

FINDINGS FROM THE
Adult Kentucky Treatment Outcome Study



Annual Report 2017

Executive Summary

This report summarizes client outcomes from a statewide evaluation of publicly-funded substance abuse treatment programs for adults (i.e., 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) economic and living circumstances, and (4) criminal justice system involvement. 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 1,274 men and women who participated in publicly-funded substance abuse treatment from July 2014 through June 2015 and then completed a follow-up interview about 12 months later (average of 327.4 days).



SUBSTANCE USE

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 72% at intake to 29% at follow-up. The percent of clients who met DSM-5 study criteria suggesting no substance use (alcohol and/or drug use) disorder increased from 31% intake to 80% at follow-up.

Additionally, among individuals who reported using any illegal drugs in the 30 days before intake or follow-up, the percent who had Addiction Severity Index (ASI) drug composite scores that met the cutoff for severe drug use disorder decreased from just over half to 11% at follow-up.

Five core components of the KTOS evidence based assessment



**SUBSTANCE
USE**



**MENTAL
HEALTH**



**VICTIMIZATION
AND TRAUMA***



**CRIMINAL JUSTICE
INVOLVEMENT**



**QUALITY OF
LIFE**

* The victimization and trauma component is new and has not yet been analyzed for a report. In addition, quality of life measures are not included in the report this year.

The number of individuals who reported using alcohol decreased from 53% at intake to 30% at 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 from 44% at intake to 23% at follow-up. Past-12-month and past-30-day rates of smoking tobacco use had a small but significant decrease from intake to follow-up.



MENTAL HEALTH, PHYSICAL HEALTH, AND STRESS

The mental health of clients who participated in treatment also significantly improved. Specifically, 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 suicidal thoughts or attempts at follow-up than at intake.

Individuals reported a significantly higher rating of overall health and fewer days their physical and mental health were poor at follow-up compared to intake. Fewer clients also reported any chronic pain at follow-up. Individuals reported significantly fewer stress symptoms at follow-up compared to intake and fewer clients reported using substances to reduce or manage their stress at follow-up.



ECONOMIC AND LIVING CIRCUMSTANCES

In addition, individuals' living situations improved from intake to follow-up. 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. More clients reported current full-time employment and fewer clients reported unemployment at follow-up than at intake. Further, the number of individuals who reported they had difficulty meeting their basic living or health care needs decreased significantly from intake to follow-up.



CRIMINAL JUSTICE INVOLVEMENT

Involvement in the criminal justice system, in terms of being arrested or incarcerated, decreased significantly from intake to follow-up. The number of individuals who reported they had been arrested in the past 12 months decreased from 56% at intake to 20% at follow-up and the number of individuals who reported they had been incarcerated in the past 12 months decreased from 61% at intake to 29% at follow-up.

Three supplemental components of the KTOS evidence based assessment



HEALTH AND STRESS-
RELATED HEALTH
CONSEQUENCES



ECONOMIC AND
LIVING CONDITIONS



RECOVERY
SUPPORTS



RECOVERY SUPPORTS

Compared to intake, significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up. Also, individuals reported having more people they could count on for recovery support at follow-up than at intake. The vast majority of clients said they had a moderately or very good chance of getting and/or staying off of drugs or alcohol at intake and follow-up.



CLIENT SATISFACTION WITH TREATMENT EXPERIENCE

Program clients were largely satisfied with the treatment services they received at Kentucky's community mental health care centers. Overall, clients rated their treatment experience as an 8.2 out of 10. Most clients felt they were treated with respect, understood the expectations of the program, felt better about themselves, and got the services they needed to get better.



SIGNIFICANT GENDER DIFFERENCES

There were several important gender differences at treatment intake and follow-up. More women than men reported using any illegal drugs at intake and, specifically, more women reported using opioids, CNS depressants, cocaine, and other stimulants at intake. Further, significantly more men than women reported using alcohol in the 12 months and 30 days before follow-up. Significantly more women reported smoking tobacco at intake while significantly more men reported using smokeless tobacco at intake and follow-up.

More women than men reported mental health symptoms at intake and follow-up including depression, generalized anxiety, comorbid depression and anxiety, and suicidality. Of those who met study criteria for depression at intake, women reported more depression symptoms than men. Similarly, of those who met study criteria for anxiety at intake, women reported more anxiety symptoms than men. Also, women rated their overall health lower at intake and follow-up compared to men. They reported their physical health was not good for significantly more days than men at

PAST-12-MONTH SUBSTANCE USE

72%

of clients reported
illegal drug use at
intake

29%

of clients reported
illegal drug use at
follow-up

PAST-12-MONTH MENTAL HEALTH

47%

of clients met
study criteria for
depression at
intake

29%

of clients met
study criteria for
depression at
follow-up

PAST-12-MONTH ARREST

56%

of clients reported
any arrest at
intake

20%

of clients reported
any arrest at
follow-up

PAST-12-MONTH ECONOMIC INDICATORS

44%

of clients had
difficulty meeting
basic needs at
intake

30%

of clients had
difficulty meeting
basic needs at
follow-up

intake and their mental health was not good for significantly more days than men at intake and follow-up. Women reported more stress symptoms than men at intake and follow-up and more women reported using substances to reduce or manage stress at intake.

Overall, 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 \$0.80 for every dollar employed men made and at follow-up, the gap in median hourly wages was similar, with employed women making only \$0.85 for every dollar employed men made. Women also reported more economic difficulties at both intake and follow-up compared to men. Thus, even though women made significant overall gains in their employment by follow-up, they still lagged behind men in their economic standing.

Further, a higher percentage of men reported being involved with the criminal justice system in the 12 months before entering treatment and the 12 months before follow-up compared to women. More men reported an arrest or incarceration at intake and criminal justice supervision (e.g., probation or parole) compared to women at intake and follow-up.

“I liked the one-on-one and group sessions. Group sessions made me feel like I wasn’t alone in my problems when I heard other people going through the same things as me.”

— KTOS Follow-up Client

At intake, more women had contact with an AA/NA or other self-help group sponsor while men reported a higher number of people they could count on for recovery support. More women reported attending self-help group meetings at follow-up compared to men.



COST SAVINGS

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 an estimated \$4.02 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).

The KTOS 2017 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.

Overall, findings from the 2017 Kentucky Treatment Outcome Study showed positive changes for individuals from the 12 months before treatment intake to the 12-month follow-up.

Table of Contents

EXECUTIVE SUMMARY.....	2
PROJECT ACKNOWLEDGMENTS	8
OVERVIEW OF REPORT	9
SECTION 1. STUDY OVERVIEW AND CLIENT CHARACTERISTICS	11
STUDY OVERVIEW	11
DESCRIPTION OF KTOS FOLLOW-UP SAMPLE AT INTAKE	17
ADULT KTOS 2016 LOCATOR EFFORTS	18
SECTION 2. SUBSTANCE USE.....	25
ALCOHOL AND/OR DRUG USE	26
ANY ILLEGAL DRUGS	27
MARIJUANA.....	30
OPIOIDS	31
HEROIN	34
CNS DEPRESSANTS	36
COCAINE	38
OTHER STIMULANTS	40
OTHER ILLEGAL DRUGS.....	42
TREND REPORT:	44
HEROIN AND PRESCRIPTION OPIOID USE.....	44
ALCOHOL USE	45
SELF-REPORTED SYMPTOMS OF ALCOHOL AND DRUG USE SEVERITY	50
TOBACCO USE	55
SECTION 3. MENTAL HEALTH, PHYSICAL HEALTH, AND STRESS	60
DEPRESSION SYMPTOMS	60
ANXIETY SYMPTOMS	62
COMORBID DEPRESSION AND ANXIETY SYMPTOMS	64
SUICIDAL THOUGHTS AND/OR ATTEMPTS	65
GENERAL HEALTH STATUS	66
SECTION 4. ECONOMIC AND LIVING CIRCUMSTANCES	73
LIVING SITUATION	73
EMPLOYMENT.....	75
ECONOMIC HARDSHIP.....	81
TREND REPORT	83
DIFFICULTY MEETING BASIC LIVING AND HEALTH CARE NEEDS	83
SECTION 5. CRIMINAL JUSTICE SYSTEM INVOLVEMENT	84
ARRESTS	84
INCARCERATION	85
CRIMINAL JUSTICE SYSTEM SUPERVISION	86

SECTION 6. RECOVERY SUPPORTS88
MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE88
RECOVERY SUPPORTIVE INTERACTIONS.....90
AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT91
WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS/ALCOHOL.....92
CHANCES OF STAYING OFF DRUGS/ALCOHOL92

SECTION 7. CLIENT SATISFACTION WITH SUBSTANCE ABUSE TREATMENT PROGRAMS94
OVERALL CLIENT SATISFACTION94
CLIENT RATINGS OF PROGRAM EXPERIENCES94

SECTION 8. CLINICAL DIAGNOSTIC AND SERVICE INFORMATION96
DIAGNOSIS96
SERVICE INFORMATION97

SECTION 9. COST SAVINGS OF SUBSTANCE ABUSE TREATMENT IN KENTUCKY98
IMPORTANCE OF COST SAVINGS ANALYSIS98
COST OF ALCOHOL AND DRUG ABUSE AND DEPENDENCE98
COST OF TREATMENT100
COST SAVINGS100

CONCLUSIONS AND IMPLICATIONS102
STUDY LIMITATIONS.....105
CONCLUSION106

APPENDIX A. METHODS107

APPENDIX B. CLIENT CHARACTERISTICS AT INTAKE FOR THOSE WHO COMPLETED FOLLOW-UP INTERVIEWS AND THOSE WHO DID NOT COMPLETE A FOLLOW-UP INTERVIEW109

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The 2017 KTOS report includes data from 1,274 CMHC substance abuse treatment clients who completed both an intake interview between July 2014 and June 2015 and a 12-month follow-up interview between July 2015 and June 2016.

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Overview of Report

The goal of KTOS is to provide an annual outcome evaluation for Community Mental Health Centers' (CMHCs) substance abuse treatment programs for the Department for Behavioral Health, Developmental, and Intellectual Disabilities, Division of Behavioral Health 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, and several other targeted outcomes ((1) substance use and severity of substance use, (2) mental health, physical health, and stress, (3) economic and living circumstances, and (4) criminal justice system involvement). In addition, the estimated avoided costs to society in relation to the cost of publicly-funded substance abuse treatment is presented in this report.

Results are reported in ten main sections:

SECTION 1. KTOS METHOD AND CLIENT CHARACTERISTICS AT INTAKE. This section briefly describes the 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, 2014 and June 30, 2015 (N = 5,187). This section also describes characteristics of 1,274 clients who completed a 12-month follow-up interview between July 1, 2015 and June 30, 2016.

SECTION 2. SUBSTANCE USE. This section examines changes in substance use (illegal drugs, alcohol, and tobacco) from intake to follow-up as well as change in substance use severity. 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 opioids, methadone, and buprenorphine-naloxone (bup-nx)]; (c) heroin; (d) Central Nervous System (CNS) depressants [including tranquilizers, benzodiazepines, sedatives, and barbiturates]; (e) cocaine; (f) other stimulants [i.e., methamphetamine, Ecstasy, MDMA, Adderall, and Ritalin]; (g) other illegal drugs not mentioned above [i.e., hallucinogens, inhalants, and synthetic drugs]. Specifically: (1) change in 12-month substance use, (2) number of months clients used substances at intake and follow-up, (3) change in 30-day substance use, and (4) self-reported severity of alcohol and drug use based on the DSM-5 criteria for severity of substance use disorder (SUD) and the Addiction Severity Index (ASI) alcohol and drug use composite scores. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

SECTION 3. MENTAL HEALTH, PHYSICAL HEALTH, AND STRESS. This section examines changes in mental health symptoms, physical health, and stress-related health consequences 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) general health status, (6) chronic pain, and (7) stress-related health consequences. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

SECTION 4. ECONOMIC AND LIVING CIRCUMSTANCES. This section examines changes from intake to follow-up for: (1) living situation, (2) employment, and (3) economic hardship. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

SECTION 5. 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 6. RECOVERY SUPPORTS. This section focuses on five main changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) recovery supportive interactions with family/friends in the past 30 days, (3) the number of people the participant said they could count on for recovery support, (4) what will be most useful to the client in staying off drugs/alcohol, and (5) clients' perceptions of their chances of staying off drugs/alcohol. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

SECTION 7. CLIENT SATISFACTION WITH SUBSTANCE ABUSE TREATMENT PROGRAMS. This section describes two aspects of client satisfaction: (1) overall client satisfaction and (2) client ratings of program experiences.

SECTION 8: 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 9: COST SAVINGS OF SUBSTANCE ABUSE TREATMENT IN KENTUCKY. This section examines estimated cost reductions or avoided costs to society after participation in substance abuse treatment. Using the number of clients who self-reported illicit drug use and alcohol use 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.

SECTION 10: CONCLUSION AND IMPLICATIONS. This section summarizes the highlights from the evaluation results and suggests implications from these findings for the state.

SECTION 1.

Study Overview 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 2015 as well as clients who completed a 12-month follow-up interview.

STUDY OVERVIEW

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 (DBHDID) performance-based measurement of treatment outcomes in Kentucky's communities.

KTOS includes an evidence-based face-to-face interview with clients that is completed by program staff at treatment intake to assess targeted factors prior to entering treatment.¹ In FY 2015, 5,187 adults completed an intake survey between July 1, 2014 and June 30, 2015.²

At the completion of the intake interview, program staff talk to individuals about the KTOS follow-up and ask if they are interested in participating. The evidence-based follow-up interview is conducted about 12 months after the intake interview with a selected sample of clients who agree to participate. The follow-up interviews are completed over the telephone by a member of the UK CDAR research team and ask questions similar to those in the intake interview along with program satisfaction questions. Client responses to follow-up interviews are collected independently from treatment programs and kept confidential to help facilitate the honest evaluation of client outcomes and satisfaction with program services.

The UK CDAR research team secured a high follow-up rate of 77.6% and a low refusal rate (0.2%) for participation in the interviews. That means that 22.2% of clients were not successfully contacted to complete the follow-up telephone interviews (see Appendix A for detailed information on study methods).

This report describes the sample of treatment clients in two main ways: (1) providing a description of characteristics for 5,187 adults who completed an intake interview in FY 2015 (July 1, 2014 – June 30, 2015), and (2) presentation of client characteristics for 1,274 adults who completed an intake interview in FY 2015 and a 12-month follow-up telephone interview with a target date between July 1, 2015 and June 30, 2016.

¹ Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2016). *Evidence Base for the Kentucky Treatment Outcome Study (KTOS) Assessment and Methods*. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

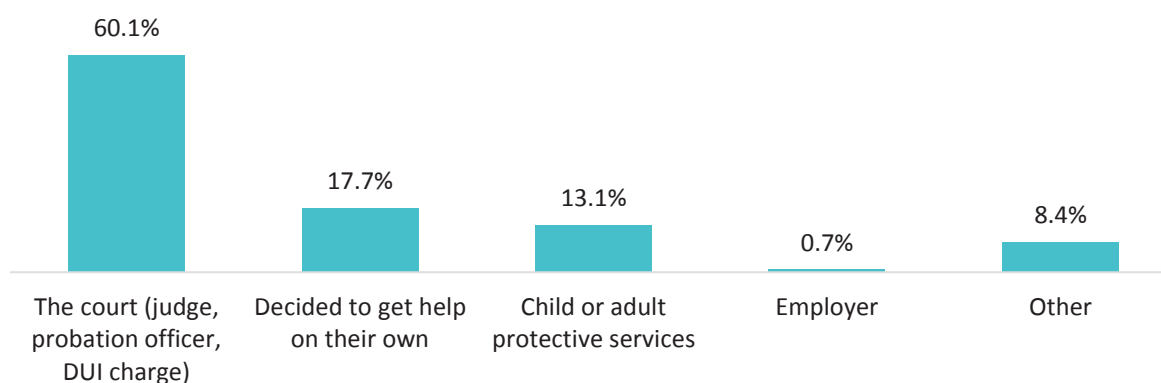
² When a client had more than one intake survey in the same fiscal year, the survey with the earliest submission date was kept in the data file and the other intake surveys were deleted so that each client was represented once and only once in the data set.

DESCRIPTION OF ALL KTOS CLIENTS AT TREATMENT INTAKE

REFERRAL SOURCE

Figure 1.1 shows the self-reported treatment referral source for all KTOS clients at intake. Sixty percent of clients reported they were referred to treatment by the court (e.g., judge, court designated worker, probation officer, for DUI offense). This is not necessarily a formal or mandated referral, but is the client's perception of referral source. About 18% of clients self-reported they decided to get help on their own (17.7%). A minority of clients reported they were referred to treatment by Child or Adult Protective Services (13.1%) or other referral source (8.4%; e.g., AA/NA sponsor or none of the above) and an even smaller percentage of clients reported they were referred to treatment by an employer (0.7%).

FIGURE 1.1. SELF-REPORTED REFERRAL SOURCE FOR ALL KTOS CLIENTS AT INTAKE (N = 5,187)



DEMOGRAPHICS

Table 1.1 shows that over half of clients with an intake survey completed in FY 2015 were male (59.8%) and the majority were White (92.8%). A minority of clients reported their race as African American/Black (5.1%) and 2.1% reported they were American Indian, Asian, Hispanic, or multiracial. Clients were, on average, 34.8 years old, ranging from 18 to 80 years old at intake. At intake 28.0% reported they had never been married (and were not cohabiting with a partner), 25.7% were separated or divorced, and 1.9% were widowed. Close to 45% were married or cohabiting with a partner at intake. Three-quarters of clients reported they had at least one child (74.0%). A small number of KTOS clients (3.4%) reported they were a veteran or were currently serving in the military, Reserves, or National Guard.

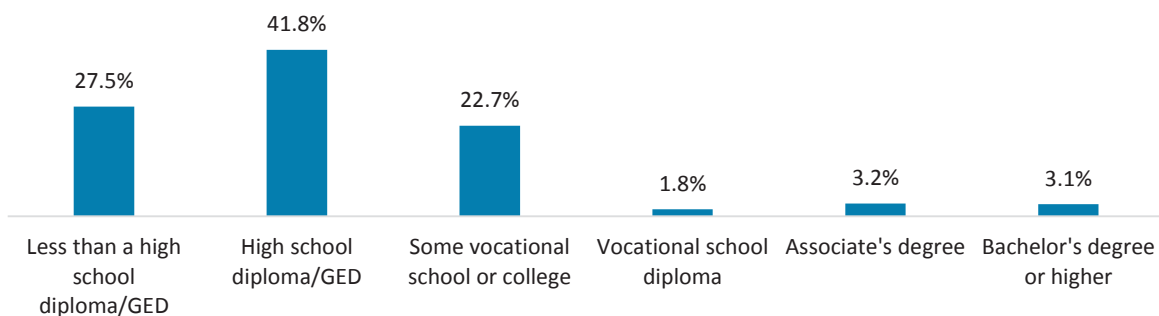
"Counselors were good, very helpful. Good people there. They've been through it themselves."

— KTOS Follow-up Client

TABLE 1.1. DEMOGRAPHICS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,187)

AGE	34.8 years (range of 18-80)
GENDER	
Male	59.8%
Female	40.2%
Transgender	0.0%
RACE	
White	92.8%
African American	5.1%
Other or multiracial	2.1%
MARITAL STATUS	
Married or cohabiting	44.3%
Never married	28.0%
Separated or divorced	25.7%
Widowed	1.9%
HAVE CHILDREN	74.0%
VETERAN OR CURRENTLY SERVING IN MILITARY	3.4%

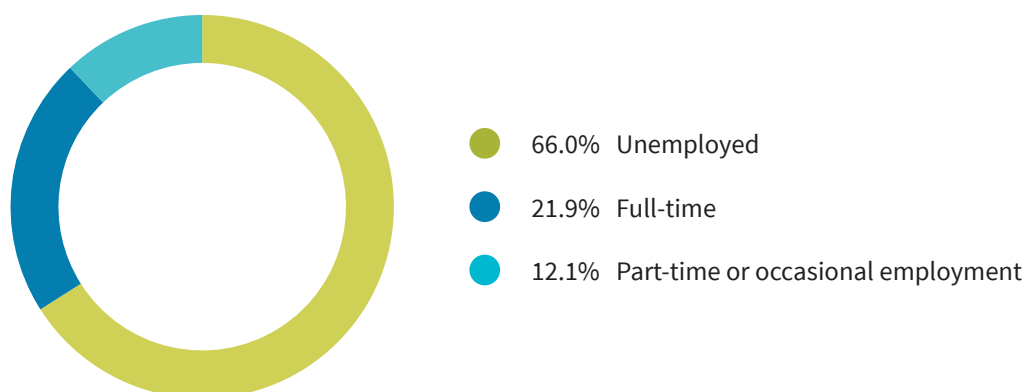
A little more than one-fourth of clients (27.5%) had less than a high school diploma or GED at intake (see Figure 1.2). The highest level of education of 41.8% of the sample was a high school diploma or GED. About 23% of clients (22.7%) had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (1.8%), an associate's degree (3.2%), or a bachelor's degree or higher (3.1%).

FIGURE 1.2. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 5,146)³

³ Forty-one clients had missing data for education level at intake due to reporting inconsistencies.

At intake, 45.2% of clients reported they had worked 0 months in the past 12 months, 18.5% had worked 1 to 5 months, and 36.2% had worked 6 or more months (not depicted in a figure). Also, the majority of individuals reported they were currently unemployed (66.0%), with 21.9% being employed full-time, and 12.1% employed part-time or having occasional or seasonal employment (see Figure 1.3). Among those who reported being employed full or part-time at intake, the median hourly wage was \$10.00.⁴

FIGURE 1.3. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 5,171)⁵



Of the individuals who were currently unemployed at intake (n = 3,410), about 42% stated they were looking for work (41.8%; see Figure 1.4). About 3 in 10 were on disability (or had applied for disability; 29.1%), 11.1% were keeping the house or taking care of children full-time at home, 10.2% were in a controlled environment that prohibited them from working, 2.6% were unemployed but not looking for work, 1.8% were students or in training, and the remaining 3.4% gave other reasons for not being employed (e.g., on furlough or temporarily laid off, retired, health problems prevented them from work but they were not on disability).

FIGURE 1.4. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 3,410)



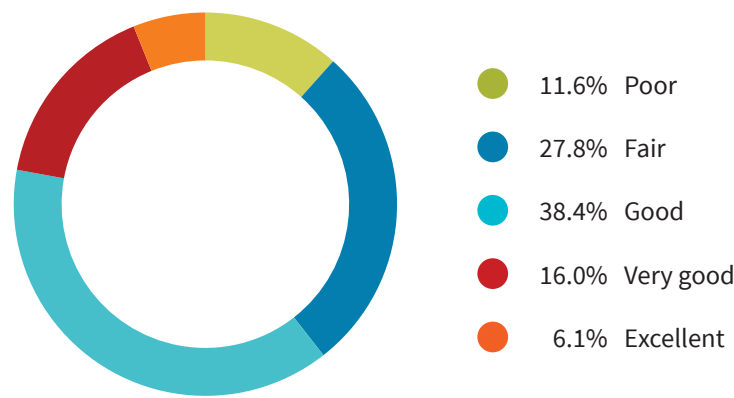
⁴ Two clients had missing data for hourly wage at intake.

⁵ Sixteen clients had missing data for employment status at intake.

PHYSICAL HEALTH

KTOS clients rated their overall health at intake (see Figure 1.5). More than one-third said their health was good (38.4%) and 27.8% said their health was fair. Sixteen percent rated their health as very good, 11.6% said their health was poor, and 6.1% reported their health was excellent.

FIGURE 1.5. OVERALL HEALTH RATING AT INTAKE (N = 5,171)



One-third of KTOS clients reported they experienced chronic pain that persisted for at least 3 months in the 12 months before entering treatment (see Table 1.2). Nearly 50% of clients reported they had at least one chronic health problem. The most common medical problems clients reported were arthritis (18.0%), heart disease (14.6%), asthma (10.9%), hepatitis C (10.4%), and severe dental problems (10.1%).

A majority of KTOS clients reported they had insurance through Medicaid (61.8%) at intake. One in five clients did not have any insurance (20.1%). Small numbers of clients had insurance through an employer, including through a spouse, parent, or self-employment (7.8%), through Medicare (7.1%), and through the Health Exchange (2.2%).

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,187)⁶

CHRONIC PAIN	32.9%
AT LEAST ONE CHRONIC MEDICAL PROBLEM	49.5%
Arthritis	18.0%
Cardiovascular/heart disease	14.6%
Asthma	10.9%
Hepatitis C	10.4%
Severe dental problems	10.1%
INSURANCE	
No insurance	20.1%
Medicaid	61.8%
Through employer (including spouse’s employer, parents’ employer, and self-employed)	7.8%
Medicare	7.1%
Through Health Exchange	2.2%

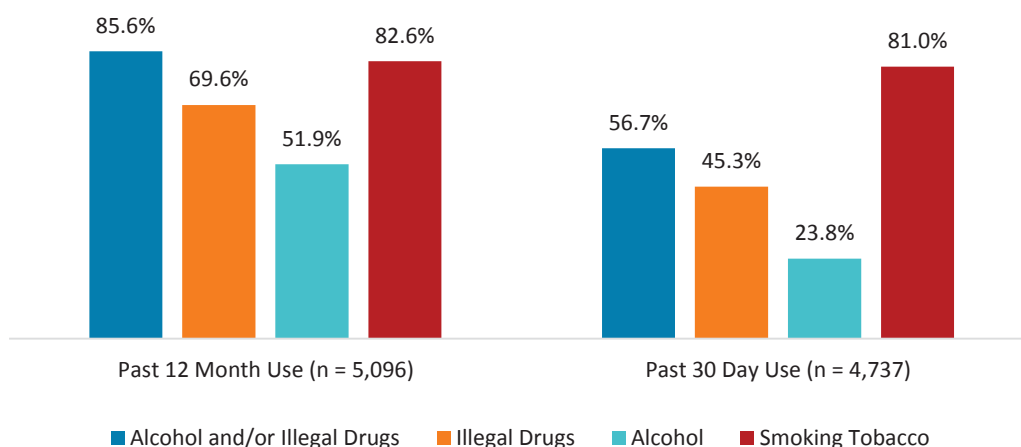
⁶ Twenty-three individuals had missing data for insurance at intake: 22 responses were unable to be classified and 1 person did not know what type of insurance they had.

SUBSTANCE USE

The majority of adults who completed an intake survey reported using alcohol and/or illegal drugs (85.6%) in the 12 months before entering treatment (see Figure 1.5).⁷ The drug classes reported by the greatest number of clients were marijuana (43.3%), prescription opioids (38.2%), and non-prescribed buprenorphine-naloxone (23.2%; not depicted in a figure). Overall, a higher percentage of individuals reported using illegal drugs (69.6%) compared to the percent of individuals who reported using alcohol (51.9%) in the 12 months before entering treatment. The vast majority of clients reported smoking tobacco (82.6%) in the 12 months before intake.

Of the 4,737 individuals who were not in a controlled environment all 30 days,⁸ over half (56.7%) reported using illegal drugs and/or alcohol in the past 30 days at intake. Specifically, 45.3% reported using illegal drugs and 23.8% reported using alcohol. Also, 81.0% reported smoking tobacco in the 30 days before entering treatment (see Figure 1.6).

FIGURE 1.6. USE OF ILLEGAL DRUGS, ALCOHOL, AND SMOKING TOBACCO IN THE 12 MONTHS AND 30 DAYS BEFORE TREATMENT⁹



CRIMINAL JUSTICE INVOLVEMENT

Over half of individuals reported being arrested at least once (56.9%) and three in five reported being incarcerated at least one night (62.0%) in the 12 months before treatment (see Figure 1.7). About 41% were currently under supervision by the criminal justice system (e.g., probation, parole) at intake.

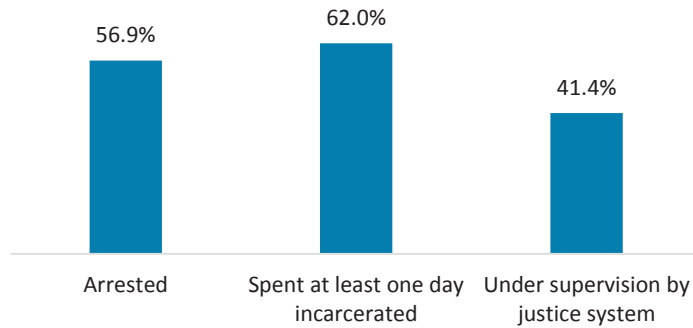
Among those who were arrested in the past 12 months, they were arrested an average of 1.7 times. Among those who were incarcerated in the past 12 months, they were incarcerated an average of 80.6 nights (not depicted in a figure).

⁷ 91 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.

⁸ 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 = 450) are not included in the analysis of substance use in the 30 days before entering treatment.

⁹ One client had missing data for past-12-month alcohol use at intake.

FIGURE 1.7. CRIMINAL JUSTICE INVOLVEMENT 12 MONTHS BEFORE TREATMENT AT INTAKE (N = 5,187)



DESCRIPTION OF KTOS FOLLOW-UP SAMPLE AT INTAKE

This report describes outcomes for 1,274 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 327.4 days) after the intake survey was completed. Detailed information about the methods can be found in Appendix A.

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 independently from the treatment program and are completed 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 (0.2%) and in the high follow-up rate (77.6%). This means that 22.2% of individuals included in the sample to be followed up were not successfully contacted.¹⁰ These elements indicate KTOS is a solid, dependable research study for publicly-funded substance abuse treatment programs with adults in Kentucky. For a summary of the client locating efforts of UK CDAR staff, see page 18.

¹⁰ 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.

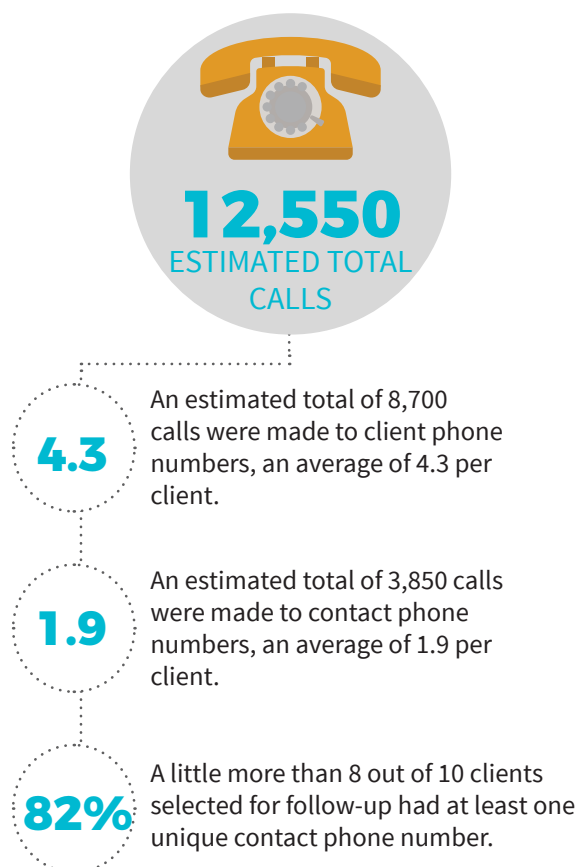
Adult KTOS 2016 Locator Efforts

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.^a Of these clients, 1,690 clients were eligible for follow-up and 1,291 completed a follow-up survey for a follow-up rate of 76.4%.

