alcohol in the 12 months before follow-up (n = 105), 83.8% of clients reported alcohol use to intoxication and 78.1% binge drank alcohol.

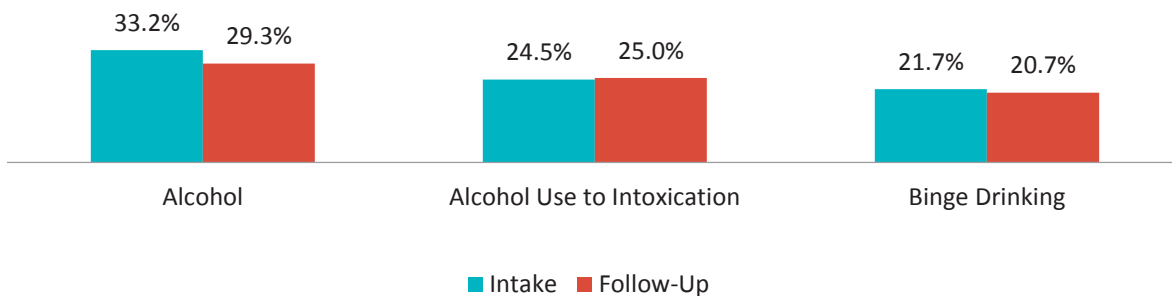
FIGURE 3.26. ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Alcohol Use, Past 30 Days

There was no significant change in the number of adolescents who reported using any alcohol, alcohol to intoxication, or binge drinking alcohol in the past 30 days from intake (see Figure 3.27).

FIGURE 3.27. PAST-30-DAY USE OF ALCOHOL AT INTAKE AND FOLLOW-UP (n = 184)



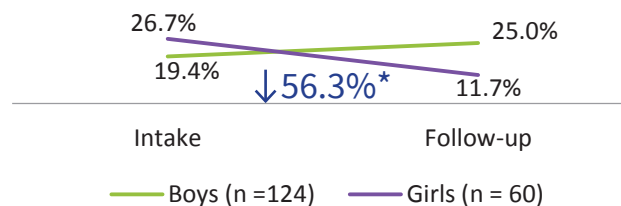
GENDER DIFFERENCES IN ALCOHOL USE IN THE PAST 30 DAYS

The number of girls who reported binge drinking alcohol decreased significantly from intake to follow-up, while the number of boys who reported binge drinking alcohol remained stable (see Figure 3.28). Significantly more boys than girls reported binge drinking alcohol in the 30 days before follow-up. There were no other differences in 30-day alcohol use or alcohol use to intoxication between boys and girls.



Significantly more boys than girls reported binge drinking alcohol in the 30 days before follow-up

FIGURE 3.28. GENDER DIFFERENCES IN PAST-30-DAY BINGE DRINKING AT INTAKE AND FOLLOW-UP^a



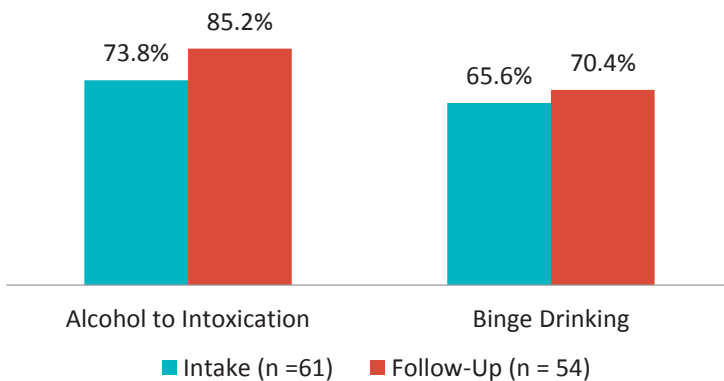
a—Significant difference by gender at follow-up, **p < .05. *p < .05, **p < .01, ***p < .001.

ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL IN THE PAST 30 DAYS

Of the 61 adolescents who used alcohol in the 30 days before intake, 73.8% used alcohol to intoxication and 65.6% binge drank in the 30 days before intake (see Figure 3.29).

Of the 54 adolescents who reported using alcohol in the 30 days before follow-up, 85.2% reported using alcohol to intoxication and 70.4% reported binge drinking in the 30 days before follow-up.

FIGURE 3.29. PAST-30-DAY USE OF ALCOHOL TO INTOXICATION AND BINGE DRINKING, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



SELF-REPORTED SEVERITY OF DRUG AND ALCOHOL USE

Another way to examine overall change in degree of severity of substance use is to use the Addiction Severity Index (ASI) composite scores for alcohol and drug use. These composite scores are computed based on self-reported severity of past-30-days alcohol and drug use, taking into consideration a number of issues including:

- the number of days of alcohol (or drug) use,
- money spent on alcohol,
- the number of days individuals used multiple drugs (for drug use composite score),
- the number of days individuals experienced problems related to their alcohol (or drug) use,
- how troubled or bothered they are by their alcohol (or drug) use, and
- how important treatment is to them for their alcohol (or drug) use (see sidebar).

Change in the average ASI composite for alcohol and

ASI Alcohol and Drug Composite Scores and Substance Dependence

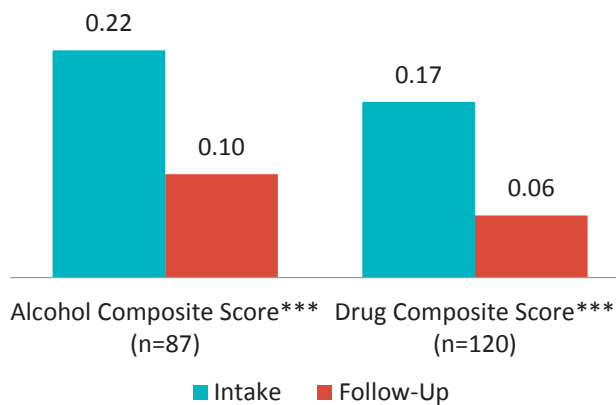
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI alcohol and drug use composite scores and DSM-IV substance dependence diagnosis. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity with regard to identifying DSM-IV substance dependence diagnosis: .17 for alcohol composite score and .16 for drug composite score. These composite score cutoffs can be used to estimate the number of individuals who are likely to meet criteria for active alcohol or drug dependence and to show reductions in self-reported severity of substance use. In previous years we have used the ASI to estimate the number and percent of clients who met a threshold for alcohol and drug dependence. However, recent changes in the diagnostics for substance abuse make the distinction between dependence and abuse questionable. While the adolescent clients who were followed up in this study were provided with treatment under previous DSM-IV-TR conditions, we relate their use severity in terms that are compatible with current nosology. Thus, ASI composite scores that met the threshold can be considered indicative of a severe substance use disorder to be compatible with current thinking about substance use disorders in the DSM-V (American Psychiatric Association, 2013), where we would have previously referred to them as meeting the threshold for dependence. Change from intake to follow-up in severity rating has the same clinical relevance as moving from dependence to abuse in the older criteria.

drug use was examined for adolescents who were not in a controlled environment all 30 days before entering treatment or follow-up. Also, clients who reported abstaining from alcohol at both intake and follow-up were not included in the analysis of change in alcohol composite score. Similarly, clients who reported abstaining from drugs at both intake and follow-up were not included in the analysis of change in drug composite score.

The average ASI alcohol and drug composite scores decreased significantly from intake to follow-up

Figure 3.30 displays the change in average composite scores.¹¹ The average for the alcohol composite score decreased significantly from 0.22 at intake to 0.10 at follow-up. The average for the drug composite score decreased significantly from 0.17 at intake to 0.06 at follow-up.

FIGURE 3.30. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



*p < .05, **p < .01, ***p < .001.

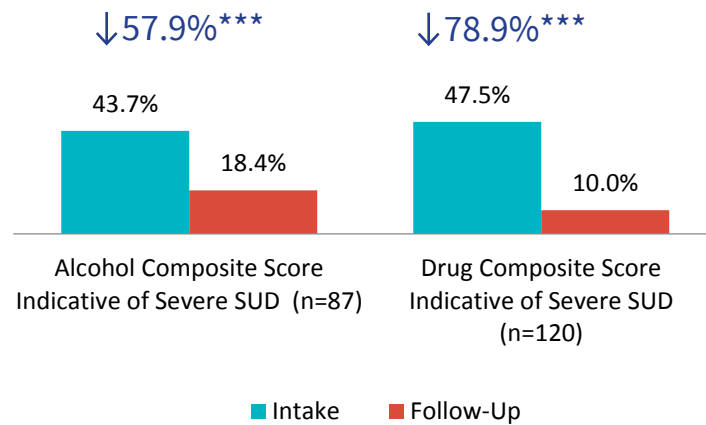
The percentage of individuals who had ASI composite scores that met the cutoff for severe substance use disorder (SUD) decreased significantly from intake to follow-up (see Figure 3.31). A sizable minority of adolescents (43.7%) had an alcohol composite score that met the cutoff for severe SUD at intake, while only 18.4% had an alcohol composite score that met the cutoff for severe SUD at follow-up (see Figure 3.31). This was a significant decrease of 57.9% in the number of adolescents who met criteria for severe alcohol use disorder. Among adolescents who did not report abstaining from drugs at both intake and follow-up, nearly half met the cutoff score for severe drug use disorder at intake, while at follow-up only 10.0% of adolescents met criteria for severe drug use disorder—representing a significant decrease of 78.9%.

“ I liked it because they let us talk to people our age about the stuff we did. It really helped us.”

- AKTOS Client quote

¹¹ The following numbers of cases were not included in the analysis of change in alcohol composite score; 86 clients reported abstaining from alcohol at intake and follow-up, and 24 were in a controlled environment all 30 days before treatment. The following numbers were not included in the analysis of change in drug composite score: 53 clients reported abstaining from drugs at baseline and follow-up, and 24 clients were in a controlled environment all 30 days before entering treatment.

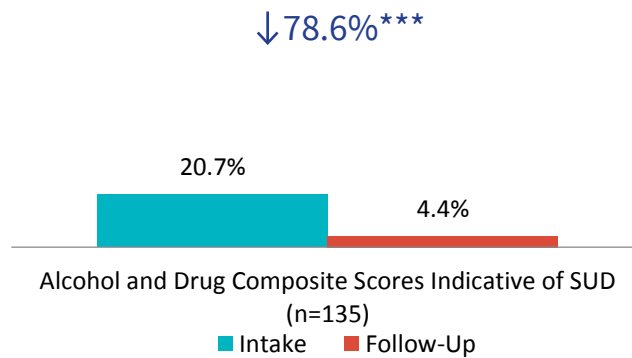
FIGURE 3.31. ADOLESCENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



*p < .05, **p < .01, ***p < .001.

Among the adolescents who were not in a controlled environment all 30 days before entering treatment and who reported using alcohol and/or drugs at intake or follow-up, one in five (20.7%) had alcohol and drug composite scores that met the cutoff for dependence (see Figure 3.32). The percentage of clients who had composite scores that met the cutoff for dependence for both alcohol and drugs decreased significantly by 78.6% to only 4.4% at follow-up.

FIGURE 3.32. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR BOTH ALCOHOL AND DRUG SEVERE USE DISORDERS AT INTAKE AND FOLLOW-UP (n = 135)



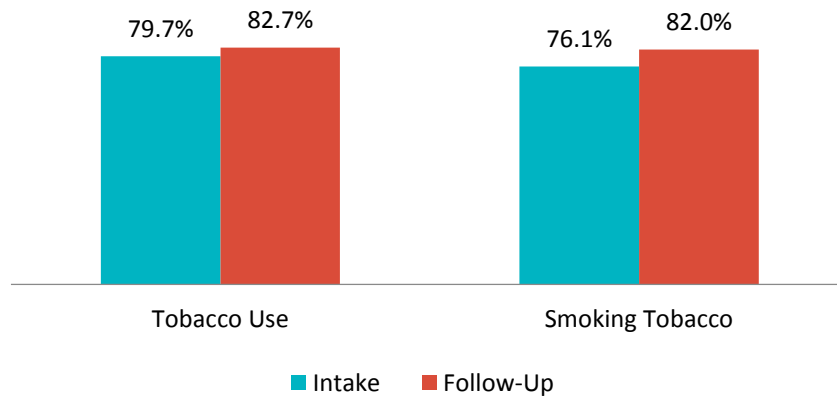
*p < .05, **p < .01, ***p < .001.

TOBACCO USE AND SMOKING

Tobacco Use And Smoking, Past 12 Months

Overall, there was no change in tobacco use from intake to follow-up (see Figure 3.33). The majority of clients reported using tobacco (including smoking and smokeless) in the 12 months before entering treatment (79.7%) and in the 12 months before follow-up (82.7%). Similarly the majority of clients (76.1%) reported smoking tobacco in the 12 months before entering treatment, which remained stable at follow-up (82.0%).

FIGURE 3.33. PAST-12-MONTH TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 197)

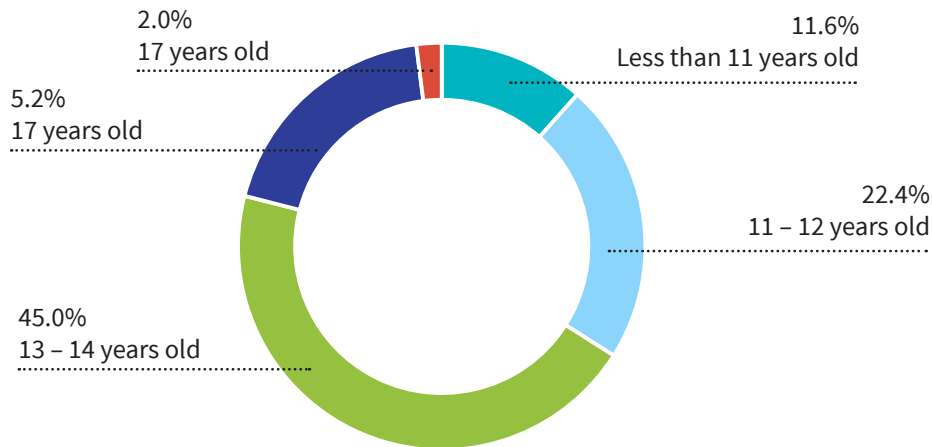


AVERAGE AGE BEGAN SMOKING REGULARLY

Adolescents who reported smoking tobacco products in the 12 months before intake were asked how old they were when they began smoking regularly (i.e., on a daily basis). Of the 150 adolescents who reported smoking tobacco products, 147 reported they began smoking regularly on average at age 12.9 years old.¹² Figure 3.34 shows the percentage of adolescents who reported beginning smoking regularly at different ages.

