Findings from the

Adult Kentucky Treatment Outcome Study

2016

Executive Summary

This report summarizes client outcomes from a statewide evaluation of publicly-funded substance abuse treatment programs for adults (18 years and older). The goal of the Kentucky Treatment Outcome Study (KTOS) is to examine client satisfaction, recovery support, and outcomes for several specific targeted factors including: (1) substance use and severity of substance use, (2) mental health, physical health, and stress, (3) education, (4) employment, (5) homelessness, living situation, and economic hardship, and (6) involvement in the criminal justice system. In addition, this report provides estimates of cost savings of publicly-funded substance abuse treatment. Report findings support continued funding of substance abuse treatment programs which improve the lives of clients and greatly reduce the cost of untreated substance abuse to society.

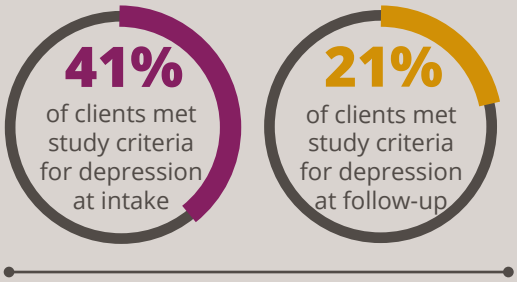
State-funded substance abuse programs in Kentucky are required by Kentucky Revised Statute (222.465) to collect data on substance abuse clients as they enter treatment. KTOS is an important part of the Division of Behavioral Health's performance-based measurement of treatment outcomes in Kentucky's communities.

This report presents outcomes for 1,290[1] men and women who participated in publicly-funded substance abuse treatment from July 2013 through June 2014 and then completed a follow-up interview about 12 months later (average of 334.8 days).

Results show that there were significant reductions in drug and alcohol use as well as self-reported substance use severity. The number of individuals who reported using illegal drugs decreased from 68% at intake to 27% follow-up. Among individuals who reported using any illegal drugs in the 30 days before intake or follow-up, the number who had Addiction Severity Index (ASI) drug composite scores that met the cutoff for severe drug use disorder decreased by 76%. The number of individuals who reported using alcohol decreased 37% from intake to follow-up. Among individuals who reported using alcohol in the 30 days before intake or follow-up, the number who had Addiction Severity Index (ASI) alcohol composite scores that met the cutoff for severe alcohol use disorder decreased by 37%.

The mental health of clients who participated in treatment was also significantly improved. The number of individuals who met study criteria for depression, generalized anxiety, and comorbid depression and anxiety decreased significantly from intake to follow-up. Further, significantly fewer individuals reported

1 A total of 1,291 clients completed intake and follow-up surveys, however one transgender individual was not included in analysis because outcomes were examined by gender and a group of 1 is insufficient to examine with statistical tests; thus, outcomes were only analyzed for 1,290 clients.

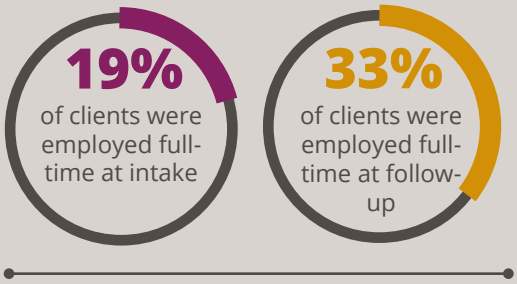


suicidal thoughts or attempts at follow-up than at intake. Also, individuals reported significantly fewer days their physical and mental health were poor at follow-up than at intake. Individuals reported fewer stress symptoms at follow-up compared to intake.

Overall, there was a significant increase in the number of individuals who had completed some vocational school or college by follow-up. Further, more clients reported current full-time employment and fewer clients reported unemployment at follow-up than at intake.

In addition, individuals' living situations improved from intake to follow-up. First, significantly more individuals reported their usual living situation was a private residence (their own home or someone else's home) and significantly fewer individuals reported their usual living situation was in a jail or prison in the 12 months before follow-up compared to the 12 months before intake. Second, the number of individuals who reported they had difficulty meeting their basic living or health care needs decreased significantly from intake to follow-up.

Involvement in the criminal justice system, in terms of being arrested or incarcerated, also decreased significantly from intake to follow-up. The number of individuals who reported they had been arrested in the past 12 months decreased from 58% at intake to 22% at follow-up and the number of individuals who reported they had been incarcerated in the past 12 months decreased from 64% at intake to 26% at follow-up.



Further, program clients were largely satisfied with the treatment services they received at Kentucky's community mental health care centers. Compared to intake, significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days. Also, individuals reported having more people they could count on for recovery support at follow-up than at intake.

There were several important gender differences at treatment intake and follow-up. More women reported using illegal drugs at intake when compared to men. When specific drug classes were examined, significantly more women than men reported they had used opioids and CNS depressants at intake. In contrast, significantly more men than women reported using alcohol, and binge drinking in the 12 months and 30 days before intake and follow-up. Significantly more men than women reported using alcohol to intoxication in the 12 months before intake. Significantly more women

reported smoking tobacco at intake and follow-up and significantly more men than women reported using smokeless tobacco at intake and follow-up.

More women than men reported mental health symptoms including depression, generalized anxiety, and comorbid depression and anxiety. Also, women reported their mental health was not good for significantly more days than men at intake and follow-up. Women reported more stress-related health consequences than men did at intake and follow-up. Further, significantly more women were unemployed at intake and follow-up when compared to men. Likewise, significantly more men reported they had full-time employment at intake and follow-up when compared to women. Among individuals who were currently employed, men had a significantly higher median hourly wage than women at both intake and follow-up. At intake, employed women made only $0.79 for every dollar employed men made and at follow-up, the gap in median hourly wages was similar, with employed women making only $0.80 for every dollar employed men made. Women also reported more economic difficulties at both intake and follow-up compared to men. However, significantly more women reported they had completed at least one year of vocational school or college than did men at intake and follow-up. Thus, even though women made significant overall gains in their education and employment by follow-up, they still lagged behind men in their economic standing.

Estimates on the total costs of drug and alcohol abuse to Kentucky in relation to expenditures on treatment programs suggest that for every dollar spent on publicly-funded substance abuse treatment programs there was a $3.63 return in avoided costs (i.e., costs that would have been expected if alcohol and drug use continued at the same level as it was before treatment intake).

$3.63 COST-SAVINGS FOR TAXPAYERS

Return in avoided costs based upon estimates on the total costs of drug and alcohol abuse to Kentucky in relation to expenditures on treatment programs

The KTOS 2016 outcome evaluation indicates that publicly-funded substance abuse treatment programs in Kentucky have been successful in facilitating positive changes in clients' lives in a variety of ways. These include decreased substance use, decreased severity of substance use, decreased mental health symptoms and stress, increased education and full-time employment, decreased economic hardship, and decreased involvement with the criminal justice system. Results also show that clients appreciate and value their experiences in treatment programs and have more support for recovery after participating in treatment. Finally, publicly-funded substance abuse treatment (in a variety of modalities) saves Kentucky taxpayers' money in avoided costs that ongoing substance abuse would have cost without treatment.

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UK UNIVERSITY OF KENTUCKY
Center on Drug and Alcohol Research

Kentucky UNBRIDLED SPIRIT

Overview of Report

This is the annual Kentucky Treatment Outcome Study (KTOS) Follow-Up Report conducted by the Behavioral Health Outcome Study team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR). State-funded substance abuse programs in Kentucky are required by Kentucky Revised Statute (222.465) to collect data on substance abuse clients as they enter treatment. KTOS is an important part of the Department for Behavioral Health, Developmental, and Intellectual Disabilities, Division of Behavioral Health's performance-based measurement of treatment outcomes in Kentucky's communities.

KTOS includes a face-to-face interview with clients that is conducted by program staff at treatment intake to assess targeted factors such as substance use, mental health symptoms, education, employment status, living situation, and criminal justice involvement prior to entering treatment. Then, a follow-up interview is conducted with a selected sample of clients about 12 months after the intake interview is completed. The follow-up interviews are conducted over the telephone by a member of the UK CDAR research team. Client responses to follow-up interviews are kept confidential to help facilitate the honest evaluation of client outcomes and perception of program services. The UK CDAR research team secured a high follow-up rate of 76.4% and a low refusal rate (0.4%) for participation in the interviews. Only 23.3% of clients were not successfully contacted to complete the follow-up telephone interviews (see Appendix A for detailed information on study methods).

The findings presented in this report describe outcomes for 1,291[2] adult male and female clients who participated in publicly-funded substance abuse treatment from July 2013 through June 2014 and then completed a follow-up interview about 12 months later (an average of 334.8 days).

Of the 1,291 clients who completed follow-up interviews, 53.8% were men, 46.2% were women, and 0.1% transgender. Most clients were White (91.6%), 6.0% were African American, and 2.5% were another race/ethnicity (e.g., Hispanic) or multiracial. Clients were an average age of 34.2 years old at the time of treatment intake (18 – 73 years old). Over two fifths (42.5%) reported they were married or cohabiting, 25.5% were separated or divorced, 30.4% were never married (and not cohabiting), and 1.6% were widowed.[3]

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 (employment, living situation), criminal justice system involvement, and substance use. However, there were some significant differences in economic hardship, physical health, and mental health. First, significantly more women were followed up than were not followed up. Second, significantly more followed up clients reported they had difficulty meeting basic living needs and health care needs for financial reasons. Third, significantly more followed-up clients reported they had completed at least one year of vocational school or college compared to clients who were not followed up. Fourth, significantly more clients who were included in the follow-up sample

[2] A total of 1,291 clients completed intake and follow-up surveys, however one transgender individual was not included in analysis because outcomes were examined by gender and a group of 1 is insufficient to examine with statistical tests; thus, outcomes were only analyzed for 1,290 clients.

[3] Sixteen cases had missing values for the married/cohabiting variable.

reported they had chronic pain, a chronic medical problem and a history of traumatic brain injury when compared to clients who were not in the follow-up sample. Fifth, significantly more clients in the follow-up sample reported depression and generalized anxiety in the 12 months before treatment. Sixth, significantly more followed up clients had used illegal drugs, in general, and specifically marijuana, in the 12 months before treatment compared to clients who were not followed up. And finally, significantly more clients who completed a follow-up reported a history of substance abuse treatment compared to clients who did not complete a follow-up. See Appendix C for detailed comparisons of clients who completed a follow-up interview (n = 1,291) and clients who did not complete a follow-up interview (n = 3,982).

Results are reported in eleven main sections:

Section 1. KTOS Method and Client Characteristics. This section briefly describes KTOS method including how clients are selected into the outcome evaluation. In addition, this section describes characteristics of clients who entered substance abuse treatment in one of Kentucky's Community Mental Health Centers between July 1, 2013 and June 30, 2014. This section also describes characteristics of 1,291 clients who completed a 12-month follow-up interview between July 1, 2014 and June 30, 2015.

Section 2. Client Satisfaction with Substance Abuse Treatment Programs and Quality of Life Ratings. This section describes three aspects of client satisfaction: (1) overall client satisfaction; (2) client ratings of program experiences; and (3) quality of life ratings.

Section 3. Substance Use. This section examines change in substance use (illegal drugs, alcohol, and tobacco) for 12-month and 30-day periods at intake and follow-up. In addition, self-reported severity of alcohol and drug use based on the Addiction Severity Index (ASI) alcohol and drug use composite scores are compared at intake and follow-up. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

Section 4. Mental Health, Stress, and Physical Health. This section examines changes in mental health and stress symptoms from intake to follow-up. Specifically, this subsection examines: (1) depression; (2) generalized anxiety; (3) comorbid depression and generalized anxiety; (4) suicide ideation and attempts; (5) perceptions of physical and mental health; and (6) stress-related health consequences. The mental health and physical health questions in the KTOS intake and follow-up surveys were self-report measures. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 5. Education and Employment. This section examines changes in education and employment from intake to follow-up including: (1) highest level of education completed; (2) current employment status; (3) the number of months clients were employed full-time or part-time; and (4) hourly wage, among employed individuals. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 6. Homelessness, Living Situation, and Economic Hardship. This section of target factors examines the clients' living situation at intake and follow-up. Specifically, clients are asked at both points: (1) if they consider themselves currently homeless; (2) in what type

of situation they have lived in for most of the past 12 months (i.e., own home or someone else's home, residential program, shelter); and (3) difficulty meeting basic living and health care needs in the past 12 months. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 7. Criminal Justice System Involvement. This section describes change in client involvement with the criminal 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) any incarceration; (4) the number of nights incarcerated; and (5) criminal justice supervision status. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 8. 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. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 9: Clinical Diagnostic and Service Information. This section examines mental health diagnosis and service event data submitted by community mental health center (CMHC) providers to the Department for Behavioral Health, Developmental and Intellectual Disabilities for the KTOS follow-up sample.

Section 10: Cost Savings of Substance Abuse Treatment in Kentucky. This section examines cost reductions or avoided costs to society after participation in substance abuse treatment. Using the number of clients who met criteria for drug and alcohol dependence at intake and follow-up in the KTOS sample, a national per/person cost was applied to the sample to estimate the cost to society for the year before clients were in treatment and then for the same clients during the year after treatment had begun.

Conclusion and Implications. This section summarizes the highlights from the evaluation results and suggests implications from these findings for the state.

Section 1.

KTOS Method and Client Characteristics

This section briefly describes the Kentucky Treatment Outcome Study (KTOS) 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 2014 as well as clients who completed a 12-month follow-up interview.

Publicly-funded Substance Abuse Treatment for Adults

The goal of KTOS 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 health, physical health, and stress; (2) education; (3) employment; (4) homelessness, living situation, and economic hardship; and (5) criminal justice system involvement. In addition, estimates present the avoided costs to society in relation to the cost of publicly-funded substance abuse treatment.

KTOS 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 involvement in the criminal justice system prior to entering substance abuse treatment (submitted to UK CDAR from July 1, 2013 through June 30, 2014). In FY 2014, 5,273 adults completed an intake survey.[4] At the completion of the intake interview, staff persons inform individuals about the KTOS follow-up telephone interview and ask if they are interested in participating.

This report describes the sample of treatment clients in two main ways: (1) providing a description of characteristics for 5,273 adults who completed an intake interview in FY 2014 (July 1, 2013 – June 30, 2014), and (2) presentation of client characteristics for 1,291 adults who completed an intake interview in FY 2014 and a 12-month follow-up telephone interview between July 1, 2014 and June 30, 2015.

Description of KTOS Clients at Treatment Intake

Table 1.1 shows that the majority of clients with an intake survey submitted in FY 2014 were male (60.0%) and White (91.1%). Only a minority of clients reported their race as African American/Black (5.9%) and 2.9% reported they were American Indian, Asian, Hispanic, or multiracial. Clients were, on average, 34.1 years old, ranging from 18 to 76 years old at intake. The majority of clients were not married or cohabiting at intake: 30.5% were never married, 27.2% were separated or divorced, and 1.6% were widowed. About 2 in 5 (40.7%) were married or cohabiting with a partner at intake. The majority of clients reported they had at least one child (72.4%).

[4] When a client had more than one intake survey in the same fiscal year, 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.

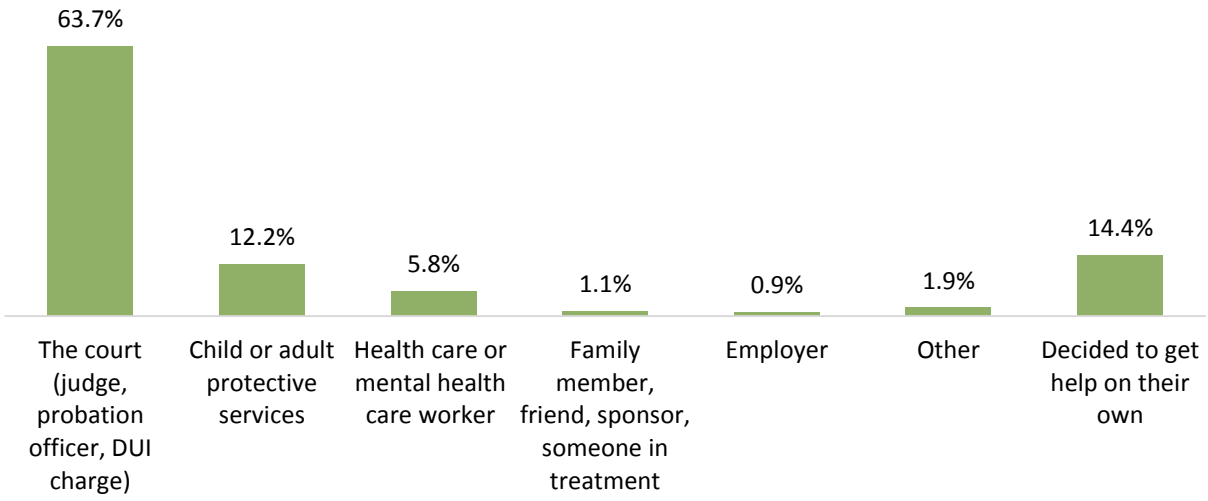
TABLE 1.1. DEMOGRAPHICS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,273)[5]

AGE	34.1 years (range of 18-76)
GENDER	
Male	60.0%
Female	40.0%
Transgender	0.1%
RACE	
White	91.1%
African American	5.9%
Other or multiracial	2.9%
MARITAL STATUS	
Never married	30.5%
Separated or divorced	27.2%
Married or cohabiting	40.7%
Widowed	1.6%
HAVE CHILDREN	72.4%

Figure 1.1 shows the treatment referral source for all KTOS clients at intake. The majority of clients (63.7%) reported they were referred to treatment by the court (e.g., judge, court designated worker, probation officer, for DUI offense). A minority of clients reported they were referred to treatment by Child or Adult Protective Services (12.2%), by a health care or mental health care worker (5.8%). Even smaller numbers of clients reported they were referred to treatment by a family member, friend, or sponsor (1.1%), an employer (0.9%), or other referral source (1.9%). One out of 7 of clients (14.4%) reported they decided to get help on their own.

[5] One client has missing data for race.

FIGURE 1.1. REFERRAL SOURCE FOR ALL KTOS CLIENTS AT INTAKE (N = 5,266)[6]

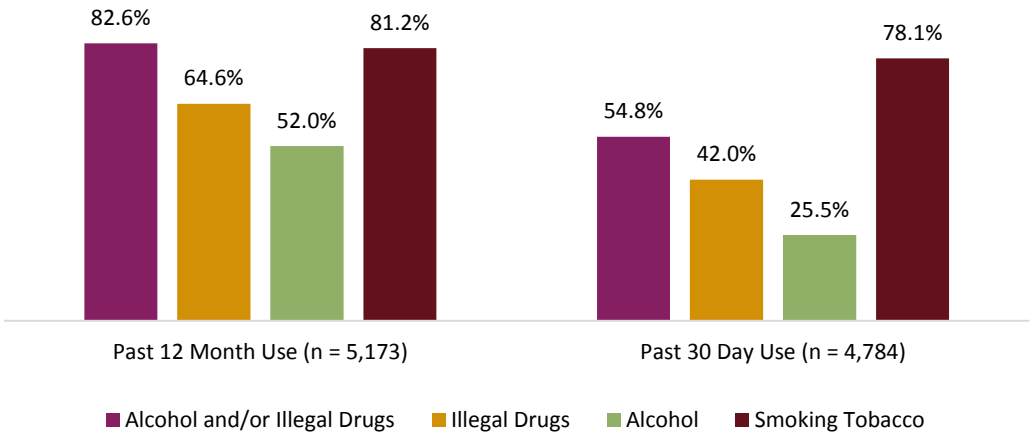


The majority of adults who completed an intake survey reported using alcohol and/or illegal drugs (82.6%) in the 12 months before entering treatment (see Figure 1.2).[7] A higher percentage of individuals reported using illegal drugs (64.6%) compared to the percentage of individuals who reported using alcohol (52.0%) in the 12 months before entering treatment. The vast majority of clients reported smoking tobacco (81.2%) in the 12 months before intake (see Figure 1.2). The drug classes reported by the greatest number of clients were marijuana (40.2%), prescription opioid/opiate (36.5%), and tranquilizers (21.2%; not depicted in a figure). Because being in a controlled environment decreases opportunities for substance use, individuals who were in a controlled environment all 30 days before entering treatment (n = 486) are not included in the analysis of substance use in the 30 days before entering treatment. Of the 4,784 individuals who were not in a controlled environment all 30 days, just over half (54.8%) reported using illegal drugs and/or alcohol, 42.0% reported using illegal drugs, 25.5% reported using alcohol, and 78.1% reported smoking tobacco in the 30 days before entering treatment.

[6] Seven clients had missing data for referral source.

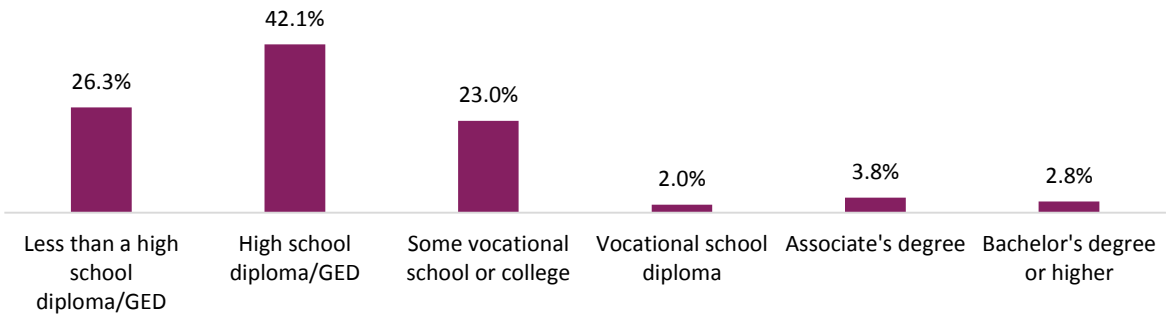
[7] 100 individuals reported being incarcerated all 365 days before intake. Because opportunities to use alcohol and drugs are severely reduced while incarcerated these individuals were not included in this analysis.

FIGURE 1.2. USE OF ALCOHOL, ILLEGAL DRUGS, AND SMOKING TOBACCO IN THE 12 MONTHS AND 30 DAYS BEFORE TREATMENT



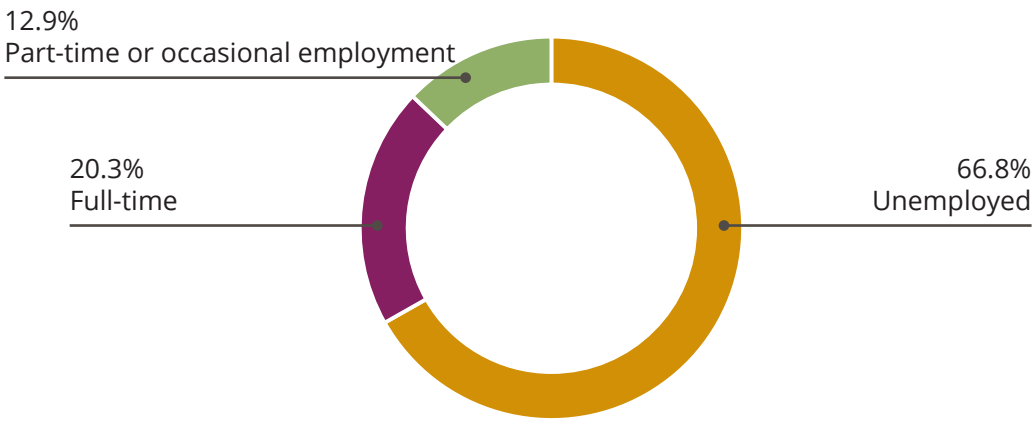
About 1 in 4 clients (26.3%) had less than a high school diploma or GED at intake. The highest level of education of 42.1% of the sample was a high school diploma or GED. Nearly one in four clients (23.0%) had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (2.0%), an associate's degree (3.8%), or a bachelor's degree or higher (2.8%).

FIGURE 1.3. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 5,273)



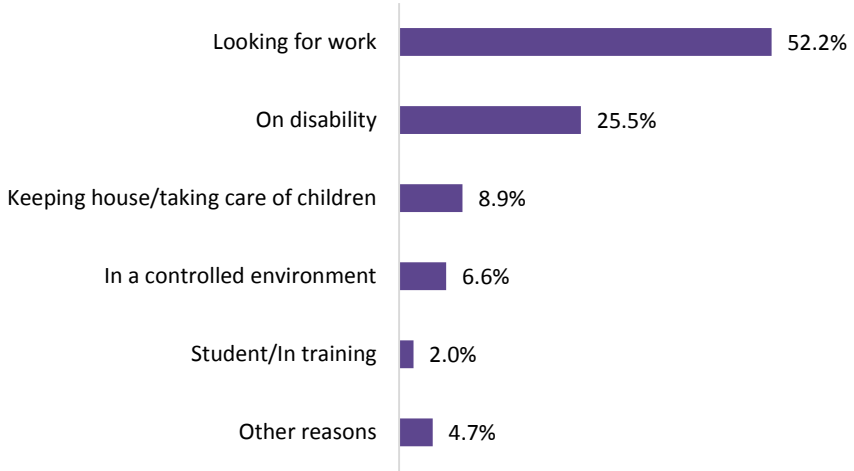
In the 12 months before intake, two in five clients (45.2%) reported they had worked 0 months, 21.4% had worked 1 to 5 months, and 33.4% had worked 6 or more months (not depicted in a figure). At intake the majority of individuals reported they were currently unemployed (66.8%), with 20.3% being employed full-time, and 12.9% employed part-time or having occasional or seasonal employment. Among those who reported being employed full or part-time at intake, the median hourly wage was $9.25.

FIGURE 1.4. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 5,273)



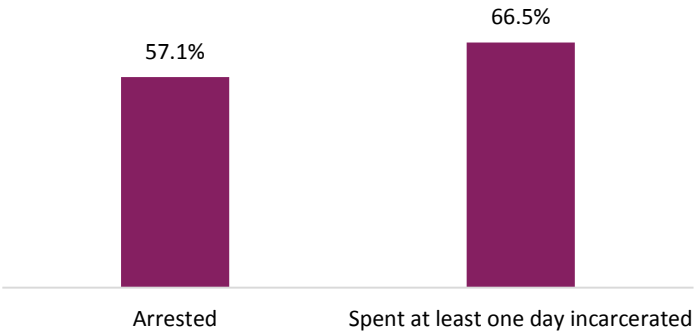
Of the individuals who were currently unemployed at intake (n = 3,524), the majority stated they were looking for work (52.2%), 25.5% were on disability (or have applied for disability), 8.9% were keeping the house or taking care of children full-time at home, 6.6% were in a controlled environment that prohibited them from working, 2.0% were students or in training, and the remaining 4.7% gave other reasons for not being employed (e.g., on furlough or temporarily laid off, retired, other health problems prevented them from work but they weren't on disability, and they were not looking for work).

FIGURE 1.5. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 3,524)



The majority of individuals reported being arrested at least once (57.1%) and being incarcerated at least one night (66.5%) in the 12 months before treatment (see Figure 1.6). Among those who were arrested in the past 12 months, they were arrested an average of 1.6 times. Among those who were incarcerated in the past 12 months, they were incarcerated an average of 91.3 nights (not depicted in a figure).

FIGURE 1.6. CRIMINAL JUSTICE INVOLVEMENT 12 MONTHS BEFORE TREATMENT AT INTAKE (N = 5,273)



KTOS Follow-up Sample

This report describes outcomes for 1,291[8] adults 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 334.8 days) after the intake survey was completed. Detailed information about the methods and follow-up efforts can be found in Appendices A and B.

Follow-up interviews are conducted with a selected sample of KTOS clients about 12 months after the intake survey is completed. All individuals who agree to be contacted by UK CDAR 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 eligible for the follow-up component of the study. Of those eligible, individuals are then randomly selected by the month in which they completed intake surveys (170 clients per month). 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 (0.4%), and in the high follow-up rate (76.4%). This means that only 23.3% of individuals included in the sample to be followed up were not successfully contacted.[9] These elements all indicate KTOS is a solid, dependable research study for publicly-funded substance abuse treatment programs with adults in Kentucky.

[8] The one client who identified themselves as transgender was not included in the analysis examining changes in outcomes, because 1 case is too few to include in analysis examining gender differences, which was carried out throughout the report. Thus, for the analysis presented in Sections 2 - 9 the follow-up sample is N = 1,290.

[9] 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.

Adult KTOS 2016 **Quality of Data and Locator Efforts**

For the 2016 follow-up study, 2,028 participants were included in the sample of individuals to be followed up from July 2013 to June 2014. 38 were ineligible for participating in the follow-up survey for a variety of reasons, which left 1,690 clients eligible for follow-up. Of these clients, 1,291 completed a follow-up survey for a follow-up rate of 76.4%.

76.4%
FOLLOW-UP RATE

Of those 2,028 selected for follow-up, 523 were examined and used to extract information about the efforts project interviewers made to locate and contact participants as well as the type of contact information provided by participants in the original locator information when the intake survey data was submitted to UK CDAR.

PHONE CALLS

12,550
ESTIMATED TOTAL

4.3 An estimated total of 8,700 calls were made to client phone numbers, an average of 4.3 per client.

1.9 An estimated total of 3,850 calls were made to contact phone numbers, an average of 1.9 per client.

81.8% A little more than 8 out of 10 clients had at least one unique contact phone number.

MAILINGS

4,650
ESTIMATED TOTAL

2.2 An estimated total of 4,450 mailings were sent to a client address, an average of 2.2 per client.

0.1 An estimated total of 200 mailings were sent to contact addresses, an average of 0.1 per client.

33.1% 1 out of 3 clients had at least one complete, unique contact address.

ONLINE SEARCH

Client information was verified through external search in cases where (a) client contact information was incomplete; and (b) client contact information was incorrect, Overall, approximately 41% of all clients were searched with medium level effort and 20.8% of all clients were searched in-depth.