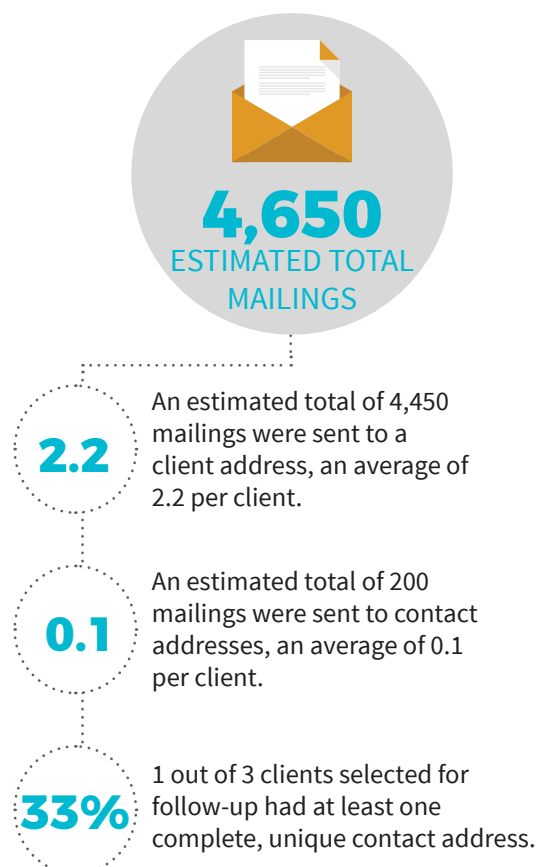
76.4%
FOLLOW-UP RATE

Of the 2,028 participants included in the follow-up sample, **523 were randomly selected to examine efforts in locating and contacting participants.**

PHONE CALLS

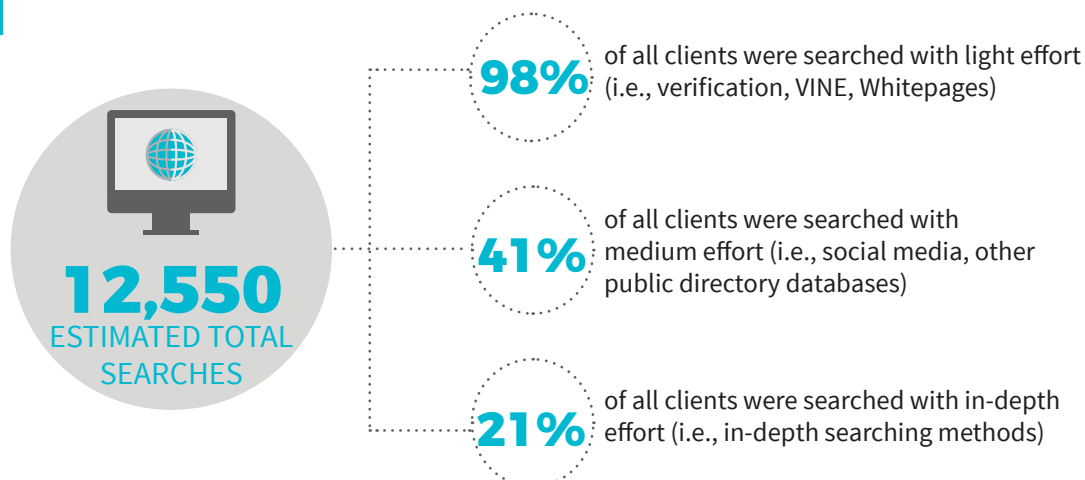


MAILINGS



ONLINE SEARCH

Client information was verified through external search in cases where client contact information was incomplete or incorrect. Overall, approximately 41% of all clients were searched to verify correct information and 20.8% of all clients were searched in-depth.

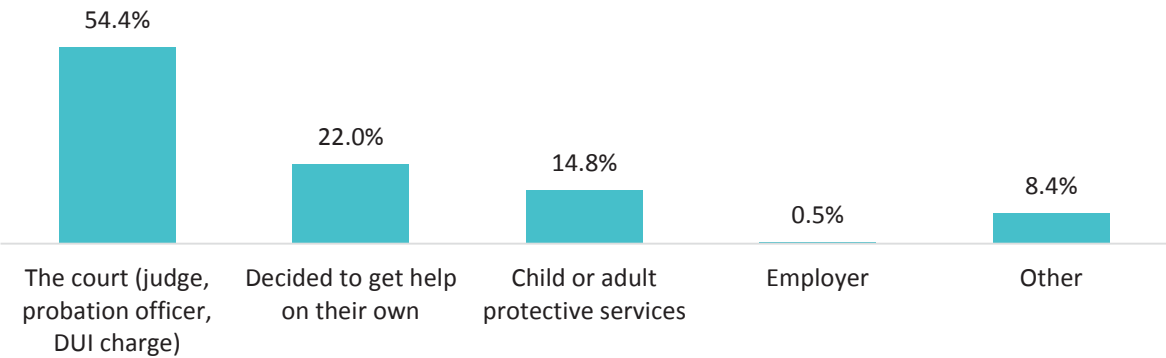


^a 38 were ineligible for participating in the follow-up survey for a variety of reasons, which left 1,690 clients eligible for follow-up.

REFERRAL SOURCE

Figure 1.8 shows the self-reported treatment referral source for the follow-up sample at intake. Over half of clients (54.4%) reported they were referred to treatment by the court (e.g., judge, court designated worker, probation officer, for DUI offense). This is not necessarily a formal or mandated referral, but is the client’s perception of referral source. Twenty-two percent of clients self-reported they decided to get help on their own. Around 15% of clients reported they were referred to treatment by Child or Adult Protective Services and 8.4% by other referral sources (e.g., AA/NA sponsor, none of the above). An even smaller percent of clients reported they were referred to treatment by an employer (0.5%).

FIGURE 1.8. SELF-REPORTED REFERRAL SOURCE FOR FOLLOW-UP CLIENTS AT INTAKE (N = 1,274)



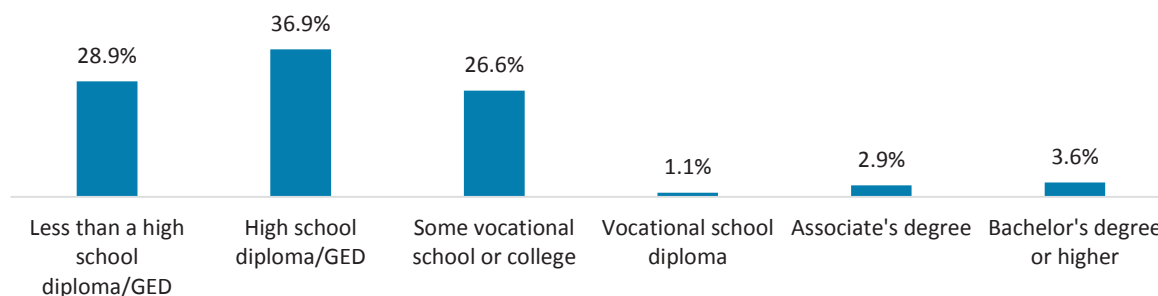
DEMOGRAPHICS

Of the 1,274 adults who completed a 12-month follow-up interview, 54.3% were male and 45.7% were female (see Table 1.3). The majority of follow-up clients were White (93.0%). A minority were African American/Black (4.9%) and 2.0% were Hispanic, American Indian, or multiracial. Clients in the follow-up sample were an average of 35 years old at the time of the intake interview. Less than half (46.5%) reported they were married or cohabiting at intake, 24.7% were separated or divorced, and 26.6% were not married (and not cohabiting). About 77% of followed-up clients had at least one child. A small percent of the follow-up sample (2.6%) reported they were a veteran or currently serving in the military, Reserves, or National Guard.

TABLE 1.3. DEMOGRAPHICS FOR KTOS CLIENTS WHO WERE FOLLOWED-UP AT INTAKE (n = 1,274)

AGE	35.0 years (range of 18-69)
GENDER	
Male	54.3%
Female	45.7%
Transgender	0.0%
RACE	
White	93.0%
African American	4.9%
Other or multiracial	2.0%
MARITAL STATUS	
Married or cohabiting	46.5%
Never married	26.6%
Separated or divorced	24.7%
Widowed	2.2%
HAVE CHILDREN	76.5%
VETERAN OR CURRENTLY SERVING IN MILITARY	2.6%

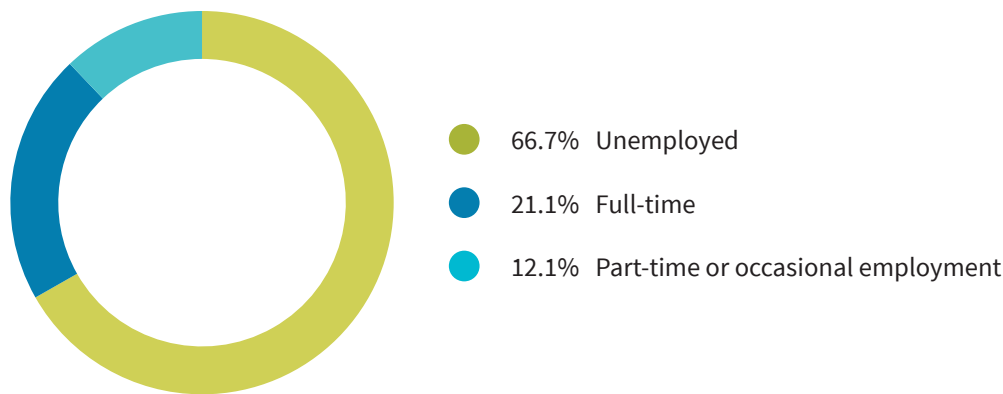
Over one-quarter of follow-up clients (28.9%) had less than a high school diploma or GED at intake (see Figure 1.9). The highest level of education of 36.9% of the follow-up sample was a high school diploma or GED. About thirty percent of clients (26.6%) had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (1.1%), an associate's degree (2.9%), or a bachelor's degree or higher (3.6%).

FIGURE 1.9. HIGHEST LEVEL OF EDUCATION COMPLETED BY FOLLOW-UP CLIENTS AT INTAKE (n = 1,233)¹¹

¹¹ Forty-one clients had missing data for education level at intake due to reporting inconsistencies.

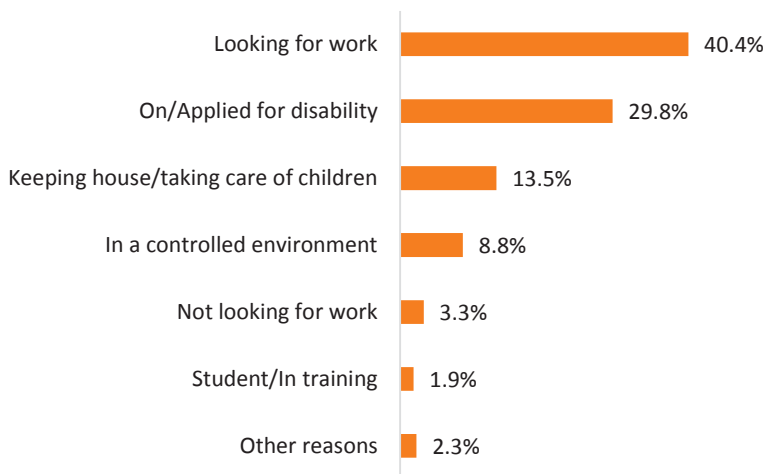
In the 12 months before intake, 44.3% of the follow-up sample reported they had worked 0 months, 19.2% had worked 1 to 5 months, and 36.5% had worked 6 or more months (not depicted in a figure). The majority of follow-up individuals reported they were currently unemployed at intake (66.7%), with 21.1% reporting full-time employment, and 12.1% employed part-time or having occasional or seasonal employment (see Figure 1.10). Among those who reported being employed full or part-time at intake, the median hourly wage was \$9.20.¹²

FIGURE 1.10. CURRENT EMPLOYMENT STATUS OF FOLLOW-UP CLIENTS AT INTAKE (n = 1,269)¹³



Of the individuals who were currently unemployed at intake (n = 845), about 40% stated they were looking for work (40.4%; see Figure 1.11). Nearly 30% were on disability (or have applied for disability; 29.8%), 13.5% were keeping the house or taking care of children full-time at home, 8.8% were in a controlled environment that prohibited them from working, 3.3% were unemployed but not looking for work, 1.9% were students or in training, and the remaining 2.3% gave other reasons for not being employed (e.g., on furlough or temporarily laid off, retired, health problems prevented them from work but they weren't on disability).

FIGURE 1.11. OF THOSE FOLLOW-UP CLIENTS WHO WERE UNEMPLOYED AT INTAKE, REASONS FOR BEING UNEMPLOYED (n = 845)



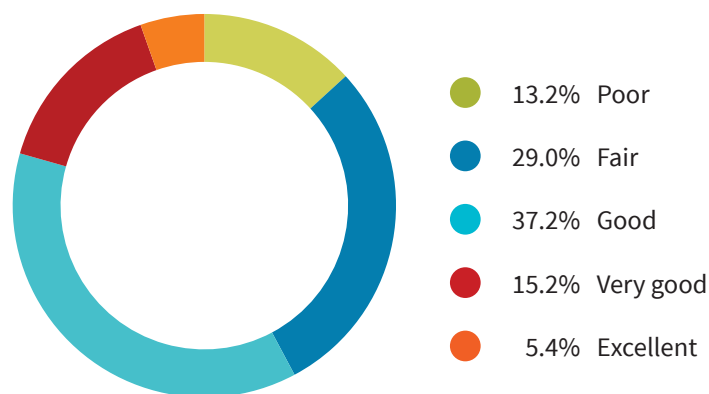
¹² One client had missing data for hourly wage at intake.

¹³ Five clients had missing data for employment status at intake.

PHYSICAL HEALTH

KTOS follow-up clients rated their overall health at intake (see Figure 1.12). Nearly 40% said their health was good (37.2%) and 29.0% said their health was fair. Fifteen percent rated their health as very good (15.2%), 13.2% said their health was poor, and 5.4% reported their health was excellent.

FIGURE 1.12. OVERALL HEALTH RATING FOR FOLLOW UP SAMPLE AT INTAKE (N = 1,274)



More than one-third of KTOS clients (36.7%) reported they experienced chronic pain that persisted for at least 3 months in the 12 months before entering treatment (see Table 1.4). About 54% of clients reported they had at least one chronic health problem. The most common medical problems clients reported were arthritis (20.4%), heart disease (14.3%), asthma (12.8%), hepatitis C (12.8%), and severe dental problems (11.3%).

A majority of KTOS clients in the follow-up sample reported they had insurance through Medicaid (67.6%) at intake. About 16% did not have any insurance. Small numbers of clients had insurance through an employer, including through a spouse, parent, or self-employment (7.0%), through Medicare (6.1%), and through the Health Exchange (2.4%).

TABLE 1.4. HEALTH-RELATED CONCERNS FOR ALL KTOS CLIENTS AT INTAKE (N = 1,274)¹⁴

CHRONIC PAIN	36.7%
AT LEAST ONE CHRONIC MEDICAL PROBLEM	53.6%
Arthritis	20.4%
Cardiovascular/heart disease	14.3%
Asthma	12.8%
Hepatitis C	12.8%
Severe dental problems	11.3%
INSURANCE	
No insurance	16.2%
Medicaid	67.6%
Through employer (including spouse's employer, parents' employer, and self-employed)	7.0%
Medicare	6.1%
Through Health Exchange	2.4%

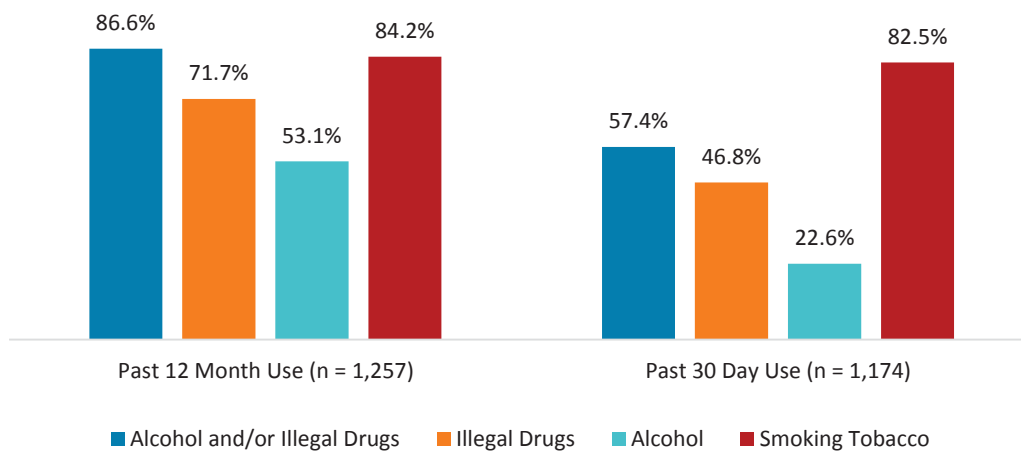
¹⁴ Four individuals had missing data for insurance at intake because their responses were unable to be classified.

SUBSTANCE USE

The majority of adults who completed a follow-up survey reported using alcohol and/or illegal drugs (86.6%) in the 12 months before entering treatment (see Figure 1.13).¹⁵ A higher percentage of follow-up individuals reported using illegal drugs (71.7%) than using alcohol (53.1%) in the 12 months before entering treatment. The drug classes reported by the greatest number of clients at intake were marijuana (45.8%), prescription opioids (40.3%), sedatives/tranquilizers (25.3%), and non-prescribed buprenorphine-naloxone (25.3%; not depicted in a figure). At intake, the majority of clients reported smoking tobacco (84.2%) in the past 12 months.

Of the 1,174 individuals¹⁶ who were not in a controlled environment all 30 days, over half (57.4%) reported using illegal drugs and/or alcohol, 46.8% reported using illegal drugs, 22.6% reported using alcohol, and 82.5% reported smoking tobacco in the 30 days before entering treatment.

FIGURE 1.13. FOLLOW-UP SAMPLE USE OF ILLEGAL DRUGS, ALCOHOL, AND SMOKING TOBACCO IN THE 12 MONTHS AND 30 DAYS BEFORE TREATMENT¹⁷



CRIMINAL JUSTICE INVOLVEMENT

Over half of individuals reported being arrested at least once (56.5%) and about 62% reported being incarcerated at least one night in the 12 months before treatment (see Figure 1.14). About 41% were currently under supervision by the criminal justice system (e.g., probation, parole) at intake.

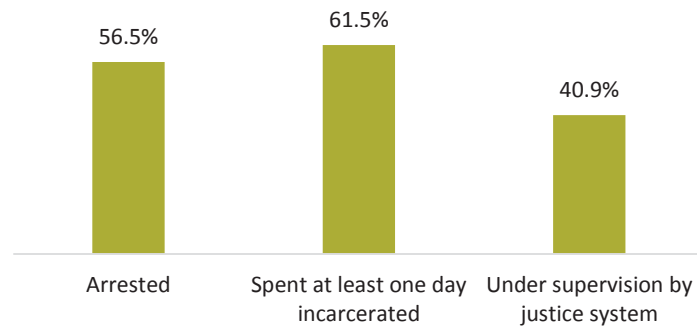
Among those who were arrested in the past 12 months, they were arrested an average of 1.7 times. Among those who were incarcerated in the past 12 months, they were incarcerated an average of 75.8 nights (not depicted in a figure).

¹⁵ Seventeen 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.

¹⁶ 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 = 100) are not included in the analysis of substance use in the 30 days before entering treatment.

¹⁷ One client had missing data for past-12-month alcohol use at intake.

FIGURE 1.14. FOLLOW-UP SAMPLE CRIMINAL JUSTICE INVOLVEMENT 12 MONTHS BEFORE TREATMENT AT INTAKE (n = 1,274)



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, education, physical health, mental health, and severity of 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. See Appendix B for detailed comparisons of clients who completed a follow-up interview (n = 1,274) and clients who did not complete a follow-up interview (n = 3,913).

Significantly more women were followed up than were not followed up. Significantly more followed-up clients reported they had difficulty meeting basic living needs and health care needs for financial reasons. 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. Significantly more clients who were included in the follow-up sample reported they had chronic pain and a chronic medical problem when compared to clients who were not in the follow-up sample. Significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. More clients who completed a follow-up and were not in a controlled environment all 30 days before entering treatment met or surpassed the cutoff score for alcohol or drug use SUD. They also met or surpassed the cutoff score for drug use SUD and had a higher average composite score for drug use when compared to clients who did not complete a follow-up.

SECTION 2.**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 opioids, methadone, and buprenorphine-naloxone (bup-nx)]; (c) heroin; (d) Central Nervous System (CNS) depressants [including tranquilizers, benzodiazepines, sedatives, and barbiturates]; (e) cocaine; (f) other stimulants [i.e., methamphetamine, Ecstasy, MDMA, Adderall, and Ritalin]; (g) 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 and specifically for marijuana, opioids, heroin, CNS depressants, cocaine, other 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 ($n = 1,255$)¹⁸ 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, cocaine, other stimulants, and other illegal drugs), alcohol use, and tobacco use ($n = 1,174$)¹⁹ is also examined.

¹⁸ 17 cases were excluded from this analysis because they were incarcerated all 365 days before entering treatment and 2 cases were excluded from this analysis because they had missing data at follow-up for days incarcerated.

¹⁹ 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 ($n = 83$) 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 SEVERITY OF SUBSTANCE USE DISORDER FROM INTAKE TO FOLLOW-UP.** There are two indices of substance use severity presented in this report. One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met any of the 11 DSM-5 symptoms for substance use disorder (SUD) in the past 12 months. For this report, the severity of the substance use disorder (i.e., none, mild, moderate, or severe) is based on the number of self-reported symptoms. The percent of individuals in each of the four categories at intake and follow-up is presented.

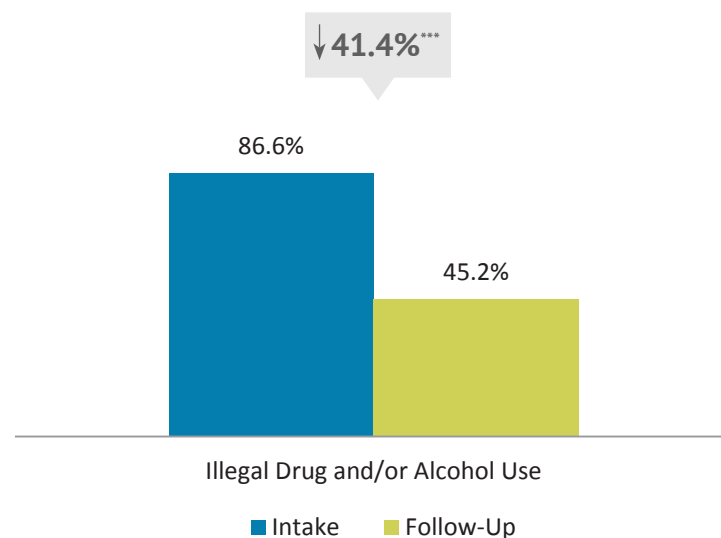
The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs ($n = 593$), alcohol ($n = 361$) and those with alcohol and/or illegal drug use ($n = 747$). The ASI composite score assesses self-reported addiction severity even among those reporting no substance 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/OR DRUG USE

The majority of clients (86.6%) reported using alcohol and/or illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 45.2% at follow-up. As a result, there was a 41.4% significant decrease in the number of clients reporting use of alcohol and/or illegal drugs (see Figure 2.1).

The number of clients reporting alcohol and/or illegal drug use decreased by 41%

FIGURE 2.1. PAST-12-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP ($N = 1,255$)



ANY ILLEGAL DRUGS

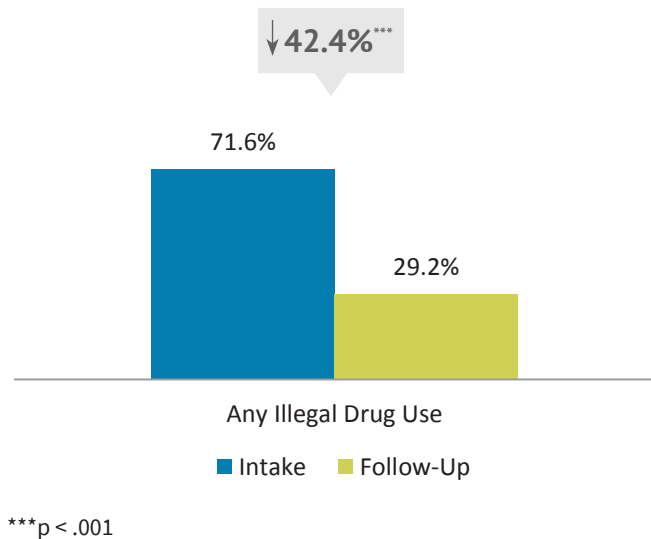
PAST-12-MONTH ILLEGAL DRUG USE

At intake, clients were asked how old they were when they first began to use illicit drugs. On average, KTOS clients reported they were 17.2 years old when they first used illegal drugs (not depicted in figure).

Seven out of ten clients (71.6%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 29.2% at follow-up. Overall, for the KTOS follow-up sample, there was a 42.4% decrease in the number of clients reporting use of any illegal drug (see Figure 2.2).

The number of clients reporting illegal drug use decreased by 42%

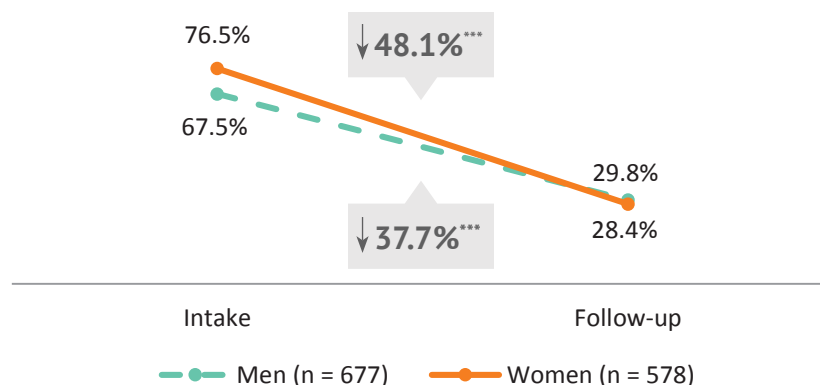
FIGURE 2.2. PAST-12-MONTH DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,255)



GENDER DIFFERENCES IN PAST-12-MONTH OVERALL ILLEGAL DRUG USE

At intake, significantly more women than men reported any illegal drug use, 76.5% vs. 67.5% (see Figure 2.3). The number of women and men who reported illegal drug use significantly decreased from intake to follow-up by 48.1% and 37.7% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any illegal drugs.

Significantly more women than men reported using any illegal drugs at intake

FIGURE 2.3. GENDER DIFFERENCES IN PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP^a

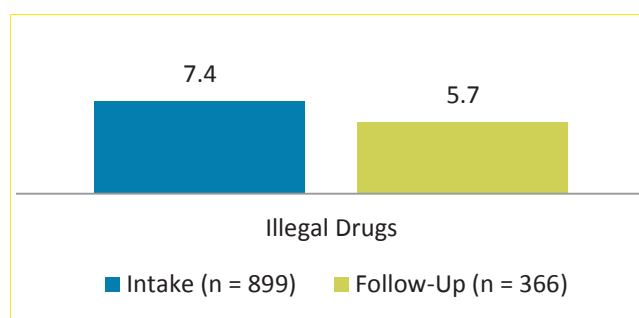
a—Significant difference by gender at intake, $p < .001$

*** $p < .001$.

AVERAGE NUMBER OF MONTHS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 12 months before entering treatment ($n = 899$), they reported using illegal drugs an average of 7.4 months (see Figure 2.4).^{20, 21} Clients who reported using illegal drugs at follow-up ($n = 366$) reported using an average of 5.7 months.

FIGURE 2.4. AVERAGE NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS



PAST-30-DAY ILLEGAL DRUG USE

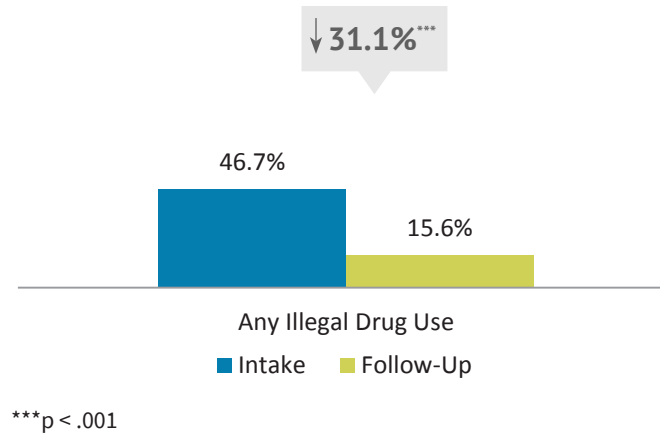
Less than one half of clients (46.7%) who were not in a controlled environment all 30 days reported they had used illegal drugs in the 30 days before entering treatment (see Figure 2.5). At follow-up, only 15.6% of clients reported they had used illegal drugs in the past 30 days—a significant decrease of 31.1%.

“They really listen to you They didn’t treat you like a client, they treated you like a human and didn’t talk down to you.”

— KTOS Follow-up Client

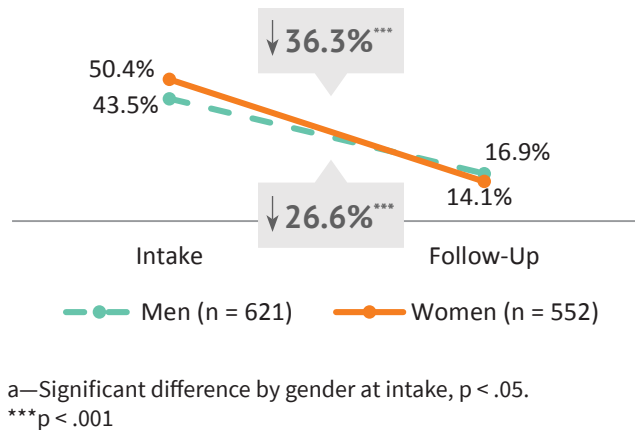
²⁰ Because number of months of illegal drugs was measured separately for each class of substance, the value is a calculation of the maximum number of months clients used any class of substance.

²¹ Two cases had missing values for number of months used illegal drugs in the 12 months before intake.

FIGURE 2.5. PAST-30-DAY USE OF ANY ILLEGAL DRUG AT INTAKE AND FOLLOW-UP (N = 1,173)²²

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. 43.5%). The number of women and men who reported illegal drug use decreased significantly by 36.3% and 26.6% respectively. The difference between men and women who reported illegal drug use was not significant at follow-up (see Figure 2.6).

FIGURE 2.6. GENDER DIFFERENCES IN PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP^a

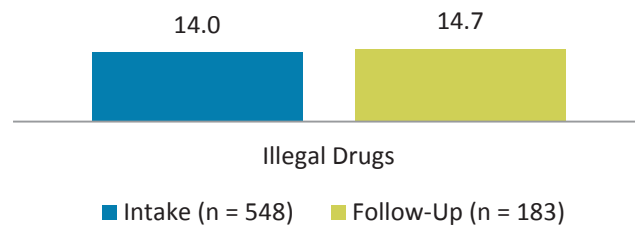
AVERAGE NUMBER OF DAYS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 30 days before entering treatment (n = 548), they reported using illegal drugs on average 14.0 days (see Figure 2.7). Clients who reported using illegal drugs at follow-up (n = 183) reported using, on average, 14.7 days.²³

²² One client had missing data for past-30-day illegal drug use at follow-up.

²³ 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.

FIGURE 2.7. AVERAGE NUMBER OF DAYS CLIENTS USED ILLEGAL DRUGS



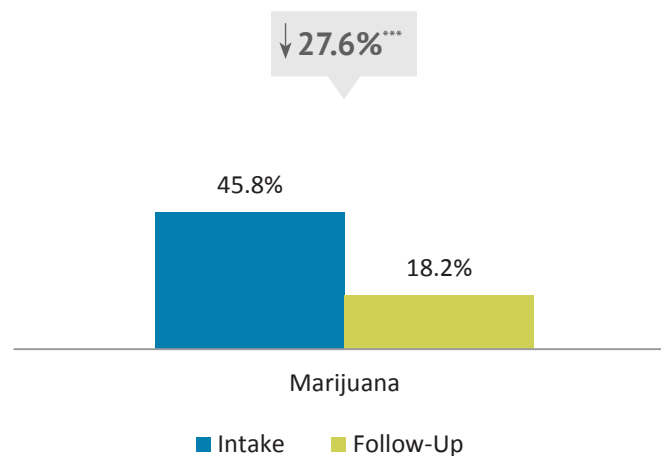
MARIJUANA

PAST-12-MONTH MARIJUANA USE

Over two-fifths of clients (45.8%) reported using marijuana in the 12 months before entering treatment, which decreased to 18.2% at follow-up. Overall, for the KTOS follow-up sample, there was a 27.6% significant decrease in the number of clients reporting marijuana use (see Figure 2.8).