Adolescents were on average 12.9 years old when they began smoking tobacco regularly

FIGURE 3.34. AVERAGE AGE BEGAN SMOKING TOBACCO REGULARLY (n = 147)

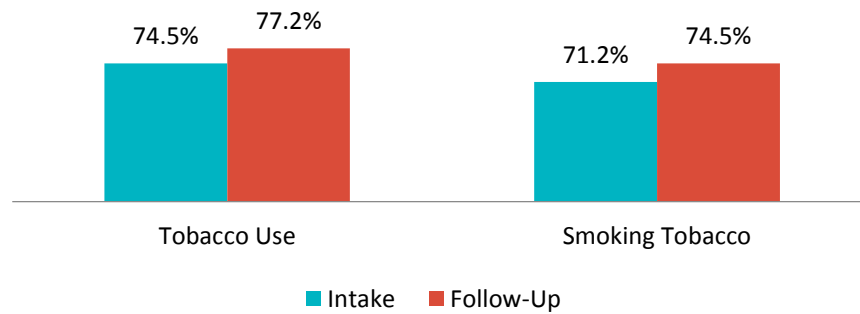


AVERAGE NUMBER OF MONTHS OF TOBACCO USE

Figure 3.35 shows the number of months clients who used tobacco reported using tobacco at intake and follow-up. Among the clients who reported using tobacco in the 12 months before entering treatment (n = 157), they reported using tobacco, on average, 10.5 months. Among clients who reported using tobacco in the 12 months before follow-up (n = 163), they reported using, on average, 10.6 months.

¹² Three adolescents 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.

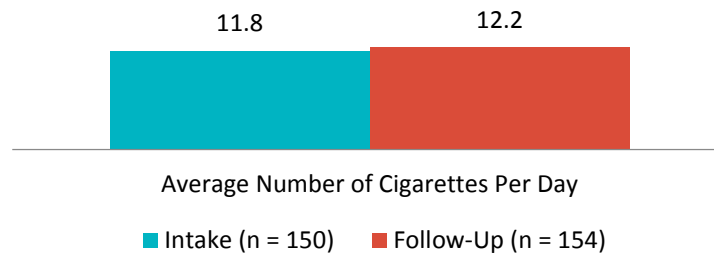
FIGURE 3.35. AMONG ADOLESCENTS WHO USED TOBACCO, THE AVERAGE NUMBER OF MONTHS OF TOBACCO USE AT INTAKE AND FOLLOW-UP



AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY

The average number of cigarettes clients reported smoking at intake and follow-up remained stable (see Figure 3.36). Of those who smoked tobacco at intake, clients reported smoking an average of 11.8 cigarettes in a day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 12.2 cigarettes in a day.

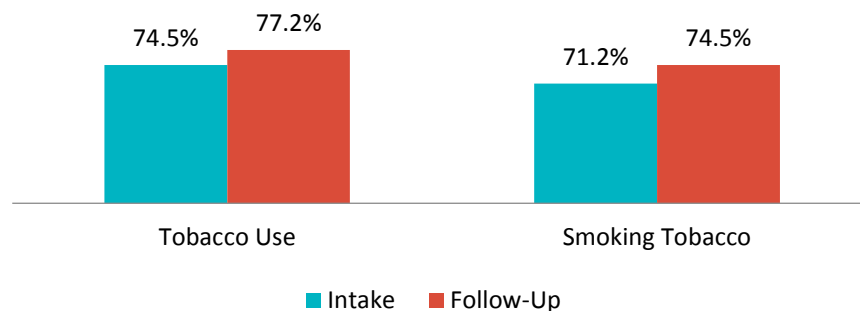
FIGURE 3.36. AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO SMOKED



Tobacco, Past 30-Day Use

The number of clients who reported any past-30-day tobacco use (including smoking and smokeless tobacco) did not change from intake to follow-up. Similarly, there was no change in the number of clients who reported smoking tobacco from intake to follow-up (see Figure 3.37).

FIGURE 3.37. PAST-30-DAY TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 184)



SECTION 4: OTHER TARGETED FACTORS

This section examines pre-program compared to post-program change on four primary targeted factors including: (1) mental health, (2) education and employment, (3) living situation, and (4) involvement with the 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.

4A. MENTAL HEALTH PROBLEMS

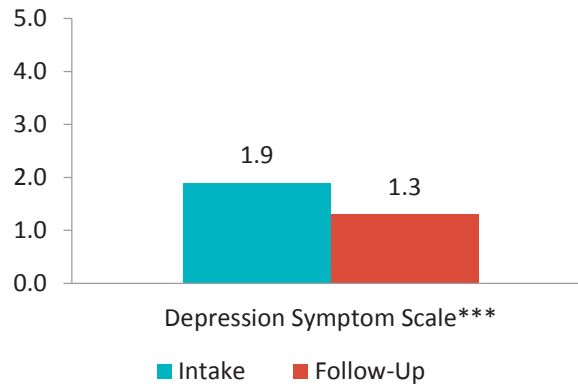
Depression Symptoms

To assess adolescents self-reported depression symptoms at intake and follow-up, five items from the depression symptom scale in the GAIN-Quick instrument were included in the intake and follow-up surveys. An example of an item is “During the past 12 months, have you had significant problems with feeling very trapped, lonely, sad, blue, depressed, or hopeless about the future?” Responses of “Yes” to the items about symptoms were assigned a value of “1” and “No” responses assigned a value of “0.” Scores on the five items were summed at intake and follow-up. Thus, the maximum possible score was 5 and the minimum score was 0.

Depression symptoms decreased significantly from intake to follow-up

Average scores on the depression symptom scale decreased significantly from intake to follow-up (see Figure 4A.1).

FIGURE 4A.1. AVERAGE SCORE ON THE DEPRESSION SYMPTOM SCALE AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

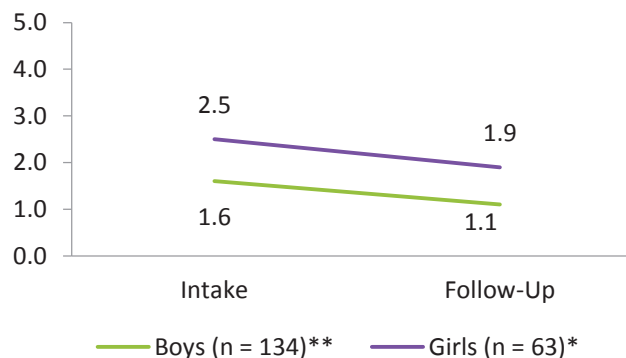
GENDER DIFFERENCES IN DEPRESSION SYMPTOMS

Compared to boys, girls had a significantly higher average on the depression symptom scale at intake and follow-up (see Figure 4A.2). Boys’ and girls’ average score on the depression symptom scale decreased significantly from intake to follow-up.



Girls had a significantly higher average score on the depression symptom scale at intake and follow-up compared to boys

FIGURE 4A.2. GENDER DIFFERENCES IN AVERAGE SCORE ON THE DEPRESSION SYMPTOM SCALE^a



a—Statistical difference by gender at intake and follow-up; p < .001.

*p < .05, **p < .01, ***p < .001.

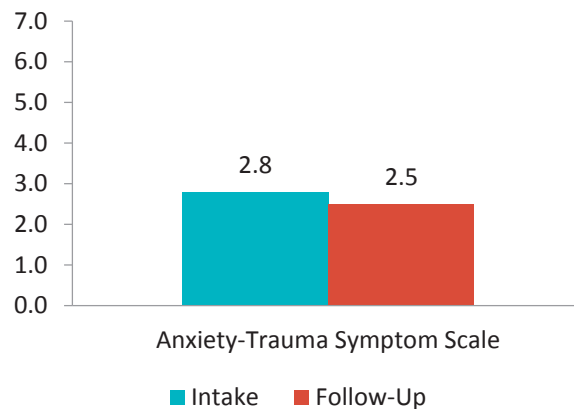
Anxiety-Trauma Symptoms

To assess for anxiety and trauma symptoms, seven items from the Anxiety-Trauma Scale in the GAIN-Quick were included in the intake and follow-up surveys. An example of an item is “During the past 12 months, have you had significant problems with trembling, having your heart race or feeling so restless you could not sit still?” Responses of “Yes” to the items about symptoms were assigned a value of “1” and “No” responses assigned a value of “0.” Scores on the seven items were summed at intake and follow-up. Thus, the maximum possible score was 7 and the minimum score was 0.

Adolescents’ self-reported anxiety-trauma symptoms remained stable

The average score on the anxiety-trauma symptom scale did not change significantly from intake to follow-up (see Figure 4A.3).

FIGURE 4A.3. AVERAGE SCORE ON THE ANXIETY-TRAUMA SYMPTOM SCALE AT INTAKE AND FOLLOW-UP (n = 197)



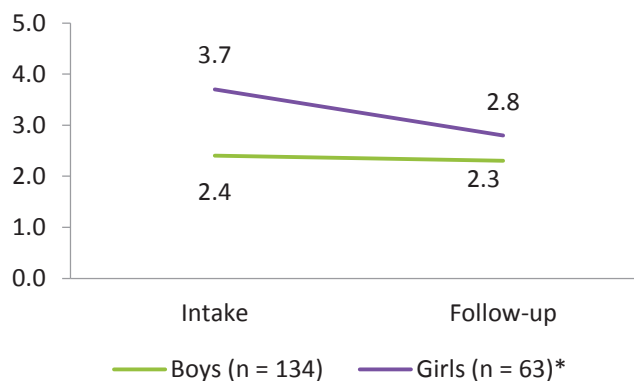
GENDER DIFFERENCES IN ANXIETY-TRAUMA SYMPTOMS

Compared to boys, girls had a significantly higher average score on the anxiety-trauma symptom scale at intake (see Figure 4A.4). The girls’ average score on the anxiety-trauma symptom scale decreased significantly from intake to follow-up (3.7 vs. 2.8); however, boys’ average score did not change significantly. Thus, at follow-up, there was no significant difference in boys’ and girls’ average scores on the anxiety-trauma symptom scales.



Girls had a significantly higher average score on the anxiety-trauma symptom scale at intake compared to boys

FIGURE 4A.4. GENDER DIFFERENCES IN AVERAGE SCORE ON THE ANXIETY-TRAUMA SYMPTOM SCALE^a



a—Statistical difference by gender at intake; $p < .01$.

* $p < .05$, ** $p < .01$, *** $p < .001$.

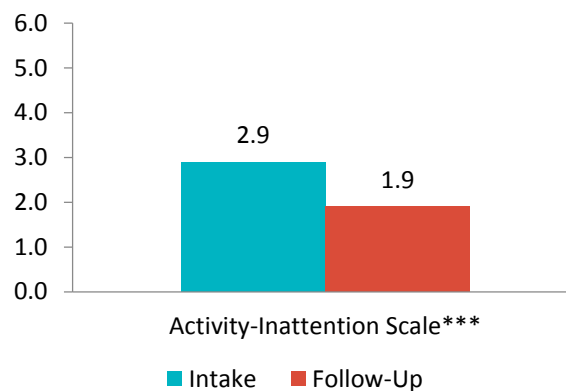
Symptoms Of Attention Deficit

To assess for symptoms of attention deficit, six items from the activity-inattention scale in the GAIN-Quick were included in the intake and follow-up surveys. An example of an item is “During the past 12 months, have you done the following things two or more times: Had a hard time listening to instructions at school, work or home?” Responses of “Yes” to the items about symptoms were assigned a value of “1” and “No” responses assigned a value of “0.” Scores on the six items were summed at intake and follow-up. Thus, the maximum possible score was 6 and the minimum score was 0.

Adolescents’ symptoms of attention deficit decreased significantly from intake to follow-up

Mean scores on the activity-inattention scale decreased significantly from intake to follow-up (see Figure 4A.5).

FIGURE 4A.5. AVERAGE SCORE ON THE ACTIVITY-INATTENTION SCALE AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

Behavior Problems

To assess for symptoms of conduct disorder and aggressive behavior, six items from the behavior problem scale in the GAIN-Quick were included in the intake and follow-up surveys. An example of an item is “During the past 12 months, have you done the following things two or more times: Been a bully or threatened other people?” Responses of “Yes” to the items about symptoms were assigned a value of “1” and “No” responses assigned a value of “0.” Scores on the six items were summed at intake and follow-up. Thus, the maximum possible score was 6 and the minimum score was 0.

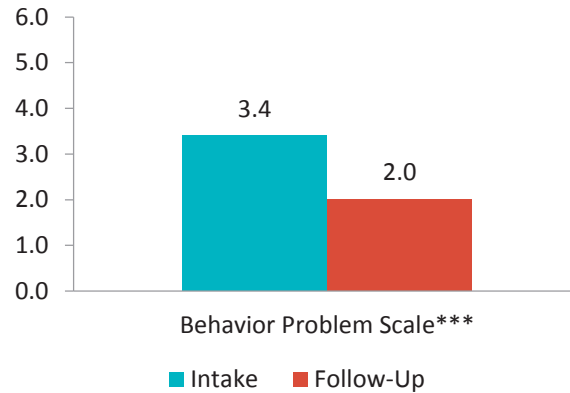
Adolescents’ self-reported symptoms of conduct disorder and aggressive behavior decreased significantly from intake to follow-up

The average score on the behavior problem scale decreased significantly from intake to follow-up (see Figure 4A.6).

“ They understood what I was talking about and never told me what to do or not to do. ”

- AKTOS Client quote

FIGURE 4A.6. AVERAGE SCORE ON THE BEHAVIOR PROBLEM SCALE AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

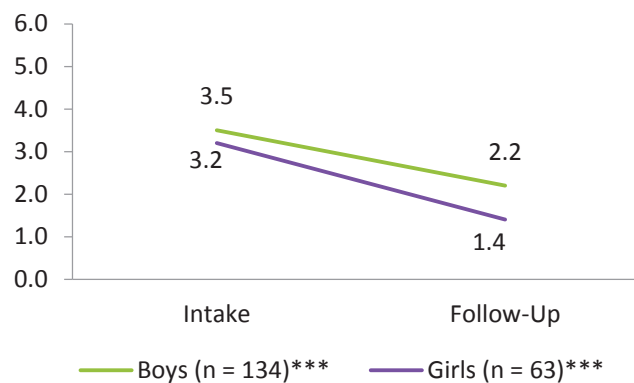
GENDER DIFFERENCES IN BEHAVIOR PROBLEMS

At intake, boys and girls had similar average scores on the behavior problem scale; however, at follow-up, boys had a significantly higher average score compared to girls (see Figure 4A.7). Girls’ average score on the behavior problem scale decreased significantly from intake to follow-up (3.2 vs. 1.4) as did boys’ average score (3.5 vs. 2.2).



At follow-up boys had a higher average score on the behavior problem scale compared to girls

FIGURE 4A.7. GENDER DIFFERENCES IN AVERAGE SCORE ON THE BEHAVIOR PROBLEM SCALE AT INTAKE AND FOLLOW-UP^a



a—Statistical difference by gender at follow-up; p < .01.

*p < .05, **p < .01, ***p < .001.

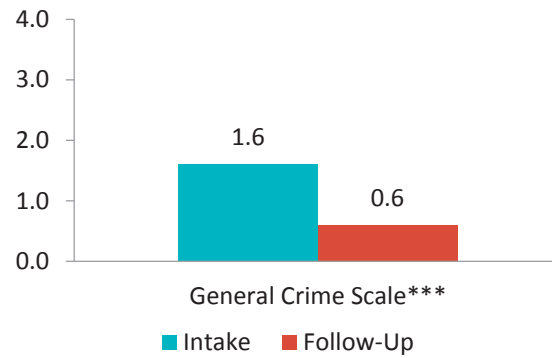
General Criminal Activity

To assess for involvement in illegal activity, four items from the general crime scale in the GAIN-Quick were included in the intake and follow-up surveys. An example of an item is “During the past 12 months, have you purposely damaged or destroyed property that did not belong to you?” Responses of “Yes” to the items about symptoms were assigned a value of “1” and “No” responses assigned a value of “0.” Scores on the four items were summed at intake and follow-up. Thus, the maximum possible score was 4 and the minimum score was 0.