98.1% of all clients were searched with light effort (i.e., verification, VINE, Whitepages)

40.9% of all clients were searched with medium effort (i.e., social media, other public directory databases)

20.8% of all clients were searched with in-depth effort (i.e., in-depth searching methods)

*For more detail on the locating efforts of UK CDAR staff, please see Appendix B

Of the 1,291 adults who completed a 12-month follow-up interview, 53.8% were male, 46.2% were female, and 0.1% were transgender. The majority of follow-up clients were White (91.6%). A minority were African American/Black (6.0%) and 2.5% were Hispanic, American Indian, or multiracial. They were an average of 34.2 years old at the time of the intake interview. The majority of clients (60.8%) were 30 years old or older at intake. Over two in five (42.5%) reported they were married or cohabiting, 25.5% were separated or divorced, and 30.4% were never married (and not cohabiting).

TABLE 1.2. DEMOGRAPHICS FOR KTOS CLIENTS WHO WERE FOLLOWED-UP AT INTAKE (N = 1,291)[10]

AGE	34.2 years (range of 18-73)
GENDER	
Male	53.8%
Female	46.2%
Transgender	0.1%
RACE	
White	91.6%
African American	6.0%
Other or multiracial	2.5%
MARITAL STATUS	
Never married	30.4%
Separated or divorced	25.5%
Married or cohabiting	42.5%
Widowed	1.6%

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 some significant differences for demographics, socio-economic status indicators (education, employment, living situation), criminal justice system involvement, and substance use. First, significantly more women were followed up than were not followed up. Second, significantly more followed up clients reported they had difficulty meeting basic living needs and health care needs for financial reasons. Third, significantly more followed-up clients reported they had completed at least one year of vocational school or college compared to clients who were not followed up. Fourth, significantly more clients who were included in the follow-up sample reported they had chronic pain, a chronic medical problem and a history of traumatic brain injury when compared to clients who were not in the follow-up sample. Fifth, significantly more clients in the follow-up sample reported depression and generalized anxiety in the 12 months before treatment. Sixth, significantly more followed up clients had used illicit drugs, in general, and marijuana specifically, in the 12 months before treatment compared to clients who were not followed up. And finally, significantly more clients who completed a follow-up reported a history of substance abuse treatment compared to clients who did not complete a follow-up. See Appendix C for detailed comparisons of clients who completed a follow-up interview (n = 1,291) and clients who did not complete a follow-up interview (n = 3,982).

[10] One client had missing data for race, 16 clients had missing data for marital status.

Section 2.

Client Satisfaction with Substance Abuse Treatment Programs and Quality of Life Ratings

One of the important outcomes assessed during the follow-up interview is the client perception of the treatment program experience. This section describes three aspects of client satisfaction: (1) overall client satisfaction; (2) client ratings of program experiences; and, (3) client quality of life ratings for before and after involvement in the program.

Overall Client Satisfaction

At the beginning of the follow-up survey, interviewers asked participants questions about their satisfaction with the treatment programs where 1 represented the worst experience and 10 represented the best experience. Overall, the majority of clients (71.8%) gave a high positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table).[11] The average rating was 8.1.

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).[12] The vast majority of clients indicated they were treated with respect (97.5%), understood their rights as clients of substance abuse treatment (97.0%), understood what staff expected of them (96.8%), understood their treatment plan (96.3%), felt better about themselves as a result of treatment (90.3%), and indicated that they had received the services they needed to help them get better (91.2%).

FIGURE 2.1. PERCENTAGE OF CLIENTS WHO AGREED/STRONGLY AGREED WITH THE FOLLOWING STATEMENTS ABOUT THE TREATMENT PROGRAM AT FOLLOW-UP (N = 1,290)

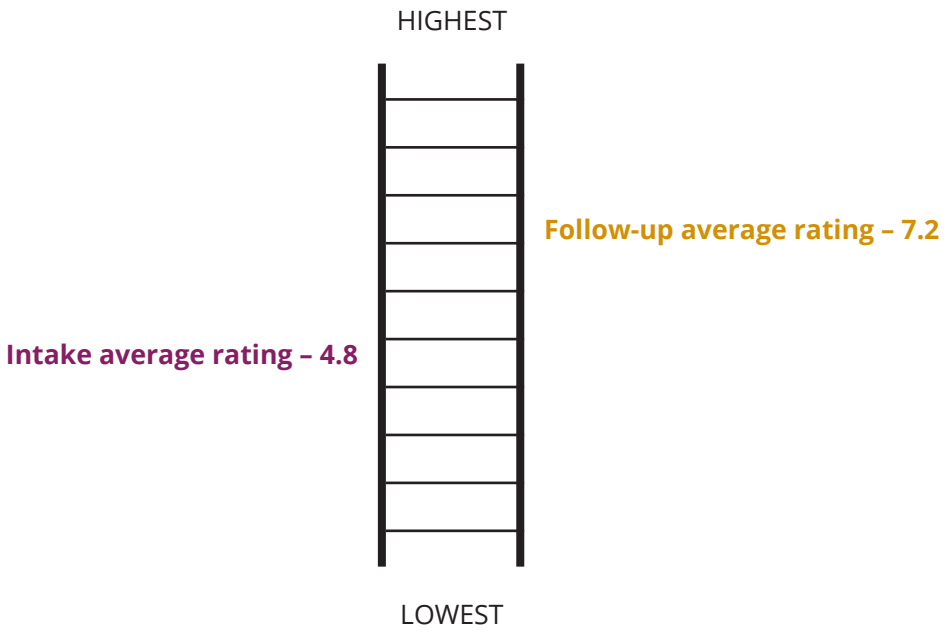
[11] Data for 2 individuals was missing for this question.

[12] Answers of don't know/don't remember were treated as missing on these items. The number of missing values ranged from 0 to 3 on the items represented in the above figure.

Quality of Life Ratings

One way to measure quality of life is to assess individuals' perceptions of their social standing in society. Clients were asked to place themselves on a ladder (Adler's Ladder), representing their perception of their standing in society.[13] The bottom rung, 1, represents "people who are the worst off, those who have the least money, least education, and worst jobs or no jobs" and the top rung, 10, represents "people who are the best off, those who have the most money, most education, and best jobs." Overall, clients' rated themselves as a 4.8 on average, (just under the middle of the ladder) at intake, and a 7.2 (above the middle) at follow-up, which was a significant increase.

FIGURE 2.2 DISTRIBUTION OF CLIENTS' PERCEPTIONS OF THEIR STANDING IN SOCIETY (N = 1,281)***[14]



Gender Differences in Subjective Social Standing

At intake, men reported a significantly higher subjective social standing compared to women. By follow-up, the average subjective social standing of men and women was significantly higher and not significantly different by gender.

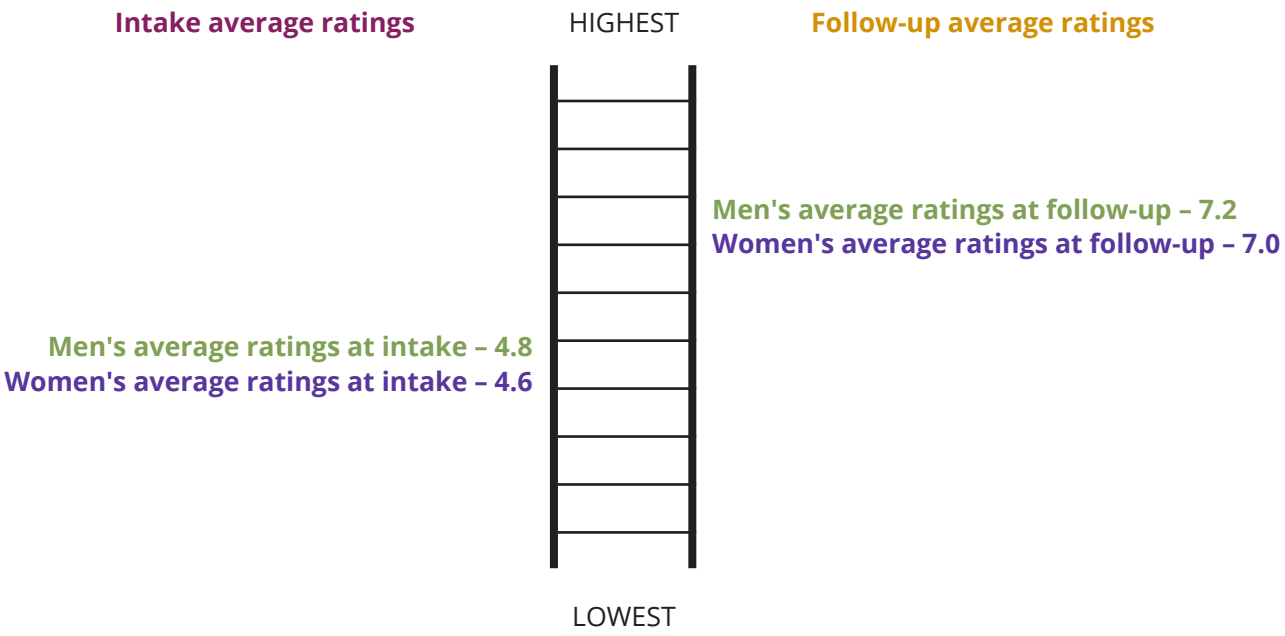
"It's an awesome program. **I couldn't really open up to people and they really helped me out a lot."**

-KTOS FOLLOW-UP CLIENT

[13] Adler, N., Epel, E., Castellazzo, G., & Ickovics, J. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology, 19*(6), 586-592.

[14] Subjective social standing at follow-up was missing for eight cases.

FIGURE 2.3. GENDER DIFFERENCES CLIENTS' PERCEPTIONS OF THEIR STANDING IN SOCIETY (N = 1,281)***[15]



[15] Subjective social standing at follow-up was missing for eight cases.

Section 3.

Substance Use

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

This section examines substance use changes which include use of any illegal drugs or alcohol, and then separately for illegal drugs, alcohol, and tobacco at intake and follow-up. In addition to examining the overall use of illegal drugs, several specific categories of illegal drugs were examined including: (a) 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., cocaine, methamphetamine, Ecstasy, MDMA, Adderall, and Ritalin]; and (d) other illegal drugs not mentioned above [i.e., hallucinogens, inhalants, and synthetic drugs]. Analysis is presented in detail for KTOS 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 = 1,267)[16] 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 substance use in the 30 days before program entry and the 30 days before the follow-up interview for any illegal drug use (including marijuana, opioids, heroin, CNS depressants, stimulants, and other illegal drugs), alcohol use, and tobacco use (n = 1,177)[17] is also examined. Because some clients were in a controlled environment (e.g., prison, jail, or residential facility) all 30 days before entering treatment (n = 113), 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. The assumption for excluding clients who were in a controlled environment all 30 days is that being in a controlled environment inhibits opportunities for alcohol and drug use.

[16] 23 cases were excluded from this analysis because they were incarcerated all 365 days before entering treatment.

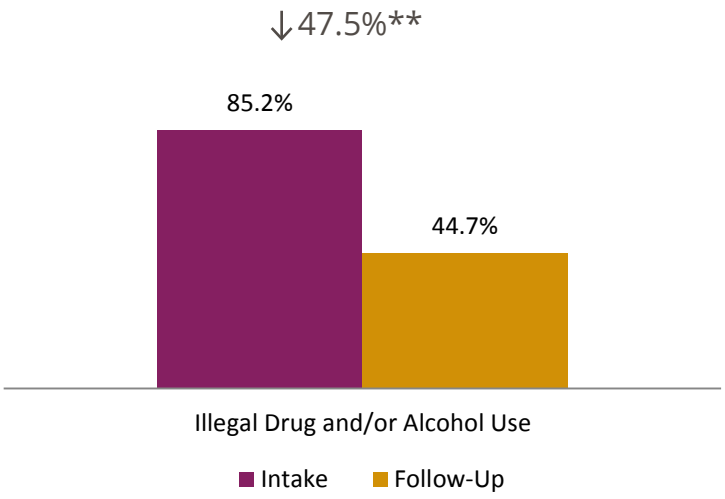
[17] Because some clients enter treatment after leaving jail or prison, substance use in the 30 days before entering the program was examined for clients who were not in a controlled environment all 30 days. The assumption for excluding clients who were in a controlled environment all 30 days before entering treatment (n = 113) from the change in past-30-day substance use analysis is that being in a controlled environment inhibits opportunities for alcohol and drug use.

4. **Change in self-reported alcohol and drug composite scores from intake to follow-up.** The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs (n = 546), alcohol (n = 409) and those with alcohol and/or illegal drug use (n = 753). The ASI composite score assesses self-reported addiction severity even among those reporting no substance use in the past 30 days. The alcohol and drug composite scores are computed from items about 30-days alcohol (or drug) use and the number of days individuals used multiple drugs in a day, as well as the impact of substance use on the 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 vast majority of clients (85.2%) reported using alcohol and/or illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 44.7% at follow-up. There was a 47.5% significant decrease in the number of clients reporting use of alcohol and illegal drugs (see Figure 3.1).

FIGURE 3.1. PAST-12-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,267)



**p < .001.

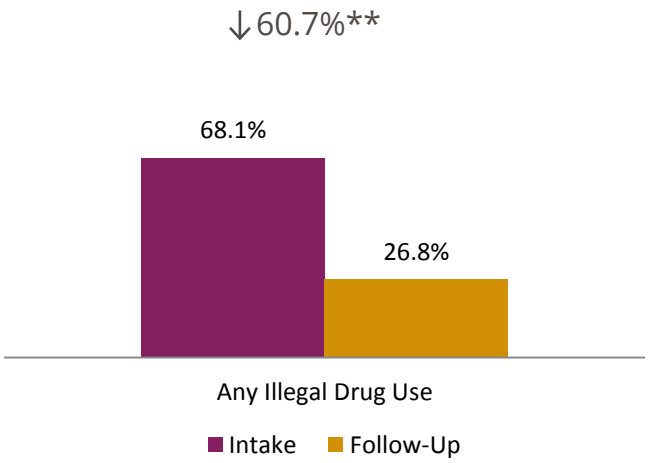
Any Illegal Drugs

Past-12-month Illegal Drug Use

Two out of three clients (68.1%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 26.8% at follow-up. Overall, for the KTOS follow-up sample, there was a 60.7% decrease in the number of clients reporting use of any illegal drug (see Figure 3.2).

The number of clients reporting **illegal drug use decreased by 61%**

FIGURE 3.2. PAST-12-MONTH DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,265)[18]



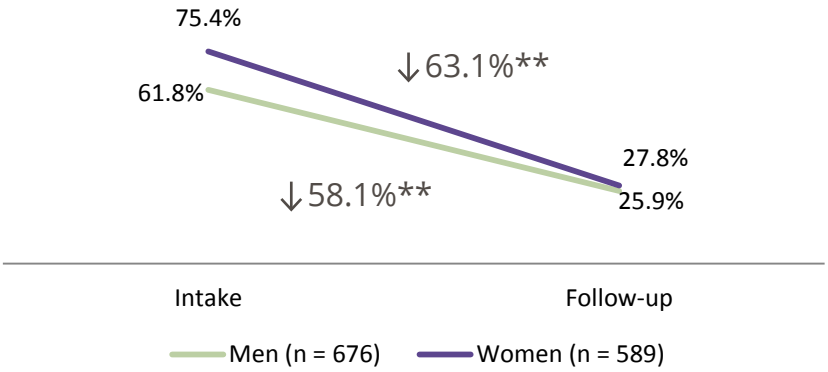
**p < .001

Gender Differences in Past-12-Month Overall Illegal Drug Use

At intake, significantly more women than men reported any illegal drug use, 75.4% vs. 61.8% (see Figure 3.3). The number of women and men who reported illegal drug use significantly decreased from intake to follow-up by 63.1% and 58.1% respectively.

Significantly **more women** than men **reported using any illegal drugs in the past 12 months at intake**

FIGURE 3.3. GENDER DIFFERENCES IN PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP[a]



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

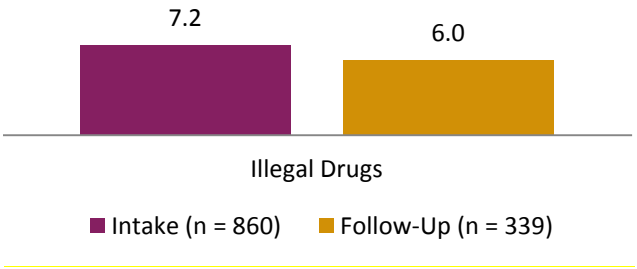
Average Number of Months Used Any Illegal Drugs

Among the clients who reported using illegal drugs in the 12 months before entering treatment (n = 862), they reported using illegal drugs on average 7.2 months (see Figure

[18] Two cases had missing data on illegal drugs in the 12 months before follow-up.

3.4).[19,20] Among clients who reported using illegal drugs at follow-up (n = 339), they reported using on average 6.0 months.

FIGURE 3.4. AVERAGE NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS



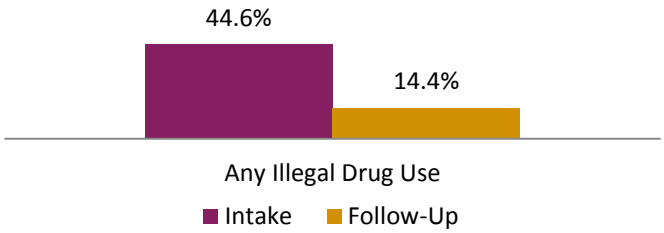
Past-30-day Illegal Drug Use

Less than one half of clients (44.6%) 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 3.5). At follow-up, only 14.4% of clients reported they had used illegal drugs in the past 30 days—a significant decrease of 67.7%.

There was a significant **reduction of 68% in** the number of clients who reported **past 30-day illegal drug use**

FIGURE 3.5. PAST-30-DAY USE OF ANY ILLEGAL DRUG AT INTAKE AND FOLLOW-UP (N = 1,172)[21]

↓67.7%**



**p < .001

[19] 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.

[20] Two cases had missing values for number of months used illegal drugs in the 12 months before intake.

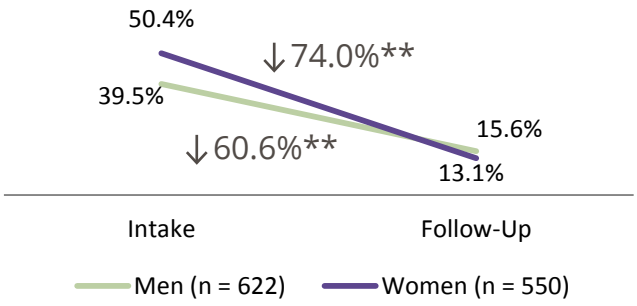
[21] Five individuals had missing data on 30-day illegal drug use at follow-up.

Gender Differences in Past-30-day Illegal Drug Use

Significantly more women reported illegal drug use in the 30 days before intake when compared to men (50.4% vs. 39.5%). The number of women and men who reported illegal drug use decreased significantly by 74.0% and 60.6% respectively (see Figure 3.6).

Significantly **more women** than men **reported using any illegal drugs in the past 30 days at intake**

FIGURE 3.6. GENDER DIFFERENCES IN PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP[a]

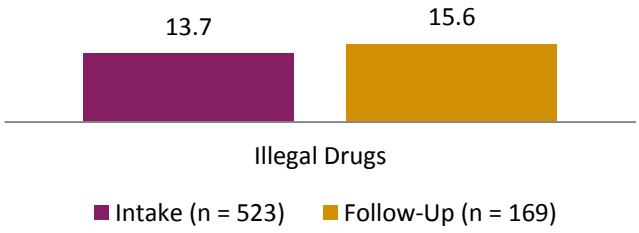


a—Significant difference by gender at intake, $p < .001$.
**$p < .001$

Average Number of Days Used Any Illegal Drugs

Among the clients who reported using illegal drugs in the 30 days before entering treatment (n = 523), they reported using illegal drugs on average 13.7 days (see Figure 3.7). Among clients who reported using illegal drugs at follow-up (n = 169), they reported using on average 15.6 days.[22]

FIGURE 3.7. AVERAGE NUMBER OF DAYS CLIENTS USED ILLEGAL DRUGS



Marijuana

Past-12-Month Marijuana Use

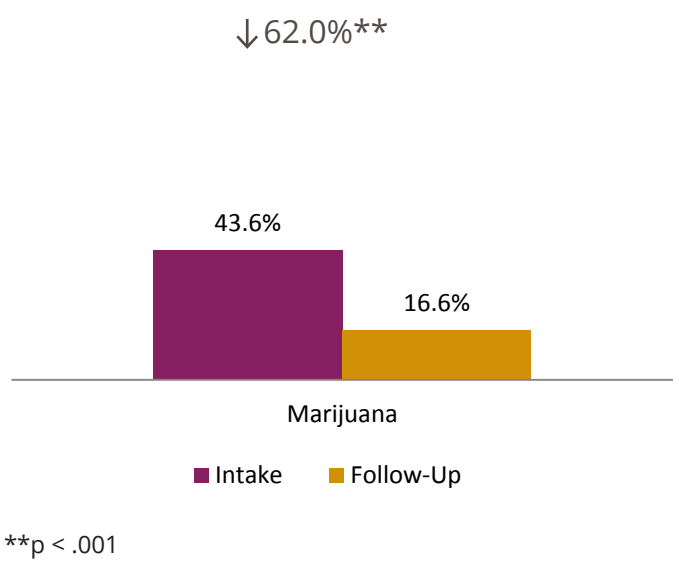
Over two-fifths of clients (43.6%) reported using marijuana in the 12 months before entering treatment, which decreased to 16.6% at follow-up. Overall, for the KTOS follow-up sample, there was a 62.0%

The number of clients reporting **marijuana use decreased by 62%**

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

decrease in the number of clients reporting marijuana use (see Figure 3.8).

FIGURE 3.8. PAST-12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,267)

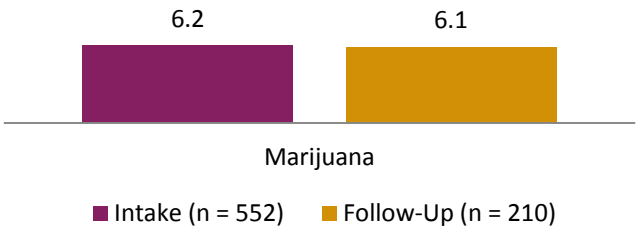


**p < .001

Average Number of Months Used Marijuana

Among the clients who reported using marijuana in the 12 months before entering treatment (n = 552), they reported using marijuana, on average, 6.2 months (see Figure 3.9). Among clients who reported using marijuana at follow-up (n = 210), they reported using, on average 6.1 months.

FIGURE 3.9. AVERAGE NUMBER OF MONTHS CLIENTS USED MARIJUANA



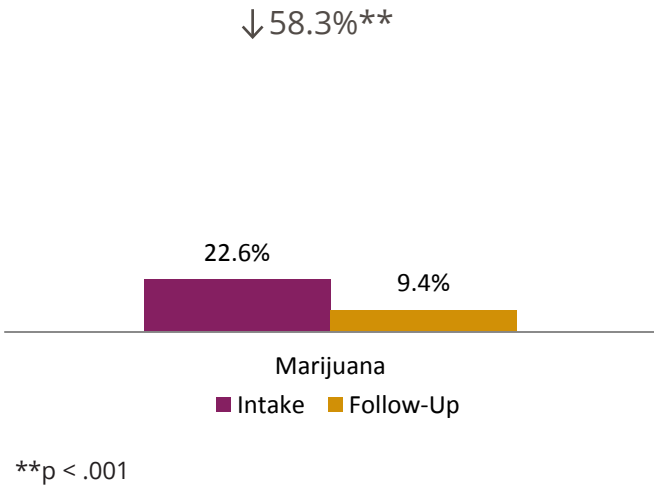
Past-30-Day Marijuana Use

The number of clients who reported using marijuana in the past 30 days decreased significantly by 58.3%, from 22.6% at intake to 9.4% at follow-up (see Figure 3.10).

"I liked my counselor, he didn't see me as a number. **He tried to actually get to know me and cared."**

-KTOS FOLLOW-UP CLIENT

FIGURE 3.10. PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,177)



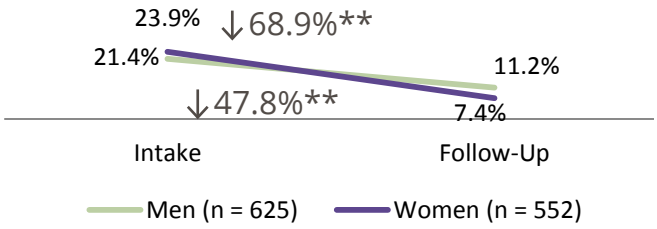
**p < .001

Gender Differences in Past-30-Day Marijuana Use

The number of men and women who reported marijuana use decreased significantly by 47.8% and 68.9% respectively (see Figure 3.11). Significantly more men reported marijuana use in the 30 days before follow-up when compared to women (11.2% vs. 7.4%).

Significantly **more men** than women **reported using marijuana at follow-up**

FIGURE 3.11. GENDER DIFFERENCES IN PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP[a]



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

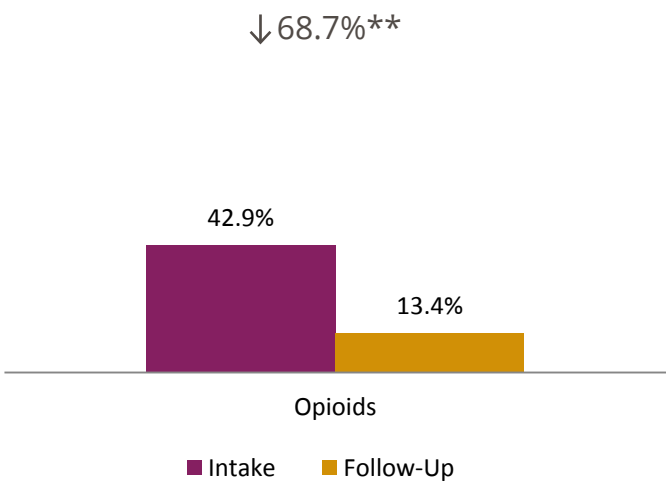
Opioids

Past-12-Month Opioid Misuse

A little more than two-fifths of clients (42.9%) reported using opioids other than heroin, including prescription opiates, methadone, and buprenorphine in the 12 months before entering treatment, which decreased to 13.4% at follow-up. Overall, for the KTOS follow-up sample, there was a 68.7% decrease in the number of clients reporting opioid use other than heroin (see Figure 3.12).

The number of clients reporting **opioid use decreased by 69%**

FIGURE 3.12. PAST-12-MONTH OPIOID USE AT INTAKE AND FOLLOW-UP (N = 1,266)[23]



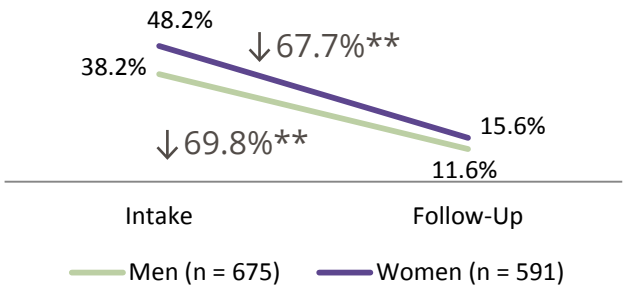
**p < .001

Gender Differences in Past-12-Month Opioid Use

Significantly more women than men reported opioid use in the 12 months before intake, 48.2% vs. 38.2% and follow-up (15.6% vs. 11.6%). The number of women and men who reported opioid use significantly decreased from intake to follow-up by 67.7% and 69.8% respectively (see Figure 3.13).

Significantly **more women than men reported opioid use** at intake and follow-up

FIGURE 3.13. GENDER DIFFERENCES IN PAST-12-MONTH OPIOID USE AT INTAKE AND FOLLOW-UP[a]



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

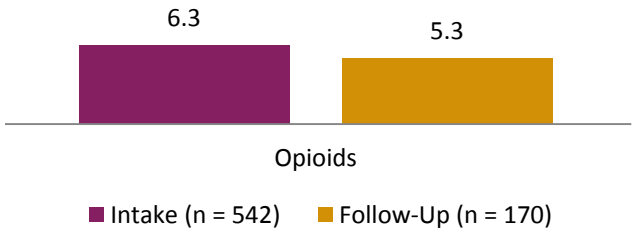
Average Number Of Months Used Opioids

Among the clients who reported using opioids in the 12 months before entering treatment (n = 542), they reported using opioids on average 6.3 months (see Figure 3.14).[24] Among clients who reported using opioids at follow-up (n = 170), they reported using an average 5.3 months.

[23] One case had missing values on opioid misuse at follow-up.

[24] 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.

FIGURE 3.14. AVERAGE NUMBER OF MONTHS CLIENTS USED OPIOIDS

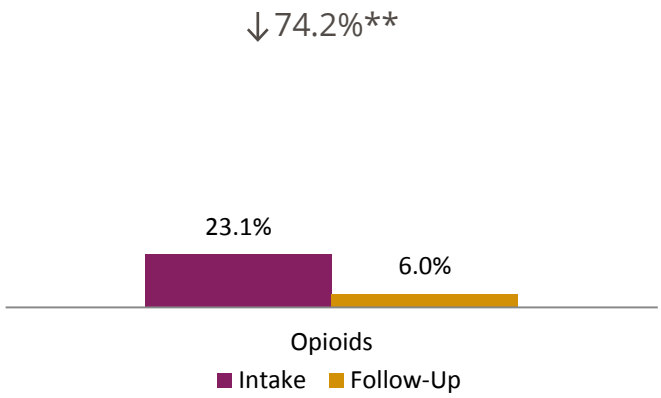


Past-30-Day Opioid Use

The number of clients who reported using opioids decreased significantly by 74.2%, from 23.1% at intake to 6.0% at follow-up (see Figure 3.15).

The number of clients who used **opioids decreased significantly by 74%**

FIGURE 3.15. PAST-30-DAY OPIOID USE AT INTAKE AND FOLLOW-UP (N = 1,173)[25]



**p < .001

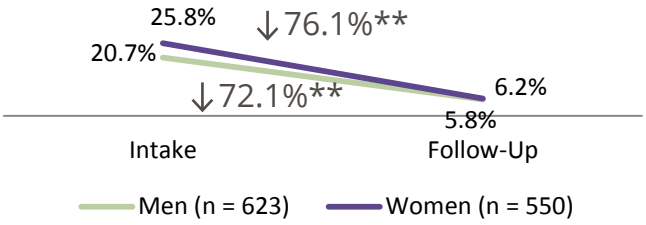
Gender Differences in Past-30-Day Opioid Use

Significantly more women than men reported opioid use in the 30 days before intake, 25.8% vs. 20.7% (see Figure 3.16). The number of women and men who reported opioid use significantly decreased from intake to follow-up by 76.1% and 72.1% respectively.