The number of clients reporting marijuana use decreased by 28%

FIGURE 2.8. PAST-12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,255)

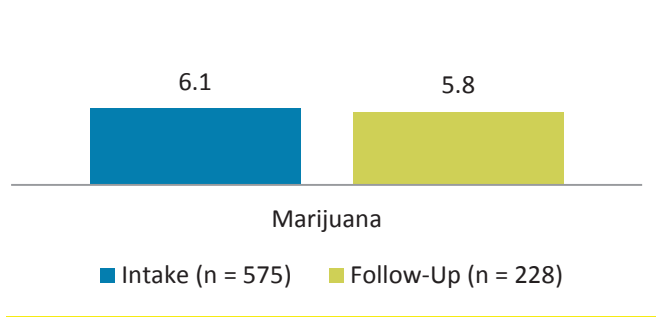


***p < .001

AVERAGE NUMBER OF MONTHS USED MARIJUANA

Among the clients who reported using marijuana in the 12 months before entering treatment (n = 575), they reported using marijuana, on average, 6.1 months (see Figure 2.9). Among clients who reported using marijuana at follow-up (n = 228), they reported using, on average 5.8 months.

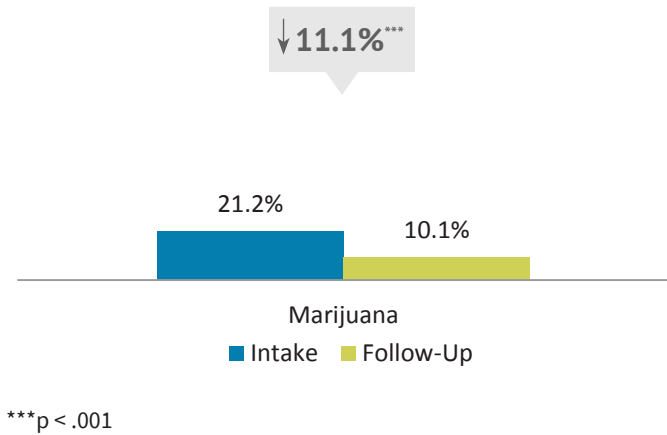
FIGURE 2.9. AVERAGE NUMBER OF MONTHS CLIENTS USED MARIJUANA



PAST-30-DAY MARIJUANA USE

The number of clients who reported using marijuana in the past 30 days decreased significantly by 11.1%, from 21.2% at intake to 10.1% at follow-up (see Figure 2.10).

FIGURE 2.10. PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,174)



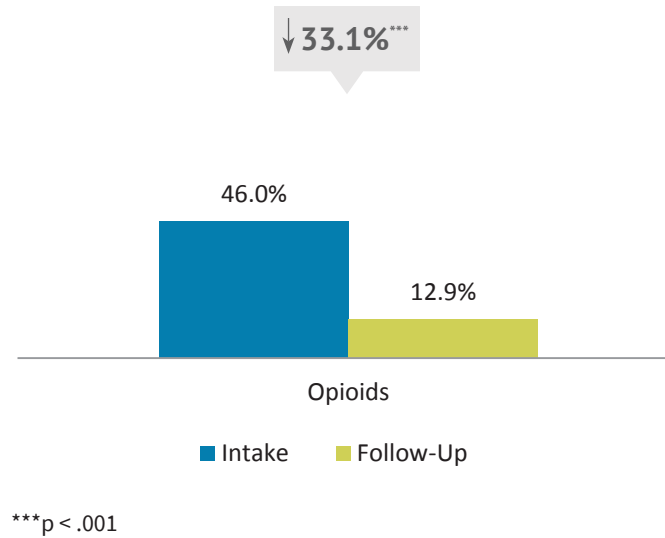
OPIOIDS

PAST-12-MONTH OPIOID MISUSE

A little less than half of clients (46.0%) reported misusing opioids other than heroin, including prescription opioids, methadone, and buprenorphine-naloxone (bup-nx) in the 12 months before entering treatment, which decreased to 12.9% at follow-up. Overall, for the KTOS follow-up sample, there was a 33.1% decrease in the number of clients reporting opioid misuse other than heroin (see Figure 2.11).

The number of clients reporting opioid misuse decreased by 33%

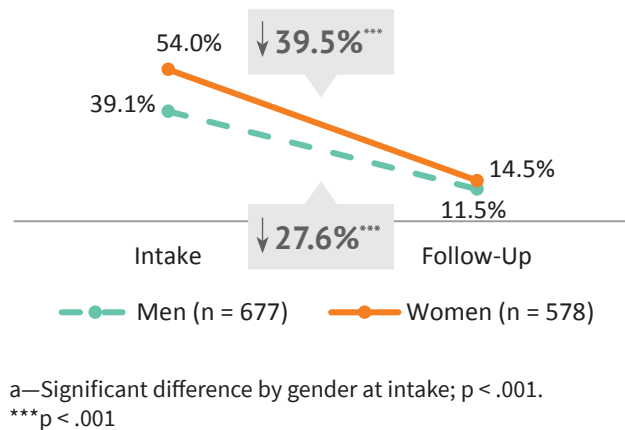
FIGURE 2.11. PAST-12-MONTH OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 1,255)



GENDER DIFFERENCES IN PAST-12-MONTH OPIOID MISUSE

Significantly more women than men reported opioid misuse in the 12 months before intake, 54.0% vs. 39.1%. The number of women and men who reported opioid misuse significantly decreased from intake to follow-up and at follow-up, there was no significant difference in the number of men (11.5%) and women (14.5%) who reported past-12-month opioid misuse (see Figure 2.12).

Significantly more women than men reported opioid misuse at intake

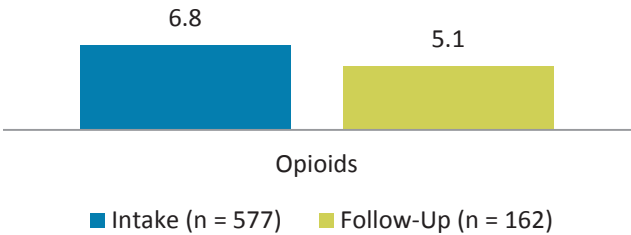
FIGURE 2.12. GENDER DIFFERENCES IN PAST-12-MONTH OPIOID MISUSE AT INTAKE AND FOLLOW-UP^a

AVERAGE NUMBER OF MONTHS OF OPIOID MISUSE

Among the clients who reported misusing opioids in the 12 months before entering treatment (n = 577), they reported misusing opioids on average 6.8 months (see Figure 2.13).²⁴ Among clients who reported misusing opioids at follow-up (n = 162), they reported misusing an average 5.1 months.

²⁴ Because number of months of prescription opioids, methadone, and bup-nx were measured separately, the value is a calculation of the maximum number of months clients used any of these specific types of opioids.

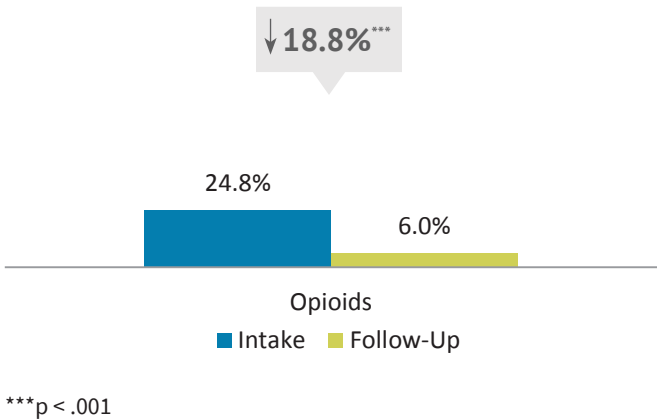
FIGURE 2.13. AVERAGE NUMBER OF MONTHS CLIENTS MISUSED OPIOIDS



PAST-30-DAY OPIOID MISUSE

The number of clients who reported misusing opioids decreased significantly by 18.8%, from 24.8% at intake to 6.0% at follow-up (see Figure 2.14).

FIGURE 2.14. PAST-30-DAY OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 1,173)²⁵

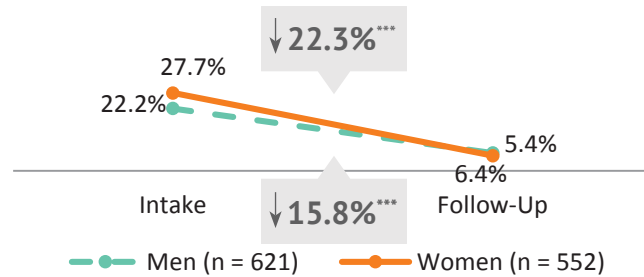


GENDER DIFFERENCES IN PAST-30-DAY OPIOID MISUSE

Significantly more women than men reported opioid misuse in the 30 days before intake, 27.7% vs. 22.2% (see Figure 2.15). The number of women and men who reported opioid misuse significantly decreased from intake to follow-up by 22.3% and 15.8% respectively and at follow-up, there was no significant difference in the number of men and women reporting past-30-day opioid misuse.

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

²⁵ One case had missing values on past-30-day opioid misuse at follow-up.

FIGURE 2.15. GENDER DIFFERENCES PAST-30-DAY OPIOID MISUSE AT INTAKE AND FOLLOW-UP^a

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

*** $p < .001$

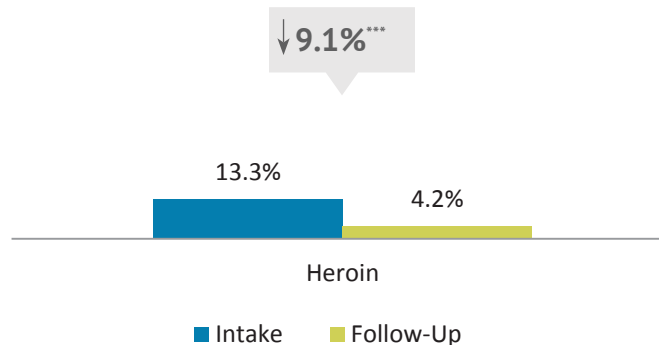
HEROIN

PAST-12-MONTH HEROIN USE

About 13% of clients reported using heroin in the 12 months before entering treatment, which decreased 9.1% to 4.2% at follow-up (see Figure 2.16).

The number of clients reporting heroin use decreased by 9%

FIGURE 2.16. PAST-12-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,255)



*** $p < .001$

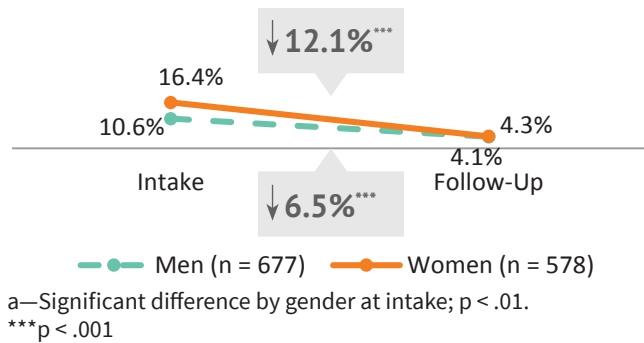
GENDER DIFFERENCES IN PAST-12-MONTH HEROIN USE

Significantly more women than men reported heroin use at intake (16.4% vs 10.6%; see Figure 2.17). The percent of women who reported heroin use decreased by 12.1% at follow-up and the number of men who reported heroin use decreased by 6.5%. At follow-up, the number of men and women who reported past-12-month heroin use was not significantly different.

“Everyone was so nice and helpful. Whatever you needed they tried to help you out with it.”

— KTOS Follow-up Client

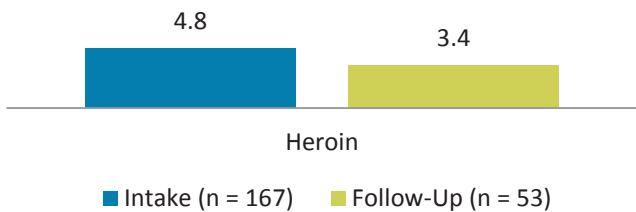
FIGURE 2.17. GENDER DIFFERENCES IN PAST-12-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP^a



AVERAGE NUMBER OF MONTHS USED HEROIN

Among the clients who reported using heroin in the 12 months before entering treatment (n = 167), they reported using heroin, on average, 4.8 months (see Figure 2.18). Among clients who reported using heroin at follow-up (n = 53), they reported using, on average, 3.4 months.

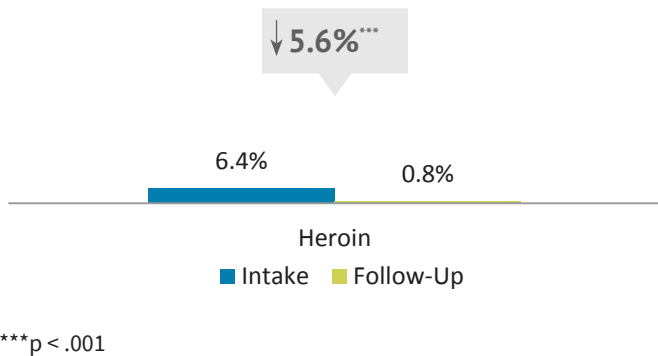
FIGURE 2.18. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



PAST-30-DAY HEROIN USE

A minority of clients (6.4%) reported using heroin in the 30 days before intake, with a significant decrease of 5.6% by follow-up to 0.8% (see Figure 2.19).

FIGURE 2.19. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,174)



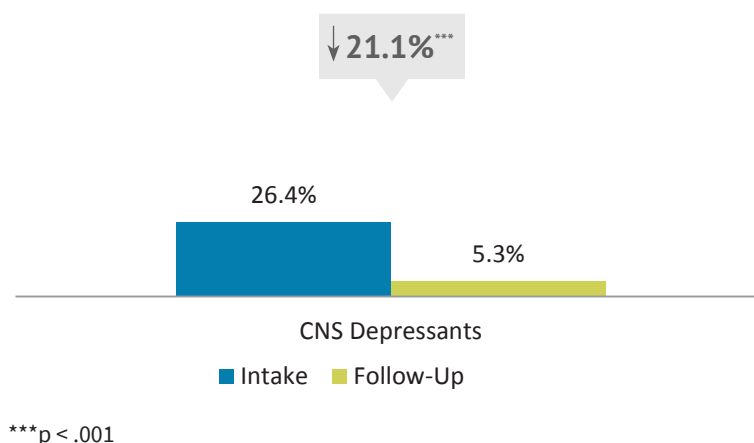
CNS DEPRESSANTS

PAST-12-MONTH CNS DEPRESSANT USE

More than one in four clients (26.4%) reported using CNS depressants, including tranquilizers, benzodiazepines, sedatives, and barbiturates in the 12 months before entering treatment, which decreased to 5.3% at follow-up. Overall, for the KTOS follow-up sample, there was a 21.1% decrease in the number of clients reporting CNS depressant use (see Figure 2.20).

The number of clients reporting CNS depressant use decreased by 21%

FIGURE 2.20. PAST-12-MONTH CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,254)²⁶

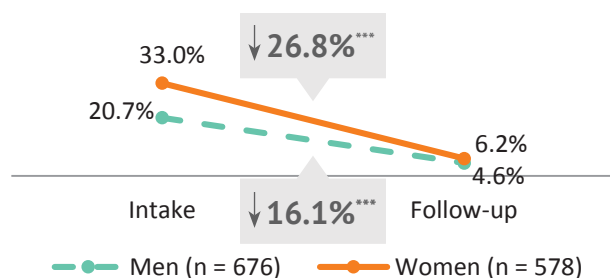


GENDER DIFFERENCES IN PAST-12-MONTH CNS DEPRESSANT USE

Significantly more women than men reported CNS depressant use in the 12 months before intake, 33.0% vs. 20.7% (see Figure 2.21). The number of women and men who reported CNS depressant use significantly decreased from intake to follow-up by 26.8% and 16.1% respectively. At follow-up, there was no significant difference in the percent of women and men who reported using CNS depressants.

Significantly more women than men reported CNS depressant use at intake

FIGURE 2.21. GENDER DIFFERENCES IN PAST-12-MONTH CNS DEPRESSANT USE FROM INTAKE TO FOLLOW-UP^a



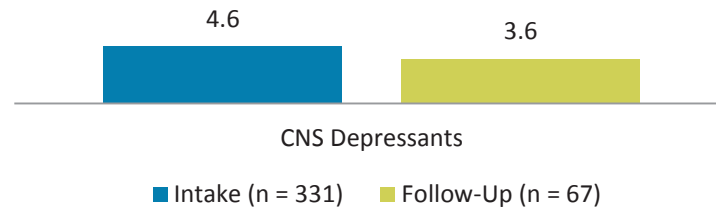
a—Significant difference by gender at intake; p < .001
***p < .001

²⁶ One client had missing values on past-12-month CNS depressant use at follow-up.

AVERAGE NUMBER OF MONTHS USED CNS DEPRESSANTS

Figure 2.22 shows the average maximum number of months clients who used CNS depressants reported using these illegal drugs.²⁷ Among the clients who reported using these substances in the 12 months before entering treatment (n = 331), they reported using CNS depressants an average 4.6 months. Among clients who reported using CNS depressants in the 12 months before follow-up (n = 67), they reported using an average of 3.6 months.

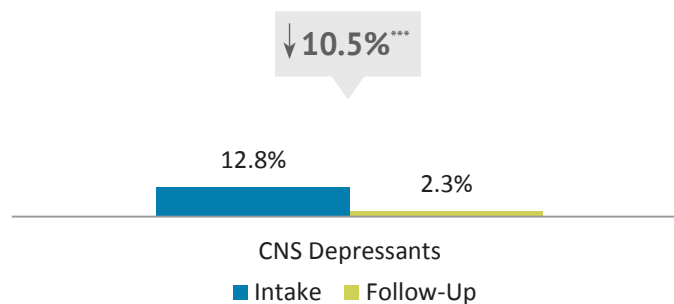
FIGURE 2.22. AVERAGE NUMBER OF MONTHS OF CNS DEPRESSANT USE



PAST-30-DAY CNS DEPRESSANT USE

The number of clients who reported using CNS depressants decreased significantly by 10.5%, from 12.8% at intake to 2.3% at follow-up (see Figure 2.23).

FIGURE 2.23. PAST-30-DAY CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,173)²⁸



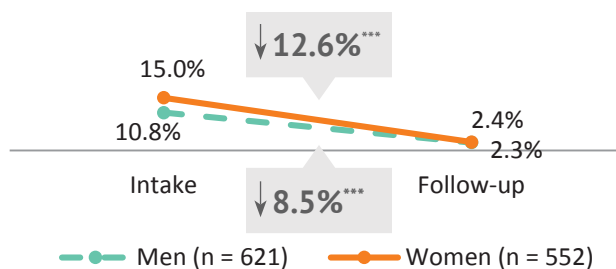
***p < .001

GENDER DIFFERENCES IN PAST-30-DAY CNS DEPRESSANT USE

Significantly more women than men reported CNS depressant use in the 30 days before intake, 15.0% vs. 10.8% (see Figure 2.24). The number of women and men who reported CNS depressant use significantly decreased from intake to follow-up by 12.6% and 8.5% respectively. There was no significant difference in past-30-day CNS depressant use at follow-up by gender.

²⁷ 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.

²⁸ One case had missing values on past-30-day CNS depressant use at follow-up.

FIGURE 2.24. GENDER DIFFERENCES IN PAST-30-DAY CNS DEPRESSANT USE FROM INTAKE TO FOLLOW-UP^a

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

*** $p < .001$

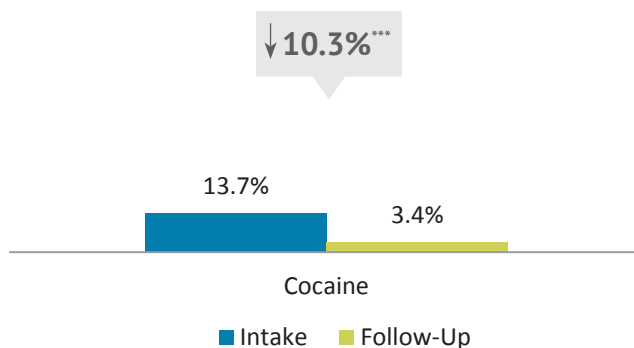
COCAINE

PAST-12-MONTH COCAINE USE

About 14% of clients reported using cocaine in the 12 months before entering treatment, which decreased to 3.4% at follow-up. Overall, there was a 10.3% decrease in the number of clients reporting cocaine use (see Figure 2.25).

The number of clients reporting cocaine use decreased by 10%

FIGURE 2.25. PAST-12-MONTH COCAINE USE AT INTAKE AND FOLLOW-UP (N = 1,255)

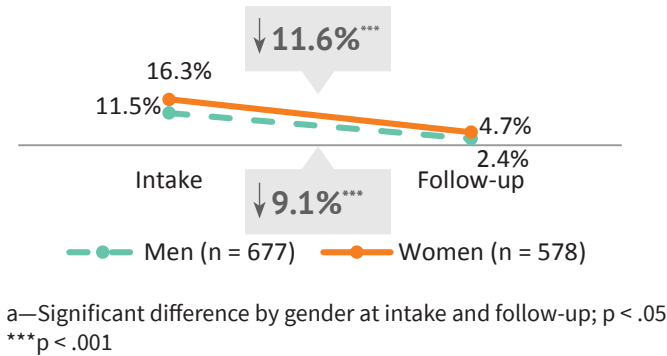


*** $p < .001$

GENDER DIFFERENCES IN PAST-12-MONTH COCAINE USE

Significantly more women (16.3%) reported cocaine use in the 12 months before entering treatment when compared to men (11.5%; see Figure 2.26). The percent reporting stimulant use significantly decreased for both women and men, respectively (11.6% vs. 9.1%), but at follow-up there was still a significant difference in the number of women (4.7%) and men (2.4%) reporting cocaine use.

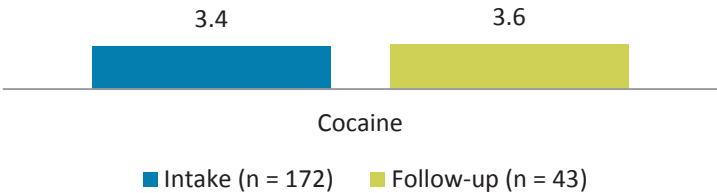
FIGURE 2.26. GENDER DIFFERENCES IN PAST-12-MONTH COCAINE USE FROM INTAKE TO FOLLOW-UP^a



AVERAGE NUMBER OF MONTHS USED COCAINE

Among the clients who reported using cocaine in the 12 months before entering treatment (n = 172), they reported using cocaine an average of 3.4 months (see Figure 2.27). Clients who reported using cocaine in the 12 months before follow-up (n = 43) reported using cocaine, on average, 3.6 months.

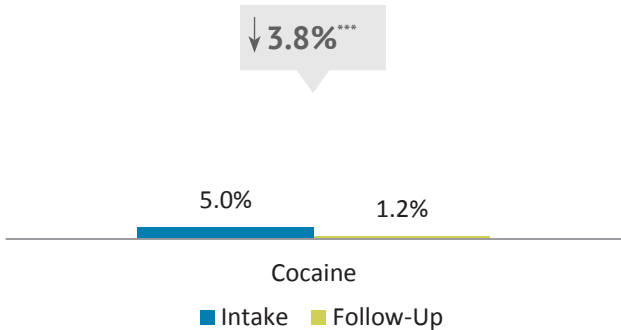
FIGURE 2.27. AVERAGE NUMBER OF MONTHS OF COCAINE USE



PAST-30-DAY COCAINE USE

The number of clients who reported using cocaine in the past 30 days decreased significantly by 3.8%, from 5.0% at intake to 1.2% at follow-up (see Figure 2.28).

FIGURE 2.28. PAST-30-DAY COCAINE USE AT INTAKE AND FOLLOW-UP (N = 1,174)

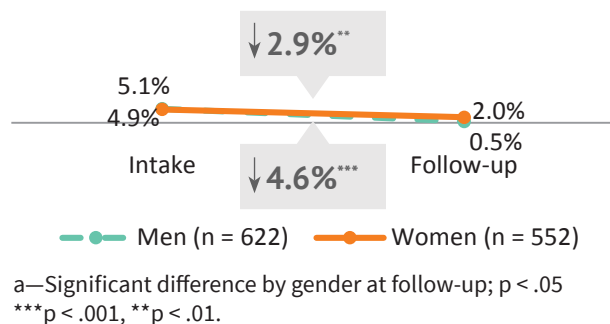


*** $p < .001$

GENDER DIFFERENCES IN PAST-30-DAY COCAINE USE

At intake, there was no significant difference by gender, however, significantly more women (2.0%) reported cocaine use in the 12 months before follow-up when compared to men (0.5%; see Figure 2.29).

FIGURE 2.29. GENDER DIFFERENCES IN PAST-30-DAY COCAINE USE FROM INTAKE TO FOLLOW-UP^a



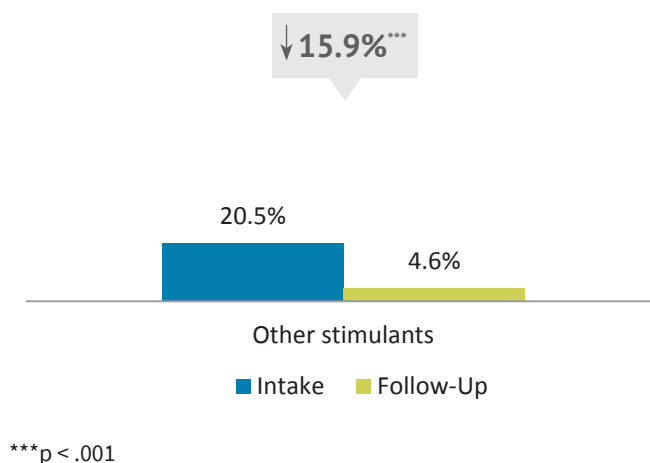
OTHER STIMULANTS

PAST-12-MONTH OTHER STIMULANT USE

One-fifth of clients (20.5%) reported using stimulants other than cocaine, including methamphetamine, Ecstasy, MDMA, and non-prescription Adderall and Ritalin in the 12 months before entering treatment, which decreased to 4.6% at follow-up. Overall, for the KTOS follow-up sample, there was a 15.9% decrease in the number of clients reporting other stimulant use (see Figure 2.30).

The number of clients reporting stimulant use other than cocaine decreased by 16%

FIGURE 2.30. PAST-12-MONTH STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 1,254)²⁹

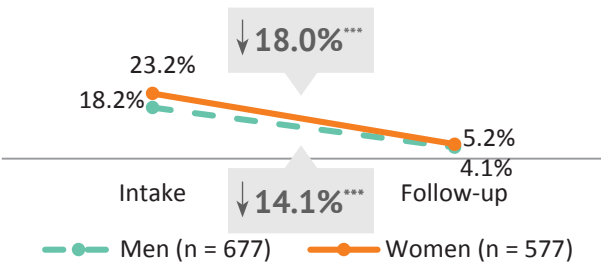


²⁹ One case had missing values on past-12-month other stimulant use at intake and follow-up.

GENDER DIFFERENCES IN PAST-12-MONTH OTHER STIMULANT USE

Significantly more women (23.2%) reported stimulant use other than cocaine in the 12 months before entering treatment when compared to men (18.2%; see Figure 2.31). The percent reporting stimulant use significantly decreased for both women and men, respectively (18.0% vs. 14.1%), and at follow-up there was no difference in the number of men and women reporting other stimulant use.

FIGURE 2.31. GENDER DIFFERENCES IN PAST-12-MONTH STIMULANT USE OTHER THAN COCAINE FROM INTAKE TO FOLLOW-UP^a

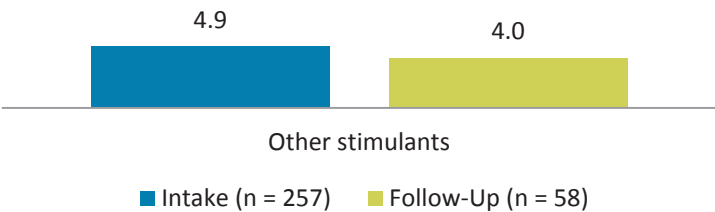


a—Significant difference by gender at intake; $p < .05$
*** $p < .001$

AVERAGE NUMBER OF MONTHS USED OTHER STIMULANTS

Among the clients who reported using stimulants other than cocaine in the 12 months before entering treatment (n = 257), they reported using other stimulants an average of 4.9 months (see Figure 2.32). Clients who reported using other stimulants in the 12 months before follow-up (n = 58) reported using other stimulants, on average, 4.0 months.

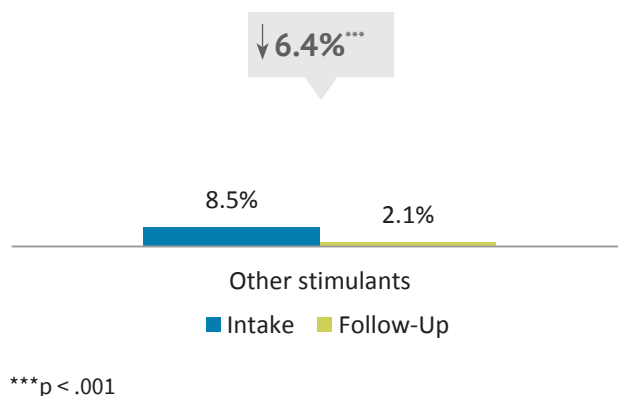
FIGURE 2.32. AVERAGE NUMBER OF MONTHS OF OTHER STIMULANT USE



PAST-30-DAY OTHER STIMULANT USE

The number of clients who reported using stimulants other than cocaine in the past 30 days decreased significantly by 6.4%, from 8.5% at intake to 2.1% at follow-up (see Figure 2.33).

FIGURE 2.33. PAST-30-DAY STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 1,174)

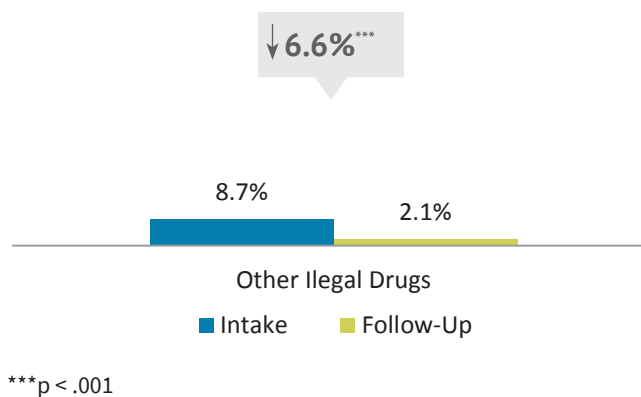


OTHER ILLEGAL DRUGS

PAST-12-MONTH OTHER ILLEGAL DRUGS

A small minority of KTOS clients (8.7%) 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 2.1% at follow-up – a significant decrease of 6.6% (see Figure 2.34).

FIGURE 2.34. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,255)

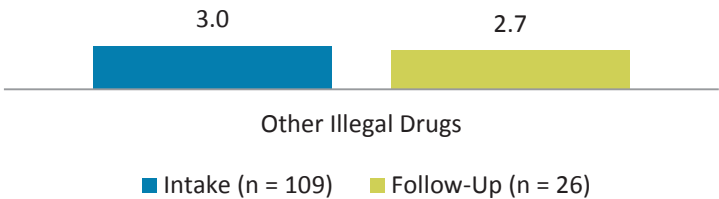


AVERAGE NUMBER OF MONTHS USED OTHER ILLEGAL DRUGS

Figure 2.35 shows the average maximum number of months clients who used other illegal drugs (e.g., hallucinogens, inhalants, synthetic drugs) reported using those illegal drugs³⁰ in the past 12 months. Among the clients who reported using these drugs in the 12 months before entering treatment (n = 109), they reported using other illegal drugs an average of 3.0 months. Among clients who reported using other illegal drugs in the 12 months before follow-up (n = 26), they reported using an average of 2.7 months.

³⁰ 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.