Adolescents’ self-reported involvement in illegal activity decreased significantly from intake to follow-up

Adolescents’ average score on the general crime scale decreased significantly from intake to follow-up (see Figure 4A.8).

FIGURE 4A.8. AVERAGE SCORE ON THE GENERAL CRIME SCALE AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

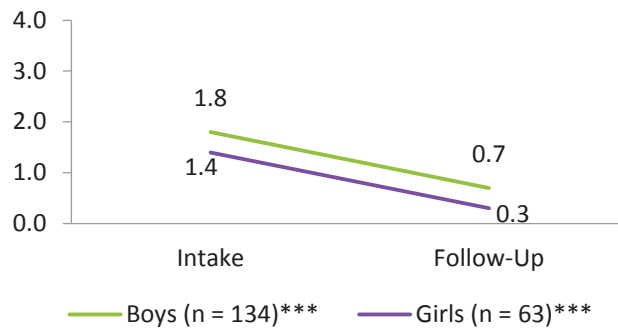
GENDER DIFFERENCES IN GENERAL CRIME ACTIVITY

At intake, boys and girls had similar average scores on the general crime scale; however, at follow-up, boys had a significantly higher average score compared to girls (see Figure 4A.9). Girls’ average score on the general crime scale decreased significantly from intake to follow-up (1.4 vs. 0.3) as did boys’ average score (1.8 vs. 0.7).



At follow-up boys had a higher average score on the general crime scale compared to girls

FIGURE 4A.9. GENDER DIFFERENCES IN AVERAGE SCORE ON THE GENERAL CRIME SCALE AT INTAKE AND FOLLOW-UP^a



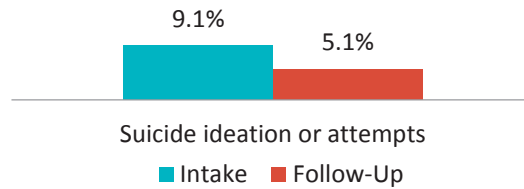
a—Statistical difference by gender at follow-up; p < .01.
 *p < .05, **p < .01, ***p < .001.

Suicide Ideation And/Or Attempts

Suicide 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 adolescents who reported suicidality did not change significantly from intake to follow-up (see Figure 4A.10).

A minority of adolescents reported suicidal ideation and/or attempts at intake and follow-up

FIGURE 4A.10. ADOLESCENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (n = 197)



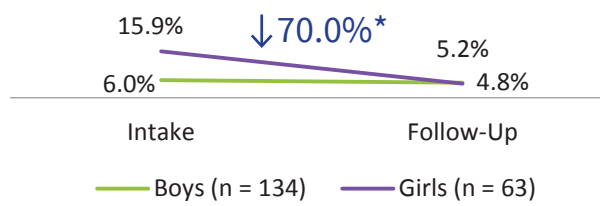
GENDER DIFFERENCES IN SUICIDE IDEATION OR ATTEMPTS

At intake, significantly more girls reported suicidality compared to boys (see Figure 4A.11). The number of girls who reported suicidality decreased significantly by 70.0%, from 15.9% at intake to 4.8% at follow-up. However, the number of boys who reported suicidal ideation or attempts did not change significantly from intake to follow-up.



The number of girls who reported suicidality decreased significantly from intake to follow-up

FIGURE 4A.11. GENDER DIFFERENCES IN SUICIDIALITY AT INTAKE AND FOLLOW-UP^a



a—Statistical difference by gender at intake; p < .05.
 *p < .05, **p < .01, ***p < .001.

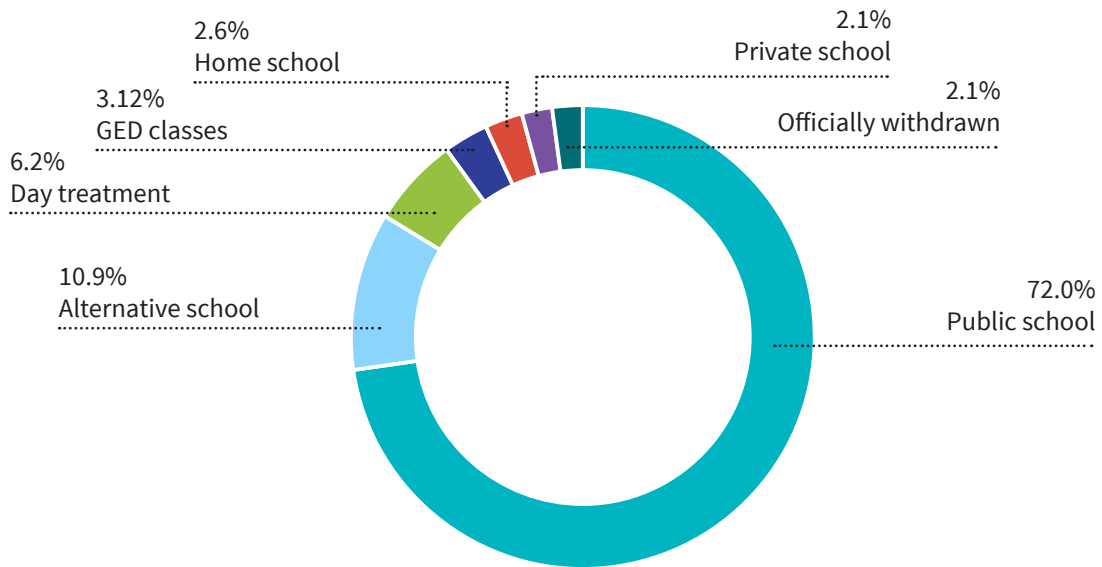
4B. EDUCATION AND EMPLOYMENT

This subsection examines changes in education and employment from intake to follow-up. Specifically, this subsection 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) education status for individuals 18 years old and older; and (6) employment status among those who were attending school and among those who were not attending school.

Attending School

At intake, 2.0% of the adolescents had a high school diploma. Of the remaining 193 adolescents, the vast majority reported they were currently attending school or taking GED classes at intake (96.9%), with only 2.1% reporting they were officially withdrawn from school (see Figure 4B.1). The largest percentage of youth were enrolled in public school (72.0%), followed by 10.9% in alternative school, and 6.2% in day treatment.

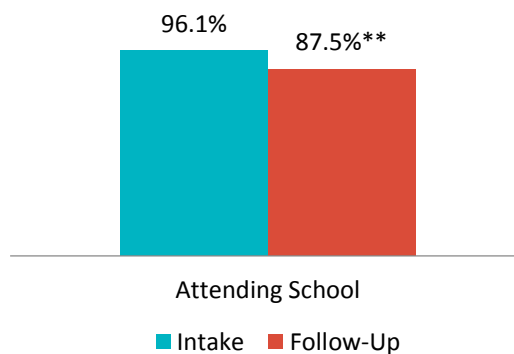
FIGURE 4B.1. PERCENTAGE OF ADOLESCENTS IN DIFFERENT TYPES OF SCHOOLS AT INTAKE, AMONG THOSE WITH LESS THAN A HIGH SCHOOL DIPLOMA (n = 193)



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

Of the 152 individuals who had not received their high school diploma by follow-up, Figure 4B.2 shows the percentage enrolled in school (including public, private, alternative, day treatment, home school, and GED classes) at intake and follow-up. There was a significant decrease in the number of youth attending school, with the decrease for boys greater than the decrease for girls: a decrease of 9.9% for boys and a decrease of 6.7% for girls.

FIGURE 4B.2 AMONG ADOLESCENTS WITH LESS THAN A HIGH SCHOOL DIPLOMA AT FOLLOW-UP, THE PERCENTAGE ATTENDING SCHOOL AT INTAKE AND FOLLOW-UP (n = 152)



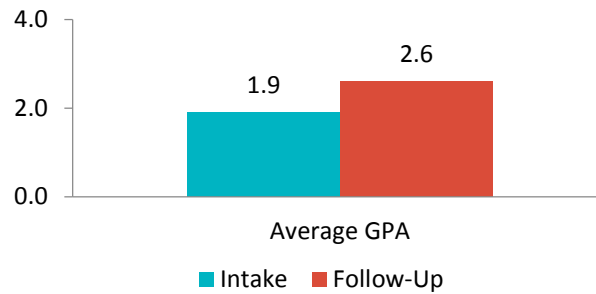
*p < .05, **p < .01, ***p < .001.

Grade Point Average

Adolescents' academic performance was assessed by examining mean grade point average (GPA) among those who were enrolled in school at intake and follow-up (see Figure 4B.3). 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 1.9 (nearly a C). At follow-up, adolescents' average GPA had increased significantly to 2.6 (midpoint between a C and a B).

Youths' GPA increased significantly from intake to follow-up

FIGURE 4B.3. AMONG THOSE ENROLLED IN SCHOOL AT INTAKE AND FOLLOW-UP (N = 122)¹³, AVERAGE GPA



*p < .05, **p < .01, ***p < .001.

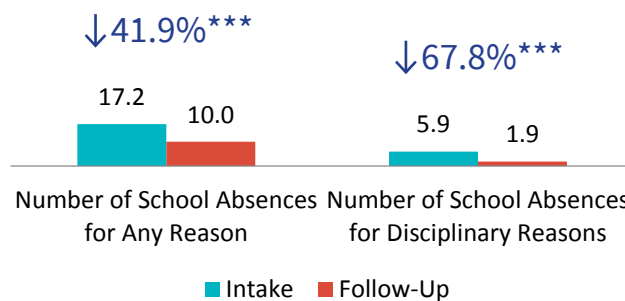
School Absences For Any Reason And For Disciplinary Reasons

Youth 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.

The number of school absences decreased significantly by 42% from intake to follow-up

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 by 41.9% from 17.2 days at intake to 10.0 days at follow-up (see Figure 4B.4). 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 absences due to suspension or expulsion decreased by 67.8%.

FIGURE 4B.4. AMONG THOSE ENROLLED IN SCHOOL IN THE PAST 3 MONTHS SCHOOL WAS IN SESSION AT INTAKE AND FOLLOW-UP (n = 105)¹⁴, AVERAGE NUMBER OF SCHOOL ABSENCES



*p < .05, **p < .01, ***p < .001.

¹³ 132 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 10 adolescents at follow-up: 5 did not know their average grade, 4 were taking GED classes, and for 1 the interviewer skipped the question in error.

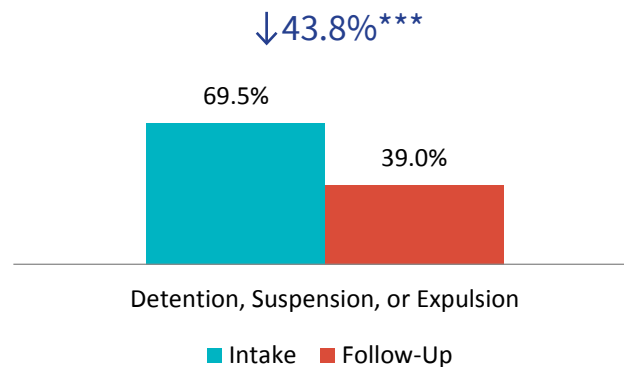
¹⁴ 132 adolescents had less than a high school diploma at follow-up and were enrolled in school at intake and follow-up. Of these 132 adolescents, 13 reported they did not attend school in the past 3 months school was in session at intake and an additional 14 reported they did not attend school in the past 3 months school was in session at follow-up. Thus, comparison of number of school absences was conducted on 105 adolescents.

Detention, Suspension, And Expulsion

The number of adolescents who reported being in detention, suspended, or expelled in the past 3 months school was in session decreased significantly by 43.8% from intake to follow-up (see Figure 4B.5). At intake, 7 in 10 individuals reported they had been in detention, suspended, or expelled, whereas at follow-up, this had decreased to about 4 in 10 individuals.

The number of youth in detention, suspension, or expelled decreased by 44%

FIGURE 4B.5. AMONG THOSE ENROLLED IN SCHOOL IN THE PAST 3 MONTHS SCHOOL WAS IN SESSION AT INTAKE AND FOLLOW-UP (n = 105)¹⁵, THE PERCENTAGE OF CLIENTS WHO WERE IN DETENTION OR EXPELLED

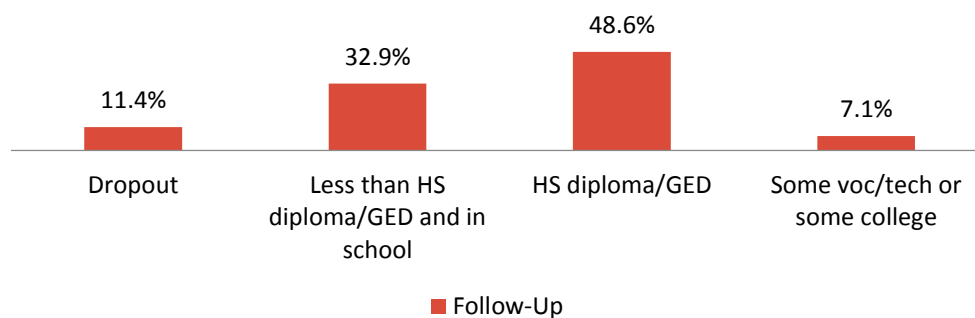


*p < .05, **p < .01, ***p < .001.

Education Status Among Individuals 18 Years Old And Older

Because all of the adolescents 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, only 3.0% reported they had already attained a high school diploma or GED at intake. However, by follow-up, 70 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 4B.6). About 1 in 10 (11.4%) were not enrolled in school and had less than a high school diploma or GED (i.e., dropouts); these are the individuals that cause the greatest concern. About 1 in 3 individuals (32.9%) had less than a high school diploma or GED and they were enrolled in secondary school. Nearly half (48.6%) had attained a high school diploma or GED by follow-up and 7.1% had completed some vocational/technical school or college by follow-up.

FIGURE 4B.6. EDUCATION STATUS AT FOLLOW-UP AMONG CLIENTS 18 YEARS OLD AND OLDER (N = 70)



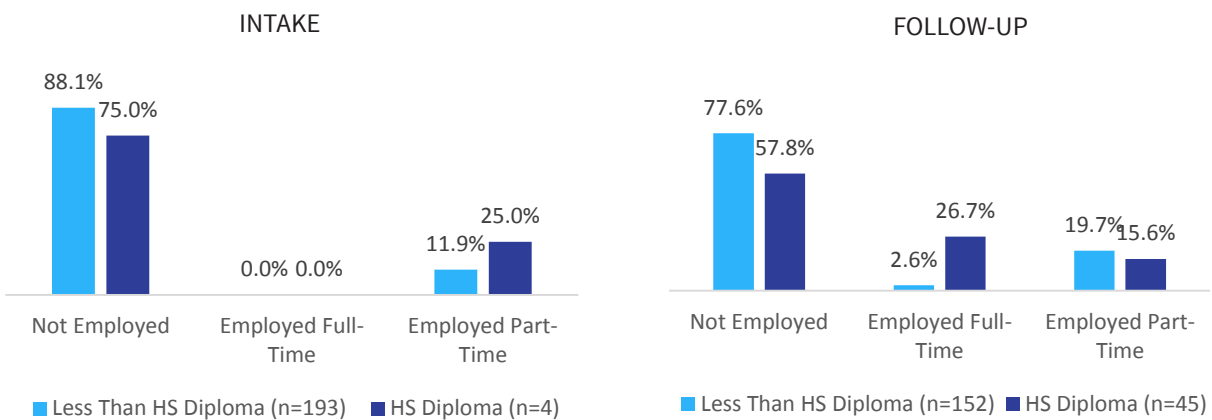
¹⁵ 132 adolescents had less than a high school diploma or GED at follow-up and were enrolled in school at intake and follow-up. Of these 132 adolescents, 13 reported they did not attend school in the past 3 months school was in session at intake and an additional 14 reported they did not attend school in the past 3 months school was in session at follow-up. Thus, comparison of number of school absences was conducted on 105 adolescents.