Significantly **more women** than men reported **opioid use in the past 30 days at intake**

[25] Four cases had missing values on 30-day opioid misuse at follow-up.

FIGURE 3.16. GENDER DIFFERENCES IN PAST-30-DAY OPIOID USE AT INTAKE AND FOLLOW-UP[a]



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

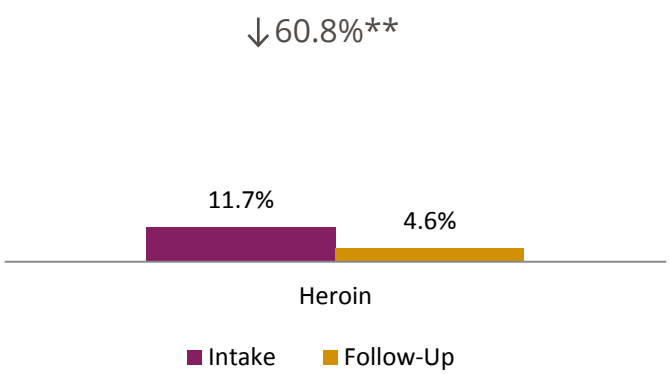
Heroin

Past-12-Month Heroin Use

Nearly 1 in 8 clients (11.7%) reported using heroin in the 12 months before entering treatment, which decreased 60.8% to 4.6% at follow-up (see Figure 3.17).

The number of clients reporting **heroin use decreased by 61%**

FIGURE 3.17. PAST-12-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,266)[26]



**p < .001

Average Number of Months Used Heroin

Among the clients who reported using heroin in the 12 months before entering treatment (n = 148), they reported using heroin, on average, 5.5 months (see Figure 3.18). Among clients who reported using heroin at follow-up (n = 58), they reported using, on average, 4.1 months.

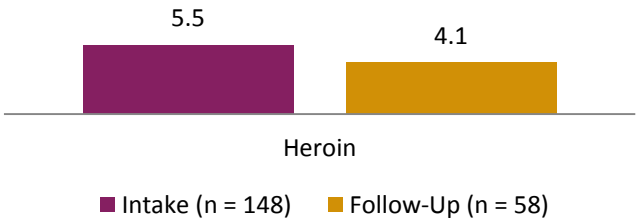
"They sincerely want to help people regardless of money

They really try to help people with mental illness and/or addiction."

-KTOS FOLLOW-UP CLIENT

[26] One case had missing values on 12-month heroin use at follow-up.

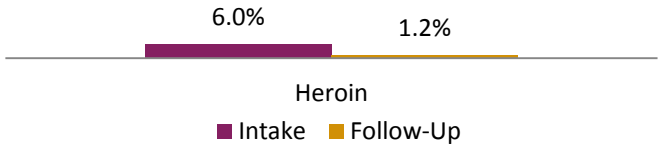
FIGURE 3.18. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



Past-30-day Heroin Use

A minority of clients (6.0%) reported using heroin in the 30 days before intake, with a significant decrease of 81.1% by follow-up to 1.2% (see Figure 3.19).

FIGURE 3.19. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,175)[27]



**p < .001

CNS Depressants

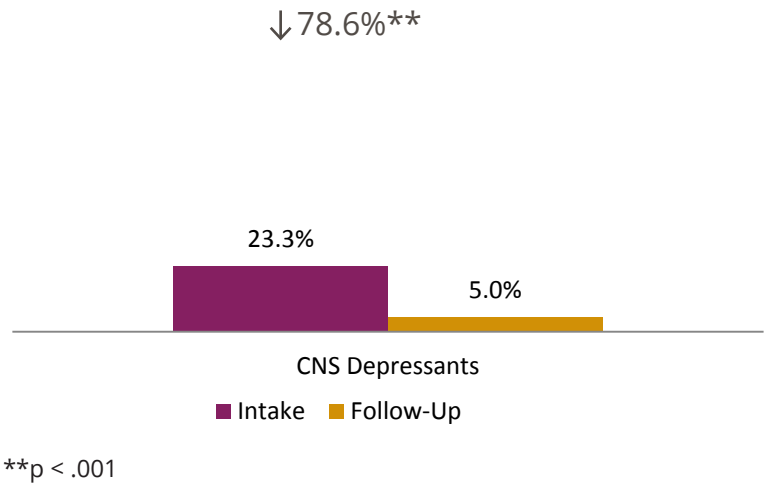
Past-12-month CNS Depressant Use

Nearly one in four clients (23.3%) reported using CNS depressants, including tranquilizers, benzodiazepines, sedatives, and barbiturates in the 12 months before entering treatment, which decreased to 5.0% at follow-up. Overall, for the KTOS follow-up sample, there was a 78.6% decrease in the number of clients reporting CNS depressant use (see Figure 3.20).

The number of clients reporting **CNS depressant use decreased by 79%**

[27] Two cases had missing values on 30-day heroin use at follow-up.

FIGURE 3.20. PAST-12-MONTH CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,265)[28]



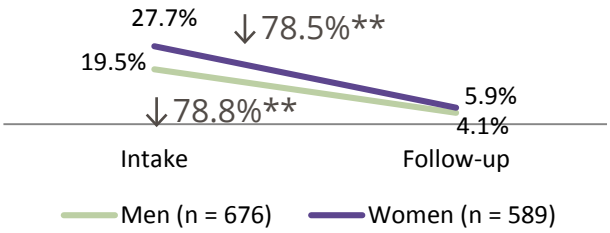
**p < .001

Gender Differences in Past-12-month CNS Depressant Use

Significantly more women than men reported CNS depressant use in the 12 months before intake, 27.7% vs. 19.5% (see Figure 3.21). The number of women and men who reported CNS depressant use significantly decreased from intake to follow-up by 78.5% and 78.8% respectively. At follow-up, there was no significant difference in the percentage of women and men who reported using CNS depressants.

Significantly **more women than men reported CNS depressant use** at intake

FIGURE 3.21. GENDER DIFFERENCES IN PAST-12-MONTH CNS DEPRESSANT USE FROM INTAKE TO FOLLOW-UP[a]



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

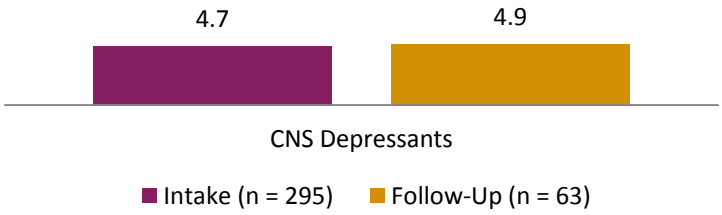
Average Number of Months Used CNS Depressants

Figure 3.22 shows the average maximum number of months clients who used CNS depressants reported using these illegal drugs.[29] Among the clients who reported using these substances in the 12 months before entering treatment (n = 295), they reported using CNS depressants an average 4.7 months. Among clients who reported using CNS depressants in the 12 months before follow-up (n = 63), they reported using an average of 4.9 months.

[28] Two cases had missing values on past 12-month CNS depressant use at follow-up.

[29] Because number of months of use barbiturates and tranquilizers/sedatives/benzodiazepines were measured separately, the value is a calculation of the maximum number of months clients used any substance class.

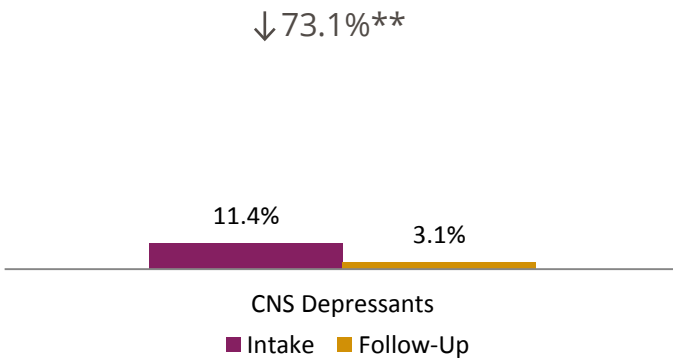
FIGURE 3.22. AVERAGE NUMBER OF MONTHS OF CNS DEPRESSANT USE



Past-30-day CNS Depressant Use

The number of clients who reported using CNS depressants decreased significantly by 73.1%, from 11.4% at intake to 3.1% at follow-up (see Figure 3.23).

FIGURE 3.23. PAST-30-DAY CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,176)[30]

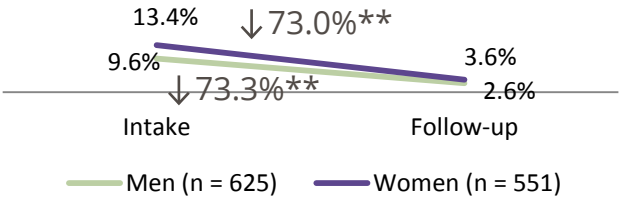


**p < .001

Gender Differences in Past-30-day CNS Depressant Use

Significantly more women than men reported CNS depressant use in the 30 days before intake, 13.4% vs. 9.6% (see Figure 3.24). The number of women and men who reported CNS depressant use significantly decreased from intake to follow-up by 73.0% and 73.3% respectively. There was no significant difference in past-30-day CNS depressant use at follow-up by gender.

FIGURE 3.24. GENDER DIFFERENCES IN PAST-30-DAY CNS DEPRESSANT USE FROM INTAKE TO FOLLOW-UP[a]



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

[30] One case had missing values on past-30-day CNS depressant use at follow-up.

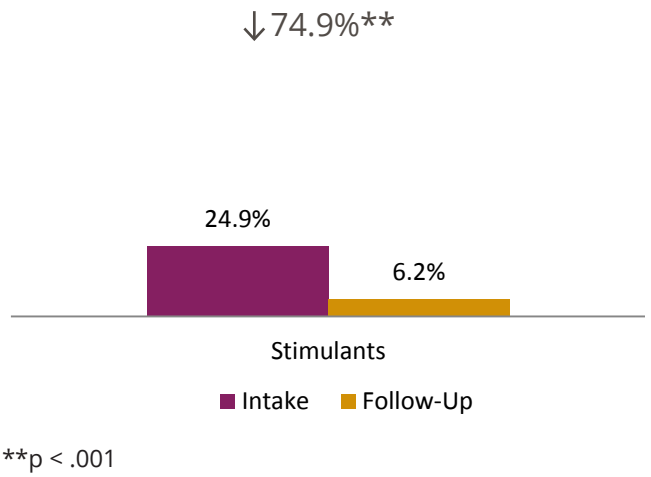
Stimulants

Past-12-month Stimulant Use

One in 4 clients (24.9%) reported using stimulants, including cocaine, methamphetamine, Ecstasy, MDMA, and non-prescription Adderall and Ritalin in the 12 months before entering treatment, which decreased to 6.2% at follow-up. Overall, for the KTOS follow-up sample, there was a 74.9% decrease in the number of clients reporting stimulant use (see Figure 3.25).

The number of clients reporting **stimulant use decreased by 75%**

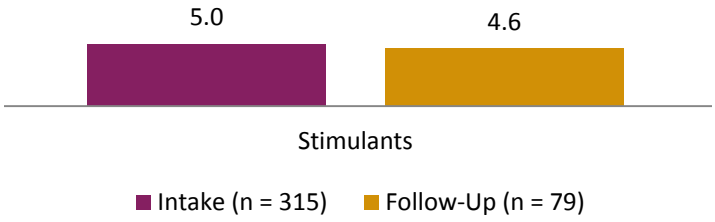
FIGURE 3.25. PAST-12-MONTH STIMULANT USE AT INTAKE AND FOLLOW-UP (N = 1,266)[31]



Average Number of Months Used Stimulants

Among the clients who reported using stimulants in the 12 months before entering treatment (n = 315), they reported using stimulants an average of 5.0 months (see Figure 3.26). Among clients who reported using stimulants in the 12 months before follow-up (n = 79), they reported using stimulants, on average, 4.6 months.

FIGURE 3.26. AVERAGE NUMBER OF MONTHS OF STIMULANT USE

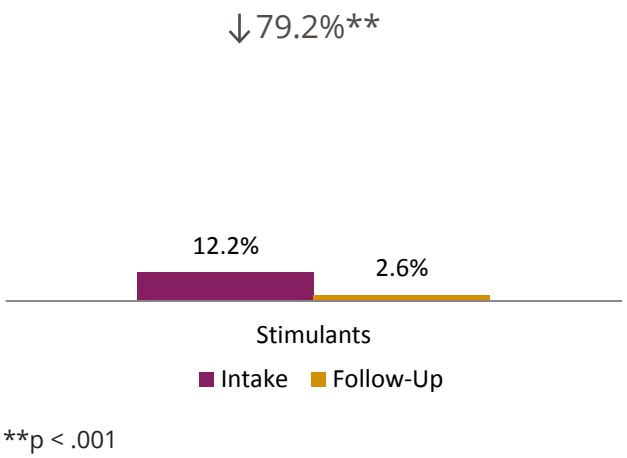


[31] One case had missing values on 12-month stimulant use at intake and follow-up.

Past-30-day Stimulant Use

The number of clients who reported using stimulants in the past 30 days decreased significantly by 79.2%, from 12.2% at intake to 2.6% at follow-up (see Figure 3.27).

FIGURE 3.27. PAST-30-DAY STIMULANT USE AT INTAKE AND FOLLOW-UP (N = 1,176)[32]



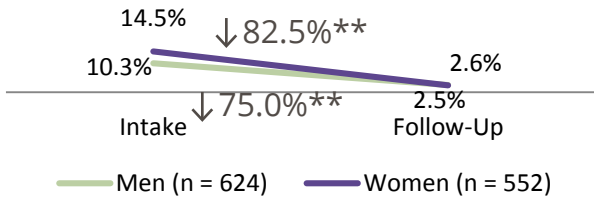
**p < .001

Gender Differences in Past-30-day Stimulant Use

Significantly more women reported stimulant use in the 30 days before intake when compared to men (14.5% vs. 10.3%). The number of women and men who reported stimulant use decreased significantly by 82.5% and 75.0% respectively (see Figure 3.28).

Significantly **more women than men reported CNS depressant use** at intake

FIGURE 3.28. GENDER DIFFERENCES IN PAST-30-DAY STIMULANT USE AT INTAKE AND FOLLOW-UP[a]



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

Other Illegal Drugs

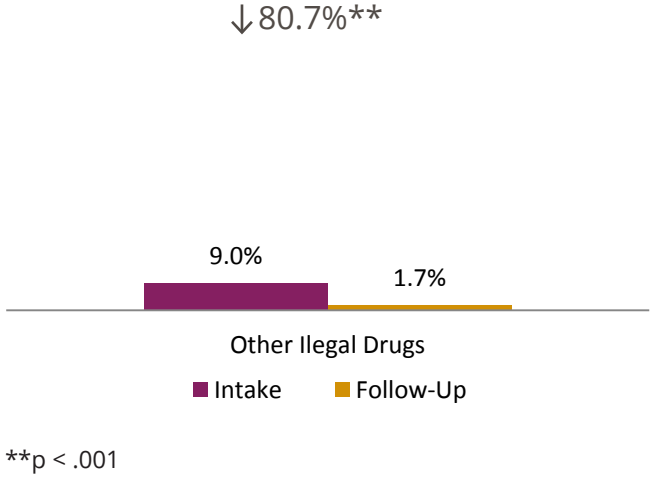
Past-12-month Other Illegal Drugs

A small minority of KTOS clients (9.0%) reported using any other illegal drugs (i.e., hallucinogens, inhalants, synthetic drugs) in the 12 months before entering treatment. The number of clients who reported using other illegal drugs decreased to 1.7% at follow-up – a significant decrease of 80.7% (see Figure 3.29).

The number of clients reporting use of **other illegal drugs in the past 12 months decreased by 81%**

[32] One case had missing values on 30-day stimulant use at intake and follow-up.

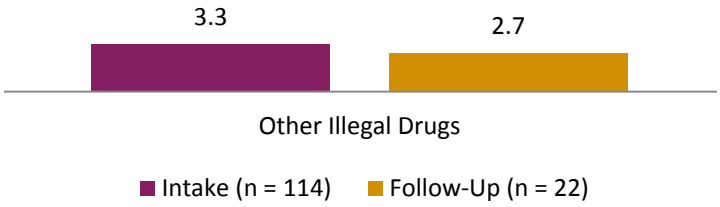
FIGURE 3.29. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,265)[33]



Average Number of Months Used Other Illegal Drugs

Figure 3.30 shows the average maximum number of months clients who used other illegal drugs (e.g., hallucinogens, inhalants, synthetic drugs) reported using those illegal drugs[34] in the past 12 months. Among the clients who reported using these drugs in the 12 months before entering treatment (n = 114), they reported using other illegal drugs an average of 3.3 months. Among clients who reported using other illegal drugs in the 12 months before follow-up (n = 22), they reported using an average of 2.7 months.

FIGURE 3.30. AVERAGE NUMBER OF MONTHS OF OTHER ILLEGAL DRUG USE



Past-30-day Other Illegal Drug Use

The number of clients who reported using other illegal drugs in the 30 days before the intake and follow-up interviews decreased significantly by 72.5%, from 3.4% at intake to 0.9% at follow-up (see Figure 3.31).

"They provide all the tools necessary for good treatment.

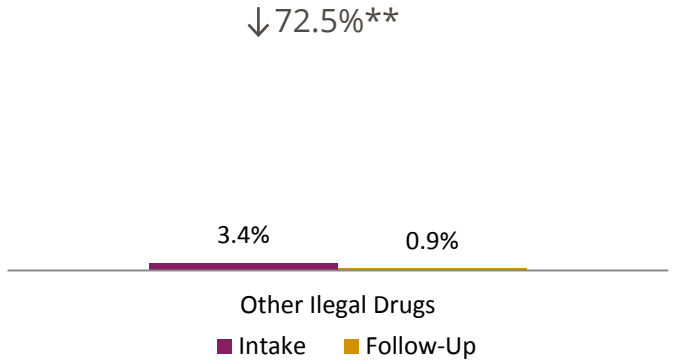
Whole process is very good."

-KTOS FOLLOW-UP CLIENT

[33] Two cases had missing data on 12-month use of other illegal drugs at follow-up.

[34] Because number of months of use of each class of substance was measured separately (e.g., hallucinogens, inhalants, synthetic drugs), the value is a calculation of the maximum number of months clients used any substance class.

FIGURE 3.31. PAST-30-DAY USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,175)[35]



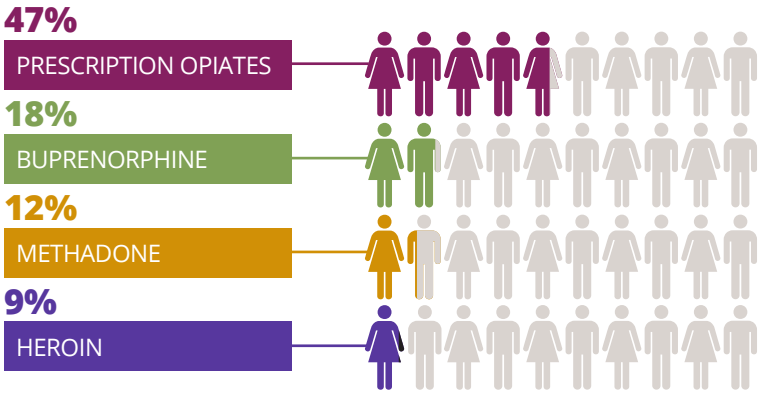
**p < .001

[35] Two cases had missing data on 30-day use of other illegal drugs at follow-up.

Trend Alert:
Heroin and Prescription Opiate Use

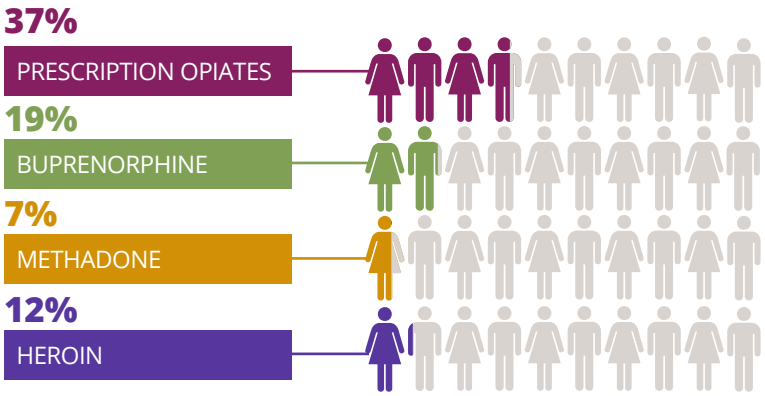
When looking at trends over time for all clients with completed intake surveys, the percentage of clients using prescription opiates was highest in FY 2012 and has steadily dropped. The percentage of clients who reported using non-prescribed methadone in the 12 months before entering treatment declined from FY 2012 to FY 2014. The percentage of clients who reported using buprenorphine remained stable from FY 2012 through FY 2014. The percentage of KTOS clients who reported using heroin increased from FY 2012 to FY 2014.

PERCENTAGE OF ALL CLIENTS WITH A COMPLETED INTAKE SURVEY REPORTING NON-PRESCRIBED USE OF PRESCRIPTION OPIATES, METHADONE, BUPRENORPHINE, AND HEROIN IN THE 12 MONTHS BEFORE ENTERING TREATMENT AT THE CMHC (N = 15,007)[36]



FY2012

FY2013



FY2014

[36] Clients who reported being in a controlled environment all 12 months before entering treatment are not included in this analysis.

Alcohol Use

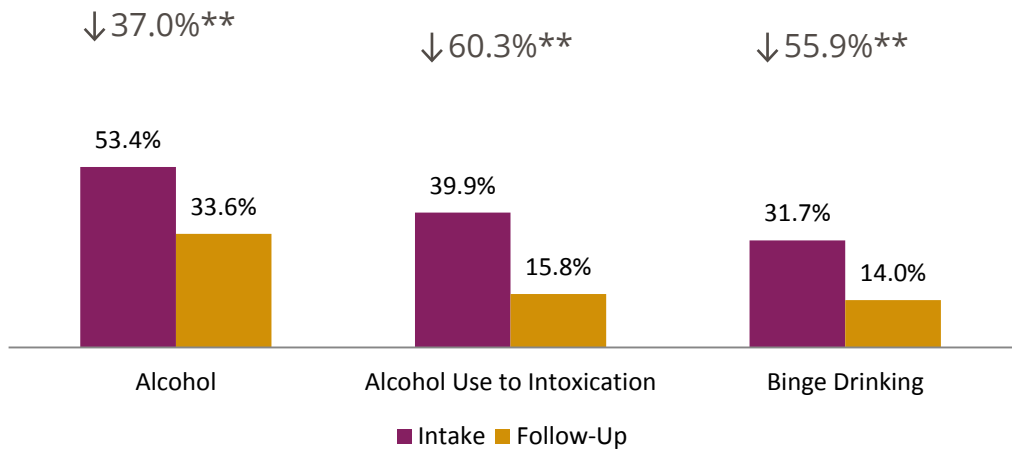
There were three measures of alcohol use including: (1) any alcohol use, (2) alcohol use to intoxication, and (3) binge drinking. Binge drinking was defined as having 5 or more (4 or more if client was female) alcoholic drinks in a period of about 2 hours.[37]

Past-12-month Alcohol Use

A little more than half of clients (53.4%) reported using alcohol in the 12 months before entering treatment while 33.6% of clients reported alcohol use in the 12 months before follow-up (see Figure 3.32). Overall, for the KTOS follow-up sample, there was a 37.0% decrease in the number of clients reporting alcohol use. Nearly two-fifths of clients (39.9%) reported using alcohol to intoxication at intake, with 15.8% reporting alcohol use to intoxication in the 12 months before follow-up—a significant decrease of 60.3%. Similarly there was a significant decrease of 55.9% in the number of clients who reported binge drinking from intake to follow-up (31.7% vs. 14.0%).[38]

The number of clients reporting **alcohol use decreased by 37%**

FIGURE 3.32. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,264)



**p < .001

Gender Differences in Past-12-month Alcohol Use

Significantly more men than women reported alcohol use at intake and at follow-up (see Figure 3.33). The number of men and women who reported alcohol use in the 12 months before follow-up was significantly decreased by 35.2% and 39.6% respectively. Significantly more men than women reported alcohol use to intoxication at intake. The number of men and women who reported alcohol use to intoxication in the 12 months before follow-up was significantly decreased

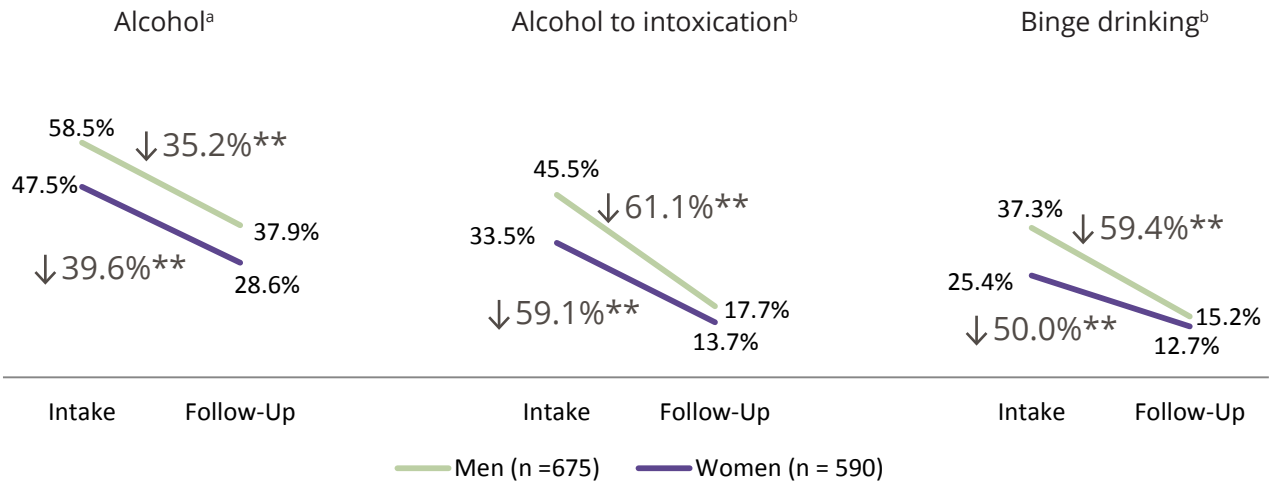
Significantly **more men** than women **reported using alcohol, alcohol to intoxication, and binge drinking** in the 12 months before entering treatment

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

[38] Missing data on alcohol use at follow-up for 2 cases and alcohol to intoxication and binge drinking at follow-up for 3 cases.

by 61.1% and 59.1% respectively. Significantly more men than women also reported binge drinking at intake. The number of men and women who reported binge drinking in the 12 months before follow-up was significantly decreased by 59.4% and 50.0% respectively.

FIGURE 3.33. GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE, ALCOHOL TO INTOXICATION, AND BINGE DRINKING AT INTAKE AND FOLLOW-UP

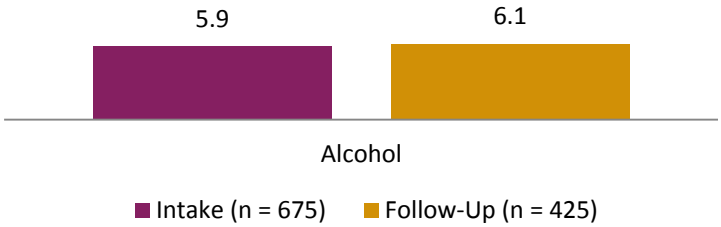


a—Significant difference by gender at intake ($p < .001$) and follow-up ($p < .01$).
b—Significant different by gender at intake ($p < .001$).
**$p < .001$

Average Number of Months Used Alcohol

Figure 3.34 shows the average 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 = 675), they reported using alcohol, on average, 5.9 months. Among clients who reported using alcohol in the 12 months before follow-up (n = 425), they reported using, on average, 6.1 months.

FIGURE 3.34. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE

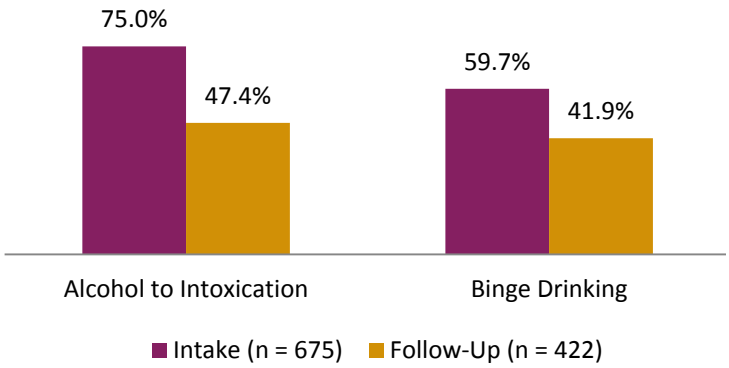


Past-12-month Alcohol Intoxication and Binge Drinking Among Those Who Used Alcohol

Of the clients who used alcohol in the 12 months before entering treatment (n = 675), 75.0% used alcohol to intoxication in the 12 months before intake (see Figure 3.35). Of the

clients who used alcohol in the 12 months before follow-up (n = 425)[39] , 47.4% of clients reported alcohol use to intoxication. Of the clients who used alcohol in the 12 months before intake, 59.7% reported binge drinking in the 12 months before intake. At follow-up, of those reporting alcohol use, 41.9% reported binge drinking.