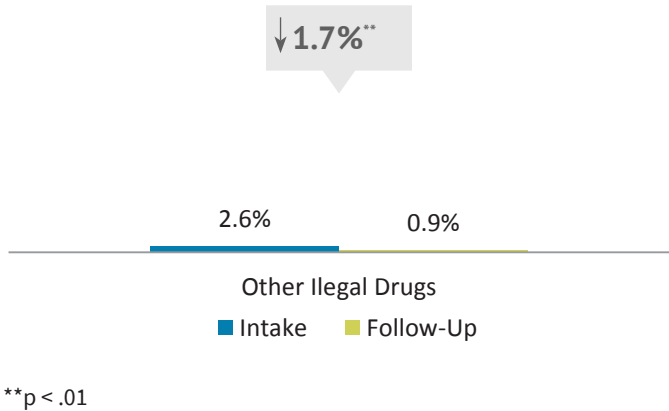
FIGURE 2.35. AVERAGE NUMBER OF MONTHS OF OTHER ILLEGAL DRUG USE



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 1.7%, from 2.6% at intake to 0.9% at follow-up (see Figure 2.36).

FIGURE 2.36. PAST-30-DAY USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,174)



“My counselor saved my life. She really understood and cared a lot about me. She was really important to my sobriety.”

— KTOS Follow-up Client

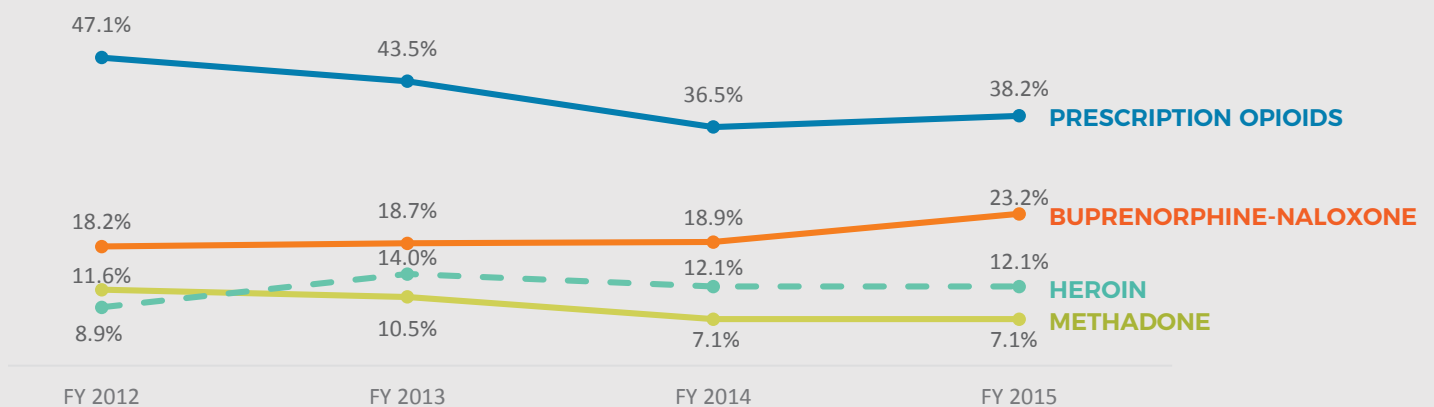
TREND REPORT:

Heroin and Prescription Opioid Use

Looking at trends over time for all clients with completed intake surveys, the percent of clients reporting prescription opioid misuse was highest in FY12 and steadily dropped in FY13 and FY14. In FY15, 38.2% of clients reported prescription opioid misuse at intake. The percent of clients who reported using non-prescribed methadone in the 12 months before entering treatment declined from FY12 to FY14 and remained stable in FY15 (7.1%). The percent of clients who reported using buprenorphine-naloxone (bup-nx) remained stable from FY12 through FY14 but increased to 23.2% in FY15. The percent of KTOS clients who reported using heroin increased from FY12 through FY14 but remained stable in FY15 (12.1%).

Percent of All Clients with a Completed Intake Survey Reporting Non-prescribed Use of Prescription Opioids, Methadone, Buprenorphine-naloxone, and Heroin

in the 12 Months Before Entering Treatment at the CMHC (n = 20,103)³¹



³¹ 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.³²

PAST-12-MONTH ALCOHOL USE

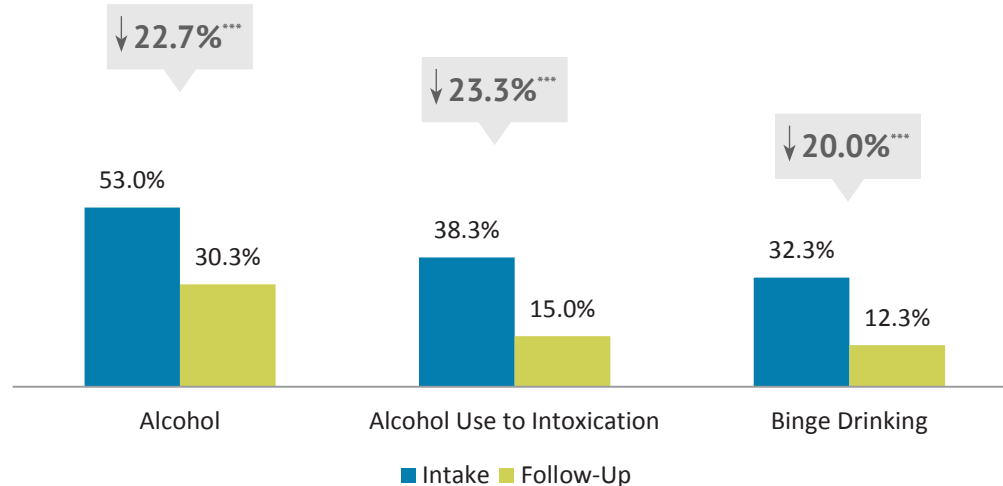
At intake, clients were asked how old they were when they had their first alcoholic drink (other than just a few sips). On average, KTOS clients reported they were 15.6 years old when they had their first alcoholic drink (not depicted in figure).

A little more than half of clients (53.0%) reported using alcohol in the 12 months before entering treatment while 30.3% of clients reported alcohol use in the 12 months before follow-up (see Figure 2.37).

Overall, for the KTOS follow-up sample, there was a 22.7% decrease in the number of clients reporting alcohol use. Nearly 40% of clients (38.3%) reported using alcohol to intoxication at intake, with 15.0% reporting alcohol use to intoxication in the 12 months before follow-up—a significant decrease of 23.3%. Similarly, there was a significant decrease of 20.0% in the number of clients who reported binge drinking from intake to follow-up (32.3% vs. 12.3%).³³

The number of clients reporting alcohol use decreased by 23%

FIGURE 2.37. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,254)



***p < .001

³² 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.

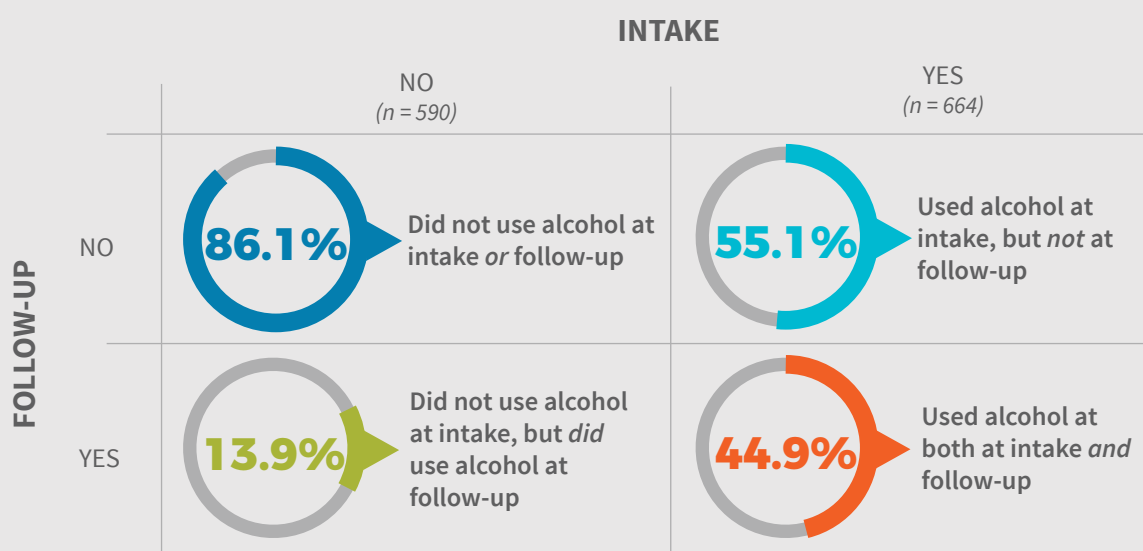
³³ Missing data on alcohol use, alcohol to intoxication, and binge drinking at follow-up for 1 case.

TAKING A CLOSER LOOK AT ALCOHOL USE

Over half of KTOS clients reported using alcohol in the 12 months before entering treatment (53%; n = 664). Of these clients who reported using alcohol in the past 12 months at intake, 55.1% did not use alcohol in the past 12 months at follow-up (see Table 2.1). However, nearly 45% of those who reported alcohol use at intake also reported use at follow-up.

Alternatively, a majority of those who did not use alcohol at intake also reported abstinence at follow-up (86.1%) while 13.9% of clients reported using alcohol at follow-up after reporting no use at intake.

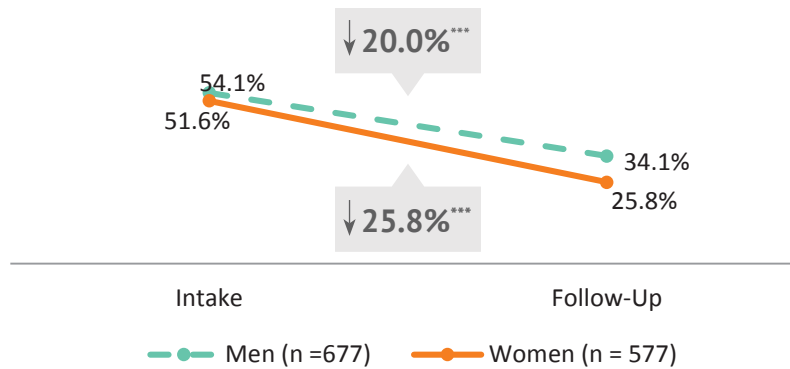
TABLE 2.1. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP BASED ON ALCOHOL USE AT INTAKE



GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE

At intake, there was no difference in the percent of men and women reporting alcohol use. The number of men and women who reported alcohol use in the 12 months before follow-up significantly decreased by 20.0% and 25.8% respectively. By follow-up, significantly more men than women reported any use of alcohol (see Figure 2.38).

Significantly more men than women reported using alcohol in the 12 months before follow-up

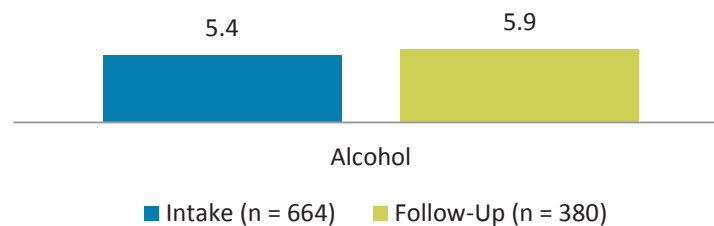
FIGURE 2.38. GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP^a

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

AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2.39 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 ($n = 664$), they reported using alcohol, on average, 5.4 months. Among clients who reported using alcohol in the 12 months before follow-up ($n = 380$), they reported using, on average, 5.9 months.

FIGURE 2.39. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE

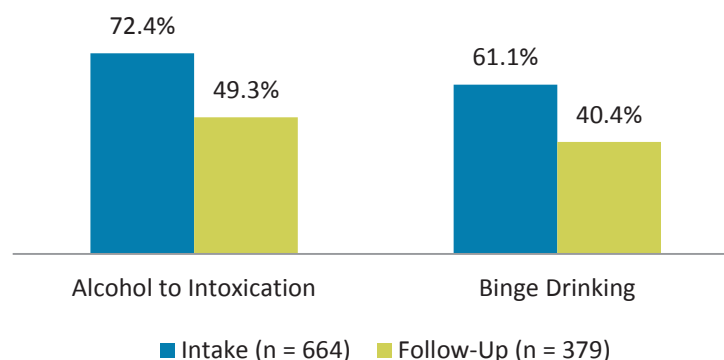


PAST-12-MONTH ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL AT EACH POINT

Of the clients who used alcohol in the 12 months before entering treatment ($n = 664$), 72.4% used alcohol to intoxication in the 12 months before intake and 61.1% reported binge drinking (see Figure 2.40). Of the clients who used alcohol in the 12 months before follow-up ($n = 379$),³⁴ 49.3% of clients reported alcohol use to intoxication and 40.4% reported binge drinking.

³⁴ One individual who reported alcohol use at follow-up had missing data on 12-month alcohol use to intoxication and binge drinking at follow-up.

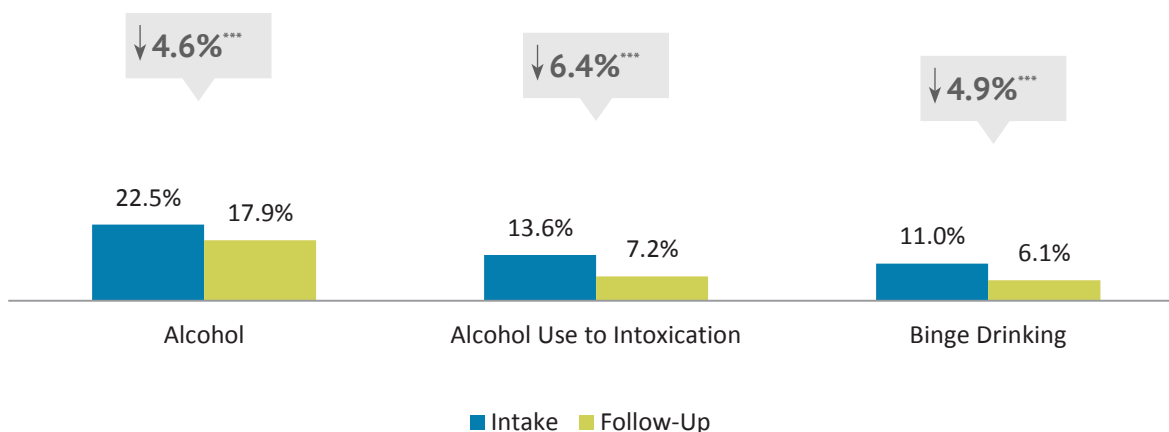
FIGURE 2.40. PAST-12-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



PAST-30-DAY ALCOHOL USE

There was a 4.6% decrease in the percent of clients who reported using alcohol in the past 30 days from intake (22.5%) to follow-up (17.9%; see Figure 2.41). The decrease in the number of clients who reported using alcohol to intoxication was 6.4% and 4.9% for those who reported binge drinking in the 30 days before entering treatment.³⁵

FIGURE 2.41. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,172)



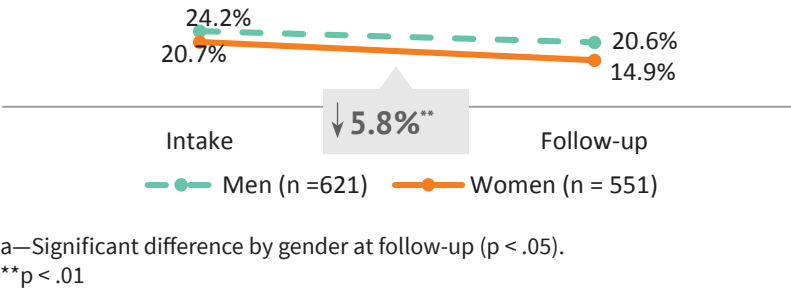
***p < .001.

GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE

At intake, there was no difference in the number of men and women reporting past-30-day alcohol use. The number of women who reported alcohol use in the past 30 days decreased significantly by 5.8% from intake to follow-up. There was no significant decrease for men over time, therefore, significantly more men than women reported alcohol use in the 30 days before follow-up (see Figure 2.42).

³⁵ Two cases had missing data on 30-day alcohol use and one case had missing data on 30-day alcohol use to intoxication and binge drinking at follow-up.

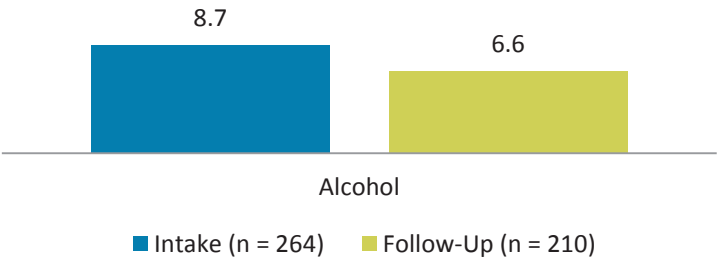
FIGURE 2.42. GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP^a



AVERAGE NUMBER OF DAYS USED ALCOHOL

Figure 2.43 shows the average number of days alcohol users reported using alcohol at intake and follow-up. Among the clients who reported using alcohol in the 30 days before entering treatment ($n = 264$), they reported using alcohol, on average, 8.7 days. Among clients who reported using alcohol in the 30 days before follow-up ($n = 210$), they reported using, on average, 6.6 days.

FIGURE 2.43. AVERAGE NUMBER OF DAYS OF ALCOHOL USE



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

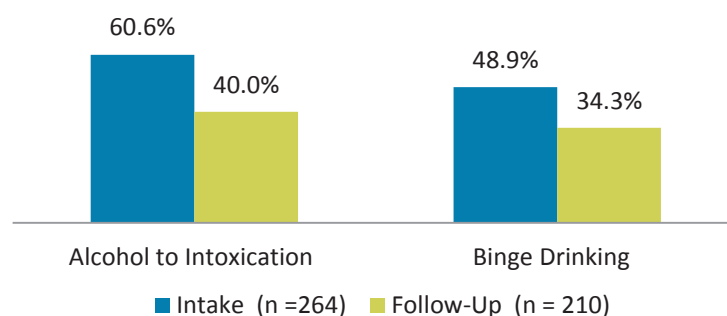
Of the 264 clients who used alcohol in the 30 days before intake, 60.6% used alcohol to intoxication and 48.9% binge drank in the 30 days before intake (see Figure 2.44).

Of the 210 clients who reported using alcohol in the 30 days before follow-up, 40.0% reported using alcohol to intoxication and 34.3% reported binge drinking in the 30 days before follow-up.

“I liked that all of the staff were recovering addicts and knew what I was going through, they were just going off the book.”

— KTOS Follow-up Client

FIGURE 2.44. 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 SYMPTOMS OF ALCOHOL AND DRUG USE SEVERITY

DSM-5 CRITERIA FOR SUBSTANCE USE DISORDER, PAST 12 MONTHS

One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they meet any of the 11 symptoms included in the DSM-5 criteria for diagnosing substance use disorder (SUD) in the past 12 months.³⁶ The DSM-5 substance use disorder diagnosis has four levels of severity which were used to classify severity groups in this study : (1) no SUD (1 or no criteria met), (2) mild SUD (2 or 3 criteria met), (3) moderate SUD (4 or 5 criteria met), and (4) severe disorder (6 or more criteria met). Client self-reports of DSM-5 criteria suggest, but do not diagnose, a substance use disorder.

Change in the number of SUD symptoms reported in the prior 12 months was examined for clients at intake and follow-up.^{37,38} Figure 2.45 displays the change in the percent of individuals in each SUD severity classification. At intake, 30.7% met study criteria for no substance use disorder classification (meaning they reported 0 or 1 DSM-5 symptoms for SUD), while at follow-up, the vast majority (80.0%) met study criteria for no SUD classification, a significant increase of 49.3%. At the other extreme of the continuum, over half of individuals (52.2%) met study criteria for severe SUD (6 or more symptoms) at intake, while at follow-up, only 8.2% met study criteria for severe SUD, a significant decrease of 44.0%.

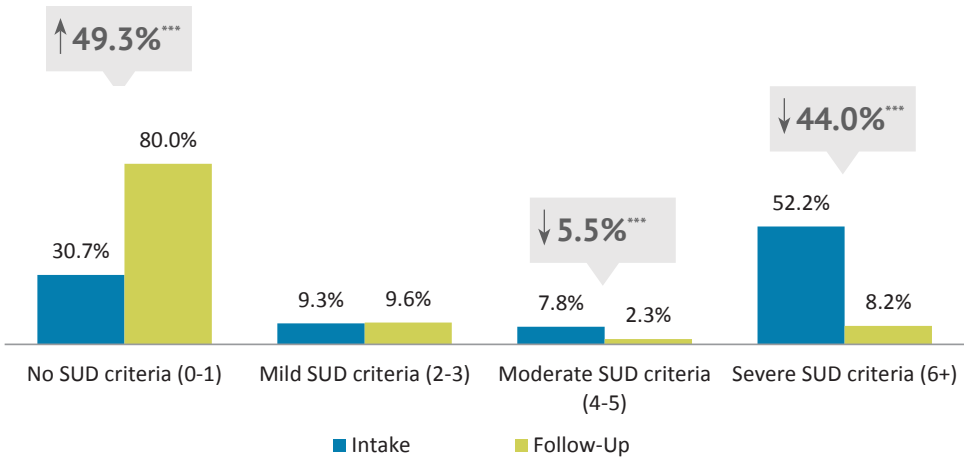
The number of clients meeting study criteria consistent with no SUD increased significantly from intake to follow-up

³⁶ The DSM-5 diagnostic criteria for substance use disorders included in the KTOS intake and follow-up interviews are similar to the criteria for DSM-IV, which has evidence of excellent test-retest reliability and validity. However, the DSM-5 eliminates the distinction between substance abuse and dependence, substituting severity ranking instead. In addition, the DSM-5 no longer includes the criterion about legal problems arising from substance use but adds a new criterion about craving and compulsion to use.

³⁷ Because of when the DSM-5 questions were added to the KTOS survey, 52 clients (4.1%) had missing data for all DSM-5 variables at intake and were not included in the analysis.

³⁸ Ten individuals had missing data for DSM-5 criteria at follow-up.

FIGURE 2.45. DSM-5 CATEGORIES BASED ON NUMBER OF SYMPTOMS AT INTAKE AND FOLLOW-UP (N = 1,213)^a

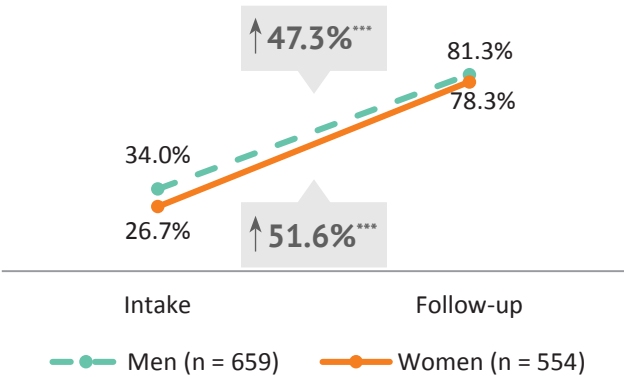


a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
*** $p < .001$.

GENDER DIFFERENCES IN DSM-5 SUD CRITERIA

Significantly more men than women reported 0 - 1 symptoms (criteria for no SUD) at intake (see Figure 2.46). The number of men and women who reported symptoms that met criteria for no SUD increased significantly from intake to follow-up, but there was no gender difference at follow-up.

FIGURE 2.46. GENDER DIFFERENCES IN NO SUD CRITERIA CATEGORIZATION AT INTAKE AND FOLLOW-UP^a



a—Significant difference by gender at intake ($p < .01$).
*** $p < .001$.

ADDICTION SEVERITY INDEX (ASI), PAST 30 DAYS

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.

Figure 2.47 displays the change in average composite scores.³⁹ The average for the alcohol composite score decreased significantly from 0.23 at intake to 0.12 at follow-up. The average for the drug composite score decreased significantly from 0.19 at intake to 0.07 at follow-up.

³⁹ The following number of cases were not included in the analysis of change in alcohol composite score: 100 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; 8 individuals had missing data for the number of days they were in a controlled environment before follow-up; an additional 801 clients reported abstaining from alcohol in the 30 days before intake and follow-up; and 3 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: 100 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; 8 individuals had missing data for the number of days they were in a controlled environment before follow-up; 567 clients reported abstaining from drugs in the 30 days before intake and follow-up, and 5 clients had missing data from items included in the calculation of the drug composite score at follow-up.

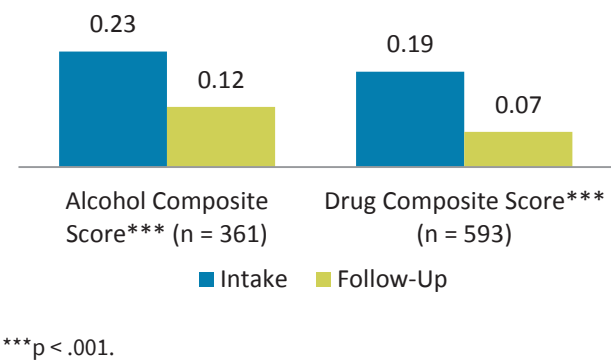
ASI Alcohol and Drug Composite Scores and Substance Use Disorder

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 percent 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.

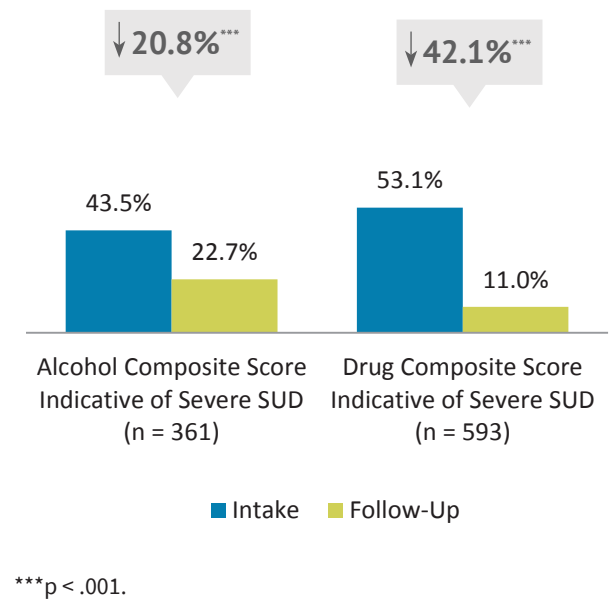
American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

FIGURE 2.47. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



The percent 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 2.48). Less than one half of individuals (43.5%) 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 percent had decreased to 22.7%. More than one half of individuals who reported any drug use in the 30 days before intake and/or follow-up had drug composite scores indicative of severe SUD at intake (53.1%). At follow-up, only about 1 in 10 had drug composite scores indicative of severe SUD.

FIGURE 2.48. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP⁴⁰

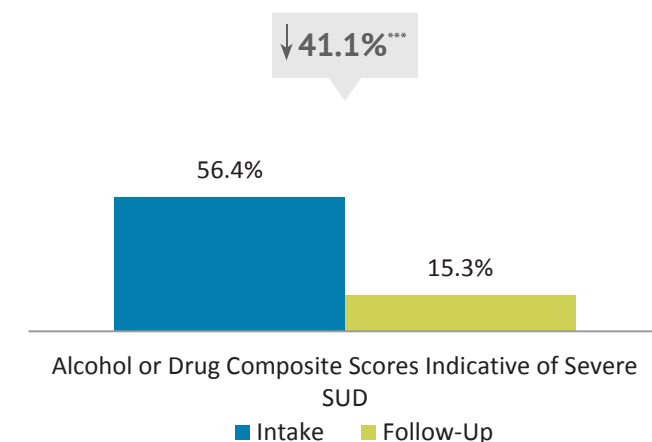


Among the individuals who were not in a controlled environment all 30 days before entering treatment and who reported using alcohol and/or drugs at intake or follow-up, over half of

⁴⁰ Three clients had missing data for the alcohol score variables at follow-up and five clients had missing data for the drug composite score variables at follow-up.

individuals had alcohol or drug composite scores that met the cutoff for severe SUD at intake and follow-up (see Figure 2.49). The percent of clients who had composite scores that met the cutoff for severe SUD for either alcohol or drugs decreased by 41.1% at follow-up.

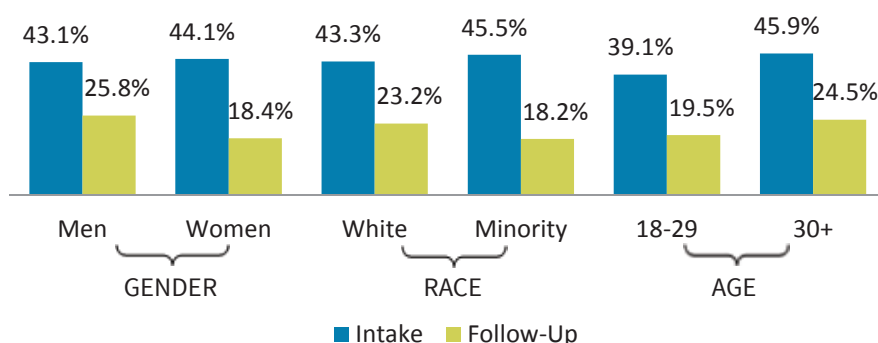
FIGURE 2.49. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR ALCOHOL OR DRUG SEVERE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 543)



***p < .001.

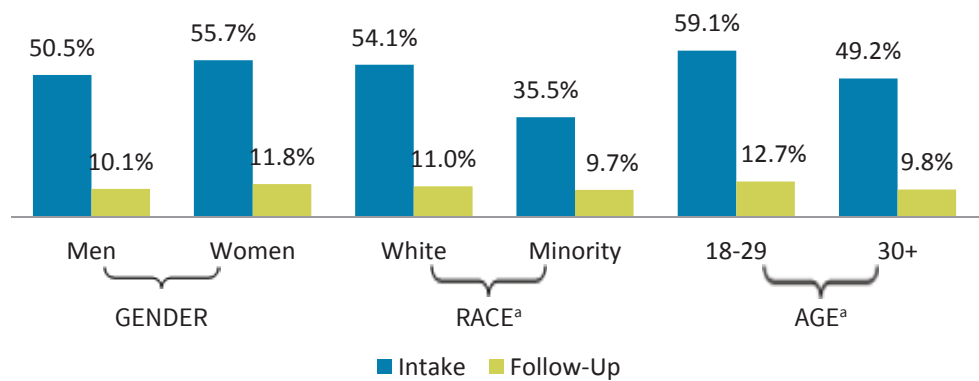
The data were examined to determine whether clients who had alcohol composite scores indicative of severe SUD at intake and follow-up differed by gender, race/ethnicity, or age (see Figure 2.50). There were no significant differences in gender, race/ethnicity, or age for clients with alcohol composite scores indicative of severe SUD at intake or follow-up.

FIGURE 2.50. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 361)



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 2.51). At intake, significantly more clients who were White had a drug composite score indicative of severe SUD than those who were a minority. Also, significantly more 18-29 year old clients had a drug composite score indicative of severe SUD compared to 30+ year old clients at intake.

FIGURE 2.51. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 593)



a – Significant difference between race and age group at intake ($p < .05$).

TOBACCO USE

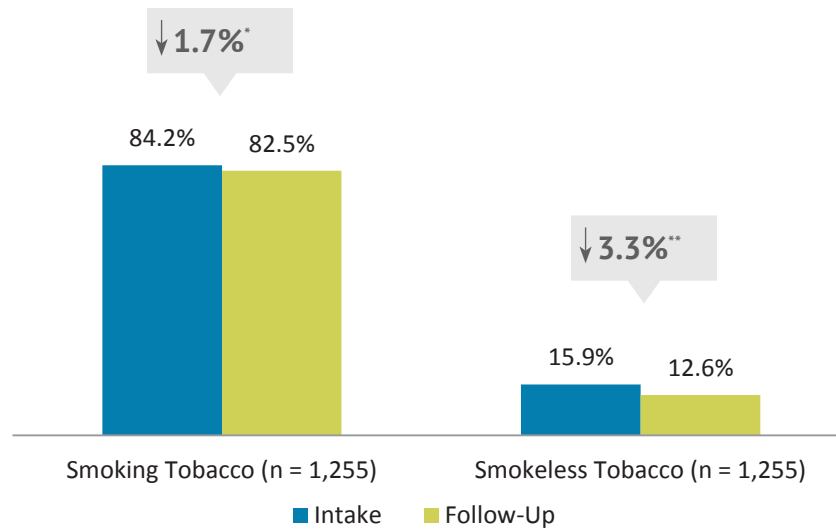
PAST-12-MONTH SMOKING AND SMOKELESS TOBACCO USE

At intake, clients were asked how old they were when they first began to smoke tobacco regularly (i.e., on a daily basis). On average, KTOS clients reported they were 16.4 years old when they started smoking tobacco regularly (not depicted in figure).