Employment

Adolescents' current employment is reported separately for those who had less than a high school diploma and those who had a high school diploma at each period (see Figures 4B.7A & B). The majority of adolescents reported being unemployed at intake, regardless of whether they had attained a high school diploma. Only four individuals reported having a high school diploma at intake, with only one of these individuals reporting being employed part-time at intake.

At follow-up, the majority of individuals reported being unemployed; however, one fourth of individuals who had attained a high school diploma reported they were employed full-time compared to just 2.6% of individuals who had not yet attained a high school diploma. Similar percentages of individuals with a high school diploma and those without a diploma reported they were employed part-time.

FIGURE 4B.7A & B. EMPLOYMENT STATUS BY COMPLETION OF HIGH SCHOOL DIPLOMA AT INTAKE AND FOLLOW-UP

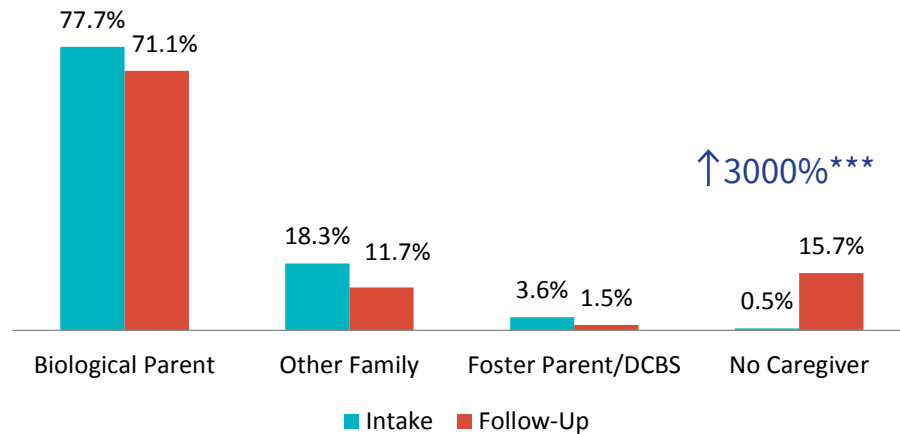


4C. LIVING SITUATION

This subsection of target factors examines the clients' living situation at intake and follow-up. Specifically, clients are asked at both points: (1) their caregiver; and (2) in what 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).

The majority of youth reported at intake and follow-up that their primary caregiver was their biological parent (see Figure 4C.1). At intake the next most frequently reported caregiver was other family (including kinship foster care). However, at follow-up the next most frequently reported caregiver was no one (15.7%), meaning that the individual was living independently. The increase in the number of adolescents who were living independently at follow-up was the only significant change in caregiver from intake to follow-up. This increase in the number of individuals who had no caregiver was related to their age. Of the 31 individuals who reported at follow-up that they had no primary caregiver, 9.7% were 17 years old, 83.9% were 18 years old, and 6.5% were 19 years old at the time of the follow-up survey.

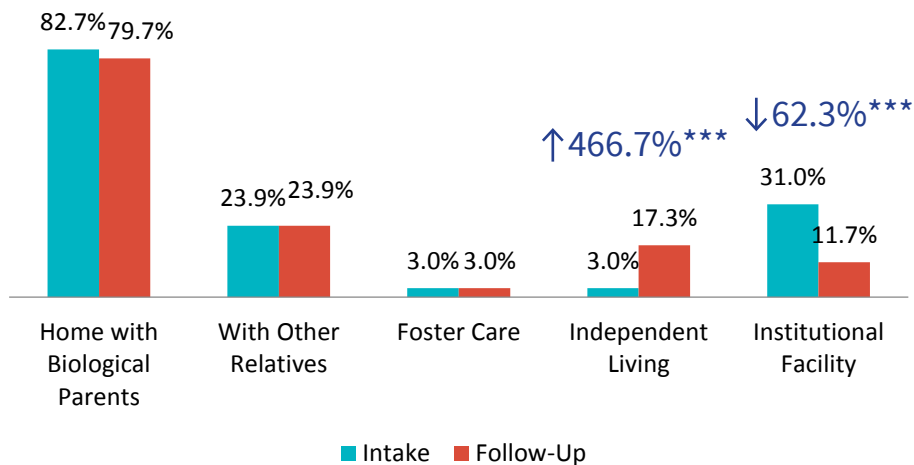
FIGURE 4C.1. PRIMARY CAREGIVER AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

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 (see Figure 4C.2). Nearly one fourth reported at intake and follow-up they had lived with other relatives in the prior 12 months. There was a significant increase of 466.7% in the number of individuals who reported that they had lived independently (e.g., on their own, in a school dormitory) at follow-up, and a significant decrease of 62.3% in the number of individuals who reported they had lived in an institutional setting (e.g., juvenile detention, residential treatment) at follow-up.

FIGURE 4C.2. LIVING SITUATION IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

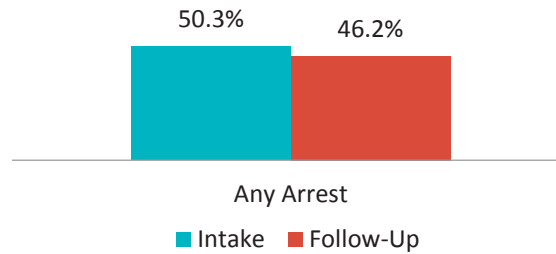
4D. JUSTICE SYSTEM INVOLVEMENT

This subsection 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) the number of times arrested; (3) types of criminal offenses; (4) any incarceration; (5) the number of nights incarcerated; and (5) supervision by the justice system.

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.¹⁶ Half of the adolescents (50.3%) reported an arrest in the 12 months before entering treatment, with a non-significant decrease at follow-up (see Figure 4D.1).

FIGURE 4D.1. PERCENTAGE OF CLIENTS REPORTING ARRESTS IN THE PAST 12 MONTHS AT INTAKE AND FOLLOW-UP (n = 195)



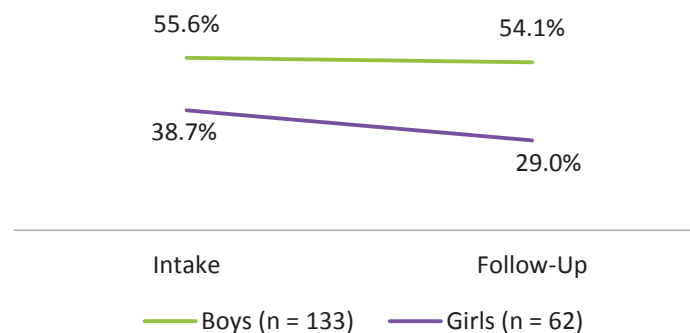
GENDER DIFFERENCES IN REPORTING ARRESTS IN THE PAST 12 MONTHS

Significantly more boys than girls reported being arrested at intake and follow-up (see Figure 4D.2). Even though the percentage of girls who reported being arrested in the 12 months before follow-up decreased slightly, this change was not statistically significant.



Significantly more boys reported being arrested at intake and follow-up compared to girls

FIGURE 4D.2 GENDER DIFFERENCES IN REPORTING ANY ARRESTS AT INTAKE AND FOLLOW-UP (n = 195)^a



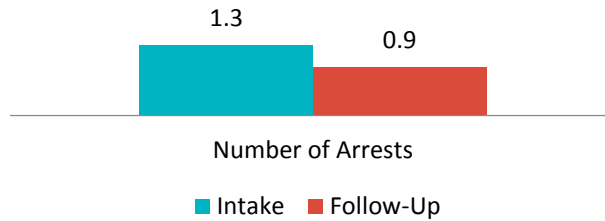
^a—Significant difference in number of arrests by gender at intake ($p < .05$) and at follow-up ($p < .01$)

AVERAGE NUMBER OF ARRESTS

At intake, the average number of times clients reported being arrested in the past 12 months was 1.3 (see Figure 4D.3). In the 12 months before follow-up, the average number of arrests was 0.9, which was not a statistically significant decrease.

¹⁶ Two cases had missing data on arrests in the 12 months before follow-up.

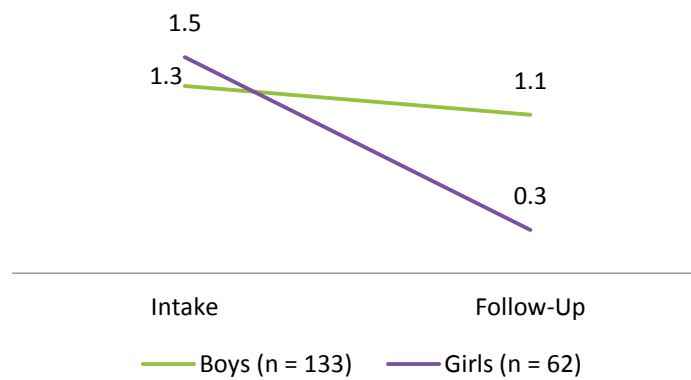
FIGURE 4D.3. AVERAGE NUMBER ARRESTS AT INTAKE AND FOLLOW-UP (N = 195)¹⁷



GENDER DIFFERENCES IN AVERAGE NUMBER OF ARRESTS

At intake boys and girls reported similar numbers of arrests (see Figure 4D.4). At follow-up, girls reported significantly fewer arrests in the past 12 months compared to boys.

FIGURE 4D.4 GENDER DIFFERENCES IN NUMBER OF ARRESTS AT INTAKE AND FOLLOW-UP (n = 195)^a



a—Significant difference in number of arrests at follow-up by gender; $p < .001$.

Types Of Criminal Charges

Adolescents who reported being arrested were asked to report the number of criminal charges they were given (e.g., crimes against persons, property crime, drug charges, DUI, status offenses, and other offenses) in the 12 months before intake and follow-up.¹⁸ Figure 4D.5 shows the percentage of adolescents who reported being charged with different types of offenses.

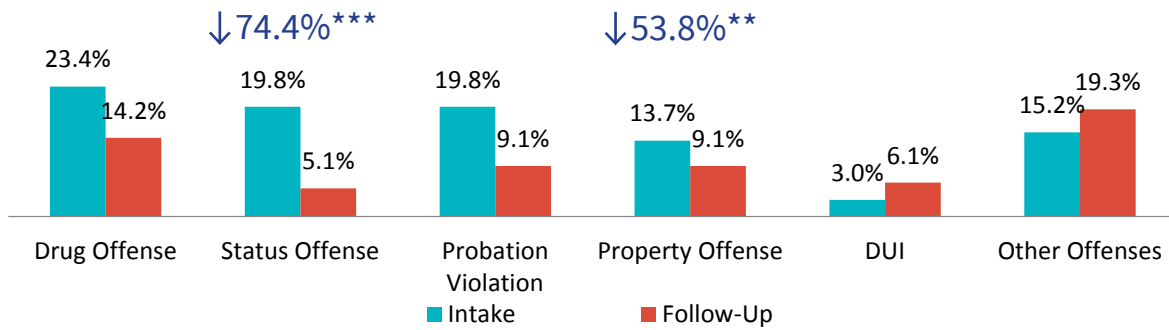
The number of youth who reported being charged with a status offense and a probation violation decreased significantly from intake to follow-up



¹⁷ Two cases had missing data on the number of arrests in the 12 months before follow-up.

¹⁸ One or more charges for each offense type was recoded into a categorical variable (Yes/No).

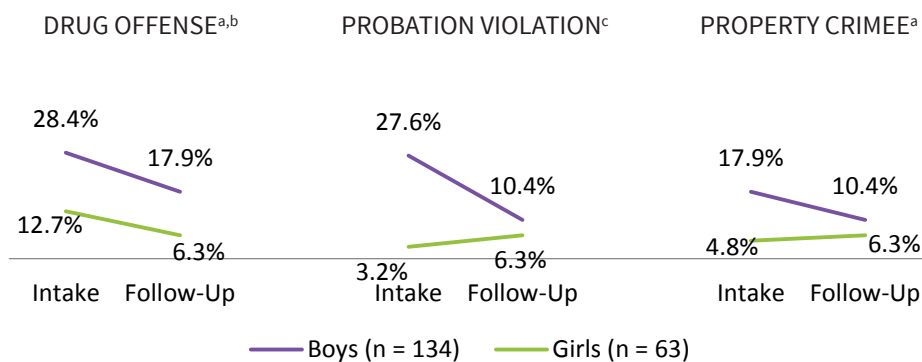
FIGURE 4D.5 PERCENTAGE OF ADOLESCENTS WHO WERE CHARGED WITH DIFFERENT TYPES OF CRIMINAL OFFENSES AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

Figure 4D.6 shows the types of offenses that were significantly different by gender. Significantly more boys reported they were charged with a drug offense, a property crime, and a status offense at intake compared to girls. At follow-up, significantly more boys reported they had been charged with a drug offense when compared to girls.

FIGURE 4D.6 GENDER DIFFERENCES IN TYPES OF OFFENSES AT INTAKE AND FOLLOW-UP (n = 197)^a



a—Significant difference in type of offense charged with by gender at intake (p < .05).
 b—Significant difference in type of offense charged with by gender at follow-up (p < .05).
 c—Significant difference in type of offense charged with by gender at intake (p < .001).

Incarceration

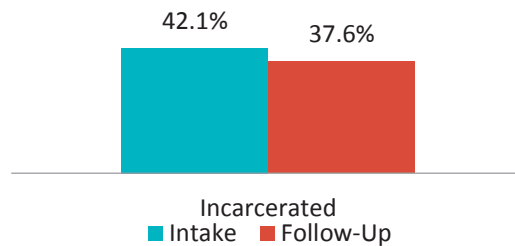
About 2 in 5 adolescents (42.1%) reported spending at least one night incarcerated in the 12 months prior to entering treatment (See Figure 4D.7). At follow-up, 37.6% of adolescents reported spending at least one night incarcerated in the past 12 months, which was a non-significant decrease.

The number of adolescents who reported being incarcerated in the past 12 months remained stable from intake to follow-up

“ I liked the people there, they genuinely wanted me to progress and cared.”