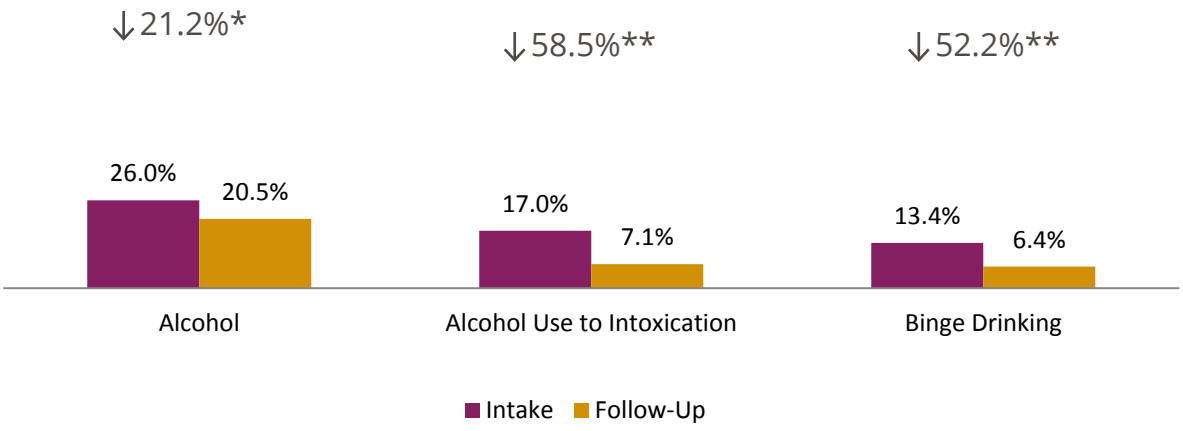
FIGURE 3.35. PAST-12-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Past-30-day Alcohol Use

There was a 21.2% decrease in the percentage of clients who reported using alcohol in the past 30 days from intake (26.0%) to follow-up (20.5%; see Figure 3.36). The decrease in the number of clients who reported using alcohol to intoxication was even greater at 58.5%. There was a similar significant decrease (52.2%) in the number of clients who reported binge drinking at follow-up compared to the 30 days before entering treatment.[40]

FIGURE 3.36. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,175)



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

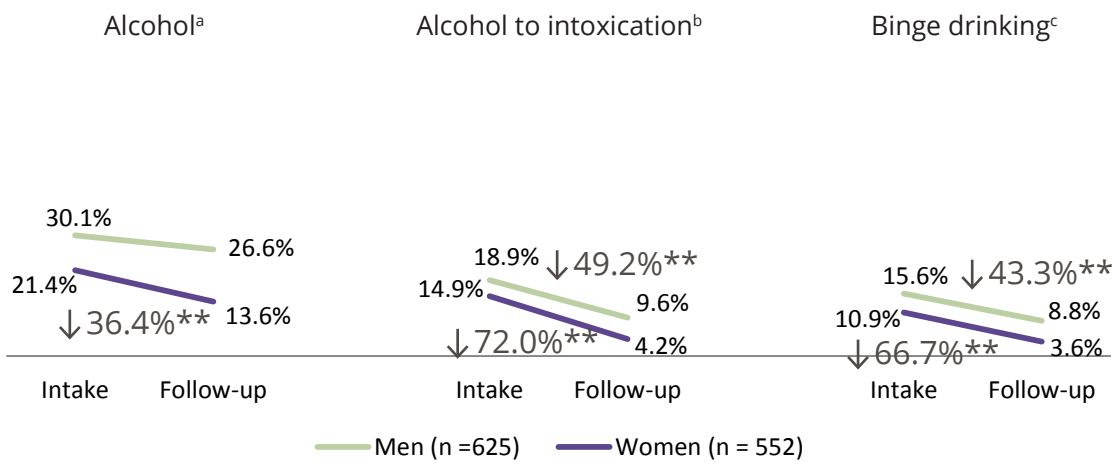
[39] Three individuals who reported alcohol use at follow-up had missing data on 12-month alcohol use to intoxication and binge drinking at follow-up.

[40] One case had missing data on 30-day alcohol use and two cases had missing data on 30-day alcohol use to intoxication and binge drinking at follow-up.

Gender Differences in Past-30-day Alcohol Use

Significantly more men than women reported alcohol use in the 30 days before intake and follow-up (see Figure 3.37). The number of women who reported past-30-day alcohol use decreased significantly by 36.4%. Additionally, significantly more men than women reported alcohol use to intoxication at follow-up. The number of men and women who reported alcohol use to intoxication decreased significantly by 49.2% and 72.0% respectively. Significantly more men than women reported binge drinking at intake and follow-up. The number of men and women who reported binge drinking decreased significantly by 43.3% and 66.7%, respectively.

FIGURE 3.37. GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE, ALCOHOL TO INTOXICATION, AND BINGE DRINKING AT INTAKE AND FOLLOW-UP[41]



a—Significant difference by gender at intake ($p < .01$) and follow-up ($p < .001$).
b—Significant difference by gender at follow-up, $p < .001$.
c—Significant difference by gender at intake ($p < .05$) and follow-up ($p < .001$).
**$p < .001$

Average Number of Days Used Alcohol

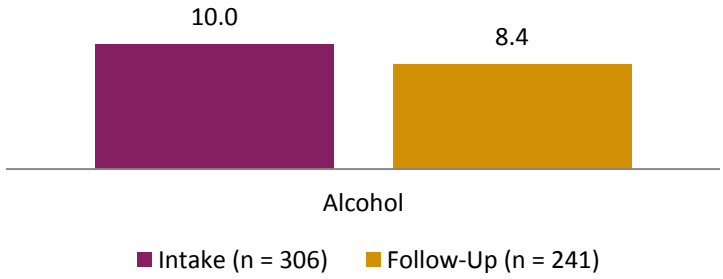
Figure 3.38 shows the average number of months alcohol users reported using alcohol at intake and follow-up. Among the clients who reported using alcohol in the 30 days before entering treatment (n = 306), they reported using alcohol, on average, 10.0 days. Among clients who reported using alcohol in the 30 days before follow-up (n = 241), they reported using, on average, 8.4 days.

"I got the best treatment when I was there, I love my counselors to death. Through them, my life has changed."

-KTOS FOLLOW-UP CLIENT

[41] One case was missing data on alcohol use and two cases were missing data on alcohol use to intoxication and binge drinking in the past 30 days at follow-up.

FIGURE 3.38. AVERAGE NUMBER OF DAYS OF ALCOHOL USE

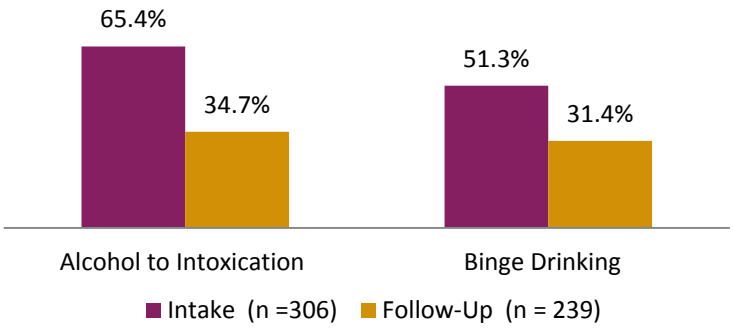


Past-30-day Alcohol Intoxication and Binge Drinking Among Those Who Used Alcohol

Of the 306 clients who used alcohol in the 30 days before intake, 65.4% used alcohol to intoxication and 51.3% binge drank in the 30 days before intake (see Figure 3.39).

Of the 239 clients who reported using alcohol in the 30 days before follow-up, 34.7% reported using alcohol to intoxication and 31.4% reported binge drinking in the 30 days before follow-up.

FIGURE 3.39. PAST-30-DAY ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Self-reported Severity of Alcohol and Drug Use

Another way to examine overall change in degree of severity of substance use is to use the Addiction Severity Index (ASI) composite score for alcohol and drug use. These composite scores are computed based on self-reported severity of past-30-day 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) problems (see sidebar).

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

ASI Alcohol and Drug Composite Scores and Substance Use Disorders

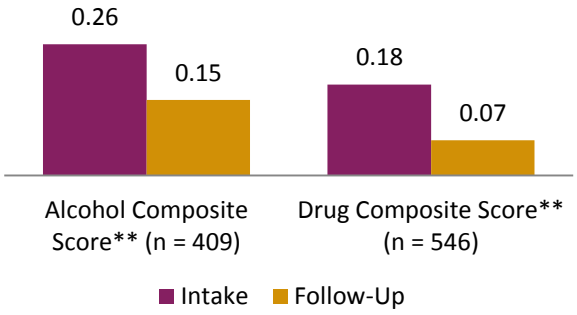
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI composite scores for alcohol and drug use and DSM-IV substance dependence diagnoses. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity with regard to identifying DSM-IV substance dependence diagnoses: .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 composite scores to estimate the number and percentage of clients who met a threshold for alcohol and drug dependence. However, recent changes in the diagnostics for substance abuse call into question the distinction between dependence and abuse. Thus, ASI composite scores that met the threshold can be considered indicative of severe substance use disorder to be compatible with current thinking about substance use disorders in the DSM-V, where we would have previously referred to them as meeting the threshold for dependence. Change from intake to follow-up in the severity rating as the same clinical relevance as moving from dependence to abuse in the older criteria.

Rikoon, S., Cacciola, J., Carise, D., Alterman, A., McLellan, A. (2006). Predicting DSM-IV dependence diagnoses from Addiction Severity Index composite scores. *Journal of Substance Abuse Treatment, 31*(1), 17–24.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.

Figure 3.40 displays the change in average composite scores.[42] The average for the alcohol composite score decreased significantly from 0.26 at intake to 0.15 at follow-up. The average for the drug composite score decreased significantly from 0.18 at intake to 0.07 at follow-up.

FIGURE 3.40. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP

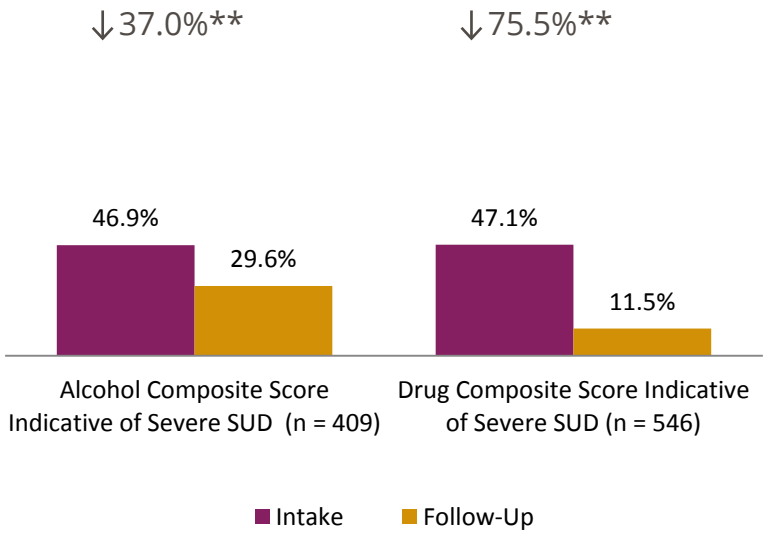


**p < .001

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 3.41). A little less than one half of individuals (46.9%) who reported any alcohol use in the 30 days before intake and/or follow-up had alcohol composite scores indicative of severe SUD at intake. At follow-up, this percentage had decreased to 29.6%. Similarly, a little less than one half of individuals who reported any alcohol use in the 30 days before intake and/or follow-up had drug composite scores indicative of severe SUD at intake. At follow-up, only about 1 in 10 had drug composite scores indicative of severe SUD.

[42] The following number of cases were not included in the analysis of change in alcohol composite score: 113 clients were in a controlled environment all 30 days before treatment; 3 additional individuals were in a controlled environment all 30 days before follow-up; 7 individuals had missing data for the number of days they were in a controlled environment before follow-up; an additional 752 clients reported abstaining from alcohol in the 30 days before intake and follow-up; and 6 individuals had missing data from items included in the calculation of the alcohol composite at follow-up. The following numbers were not included in the analysis of change in drug composite score: 113 clients were in a controlled environment all 30 days before treatment; 3 additional individuals were in a controlled environment all 30 days before follow-up; 7 individuals had missing data for the number of days they were in a controlled environment before follow-up; 596 clients reported abstaining from drugs in the 30 days before intake and follow-up, and 25 clients had missing data from items included in the calculation of the drug composite score at follow-up.

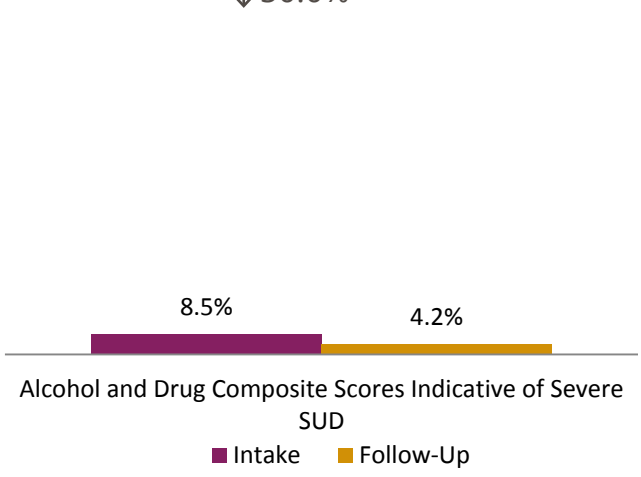
FIGURE 3.41. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



**p < .001

Among the individuals 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, a small minority of individuals had alcohol and drug composite scores that met the cutoff for severe SUD at intake and follow-up (see Figure 3.42). The percentage of clients who had composite scores that met the cutoff for severe SUD for both alcohol and drugs decreased by half at follow-up.

FIGURE 3.42. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR BOTH ALCOHOL AND DRUG SEVERE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 753)

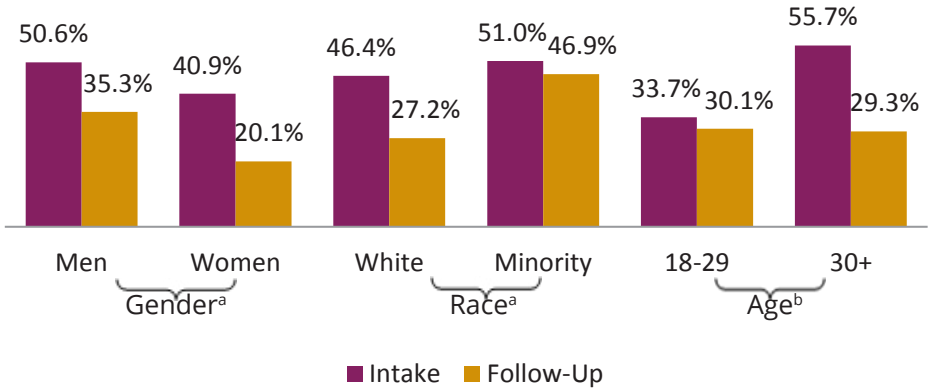


**p < .001.

The data were examined to determine whether clients who had alcohol composite scores indicative of severe SUD at intake and follow-up differed by gender, race/ethnicity, or age (see Figure 3.43). There were several statistically significant findings. First, significantly more men than women had alcohol composite scores indicative of severe SUD at follow-

up. Second, significantly more individuals of minority races had alcohol composite scores indicative of severe SUD at follow-up when compared to White individuals. Third, significantly more individuals who were 30 years old or older had alcohol composite scores indicative of severe SUD at intake than individuals who were younger than 30 years old.

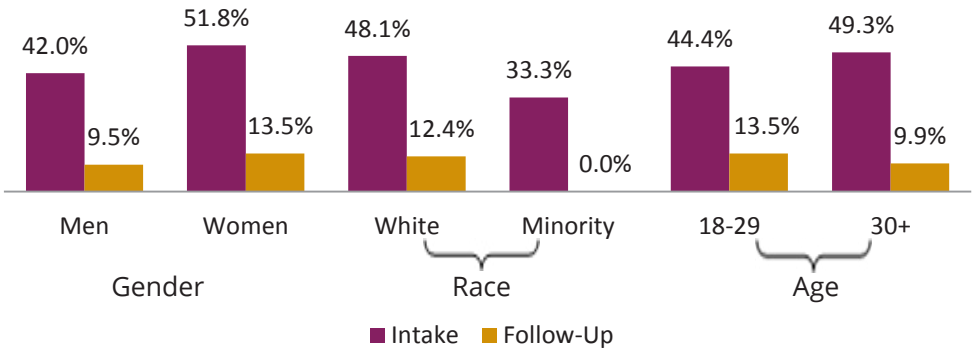
FIGURE 3.43. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 409)



a—Statistically significant difference at follow-up ($p < .01$).
b—Statistically significant difference at intake ($p < .001$).

Analyses were also conducted to determine if clients who had a drug composite score indicative of severe SUD at intake and follow-up differed by gender, race/ethnicity, or age (see Figure 3.44). At intake and follow-up, there were no differences in the percentage of individuals who had a drug composite score indicative of severe SUD by gender, race, or age

FIGURE 3.44. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 546)



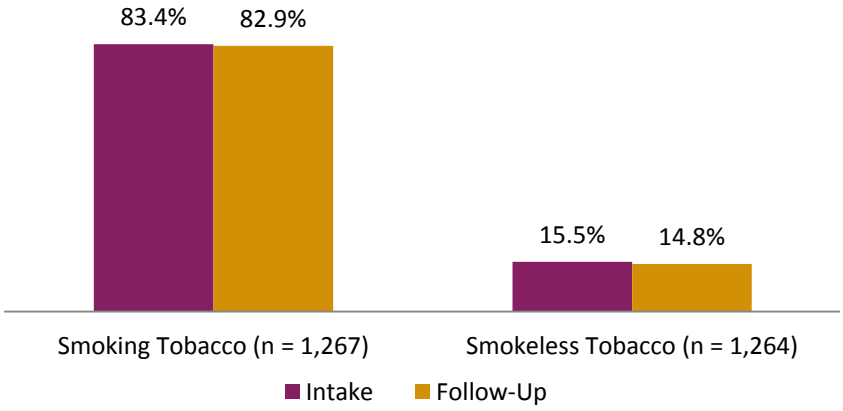
Tobacco Use

Past-12-month Smoking and Smokeless Tobacco Use

Overall, there was no change in smoking tobacco use from intake to follow-up (see Figure 3.45). Most clients reported smoking tobacco in the 12 months before entering treatment (83.4%) and in the 12 months before follow-up (82.9%). A minority of clients (15.5%) reported

using smokeless tobacco in the 12 months before entering treatment and in the 12 months before follow-up (14.8%).

FIGURE 3.45. CHANGE IN TOBACCO USE FROM INTAKE TO FOLLOW-UP

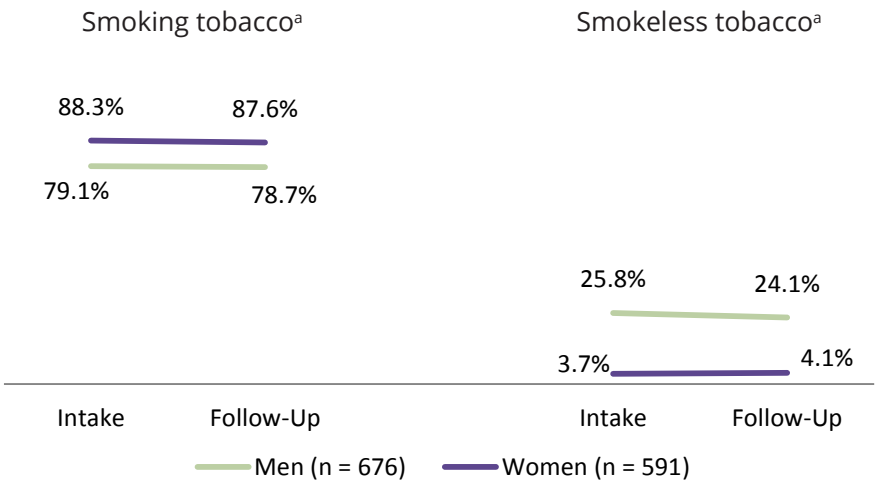


Gender Differences in Past-12-month Smoking and Smokeless Tobacco Use

Significantly more women than men reported smoking tobacco at intake and follow-up whereas significantly more men than women reported using smokeless tobacco at intake and follow-up (see Figure 3.46). The number of women and men who reported smoking tobacco or using smokeless tobacco in the past 12 months remained stable from intake to follow-up.

Significantly **more women** reported **smoking tobacco use at intake and follow-up** compared to men

FIGURE 3.46. GENDER DIFFERENCES IN SMOKING AND SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP[43]



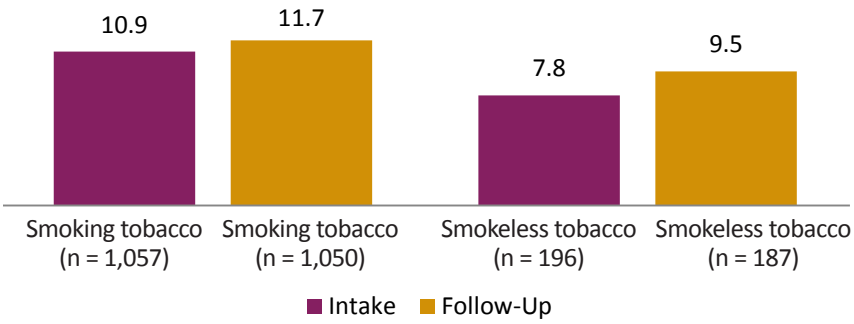
a—Significant difference by gender at intake and follow-up ($p < .001$).

[43] Three cases had missing data for smokeless tobacco at follow-up.

Average Number of Months of Smoking and Smokeless Tobacco Use

Figure 3.47 shows the average number of months clients who used smoking or smokeless tobacco reported using tobacco at intake and follow-up. Among the clients who reported using smoking tobacco in the 12 months before entering treatment (n = 1,057), they reported using tobacco, on average, 10.9 months. Among clients who reported using smoking tobacco in the 12 months before follow-up (n = 1,050), they reported using, on average, 11.7 months. Among the clients who reported using smokeless tobacco in the 12 months before entering treatment (n = 196), they reported using it, on average, 7.8 months. Among clients who reported using smokeless tobacco in the 12 months before follow-up (n = 187), they reported using it, on average, 9.5 months.

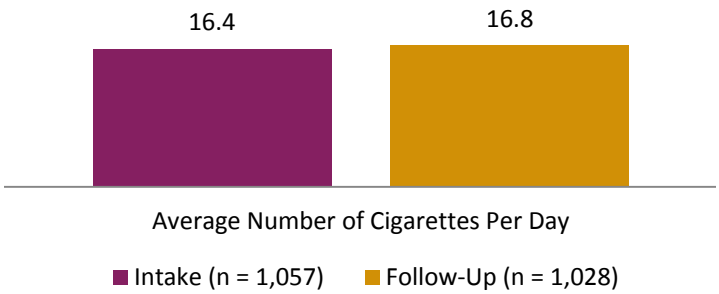
FIGURE 3.47. AVERAGE NUMBER OF MONTHS OF SMOKING AND SMOKELESS TOBACCO USE



Average Number of Cigarettes Smoked

The average number of cigarettes clients reported smoking at intake and follow-up remained stable (see Figure 3.48). Of those who smoked tobacco in the 12 months before entering treatment, clients reported smoking an average of 16.4 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they also reported smoking an average of 16.8 cigarettes per day.

FIGURE 3.48. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO[44]

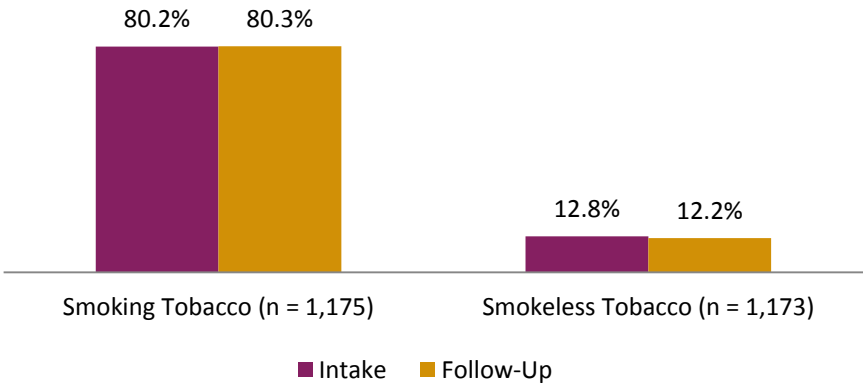


[44] 23 cases had missing data for number of cigarettes smoked at follow-up.

Past-30-day Smoking and Smokeless Tobacco Use

The number of clients who reported any past-30-day smoking or smokeless tobacco use did not change from intake to follow-up (see Figure 3.49).

FIGURE 3.49. SMOKING AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP[45]

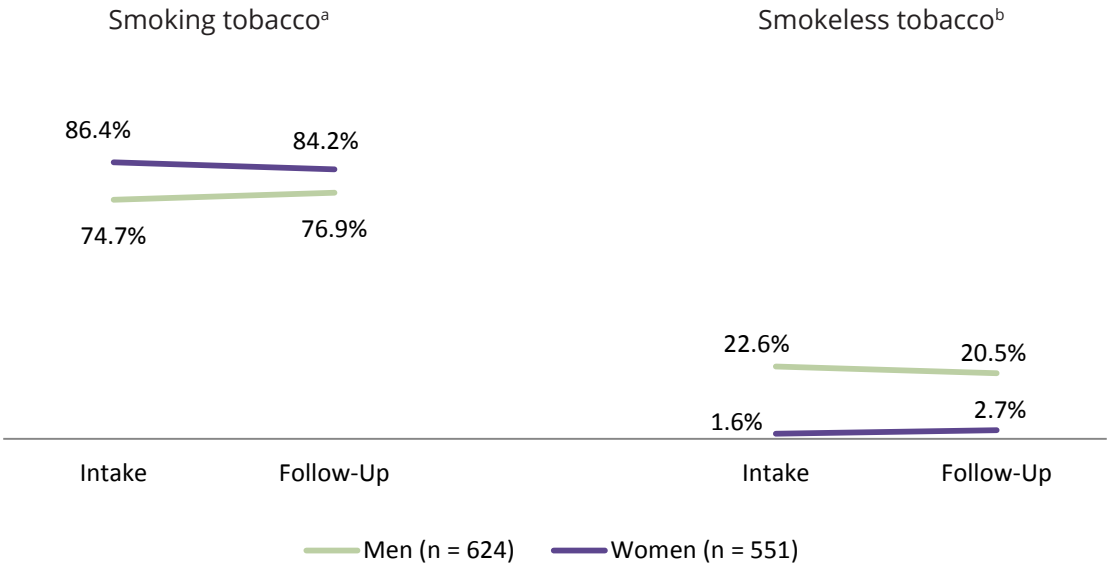


Gender Differences in Past-30-day Smoking and Smokeless Tobacco Use

Similar to the 12-month measure of smoking and smokeless tobacco, significantly more women than men reported smoking tobacco in the 30 days before intake and follow-up (see Figure 3.50). The number of men and women who reported smoking tobacco in the past 30 days remained stable from intake to follow-up. Significantly more men than women reported using smokeless tobacco in the 30 days before intake and follow-up.

Significantly **more women reported smoking tobacco at follow-up** compared to men

FIGURE 3.50. GENDER DIFFERENCES IN PAST-30-DAY SMOKING TOBACCO USE FROM INTAKE TO FOLLOW-UP



a—Significant difference by gender at intake ($p < .001$) and follow-up ($p < .01$).
b—Significant difference by gender at intake and follow-up ($p < .001$).

[45] Two cases had missing data for smoking tobacco and four cases had missing data for smokeless tobacco use in the 30 days before follow-up.

Section 4.

Mental Health, Physical Health, and Stress

This section examines changes in mental health and stress symptoms from intake to follow-up. Specifically, this subsection examines: (1) depression; (2) generalized anxiety; (3) comorbid depression and generalized anxiety; (4) suicide ideation and attempts; (5) perceptions of physical and mental health; and (6) stress-related health consequences. The mental health and physical health questions in the KTOS intake and follow-up surveys were self-report measures.

Depression Symptoms

To assess depression, participants were first asked two screening questions:

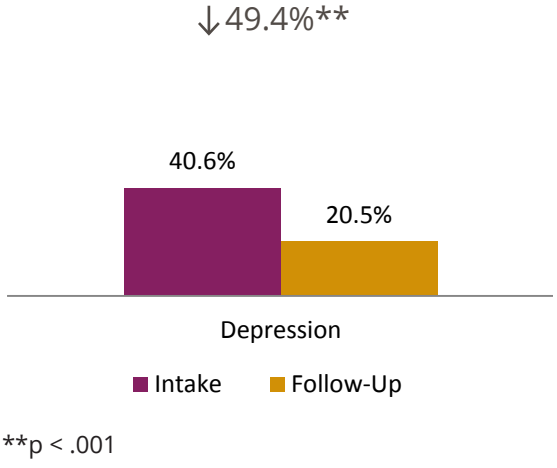
1. "Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?" and
2. "Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?"

If participants answered "yes" to at least one of these two screening questions, they were then asked seven additional questions about symptoms of depression (e.g., sleep problems, weight loss or gain, feelings of hopelessness or worthlessness). To meet study criteria for depression, clients had to say "yes" to at least one of the two screening questions and at least 4 of the other symptoms.

Four in 10 clients (40.6%) met criteria for depression in the 12 months before they entered treatment (see Figure 4.1). At follow-up, 20.5% met criteria for depression—a significant decrease of 49.4%.

The percentage of clients meeting criteria for **depression decreased significantly by 49%** from intake to follow-up

FIGURE 4.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 1,280)[46]



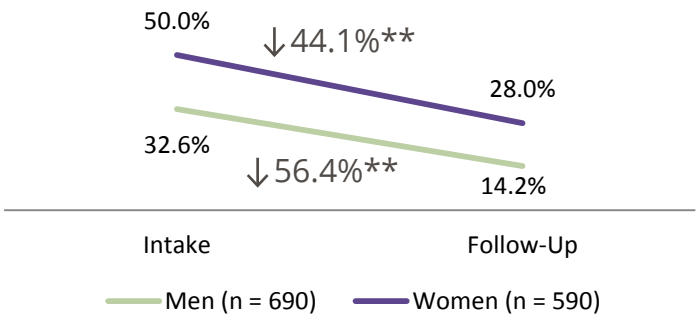
[46] Ten individuals had missing data for depression criteria at follow-up.

Gender Differences in Depression

Significantly more women met study criteria for depression at intake and follow-up compared to men. For example, at follow-up the percentage of women who reported depression was double the percentage of men who reported depression (see Figure 4.2). The number of women and men who met criteria for depression decreased significantly by 44.1% and 56.4%, respectively.