Overall, there was a small but significant decrease in smoking tobacco use from intake to follow-up (1.7%; see Figure 2.52). Most clients reported smoking tobacco in the 12 months before entering treatment (84.2%) and in the 12 months before follow-up (82.5%). A minority of clients (15.9%) reported using smokeless tobacco in the 12 months before entering treatment and 12.6% reported using smokeless tobacco in the 12 months before follow-up, a 3.3% significant decrease.

Significantly fewer clients reported smoking tobacco in the past 12 months at follow-up

FIGURE 2.52. CHANGE IN TOBACCO USE FROM INTAKE TO FOLLOW-UP

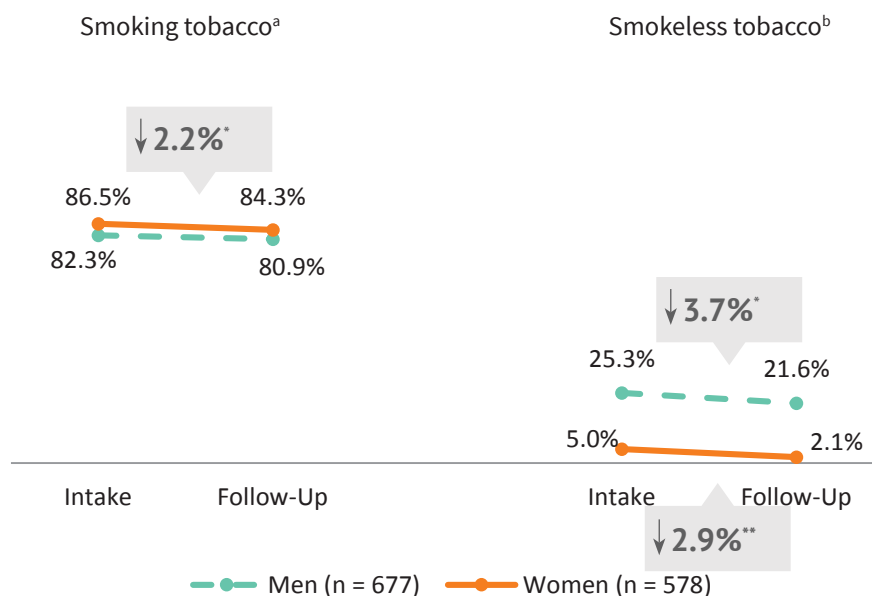


**p < .01, *p < .05.

GENDER DIFFERENCES IN PAST-12-MONTH SMOKING AND SMOKELESS TOBACCO USE

Significantly more women than men reported smoking tobacco at intake whereas significantly more men than women reported using smokeless tobacco at intake and follow-up (see Figure 2.53). The percent of women who reported smoking tobacco in the past 12 months significantly decreased from intake to follow-up. The number of women and men who reported using smokeless tobacco in the past 12 months decreased significantly from intake to follow-up (2.9% and 3.7%, respectively).

FIGURE 2.53. GENDER DIFFERENCES IN SMOKING AND SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP



a—Significant difference by gender at intake (p < .05).

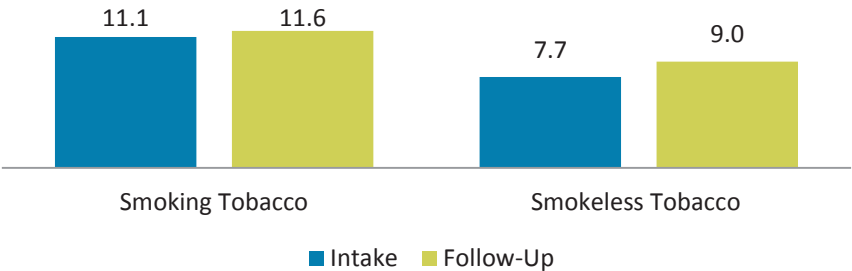
b – Significant difference by gender at intake and follow-up (p < .001).

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

AVERAGE NUMBER OF MONTHS OF SMOKING AND SMOKELESS TOBACCO USE

Figure 2.54 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, 11.1 months. Of the clients who reported using smoking tobacco in the 12 months before follow-up (n = 1,035), they reported using, on average, 11.6 months. Among the clients who reported using smokeless tobacco in the 12 months before entering treatment (n = 200), they reported using it, on average, 7.7 months. Of the clients who reported using smokeless tobacco in the 12 months before follow-up (n = 158), they reported using it, on average, 9.0 months.

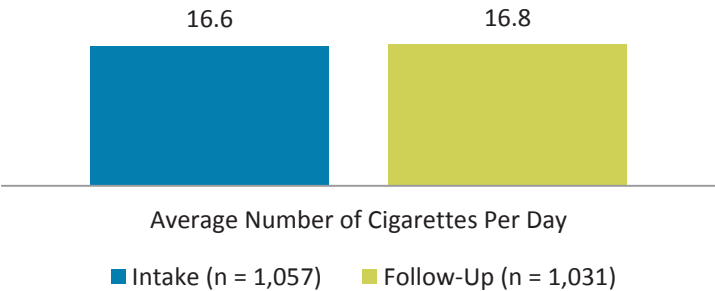
FIGURE 2.54. AVERAGE NUMBER OF MONTHS OF SMOKING AND SMOKELESS TOBACCO USE



AVERAGE NUMBER OF CIGARETTES SMOKED

The average number of cigarettes clients reported smoking at intake and follow-up remained stable (see Figure 2.55). Of those who smoked tobacco in the 12 months before entering treatment, clients reported smoking an average of 16.6 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 16.8 cigarettes per day.

FIGURE 2.55. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO⁴¹

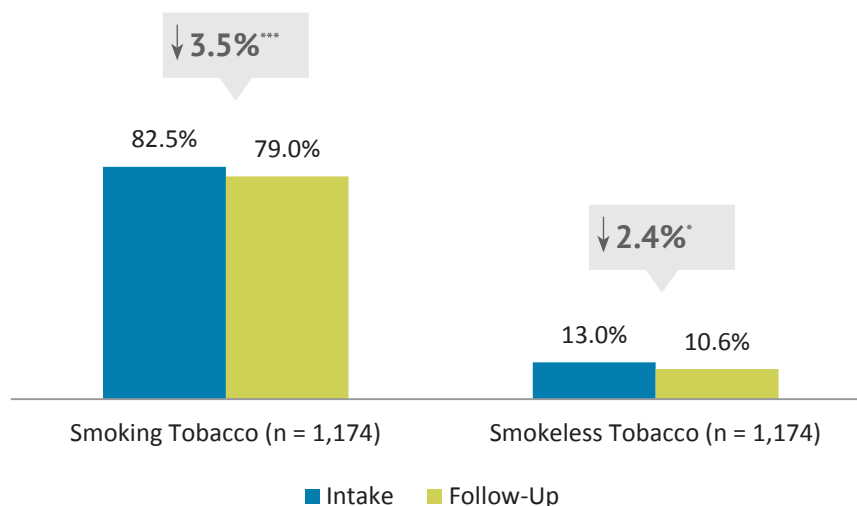


⁴¹ Four cases had missing data for number of cigarettes smoked at follow-up.

PAST-30-DAY SMOKING AND SMOKELESS TOBACCO USE

The number of clients who reported any past-30-day smoking tobacco decreased significantly from intake (82.5%) to follow-up (79.0%; see Figure 2.56). Smokeless tobacco use also decreased from intake (13.0%) to follow-up (10.6%).

FIGURE 2.56. SMOKING AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP



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

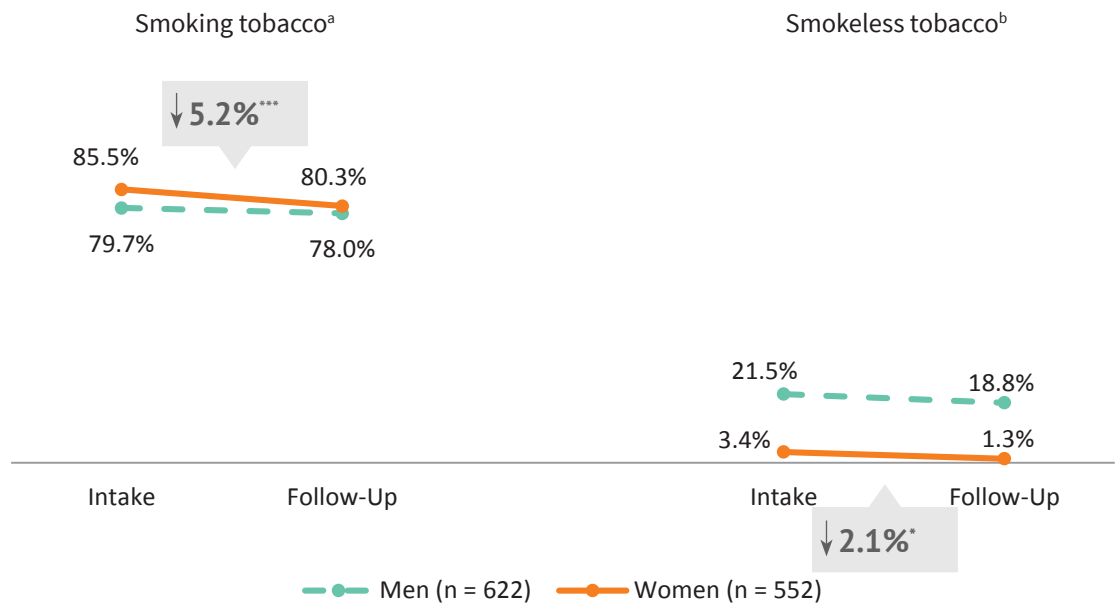
GENDER DIFFERENCES IN PAST-30-DAY SMOKING AND SMOKELESS TOBACCO USE

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 (see Figure 2.57). At follow-up, the number of women who reported smoking tobacco in the past 30 days had decreased significantly. More men than women reported using smokeless tobacco in the 30 days before intake and follow-up and the percent of women who reported smokeless tobacco use decreased from intake to follow-up.

"I liked everything. I'm still going to the program and I feel very comfortable there."

— KTOS Follow-up Client

FIGURE 2.57. GENDER DIFFERENCES IN PAST-30-DAY SMOKING TOBACCO USE FROM INTAKE TO FOLLOW-UP



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

SECTION 3.

Mental Health, Physical Health, and Stress

This section examines changes in mental and physical health 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) general health status, (6) chronic pain, and (7) stress-related health consequences. 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).

Less than half of clients (46.7%) met criteria for depression in the 12 months before they entered treatment (see Figure 3.1). At follow-up, 29.2% met criteria for depression—a significant decrease of 17.5%. Of those who met study criteria at intake ($n = 595$), they had an average of 7.3 symptoms out of 9. At follow-up, among those who met study criteria for depression ($n = 369$),⁴² clients reported an average of 7.6 symptoms out of 9.

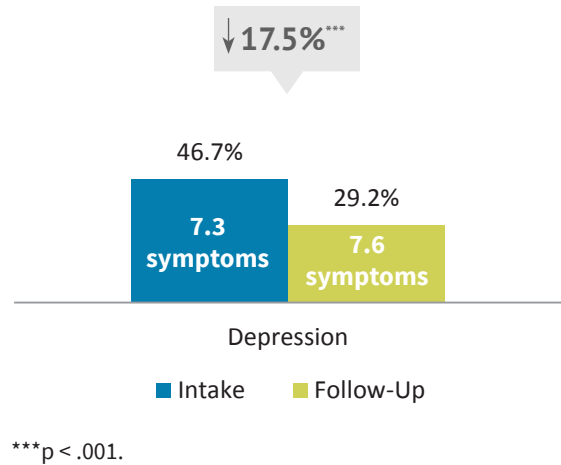
STUDY CRITERIA FOR DEPRESSION

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 7 symptoms. Thus, the minimum score to meet study criteria: 5 out of 9.

The percent of clients meeting criteria for depression decreased significantly by 18% from intake to follow-up

⁴² Five individuals had missing data for at least one depression symptom variable at follow-up.

FIGURE 3.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 1,272)⁴³

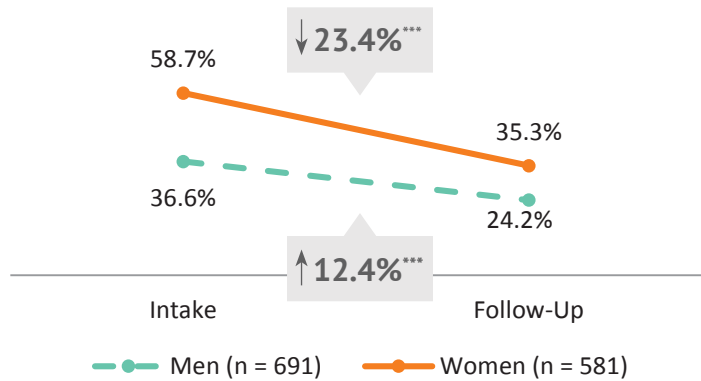


GENDER DIFFERENCES IN DEPRESSION

Significantly more women met study criteria for depression at intake and follow-up compared to men. At intake, 1.5 times more women met study criteria compared to men and at follow-up the percent of women who reported depression was 35.3% compared to 24.2% of men (see Figure 3.2). The number of women and men who met criteria for depression decreased significantly by 23.4% and 12.4%, respectively.

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

FIGURE 3.2. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION^a

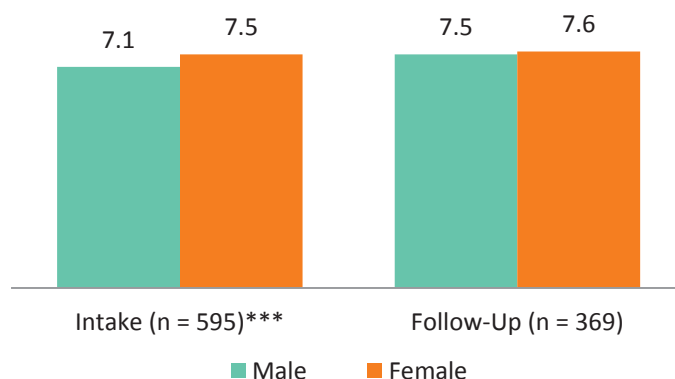


a—Statistical difference by gender at intake and follow-up (p < .001).
***p < .001.

Of those who met study criteria for depression at intake, women (7.5) reported significantly more depression symptoms than men (7.1; see Figure 3.3). Of those who met study criteria for depression at follow-up, there was no difference in number of symptoms between men (7.5) and women (7.6).

⁴³ Two individuals had missing data for all depression criteria at follow-up.

FIGURE 3.3. GENDER DIFFERENCES IN NUMBER OF DEPRESSION SYMPTOMS REPORTED BY THOSE WHO MET STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP^a



a – To meet study criteria, a client had to endorse at least 5 of 9 depression symptoms.

^{***}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).

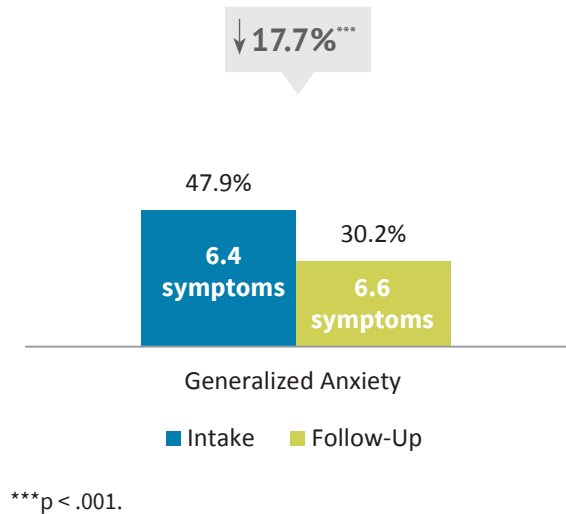
In the 12 months before entering treatment, almost half of clients reported symptoms that met study criteria for generalized anxiety (47.9%; see Figure 3.4). By follow-up, the percent of clients meeting study criteria for generalized anxiety had decreased by 17.7%. At intake, among those who met study criteria for generalized anxiety (n = 609), clients reported an average of 6.4 symptoms out of 7. Among those who met study criteria for generalized anxiety at follow-up (n = 384), clients reported an average of 6.6 symptoms out of 7.

STUDY CRITERIA FOR GENERALIZED ANXIETY

To meet study criteria for depression, clients had to say “yes” to the one screening question and at least 3 of the other 6 symptoms. Thus, minimum score to meet study criteria: 4 out of 7.

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

FIGURE 3.4. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,271)⁴⁴

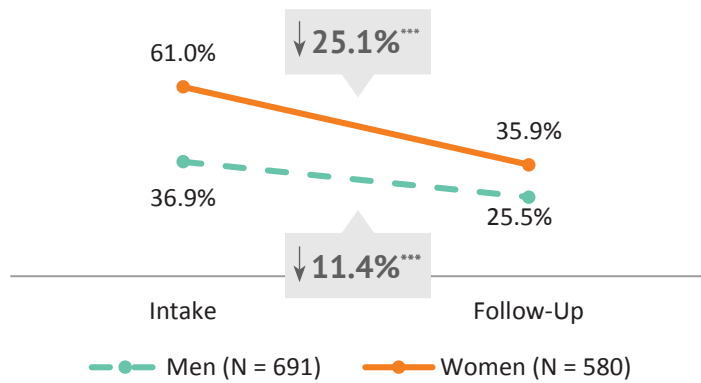


GENDER DIFFERENCES IN GENERALIZED ANXIETY SYMPTOMS

Significantly more women met criteria for generalized anxiety at intake and follow-up compared to men (see Figure 3.5). The number of women and men who met criteria for generalized anxiety decreased significantly from intake (61.0% vs. 36.9%) to follow-up (35.9% vs. 25.5%).

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

FIGURE 3.5. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY^a

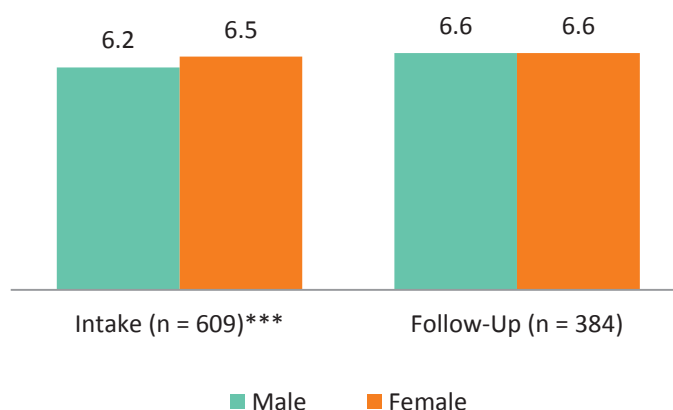


a—Statistical difference by gender at intake and follow-up (p < .001).
***p < .001.

Of those who met study criteria for generalized anxiety at intake, women (6.5) reported significantly more anxiety symptoms than men (6.2; see Figure 3.6). Of those who met study criteria for depression at follow-up, there was no difference in number of symptoms between men (6.6) and women (6.6).

⁴⁴ Missing data on generalized anxiety at follow-up for 3 cases.

FIGURE 3.6. GENDER DIFFERENCES IN NUMBER OF GENERALIZED ANXIETY SYMPTOMS REPORTED BY THOSE WHO MET STUDY CRITERIA FOR GAD AT INTAKE AND FOLLOW-UP^a



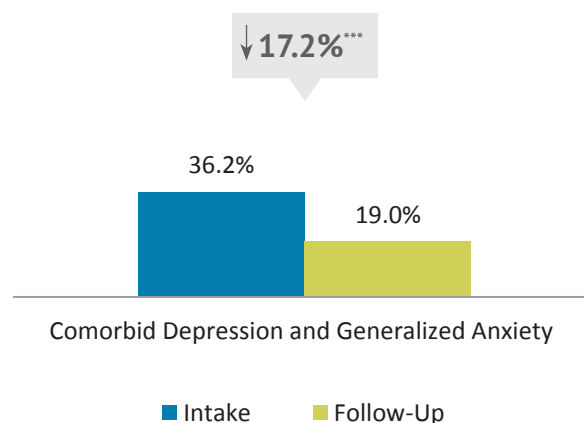
a – To meet study criteria, a client had to endorse at least 4 of 7 anxiety symptoms.

***p < .001.

COMORBID DEPRESSION AND ANXIETY SYMPTOMS

Figure 3.7 shows that at intake, over one-third (36.2%) met study criteria for both depression and generalized anxiety and there was a significant 17.2% decrease in the number of individuals who met study criteria for depression and generalized anxiety at follow-up (19.0%).

FIGURE 3.7. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,271)⁴⁵



***p < .001.

GENDER DIFFERENCES IN COMORBID DEPRESSION AND GENERALIZED ANXIETY SYMPTOMS

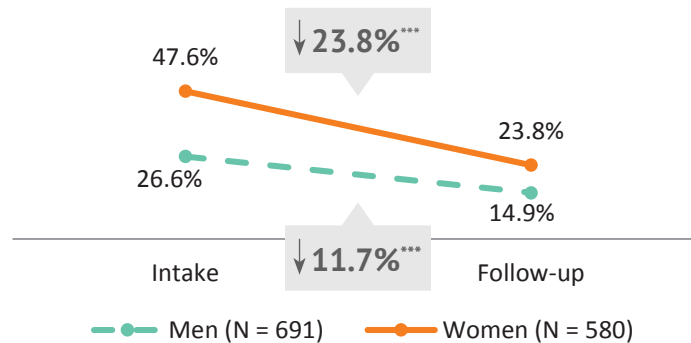
Significantly more women met criteria for comorbid depression and generalized anxiety at intake and follow-up compared to men (see Figure 3.8). The number of women and men who met criteria for depression and generalized anxiety decreased significantly by 23.8%

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

⁴⁵ Three cases had missing data for depression and/or generalized anxiety at follow-up.

and 11.7% respectively.

FIGURE 3.8. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP^a



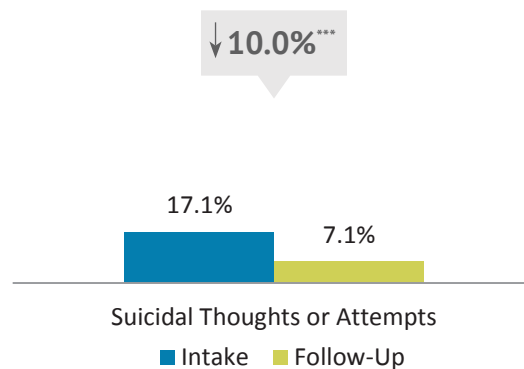
a—Statistical difference by gender at intake and follow-up ($p < .001$).
*** $p < .001$.

SUICIDAL THOUGHTS AND/OR ATTEMPTS

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 17.1% of clients reported thoughts of suicide or attempted suicide and 7.1% of clients reported thoughts of suicide or attempted suicide in the 12 months before follow-up. There was a 10.0% decrease from intake to follow-up in the number of clients reporting suicidal thoughts and attempts (see Figure 3.9).

The percent of clients reporting suicidal thoughts and/or attempts decreased 10% at follow-up

FIGURE 3.9. CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 1,274)



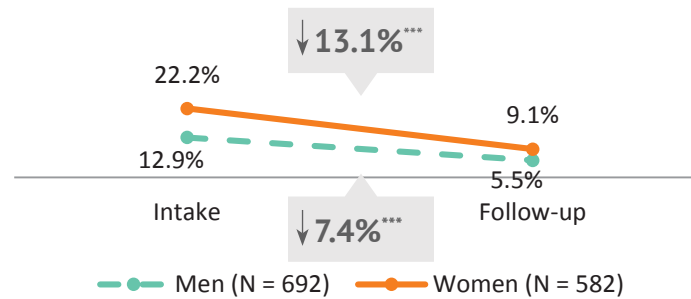
*** $p < .001$.

GENDER DIFFERENCES IN SUICIDAL THOUGHTS AND/OR ATTEMPTS

Significantly more women than men reported suicidal thoughts and/or attempts in the 12 months before intake and follow-up (see Figure 3.10). The percent of women reporting suicidality decreased

by 13.1% at follow-up and the percent of men reporting suicidality decreased by 7.4%.

FIGURE 3.10. GENDER DIFFERENCES IN CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP^a



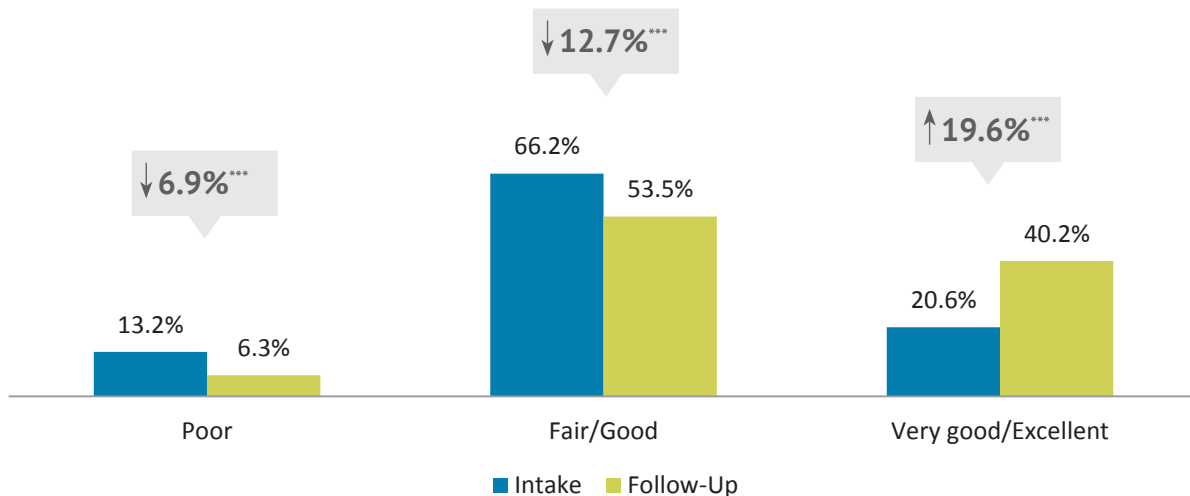
a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
*** $p < .001$.

GENERAL HEALTH STATUS

OVERALL HEALTH

At both intake and follow-up, clients were asked to rate their overall health in the past 12 months from 1 = poor to 5 = excellent. Clients rated their health, on average, as 2.7 at intake and this significantly increased to 3.2 at follow-up (not depicted in figure). Figure 3.11 shows that significantly more clients rated their overall physical health as very good or excellent (40.2%) at follow-up when compared to intake.⁴⁶

FIGURE 3.11. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 1,271)^a



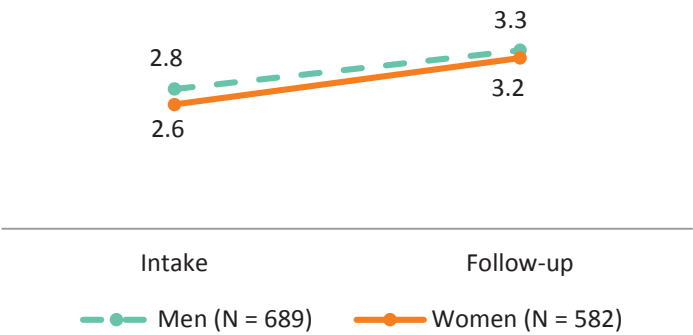
a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
*** $p < .001$.

⁴⁶ Three individuals had missing data for overall health status at follow-up.

GENDER DIFFERENCES IN OVERALL HEALTH STATUS

At intake, women rated their overall health significantly lower than men (2.6 vs. 2.8; see Figure 3.12). For both men and women, there was a significant increase in overall health status rating, however, women still rated their health as significantly lower (3.2 vs. 3.3).

FIGURE 3.12. GENDER DIFFERENCES IN CLIENTS’ SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP^{a,b}

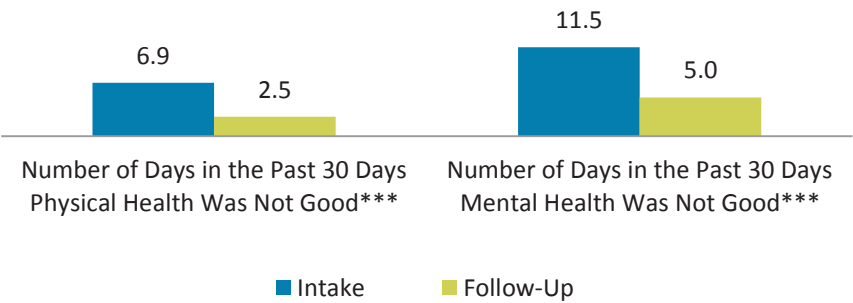


a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
b – Significant increase from intake to follow-up for men and women ($p < .001$).

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 3.13). There was a significant decrease from intake to follow-up in the number of days clients reported their physical health was not good (6.9 vs. 2.5). The number of days clients’ mental health was not good decreased significantly from 11.5 at intake to 5.0 at follow-up.

FIGURE 3.13. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,271)⁴⁷



*** $p < .001$.



In 2015, Kentucky ranked **49th** in the US for number of poor physical health days. Compared to the rest of the state, KTOS clients reported a higher number of poor physical health days (6.9 vs. 5.1) at intake. In 2015, Kentucky ranked **47th** in the US for number of poor mental health days. Compared to the rest of the state, KTOS clients reported a higher number of poor mental health days (11.5 vs. 4.5) at intake.

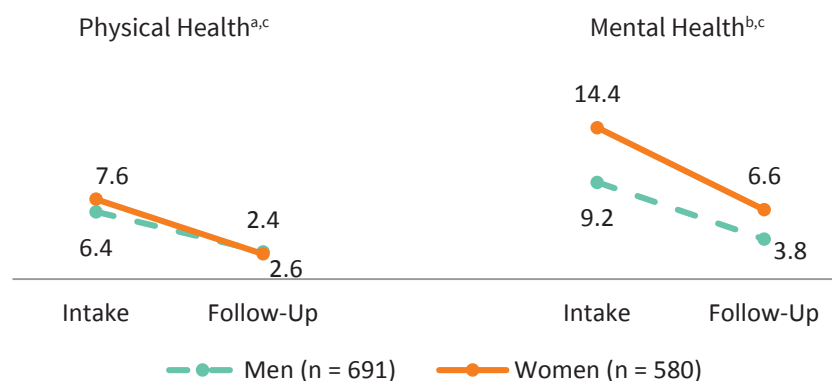
Source: <http://www.americashealthrankings.org/explore/2015-annual-report/measure/MentalHealth/state/KY>

⁴⁷ Four clients had missing data for the physical health question, and three had missing data for the mental health question.

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 3.14).

FIGURE 3.14. 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 ($p < .05$).

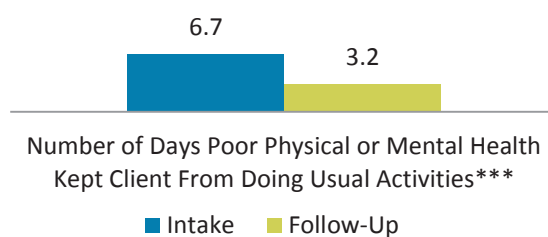
b – Statistical difference by gender at intake and follow-up ($p < .001$).

c – Significant decrease from intake to follow-up for men and women ($p < .001$).

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 from 6.7 days at intake to 3.2 days at follow-up (see Figure 3.15).