- AKTOS Client quote

FIGURE 4D.7. PERCENTAGE OF CLIENTS REPORTING INCARCERATION IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (n = 197)



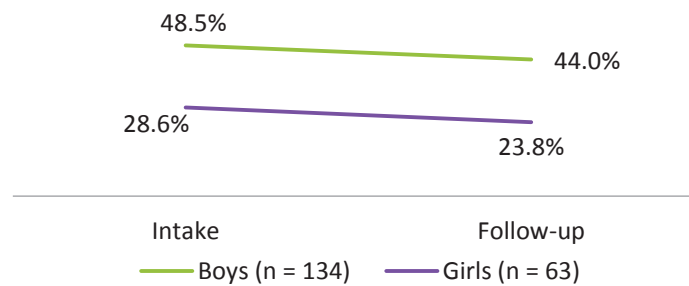
GENDER DIFFERENCES IN INCARCERATION

Significantly more boys than girls reported being incarcerated in the past 12 months at intake and follow-up (see Figure 4D.8).



Significantly more boys than girls reported being incarcerated before intake and follow-up

FIGURE 4D.8. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS REPORTING INCARCERATION (n = 197)^a

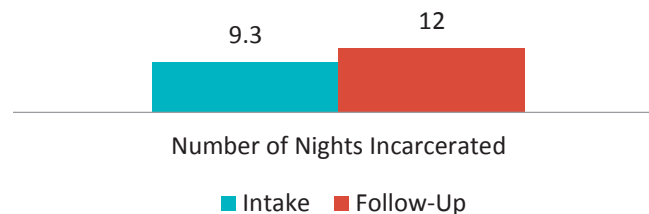


a— Significant difference by gender at intake and follow-up; $p < .01$

AVERAGE NUMBER OF NIGHTS INCARCERATED

The number of self-reported nights incarcerated did not change significantly from intake to follow-up (see Figure 4D.9).

FIGURE 4D.9. AVERAGE NUMBER OF NIGHTS INCARCERATED IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (n = 197)



* $p < .05$, ** $p < .01$, *** $p < .001$.

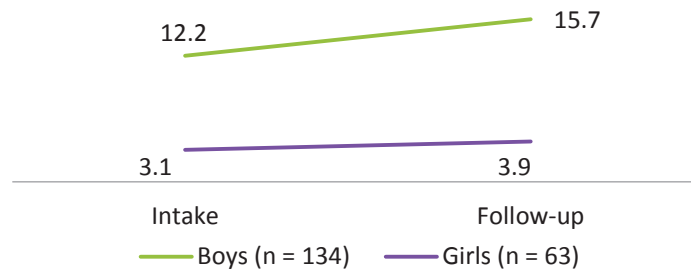
GENDER DIFFERENCES IN AVERAGE NUMBER OF NIGHTS INCARCERATED

Compared to girls, boys reported spending significantly more nights incarcerated in juvenile detention or jail in the 12 months before intake and follow-up (see Figure 4D.10). The average number of nights incarcerated was nearly four times higher for boys than girls at intake and follow-up.



Compared to girls, boys reported spending significantly more nights incarcerated in juvenile detention or jail at intake and follow-up

FIGURE 4D.10. GENDER DIFFERENCES IN AVERAGE NUMBER OF NIGHTS INCARCERATED AT INTAKE AND FOLLOW-UP (n = 197)^a



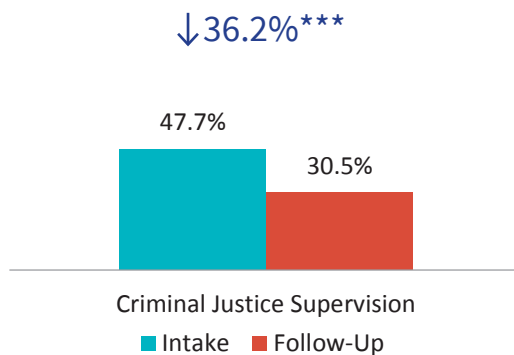
a— Significant difference by gender at intake and follow-up; p < .01

Self-Reported Justice System Supervision

The number of youth who self-reported they were under justice system supervision (e.g., drug court or probation) decreased significantly by 36.2% from 47.7% at intake to 30.5% at follow-up (see Figure 4D.11).

The number of adolescents who reported they were under supervision by the justice system decreased significantly by 36%

FIGURE 4D.11. PERCENTAGE OF CLIENTS REPORTING SUPERVISION BY THE JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (n = 197)



*p < .05, **p < .01, ***p < .001.

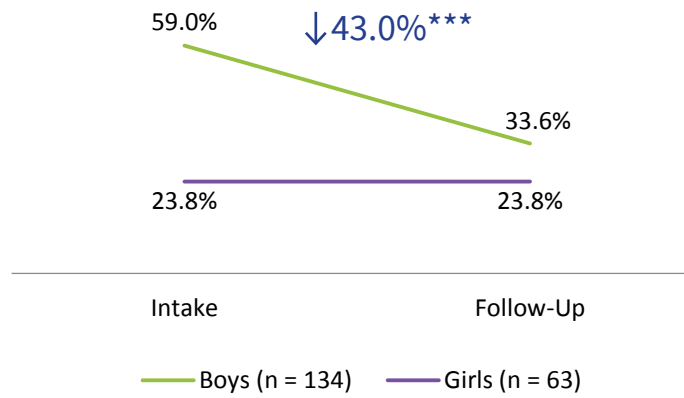
GENDER DIFFERENCES IN CLIENTS REPORTING JUSTICE SYSTEM SUPERVISION

Significantly more boys than girls reported they were under supervision by the justice system at treatment intake (see Figure 4D.12). The number of boys who reported they were under justice system supervision decreased significantly at follow-up. There was no change in the number of girls who reported they were under justice system supervision.



More boys reported they were under justice system supervision at intake compared to girls

FIGURE 4D.12. GENDER DIFFERENCES IN CLIENTS REPORTING JUSTICE SYSTEM SUPERVISION AT INTAKE AND FOLLOW-UP (n = 197)^a



a—There was a significant difference by gender at intake; $p < .001$.
 * $p < .05$, ** $p < .01$, *** $p < .001$.

SECTION 5: RECOVERY SUPPORTS

This section focuses on three main changes in recovery supports: (1) percentage of clients attending mutual help recovery group meetings; (2) recovery supportive interactions with family/friends in the past 30 days; and (3) the number of people the participant said they could count on for recovery support.

MUTUAL HELP RECOVERY GROUP MEETINGS

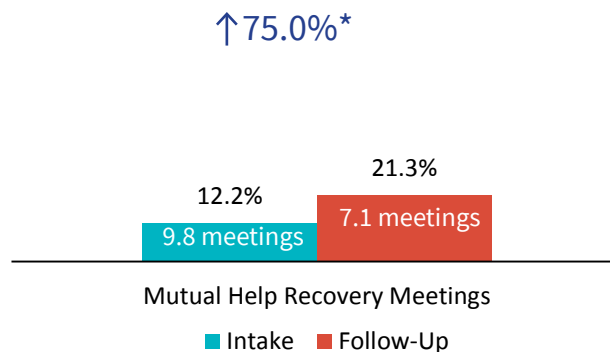
At intake, only 12.2% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (See Figure 5.1). At follow-up, there was a significant increase of 75.0%, with 21.3% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days. Among those who attended meetings, the average number of meetings attended in the past 30 days was 9.8 at intake and 7.1 at follow-up. Nonetheless, only 1 in 5 adolescents reported attending mutual help recovery group meetings at follow-up. Limited research has examined the role of AA and

There was a 75% increase in the percentage of clients reporting attending mutual help recovery groups

NA meeting attendance among adolescents (Kelly, Brown, Abrantes, Kahler, & Myers, 2008). 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 (Hsieh, Hoffman, & Hollister, 1998; Kelly, Myers, & Brown, 2000, 2002). Adolescents' attendance at group meetings that are predominately composed of adults may not be helpful and may even be harmful (Kelly & Myers, 1997; Kelly, Myers, & Brown, 2005). Many communities may not have mutual

help group meetings specific for adolescents. Other forms of recovery support may be crucial to helping adolescents maintain their recovery, particularly in communities that lack mutual help group meetings that are specific for adolescents.

FIGURE 5.1. PARTICIPATION IN MUTUAL HELP RECOVERY GROUP MEETINGS AT INTAKE AND FOLLOW-UP (n=197)

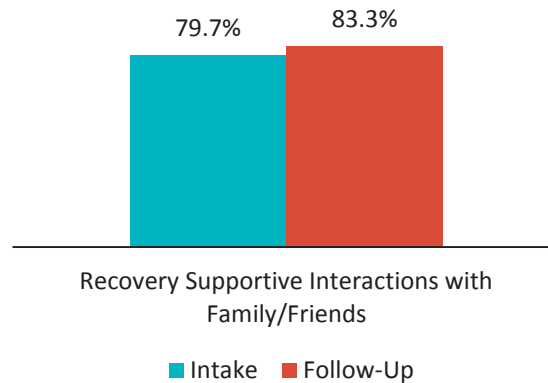


*p < .05, **p < .01, ***p < .001.

RECOVERY SUPPORTIVE INTERACTIONS WITH FAMILY/FRIENDS

The majority of adolescents reported they had interactions with family or friends who were supportive of their recovery in the 30 days before treatment intake and before follow-up (see Figure 5.2). There was no significant change in the number of clients overall who reported having recovery supportive interactions with family or friends.

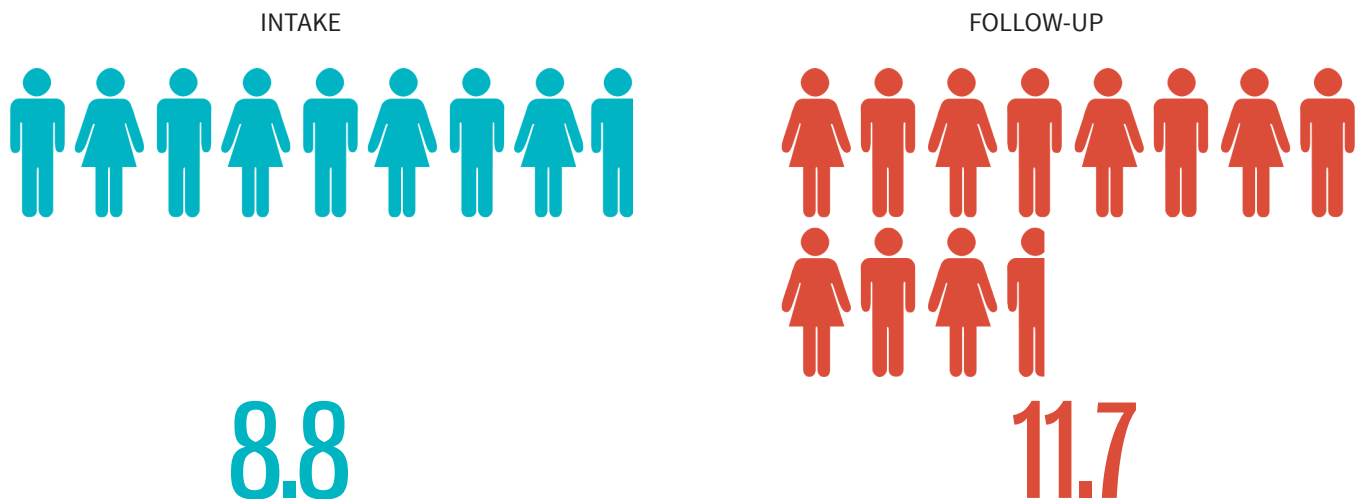
FIGURE 5.2. CLIENTS WITH RECOVERY SUPPORTIVE INTERACTIONS WITH FAMILY/FRIENDS IN THE 30 DAYS BEFORE INTAKE AND FOLLOW-UP (n=197)



AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT

The average number of people clients reported that they could count on for support increased significantly by 33.0%, from 8.8 people at intake to 11.7 people at follow-up (see Figure 5.3).

FIGURE 5.3. AVERAGE NUMBER OF PEOPLE CLIENTS COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (n = 197)



**SECTION 6:
INVESTING IN SUBSTANCE ABUSE TREATMENT FOR YOUTH**

SUBSTANCE ABUSE SETS ADOLESCENTS ON A NEGATIVE LONG-TERM PATH

The development of children can be severely compromised by early substance use. First, early initiation of alcohol and drug use is associated with greatly increased incidence of substance use disorders in adulthood (Grant & Dawson, 1997). The vast majority of adults with a substance use disorder began drinking alcohol and using illicit drugs before the age 18 (CASA, 2009). Youth who began drinking alcohol at age 14 or younger were four times more likely to develop alcohol dependence than youth who began drinking after age 15 (SAMHSA, 2013). Children who first smoked marijuana younger than 14 years old were more than five times as likely to abuse drugs in their adulthood compared to individuals who first used marijuana when they were 18 years old (SAMHSA, 2013). The robust relationship between early drug initiation and substance use disorders in adulthood reinforces the importance of preventing and ceasing (or least delaying or reducing) drug use in adolescence. More importantly, substance use in adolescence is associated with other serious problems, such as lower educational attainment (Ellickson et al., 2004), psychopathology (McGue, Iacono, Legrand, & Elkins, 2001), repeated arrests (Flory et al., 2004), and physical health problems in adulthood (Flory et al., 2004).

The finding that the majority of youth in the AKTOS 2014 follow-up sample first used alcohol or drugs before the age of 14 suggests that treatment efforts that reduce or cease substance use among these youth may very well net significant long-term benefits and decrease substantial longer term personal and societal costs. For example, of the 67 individuals who reported abstaining from alcohol and drugs for the entire 12-month follow-up period, the majority (65.0%) were early initiators of substance use. The AKTOS 2014 report findings show significant decreases in individuals' substance use, with decreases in drug use being even greater than decreases in alcohol use. **Changing adolescents' trajectories from heavier substance use and substance use disorders to abstinence has meaningful effects on the individual's life but also is likely to have substantial societal benefits by increasing the individual's future capabilities and productivity.**

TREATMENT AS AN INVESTMENT

The costs to society for substance abuse are high. The National Drug Intelligence Center (2011) estimated that illicit drug use totaled more than \$193 billion in 2007 in the U.S. A report by The National Center on Addiction and Substance Abuse (CASA, May 2009) estimated that federal, state, and local governments spent at least \$167.7 billion in 2005 on expenditures related to substance use and abuse. These costs include interventions for the negative consequences of substance use such as health and mental health care costs, criminal justice system costs, child and family assistance, costs to the education system, and public safety costs. The researchers estimated that for every dollar government spent on substance use and abuse, only 1.9 cents was spent on prevention and treatment.

Convincing the public and policymakers to invest in substance abuse treatment is often a challenging task. Substance abuse treatment programs have had to justify their existence by showing their effectiveness and cost efficiencies to a skeptical public. One way to demonstrate value to society is by showing cost offsets whereby treatment costs are outweighed by short-term savings in other societal costs. Many of the benefits of treatment, particularly for adolescents, may not be realized in the short-term and instead are realized in the long-term; thus, cost savings study that examine the cost of substance abuse in the year before treatment and the year post-treatment cannot detect the long-term benefits of improving the developmental trajectories of adolescents, which are salient when considering a chronic health problem such as addiction. The investment in treatment for today's

substance using adolescents translates into not only avoidance of substantial future health care, mental health care, public benefit, and criminal justice system costs, but it also increases the individual's abilities by increasing their education, employment, health, and other less tangible qualities (e.g., social capabilities, parenting, quality of life) of adolescents who grow into tomorrow's adults. Thus, it may be more informative for policy makers to examine the benefits of adolescent substance abuse treatment in the context of an investment in future wellbeing rather than an immediate cost offset.