Significantly **more women met criteria for depression** at intake and follow-up compared to men

FIGURE 4.2. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION[a]



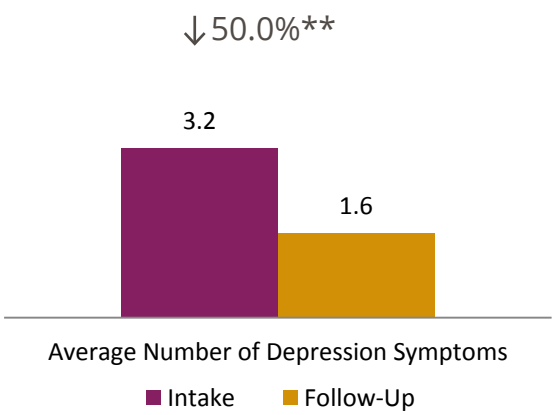
a—Statistical difference by gender at intake and follow-up; p < .001.
**p < .001.

Average Number of Depression Symptoms

At intake, clients reported an average of 3.2 depression symptoms and at follow-up, clients reported an average of 1.6 symptoms—a significant decrease of 50.0% (see Figure 4.3).

The average number of **depression symptoms decreased significantly by half**

FIGURE 4.3. AVERAGE NUMBER OF DEPRESSION SYMPTOMS AT INTAKE AND FOLLOW-UP (N = 1,276)[47]



**p < .001.

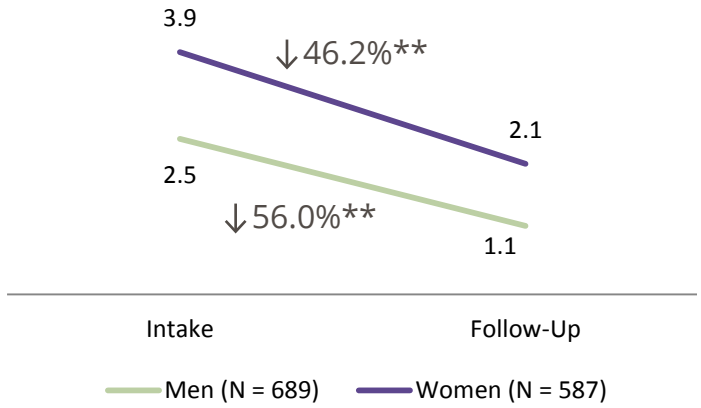
[47] Fourteen individuals had missing values for the number of depression symptoms at follow-up because they had missing values on at least one of the depression symptom items.

Gender Differences in the Average Number of Depression Symptoms

Women reported significantly more depression symptoms at intake and follow-up compared to men (see Figure 4.4). Women reported an average of 3.9 depression symptoms at intake and an average of 2.1 depression symptoms at follow-up – a significant decrease of 46.2%. At intake, men reported an average of 2.5 symptoms and at follow-up men reported an average of 1.1 symptoms—a significant decrease of 56.0%.

Women reported significantly **more depression symptoms at intake and follow-up** compared to men

FIGURE 4.4. GENDER DIFFERENCES IN THE AVERAGE NUMBER OF SYMPTOMS FOR DEPRESSION[a]



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

Anxiety Symptoms

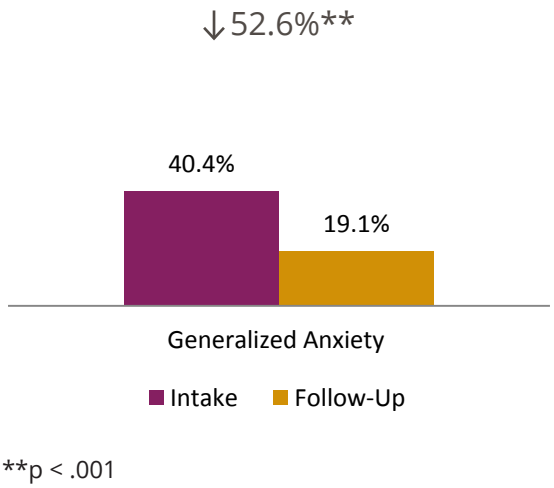
To assess for generalized anxiety symptoms, participants were first asked:
"In the 12 months before you entered this program, did you have a period lasting 6 months or longer where you worried excessively or were anxious about multiple things on more days than not (like family, health, finances, school, or work difficulties)?"

Participants who answered "yes" were then asked 6 additional questions about anxiety symptoms (e.g., felt restless, keyed up or on edge, have difficulty concentrating, feel irritable). To meet study criteria for generalized anxiety, clients had to answer "yes" to the screening question and to at least 3 of the symptom items.

In the 12 months before entering treatment, 2 in 5 clients reported symptoms that met study criteria for generalized anxiety. The percentage of clients who reported symptoms of generalized anxiety was half at follow-up (19.1%) what it was at intake (40.4%; see Figure 4.5).

The percentage of clients meeting criteria for **generalized anxiety was significantly lower at follow-up** compared to intake

FIGURE 4.5. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,281)[48]



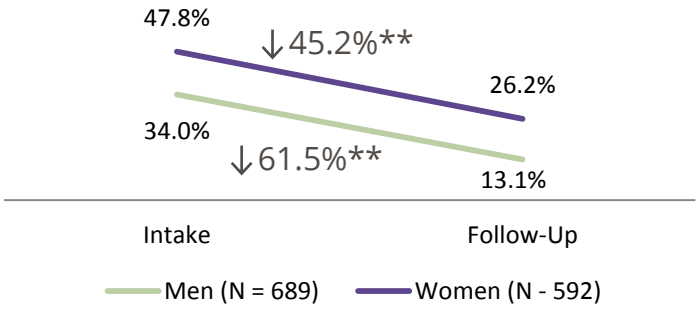
**p < .001

Gender Differences in Generalized Anxiety Symptoms

Significantly more women met criteria for generalized anxiety at intake and follow-up compared to men (see Figure 4.6). In fact, the percentage of women who reported generalized anxiety at follow-up was twice as high as the percentage of men who reported generalized anxiety. The number of women and men who met criteria for generalized anxiety decreased significantly from intake to follow-up.

Significantly **more women met criteria for generalized anxiety** at intake and follow-up compared to men

FIGURE 4.6. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY[a]



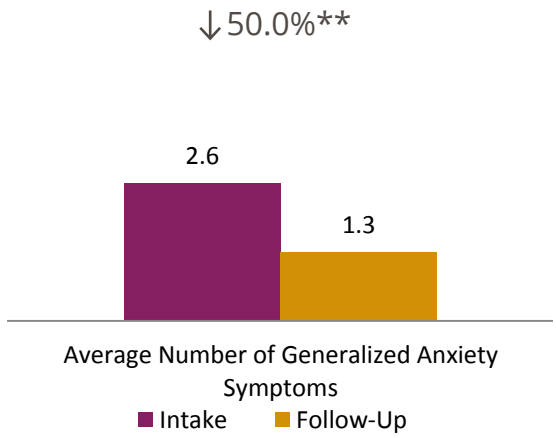
a—Statistical difference by gender at intake and follow-up; p < .001.
**p < .001.

Average Number of Generalized Anxiety Symptoms

The average number of generalized anxiety symptoms decreased significantly from intake to follow-up (see Figure 4.7).

[48] Missing data on generalized anxiety at follow-up for 9 cases.

FIGURE 4.7. AVERAGE NUMBER OF GENERALIZED ANXIETY SYMPTOMS AT INTAKE AND FOLLOW-UP (N = 1,280)[49]



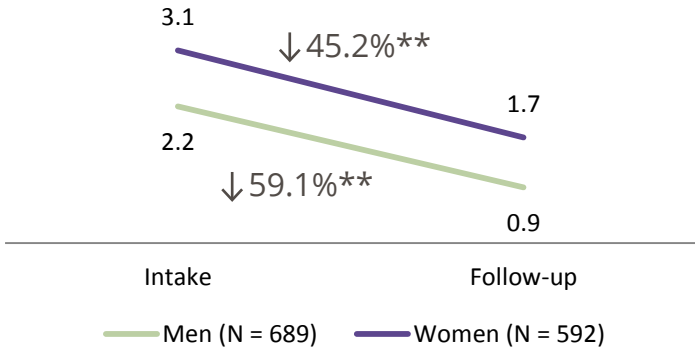
**p < .001

Gender Differences in the Average Number of Generalized Anxiety Symptoms

Compared to men, women reported more generalized anxiety symptoms at intake and follow-up (see Figure 4.8). Women reported an average of 3.1 generalized anxiety symptoms at intake and an average of 1.7 symptoms at follow-up. At intake, men reported an average of 2.2 generalized anxiety symptoms and at follow-up men reported an average of 0.9 symptoms.

Women reported significantly **more generalized anxiety symptoms at intake and follow-up** compared to men

FIGURE 4.8. GENDER DIFFERENCES IN THE AVERAGE NUMBER OF SYMPTOMS FOR GENERALIZED ANXIETY[a]



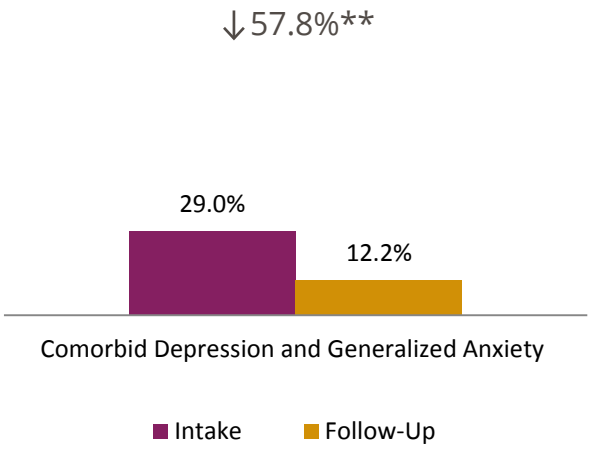
a—Statistical difference by gender at intake and follow-up; p < .001.
**p < .001

Comorbid Depression and Anxiety Symptoms

Figure 4.9 shows that at intake, over one-quarter (29.0%) met study criteria for both depression and generalized anxiety and there was a significant 57.8% decrease in the number of individuals who met study criteria for depression and generalized anxiety at follow-up (12.2%).

[49] Missing data for 10 cases on anxiety symptoms at follow-up.

FIGURE 4.9. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,278)[50]

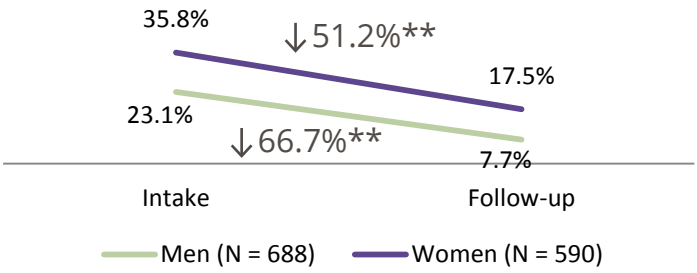


**p < .001.

Gender Differences in Comorbid Depression and Generalized Anxiety Symptoms

Significantly more women met criteria for comorbid depression and generalized anxiety at intake and follow-up compared to men (see Figure 4.10). The number of women and men who met criteria for depression and generalized anxiety decreased significantly by 51.2% and 66.7% respectively.

FIGURE 4.10. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP[a]



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

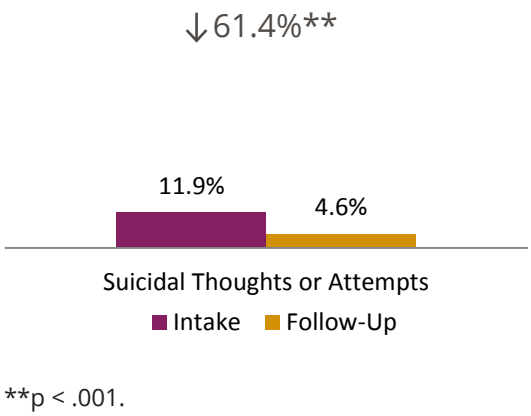
Suicidal Thoughts and/Or Attempts

The percentage of clients reporting **suicidal thoughts and/or attempts decreased 61%** at follow-up

Suicide ideation and attempts were measured with self-reported questions about thoughts of suicide and actual attempts to commit suicide. In the 12 months before entering treatment 11.9% of clients reported thoughts of suicide or attempted suicide and 4.6% of clients reported thoughts of suicide or attempted suicide in the 12 months before follow-up. There was a 61.4% decrease from intake to follow-up in the number of clients reporting suicidal thoughts and attempts (see Figure 4.11).

[50] Twelve cases had missing data for depression and/or generalized anxiety at follow-up.

FIGURE 4.11. CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 1,290)

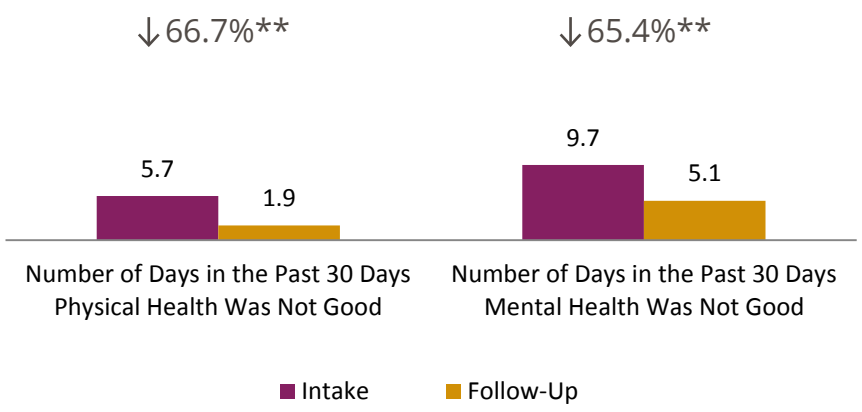


**p < .001.

Perceptions of Poor Physical and Mental Health

Clients were asked how many days in the past 30 days their physical and mental health were not good at intake and follow-up (see Figure 4.12). There was a significant decrease from intake to follow-up in the number of days clients reported their physical health was not good (5.7 vs. 1.9). The number of days clients' mental health was not good decreased significantly from 9.7 at intake to 5.1 at follow-up.

FIGURE 4.12. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,289)[51]



**p < .001.

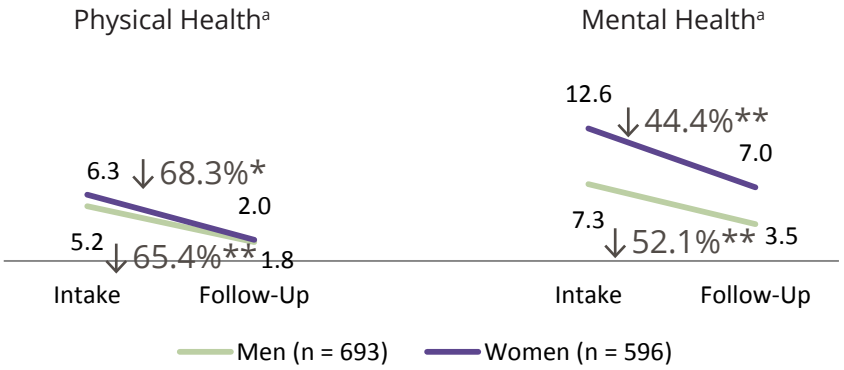
Gender Differences in Perceptions of Mental Health

Women's reported number of days *physical* health was not good was higher at intake and women's reported number of days *mental* health was not good was higher at intake and follow-up compared to men (see Figure 4.13).

> "Everyone you meet can relate to you.
>
> **People are caring and show interest in you personally."**
>
> -KTOS FOLLOW-UP CLIENT

[51] An interviewer skipped (in error) the item about perception of physical health for two clients at follow-up and one client had missing data for perception of mental health at follow-up.

FIGURE 4.13. GENDER DIFFERENCES IN NUMBER OF DAYS IN THE PAST 30 DAYS PHYSICAL AND MENTAL HEALTH WAS NOT GOOD

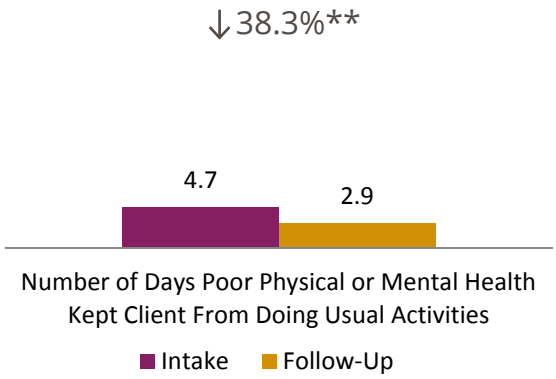


a—Statistical difference by gender at intake; p < .05.
b – Statistical different by gender at intake and follow-up; p < .001
* p < .01, **p < .001.

Perceptions of Poor Physical or Mental Health Limiting Activities

Clients were also asked to report the number of days in the past 30 days poor physical or mental health had kept them from doing their usual activities. The number of days clients reported their physical or mental health kept them from doing their usual activities decreased significantly by 38.3% from 4.7 days at intake to 2.9 days at follow-up (see Figure 4.14).

FIGURE 4.14. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,273)[52]



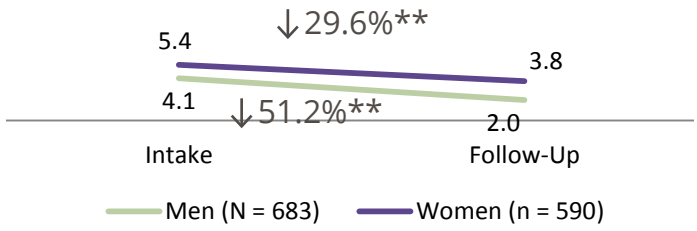
**p < .001.

Gender Differences in Perceptions of Physical or Mental Health

The average number of days clients indicated their poor physical or mental health had kept them from doing their usual activities was higher for women than for men at intake and follow-up (see Figure 4.15). The number of days poor physical or mental health limited activities decreased significantly by 51.2% for men and by 29.6% for women.

[52] An interviewer skipped (in error) the item about number of days physical or mental health limiting usual activities for 17 clients at follow-up.

FIGURE 4.15. GENDER DIFFERENCES IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEPT CLIENT FROM DOING USUAL ACTIVITIES[a]

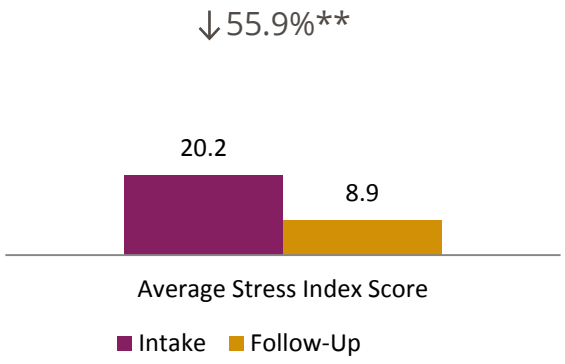


**p < .001.
a—Statistical difference by gender at intake (p < .01) and follow-up (p < .001).

Stress-related Health Consequences

Clients were also asked 15 items about physiological symptoms often associated with higher stress called the Stress-Related Health Consequences Scale.[53] The scale contains 15 symptoms; the client indicates how often they have experienced each symptom in the past 7 days (e.g., experienced unexplained aches and pains, slept poorly, experienced an increased heart rate). Higher scores on the scale indicate higher stress and greater physiological indicators of stress. The highest possible score is 75 and the lowest possible score is 0. For the overall sample, scores on the Stress-Related Health Consequences Scale decreased significantly from 20.2 at intake to 8.9 at follow-up, representing a decrease of 55.9% (see Figure 4.16).[54]

FIGURE 4.16. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP (N = 1,269)[a]



a—Significance tested with paired t-test;
**p < .001.

Gender Differences in Stress–related Health Consequences

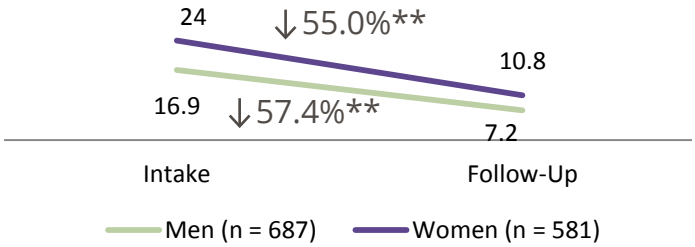
Figure 4.17 shows that women's scores on the Stress-Related Health Consequences Scale were significantly higher than men's scores at intake and follow-up. Nonetheless, both men's and women's scores decreased significantly from intake to follow-up.

At intake and follow-up, **women's Stress-related Health Consequences scores were significantly higher** than men's scores

[53] Measure created by Logan, T. and Walker, R. Stress-Related Health Consequences Scale.

[54] Twenty-one cases had missing values on the scale sum at follow-up.

FIGURE 4.17. GENDER DIFFERENCES IN AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE[a]



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

Section 5.

Education and Employment

This section examines changes in education and employment from intake to follow-up. Specifically, this subsection examines: (1) highest level of education completed; (2) current employment status; (3) the number of months clients were employed full-time or part-time; and (4) hourly wage, among employed individuals.

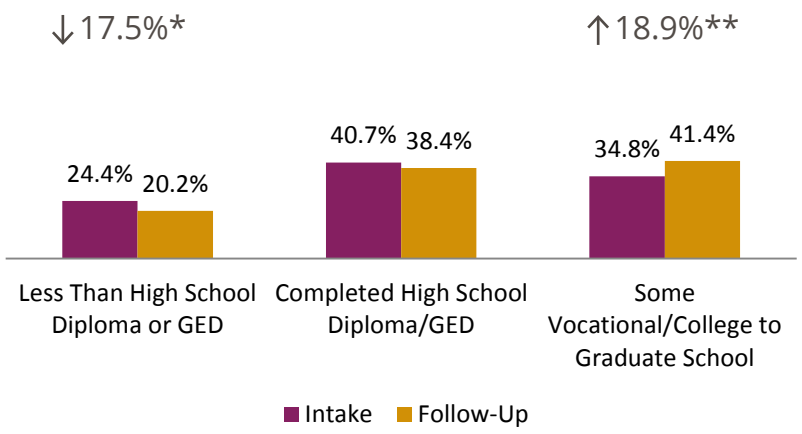
Education

Overall, the highest number of years of education completed increased significantly from 12.5 at intake to 12.8 at follow-up.

Another way to examine change in education was to group clients into one of three categories, based on their highest level of education completed: (1) less than a high school diploma or GED, (2) a high school diploma or GED, or (3) some vocational/college to graduate school (see Figure 5.1). At intake, 24.4% of the follow-up sample reported that they had less than a high school diploma or GED. At follow-up, 20.2% reported that they had completed less than a high school diploma or GED. At intake, 34.8% of the follow-up sample had attended vocational school or college, whereas at follow-up the percentage had increased significantly by 18.9% to 41.4%.

The number of clients with **some vocational school/college or higher level of education increased significantly** by 19%

FIGURE 5.1. HIGHEST LEVEL OF EDUCATION COMPLETED (N = 1,260)[55]



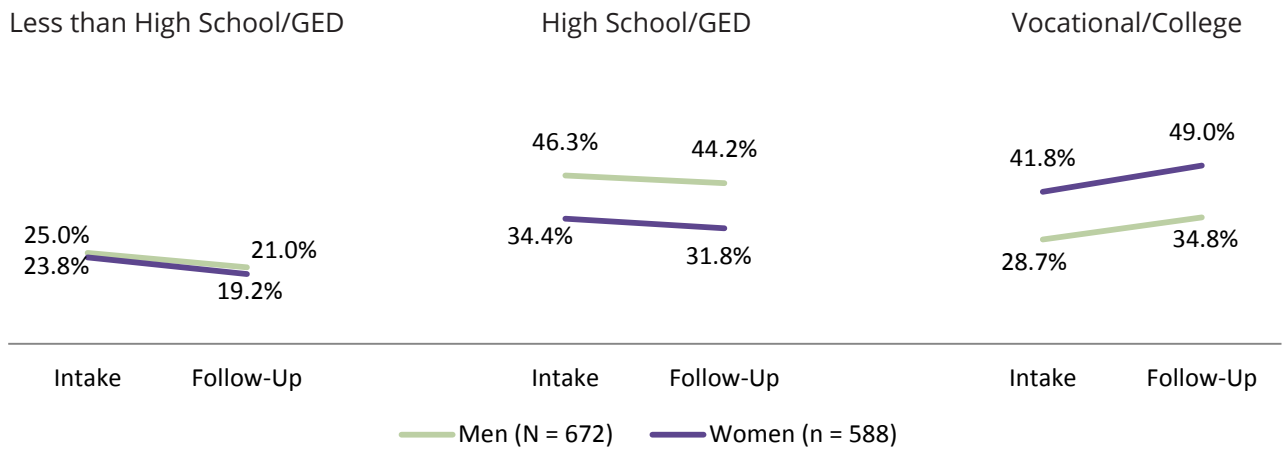
*p < .01, **p < .001.

Gender Differences in Highest Level of Education

Men and women reported significant differences in the highest level of education at intake and follow-up (see Figure 5.2). At intake and follow-up, a higher percentage of women had some vocational school or college education compared to men.

[55] Thirty cases were excluded because of inconsistencies in data on highest level of education at intake and follow-up.

FIGURE 5.2. GENDER DIFFERENCES IN THE HIGHEST LEVEL OF EDUCATION AT INTAKE AND FOLLOW-UP[a]



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

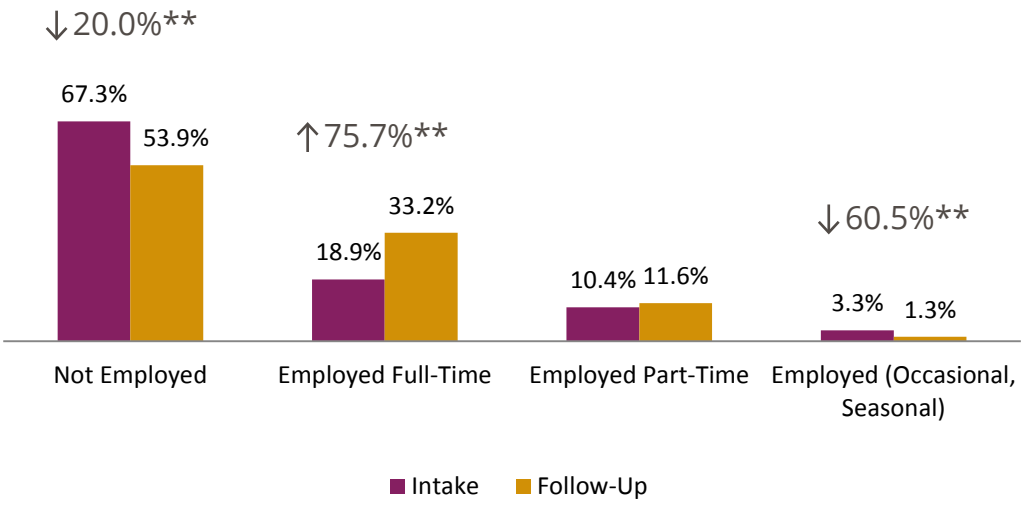
Employment

Current Employment Status

There were significant changes in current employment status from intake to follow-up (see Figure 5.3). About two thirds (67.3%) of clients reported they were not employed when they entered treatment, while just over half of clients (53.9%) reported they were unemployed at follow-up. This represents a 20.0% significant decrease in the number of clients who were currently unemployed. The number of clients who were employed full-time increased significantly by 75.7% from intake to follow-up (18.9% vs. 33.2%).

The number of clients who were **employed full-time increased by 76%** and the number of clients who were unemployed decreased by 20%

FIGURE 5.3. CHANGE IN CURRENT EMPLOYMENT STATUS (N = 1,283)[56]



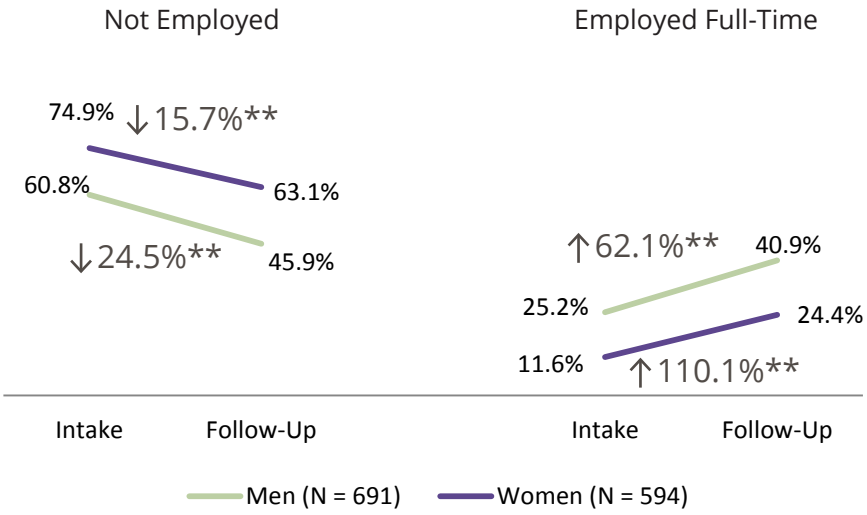
**p < .001.

[56] Five cases had missing data for current employment at follow-up.

Gender Differences in Current Employment Status

Significantly more women reported at intake and follow-up that they were currently unemployed compared to men: 74.9% vs. 60.8% at intake and 63.1% vs. 45.9% at follow-up. The number of clients who were currently unemployed decreased significantly for both women and men (see Figure 5.4). The number of men who reported they were employed full-time was twice as high as the number of women at intake (25.2% vs. 11.6%) and was 1.7 times as high at follow-up (40.9% vs. 24.4%). Both genders, however, had significant increases in full-time employment from intake to follow-up (110.1% for women and 62.1% for men).

FIGURE 5.4. GENDER DIFFERENCES IN EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP[a]



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

Average Number of Months Employed

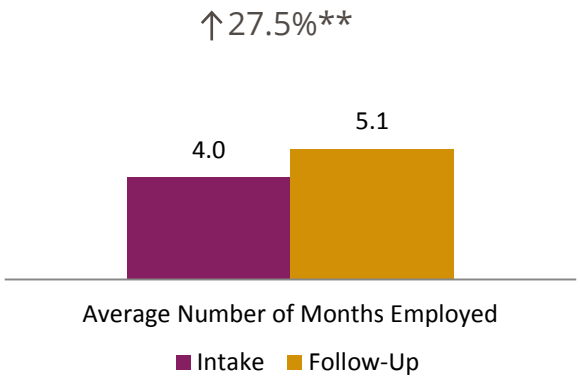
Clients were asked in the intake survey and follow-up survey to report the number of months they were employed full-time or part-time in the 12 months before they entered treatment (past 12 months at follow-up). As seen in Figure 5.5, clients reported working significantly more months at follow-up (5.1) than at intake (4.0).