FIGURE 3.15. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,264)⁴⁸



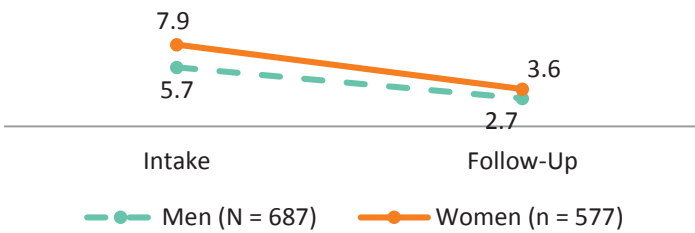
*** $p < .001$.

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 3.16).

⁴⁸ Ten clients had missing data for the perceptions of poor physical or mental health question.

FIGURE 3.16. GENDER DIFFERENCES IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEPT CLIENT FROM DOING USUAL ACTIVITIES^{a,b}

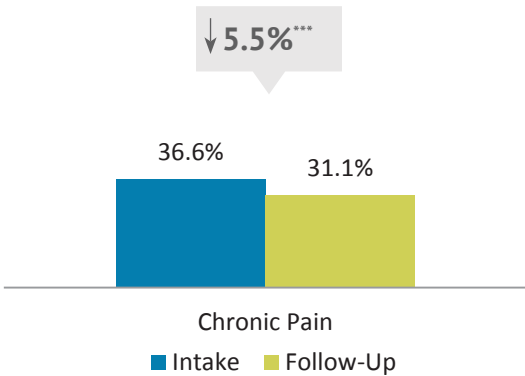


a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
b – Significant decrease from intake to follow-up for men and women ($p < .001$).

CHRONIC PAIN

The percent of clients who reported chronic pain that was persistent and lasted at least 3 months decreased significantly from intake to follow-up by 5.5% (see Figure 3.17).

FIGURE 3.17. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 1,272)⁴⁹



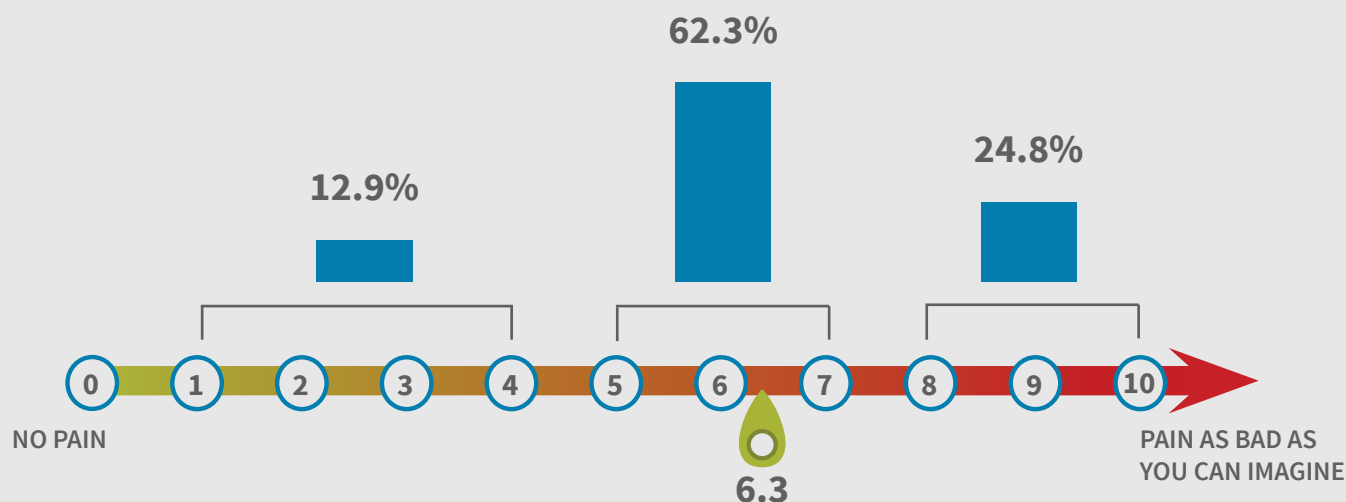
*** $p < .001$

“Staff was caring and it was a great environment. I felt comfortable with the staff and my therapist was amazing.”
— KTOS Follow-up Client

⁴⁹ Two individuals had missing data for chronic pain at follow-up.

TAKING A CLOSER LOOK AT CHRONIC PAIN

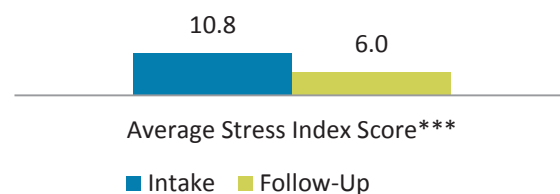
At intake, over one-third of KTOS clients reported experiencing chronic pain for at least 3 months before entering treatment ($n = 467$). On average, clients reported their chronic pain began at age 27 (ranging from age 3 to age 58).⁵⁰ In the 30 days before entering treatment, clients experienced chronic pain, on average, 24.2 days. Clients were also asked to rate their chronic pain on a scale from 0 (no pain) to 10 (pain as bad as you can imagine).⁵¹ At intake, clients rated their pain as a 6.3 with one quarter of clients (24.8%) giving their pain the highest ratings of 8, 9, and 10 (see Figure 3.18).



STRESS-RELATED HEALTH CONSEQUENCES

Clients were also asked 12 items about physiological symptoms often associated with higher stress called the Stress-Related Health Consequences Scale.⁵² The scale contains 12 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 36 and the lowest possible score is 0. For the overall sample, scores on the Stress-Related Health Consequences Scale decreased significantly from 10.8 at intake to 6.0 at follow-up (see Figure 3.19).⁵³

FIGURE 3.19. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP ($N = 1,261$)



*** $p < .001$.

⁵⁰ Thirty-seven individuals had missing data for this question.

⁵¹ Forty individuals had missing data for this question.

⁵² Measure created by Logan, T. and Walker, R. Stress-Related Health Consequences Scale.

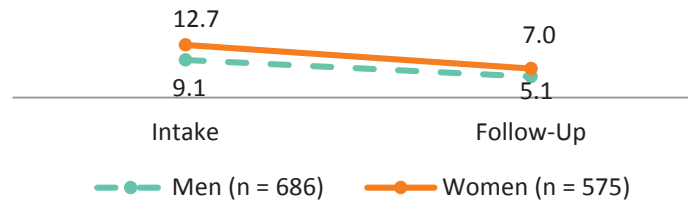
⁵³ Thirteen cases had missing values on the scale sum at follow-up.

GENDER DIFFERENCES IN STRESS-RELATED HEALTH CONSEQUENCES

Figure 3.20 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

FIGURE 3.20. GENDER DIFFERENCES IN AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE^{a,b}

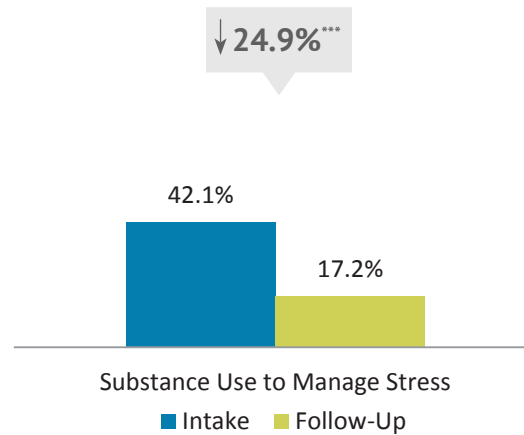


a—Statistical difference by gender at intake and follow-up ($p < .001$).

b – Significant decrease from intake to follow-up for men and women ($p < .001$).

Clients were also asked if they used alcohol, prescription drugs, or illegal drugs in the past 7 days to reduce or manage stress at intake and follow-up. Figure 3.21 shows that 42.1% of clients reported they used at least one type of substance to reduce or manage their stress in the 7 days before entering treatment. At follow-up, that number significantly decreased to 17.2%.

FIGURE 3.21. CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE STRESS AT INTAKE AND FOLLOW-UP (N = 1,273)⁵⁴



*** $p < .001$

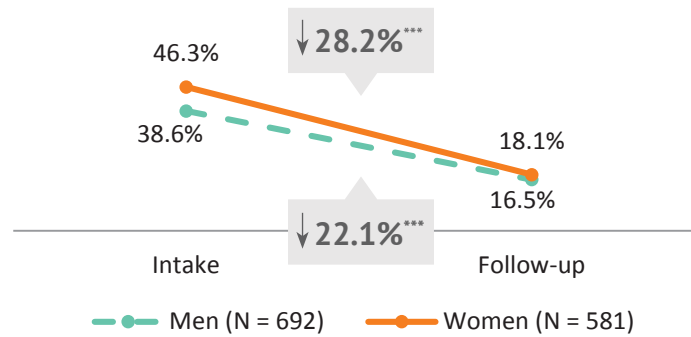
GENDER DIFFERENCES IN SUBSTANCE USE TO REDUCE STRESS

Significantly more women than men reported substance use to reduce or manage stress in the 7 days before intake (see Figure 3.22). The percent of women and men who used substances to reduce

⁵⁴ One individual had missing data for all substance use to manage stress scale items at follow-up.

stress decreased significantly over time. There was no significant difference by gender at follow-up.

FIGURE 3.22. GENDER DIFFERENCES IN CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE STRESS AT INTAKE AND FOLLOW-UP^a



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

*** $p < .001$

SECTION 4.

Economic and Living Circumstances

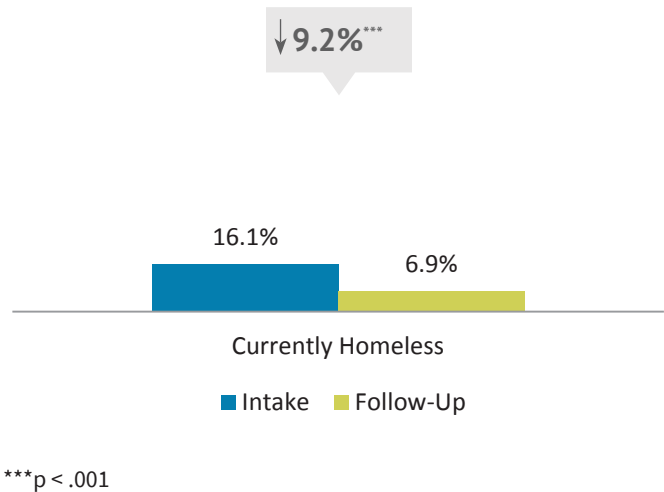
This section examines changes from intake to follow-up on: (1) living situation, (2) employment, and (3) economic hardship. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

LIVING SITUATION

HOMELESSNESS

About 1 in 6 clients (16.1%) reported at treatment intake they were currently homeless and at follow-up 6.9% of clients reported they were currently homeless – a significant decrease of 9.2% (see Figure 4.1).

FIGURE 4.1. CURRENT HOMELESSNESS AT INTAKE AND FOLLOW-UP (N=1,267)⁵⁵



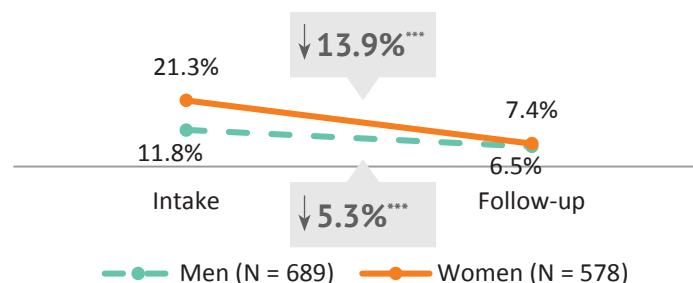
GENDER DIFFERENCES IN HOMELESSNESS

Significantly more women reported being homeless at the time of intake when compared to men (see Figure 4.2). The percent of women and men reporting homelessness at follow-up significantly decreased (13.9% and 5.3%, respectively).

“They were helpful and supportive. Helped with getting me assistance on other problems like housing.”

— KTOS Follow-up Client

⁵⁵ Seven cases had missing data for homelessness at follow-up.

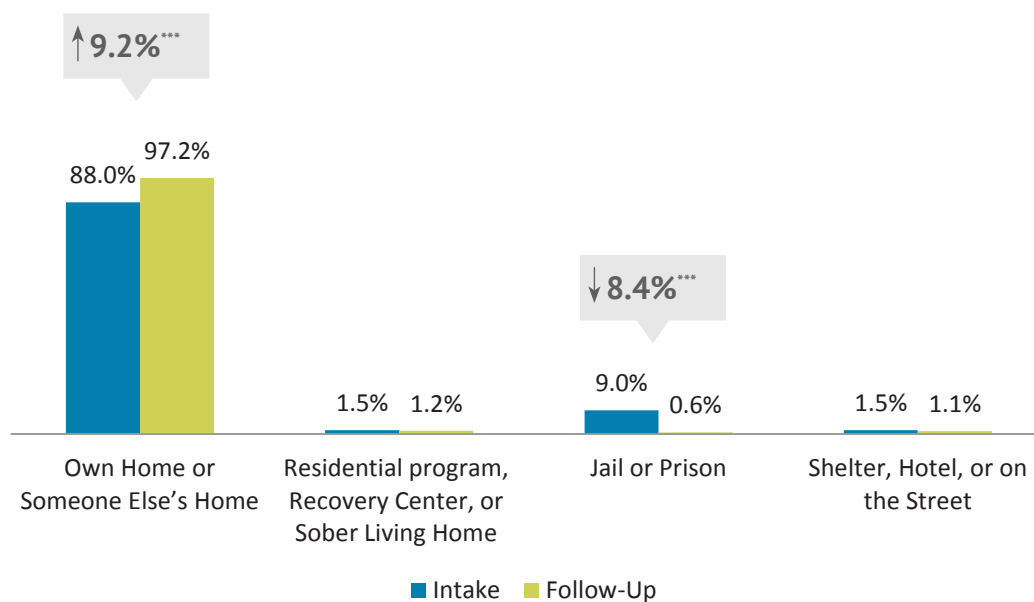
FIGURE 4.2. GENDER DIFFERENCES IN CLIENTS REPORTING HOMELESSNESS AT INTAKE AND FOLLOW-UP^a

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

USUAL LIVING SITUATION

Change in usual living situation from intake to follow-up was examined for the KTOS follow-up sample (see Figure 4.3). 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 (9.2%). 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 percent of clients who reported their usual living situation in the past 12 months was in a jail or prison: 9.0% vs. 0.6%. A very small percentage of clients reported living in a shelter or on the street at intake or follow-up.

FIGURE 4.3. USUAL LIVING SITUATION AT INTAKE AND FOLLOW-UP (N=1,272)⁵⁶

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

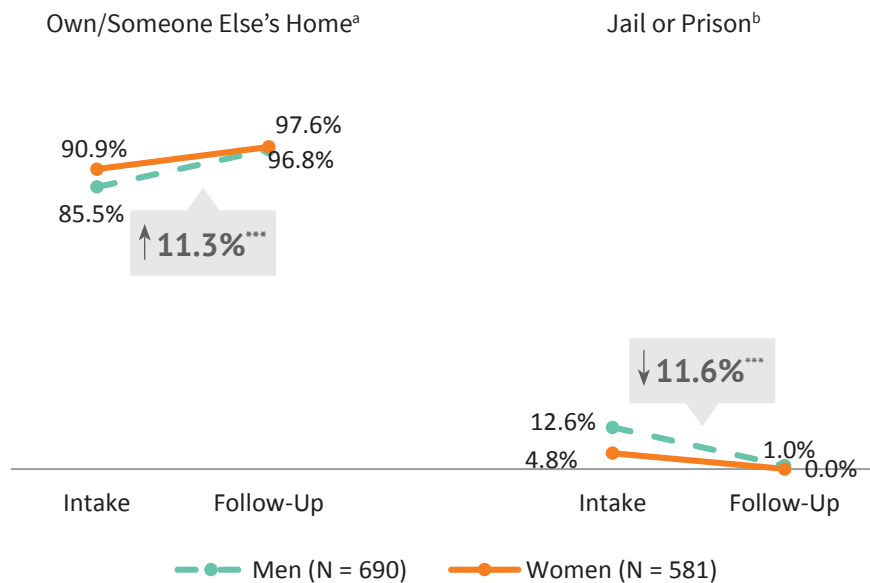
⁵⁶ Two cases had missing data for living situation at follow-up.

GENDER DIFFERENCES IN USUAL LIVING SITUATION

Significantly more women than men reported living in their own home or someone else's home in the 12 months before intake while more men reported living in jail or prison compared to women (see Figure 4.4). The number of men living in jail or prison decreased significantly (11.6%).

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

FIGURE 4.4. GENDER DIFFERENCES IN LIVING SITUATION AT INTAKE AND FOLLOW-UP^c



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

b – Significant difference by gender at intake ($p < .001$) and follow-up ($p < .05$).

c - No measure of association could be computed for the cross tabulation because there was a value of 0 for jail/prison variable for women at follow-up.

*** $p < .001$

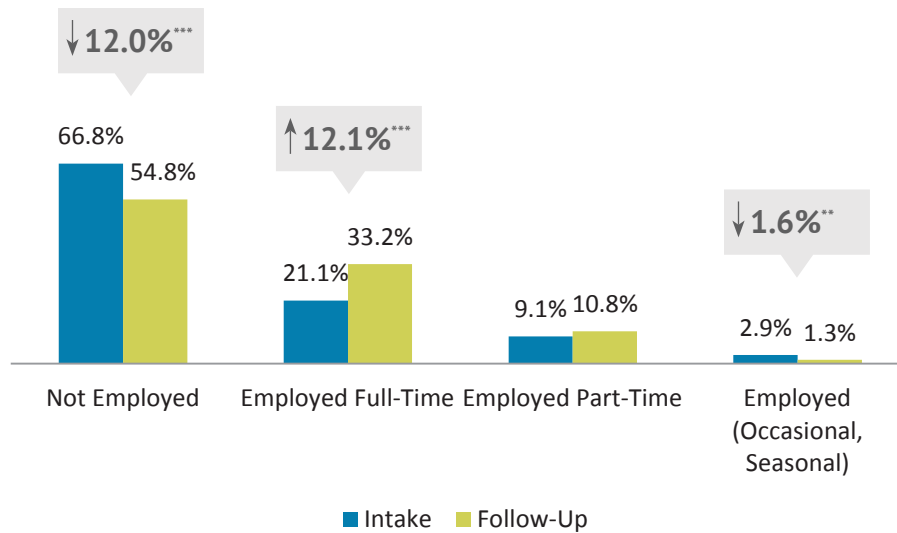
EMPLOYMENT

CURRENT EMPLOYMENT STATUS

There were significant changes in current employment status from intake to follow-up (see Figure 4.5).⁵⁷ About two-thirds (66.8%) of clients reported they were not employed when they entered treatment, while just over half of clients (54.8%) reported they were unemployed at follow-up. This represents a 12.0% significant decrease in the number of clients who were currently unemployed. The number of clients who were employed full-time increased significantly by 12.1% from intake to follow-up (21.1% vs. 33.2%).

The number of clients who were employed full-time increased by 12%

⁵⁷ Fourteen cases had missing data for current employment at follow-up.

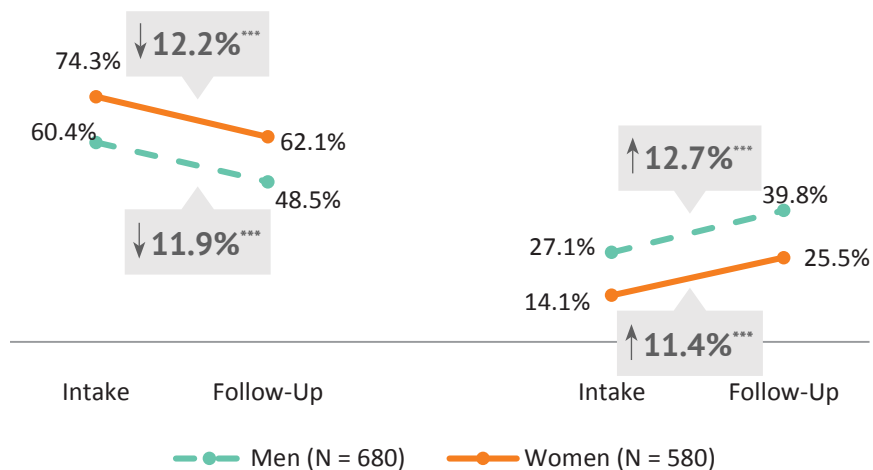
FIGURE 4.5. CHANGE IN CURRENT EMPLOYMENT STATUS (N = 1,260)^a

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

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

GENDER DIFFERENCES IN CURRENT EMPLOYMENT STATUS

Significantly more women reported at intake and follow-up that they were currently unemployed compared to men: 74.3% vs. 60.4% at intake and 62.1% vs. 48.5% at follow-up. The number of clients who were currently unemployed decreased significantly for both women and men (see Figure 4.6). The number of men who reported they were employed full-time was almost twice as high as the number of women at intake (27.1% vs. 14.1%) and was 1.5 times as high at follow-up (39.8% vs. 25.5%). Both genders, however, had significant increases in full-time employment from intake to follow-up (11.4% for women and 12.7% for men).

FIGURE 4.6. GENDER DIFFERENCES IN EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP^a

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

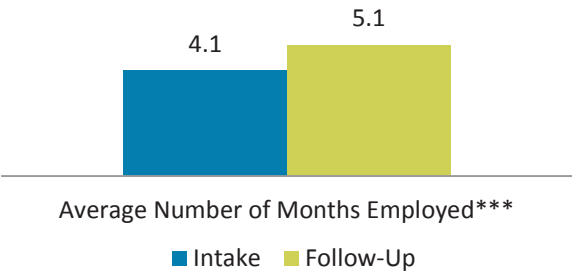
*** $p < .001$

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 4.7, clients reported working significantly more months at follow-up (5.1) than at intake (4.1).

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

FIGURE 4.7. AVERAGE NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP (N = 1,270)⁵⁸

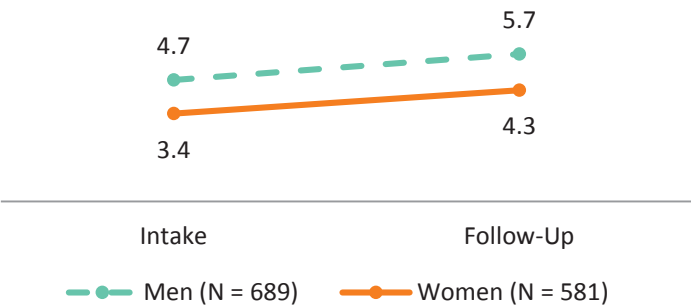


***p < .001.

GENDER DIFFERENCES IN THE NUMBER OF MONTHS EMPLOYED

Men reported working significantly more months at both periods compared to women (intake, 4.7 vs. 3.4 and follow-up, 5.7 vs. 4.3), however, the average number of months both men and women worked increased significantly from intake to follow-up (see Figure 4.8).

FIGURE 4.8. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP^{a,b}



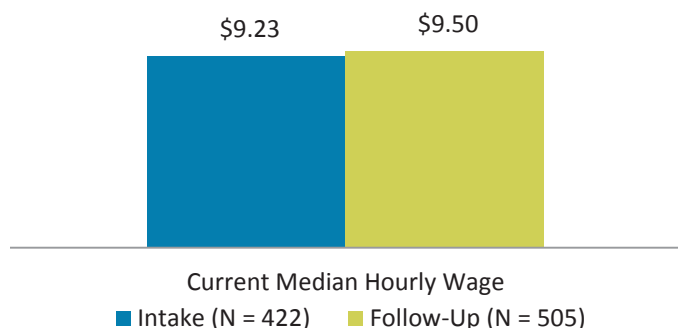
a—Significant difference by gender in number of months worked at intake and follow-up (p < .001).
b – Significant increase from intake to follow-up for men and women (p < .001).

HOURLY WAGE

Of those clients who were employed at intake (n = 422), the median hourly wage was \$9.23. Of those clients who were employed at follow-up (n = 505),⁵⁹ the median hourly wage was \$9.50 (see Figure 4.9).

⁵⁸ Four cases had missing data for number of months employed.
⁵⁹ Of the 572 individuals who reported being employed full-time, part-time, or seasonally at follow-up, 64 individuals had missing data on hourly wage because they did not know the answer or they refused to answer.

FIGURE 4.9. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO WORKED

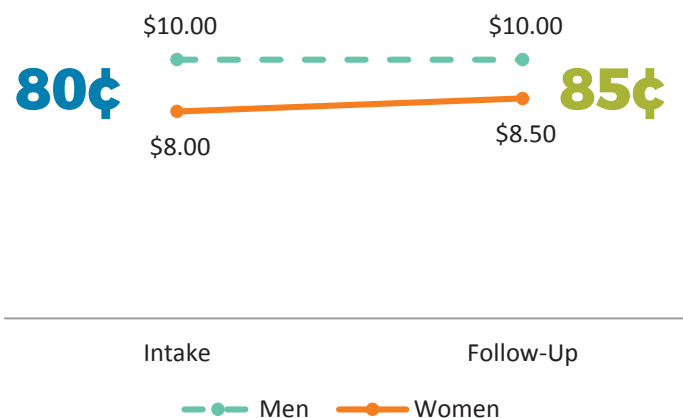


GENDER DIFFERENCES IN HOURLY WAGE

Of those clients who were employed at each period, men had significantly higher hourly wages than women (see Figure 4.10). At intake, employed women made \$0.80 for every dollar employed men made in this sample, while at follow-up, employed women made \$0.85 for every dollar employed men made.

At follow-up, employed women made only \$0.85 for every \$1 men made

FIGURE 4.10. 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.⁶⁰ At intake, less than two-thirds of employed women (62.1%) had a service sector job, whereas only 27.8% of employed men had a service sector job (see

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

⁶⁰ Occupation type was asked only of individuals who reported they were currently employed at intake and at follow-up.

Figure 4.11a). In addition, about two-fifths of employed men (42.2%) 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 (3.4%). These patterns were also found at follow-up; over half of employed women (53.9%) had a service sector job, whereas only 24.5% of employed men had a service sector job (see Figure 4.11b).

FIGURE 4.11a. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT INTAKE (N = 415)

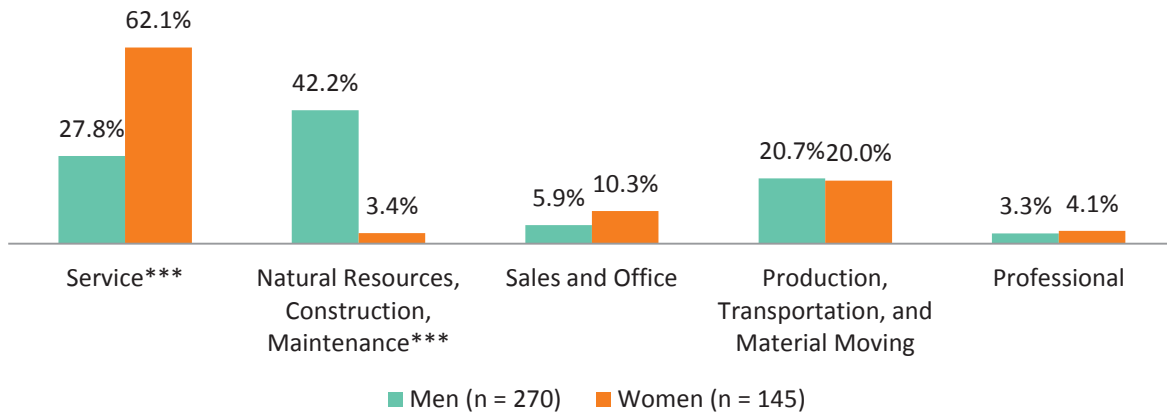
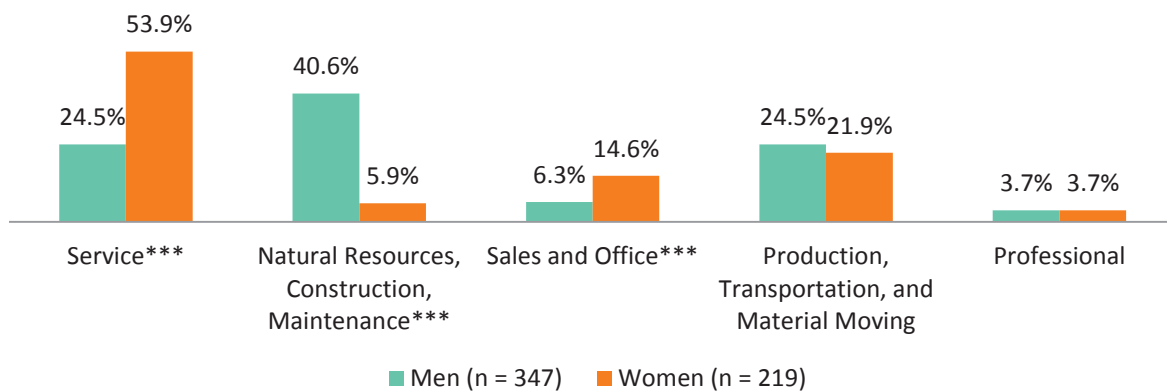


FIGURE 4.11b. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 566)

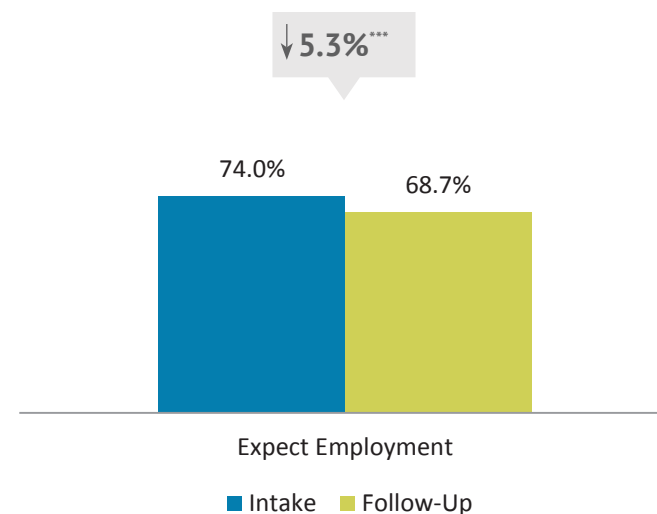


EXPECT EMPLOYMENT

Clients are asked if they expect to be employed in the next 12 months at intake and follow-up. At intake, 74% reported they expected to be employed in the future (see Figure 4.12). At follow-up, this number decreased significantly with only 68.7% reporting they expected employment in the next 12 months.

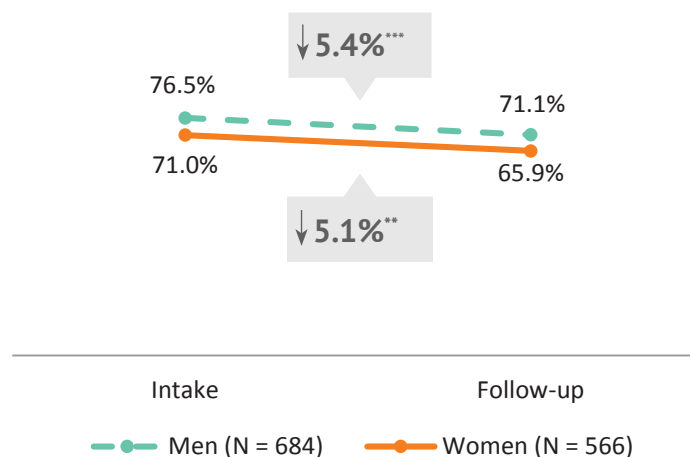
“Good personalized program, took great pride in what they do there. I would recommend it to anyone.”

— KTOS Follow-up Client

FIGURE 4.12. CLIENTS WHO EXPECT TO BE EMPLOYED IN THE FUTURE AT INTAKE AND FOLLOW-UP (N=1,250)⁶¹

GENDER DIFFERENCES IN EXPECT EMPLOYMENT

Significantly more men (76.5%) than women (71.0%) expected to be employed in the next 12 months at intake (see Figure 4.13). The percent of men and women who expected employment in the future decreased significantly from intake. There were no significant gender differences at follow-up.