The Human Capital Approach

One way to explore this kind of investment in future wellbeing is the human capital approach that has been developed by two Nobel Prize winning economists – Theodore Schultz and Gary Becker. Human capital is the acquisition “of all useful skills and knowledge...that is part of deliberate investment” (Schultz, 1971, p. 1). Economists have largely focused on investments in education and health care and their relationship to long-term quality of life. One could argue that examining the value of societal investment in publicly funded substance abuse treatment would benefit from the use of a human capital approach. Because adolescents' substance use can have serious adverse effects on their education, health, and involvement in the criminal justice system, treatment that lessens or stops their substance use may lessen the adverse effects on their education, health, and involvement in the justice system, and thereby allow for greater investments in adolescents' human capital.

Schooling is a personal and societal investment. For every year of education an individual completes there is an estimated 10% gain in career earnings (Psacharopoulos & Patrinos, 2004). Some studies have found an even greater return rate for the years of education until high school completion with smaller increases in post-secondary education completion (Heckman, Lochner, & Todd, 2008). Thus, high school graduation has a robust impact on an individual's lifetime earnings and their contributions to society, in the form of more tangible benefits such as tax revenue and less tangible benefits such as increased entrepreneurship (Becker, 1993; Schultz, 1971).

One possible way to apply a human capital approach to adolescent substance abuse treatment is to examine the cost of treatment in comparison to client outcomes in terms of staying in school or, if age eligible (at least 18 years old), completion of schooling sufficient for gainful employment (i.e., high school diploma or GED). Thus, treatment in this sense is coupled with educational attainment based on the well-supported relationship between substance abuse and worse academic performance and lower levels of education (CDC, 2010; DuPont et al., 2013; Hawkins, Catalano, & Miller, 1992). Interestingly, the outcomes research on adolescents with substance use disorders does not focus much on educational attainment but instead tends to examine only school interests and attachments to school (Kumpfer, 1999; Reynolds & Kamphaus, 2002). However, in considering a return on investment for substance abuse intervention for adolescents, examining post-treatment educational attainment may prove valuable.

There are two ways to conceive of the return on investment (ROI) given the age of clients in adolescent substance abuse treatment: (1) a first year ROI that examines how well prepared clients are for the job market and their likely earnings in that first year after treatment; and (2) an estimated lifetime ROI based on lifetime earnings differentials based on different levels of educational attainment in relation to treatment effects on substance use. Different levels of educational attainment have very different economic value in terms of wages and earnings (see Table 6.1).

TABLE 6.1. BUREAU OF LABOR STATISTICS EARNINGS AND UNEMPLOYMENT RATES BY EDUCATIONAL ATTAINMENT IN 2013

Education attained	Unemployment rate in 2013 (Percent)	Median weekly earnings
Doctoral degree	2.2	\$1,623
Professional degree	2.3	\$1,714
Master's degree	3.4	\$1,329
Bachelor's degree	4	\$1,108
Associate's degree	5.4	\$777
Some college, no degree	7	\$727
High school diploma	7.5	\$651
Less than a high school diploma	11	\$472

Source: Bureau of Labor Statistics, Employment Projections, Earnings and unemployment rates by educational attainment http://www.bls.gov/emp/ep_table_001.htm

For the return on investment estimate, we examined the educational attainment of AKTOS adolescents who can reasonably be expected to have attained a diploma, GED, or at least one year of other post-secondary education at follow-up. Because 18 is the typical age at which individuals graduate from high school, analysis examined education status at follow-up of the 70 individuals who were 18 years old or older at follow-up. For this analysis this subgroup was examined in regard to treatment cost by comparison to estimated earnings than can be expected given the clients’ educational attainments. Nearly half (48.6%, n = 34) had attained a high school diploma or GED by follow-up and 7.1% (n =5) had completed some vocational/technical school or college by follow-up. Out of the seventy 18+-year-old individuals at follow-up, 11.4% (n = 8) were dropouts, meaning they had less than a high school diploma/GED and were not enrolled in school. The percentage of Kentucky students who graduate in four years with a regular high school diploma was 86.1% in 2013, meaning that 13.9% were dropouts (Kentucky School Report Card, 2013). About 1 in 3 individuals (32.9%) had less than a high school diploma or GED and they were enrolled in secondary school; because they had not yet reached the terminal phase of secondary education (i.e., graduation or dropout), they are not included in the subsequent analysis.

The Cost of Treatment

The cost of treatment for adolescents included in this analysis was calculated from clinical service event data provided by community mental health centers (CMHC) to the DBHDID (see Appendix C). Service event data from the date of the intake survey until the date of the follow-up survey was matched to intake and follow-up survey data for 47 adolescents included in this return on investment analysis. Rates for state-funded services in FY 2012 were provided by the Kentucky DBHDID. These rates were used to calculate the cost of treatment from intake to follow-up. Services paid for by private payer sources (e.g., private insurance, employee assistance programs, self-pay) were not included in the cost calculations.

Estimate 1 – short term return on investment from substance abuse treatment

The cost of treatment for the three groups of adolescents who would be age-eligible for graduation is

shown in Table 6.2.¹⁹

TABLE 6.2. COST OF TREATMENT FOR AKTOS CLIENTS BY LEVEL OF EDUCATIONAL ATTAINMENT AT AGE 18

Client Level of Attainment	Average cost per client	Total cost for the group
Less than high school – drop out (n = 8)	\$6,652	\$53,218
High school or GED (n = 34)	\$2,827	\$96,129
Some post HS schooling/training (n = 5)	\$11,024	\$55,121
Total for all (n = 47)		\$204,468

Table 6.3 shows the expected earnings per person based on the level of educational attainment for each of the three groups, assuming their level of education does not increase in the year.

TABLE 6.3. U.S. BUREAU OF LABOR STATISTICS ESTIMATES OF EXPECTED EARNINGS BY LEVEL OF EDUCATIONAL ATTAINMENT AS APPLIED TO AKTOS INDIVIDUALS WHO WERE 18 YEARS OLD AT FOLLOW-UP

Client Level of Attainment	Average expected earnings per week	Average likely earnings per year	Earnings per year for the group
Less than high school – drop out (n = 8)	\$472	\$24,544	\$196,352
High school or GED (n = 34)	\$651	\$33,852	\$1,150,968
Some post HS schooling/training (n = 5)	\$727	\$37,804	\$189,020
Total for all (n = 47)		\$96,200	\$1,536,340

Table 6.4 shows the expected earnings per person adjusted for the latest unemployment rates issued by the U.S. Bureau of Labor Statistics by each level of educational attainment.

TABLE 6.4. U.S. BUREAU OF LABOR STATISTICS ESTIMATES OF EXPECTED EARNINGS ADJUSTED BY U.S. UNEMPLOYMENT RATES BY LEVEL OF EDUCATIONAL ATTAINMENT AS APPLIED TO AKTOS INDIVIDUALS WHO ARE 18 YEARS OLD AT FOLLOW-UP

Client Level of Attainment	Unemployment rate	Average expected earnings per year adjusted by unemployment	Earnings per year for the group adjusted by unemployment
Less than high school – drop out (n = 8)	11%	\$21,844	\$174,753
High school or GED (n = 34)	7.5%	\$31,313	\$1,064,645
Some post HS schooling/training (n = 5)	7%	\$35,158	\$175,789
Total for all (n = 47)		\$88,315	\$1,415,187

With expected yearly earnings of \$1,415,187, we can estimate a 6% of this amount in the form of income taxes and an estimated 2.5% of the earnings in sales taxes for covered items (allowing that food and medicine would be excluded from the tax). Thus, approximately 8.5% of the earnings will likely result in direct returns to the state general fund. This would suggest that \$120,291 would be returned to the state general fund through tax revenues in the course of the year following the follow-up interviews with the AKTOS clients. Within 1.7 years the \$204,468 in treatment costs would be directly returned to

¹⁹ After calculating the cost of treatment services for all 168 adolescents in the follow-up sample for whom we were able to match survey data with clinical service data, outliers at the highest 5% for total cost of treatment were recoded to the value for the 94.9 percentile.

the state general fund. However, in the larger context of overall social economic costs, the return to society on treatment expenditures can be expressed as for every \$1.00 spent on treatment there is a \$6.92 return in estimated employment additions to local and state economies. An important caveat is that it is unknown how many of the adolescents who attained at least a GED or high school diploma by age 18 would not have graduated had they not been in substance abuse treatment. However, the robust association between adolescent substance use and worse school performance and lower educational attainment bolsters the assumption that investment in substance abuse treatment leads to decreased substance use for many adolescents, which allows for greater educational attainment and subsequently higher earnings.

Estimate 2. A longer term return on investment from substance abuse treatment

The more important gains from substance abuse treatment for adolescents needs to contrast the lifetime earnings of those with a high school diploma, GED and other post high school education with those who dropped out. For this purpose, we used a 35-year lifetime employment average. An individual who dropped out of high school is estimated to have average lifetime earnings of \$764,546 (adjusted for an 11% unemployment rate applied to all 35 years in a lifetime earnings model). The same adjusted average income (at a 7.5% unemployment rate applied to all 35 years) for an individual who graduated from high school is \$1,095,959 – a \$331,413 difference. For an individual with at least one year of additional education or training after high school the estimated adjusted lifetime earnings is \$1,230,520 or \$465,974 more than the lifetime earnings for an individual who dropped out of high school. For the entire group of completers, adjusted lifetime earnings would be estimated at \$43,415,190 versus \$6,116,365 and subtracting the drop outs from net earnings estimates means that lifetime earnings of this groups of AKTOS clients who completed high school can be expected to be over \$37 million. Thus, an investment of \$204,468 for substance abuse treatment can facilitate a long term gain to society of \$37 million in expected lifetime earnings. It is true that some adolescents who continue on their substance use trajectory will attain a high school diploma or higher level of education, but given the robust relationship between substance abuse in youth and lower educational attainment, treatment can interrupt this negative association for many youth. . The gains in estimated earnings also assumes that with reduced or terminated drug use, arrests and criminal justice erosions of employment will decrease.

Conclusion

The most important finding from this estimate of a return on investment is that substance abuse treatment needs to focus far more intensively on clinical efforts that bolster high school completion. The gains in future earnings from small amounts of college or technical schools on top of the high school diploma are modest. But the difference between high school drop outs and graduates is very great. The economics literature on specific long term cost savings related to human capital investment has not examined the role of any form of treatment as an investment even though the literature is replete with mentions of the importance of health care in human capital investment. However, it stands to reason that reductions in risk behaviors and increases in educational attainments can only be seen as positive contributions to the future economic wellbeing of adolescents who have begun dealing with their problems of substance use.

**SECTION 7:
SUMMARY AND RECOMMENDATIONS**

Substance use disorders in youth are best understood within the context of several interrelated problems (Jessor & Jessor, 1997; Teplin et al., 2002), such as childhood adversity and victimization (Tonmyr, Thornton, Draca, & Wekerle, 2010), comorbid psychiatric disorders (Rohde, Lewinsohn, & Seeley, 1996), and problem behaviors (i.e., delinquency; Jessor & Jessor, 1997; Kuperman et al., 2001). The 197 youth who completed intake and follow-up interviews for the 2014 AKTOS Follow-Up Study were on average 15.8 years old and came into treatment with significant problems. At treatment intake the majority of youth had used alcohol, drugs, and tobacco, had an average grade of C or lower, had been in school detention, suspended, or expelled from school, had been involved with the justice system, began using alcohol or drugs before the age of 14, and had self-reported symptoms of depression, attention deficit, and behavior problems.

The outcomes data show significant decreases in substance use and severity of substance use. The follow-up findings show that 97.0% 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 by 30.9% to 67.0%.

In other words, 46.7% of youth reported abstaining from alcohol and 45.2% of youth reported abstaining from drugs in the 12 month follow-up period. This is comparable to other adolescent substance abuse outcomes studies.

Looking specifically at alcohol, the number of adolescents who reported using alcohol in the past 12 months decreased by 26.6% from intake to follow-up. Looking specifically at drugs, a total of 88.8% of adolescents reported that they had used drugs in the 12 months before intake, compared to 54.8% that used drugs in the 12 months before follow-up, which was a significant decrease of 38.3%. In other words, 46.7% of youth reported abstaining from alcohol and 45.2% of youth reported abstaining from drugs in the 12 month follow-up period. How do these findings compare to other substance abuse treatment outcome studies with one-

year follow-up surveys for adolescents? Other studies have found abstinence rates ranging from 14% to 54% at one year follow-up, with most of these studies finding 12-month abstinence rates from 30% to 40% (Williams & Chang, 2000). Not only did substance use decrease significantly, but so did severity of substance use, as measured by the ASI composite scores. The number of alcohol using adolescents who met the criteria for severe alcohol disorder decreased significantly by 57.9%. The number of drug using adolescents who met criteria for severe drug use disorder decreased significantly by 78.9%.

Youth who abuse substances are at higher risk of drop-out or non-completion of a degree (DuPont et al., 2013). 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 (Heckman et al., 2008). Individuals who complete a high school degree or obtain some college education have exponentially higher income than those who do not advance their education (Autor et al., 2005; Heckman & LaFontaine, 2010). Because of this, it is important to examine education in a substance abuse treatment outcome study. In the Adolescent KTOS sample, the majority of individuals who had not yet obtained a high school diploma at follow-up were still enrolled in school at follow-up (87.5%). Additionally, there was a significant increase in GPA from intake (1.9) to follow-up (2.6) 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

There was a significant increase in GPA from intake (1.9) to follow-up (2.6) and significant decreases in the number of school absences for any reason as well as school absences for disciplinary reasons.

measures such as detention, suspension, or expulsion at follow-up. 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 = 70), the vast majority (88.6%) were either still enrolled in secondary school (32.9%), had obtained a high school diploma or GED (48.6%), or had completed some post-secondary education (7.1%). Only a minority of individuals who were 18 years old at the follow-up (11.4%, n = 8) had dropped out of secondary school. How does this percentage compare to the percentage of youth in Kentucky who do not graduate from high school in four years? In the 2012-2013 school year, the graduation rate for Kentucky was 86.1%, meaning that 13.9% of students did not graduate (Karem et al., 2014). Thus, the dropout rate for the individuals in the follow-up sample is slightly lower than the rate for the general population of high school students in Kentucky.

The discrepancy between the majority of individuals who either continued their education and had improvements in their grades and reductions in disciplinary measures or obtained at least a high school diploma or GED and the small minority of individuals who dropped of secondary school before attaining a high school diploma or GED suggests a need for more intensive school-based programs to retain and successfully intervene with high risk kids. The benefits of keeping youth in school are well documented but require significant investments from the community including treatment staff, families, schools, and other community agencies.