Clients **reported working significantly more months at follow-up** than at intake

"I liked the people who worked there, they worked with me a lot to help fix my problems. I have been sober for 18 months."

-KTOS FOLLOW-UP CLIENT

FIGURE 5.5. AVERAGE NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP (N = 1,274)[57]

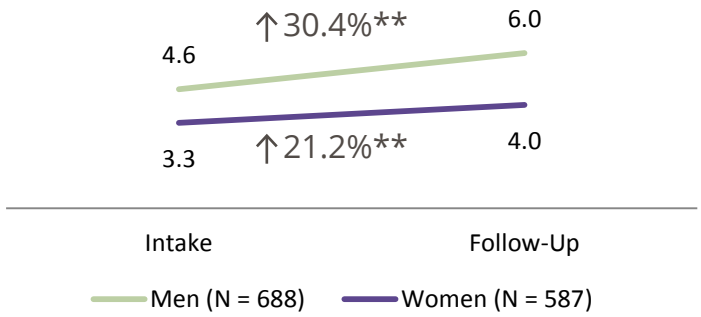


**p < .001.

Gender Differences in the Number of Months Employed

Men reported working significantly more months at both periods compared to women (intake, 4.6 vs. 3.3 and follow-up, 6.0 vs. 4.0). The number of months men were employed in the past 12 months increased significantly by 30.4% from intake to follow-up, and the number of months women were employed increased significantly by 21.2% (see Figure 5.6).

FIGURE 5.6. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP[a]



**p < .001.
a—Significant difference in number of months worked at intake and follow-up by gender; p < .001.

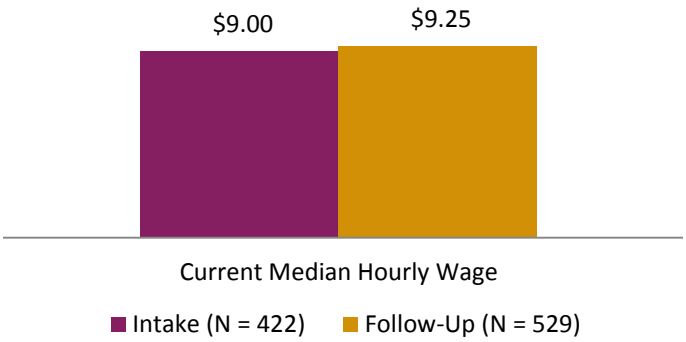
Hourly Wage

Of those clients who were employed at intake (n = 422), the median hourly wage was $9.00. Of those clients who were employed at follow-up (n = 593)[58], the median hourly wage was $9.25 (see Figure 5.7).

[57] Sixteen cases had missing data on the variable at follow-up.

[58] Of the 529 individuals who reported being employed full-time, part-time, or seasonally at intake, 64 individuals had missing data on hourly wage because they did not know the answer or they refused to answer.

FIGURE 5.7. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO WORKED



Gender Differences in Hourly Wage

Of those clients who were employed at each period, men had significantly higher hourly wages than women (see Figure 5.8). At intake, employed women made $0.79 for every dollar employed men made in this sample, while at follow-up, employed women made $0.80 for every dollar employed men made.

At follow-up, employed **women made only $0.80 for every $1 men made**

FIGURE 5.8 GENDER DIFFERENCES IN CURRENT HOURLY WAGE AT INTAKE AND FOLLOW-UP

a—Significant difference in hourly wage at intake and follow-up by gender, tested with Mann-Whitney U test; $p < .001$.

Gender Differences in Occupation Type

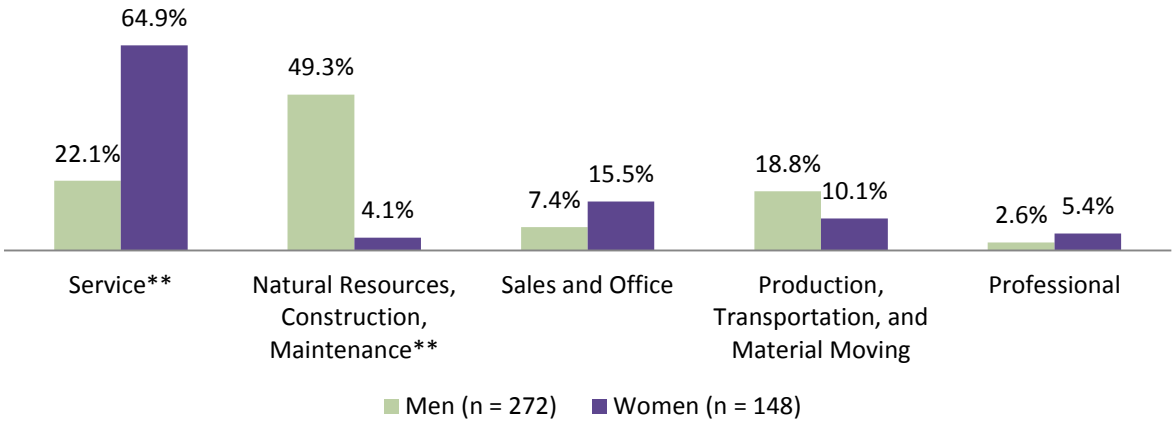
At least part of the reason for the marked difference in hourly wages between men and women is due to the significant difference in occupation type for employed individuals by gender.[59] At intake, the majority of employed women (64.9%) had a service sector job, whereas only 22.1% of employed men had a service sector job (see Figure 5.9a). In

At intake and follow-up, among employed individuals, **more women had service jobs and more men had natural resources, construction, and maintenance jobs, which are typically higher paying than service jobs**

[59] Occupation type was asked only of individuals who reported they were currently employed at intake and at follow-up.

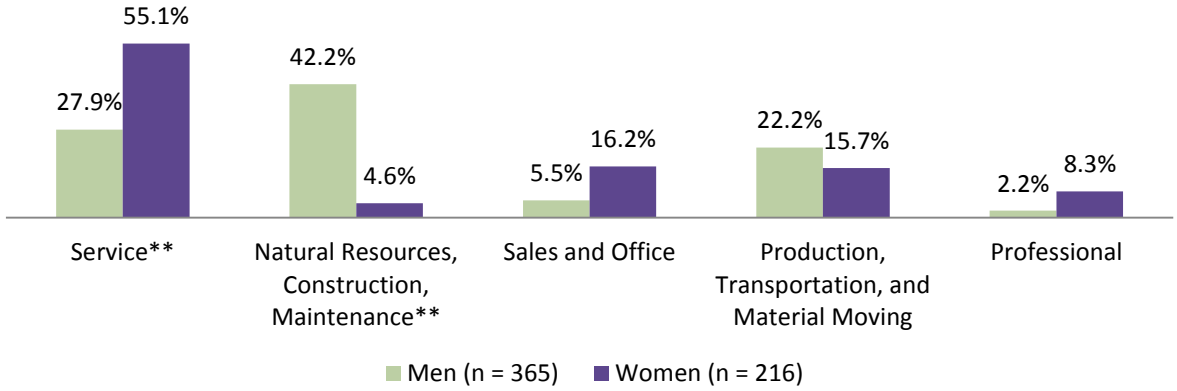
addition, about half of employed men (49.3%) reported having a job in the natural resources, construction, and maintenance sector, which has higher average wages than service sector jobs, when compared to women (4.1%). These patterns were also found at follow-up; over half of employed women (55.1%) had a service sector job, whereas only 27.9% of employed men had a service sector job (see Figure 5.9b).

FIGURE 5.9a. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT INTAKE (N = 420)



**p < .001

FIGURE 5.9b. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 581)



**p < .001

Section 6.

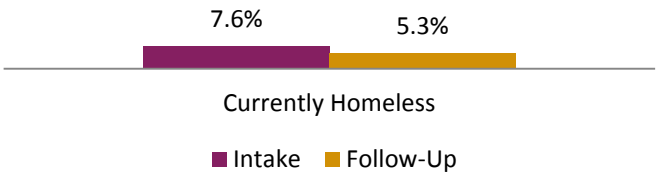
Living Situation

This section of target factors examines the clients' living situation at intake and follow-up. Specifically, clients are asked at both points: (1) if they consider themselves currently homeless; (2) in what type of situation they have lived in for most of the past 12 months (i.e., own home or someone else's home, residential program, shelter); and (3) difficulty meeting basic living and health care needs in the past 12 months.

Homelessness

About 1 in 13 clients (7.6%) reported at treatment intake they were currently homeless and at follow-up 5.3% of clients reported they were currently homeless – a non-significant decrease (see Figure 6.1).

FIGURE 6.1. CURRENT HOMELESSNESS AT INTAKE AND FOLLOW-UP (N=1,274)[60]



Living Situation

Change in usual living situation from intake to follow-up was examined for the KTOS follow-up sample (see Figure 6.2). At intake clients were asked about where they lived for the majority of the time in the 12 months before entering treatment and at follow-up clients were asked where they lived for the majority of the time in the 12 months before the follow-up interview.

The majority of clients reporting living in their own home or someone else's home for most of the past 12 months at intake and follow-up; nonetheless, there was a significant increase in the number of individuals who lived in a private residence at follow-up. A small percentage of clients reported their usual living situation was in a residential program, Recovery Center, or Sober Living home at intake and follow-up. There was a significant decrease in the minority of clients who reported their usual living situation in the past 12 months was in a jail or

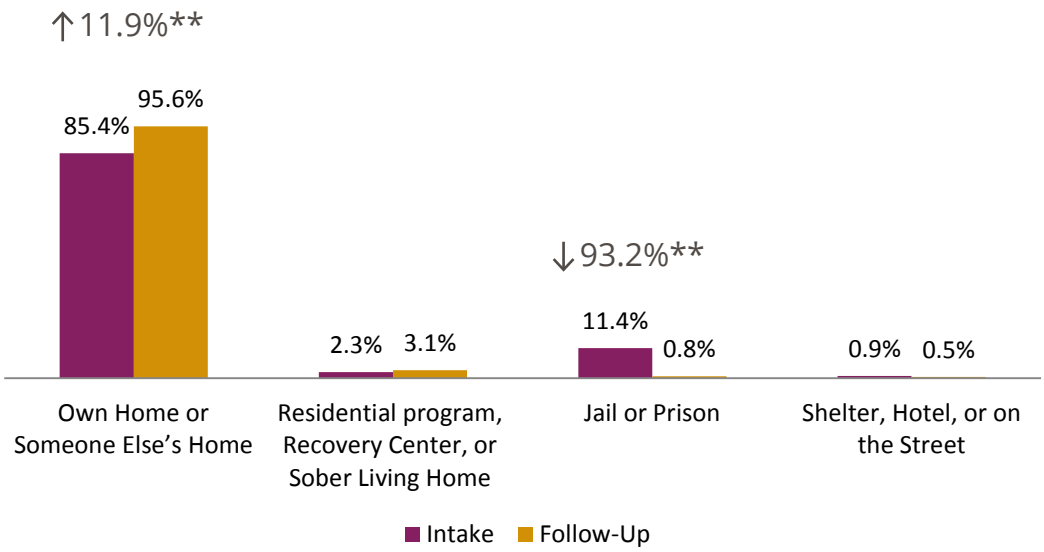
"I went to treatment before when I was a child and I hated it. Now as an adult, the program **taught me to live life on life's terms."**

-KTOS FOLLOW-UP CLIENT

[60] Sixteen cases had missing data for homelessness at follow-up.

prison: 11.4% vs. 0.8%. A very small percentage of clients reported living in a shelter or on the street at intake or follow-up.

FIGURE 6.2. USUAL LIVING SITUATION AT INTAKE AND FOLLOW-UP (N=1,286)[61]



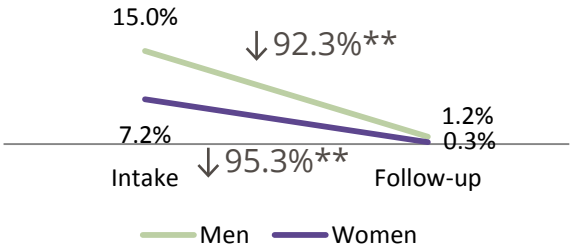
**p < .001.

Gender Differences in Living Situation

Significantly more men reported living in jail or prison in the 12 months before intake compared to women (see Figure 6.3). The number of men and women living in jail or prison decreased significantly (92.3% and 95.3% respectively).

At intake, **more men than women lived in jail or prison**

FIGURE 6.3 GENDER DIFFERENCES IN CLIENTS LIVING IN JAIL OR PRISON AT INTAKE AND FOLLOW-UP



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

Economic Hardship

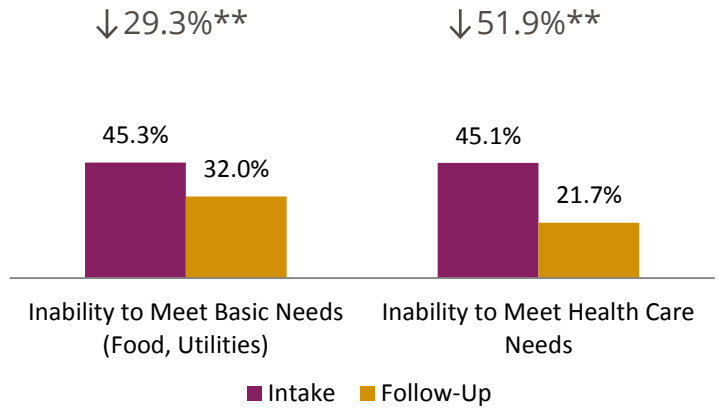
Economic hardship may be a better indicator of the actual day-to-day stressors clients face than a measure of income. Therefore, the intake and follow-up surveys included several

[61] Four cases had missing data for living situation at follow-up.

questions about clients' ability to meet expenses for basic needs and food insecurity.[62] Clients were asked eight items, five of which asked about inability to meet basic living needs such as food, shelter, utilities, and telephone, and three items asked about inability to receive medical care for financial reasons. The total number of basic needs individuals reported they had difficulty meeting were summed at intake and follow-up. Individuals reported significantly fewer needs they had difficulty meeting at follow-up (1.3) compared to intake (1.9).

Less than half of clients (45.3%) reported at intake that they had difficulty meeting basic needs such as food, shelter or utilities. Similarly, 45.1% reported their household had difficulty meeting health care needs in the 12 months before clients entered treatment. The number of individuals who reported having difficulty meeting basic needs and health care needs decreased significantly by 29.3% and 51.9%, respectively, from intake to follow-up (see Figure 6.4). Yet, at follow-up, nearly one-third of clients stated they had difficulty meeting basic living needs and about one-fifth stated they had difficulty meeting health care needs.

FIGURE 6.4. DIFFICULTY IN MEETING BASIC AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 1,286)[63]



**p < .001.

Gender Differences in Economic Hardship

There were significant gender differences in clients' inability to meet basic living needs and health care needs at intake and follow-up (see Figure 6.5). More specifically, compared to men, more women reported having difficulty meeting their basic living needs (e.g., housing, utilities, telephone, and food) at intake and follow-up. Over half of women (51.1%) reported difficulty meeting basic living needs at intake compared to 40.4% of men. There was a significant decrease in the number of women and men who reported having difficulty meeting basic living needs at follow-up.

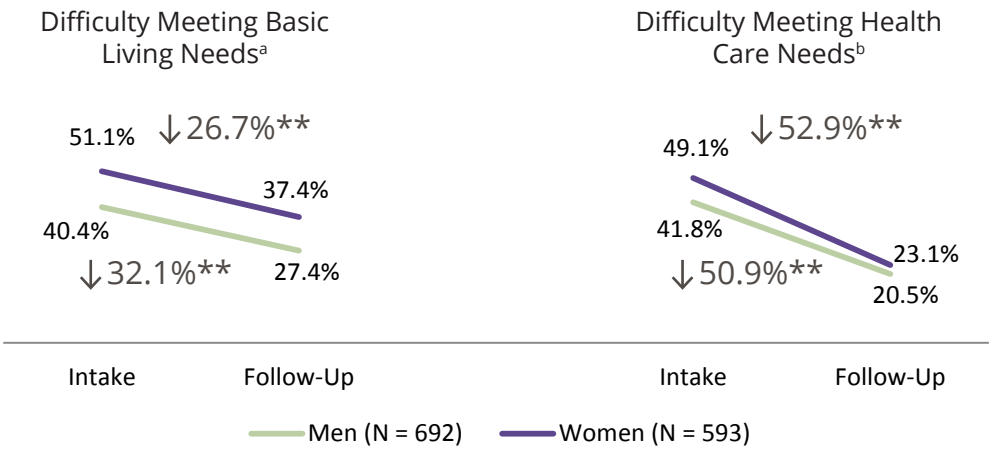
More women reported difficulty meeting basic living needs at intake and follow-up and more women reported difficulty meeting health care needs than men and intake

[62] She, P., & Livermore, G. (2007). Material hardship, poverty, and disability among working-age adults. *Social Science Quarterly, 88*(4), 970-989.

[63] Three cases had missing data on basic needs items and five cases had missing data on health care needs items.

About half of women (49.1%) reported difficulty meeting health care needs at intake compared to 41.8% of men; however, at follow-up, there was no difference by gender.[64] The number of women and men who reported difficulty meeting health care needs at follow-up was significantly lower than at intake.

FIGURE 6.5 GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 1,286)



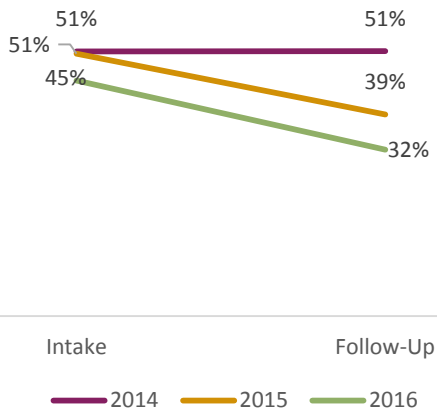
**p < .001.
a—Significant difference at intake and follow-up by gender; p < .001.
b – Significant difference at intake; p < .01

[64] There was missing data on items included in the computed variable, difficulty meeting health care needs, at follow-up.

Trend Alert:
Trends in Difficulty Meeting Basic Living Needs and Health Care Needs

The percentage of KTOS clients who have reported difficulty meeting basic living needs and health care needs at follow-up has decreased over time.

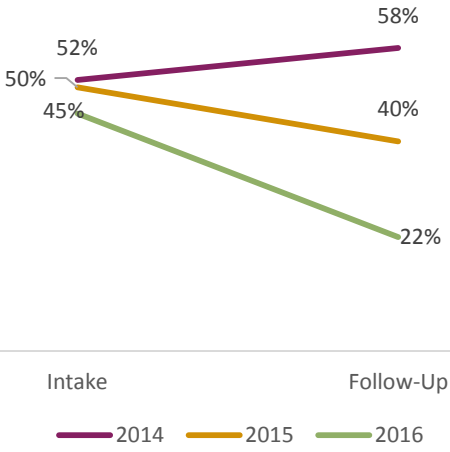
Basic Living Needs



The percentage of clients reporting difficulty meeting basic living needs decreased

from 51% in the KTOS 2014 report to 32% in the KTOS 2016 report

Health Care Needs



The decrease in the percentage of clients reporting difficulty meeting health care needs was even more dramatic

from 58% in the KTOS 2014 report to 22% in the KTOS 2016 report

The expansion of Medicaid in the state under the implementation of the Affordable Care Act corresponds to the follow-up period in the 2016 report.

The intake survey periods corresponding to the KTOS reports are: 2014 (July 1, 2011 – June 30, 2012), 2015 (July 1, 2012 – June 30, 2013), and 2016 (July 1, 2013 – June 30, 2014).
The follow-up survey periods corresponding to the KTOS reports are: 2014 (July 1, 2012 – June 30, 2013), 2015 (July 1, 2013 – June 30, 2014), and 2016 (July 1, 2014 – June 30, 2015).

Section 7.

Involvement in the **Criminal Justice System**

This section describes change in client involvement with the criminal 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) any incarceration; (4) the number of nights incarcerated; and (5) criminal justice supervision status.

Arrests

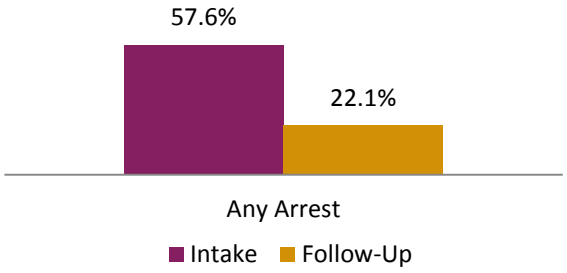
Arrested in the Past 12 Months

Clients were asked about their arrests in the 12 months before they entered treatment (at intake) and the past 12 months (at follow-up). Over half of clients (57.6%) reported an arrest in the 12 months before entering treatment (see Figure 7.1). At follow-up, this percentage had decreased significantly by 61.6% to 22.1%.

Percentage of **clients reporting any arrest significantly decreased 62%** at follow-up

FIGURE 7.1. CLIENTS REPORTING ARRESTS AT INTAKE AND FOLLOW-UP (N = 1,284)[65]

↓61.6%**



**p < .001.

Average Number of Arrests

Among those clients who reported being arrested in the 12 months before intake, the average number of times clients reported being arrested was 1.6 (see Figure 7.2). Among those clients who reported being arrested in the 12 months before follow-up, the average number of times arrested was also 1.6.[66]

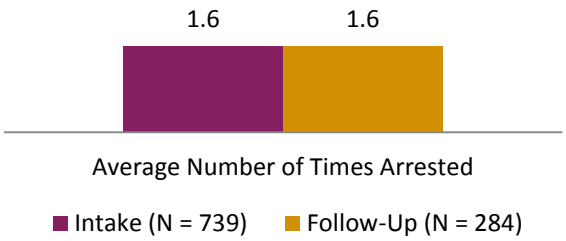
"There was stuff I didn't know about my addiction that I found and **has helped me lead a clean and sober life."**

-KTOS FOLLOW-UP CLIENT

[65] Six cases had missing data on arrests in the 12 months before follow-up.

[66] Six cases had missing data for number of arrests in the 12 months before follow-up.

FIGURE 7.2. AVERAGE NUMBER OF TIMES ARRESTED AT INTAKE AND FOLLOW-UP



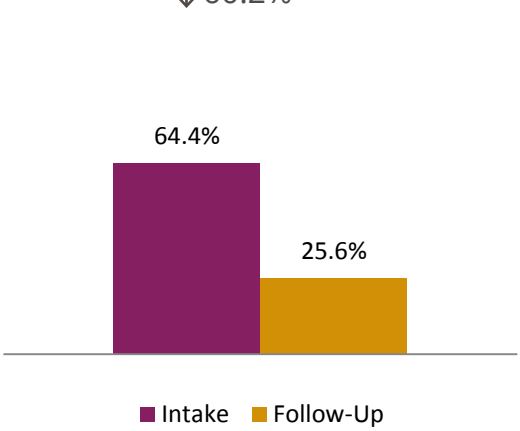
Incarceration

Incarcerated in the Past 12 Months

The majority of clients (64.4%) reported spending at least one day in jail or prison in the 12 months prior to entering treatment (See Figure 7.3). At follow-up, 25.6% of clients reported spending at least one day incarcerated in the past 12 months; a significant decrease of 60.2%.

The number of **clients who spent at least one day incarcerated decreased by 60%**

FIGURE 7.3. CLIENTS REPORTING BEING INCARCERATED AT INTAKE AND FOLLOW-UP (N = 1,288)[67]



**p < .001.

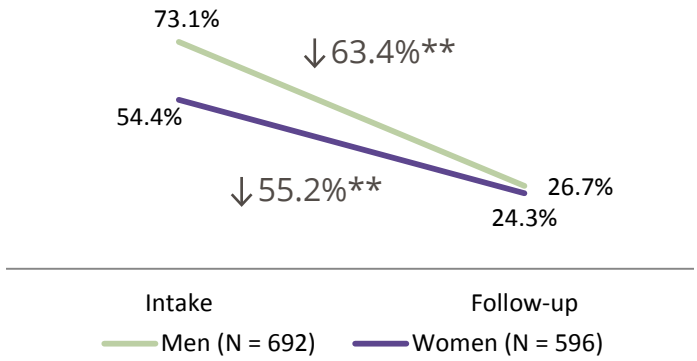
Gender Differences in Being Incarcerated

Significantly more men than women reported being incarcerated in the 12 months before entering treatment; however, at follow-up, there was no difference between men and women in the percentage reporting incarceration in the past 12 months (see Figure 7.4). The number of men and women who reported being incarcerated decreased significantly from intake to follow-up.

Significantly **more men** than women **reported being incarcerated before intake**

[67] Two cases had missing data for incarceration at follow-up.

FIGURE 7.4. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS REPORTING INCARCERATION (N = 1,288)[a]

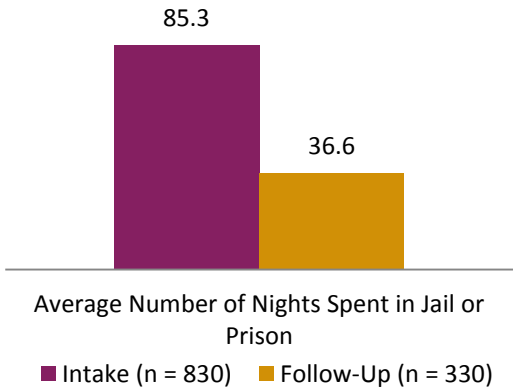


**p < .001.
a— Significant difference by gender at intake (p < .001).

Average Number of Nights Spent Incarcerated

Among individuals who reported being incarcerated in the 12 months before intake, the average number of nights incarcerated was 85.3 (see Figure 7.5). Among individuals who reported being incarcerated in the 12 months before follow-up, the average number of nights incarcerated was 36.6.

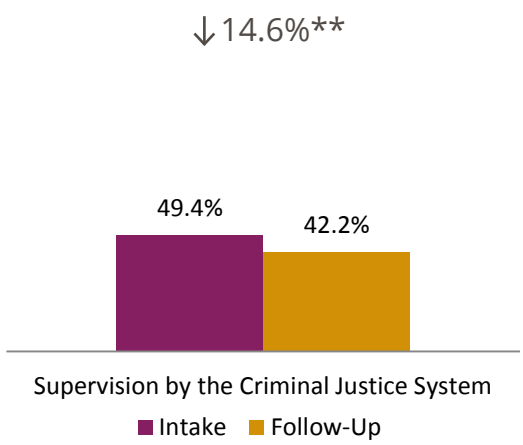
FIGURE 7.5. AMONG INDIVIDUALS WHO WERE INCARCERATED, AVERAGE NUMBER OF NIGHTS INCARCERATED AT EACH PERIOD



Criminal Justice System Supervision

The number of clients that self-reported they were under criminal justice system supervision (e.g., drug court, probation, or parole) decreased significantly from intake to follow-up (See Figure 7.6).

FIGURE 7.6. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 1,289)[68]



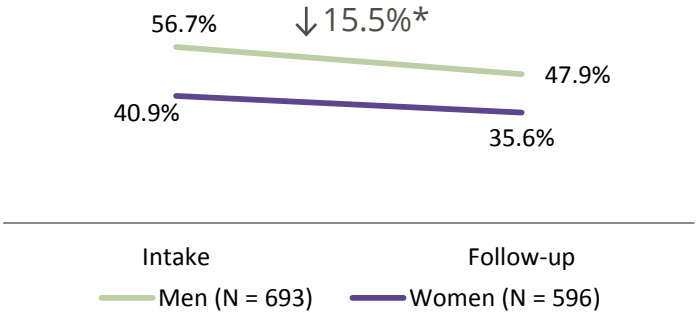
**p < .001.

Gender Differences in Criminal Justice Supervision

Significantly more men than women reported being under supervision by the criminal justice system in the 12 months before entering treatment and the 12 months before follow-up (see Figure 7.7). The number of men who reported being under supervision decreased significantly from intake to follow-up.

Significantly **more men** than women **reported being under criminal justice system supervision** before intake and follow-up

FIGURE 7.7. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS REPORTING CRIMINAL JUSTICE SUPERVISION (N = 1,289)[a]



*p < .01.
a— Significant difference by gender at intake and follow-up (p < .001).

[68] One case had missing data on criminal justice system supervision at follow-up.

Section 8.

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 Meeting Attendance

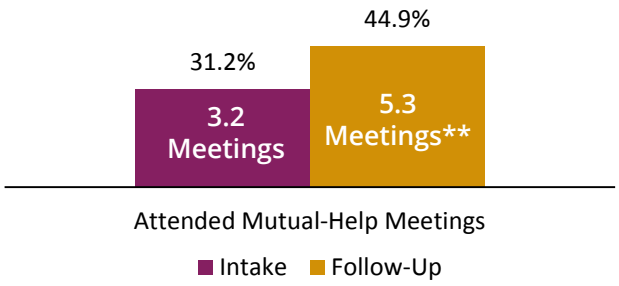
At intake, only 31.2% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (See Figure 8.1). At follow-up, there was a significant increase of 44.0%, with 44.9% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days.

The number of meetings attended increased significantly from 3.2 at intake to 5.3 at follow-up; a 65.6% increase for the overall sample.

There was a **44% increase in the percentage of clients reporting attending mutual help recovery groups**

FIGURE 8.1. MUTUAL HEALTH RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N=1,290)

↑44.0%**



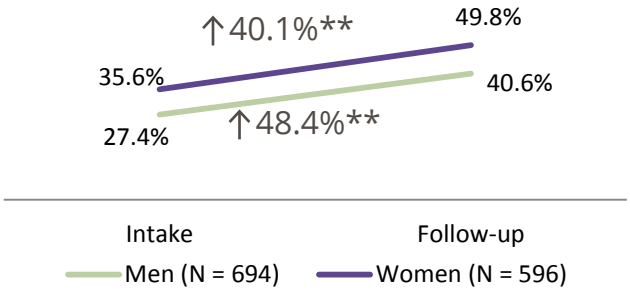
**p < .001.