FIGURE 4.13. GENDER DIFFERENCES IN CLIENTS WHO EXPECT TO BE EMPLOYED IN THE FUTURE AT INTAKE AND FOLLOW-UP^a

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

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

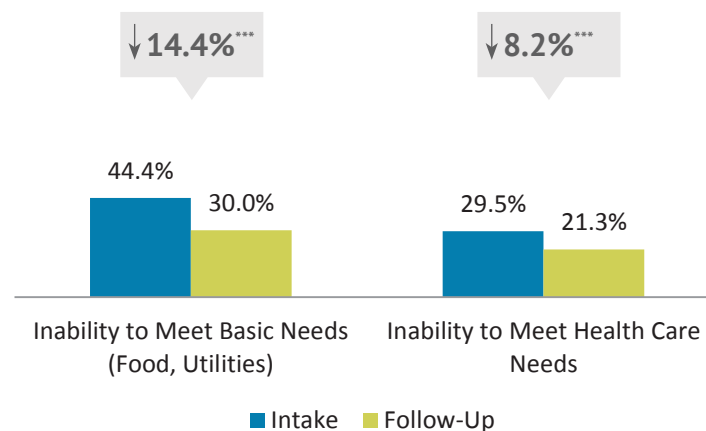
⁶¹ Twenty-four cases had missing data for expect employment at follow-up: 12 individuals responded they didn't know, the interviewer skipped the question in error for 11 cases, and 1 client refused to answer.

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 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 (1.0) compared to intake (1.5; not depicted in figure).

Less than half of clients (44.4%) reported at intake that they had difficulty meeting basic needs such as food, shelter or utilities. About 30% 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 14.4% and 8.2%, respectively, from intake to follow-up (see Figure 4.14). 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 4.14. DIFFICULTY IN MEETING BASIC AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 1,272)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 4.15). 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 (52.5%) reported difficulty meeting

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

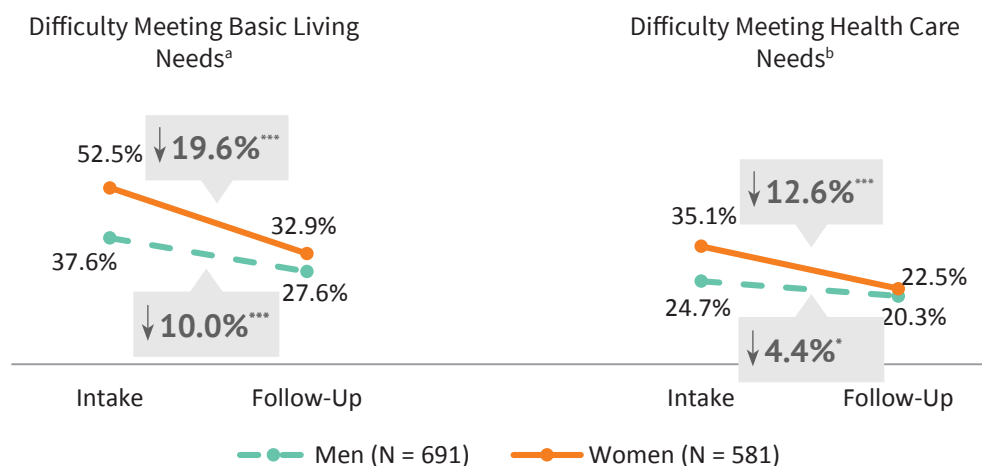
⁶² She, P., & Livermore, G. (2007). Material hardship, poverty, and disability among working-age adults. *Social Science Quarterly*, 88(4), 970-989.

⁶³ Two cases had missing data on basic needs items and health care needs items.

basic living needs at intake compared to 37.6% 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.

About one-third of women (35.1%) reported difficulty meeting health care needs at intake compared to 24.7% of men; however, at follow-up, there was no difference by gender. The number of women and men who reported difficulty meeting health care needs at follow-up was significantly lower than at intake.

FIGURE 4.15. GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 1,272)



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

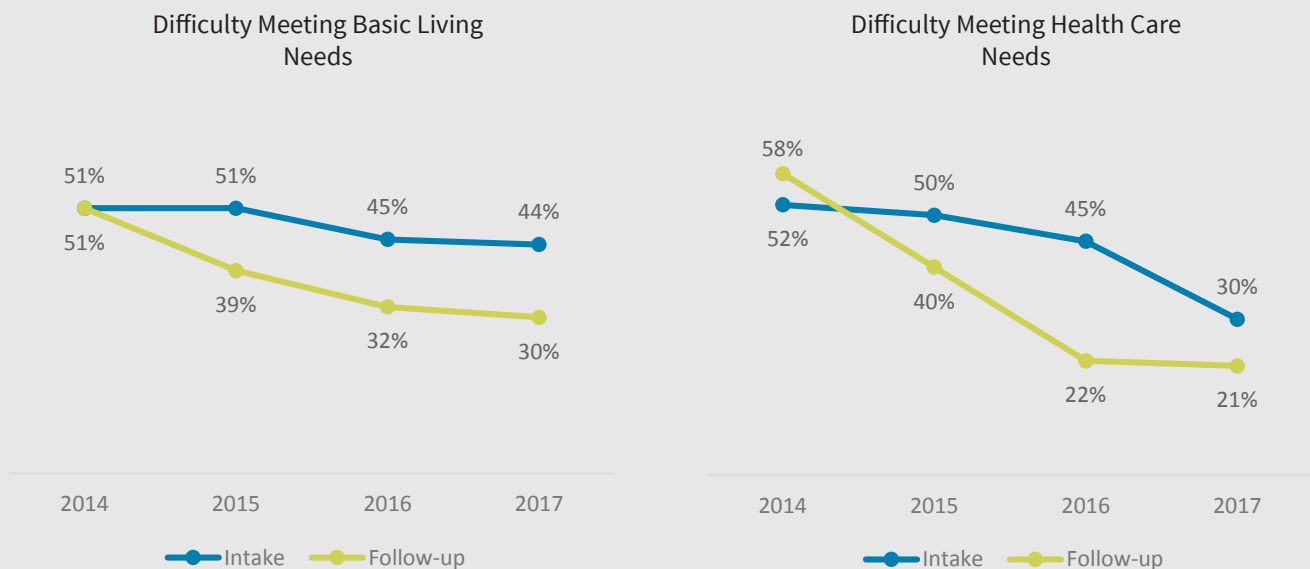
b – Significant difference by gender at intake ($p < .001$).

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

TREND REPORT

Difficulty Meeting Basic Living and Health Care Needs

The percent of KTOS clients who have reported difficulty meeting basic living needs and health care needs at follow-up has decreased over time. The percent of clients reporting difficulty meeting basic living needs at follow-up decreased from 51% in the KTOS 2014 report to 30% in the KTOS 2017 report. The decrease in the percent of clients reporting difficulty meeting health care needs at follow-up was even more dramatic: 58% in the KTOS 2014 report to 21% in the KTOS 2017 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), 2016 (July 1, 2013 – June 30, 2014), and 2017 (July 1, 2014 – June 30, 2015).

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), 2016 (July 1, 2014 – June 30, 2015), and 2017 (July 1, 2015 – June 30, 2016).

SECTION 5.

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.

ARRESTS

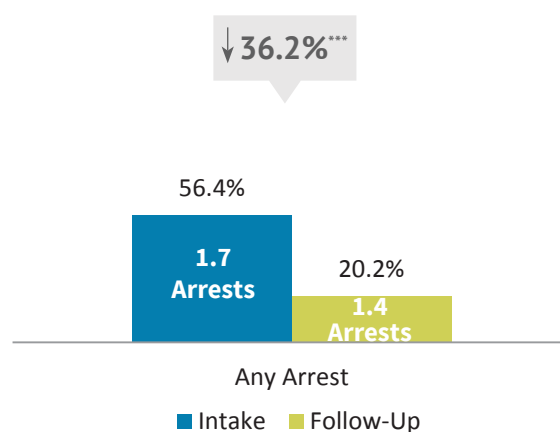
ARRESTED IN THE PAST 12 MONTHS

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 (56.4%) reported at least one arrest in the 12 months before entering treatment (see Figure 5.1). At follow-up, 20.2% reported at least one arrest in the past 12 months.

Among those clients who reported at least one arrest in the 12 months before intake ($n = 713$), clients were arrested an average of 1.7 times. Among those clients who reported at least one arrest in the 12 months before follow-up ($n = 255$), the average number of arrests was 1.4.

Percent of clients reporting any arrest significantly decreased 36% at follow-up

FIGURE 5.1. CLIENTS REPORTING ARRESTS AT INTAKE AND FOLLOW-UP ($N = 1,265$)⁶⁴



*** $p < .001$.

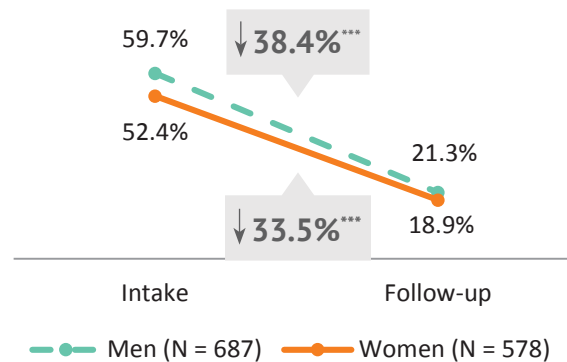
GENDER DIFFERENCES IN ARRESTS

At intake, significantly more men than women reported an arrest in the past 12 months (see Figure 5.2). The percentage of men and women who reported an arrest significantly decreased from intake

⁶⁴ Nine cases had missing data on arrests in the 12 months before follow-up.

to follow-up (38.4% and 33.5%, respectively). There was no significant gender difference at follow-up.

FIGURE 5.2 GENDER DIFFERENCES IN CLIENTS REPORTING ARRESTS AT INTAKE AND FOLLOW-UP^a



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

INCARCERATION

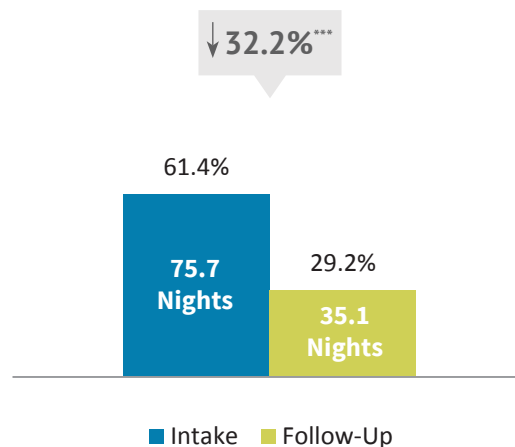
INCARCERATED IN THE PAST 12 MONTHS

Six in 10 clients (61.4%) reported spending at least one day in jail or prison in the 12 months prior to entering treatment (see Figure 5.3). At follow-up, 29.2% of clients reported spending at least one day incarcerated in the past 12 months; a significant decrease of 32.2%.

Among those who were incarcerated at least one night, they reported spending, on average, less time in jail or prison in the 12 months before follow-up ($n = 371$, 35.1 nights) when compared to intake ($n = 781$, 75.7 nights).

The number of clients who spent at least one day incarcerated decreased by 32%

FIGURE 5.3. CLIENTS REPORTING BEING INCARCERATED AT INTAKE AND FOLLOW-UP ($N = 1,272$)⁶⁵



*** $p < .001$.

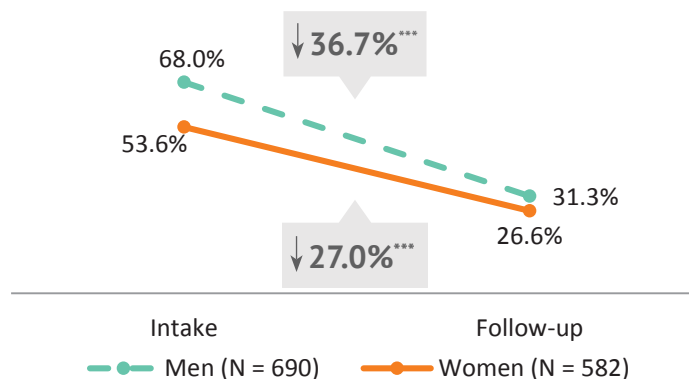
⁶⁵ Two cases had missing data for incarceration at follow-up.

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 5.4). 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

FIGURE 5.4. GENDER DIFFERENCES IN CLIENTS REPORTING INCARCERATION (N = 1,272)^a



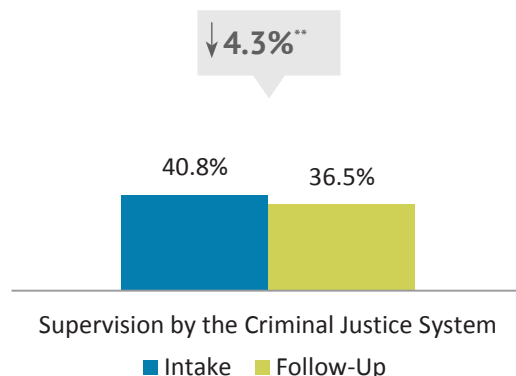
a— Significant difference by gender at intake ($p < .001$).

*** $p < .001$.

CRIMINAL JUSTICE SYSTEM SUPERVISION

The number of clients that self-reported they were under criminal justice system supervision (e.g., probation or parole) decreased significantly from intake (40.8%) to follow-up (36.5%; see Figure 5.5).

FIGURE 5.5. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 1,272)⁶⁶



** $p < .01$.

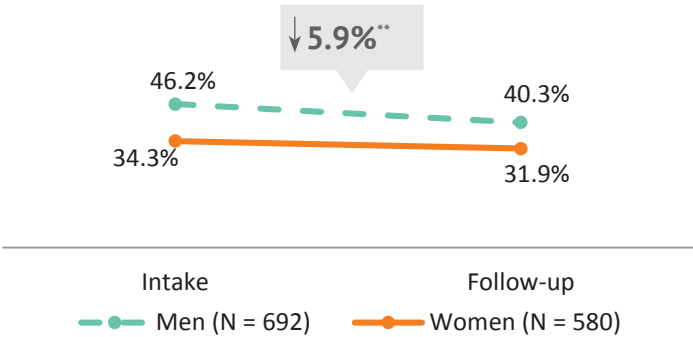
⁶⁶ Two cases had missing data on criminal justice system supervision at follow-up.

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 5.6). The number of men who reported being under supervision decreased significantly from intake to follow-up, however, the percent of women reporting supervision did not change.

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

FIGURE 5.6. GENDER DIFFERENCES IN CLIENTS REPORTING CRIMINAL JUSTICE SUPERVISION (N = 1,272)^a



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

SECTION 6.

Recovery Supports

This section focuses on five main changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) recovery supportive interactions with family/friends in the past 30 days, (3) the number of people the participant said they could count on for recovery support, (4) what will be most useful to the client in staying off drugs/alcohol, and (5) clients' perceptions of their chances of staying off drugs/alcohol.

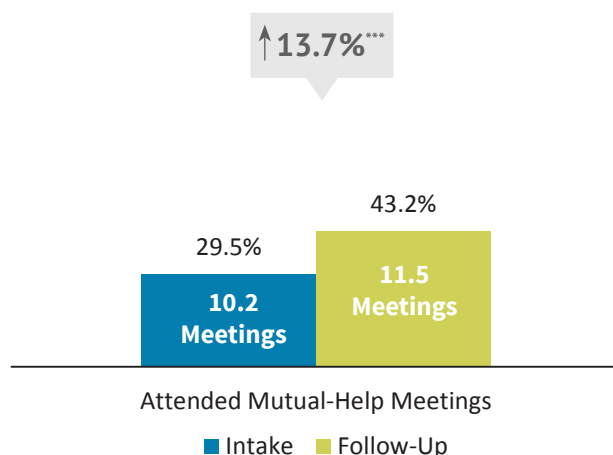
MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE

At intake, only 29.5% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (see Figure 6.1). At follow-up, there was a significant increase of 13.7%, with 43.2% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days.

There was a 14% increase in the percent of clients reporting attending mutual help recovery groups

Of those who attended self-help meetings at intake ($n = 377$), they reported attending an average of 10.2 meetings in the past 30 days. Those who attended self-help meetings at follow-up ($n = 550$) reported an average of 11.5 meetings attended in the past 30 days.

FIGURE 6.1. MUTUAL HELP RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP ($N=1,272$)⁶⁷



GENDER DIFFERENCES IN MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE

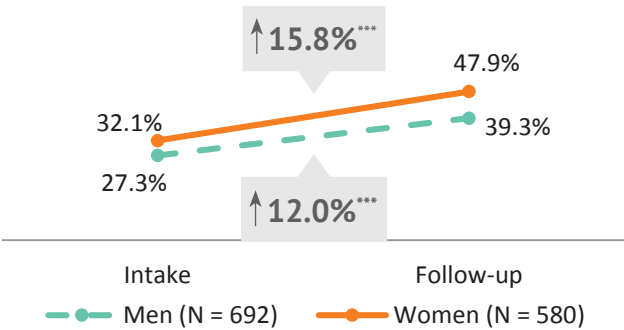
Significantly more women than men reported attending mutual help recovery groups in the 12 months before follow-up (see Figure 6.2). The number of women and men who reported attending mutual help recovery meetings increased significantly from intake to follow-

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

⁶⁷ Two individuals had missing data for self-help meeting attendance.

up (15.8% and 12.0% respectively).

FIGURE 6.2. GENDER DIFFERENCES IN CLIENTS ATTENDING MUTUAL HELP MEETINGS (N = 1,272)^a



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

TAKING A CLOSER LOOK AT RECOVERY SUPPORT

One in three clients reported attending mutual help recovery group meetings in the 30 days before entering treatment (29.5%; n = 375). Of these clients who reported attending mutual help recovery group meetings at intake, 69.6% also attended mutual help recovery group meetings at follow-up (see Table 6.1).

Alternatively, 32.2% of those who *did not* report attending mutual help recovery group meetings in the 30 days before entering treatment *did* attend meetings at follow-up.

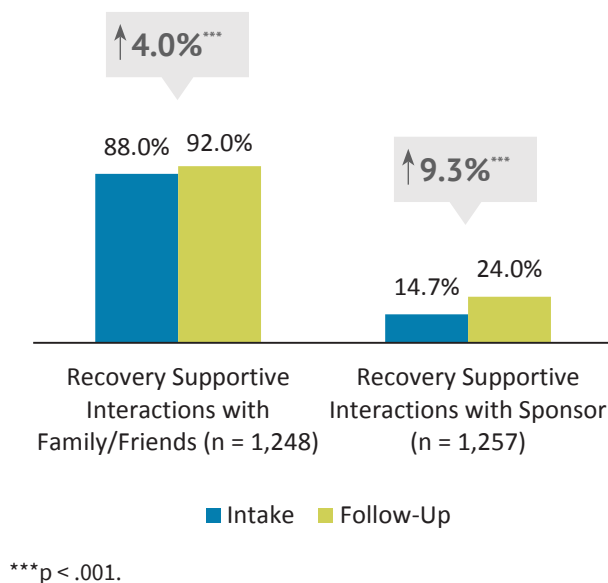
TABLE 6.1. MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE AT INTAKE AND FOLLOW-UP BASED ON MEETING ATTENDANCE AT INTAKE

		INTAKE	
		NO (n = 897)	YES (n = 375)
FOLLOW-UP	NO	67.8% Did not attend mutual help recovery meetings in the past 30 days at intake <i>or</i> in the past 30 days at follow-up	30.4% Attended mutual help recovery meetings in the past 30 days at intake but <i>did not</i> in the past 30 days at follow-up
	YES	32.2% Did not attend mutual help recovery meetings in the past 30 days at intake but <i>did</i> in the past 30 days at follow-up	69.6% Attended mutual help recovery meetings in the past 30 days at intake <i>and</i> in the past 30 days at follow-up

RECOVERY SUPPORTIVE INTERACTIONS

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 6.3). The number of clients who reported having recovery supportive interactions with family or friends significantly increased from intake to follow-up. About 15% of clients reported being in contact with an AA/NA or other self-help group sponsor at intake. That number increased significantly to 24.0% at follow-up.

FIGURE 6.3. RECOVERY SUPPORTIVE INTERACTIONS IN THE PAST 30 DAYS⁶⁸



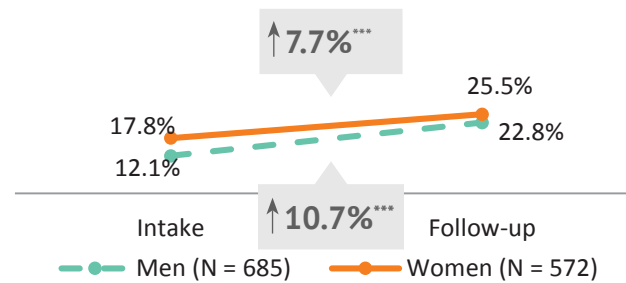
GENDER DIFFERENCES IN RECOVERY SUPPORTIVE INTERACTIONS WITH A SPONSOR

Significantly more women than men reported being in contact with an AA/NA or other self-help group sponsor in the 12 months before intake (see Figure 6.4). The number of women and men who reported contact with a sponsor increased significantly from intake to follow-up. At follow-up, there were no gender differences in the number of clients reporting contact with a sponsor.

"I liked how confidential it was. It helped me a lot. I felt comfortable there and I found it easy to open up."

— KTOS Follow-up Client

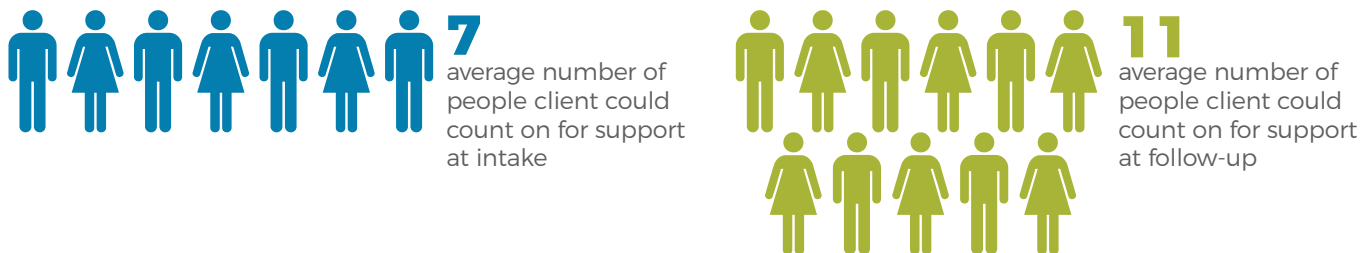
⁶⁸ Data on family/friends recovery supportive interactions was missing at follow-up for 26 cases and data on sponsor recovery supportive interactions was missing at follow-up for 17 cases.

FIGURE 6.4. GENDER DIFFERENCES IN CLIENTS REPORTING SUPPORTIVE INTERACTIONS WITH A SPONSOR (N = 1,272)^a

a— Significant difference by gender at intake ($p < .01$).
 *** $p < .001$.

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, from 6.9 people at intake to 11.0 people at follow-up (see Figure 6.5).

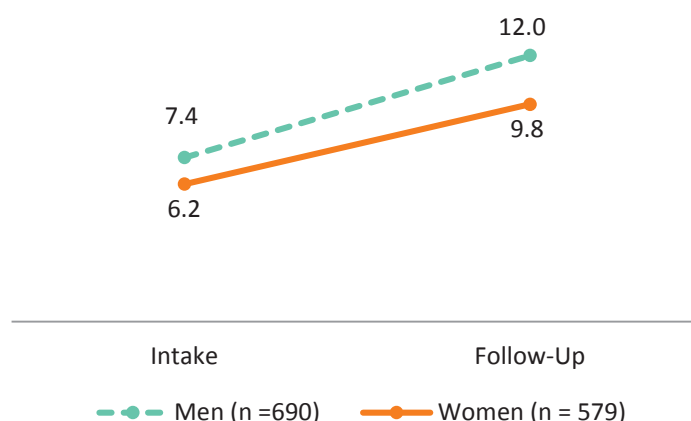
FIGURE 6.5. AVERAGE NUMBER OF PEOPLE CLIENTS COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 1,269)^{***69}

*** $p < .001$.

GENDER DIFFERENCES IN NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT

At intake, men reported a higher average number of people they could count on for recovery support compared to women (see Figure 6.6). However, at follow-up, there was no significant difference between men and women in the number of people 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.

⁶⁹ Data on the number of people the client could count on for recovery support at follow-up was missing for 5 cases.

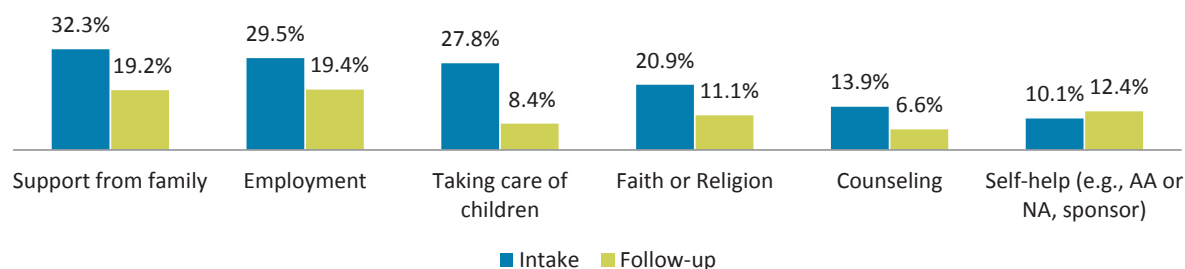
FIGURE 6.6. GENDER DIFFERENCES IN NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP^{a,b}

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

b—Significant increase from intake to follow-up for men and women ($p < .001$).

WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS/ALCOHOL

At intake and follow-up, clients were asked what they believed would be most useful in helping them quit or stay off drugs/alcohol. Rather than conduct analysis on change in responses from intake to follow-up, responses that were reported by 10% of clients or more are presented for descriptive purposes in Figure 6.7. The most common responses at intake were support from family, employment, and taking care of their children or dependents. At follow-up, the most common responses were employment, support from family, and self-help (e.g., AA or NA, their sponsor).

FIGURE 6.7. CLIENTS REPORTING WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1251)⁷⁰

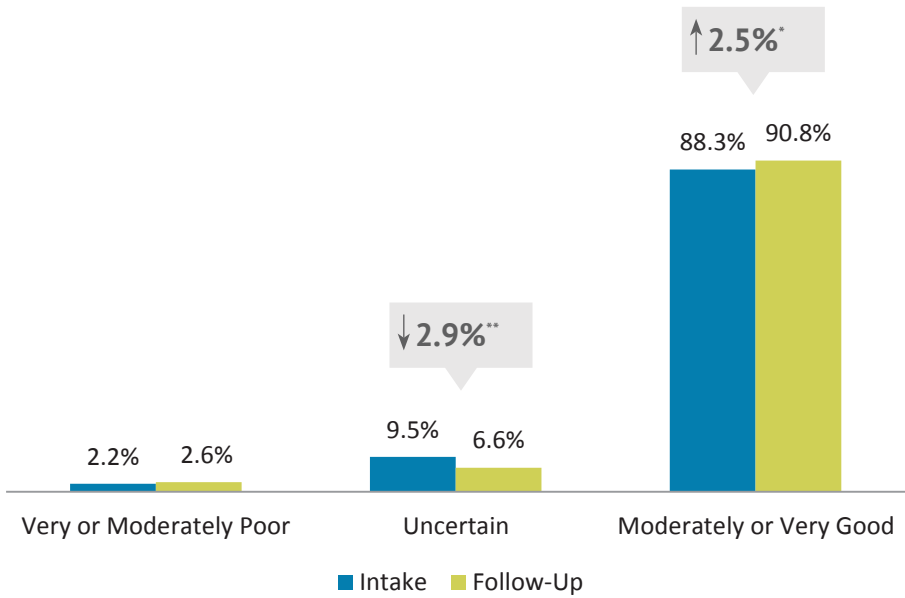
CHANCES OF STAYING OFF DRUGS/ALCOHOL

Clients were asked, based upon their situation, how good they believed their chances were of getting off and staying off drugs/alcohol using a scale from 1 (very poor) to 5 (very good). Clients rated their chances of getting off and staying off drugs/alcohol as a 4.5 at intake and a 4.6 at follow-up, which was a significant increase (not depicted in figure). Overall, 88.3% of clients believed they had a moderately or very good chance of staying off drugs/alcohol at intake with a significant increase of 2.5% at follow-up (90.8%; see Figure 6.8).⁷¹

⁷⁰ One individual had missing data for the variables at intake and 22 had missing data at follow-up.

⁷¹ Nine individuals had missing data for chances of staying off drugs/alcohol at follow-up.

FIGURE 6.8. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,265)^a



a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .05$).
** $p < .01$, * $p < .05$.

SECTION 7.

Client Satisfaction with Substance Abuse Treatment Programs

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

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 (72.1%) gave a high positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table).⁷² The average rating was 8.2.

CLIENT RATINGS OF PROGRAM EXPERIENCES

When asked about specific aspects of their treatment program, the overwhelming majority of clients reported they either agreed or strongly agreed with each aspect of the program that was assessed (see Figure 7.1).⁷³ The majority of clients indicated they were treated with respect (97.0%), understood their rights as clients of substance abuse treatment (97.4%), understood what staff expected of them (96.9%), understood their treatment plan (96.8%), felt better about themselves as a result of treatment (91.5%), and indicated that they had received the services they needed to help them get better (91.0%).

“I liked how they got to the root of the problems and what caused me to turn to drugs in the first place. It was a good program.”

— KTOS Follow-up Client

⁷² Data for 3 individuals was missing for this question.

⁷³ 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.

FIGURE 7.1. PERCENT OF CLIENTS WHO AGREED/STRONGLY AGREED WITH THE FOLLOWING STATEMENTS ABOUT THE TREATMENT PROGRAM AT FOLLOW-UP (N = 1,274)



SECTION 8.

Clinical Diagnostic and Service Information

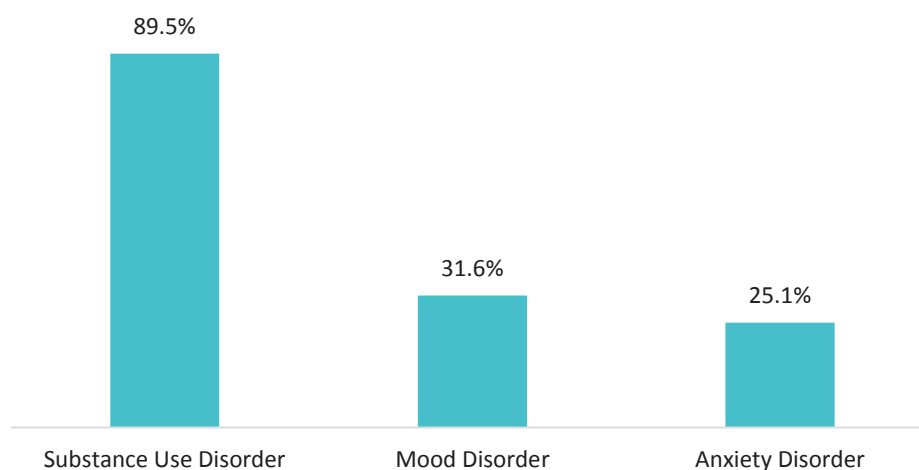
This section examines mental health diagnosis and service event data submitted by community mental health center (CMHC) providers to the Department for Behavioral Health, Developmental and Intellectual Disabilities.

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 281 cases.⁷⁴

Figure 8.1 shows the percent of clients with a diagnosis for various types of mental health disorders. Diagnosis codes were entered for 990 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 (31.6%; 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). Other disorders that were coded for fewer than 5% of clients included: a V-code, behavioral disorder, psychotic and developmental disorder, non-psychotic disorder, intellectual disability, personality disorder, learning disorder, and sleep disorder.

FIGURE 8.1. DSM-IV DIAGNOSES FOR CLIENTS IN SUBSTANCE ABUSE TREATMENT BETWEEN JULY 1, 2014 AND JUNE 30, 2015 (N = 990)



⁷⁴ 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.