Psychiatric comorbidity is common in adolescents with substance use disorders (SAMHSA, 2006; Shane, Jasiukaitis, & Green, 2003; Turner et al., 2004). Nearly two-fifths of the AKTOS follow-up sample (38.7%) had comorbid substance use disorder and other psychiatric disorders recorded in the client-level service event data. Adolescents' self-reported symptoms showed a significant decrease in depression, attention deficit, behavior problems, and criminal behavior from intake to follow-up. Self-reported symptoms of anxiety-trauma symptoms did not decrease significantly from intake to follow-up for the overall sample, however, boys' average number of anxiety-trauma symptoms did decrease significantly while girls' average number of symptoms did not change from intake to follow-up. Future reports of the AKTOS Follow-Up Study will include detailed descriptions of youth's self-reported victimization experiences and other childhood adversities to better explore the relationship of traumatic events and substance use among adolescents in substance abuse treatment.

Externalizing behavior has been associated with early substance use initiation and greater substance use (Lillehoj et al., 2005; Randall et al., 1999). Boys' higher average scores on the behavior problem scale and general crime scale compared to girls' average scores and girls' higher average scores on the depression symptom scale and the anxiety-trauma scale compared to boys' average scores correspond to other research indicating boys' exhibit more externalizing behavior and girls exhibit more internalizing behavior (Achenbach et al., 1991). Interestingly, there were no significant differences in age of initiation of drugs, alcohol, or tobacco by gender. There were few significant differences in substance use at intake by gender. For example, significantly more boys than girls reported using illegal drug in general, and specifically, in marijuana use at intake, whereas significantly fewer girls reported past-30-day use of alcohol at follow-up compared to boys.

The 2009 Blueprint for Kentucky's Children recommends expanding diversion programs for youth to decrease the costs of incarceration and detention, and encourage use of community-based interventions that provide evidence-based treatment and recovery support.

Involvement with the justice system is a problem for Kentucky youth involved in substance abuse treatment with half of Adolescent KTOS clients (50.3%) reporting they were arrested in the 12 months prior to treatment intake. At intake, nearly half of adolescents (47.7%) self-reported they were under

supervision by the justice system: 44.2% were on probation, and 13.7% were involved with Juvenile Drug Court. By follow-up, this number had decreased significantly by 36.2%. Nonetheless, a number of other justice system variables did not change significantly from intake to follow-up, such as the number of individuals who reported being arrested or incarcerated. The number of youth who reported being arrested and charged with a status offense or a probation violation did decrease significantly from intake to follow-up. The 2009 Blueprint for Kentucky’s Children recommends expanding diversion programs for youth to decrease the costs of incarceration and detention, and encourage use of community-based interventions that provide evidence-based treatment and recovery support.

There were significant differences in the number of boys and girls arrested or incarcerated as well as in the number of arrests and nights incarcerated, with boys reporting greater involvement in the justice system. Significantly more boys reported being under supervision by the justice system at intake compared to girls. Taken together with boys’ higher average scores on the behavior problem and general crime scales, boys’ greater involvement compared to girls’ involvement in the justice system is not surprising.

Cigarette smoking among adolescents increases the risk of other drug use (Centers for Disease Control and Prevention [CDC], 1994) and the risk of nicotine addiction. In fact, of all addictions to substances, nicotine addiction is the one most likely to occur in adolescence (CDC, 1994). In 2009 and 2010, Kentucky had the 5th highest rate of smoking among adolescents of all 50 states: 11.01% for past-month cigarette use (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012a). In the Adolescent KTOS sample, 74.5% of adolescents reported smoking tobacco in the 30 days before follow-up, which was 6.8 times greater than the percentage of adolescents in the general population in Kentucky. The findings for tobacco use were not as positive as the findings for alcohol and drug use. In the Adolescent KTOS Follow-Up sample, at intake about four in five youth (79.7%) used tobacco. By follow-up, the percentage of adolescents who reported past-12-month use of tobacco had increased slightly, but not significantly, to 82.7%. What’s more, of those who reported smoking tobacco products, the average age they began smoking tobacco regularly was 12.9 years old. Prior research has shown that individuals who began smoking tobacco before age 14 were significantly less likely to have stopped smoking in young adulthood than individuals who began smoking at age 14 or later (Breslau & Peterson, 1996). These findings are in line with other research on tobacco use among adolescents in substance abuse treatment (Campbell, Chi, Sterling, Kohn, & Weisner, 2009; Myers & MacPherson, 2004; Sussman, 2002). 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 (Campbell et al., 2009). 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 impact alcohol and drug recovery (de Dios et al., 2009; Myers & Brown, 2005; Reid et al., 2008).

Participation in mutual help recovery meetings is an

“ I liked the fact that they helped me stop drinking and stuff. They explained a lot of things I knew nothing about. ”

- AKTOS Client quote



important recovery support that is associated with abstinence and lower risk of relapse among adults (Gossop, Stewart, & Marsden, 2008). However, there are concerns about the appropriateness of youth participating in mutual help recovery meetings that are comprised largely of adults. Adolescents participating in 12-step meetings with members closer to their own age attend more meetings and have better recovery outcomes (Kelly et al., 2005); however, this may not be possible in many, if not most, communities in Kentucky. In this follow-up sample of adolescents, there was a significant increase in the number of individuals who reported attending mutual help recovery meetings from intake to follow-up. Adolescents also reported at follow-up that they had more people in their lives they could rely on for recovery support than they had at treatment intake.

Youth reported high satisfaction with treatment providers, which is important because higher levels of satisfaction with treatment are associated with positive treatment outcomes (Waxman, 1996). Specifically, the majority of youth gave a high 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 vast majority of clients agreed that they received the services they needed to help them get better, they felt better about themselves as a result of their treatment experience, they were treated with respect, they understood their treatment plan, their rights as a client, and staff member's expectations of them.

Youth reported high satisfaction with treatment providers, because other research has found that higher levels of satisfaction is important because higher levels of satisfaction with treatment are associated with positive treatment outcomes.

The investment in treatment for today's substance using adolescents translates into not only avoidance of substantial future health care, mental health care, public benefit, and criminal justice system costs, but it also increases the individual's abilities by increasing their education, employment, health, and other less tangible qualities (e.g., social capabilities, parenting, quality of life) of adolescents who grow into tomorrow's adults. Thus, it may be more informative for policy makers to examine the benefits of adolescent substance abuse treatment more in the context of an investment in future wellbeing rather than an immediate cost offset. Looking at human capital indicators in the AKTOS 2014 follow-up sample there were important improvements in education—both academic and disciplinary factors and significant reductions in the number of youth who reported using drugs and alcohol at follow-up. Educational attainment for age-eligible (18 years old) AKTOS clients was examined at follow-up. The majority had attained a high school diploma/GED or higher level of education, 32.9% were still enrolled in secondary school, and only 11.4% were not enrolled in school and had not attained a high school diploma or GED. Using Bureau of Labor statistics that show different expected yearly earnings for individuals based on educational attainment, projected likely earnings in the year after treatment and lifetime earnings are estimated to illustrate the greater tax revenues that are expected from keeping children in school to high school graduation and to higher levels of education.

LIMITATIONS OF THE STUDY

There are several areas of limitation to the findings presented in this report. First, this study examined 197 adolescents who received substance abuse treatment in state fiscal years 2011 and 2012, but did not examine 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. Second, both the intake data and the follow-up data are self-reported. While self-reports have been shown to be valid in comparison to

urinalyses (Rutherford, Cacciola, Alterman, McKay, & Cook, 2000), 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 Adolescent KTOS project examines treatment outcomes from everyday clinical practice among the 14 Community Mental Health Centers and their affiliates that provide state and Substance Abuse Prevention and Treatment (SAPT) Block Grant-funded services. It 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.

CONCLUSION

Findings from the AKTOS 2014 report indicate successful treatment experiences for many youth, with significant reductions in substance use, substance use severity, decreases in mental health problems, greater attainment of high school diplomas, improved academic performance, and fewer youth with school disciplinary problems. Slowing down or stopping youth's substance use trajectories may lead to substantial increases in education, lower psychiatric comorbidities, and lower criminal 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

Intake surveys 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 data were collected, clients were asked if they would like to volunteer to participate in the 12-month follow-up study (i.e., the follow-up survey). Adolescents who were interested in participating in the follow-up study gave consent to be contacted by UK CDAR BHOS staff members, who conduct follow-up surveys approximately 12 months later. Follow-up surveys were conducted via telephone using a survey with items and questions similar to the ones used in the intake survey. The data collection instruments for AKTOS build on the Teen Addiction Severity Index (T-ASI; Kaminer et al., 1991) and the Global Appraisal of Individual Needs-Quick (GAIN-Q; Dennis, Titus, White, Unsicker, & Hodgkins, 2002). 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.

In FY2011 and 2012, a total of 372 adolescents in publicly funded substance abuse treatment completed intake surveys. Of these 372 adolescents who completed an intake survey, 65.1% (n = 242) gave consent at the end of the intake survey to be contacted for the 12-month follow-up survey. Almost all of these individuals were included in the sample to be followed up (n = 235). The seven adolescents who gave consent to be followed up but who were not included in the follow-up sample were excluded because they did not provide phone numbers or addresses in the locator information requested of individuals who agree to be contacted for the follow-up survey.

The target month for the follow-up survey was 12 months (i.e., 365 days after the baseline survey was submitted). The window for completing a follow-up survey 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 a baseline survey was submitted for an individual in May 2012, the target month for the follow-up survey was May 2013 and interviewers began working to locate and contact the individual in March and could work on the file until the end of July.

Of the 235 adolescents who were included in the sample of individuals to be followed up, 10 were ineligible to complete the follow-up survey when they were contacted (see Table AA.1). Reasons for ineligibility include being in residential treatment (n = 6), incarcerated (n = 3), or in Job Corps (n = 1) at the time of follow-up. Of the remaining 225 adolescents, interviewers completed follow-up surveys with 197 adolescents, representing a follow-up rate of 87.6%. Of the eligible individuals, 24 were never successfully contacted or if they were contacted, interviewers were not able to complete a follow-up survey with them during the follow-up period: these cases are classified as expired (10.7%). Four individuals refused to complete the follow-up survey when the interviewer contacted him/her. The refusal rate was 1.8%. The project interviewers' efforts accounted for 89.8% of the cases (n = 211) 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 = 235)	Percent
Ineligible for follow-up survey	10	4.3%
	Number of cases eligible for follow-up (n = 225)	
Completed follow-up surveys	197	
Follow-up rate is calculated by dividing the number of completed surveys by the number of eligible cases and multiplying by 100		87.6%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	24	
Expired rate ((the number of expired cases/eligible cases)*100)		10.7%
Refusal	4	
Refusal rate ((the number of refusal cases/eligible cases)*100)		1.8%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	211	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		89.8%

Appendix B compares adolescents who completed a follow-up survey with those who did not complete a follow-up survey. 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, involvement in the justice system, 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 z test of proportions were run for categorical variables. 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.

This report presents not only differences in the absolute numbers and percentages of clients’ reporting different behaviors, conditions, and situations (e.g., living situation, used tobacco, and bullied others), but also presents a calculation of the rate of change—a measure often used by policy makers. The percent of change presents the relative change in a variable over time. It is essentially a rate of change calculation just like the one that people use to calculate the percent increase in their salary they get with a promotion and salary increase. To calculate the percent change in a variable from intake to follow-up (e.g., alcohol use in the past 12 months), we first subtract the value at time 1 (i.e., intake) from the value at time 2 (i.e., follow-up), then divide by the value at time 1 and multiply this value by 100 to get a percentage. For example, let’s say 143 clients out of 197 (72.6%) reported using alcohol in the past 12 months at intake. At follow-up, 105 clients out of 197 (53.3%) reported using alcohol in the 12 months before follow-up. The absolute difference between the percentage at intake and follow-up is $72.6\% - 53.3\% = 19.3\%$. However, the rate of change is calculated with the equation:

$((105 - 143)/143) * 100 = -26.6\%$, with the negative sign indicating that the number of individuals who reported using alcohol decreased from intake to follow-up. A positive percent change corresponds to an increase in the number of individuals and a negative percent change corresponds to a decrease in the number of individuals reporting a particular condition or behavior.

APPENDIX B. CLIENT CHARACTERISTICS AT INTAKE FOR THOSE WITH COMPLETED FOLLOW-UP INTERVIEWS AND THOSE WITHOUT COMPLETED FOLLOW-UP INTERVIEWS

Youth who completed a follow-up interview are compared in this section with youth who did not complete a follow-up interview for any reason²⁰ (e.g., not selected into the follow-up sample, 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). The average client age was nearly 16 years old. There were no significant differences in age, gender, or race by follow-up status.

TABLE AB.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP²¹

	FOLLOWED UP	
	NO n = 175	YES n = 197
AGE	15.8 years	15.8 years
GENDER		
Male	73.7%	68.0%
Female	25.7%	32.0%
RACE*		
White	78.3%	83.8%
African American	12.6%	8.6%
Other or multiracial	9.1%	7.6%

EDUCATION

Table AB.2 describes clients' school involvement and academic performance when entering treatment. The vast majority were enrolled in school when they entered treatment and also reported they had attended school the last 3 months school was in session. The mean GPA was equivalent to a C; however, youth who completed a follow-up survey had a significantly lower mean GPA when compared to youth who did not complete a follow-up survey. One third of youth reported they had ever repeated a grade in school. Among those who attended school in the last 3 months school was in session, clients who completed a follow-up survey reported more school absences compared to clients who did not complete a follow-up survey. There was no significant difference by follow-up status in the percentage of youth who reported they were suspended, in detention, or expelled in the last 3 months school was in session.

²⁰ Significance is reported for $p < .05$.

²¹ One person reported gender as transgender.

TABLE AB.2. CLIENTS' SCHOOL INVOLVEMENT AND ACADEMIC PERFORMANCE AT INTAKE

	FOLLOWED UP	
	NO n = 175	YES n = 197
Enrolled in school (e.g., public, private, home school, alternative, GED classes)	98.3%	96.4%
Mean GPA*	2.2	1.9
Ever repeated a grade in school	33.1%	34.5%
Attended school in the last 3 months school was in session	92.6%	86.3%
Among those who attended school in the last 3 months school was in session:	n = 162	n = 170
Mean number of days missed school for any reason in the last 3 months school was in session*	13.8	17.3
Client was suspended or expelled in the last 3 months school was in session	58.6%	64.7%

*p < .05, **p < .01, ***p < .001.

The majority of youth reported their primary caregiver was a biological parent (see Table AB.3). About one in five individuals stated their primary caregiver was other family members. 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, with about one fourth stating they had lived with other family members. Overall, 27.4% reported they had lived in an institutional facility at some point in the past 12 months, with no difference by follow-up status. Even though a small percentage of the sample reported they had been in foster care in the past 12 months, significantly more youth who did not complete a follow-up survey reported they had been in foster care compared to youth who did complete a follow-up survey.

 TABLE AB.3 LIVING SITUATION OF CLIENTS BEFORE ENTERING TREATMENT²²

	FOLLOWED UP	
	NO n = 175	YES n = 197
CURRENT PRIMARY CAREGIVER		
Biological parent	71.6%	77.7%
Other family including adoptive family	20.1%	18.3%
Foster parent or DCBS	8.3%	3.6%
WHERE THE CLIENT LIVED IN THE 12 MONTHS BEFORE ENTERING THE PROGRAM		
Home with biological parent	76.0%	82.7%
With other family (including adoptive family)	25.1%	23.9%

²² The version of the intake survey used during this point included kinship care as foster care. Later versions of the intake survey have been updated to include kinship foster care as separate from non-kinship foster care.