Gender Differences in Mutual Help Recovery Group Meeting Attendance

Significantly more women than men reported attending mutual help recovery groups in the 12 months before entering treatment and the 12 months before follow-up (see Figure 8.2). The number of women and men who reported attending mutual help recovery meetings increased significantly from intake to follow-up (40.1% and 48.4% respectively).

Significantly **more women than men reported attending mutual help meetings** before intake and follow-up

FIGURE 8.2. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS ATTENDING MUTUAL HELP MEETINGS (N = 1,290)[a]



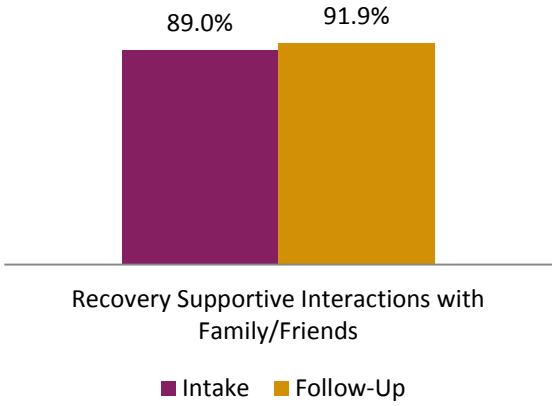
**p < .001.
a— Significant difference by gender at intake and follow-up (p < .01).

Recovery Supportive Interactions

Recovery Supportive Interactions with Family/Friends

The majority of clients 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 8.3). The change in the number of clients who reported having recovery supportive interactions with family or friends from intake to follow-up was not significant.

FIGURE 8.3. RECOVERY SUPPORTIVE INTERACTIONS WITH FAMILY/FRIENDS IN THE PAST 30 DAYS (N=1,287)[69]



Average Number of People Client Could Count on for Recovery Support

The average number of people clients reported that they could count on for recovery support increased significantly by 59.0%, from 8.3 people at intake to 13.2 people at follow-up (see Figure 8.4).

"They helped make sure I was still getting treatment.

They followed up with me."

-KTOS FOLLOW-UP CLIENT

[69] Data on recovery supportive interactions was missing at follow-up for 3 cases.

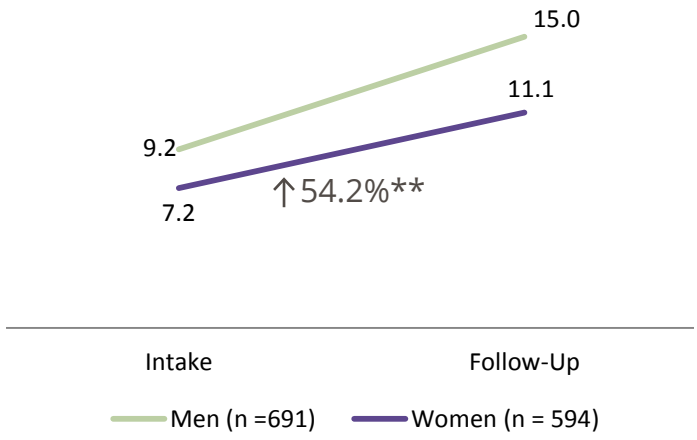
FIGURE 8.4. AVERAGE NUMBER OF PEOPLE CLIENTS COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 1,285)[70]

**p < .001.

Gender Differences in Number of People Client Could Count on for Recovery Support

At intake, men had a higher average number of people they could count on for recovery support when compared to women (see Figure 8.5). However, at follow-up, there was no significant difference between men and women in the number of persons clients could count on for recovery support. The average number of people clients could count on for recovery support increased significantly for both women and men.

FIGURE 8.5. GENDER DIFFERENCES IN NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP[a]



**p < .001.

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

[70] Data on the number of people the client could count on for recovery support at follow-up was missing for 5 cases.

Section 9.

Clinical Diagnostic and Service Information

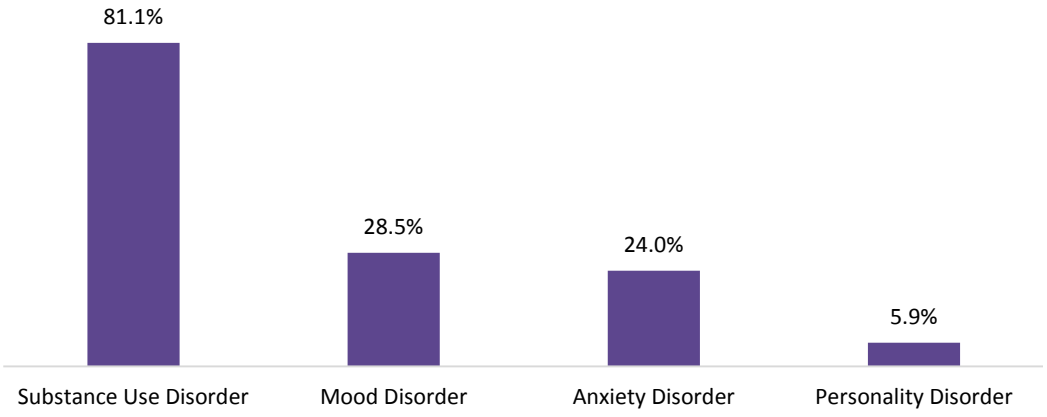
This section examines mental health diagnosis and service event data submitted by community mental health center (CMHC) providers to the Department for Behavioral Health, Developmental and Intellectual Disabilities.

Diagnosis

Information on mental health diagnosis codes and service event data for clients receiving treatment at community mental health centers is submitted to DBHDID and is managed by the University of Kentucky Institute for Pharmaceutical Outcomes and Policy (IPOP). Service event data was matched with KTOS survey data for the follow-up sample, using encrypted social security numbers, for the period between the date of submission of the intake survey and the completion of the follow-up survey. A match was not found in the IPOP data set for 285 cases.[71]

Figure 9.1 shows the percentage of clients with a diagnosis for various types of mental health disorders. Diagnosis codes were entered for 1,006 clients. Classes of diagnoses found in fewer than 5% of clients are not included in the figure. The vast majority of clients had a diagnosis of a substance use disorder (e.g., alcohol and/or drug abuse or dependence). The next most frequently noted type of diagnosis was for mood disorders (28.5%; e.g., depression or non-psychotic bipolar disorder). A little less than 1 in 4 had an anxiety disorder diagnosis (e.g., generalized anxiety disorder, panic disorder, or obsessive-compulsive disorder). About 6% had a diagnosis for a personality disorder.

FIGURE 9.1. DSM-IV DIAGNOSES FOR CLIENTS IN SUBSTANCE ABUSE TREATMENT BETWEEN JULY 1, 2013 AND JUNE 30, 2014 (N = 1,006)



Of the 1,291 clients in the KTOS follow-up sample, 22.2% (including the 285 that had no match to the IPOP data) had no services in the clinical service event data set for the period of from the date the intake survey was completed to the date the follow-up survey was

[71] Reasons that matches are not found include errors in entering SSN or no entry of services or diagnoses for the period requested: date the intake survey was completed through the date the follow-up survey was completed.

completed.[72] Among the clients with a match in the service event data (n = 1,006) the types of services that were most commonly provided are shown in Figure 9.2. The majority of KTOS clients (65.8%) received individual therapy, and about one half (49.6%) received evaluation or diagnostic services. A little more than 2 in 5 received group therapy and about 1 in 5 received substance abuse residential services. Smaller minorities received substance abuse-related case management, intensive outpatient, psychiatric individual therapy, and case management services.[73]

FIGURE 9.2. PERCENTAGE OF CLIENTS RECEIVING EACH TYPE OF SERVICE OF THOSE WITH ANY SERVICES INCLUDED IN THE DATA (N = 1,006)

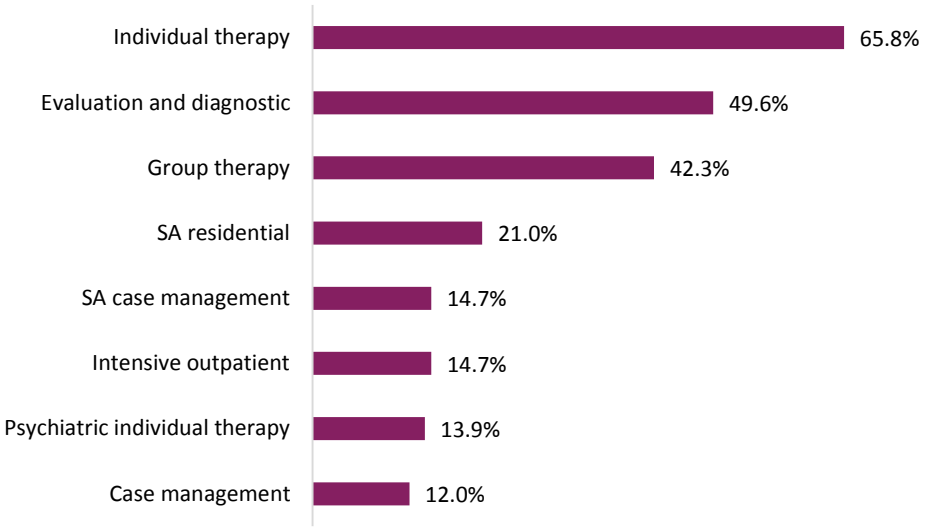
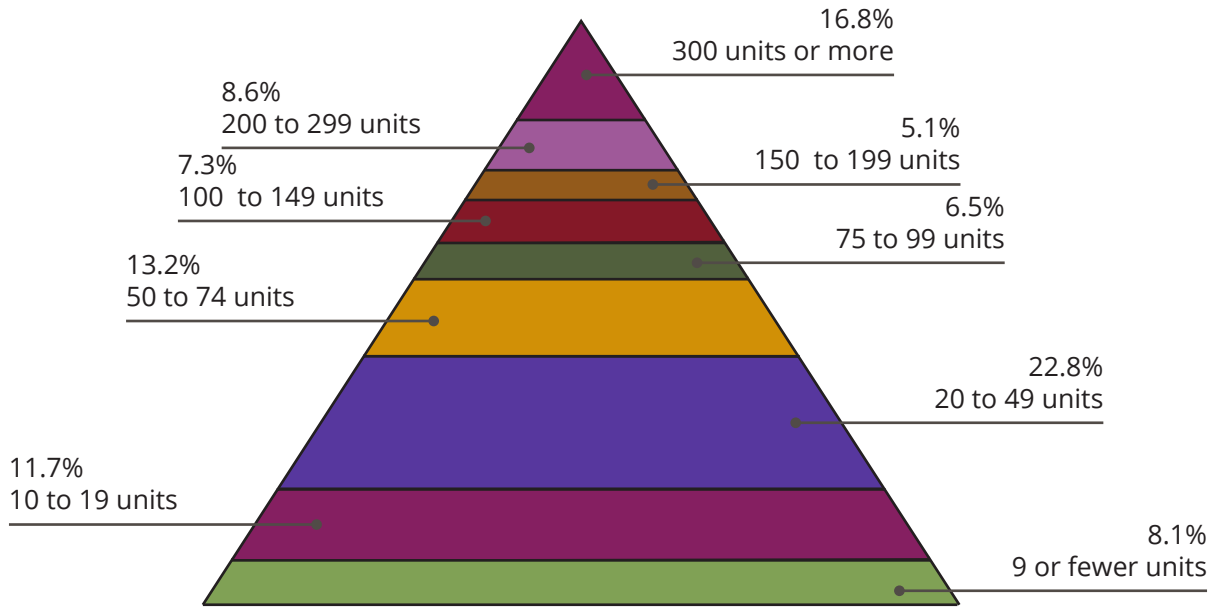


Figure 9.3 shows the range in the number of units of clinical services KTOS clients received. Half of the clients received 60 or more units of service.

FIGURE 9.3. NUMBER OF UNITS OF CLINICAL SERVICES (N = 1,006)



[72] A total of 285 cases had no clinical services or diagnostic data in the IPOP data set for the period examined. One additional case had no clinical services in the data set for the period examined.

[73] Service categories found for fewer than 5% of the 1,006 clients are not shown in the figure (e.g., residential crisis stabilization, non-residential crisis, substance abuse family residential, substance abuse transitional living, supported employment or housing, and peer support services).

Section 10.

Cost Savings of Substance Abuse Treatment in Kentucky

This section examines cost reductions or avoided costs to society after client participation in publicly-funded substance abuse treatment. Using the number of clients who met criteria for drug dependence and alcohol dependence at intake and follow-up in the KTOS sample, a cost per person based on national aggregate data was applied to this study sample. This information is then used to estimate the cost to society for the year prior to when clients entered treatment and then for the same clients during the year after treatment intake.

Importance of Cost Savings Analysis

There is great continuing policy interest in examining cost reductions or avoided costs to society after individuals participate in publicly-funded substance abuse treatment. This policy interest is fueled by concerns over the cost of substance abuse to overall personal health and to incarceration. Thorough analysis of cost savings, while increasingly popular in policy making settings, is extremely difficult and complex. Immediate proximate costs can be examined relatively easily. However, thorough assessment requires a great number of econometrics. In order to accommodate these complexities at an aggregate level, data was extrapolated from a large federal study that was published in 1998 to give an estimate of the separate annual costs of alcohol abuse drug abuse in the United States.[74] In 2000 the estimated costs of alcohol abuse in the United States was updated[75] and in 2011 the National Drug Intelligence Center updated the estimates of drug abuse in the United States for 2007.[76] These updated costs were used in the calculations for the cost savings analysis in this KTOS follow-up report.

Cost of Alcohol and Drug Abuse and Dependence

The national report and the subsequent revisions of estimates of costs referenced in this report factored in all the many explicit and implicit costs of alcohol and drug abuse to the nation, such as the costs of lost labor due to illness, accidents, the costs of crime to victims, costs of incarceration, hospital and other medical treatment, social services, motor accidents, and other costs. Thus each of these reports analyzes the hidden and obvious costs that are caused by clients with substance abuse. For this analysis, the national costs of alcohol abuse/dependence and the costs of drug abuse/dependence were updated from the original reports to 2013 dollars using Consumer Price Indexes (monthly data on the average change in prices paid over time in the market for goods and services released by

[74] Harwood, H., Fountain, D., & Livermore, G. (1998). The economic costs of alcohol and drug abuse in the United States 1992. Report prepared for the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Department of Health and Human Services. NIH Publication No. 98-4327. Rockville, MD: National Institutes of Health.

[75] Harwood, H. (2000). *Updating estimates of the economic costs of alcohol abuse in the United States: Estimates, update methods, and data.* Report prepared by The Lewin Group for the National Institute on Alcohol Abuse and Alcoholism.

[76] National Drug Intelligence Center. (2011). *The economic impact of illicit drug use on American Society.* Washington, DC: United States Department of Justice.

the Bureau of Labor Statistics) from a federal reserve bank.[77]

Next, to calculate an estimate of the cost of alcohol and drug abuse per person, those updated national costs were divided by the 2013 federally derived estimates of the number of clients with alcohol abuse/dependence (14.7 million) and drug abuse/dependence (4.3 million) and 2.6 million clients who had abuse/dependence on alcohol and drugs in the nation.[78] Because the national cost estimates of alcohol abuse/dependence were examined separately from drug abuse/dependence, the 2.6 million clients who were alcohol and drug misusers were assigned to either the alcohol abuse/dependent category or the drug abuse/dependent category to estimate the cost of alcohol abuse/dependence and drug abuse/dependence per person.[79] These per person costs were then applied to the follow-up sample used in this study to estimate the cost to society for the year before clients were in treatment and then for the same clients during the 12-month period after treatment intake. Analyses hinged on estimating the differences in cost to society between persons who are actively addicted compared to those who are abstinent from drug and/or alcohol use. Thus reductions in the number of clients who met criteria for dependence from the period before treatment to after treatment was examined.

Figure 10.1 shows the change in the number of clients who reported any use of drugs and/or alcohol in the 12 months before intake and follow-up.[80] Clients who reported using illicit drugs only or illicit drugs as well as alcohol were counted in the drug use category because the cost per person of drug abuse was higher than the cost per person of alcohol abuse. Clients who met reported using alcohol only were counted in the alcohol use category. The change from intake to follow-up was significant. At intake 696 clients were reported using illicit drugs and 170 clients reported using alcohol only. At follow-up, 278 clients reported using illicit drugs and 177 clients reported using any alcohol.

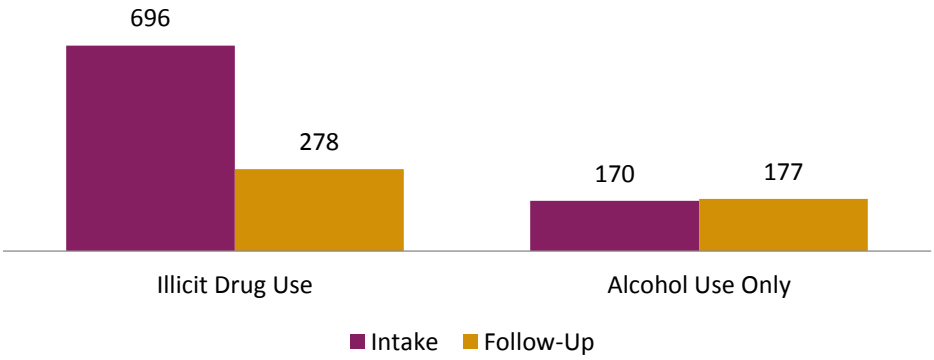
[77] http://www.minneapolisfed.org

[78] SAMHSA (2014). Results from the 2013 *National Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-48, HHS Publication No. (SMA) 14-4863.* Rockville, MD. Substance Abuse and Mental Health Services Administration.

[79] To do this the proportion of clients who were not in the alcohol and drug abuse/dependent category who were in the alcohol category (0.77) and the drug category (0.23) was estimated the multiplied that proportion by the 2.6 million to assign the cross-addicted clients to one of the categories (drug abuse or alcohol abuse).

[80] A total of 285 cases had no match in the service event data **or** had no services for which a cost could be assigned (i.e., varying unit cost). This high percentage of cases (22.1%) with missing data on variables used to compute the cost of treatment made imputation of the mean value or use of Expectation-Maximization (EM) for these cases inappropriate. Multiple imputation would be appropriate, if it could be conducted when calculating the sum; however, because this is not the case, cases that had no match to the service event data were excluded from the cost analysis. In addition, 4 cases had missing values for the illicit drug use and/or alcohol use in the 12 months before follow-up; thus, they were excluded from the cost analysis.

FIGURE 10.1 THE NUMBER OF CLIENTS WHO REPORTED USING ILLICIT DRUGS AND/OR ALCOHOL IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (N = 1,002)



The average annual cost to society of an active drug abuser in 2014 dollars was $43,063. The average annual cost to society of an active alcohol abuser was $16,367. Thus, when this average annual cost per individual drug user was applied to the 696 clients who reported using illicit drugs at intake, the annual cost to society in 2014 was estimated at $29,971,848. When the average annual cost per individual alcohol abuser was applied to the 170 clients who reported using alcohol only at intake, the estimated annual cost to Kentucky in 2014 was $2,782,390. The estimated total annual cost of drug and alcohol use in the 12 months before intake applied to the sample of KTOS clients with matching service event data was $40,811,463. By follow-up, the estimated cost of the 278 clients who reported illicit drug use was $11,971,514 and the estimated cost of the 177 clients who reported using alcohol was $2,896,959, for a total of $14,868,473. Thus, as shown in Figure 10.2, after participation in publicly-funded substance abuse treatment, the gross cost to Kentucky taxpayers for these 1,002 clients was reduced by $17,885,765.

FIGURE 10.2. COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N=1,002)

AFTER PUBLICLY-FUNDED SUBSTANCE ABUSE TREATMENT

$32.7 million - $14.9 million = **$17.9 million**

COST TO SOCIETY AT INTAKE | COST TO SOCIETY AT FOLLOW-UP | GROSS DIFFERENCE IN COST TO SOCIETY

Cost of Treatment

The clinical service event data described in Section 9 was matched to the KTOS survey data for the KTOS follow-up sample. Unit costs for different types of services was provided by the Department for Behavioral Health, Developmental and Intellectual Disabilities (DBHDID) and applied to the total number of services KTOS clients received wherein the payer was Medicaid or the DBHDID from the date of the intake survey submission to the follow-up survey completion date. When the clinical service data was matched to clients in the KTOS follow-up sample (n = 1,289), 285 cases had no services listed or no services that could be assigned a unit cost (e.g., miscellaneous services). Because this is a sizable percentage of

clients with missing data, these cases were excluded from the cost analysis. The cost of providing publicly-funded behavioral health treatment services to the 1,002[81] clients in FY 2014 in the KTOS follow-up sample was $4,933,821.

Cost Savings

The net cost savings of providing treatment to the KTOS follow-up sample was estimated using the net difference in costs of alcohol and drug abuse/dependence divided by the cost of providing treatment: $17,885,765/$4,933,821, which equals $3.63 (see Table 10.3). In other words, for every dollar spent on publicly-funded substance abuse treatment in FY 2014, there was an estimated savings of $3.63 in costs to Kentucky taxpayers associated with alcohol and drug addiction.

TABLE 10.3. COST SAVINGS OF PROVIDING TREATMENT TO SUBSTANCE ABUSING/DEPENDENT CLIENTS

	ALCOHOL AND DRUG DEPENDENCE BASED ON ASI COMPOSITE SCORES	
	INTAKE	FOLLOW-UP
DRUG USE		
Number of clients	696	278
ALCOHOL USE		
Number of clients	170	177
TOTAL COST TO SOCIETY OF DRUG AND ALCOHOL USE	$32,754,238	$14,868,473
GROSS COST DIFFERENCE FROM INTAKE TO FOLLOW-UP	$17,885,765	
COST OF TREATMENT	$4,933,821	
OFF-SET AS NET COST/BENEFIT RATIO	$17,885,765/$4,933,821	
RETURN ON $1.00 INVESTMENT	$3.63	

[81] In addition to the 285 cases with missing data for the cost of treatment, 4 cases had missing values for alcohol and/or illicit drug use variables at follow-up. We did conduct the cost analysis on all 1291 cases by imputing the mean value for the cost of treatment for the cases with missing values and this yielded a return on investment of $3.38. However, imputing the mean value on such a large percentage of the overall number of cases is problematic because it leads to too-small standard errors.

Section 11.

Conclusions and Implications

This report describes outcomes for 1,290 clients who participated in publicly-funded substance abuse treatment in FY 2014 and a follow-up telephone interview 12 months after the intake survey was submitted to UK CDAR. Findings from the 2016 Kentucky Treatment Outcome Study showed positive changes for individuals at the 12-month follow-up.

First, clients reported high levels of satisfaction with the substance abuse treatment programs. The majority of clients agreed that the programs helped them get better and feel better about themselves, program staff treated them with respect, and clients understood their treatment plan and what staff expected of them in the program. The majority of clients (71.8%) also gave an overall rating of the program that was highly positive (between 8 and 10, where 1 represents the worst possible experience and 10 represents the best experience).

Second, KTOS clients reported significant reductions in substance use and severity of substance use. At intake, 68.1% of clients reported using any illegal drugs in the past 12 months. By follow-up, the number of clients reporting past-12-month drug use decreased by 61% to 26.8%. Moreover, of those individuals who reported any past-12-month use of illegal drugs at intake or follow-up, the average number of months they used was lower at follow-up than at intake. The number of individuals who reported using each of the specific drug classes we examined decreased significantly: marijuana (62% decrease), opioids (69% decrease), heroin (61% decrease), CNS depressants (79% decrease), stimulants (75% decrease), and other illegal drugs such as hallucinogens, inhalants, or synthetic marijuana (81% decrease). The number of individuals who reported using alcohol, using alcohol to intoxication, or binge drinking also decreased significantly. Not only were significant decreases in substance use found, but self-reported severity of substance use significantly decreased as well.

Clients' mental health also showed significant improvements. The number of individuals who reported depression, generalized anxiety, comorbid depression and anxiety, and suicidal thoughts or attempts decreased significantly from intake to follow-up. Moreover, from intake to follow-up, individuals reported significantly fewer days in the past 30 days their mental health was not good and significantly fewer stress symptoms.

From intake and follow-up the number of individuals who had completed at least one year of vocational school or college increased significantly. The number of individuals who were currently employed full-time increased from 18.9% at intake to 33.2% at follow-up. Overall, individuals' living situations also improved. Significantly more individuals reported their usual living situation was in a private residence (i.e., their own home or someone else's home) in the 12 months before follow-up compared to the 12 months before intake. The number of individuals who reported they had difficulty meeting their basic living needs and health care needs for financial reasons decreased significantly from intake to follow-up.

Individuals' involvement with the criminal justice system decreased from the 12 months before treatment intake to the 12 months before follow-up. A little more than 1 in 5 individuals reported at follow-up they had been arrested in the past 12 months, which was

a 62% decrease from the number who reported being arrested in the 12 months before intake (57.6%). A similar decrease (60% decrease) was found in the number of individuals who reported being incarcerated at follow-up (25.6%) when compared to intake (64.4%).

Individuals also reported significant increases in recovery supports from intake to follow-up, which is critical in maintaining substance abuse recovery. Cost analysis suggests that for every dollar spent on publicly-funded substance abuse treatment services there was an estimated $3.63 in costs to society that would have been expected had the drug and alcohol dependence rates for these clients not been reduced.

Co-occurring Problems. Several findings suggest opportunities to target co-occurring problem areas including tobacco smoking, mental health symptoms, and economic difficulties reported by participants.

Smoking. Smoking rates are very high for these clients with 82.9% reporting smoking in the 12 months before follow-up. There is a commonly held belief that individuals should not attempt to quit smoking while in substance abuse treatment, because smoking cessation can endanger their sobriety. This belief has been refuted by recent empirical research studies.[82] Voluntary smoking cessation during substance abuse treatment has been associated with lower relapse. Because tobacco use is associated with increased mental health symptoms as well as well-known physical health problems, including increased mortality, and smoking cessation has been associated with lower alcohol and drug relapse, smoking cessation interventions should be promoted (but not required) in substance abuse treatment programs.[83]

Basic Needs for Recovery Success. Meeting basic needs including health, stable living arrangements, having a purpose with daily meaningful activities, and recovery community are the four key dimensions to recovery.[84] In contrast to the findings of the KTOS 2014 report in which there were no significant improvements in clients' economic hardship from intake to follow-up, in this year's report, there were significant decreases in the number of individuals who reported having difficulty meeting basic living needs (such as paying for rent/mortgage, utilities, phone, or food) and health care needs for financial reasons from intake to follow-up in the KTOS 2015 and 2016 reports. The finding of a significantly lower number of individuals who experienced economic hardship is good news. Nonetheless, the fact that 32% of individuals reported they had difficulty meeting basic living needs and 22% reported they had difficulty meeting health care needs for financial reasons at follow-up indicates that a minority of individuals continue to struggle economically post-treatment. Providing referrals and support for these dimensions may help improve basic living situations for many clients and support continued recovery living for long-term positive results from treatment.

Gender Differences. A number of gender differences were found in this report. Significantly more women than men reported using illegal drugs at intake. When specific drug classes were examined, significantly more women than men reported they had used opioids and

[82] Baca, C., & Yahne, C. (2009). Smoking cessation during substance abuse treatment: What you need to know. *Journal of Substance Abuse Treatment, 36*, 205-219.

[83] Proschaska, J. (2010). Failure to treat tobacco use in mental health and addiction treatment settings: A form of harm reduction? *Drug and Alcohol Dependence, 110*, 177-182.

[84] http://blog.samhsa.gov/2012/03/23/defintion-of-recovery-updated/

CNS depressants at intake. These patterns were found for both the 12-month and 30-day measures in illegal drug use. Further, significantly more men than women reported using alcohol and binge drinking alcohol in the 12 months and 30 days before intake and follow-up. Significantly more men than women reported using alcohol in the 12 months before intake. Significantly more women reported smoking tobacco at intake and follow-up and significantly more men than women reported using smokeless tobacco at intake and follow-up.

More women than men reported mental health symptoms including depression, generalized anxiety, and comorbid depression and anxiety. Also, women reported their mental health was not good significantly more days than men at intake and follow-up. Women reported more stress symptoms than did men at intake and follow-up. Interestingly, compared to women, men reported at intake that they had more people they could count on for recovery support. Men and women have been shown to use different coping styles and thus may benefit from separate groups to plan recovery support.

Women also reported more economic difficulties at both intake and follow-up compared to men. Further, significantly more women were unemployed at intake and follow-up when compared to men. Likewise, significantly more men reported they had full-time employment at intake and follow-up when compared to women. Among individuals who were currently employed, men had significantly higher median hourly wages than women at both intake and follow-up. At intake, employed women made only $0.79 for every dollar employed men made and by follow-up the gap in hourly wages was even greater with employed women making only $0.80 for every dollar employed men made. Significantly more women than men reported difficulty in accessing basic living needs at intake and follow up. In addition, significantly more women than men reported having difficulty meeting health care needs in the 12 months before intake. Interestingly, significantly more women reported they had completed at least one year of vocational school or college than did men at intake and follow-up. Even though women made significant gains in their education and employment overall by follow-up, they still lagged behind men in their economic standing. One possible explanation for men's higher median hourly wage when compared to women's is likely due to gender differences in occupation type. At intake and follow-up, the majority of employed women had a service sector job, whereas only a minority of employed men had a service sector job. In addition, at intake about half of employed men (49.3%) reported having a job in the natural resources, construction, and maintenance sector, which has higher average wages than service sector jobs, when compared to women (4.1%).

STUDY LIMITATIONS

The study findings must be considered within the context of the study's limitations. First, because there is no appropriate group of substance-using individuals who would like to receive substance abuse treatment but do not receive it to compare with the KTOS individuals who participate in treatment, one cannot attribute all changes from intake to follow-up to substance abuse treatment. Second, because not all clients agree to participate in the 12 month follow-up survey, it is unclear how generalizable the findings are to the entire client population that completes an intake survey. Analysis comparing those individuals who completed a follow-up survey with those who did not complete a follow-up survey (for any reason, for example, they did not agree to be in the follow-up study, they were not randomly

selected into the follow-up sample, or they were not successfully contacted for the follow-up survey) found some significant differences between the two groups (gender, difficulty meeting basic needs, physical health, and mental health problems); however, most of the examined factors were not significantly different between the two groups, suggesting that the findings may generalize fairly well to the entire client population.