SERVICE INFORMATION

Of the 1,274 clients in the KTOS follow-up sample, 22.1% (including the 281 that had no match to the IPOP data) had no services in the clinical service event data set for the period from the date the intake survey was completed to the date the follow-up survey was completed.⁷⁵ Among the clients with a match in the service event data (n = 993) the types of services that were most commonly provided are shown in Figure 8.2. The majority of KTOS clients (68.6%) received individual and family therapy and about one third (35.4%) received evaluation or diagnostic services. A little more than 2 in 5 received group therapy. About 1 in 7 received substance abuse residential services and psychiatric individual therapy. Smaller percentages received substance abuse-related case management, intensive outpatient, and case management services, and peer support.⁷⁶

FIGURE 8.2. PERCENT OF CLIENTS RECEIVING EACH TYPE OF SERVICE OF THOSE WITH ANY SERVICES INCLUDED IN THE DATA (N = 993)

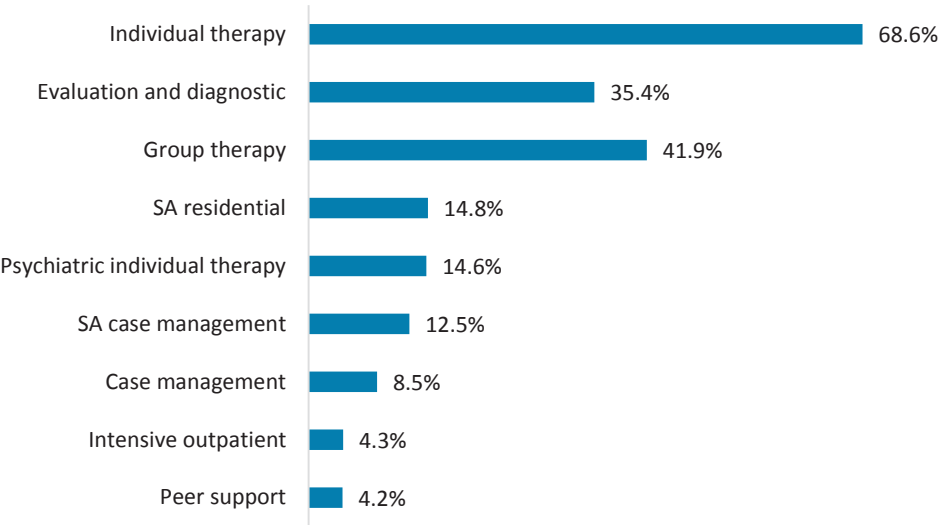
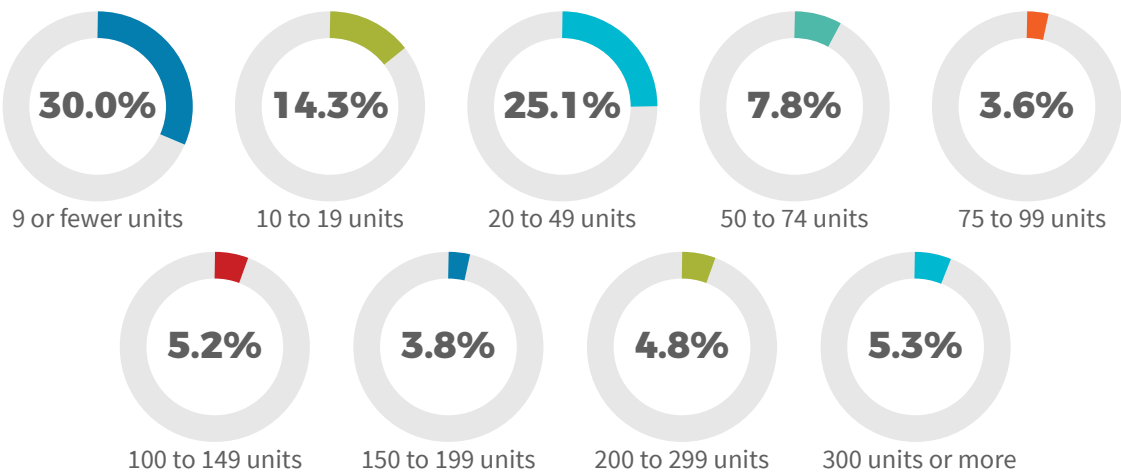


Figure 8.3 shows the range in the number of units of clinical services KTOS clients received. The average number of units of service clients received from intake to the 12-month follow-up interview was 77.4. Half of clients received 24 or fewer units of service.

FIGURE 8.3. NUMBER OF UNITS OF CLINICAL SERVICES (N = 993)



⁷⁵ A total of 281 cases had no clinical services or diagnostic data in the IPOP data set for the period examined.

⁷⁶ Service categories found for fewer than 4% of the 993 clients are not shown in the figure (e.g., residential crisis stabilization, non-residential crisis, supported employment or housing, inpatient services, Assertive Community Treatment, and other services).

SECTION 9.

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 self-reported illegal drug and alcohol use 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 was 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 and drug abuse in the United States.⁷⁷ In 2000 the estimated costs of alcohol abuse in the United States was updated⁷⁸ and in 2011 the National Drug Intelligence Center updated the estimates of drug abuse in the United States for 2007.⁷⁹ 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 2015 dollars using Consumer Price Indexes (monthly data on the average change in prices paid over time in the market for goods and

⁷⁷ 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.

⁷⁸ 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.

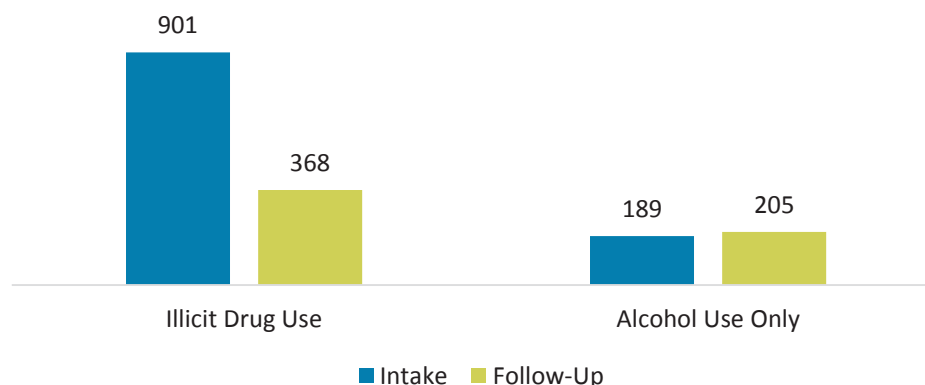
⁷⁹ National Drug Intelligence Center. (2011). *The economic impact of illicit drug use on American Society*. Washington, DC: United States Department of Justice.

services released by the Bureau of Labor Statistics) from a federal reserve bank.⁸⁰

Next, to calculate an estimate of the cost of alcohol and drug abuse per person, those updated national costs were divided by the 2015 federally derived estimates of the number of individuals (aged 12 or older) with alcohol use disorder only (13.1 million), drug use disorder only (5.1 million), and alcohol and illicit drug use disorders (2.7 million) in the nation.⁸¹ Because the national cost estimates of alcohol abuse/dependence were examined separately from drug abuse/dependence, the 2.7 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.⁸² 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. Analysis 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 reported using illicit drugs and alcohol in the period before treatment to after treatment was examined.

Figure 9.1 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.⁸³ 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 reported using alcohol only were counted in the alcohol use category. The change from intake to follow-up was significant. At intake 901 clients reported using illicit drugs and an additional 189 clients reported using alcohol only. At follow-up, 368 clients reported using illicit drugs and 205 clients reported using any alcohol.

FIGURE 9.1 THE NUMBER OF CLIENTS WHO REPORTED USING ILLICIT DRUGS AND/OR ALCOHOL IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (N = 1,272)



⁸⁰ <http://www.minneapolisfed.org>

⁸¹ Center for Behavioral Health Statistics and Quality. (2016). *Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug Use and Health* (HHS Publication No. SMA 16-4984, NSDUH Series H-51). Retrieved from <http://www.samhsa.gov/data/>.

⁸² To do this the proportion of clients who were not in the alcohol and drug abuse/dependent category who were in the alcohol category (0.72) and the drug category (0.28) was estimated the multiplied that proportion by the 2.7 million to assign the cross-addicted clients to one of the categories (drug abuse or alcohol abuse).

⁸³ A total of 306 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). Even though this high percentage of cases (24.0%) with missing data on variables used to compute the cost of treatment would make imputation of the mean value or use of Expectation-Maximization (EM) for these cases inappropriate, we input the mean value of \$2,512 to these cases to yield a conservative estimate of the cost savings. Two cases had missing values for alcohol use in the 12 months before follow-up; thus, they were excluded from the cost savings analysis.

The average annual cost to society of an active drug abuser in 2015 dollars was \$37,687. The average annual cost to society of an active alcohol abuser was \$17,844. Thus, when this average annual cost per individual drug user was applied to the 901 clients who reported using illicit drugs at intake, the annual cost to society in 2015 was estimated at \$33,955,987. When the average annual cost per individual alcohol abuser was applied to the 189 clients who reported using alcohol only at intake, the estimated annual cost to Kentucky in 2015 was \$3,372,516. The estimated total annual cost of drug and alcohol use in the 12 months before intake applied to the follow-up sample of KTOS clients was \$37,328,503. By follow-up, the estimated cost of the 368 individuals who reported illicit drug use was \$13,868,816 and the estimated cost of the 205 individuals who reported using alcohol was \$3,658,020, for a total of \$17,526,836. Thus, as shown in Figure 9.2, after participation in publicly-funded substance abuse treatment, the gross cost to Kentucky taxpayers for these 1,272 clients was reduced by \$19,801,667.

FIGURE 9.2. COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N=1,272)

$$\text{\$37.3 million} - \text{\$17.5 million} = \text{\$19.8 million}$$

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 8 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 the Department for Medicaid Services Behavioral Health and Substance Abuse Services Inpatient and Outpatient Fee Schedules,^{84, 85} and then 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 = 1,274), 306 cases had no services listed or no services that could be assigned a unit cost (e.g., miscellaneous services). The number of cases included the follow-up sample with no service data in the IPOP data has increased. There are concerns that CMHC providers may not enter all the services, particularly Medicaid-funded services with the expansion of Medicaid funding of substance abuse services in recent years, into the data set. Because the services included in the current IPOP data may not capture all the services clients included in the follow-up sample may have received we decided to compute the average cost of treatment per client over several years (2012 – 2015), and use this average in the calculation of avoided costs. The average total costs of providing publicly-funded behavioral health treatment services in 2012, 2013, 2014, and 2015 as calculated from the service event data submitted to IPOP by the CMHCs were updated to 2015 dollar amounts, divided by the total number of clients included in the follow-up samples for those years, yielding an average cost of treatment of \$3,868 (in 2015 dollars). The average cost of \$3,868 was multiplied by 1,272, which was the number of individuals in the follow-up sample for whom we had alcohol and illicit drug use data for the 12-month follow-up period. The estimate of the cost of treatment was \$4,920,096.

⁸⁴ Department of Medicaid Services. Behavioral Health and Substance Abuse Services Inpatient (facility) Fee Schedule (Rev 06/2016). Retrieved from <http://chfs.ky.gov/NR/rdonlyres/5F888306-0400-4FC1-91D1-530BC7A554CD/0/BHandSUFeeScheduleIPFrev612016r1.pdf>.

⁸⁵ Department of Medicaid Services. Behavioral Health and Substance Abuse Services Outpatient (facility) Fee Schedule (Rev 06/2016). Retrieved from <http://chfs.ky.gov/NR/rdonlyres/63561642-4335-45FB-9F06-FE3E75A9E101/0/BHandSUFeeScheduleOPNFrev612016.pdf>.

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 use divided by the cost of providing treatment: \$19,801,667/\$4,920,096, which equals \$4.02 (see Table 9.3). In other words, for every dollar spent on publicly-funded substance abuse treatment in FY 2015, there was an estimated savings of \$4.02 in costs to Kentucky taxpayers associated with alcohol and drug addiction.

TABLE 9.3. COST SAVINGS OF PROVIDING TREATMENT TO INDIVIDUALS WHO USED ILLICIT DRUGS AND/OR ALCOHOL

	ALCOHOL AND DRUG DEPENDENCE BASED ON ASI COMPOSITE SCORES	
	INTAKE	FOLLOW-UP
DRUG USE		
Number of clients	901	368
ALCOHOL USE		
Number of clients	189	205
TOTAL COST TO SOCIETY OF DRUG AND ALCOHOL USE	\$37,328,503	\$17,526,836
GROSS COST DIFFERENCE FROM INTAKE TO FOLLOW-UP	\$19,801,667	
ESTIMATE OF COST OF TREATMENT (BASED ON AVERAGE COST PER CLIENT IN 2012 – 2015)	\$4,920,096	
OFF-SET AS NET COST/BENEFIT RATIO	\$19,801,667/\$4,920,096	
RETURN ON \$1.00 INVESTMENT	\$4.02	

SECTION 10.

Conclusions and Implications

Findings from the 2017 Kentucky Treatment Outcome Study showed positive changes for individuals at the 12-month follow-up. KTOS clients reported significant reductions in substance use and severity of substance use. The number of individuals who reported using alcohol, using alcohol to intoxication, or binge drinking also decreased significantly. The number of clients who met DSM-5 study criteria for no substance use (alcohol and/or drug use) disorder increased from intake to follow-up and the percent of clients with ASI alcohol or drug composite scores that met or surpassed the cutoff for SUD decreased from intake to follow-up. Past-12-month and past-30-day smoking tobacco use saw a small but significant decrease from intake to follow-up.

Clients' mental health 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. KTOS clients' health and stress-related health consequences also significantly improved from intake to follow-up. Clients reported a significantly higher overall health rating and fewer days their physical health and mental health was not good in the past 30 days. The percent of clients reporting chronic pain decreased over time and clients reported significantly fewer stress symptoms at follow-up.

Overall, individuals' economic and living circumstances 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 were currently employed full-time increased from intake to follow-up. The percent of clients 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. One in five individuals reported at follow-up they had been arrested in the past 12 months, which was a significant decrease from the number who reported being arrested in the 12 months before intake. A similar decrease was found in the number of individuals who reported being incarcerated at follow-up when compared to intake.

KTOS clients reported significant increases in recovery supports from intake to follow-up, which is critical in maintaining substance abuse recovery. Additionally, client ratings of the treatment services they received were high (an average of 8.2 out of 10). 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.

CO-OCCURRING PROBLEMS. This year's findings suggest opportunities to target co-occurring problem areas including tobacco smoking and economic difficulties reported by participants.

SMOKING. Despite a small significant decrease in smoking tobacco rates from intake to follow-up, smoking rates remained very high for these clients with 82.5% 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, however, has been refuted by recent empirical research studies.⁸⁶ *Voluntary* smoking cessation during substance abuse treatment has been associated with lower relapse. 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.⁸⁷

MENTAL HEALTH. Compared to the general population, individuals who have a substance use disorder are more likely to also have a co-occurring mental health disorder.⁸⁸ Those with co-occurring substance use and mental health disorders often have medication noncompliance, relapse, homelessness, and suicidal behavior.⁸⁹ Overall, there was a significant decrease over time in the percent of KTOS clients who reported depression, generalized anxiety, and suicidal thoughts and/or attempts, however, nearly 1 in 10 women reported suicidality at follow-up, which was significantly more than men. Women with co-occurring mental health and substance use disorders have poorer treatment outcomes and high rates of program dropout.⁸⁰

CHRONIC PAIN. At follow-up, nearly one-third of KTOS clients reported persistent chronic pain that lasted at least 3 months. Individuals with persistent or chronic pain are more likely to report anxiety, depression, lower overall health ratings⁹⁰ and substance use disorders.⁹¹ Self-medication can be problematic in substance abuse treatment program participants who report chronic pain.⁹² Of those KTOS clients who reported chronic pain at follow-up (n = 395), 10.1% also reported misusing prescription opioids in the past 12 months.

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.⁹³ 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. The finding of a significantly lower number of individuals who experienced economic hardship is good news. Nonetheless, the fact that 30% of individuals reported they had difficulty meeting basic living needs and 21% 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.

⁸⁶ Baca, C., & Yahne, C. (2009). Smoking cessation during substance abuse treatment: What you need to know. *Journal of Substance Abuse Treatment*, 36, 205-219.

⁸⁷ 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.

⁸⁸ <https://www.samhsa.gov/treatment#co-occurring>

⁸⁹ Center for Substance Abuse Treatment. Substance Abuse Treatment: Addressing the Specific Needs of Women. Treatment Improvement Protocol (TIP) Series, No. 51. HHS Publication No. (SMA) 15-4426. Rockville, MD: Center for Substance Abuse Treatment, 2009. Retrieved from: <https://store.samhsa.gov/shin/content//SMA15-4426/SMA15-4426.pdf>

⁹⁰ Gureje, O., Von Korff, M., Simon, G., & Gater, R. (1998). Persistent pain and well-being: A World Health Organization study in primary care. *JAMA*, 280(2), 147-151

⁹¹ Ballantyne, J. & LaForge, S. (2007). Opioid dependence and addiction during opioid treatment of chronic pain. *Pain*, 129(3), 235-255.

⁹² Rosenblum, A., Joseph, H., Fong, C., Kipnis, S., Cleland, C., Portenoy, R. (2003). Prevalence and characteristics of chronic pain among chemically dependent patients in methadone maintenance and residential treatment facilities. *JAMA*, 289(18), 2370-2378.

⁹³ <http://blog.samhsa.gov/2012/03/23/definition-of-recovery-updated/>

GENDER DIFFERENCES. A number of gender differences were found in this report. Significantly more women than men reported using illegal drugs at intake. Specifically, significantly more women reported they had used opioids and CNS depressants in the past 12 months and past 30 days at intake. More women also reported using cocaine and other stimulants in the 12 months before intake when compared to men. Significantly more women reported smoking tobacco at intake while significantly more men reported using smokeless tobacco at intake and follow-up. Significantly more men also reported using alcohol in the 12 months and 30 days before follow-up.

More women than men reported mental health symptoms at intake and follow-up including depression, generalized anxiety, comorbid depression and anxiety, and suicidality. Of those who met study criteria for depression and anxiety at intake, women reported a higher number of depression and anxiety symptoms than men. Also, women rated their overall health lower at intake and follow-up compared to men. They reported their physical health was not good significantly more days than men at intake and their mental health was not good significantly more days than men at intake and follow-up. Women also reported more stress symptoms 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.

Significantly more women reported economic difficulties and unemployment at both intake and follow-up while significantly more men reported they had full-time employment at intake and follow-up. 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 \$0.80 for every dollar employed men made and by follow-up the gap in hourly wages remained large with employed women making only \$0.85 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 reported having difficulty meeting health care needs in the 12 months before intake.

Even though women made significant gains in their employment 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, more than half of employed women had a service sector job, whereas only about one-quarter of employed men had a service sector job. In addition, at intake and follow-up about 40% of employed men (42.2% and 40.6%, respectively) 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 (3.4% and 5.9%, respectively).

Overall, a higher percentage of men reported being involved with the criminal justice system in the 12 months before entering treatment and the 12 months before follow-up compared to women. More men reported an arrest or incarceration at intake and criminal justice supervision (e.g., probation or parole) at intake and follow-up.

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, education, physical health, mental health problems, and substance use severity). 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, except 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.^{94, 95, 96, 97} Earlier studies found that the context of the interview influences reliability.⁹⁸ 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-

⁹⁴ 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.

⁹⁵ 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.

⁹⁶ Rutherford, M. J., Cacciola, J. S., Alterman, A. I., McKay, J. R., & Cook, T. G. (2000). Contrasts between admitters and deniers of drug use. *Journal of Substance Abuse Treatment*, 18(4), 343-348.

⁹⁷ 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.

⁹⁸ Babor, T. F., Stephens, R. S., & Marlatt, G. A. (1987). Verbal report methods in clinical research on alcoholism: Response bias and its minimization. *Journal of Studies on Alcohol and Drugs*, 48(05), 410.

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 9 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 2017 report provides a valuable examination of client outcomes for adults in publicly-funded substance abuse treatment. 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, depression and anxiety symptoms, suicidality, arrests and incarceration, and a significant increase in full-time employment and 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 use in the year after treatment intake, while taking into account the cost of publicly-funded treatment, showed a significant estimated 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 an evidence-based web-based survey.⁹⁹ At the end of the intake survey, clinicians explain the follow-up study to clients and give them the opportunity to volunteer to participate. 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 5,187 clients who completed an intake survey, 2,742 (52.9%) 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 = 2,035).

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 2,035 clients included in the follow-up sample, 393 were ineligible for participating in the follow-up survey for a variety of reasons (e.g., incarcerated, in residential treatment, deceased), which left 1,642 clients eligible for follow-up. Of these clients, 1,274 completed a follow-up survey (see Table AA.1). Thus, the follow-up rate was 77.6%. The remaining clients either (1) refused (0.2%) to complete the follow-up survey, or (2) were never successfully contacted, or if contacted they never completed the follow-up survey (22.2%).

⁹⁹ Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2016). *Evidence Base for the Kentucky Treatment Outcome Study (KTOS) Assessment and Methods*. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 2,035)

	Number of Records	Percent
Ineligible for follow-up survey	393	19.3%
Number of cases eligible for follow-up (N = 1,642)		
Completed follow-up surveys	1,274	
Follow-up rate ((the number of completed surveys/ the number of eligible cases)*100)		77.6%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	365	
Expired rate ((the number of expired cases/eligible cases)*100)		22.2%
Refusal	3	
Refusal rate (the number of refusal cases/eligible cases)*100)		0.2%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	1,670	
Percent of cases accounted for ((the number of cases accounted for/total number of records in the follow-up sample)*100		82.1%

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 393 cases that were ineligible for follow-up, the majority (80.1%) were ineligible because they were incarcerated during the follow-up period. Fifty 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 = 393)

	Number	Percent
Incarcerated	316	80.1%
In residential treatment	50	12.7%
Deceased	21	5.3%
Hospitalized	3	0.8%
Invalid data	1	0.3%
Did not speak English	1	0.3%
Did not remember intake	1	0.3%

Appendix B 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.

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 reason¹⁰⁰ (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 clients represented in this annual report were White and male (see Table AB.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 mid-30s. More clients reported their marital status as married or cohabiting than any other category in both groups. The percent of clients who reported being never married, separated or divorced, or widowed were similar.

TABLE AB.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP¹⁰¹

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
AGE	34.7 years	35.0 years
GENDER**		
Male	61.6%	54.3%
Female	38.4%	45.7%
RACE		
White	92.8%	93.0%
African American	5.1%	4.9%
Other or Multiracial	2.1%	2.0%
MARITAL STATUS		
Never married	28.5%	26.6%
Married or cohabiting	43.6%	46.5%
Separated or divorced	26.1%	24.7%
Widowed	1.8%	2.2%

**p < .001.

¹⁰⁰ Significance is reported for p < .01 because of the large sample size.

¹⁰¹ Thirty individuals who did not complete a follow-up and 6 who completed a follow-up had missing data for marital status.

SOCIOECONOMIC INDICATORS

There were no significant differences in living situation at intake between clients who completed a follow-up interview and clients who did not. 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 AB.2). About 10% reported their usual living arrangement was in jail or prison. A small number 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, around 15% 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 were living on the street or in a car (see Table AB.2).

TABLE AB.2 LIVING SITUATION OF CLIENTS BEFORE ENTERING TREATMENT^{102, 103}

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
USUAL LIVING ARRANGEMENT IN THE 12 MONTHS BEFORE ENTERING THE PROGRAM		
Own or someone else's home or apartment	87.2%	87.9%
Residential treatment, Recovery Center, sober living home, personal care home, hospital, school or work dormitory	1.6%	1.5%
Jail or prison	9.8%	9.1%
Shelter, hotel/motel, or on the street	1.4%	1.5%
CONSIDERS SELF TO BE CURRENTLY HOMELESS	14.7%	16.1%
Why the individual considers himself/herself to be homeless	(n = 577)	(n = 205)
Staying temporarily with friends or family	64.9%	65.7%
Staying on the street or living in car	20.2%	19.6%
Staying in a shelter	9.5%	5.9%
Staying in hotel/motel	3.0%	2.5%
Incarcerated in jail or prison	1.4%	2.0%
Other reason	1.1%	4.4%

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.

¹⁰² Nine individuals who did not complete a follow-up and 1 who completed a follow-up were missing data for living situation.

¹⁰³ Seven individuals who did not complete a follow-up and 1 who completed a follow-up were missing data for why they were homeless.

Table AB.3 presents the percent of clients who reported inability to meet basic living needs (e.g., food, shelter, utilities, telephone), and any of their 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. Similarly, significantly more clients in the follow-up sample reported they were unable to receive needed health care for financial reasons.

TABLE AB.3. DIFFICULTY MEETING BASIC AND HEALTHCARE NEEDS IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)**	36.4%	44.4%
Had difficulty obtaining needed health care for financial reasons (e.g., doctor visit, dental care, or fill prescription)*	25.4%	29.6%

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

Table AB.4 describes clients' level of education when entering treatment. Over one-quarter of clients in both samples 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 AB.4. CLIENTS' HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE¹⁰⁴

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
HIGHEST LEVEL OF EDUCATION COMPLETED**		
Less than GED or high school diploma	27.1%	28.9%
GED or high school diploma	43.3%	36.9%
Some vocational school to graduate school	29.6%	34.2%

**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 AB.5). Less than 20% of clients reported working 1 to 5 months and over 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 7.5 for clients not followed up and 7.4 for clients who were followed up.

¹⁰⁴ Forty-one individuals who were followed up had invalid data for education level.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
EMPLOYMENT		
Percent of clients who reported working for:		
0 months	45.5%	44.3%
1 to 5 months	18.3%	19.2%
6 months or more	36.2%	36.5%
Among those who were employed:	n = 2,132	n = 709
Average # of months employed in the past 12 months	7.5 months	7.4 months

CRIMINAL JUSTICE SYSTEM INVOLVEMENT

Around 40% of clients were under supervision by the criminal justice system when they entered treatment (e.g., probation or parole), with no significant difference by follow-up status (see Table AB.6).

Over half of clients in both samples reported they had been arrested in the 12 months before entering treatment. Of the clients who reported being arrested, followed-up and non-followed up clients reported an average of 1.7 arrests in the 12 months before entering treatment.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Currently under supervision by the criminal justice system	41.5%	40.9%
Arrested for any charge in the 12 months before entering treatment	57.1%	56.5%
Of those with an arrest,	n = 2,233	n = 720
Average number of arrests	1.7	1.7

There were no significant differences in the number of clients who reported being incarcerated at least one day in the past 12 months before entering treatment (see Table AB.8). Among the clients who were incarcerated at least one night, the average incarceration time in the 12 months before entering treatment was 82.1 days for clients who were not followed up and 75.8 days for clients who were followed up.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Incarcerated at least one day	62.2%	61.5%
Of those incarcerated	(n = 2,433)	(n = 783)
Average number of days incarcerated in the past 12 months	82.1	75.8

PHYSICAL HEALTH

Physical health measures were included in the intake survey (see Table AB.9). There were significant differences between those clients who were not followed-up and those that were followed-up. About one third (31.7%) of clients who were not followed-up experienced chronic pain, which was significantly less than those who were in the follow-up sample (36.7%).

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 (53.6% vs. 48.2%).

TABLE AB.9. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Chronic pain (lasting at least 3 months)*	31.7%	36.7%
Ever told by a doctor that client had one of the 12 chronic medical problems listed*	48.2%	53.6%

*p < .01.

MENTAL HEALTH

The mental health questions included in the KTOS intake and follow-up surveys are not clinical measures, but instead are research measures (see Table AB.10). 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: 46.7% vs. 37.6%.

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: 47.8% vs. 38.4%.

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. Significantly more clients who were followed-up reported suicidality compared to those who were not followed-up.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Depression**	37.6%	46.7%
Generalized Anxiety Disorder**	38.4%	47.8%
Suicidality (e.g., thoughts of suicide or suicide attempts)**	12.3%	17.1%

**p < .001.

SUBSTANCE USE

Use of illegal drugs in the 12 months before entering treatment is presented by follow-up status in Table AB.11. There were no significant differences between clients who were not followed-up and those who were followed-up.

The most frequently reported illegal drugs used in the 12 months before entering treatment were marijuana, non-prescribed use of prescription opioid, non-prescribed buprenorphine-naloxone (bup-nx), and sedatives/tranquilizers. Less than 1 in 5 clients reported using amphetamines (e.g., methamphetamine, Adderal, Ritalin). About 1 in 8 clients in both groups reported using cocaine and heroin. Less than 10% of clients used non-prescribed methadone, synthetic drugs (including synthetic marijuana and bath salts) and an even smaller percent of clients used hallucinogens, barbiturates, and inhalants.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Any illegal drug	68.2%	70.9%
Marijuana	42.0%	45.3%
Prescription opioids (illegal use)	37.1%	39.9%
Non-prescribed buprenorphine-naloxone (bup-nx)	22.2%	25.0%
Tranquilizers, sedatives, benzodiazepines	21.6%	25.0%
Amphetamines	19.3%	20.3%
Cocaine	12.0%	13.5%
Heroin	11.6%	13.1%
Non-prescribed methadone	6.6%	8.1%
Synthetic Drugs (synthetic marijuana, bath salts)	6.1%	7.1%
Hallucinogens	2.7%	2.8%
Barbiturates	2.2%	2.3%
Inhalants	0.9%	1.1%

There were no differences in alcohol use in the 12 months before entering treatment by follow-up status (see Table AB.12). Over half of clients reported alcohol use in the 12 months before entering treatment. Less than 40% of clients in both groups reported alcohol use to intoxication in the same period. Less than one-third of clients reported binge drinking in the 12 months before entering treatment.

TABLE AB.12. PERCENT OF CLIENTS REPORTING ALCOHOL USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT¹⁰⁵

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Alcohol	50.6%	52.4%
Alcohol to intoxication	37.2%	38.0%
Binge drank alcohol (i.e., drank 5 or more (4 for women) drinks in 2 hours)	31.1%	31.9%

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

¹⁰⁵ One individual who was not followed-up had missing data for alcohol use in the past 12 months.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Smoked tobacco	81.8%	83.9%
Used smokeless tobacco	17.9%	16.0%

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 AB.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.

Over 40% 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 significantly more clients who were followed-up meeting or surpassing the cutoff (40.1% for not followed up and 46.3% for followed up; see Table AB.14). Significantly more clients who were followed-up also met or surpassed the cutoff score for severe drug use disorder compared to those who were not followed-up.

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 0.10 for those who were not followed up and 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 0.12 for followed up clients, which was a significant difference (see Table AB.14).

Of the clients who were in a controlled environment all 30 days before entering treatment, half of clients in both samples met or surpassed the cutoff score for severe alcohol and drug use disorder (see Table AB.14). Among clients who were in a controlled environment all 30 days before entering the program, 52.3% of clients who were not followed up and 47.0% of clients who were followed up met the cutoff score for severe alcohol or drug use disorder.

TABLE AB.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 = 3,563)	YES (n = 1,174)	NO (n = 350)	YES (n = 100)
Percent of clients with ASI composite score equal to or greater than cutoff score for ...				
Severe alcohol or drug use disorder	40.1%	46.3%**	52.3%	47.0%
Severe alcohol use disorder	22.4%	22.1%	27.1%	26.0%
Severe drug use disorder	24.8%	30.2%**	39.7%	27.0%
Average composite score for alcohol use ^a	.10	.10	.09	.08
Average composite score for drug use ^b	.10	.12**	.13	.11

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.

**p < .001.

There were no significant differences in lifetime substance abuse treatment attendance (see Table AB.15). Among clients who reported a history of substance abuse treatment, the mean number of lifetime treatment episodes was 2.4 for those not followed-up and 2.5 for those who completed a follow-up.

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

	FOLLOWED UP	
	NO n = 3,913	YES n = 1,274
Ever been in substance abuse treatment in lifetime	52.1%	56.2%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 2,031)	(n = 716)
Average number of times in treatment	2.4	2.5

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 and a chronic medical problem when compared to clients who were not in the follow-up sample. Fifth, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Finally, significantly more clients who completed a follow-up and were not in a controlled environment all 30 days before entering treatment met or surpassed the cutoff score for alcohol or drug use SUD, met or surpassed the cutoff score for drug use SUD, and had a higher average composite score for drug use when 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 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.