	FOLLOWED UP	
	NO n = 175	YES n = 197
In an institutional facility (e.g., group home, residential treatment, juvenile detention)	23.4%	31.0%
Foster care*	9.1%	3.0%
Lived independently (including in a school dormitory)	2.9%	3.0%

*p < .05, **p < .01, ***p < .001.

SUBSTANCE USE AT INTAKE

Use of illegal drugs, alcohol, and tobacco in the 12 months before entering treatment is presented by follow-up status in Table AB.4. There were no significant differences in the percentage of individuals who reported using different types of substances by follow-up status. The majority of the clients reported using any illegal drug in the 12 months before entering the program. The drug class used by the greatest percentage of clients was marijuana: the vast majority of youth reported using marijuana in the 12 months before entering treatment. A little less than one third of youth reported using opioids (e.g., prescription opiates, methadone, and buprenorphine) in the 12 months before treatment intake. A little more than one fourth of clients used non-prescribed CNS depressants. About 1 in 5 youth reported using other illegal drugs (e.g., cocaine, hallucinogens, and inhalants). A small number of youth reported using heroin in the 12 months before intake. The majority of youth reported using alcohol and tobacco in the 12 months before intake.

TABLE AB.4. PERCENTAGE OF INDIVIDUALS REPORTING SUBSTANCE USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

SUBSTANCES	FOLLOWED UP	
	NO n = 175	YES n = 197
Any illegal drug	92.6%	88.8%
Marijuana	88.0%	87.3%
Opioids (other than heroin)	32.6%	30.5%
CNS depressants	28.6%	24.9%
Stimulants	16.6%	15.7%
Heroin	1.1%	2.0%
Other illegal drugs (e.g., cocaine, hallucinogens, inhalants)	20.6%	23.4%
Alcohol	68.6%	72.6%
Tobacco	76.0%	79.7%

Similar patterns were found in the past 30-days substance use measure with fewer individuals reporting use of each substance (not depicted in a Table or Figure).

Alcohol and drug composite severity scores were calculated from items included in the intake survey. Because the ASI composite severity scores are based on past-30-day measures, it is important to take into account clients being in a controlled environment all 30 days when examining composite severity scores and having no opportunity to use substances in the 30 day period. Thus, alcohol and

drug severity composite scores are presented in Table AB.5 for only those individuals who were not in a controlled environment all 30 days before treatment intake. The highest composite score is 1.0 for each of the two substance categories.

Of the individuals who were not in a controlled environment all 30 days, the majority met or surpassed the Addiction Severity Index (ASI) composite score (CS) cutoff for alcohol and/or drug dependence, with no difference by follow-up status (37.4% for not followed up and 46.7% for followed up; see Table AB.5). Among individuals who were not in a controlled environment all 30 days before entering the program, the mean score on the alcohol severity composite score was .15 for individuals who were not followed up and .17 for individuals who were followed up. Among clients who were not in a controlled environment all 30 days before entering the program, the mean score for the drug severity composite score was .13 for individuals who did not complete a follow-up interview and .14 for clients who did complete a follow-up interview. These average cutoff scores include individuals with scores of 0 on the composites.

TABLE AB.5. SUBSTANCE ABUSE AND DEPENDENCE PROBLEMS AT INTAKE

Recent substance use problems among individuals who were...	Not in a controlled environment all 30 days before entering treatment	
	FOLLOWED UP	
	NO (n = 163)	YES (n = 184)
Percent of Individuals with ASI CS equal to or greater than cutoff score for ...		
alcohol or drug dependence	37.4%	46.7%
alcohol dependence	23.9%	29.3%
drug dependence	27.0%	35.3%
Mean Addiction Severity Index composite score for alcohol use ^{-a}	.15	.17
Mean Addiction Severity Index composite score for drug use ^{-b}	.13	.14

-a Score equal to or greater than .17 is indicative of alcohol dependence.

-b Score equal to or greater than .16 is indicative of drug dependence.

MENTAL HEALTH AT INTAKE

Mean scores on the mental health measures were compared by follow-up status (see Table AB.6). Mean scores on the Depression Symptom, Anxiety-Trauma, and Activity-Inattention scales were not significantly different by follow-up status. In contrast, individuals who completed a follow-up survey had significantly higher scores on the behavior problem and general crime scales.

TABLE AB.6. MEAN SCORES ON MENTAL HEALTH MEASURES AT INTAKE

	FOLLOWED UP	
	NO n = 175	YES n = 197
Depression Symptom scale	1.7	1.9
Anxiety-Trauma scale	2.4	2.8
Activity-Inattention scale	2.5	2.9
Behavior Problem scale**	2.9	3.4
General Crime scale**	1.2	1.6

*p < .05, **p < .01, ***p < .001.

JUSTICE SYSTEM INVOLVEMENT AT INTAKE

The majority of adolescents in the sample reported being referred to treatment by the justice system, with no difference between those who were followed up and those who were not (56.9% vs. 63.2% respectively; not depicted in a Table or Figure).

Half of the youth in the sample (49.1% of those not followed up and 50.3% of those followed up) reported they had been arrested in the 12 months before entering treatment (see Table AB.7). Of the individuals who reported being arrested, they reported an average of 2.3-2.7 arrests in the 12 months before entering treatment. Among adolescents who reported an arrest in the 12 months before intake, significantly more adolescents who completed a follow-up survey reported they had been charged with a probation violation than adolescents who did not complete a follow-up survey. There were no other statistically significant differences in the percentage of adolescents arrested for different types of offenses by follow-up status. A little less than one half of clients who were not followed up and clients who were followed up were under supervision by the justice system (e.g., in Drug Court, and on probation) when they entered treatment.

TABLE AB.7. JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 175	YES n = 197
Arrested for any charge in the 12 months before entering treatment	49.1%	50.3%
Of those with an arrest,	n = 86	n = 99
Mean number of arrests	2.3 arrests	2.7 arrests
Charged with a status offense	47.7%	39.4%
Charged with a drug offense	37.2%	46.5%
Charged with probation violation*	24.4%	39.4%
Charged with a property crime	23.3%	27.3%
Charged with crime against persons	20.9%	22.2%
Charged with a DUI	5.8%	6.1%
Charged with other criminal offense	32.6%	30.3%
Incarcerated in the 12 months before entering treatment	38.3%	42.1%
Currently under supervision by the justice system	45.7%	47.7%

*p < .05, **p < .01, ***p < .001.

Two in 5 adolescents reported being incarcerated for at least one day in the 12 months before entering treatment (See Table AB.8). Among the individuals who were incarcerated at least one night, the average incarceration time in the 12 months before entering treatment was 18.3 days for individuals who were not followed up and 22.1 days for individuals who were followed up, with no significant difference by follow-up status.

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

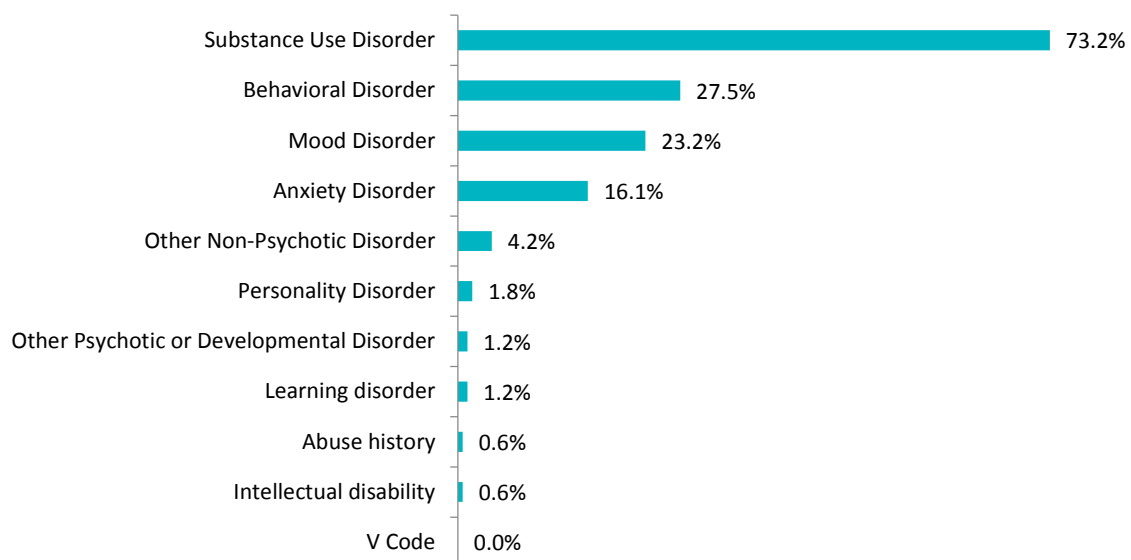
	FOLLOWED UP	
	NO n = 175	YES n = 197
Incarcerated at least one day	38.3%	42.1%
Of those incarcerated	(n = 67)	(n = 83)
Mean number of days incarcerated	18.3	22.1

APPENDIX C. DIAGNOSTIC AND CLINICAL SERVICE INFORMATION

Using the diagnostic and clinical service event data provided by community mental health centers (CMHC) to the Department for Behavioral Health, Developmental and Intellectual Disabilities (DBHDID), DSM-IV diagnostic and service event information was accessed for adolescent clients included in this report. The data set is managed by the University of Kentucky Institute for Pharmaceutical Outcomes and Policy (UK IPOP). Twenty-nine clients (14.7% of the Adolescent KTOS follow-up sample) had no services or diagnoses in the data set during the time period under review. Thus, diagnostic and service event data was available for 168 follow-up clients. Two reasons for not being able to match clients' data from the Adolescent KTOS surveys and the UK IPOP data are (1) incorrectly entered social security numbers, and (2) data not entered by the CMHC.

Figure AC.1 shows the percentage of clients diagnosed with various categories of mental health disorders. There were no significant differences by gender, thus, the results are presented for the entire sample. Clients can have multiple diagnoses, for example, alcohol dependence and cannabis abuse. Nearly three-fourths of clients (73.2%) had a diagnosis of substance use disorder (abuse or dependence). The next mostly commonly found diagnosis type was for behavior disorders (27.5%; e.g., impulse-control disorder, conduct disorder, disruptive behavior disorder, oppositional defiant disorder, ADHD). Nearly one fourth (23.2%) had a diagnosis of a mood disorder (e.g., depression or non-psychotic bipolar disorder), and 16.1% had a diagnosis of anxiety disorder (such as generalized anxiety, panic disorder, or obsessive-compulsive disorder).²³ Behavioral, mood, other non-psychotic, anxiety, other psychotic, and personality disorders were combined into one category of non-substance use-related psychiatric disorders to examine substance use and comorbid psychiatric disorders. Nearly two-fifths of adolescents (38.7%) had diagnoses in their records indicating comorbid substance use disorders and other psychiatric disorders (not depicted in a figure).

FIGURE AC.1. DSM-IV DIAGNOSES FOR ADOLESCENT KTOS CLIENTS IN TREATMENT DURING FY 2011 AND FY 2012 (n=168)



²³ Small numbers of adolescents had other types of diagnoses: other non-psychotic disorder (4.2%), personality disorder (1.8%), other psychotic and developmental disorder (1.2%), learning disorder (1.2%), abuse history (0.6%), and intellectual disability (0.6%).

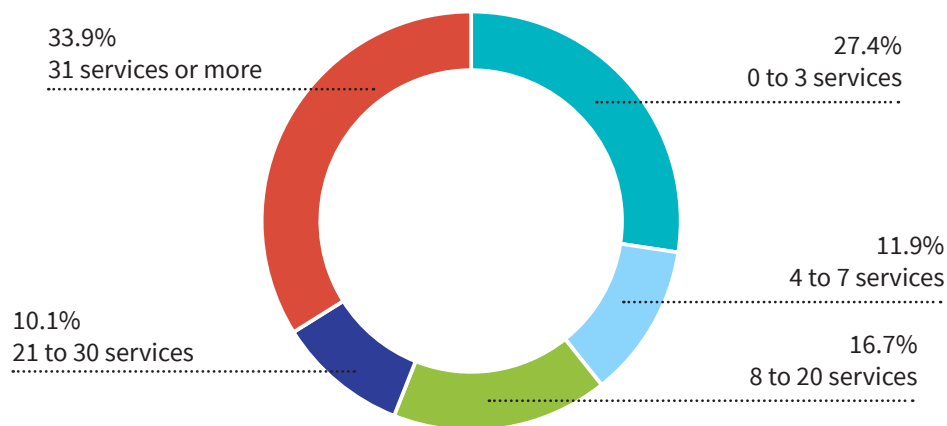
The 168 Adolescent KTOS follow-up clients received a total of 3,380 services between baseline and follow-up. Seven Counties regional Community Mental Health Center (CMHC) clients received the highest regional total of services and the highest average number of services per client (see Table AC.1).

TABLE AC.1. DISTRIBUTION OF SERVICES REPORTED BY CMHC REGIONS FOR ADOLESCENT CLIENTS IN TREATMENT DURING FY 2011 AND FY 2012 (n = 149)

	TOTAL NUMBER OF SERVICES	N	AVERAGE NUMBER OF SERVICES PER CLIENT
Four Rivers	35	10	3.5
Pennyroyal	69	1	69.0
River Valley	50	10	5.0
Lifeskills	58	6	9.7
Communicare	68	5	13.6
Seven Counties	1444	19	76
NorthKey	0	0	0
Comprehend	136	15	9.1
Pathways	730	28	26.1
Mountain	162	20	8.1
Kentucky River	3	1	3.0
Cumberland River	0	0	0
Adanta	222	10	22.2
Bluegrass	403	43	9.4
TOTAL	3,380	168	20.1

Figure AC.2 shows the range of the number of units of clinical services received by Adolescent KTOS clients. Considering only the 168 clients with diagnostic and/or service event data, 27.4% received 3 or fewer units of service, 11.9% received 4 to 7, 16.7% received 8 to 20, 10.1% received 21 to 30, and 33.9% received 31 or more units of service.

FIGURE AC.2. THE NUMBER OF UNITS OF CLINICAL SERVICES RECEIVED BY ADOLESCENT CLIENTS (n = 168)



More than half of clients (55.4%) received individual therapy services, 21.4% evaluation and diagnostic services, 14.3% received group therapy services, 13.1% received psychiatric individual therapy, and

12.5% received substance abuse residential services (see Figure AC.3). Fewer than 10% of the cases had the following services in the client-level Treatment Episode Data Set (TEDS): case management services, substance abuse-related case management, intensive outpatient, residential crisis, non-residential crisis, residential services, and other services not classified into other categories.

FIGURE AC.3. PERCENTAGE OF CLIENTS RECEIVING EACH CATEGORY OF TREATMENT FOR THOSE RECEIVING SERVICES (n = 168)



Figure AC.4 shows the average units of service for each type of service among those clients who received at least one unit of those service types. Services that fewer than 5% of adolescents received are not presented in Figure AC.4. An average of 91.9 days of substance abuse residential treatment services, 51.8 group therapy services, and 23.5 units of individual therapy service were provided to those who received these types of services.

FIGURE AC.4. AMONG CLIENTS RECEIVING AT LEAST ONE SERVICE IN THE CATEGORY, AVERAGE NUMBER OF UNITS OF CLINICAL SERVICES