Third, data included in this report, with the exception of clinical diagnostic and service event data, were self-reported by clients. There is reason to question the validity and reliability of self-reported data, particularly with regard to sensitive topics, such as illegal behavior and stigmatizing issues such as mental health and substance use. However, recent research has supported findings about the reliability and accuracy of individuals' reports of their substance use.[85, 86, 87, 88] Earlier studies found that the context of the interview influences reliability.[89] During the informed consent process for the KTOS follow-up study, interviewers tell participants that the research team operates independently from the community mental health centers, responses will be reported in group format and will not be identifiable at the individual level, and that the research team has a federal Certificate of Confidentiality. These assurances of confidentiality and lack of affiliation with the data collectors may minimize individuals' concern about reporting stigmatizing or illegal behavior or conditions.

Collecting all of the secondary data that would be required to estimate the costs and cost savings for the individuals who participated in the KTOS follow-up study is labor intensive, expensive, and beyond the scope of the treatment outcome study; thus, funding constraints prevented estimating actual costs of alcohol and drug abuse for the clients. The cost-offset analysis included in this report is based on using national estimates of the annual cost of alcohol and drug abuse and the annual NSDUH estimate of the number of individuals with alcohol dependence and drug dependence in the U.S. to estimate a cost per dependent person. This cost per person was then applied to the KTOS clients based on their self-reported alcohol and drug use at intake and follow-up. As with any cost-offset analysis, there are several assumptions underlying the logic of this approach—any of which could prove to be faulty. Therefore, we have clearly laid out the assumptions in Section 10 to help interpret the findings. Further, because the measure of alcohol or drug dependence used in KTOS was based on a 30-day measure, it is likely an underestimate of the number of individuals with severe substance use disorders.

Conclusion

This KTOS 2016 report provides a valuable look at the client outcomes of publicly-funded

[85] Del Boca, F. K., & Noll, J. A. (2000). Truth or consequences: The validity of self-report data in health services research on addictions. *Addiction, 95*(Supplement 3), S347-S360.

[86] Harrison, L. D., Martin, S. S., Enev, T., & Harrington, D. (2007). Comparing drug testing and self-report of drug use among youths and young adults in the general population (DHHS Publication No. SMA 07-4249, Methodology Series M-7). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

[87] Rutherford, M. J., Cacciola, J. S., Alterman, A. I., McKay, J. R., & Cook, T. G. (2000). Contrasts between admitters and deniers of drug us. *Journal of Substance Abuse Treatment, 18*(4), 343-348.

[88] Shannon, E. E., Mathias, C. W., Marsh, D. M., Dougherty, D. M., & Liguori, A. (2007). Teenagers do not always lie: Characteristics and correspondence of telephone and in-person reports of adolescent drug use. *Drug and alcohol dependence, 90*(2), 288-291.

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substance abuse treatment for adults in Kentucky. Overall, clients of publicly-funded substance abuse treatment, including a variety of treatment modalities, made significant strides in all of the targeted outcomes. Specifically, there were significant decreases in use of alcohol and all drugs (except tobacco), a significant increase in full-time employment, decrease in depression, anxiety and suicidality, decrease in arrests and incarceration, and increased recovery supports. Moreover, an estimate of the cost to Kentucky for alcohol and drug dependence in the year before treatment compared to the cost to the state for alcohol and drug dependence in the year after treatment intake, while taking into account the cost of publicly-funded treatment, showed a significant cost savings.

Appendix A.

Methods

The KTOS evaluation uses a pre- and post-intervention research design, meaning that client data is collected at treatment intake and compared to data collected 12 months later at follow-up. All publicly-funded substance abuse treatment programs in Kentucky are required to collect intake data on individuals entering treatment. Intake data are collected by clinicians on-site via a structured web-based survey. At the end of the intake survey, clinicians explain the follow-up study to clients and give them the opportunity to volunteer to participate in the follow-up study. During the consent process clients are informed that the research staff at the University of Kentucky have obtained a Certificate of Confidentiality from the U.S. Department of Health and Human Services to protect the research team from being forced to release client-identifying data to law enforcement or other government agencies. Clients who agree to participate in the follow-up study give their consent using an electronic consent form on the web survey, which is approved by the University of Kentucky Medical Institutional Review Board (IRB). Identifying data are encrypted as the data are submitted on the web-based survey. Electronic data are stored on password protected computers and servers in secure facilities.

Of the 5,273 clients who completed an intake survey, 2,781 (52.7%) agreed to be contacted for the follow-up study. From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one address), and then randomly selecting clients by intake month (N = 2,028).

Follow-up surveys were conducted by interviewers on the research team at the University of Kentucky Center on Drug and Alcohol Research via telephone 12 months after the intake survey is submitted. Of the 2,028 clients included in the follow-up sample, 338 were ineligible for participating in the follow-up survey for a variety of reasons (e.g., incarcerated, in residential treatment, deceased), which left 1,690 clients eligible for follow-up. Of these clients, 1,291 completed a follow-up survey (see Table AA.1). Thus, the follow-up rate was 76.4%. The remaining clients either (1) refused (0.4%) to complete the follow-up survey, or (2) were never successfully contacted, or if contacted they never completed the follow-up survey (23.3%).

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 2,028)

	Number of Records	Percent (n = 2,028)
Ineligible for follow-up survey	338	16.7%
	Number of cases eligible for follow-up (N = 1,690)	
Completed follow-up surveys	1,291	
Follow-up rate ((the number of completed surveys/ the number of eligible cases)*100)		76.4%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	392	
Expired rate ((the number of expired cases/ eligible cases)*100)		23.2%
Refusal	7	
Refusal rate (the number of refusal cases/ eligible cases)*100)		0.4%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	1,635	
Percent of cases accounted for ((the number of cases accounted for/total number of records in the follow-up sample)*100		80.6%

Clients were considered ineligible for follow-up if they were living in a controlled environment during the follow-up period or were deceased (see Table AA.2). Of the 338 cases that were ineligible for follow-up, the majority (81.4%) were ineligible because they were incarcerated during the follow-up period. Forty-six clients were ineligible because they were in residential treatment at the time of follow-up. Other reasons a small number of clients were ineligible for follow-up were because they were deceased, were hospitalized, did not speak English, or had invalid locator information.

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 338)

	Number	Percent
Incarcerated	275	81.4%
In residential treatment	46	13.6%
Deceased	11	3.3%
Hospitalized	4	1.2%
Invalid data	1	0.3%
Did not speak English	1	0.3%

Appendix C presents analysis on comparisons between clients who completed a follow-up interview and clients who did not complete a follow-up interview for any reason on key variables included in the intake survey.

Appendix B.

Locating Efforts and Quality of Contact Information for the KTOS 2015 Follow-up Study

Project interviewers documented their efforts (e.g., mailings, phone calls, internet searches, etc.) to locate each participant included in the sample of individuals to be followed up from July 2013 to June 2014. (N = 2,028). Of these locator files, 25% (n = 523) were examined and used to extract information about the efforts project interviewers made to locate and contact participants as well as the type of contact information provided by participants in the original locator information when the intake survey data was submitted to UK CDAR. A subsample of these records (n = 118) was randomly selected and independently examined to check that the procedures for extracting data were reliable and valid. The extraction sheets were compared between the two raters for interrater reliability, which was high (99.4%). The following information is based on the data collected during this review of locator files.

For the 523 records examined, an average of 4.3 calls were made to a client phone number. Applying that average to the entire KTOS follow-up sample, there was an estimated 8,700 phone calls made to clients for the 2013-2014 study. An average of 1.9 calls were made to a contact persons' phone number which is an estimated 3,850 calls to client contacts. As Table AB.1 shows, about one-third of clients called in at any point and only 7.8% called-in to complete the survey after receiving the initial mailing without project interviewers putting additional effort into contacting the clients. That means 92.2% of clients took considerable effort to try to locate, contact, and complete follow-up surveys.

An estimated total of 4,450 mailings were sent to client addresses and around 200 mailings were sent to contact persons, an average of 2.2 mailings to clients and 0.1 mailings to contact persons. The research team received returned mail for 17.6% of clients that received mailings to client addresses and 0.2% of clients that received mailings to contact addresses.

In cases where the client contact information was incorrect (i.e., mail was returned, phone number was disconnected), online public directory databases were used to try to verify that we had correct or updated information for the client. Because it had been six months since they provided contact information, we want to be sure we are not calling or sending mailings to someone other than the client. Therefore, verifying the correct contact information is a critical interim step in the follow-up process to protect confidentiality. For 98.1% of the clients, the interviewers used public searches/directories to verify contact information. If the client information could not be verified, interviewers also used social media and more detailed public directory databases to find updated contact information (40.9%). In cases where very little contact information was given or clients were not successfully located in the ways listed above, more in-depth searching methods were used (20.8%). As a last resort, in the few cases where the client was not successfully located in any of the ways described above, interviewers worked to reach client contacts provided by them at intake (20.8%).

TABLE AB.1. LOCATING EFFORTS FOR SAMPLE OF FILES (N = 523)

LOCATING EFFORTS	% OF CLIENT RECORDS	AVERAGE PER CLIENT
Number of total phone calls made to reach client		4.3
Number of phone calls made to contact persons (n= 499)		1.9
Clients who called in	33.5%	
Clients who called in and completed survey	*27.9%*	
Clients who called in and completed survey after receiving the initial client mailing	*7.8%*	
Contact persons who called in	7.6%	
At least one text message was sent to client	4.6%	
At least one text message was sent to contact person	1.0%	
Number of mailings sent to client		2.2
Handwritten note was sent	7.1%	
Returned mail from client's address	17.6%	
Number of mailings sent to contact persons		0.1
Returned mail from contact person's address	0.2%	
Client level of searching:		
Light (verification, VINE, Whitepages)	98.1%	
Medium (Facebook, Ancestry, USsearch, etc.)	40.9%	
In-depth (other in-depth databases)	20.8%	
Contact searched in any way	20.8%	

Because of study inclusion criteria, a complete client phone number was listed on 100.0% of the records. Only one-quarter of these were working numbers for the client (24.9%), 15.3% were working numbers for a contact who knew the client, 8.4% were working numbers but the contact did not know the client (i.e., wrong number), and 0.2% were working numbers for a treatment facility or clinic. One-fifth of the phone numbers (19.9%) listed never resulted in contact (e.g., voicemail, busy signal, not receiving incoming calls, etc.) and 15.3% were disconnected. The majority of records also listed one unique, complete address for the client (97.9%; see Table B.2).

Most of the clients provided the name of at least one other person that they thought would know how to get in touch with them in the next six months (93.1%). In addition, one-third also provided at least one unique and complete address and most (81.8%) provided at least one unique phone number for that person.

Table AB.2. QUALITY OF CONTACT INFORMATION FOR SAMPLE OF FILES (N = 523)

QUALITY OF CONTACT INFORMATION	% OF CLIENT RECORDS	AVERAGE PER CLIENT
Client Contact Information		
Client phone number listed	100.0%	
Client phone number was:		
Working number for client	24.9%	
Working number, person knew client	15.3%	
Working number, but no one knew the client	8.4%	
Working number for a facility or clinic	0.2%	
Called but did not reach a person (e.g., voicemail, busy signal, not receiving incoming calls)	19.9%	
Disconnected	15.3%	
Never called	16.1%	
Complete client address listed	97.9%	
Locator Contact Information		
Number of contact persons listed		1.3
0	6.9%	
1	57.7%	
2	35.4%	
Number of unique, complete addresses listed for contact persons		0.4
0	66.9%	
1	27.7%	
2	5.4%	
Number of unique, complete phone numbers listed for contact persons		1.0
0	18.2%	
1	58.7%	
2	23.1%	

Appendix C.

Client Characteristics at Intake for Those Who Completed Follow-up Interviews and Those Who Did Not Complete a Follow-up Interview

Clients who completed a follow-up interview are compared in this section with clients who did not complete a follow-up interview for any reason[90] (e.g., did not agree to be contacted for the follow-up survey, not selected into the follow-up sample, ineligible for follow-up, unable to be located for the follow-up).

Demographics

The majority of the sample for this annual report was White and male (see Table AC.1). Significantly more clients who completed a follow-up survey were female compared to clients who did not complete a follow-up survey. There were no significant differences on other demographics between clients who completed a follow-up survey and those who did not. The average client age for both groups was in the early 30s with no difference by follow-up status. More clients reported their marital status as married or cohabiting than any other category in both groups. The percentages of clients who reported being never married, or separated or divorced were similar (ranging from 25.5% to 30.5%).

TABLE AC.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP[91]

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
AGE	34.0 years	34.2 years
GENDER**		
Female	38.0%	46.2%
RACE		
White	91.0%	91.6%
African American	5.9%	6.0%
Other or Multiracial	3.1%	2.5%
MARITAL STATUS		
Never married	30.5%	30.4%
Married or cohabiting	40.1%	42.5%
Separated or divorced	27.8%	25.5%
Widowed	1.6%	1.6%

**p < .001.

[90] Significance is reported for p < .01 because of the large sample size.

[91] One individual, who did not complete a follow-up, was missing data for race at intake.

Socioeconomic Indicators

The vast majority of clients reported that their usual living arrangement in the 12 months before entering substance abuse treatment was living in their own home or apartment (see Table AC.2). A small minority reported their usual living arrangement was in jail or prison. Small numbers of clients reported their usual living situation was in a residential treatment, sober living home, or in a shelter or on the streets. At the time clients entered treatment, nearly 8% considered themselves to be homeless, with most saying they considered themselves to be homeless because they were staying temporarily with friends or family or they didn't have a home to go to after leaving treatment/recovery center (see Table AC.2). There were no significant differences in living situation at intake between clients who completed a follow-up interview and clients who did not.

TABLE AC.2 LIVING SITUATION OF CLIENTS BEFORE ENTERING TREATMENT[92,93]

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
USUAL LIVING ARRANGEMENT IN THE 12 MONTHS BEFORE ENTERING THE PROGRAM		
Own or someone else's home or apartment	83.2%	85.4%
Residential treatment, Recovery Center, sober living home, personal care home, hospital, school or work dormitory	1.6%	2.3%
Jail or prison	14.4%	11.4%
Shelter, hotel/motel, or on the street	0.8%	0.9%
CONSIDERS SELF TO BE CURRENTLY HOMELESS	7.6%	7.8%
Why the individual considers himself/herself to be homeless	(n = 302)	(n = 101)
Staying temporarily with friends or family	69.1%	73.3%
Have no home to go to after leaving treatment/recovery center	21.6%	17.8%
Staying in a shelter	7.0%	5.0%
Staying in hotel/motel	0.7%	1.0%
Staying on the street or in the car	1.7%	1.0%
Other reason	0.0%	2.0%

Measures of economic hardship may be better indicators of the actual day-to-day stressors clients face than a measure of income. Therefore, the intake survey included several questions about clients' ability to meet expenses for basic needs and food insecurity. Clients were asked eight items, five of which asked about inability to meet basic living needs such as food, shelter, utilities, and telephone, and three items asked about inability to receive medical care for financial reasons.

Table AC.3 presents the percentage of clients who reported inability to meet basic living

[92] Four individuals who did not complete a follow-up were missing data for living situation at intake.

[93] One individual who did not complete a follow-up had missing data for why they were homeless.

needs (e.g., food, shelter, utilities, telephone), and any of the health care needs. Significantly more clients who were followed up reported that in the 12 months before they entered treatment their household had difficulty meeting the basic living needs of food, shelter, utilities, or telephone because of financial reasons. In addition, significantly more clients in the follow-up sample reported they were unable to receive needed health care for financial reasons (45.2% compared to 38.0%).

TABLE AC.3. DIFFICULTY MEETING BASIC NEEDS IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)**	39.2%	45.3%
Had difficulty obtaining needed health care for financial reasons (e.g., doctor visit, dental care, or fill prescription)**	38.0%	45.2%

**p < .001.

Clients were asked to place themselves on a ladder, representing their perception of their standing in society (Adler's Ladder). The bottom rung, 1, represents "people who are the worst off, those who have the least money, least education, and worst jobs or no jobs" and the top rung, 10, represents "people who are the best off, those who have the most money, most education, and best jobs". The majority of KTOS clients (58.3%) rated themselves as being on the 4th, 5th, or 6th rung on the ladder (see Figure AC.1). Clients who were followed up did not have significantly different ratings than clients who were not followed up (4.8 for both groups).

FIGURE AC.1 SUBJECTIVE SOCIAL STANDING OF CLIENTS BEFORE ENTERING TREATMENT

FOLLOWED UP			
NO n = 3,982	YES n = 1,291		
1.5%	1.8%		10—Best off (e.g., most money, most education, and best jobs)
1.1%	0.9%		9
4.8%	4.4%		8
11.0%	10.9%		7
13.4%	12.2%		6
31.6%	31.3%		5
13.7%	13.3%		4
10.9%	12.8%		3
5.5%	4.2%		2
6.5%	8.1%		1—Worst off (e.g., least money, least education, worst jobs or no jobs)

Table AC.4 describes clients' level of education when entering treatment. Around one-

quarter of clients had less than a high school diploma or GED. Significantly more followed-up clients had completed at least one year of college, vocational school, or a higher level of education compared to clients who were not followed up.

TABLE AC.4. CLIENTS' HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
HIGHEST LEVEL OF EDUCATION COMPLETED**		
Less than GED or high school diploma	27.0%	24.1%
GED or high school diploma	26.9%	23.4%
Some vocational school to graduate school	46.1%	52.5%

**p < .001

There were no differences in number of months clients were employed in the 12 months before entering treatment by follow-up status. Around 45% of clients reported working 0 months in the 12 months before entering treatment (see Table AC.5). About 1 in 5 clients reported working 1 to 5 months and one third reported working 6 months or more. Of the clients who reported working at least one month either part-time or full-time in the 12 months before entering treatment, the average number of months worked was 7.1 for both clients not followed up and clients followed up.

TABLE AC.5. EMPLOYMENT IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
EMPLOYMENT		
Percentage of clients who reported working for:		
0 months	45.5%	44.4%
1 to 5 months	21.4%	21.2%
6 months or more	33.1%	34.4%
Among those who were employed:	n = 2,170	n = 718
Average # of months employed in the past 12 months	7.1 months	7.1 months

Criminal Justice System Involvement at Intake

Nearly half of clients were under supervision by the criminal justice system when they entered treatment (e.g., probation, parole, drug court), with no significant difference by follow-up status; see Table AC.6).

The majority of clients reported they had been arrested in the 12 months before entering treatment. Of the clients who reported being arrested, followed-up clients reported an average of 1.6 arrests and clients who were not followed up reported an average of 1.7

arrests in the 12 months before entering treatment, with no significant difference by follow-up status.

TABLE AC.6. CRIMINAL JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Currently under supervision by the criminal justice system	48.7%	49.4%
Arrested for any charge in the 12 months before entering treatment	57.0%	57.7%
Of those with an arrest,	n = 2,268	n = 745
Average number of arrests	1.7 arrests	1.6 arrests

Table AC.7 displays the percentage of clients arrested and charged with different types of criminal charges among those who reported being arrested in the 12 months before entering treatment. Arrests for DUI were the most commonly reported criminal offense, followed by drug charges (e.g., trafficking, possession). Property crime arrests were reported by less than one-fifth of clients in both groups. Less than 10% of clients reported an arrest for a crime against person offense as was probation or parole violations. The criminal offense category reported by the smallest number of clients in both groups was domestic violence-related offense (i.e., a crime against a person wherein the victim was a family member or intimate partner). Other criminal offenses were reported by 23.7% of clients who were not followed up and 23.9% of clients who were followed up.

TABLE AC.7. AMONG THOSE WHO REPORTED BEING ARRESTED IN THE 12 MONTHS BEFORE TREATMENT, PERCENTAGE OF CLIENTS ARRESTED AND CHARGED WITH TYPES OF CRIMINAL OFFENSES

	FOLLOWED UP	
TYPES OF CRIMINAL CHARGES	NO n = 3,982	YES n = 1,291
DUI	37.5%	37.2%
Drug charge	31.2%	31.8%
Property crime	16.1%	15.4%
Probation or parole violation	17.2%	19.7%
Crimes against a person (other than family member or partner)	7.6%	9.0%
Domestic violence offense (i.e., crime against family member of intimate partner)	5.1%	5.8%
Other crimes (e.g. contempt, criminal mischief, disorderly conduct, endangering minor, failure to pay child support, failure to comply with court order, moving violations, public intoxication, trespassing, resisting arrest)	23.7%	23.9%

There was not a significant difference on the number of clients who reported being incarcerated at least one day in the past 12 months before entering treatment for clients

who were not followed-up (67.1%) when compared with those who were in the followed-up group (64.5%; see Table AC.8). Among the clients who were incarcerated at least one night, the average incarceration time in the 12 months before entering treatment was 93.2 days for clients who were not followed up and 85.1 days for clients who were followed up.

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

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Incarcerated at least one day	67.1%	64.5%
Of those incarcerated	n = 2,673	n = 833
Average number of days incarcerated in the past 12 months	93.2	85.1

Physical Health at Intake

Physical health measures were included in the intake survey (see Table AC.9). There were significant differences between those clients who were not followed-up and those that were followed-up. About one third (32.8%) of clients in the follow-up sample experienced chronic pain, which was significantly more than those who were not followed-up (27.7%). Significantly more clients who were followed-up had ever experienced a head injury that resulted in loss of consciousness (37.1% vs. 32.8%). Finally, clients were asked at intake if a doctor had ever told them they had any of the 12 chronic medical problems listed (e.g., asthma, arthritis, cardiovascular disease, diabetes, chronic obstructive pulmonary disease [COPD], tuberculosis, severe dental disease, cancer, Hepatitis B, Hepatitis C, HIV, and other sexually transmitted diseases). Significantly more clients who were followed up reported they had been told by a doctor that they had at least one of the chronic medical problems compared to clients who were not followed up (44.2% vs. 35.8%).

TABLE AC.9. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Chronic pain (lasting at least 3 months)**	27.7%	32.8%
Ever had a head injury that resulted in being knocked out or hospitalized for at least one night*	32.8%	37.1%
Ever told by a doctor that client had one of the 12 chronic medical problems listed**	35.8%	44.2%

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

Mental Health at Intake

The mental health questions included in the KTOS intake and follow-up surveys are not clinical measures, but instead are research measures. A total of 9 questions were asked to determine if they met study criteria for depression, including at least one of the two leading questions: (1) "Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?" and (2) "Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?" Significantly more clients who completed a follow-up interview than clients who did not complete a follow-up interview reported symptoms that met criteria for depression: 40.7% vs. 36.3% (see Table AB.10).

A total of 7 questions were asked to determine if clients met study criteria for generalized anxiety, including the leading question: "In the 12 months before you entered this program, did you have a period lasting 6 months or longer where you worried excessively or were anxious about multiple things on more days than not (like family, health, finances, school, or work difficulties)?" Significantly more clients who completed a follow-up interview than clients who did not complete a follow-up interview reported symptoms that met study criteria for generalized anxiety: 40.4% vs. 35.2%.

Two questions were included in the intake survey that asked about thoughts of suicide and attempted suicide in the 12 months before clients entered treatment. There was no statistically significant difference in the percentage of clients reporting suicidality by follow-up status (see Table AC.10).

TABLE AC.10. PERCENTAGE OF CLIENTS REPORTING MENTAL HEALTH PROBLEMS IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Depression*	36.3%	40.7%
Generalized anxiety*	35.2%	40.4%
Suicidality (e.g., thoughts of suicide or suicide attempts)	9.6%	11.9%

*p < .01.

Substance Use at Intake

Use of illegal drugs in the 12 months before entering treatment is presented by follow-up status in Table AC.11. Significantly more clients in the follow-up sample reported using any illegal drugs, in general, and marijuana specifically. The most frequently reported illegal drugs used in the 12 months before entering treatment were marijuana, prescription opioids/opiates, and tranquilizers (including sedatives, benzodiazepines, hypnotics). Less than 1 in 5 clients reported using non-prescribed buprenorphine (Suboxone, Subutex), amphetamines, and cocaine. A relatively small number of clients in both groups reported using heroin. Less than 10% of clients used non-prescribed methadone, synthetic drugs (including synthetic marijuana and bath salts) and an even smaller percentage of clients

used hallucinogens, barbiturates, and inhalants.

TABLE AC.11. PERCENTAGE OF CLIENTS REPORTING ILLEGAL DRUG USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Any illegal drug*	62.6%	67.2%
Marijuana*	38.5%	43.1%
Prescription opioid/opiate (illegal use)	35.5%	37.3%
Tranquilizers, sedatives, benzodiazepines	20.3%	22.3%
Non-prescribed buprenorphine (Suboxone, Subutex)	18.4%	19.3%
Amphetamines	15.7%	17.4%
Cocaine	13.4%	13.2%
Heroin	12.0%	11.5%
Non-prescribed methadone	7.0%	6.9%
Synthetic Drugs (synthetic marijuana, bath salts)	5.3%	6.4%
Hallucinogens	2.7%	3.4%
Barbiturates	2.2%	1.9%
Inhalants	1.0%	1.4%

*$p < .01$.

Over half of clients reported alcohol use in the 12 months before entering treatment. Less than two in five clients in both groups reported alcohol use to intoxication in the same period. Smaller percentages of clients reported binge drinking in the 12 months before entering treatment. There were no differences in alcohol use in the 12 months before entering treatment by follow-up status (see Table AC.12).

TABLE AC.12. PERCENTAGE OF CLIENTS REPORTING ALCOHOL USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Alcohol	50.6%	52.5%
Alcohol to intoxication	37.6%	39.3%
Binge drank alcohol (i.e., drank 5 or more (4 for women) drinks in 2 hours	29.2%	31.4%

In the 12 months before entering substance abuse treatment, the vast majority of the clients reported smoking tobacco products. For both groups, less than one-fifth reported smokeless tobacco use (18.1% vs. 15.6%). There was no difference between those who completed a follow-up interview and those who did not (see Table AC.13).

TABLE AB.13. PERCENTAGE OF CLIENTS REPORTING TOBACCO USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Smoked tobacco	80.1%	82.9%
Used smokeless tobacco	18.1%	15.6%

Self-reported severity of alcohol and drug use was measured with Addiction Severity Index (ASI) alcohol and drug composite scores. Alcohol and drug composite scores are presented in Table AC.14 separately for those clients who were not in a controlled environment all 30 days before entering treatment and clients who were in a controlled environment all 30 days. The lowest composite score is 0 and the highest composite score is 1.0.

A minority of clients who were not in a controlled environment all 30 days met or surpassed the Addiction Severity Index (ASI) composite score cutoff for alcohol and/or drug severe SUD, with no difference by follow-up status (37.5% for not followed up and 40.7% for followed up; see Table AC.14). Among clients who were not in a controlled environment all 30 days before entering the program, the average score on the alcohol composite score was 0.11 for those who were not followed up and 0.12 for those who completed a follow-up survey. Among clients who were not in a controlled environment all 30 days before entering the program, the average score for the drug severity composite score was 0.10 for clients who did not complete a follow-up interview and 0.11 for followed up clients (see Table AB.14).

Of the clients who were in a controlled environment all 30 days before entering treatment, a minority met or surpassed the cutoff score for severe alcohol and drug use disorder (see Table AC.14). Among clients who were in a controlled environment all 30 days before entering the program, 35.6% of clients who were not followed up and 28.3% of clients who were followed up met the cutoff score for severe alcohol or drug use disorder. Nearly one-fourth of clients met the cutoff score for severe drug use disorder.

TABLE AC.14. SUBSTANCE ABUSE AND DEPENDENCE PROBLEMS AT INTAKE

	Not in a controlled environment all 30 days before entering treatment		In a controlled environment all 30 days before entering treatment	
	FOLLOWED UP		FOLLOWED UP	
	NO (n = 3,606)	YES (n = 1,178)	NO (n = 376)	YES (n = 113)
Percentage of clients with ASI composite score equal to or greater than cutoff score for …				
Severe alcohol or drug use disorder	37.5%	40.7%	35.6%	28.3%
Severe alcohol use disorder	18.7%	20.5%	13.0%	7.1%
Severe drug use disorder	23.6%	26.0%	26.6%	23.9%
Average composite score for alcohol use[-a]	.11	.12	.09	.05
Average composite score for drug use[-b]	.10	.11	.12	.12

-a Score equal to or greater than .17 is indicative of severe alcohol use disorder.
-b Score equal to or greater than .16 is indicative of severe drug use disorder.

Significantly more clients who completed a follow-up reported ever having been in substance abuse treatment in their lifetime compared to those who were not followed-up (see Table AC.15). Among clients who reported a history of substance abuse treatment, the mean number of lifetime treatment episodes was the same (2.4) for the two groups.

TABLE AC.15. HISTORY OF SUBSTANCE ABUSE TREATMENT IN LIFETIME

	FOLLOWED UP	
	NO n = 3,982	YES n = 1,291
Ever been in substance abuse treatment in lifetime*	53.4%	58.0%
Among those who had ever been in substance abuse treatment in lifetime,	n = 2,127	n = 749
Average number of times in treatment	2.4	2.4

*p < .01

In summary, there were some significant differences between clients who were followed up and those who were not. First, significantly more women were followed up than were not followed up. Second, significantly more followed up clients reported they had difficulty meeting basic living needs and health care needs for financial reasons. Third, significantly more followed-up clients reported they had completed at least one year of vocational school or college compared to clients who were not followed up. Fourth, significantly more clients who were included in the follow-up sample reported they had chronic pain, a chronic medical problem and a history of traumatic brain injury when compared to clients who were not in the follow-up sample. Fifth, significantly more clients in the follow-up sample reported depression and generalized anxiety in the 12 months before treatment. Sixth, significantly more followed up clients had used illicit drugs, in general, and marijuana specifically, in the 12 months before treatment compared to clients who were not followed up. And finally, significantly more clients who completed a follow-up reported a history of substance abuse treatment compared to clients who did not complete a follow-up. Nonetheless, there were no significant differences between followed up clients and clients who were not followed up on other demographic variables, employment, living situation, criminal justice system involvement, and other substance use. The differences that were found indicate that followed-up individuals were worse off in several key domains compared to those who were not followed up.