Adult Kentucky Treatment Outcome Study

2020 ANNUAL REPORT

Project Acknowledgments

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Intake Surveys Completed from July 2017 to June 2018 and Follow-Up Surveys Completed from July 2018 through June 2019

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Executive Summary

This report summarizes client outcomes from a statewide evaluation of publicly-funded substance abuse treatment programs administered through the Community Mental Health Centers for adults (i.e., 18 years and older). The goal of the Kentucky Treatment Outcome Study (KTOS) is to examine client satisfaction 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, (4) criminal justice system involvement, (5) quality of life, and (6) recovery supports. 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 in a client outcome study. KTOS is an important part of the Division of Behavioral Health's performance-based measurement of treatment outcomes in Kentucky's communities. The study includes an evidence-based assessment administered by substance abuse treatment staff at treatment intake (n = 5,528 in FY 2018) and a follow-up interview administered by the University of Kentucky Center on Drug & Alcohol Research (CDAR) staff with 1,175 individuals about 12 months later. The CDAR team randomly selects individuals who are eligible for follow-up to be included in the follow-up sample. The follow-up rate for this year's report was 69.4%. Furthermore, trend analyses across multiple report years are presented in this report.

Substance Use

Results show that there were significant reductions in drug and alcohol use as well as self-reported substance use severity. The percent of individuals who reported using illegal drugs decreased from 88% at intake to 36% at follow-up. A trend report of illegal drug use at intake and follow-up over the past 12 years shows that around three-quarters of KTOS clients reported any illegal drug use in the 12 months before treatment each year, with the exception of the past two years (88%-89%) because the selection criteria for including individuals in the follow-up sample was changed to include alcohol and/or illegal drug use in the 12 months before intake. The percent of individuals who reported using alcohol decreased from 53% at intake to 29% at follow-up.

Overall, the percent of clients who met DSM-5 study criteria suggesting no substance use (alcohol and/or drug use) disorder increased from 22% at intake to 74% 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 nearly one-half (49%) at intake to 10% at follow-up. Among individuals who reported using alcohol in the 30 days before intake or follow-up, the percent who had Addiction Severity Index (ASI) alcohol composite scores that met the cutoff for severe alcohol use disorder decreased from 51% at intake to 28% at follow-up.

> *"It was perfect! You can get everything you need if you actually want to help yourself."*
>
> KTOS FOLLOW-UP CLIENT

Past-12-month (86%) and past-30-day (82%) rates of smoking tobacco use were very high and remained stable from intake to follow-up (83% and 79%, respectively).

For the first time compared to previous years, among individuals who completed an intake survey, a higher percentage of clients reported using methamphetamine (42%) in the past 12 months than reported using prescription opioids (35%), buprenorphine-naloxone (22%), heroin (13%), and methadone (5%) in FY 2018.

Mental Health, Physical Health, and Victimization

The mental health of clients who participated in treatment also significantly improved. Over half of clients (53%) met study criteria for depression at intake compared to 34% of clients at follow-up. Over half of clients (52%) met study criteria for generalized anxiety at intake compared to 33% at follow-up. About 42% of clients met study criteria for both depression and generalized anxiety compared to 23% at follow-up. In addition, 21% of clients reported suicidal ideation or attempts at intake compared to 11% at follow-up.

Physical health was also improved at follow-up. Specifically, clients reported a significantly higher rating of overall health at follow-up than at intake. Also, clients reported fewer average days their physical health (4.8 vs. 6.8) and mental health (6.1 vs. 12.6) were poor in the past 30 days at follow-up compared to intake. Trend analysis shows that while the average number of days clients reported poor physical health in the past 30 days increased at intake from 5.5 in FY 2011 to 6.8 in FY 2018, clients have reported fewer days of poor physical health at follow-up when compared to intake since FY 2013. The same trend pattern was found for the average number of days of poor mental health. In addition, significantly fewer clients reported using substances to reduce or manage their stress at follow-up (26%) than at intake (42%).

Economic and Living Circumstances

KTOS clients showed improvements in economic and living circumstances from intake to follow-up. First, significantly fewer clients reported they were homeless at follow-up than at intake. Significantly fewer individuals reported their usual living situation was in a jail or prison in the 12 months before follow-up

2020 Highlights

REPORTED ANY ILLEGAL DRUG USE

88% at intake | **36%** at follow-up

MET STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY

42% at intake | **23%** at follow-up

CURRENTLY EMPLOYED FULL-TIME

23% at intake | **41%** at follow-up

REPORTED ANY ARREST

58% at intake | **30%** at follow-up

compared to the 12 months before intake. Furthermore, about 41% of clients reported being currently employed full time at follow-up compared to 23% at intake. The average number of months clients reported working in the past 12 months increased significantly from 4.4 months at intake to 5.6 months at follow-up. Additionally, at intake, 43% of clients reported having difficulty meeting basic living needs (e.g., food, shelter, utilities, and telephone) for financial reasons in the past 12 months. At follow-up, this number decreased significantly to 34%. The percent of clients who reported they had difficulty obtaining health care (e.g., doctor visits, dental visits, and prescription medications) for financial reasons did not change significantly.

Criminal Justice Involvement

Involvement in the criminal justice system, in terms of being arrested and incarcerated, decreased significantly from intake to follow-up. The percent of individuals who reported they had been arrested in the past 12 months decreased from 58% at intake to 30% at follow-up and the percent of individuals who reported they had been incarcerated in the past 12 months decreased from 61% at intake to 34% at follow-up. Trend analyses show that, overall, the percent of clients who reported an arrest was consistent over the past 12 years at intake (minimum of 53%, maximum of 59%) with greater fluctuation at follow-up (minimum of 20% in FY 2015, maximum of 33% in FY 2010). Trend analysis for average number of days incarcerated showed a similar pattern of greater stability at intake and greater fluctuation at follow-up. Finally, significantly fewer individuals reported they had been convicted of a misdemeanor and felony at follow-up than at intake.

Quality of Life

Compared to intake, individuals rated their quality of life as significantly higher at follow-up. They also had higher ratings, on average, for overall well-being, personal well-being, interpersonal well-being, and social well-being at follow-up than at intake.

Multidimensional Recovery

Consistent with the framework that recovery is a multidimensional construct, encompassing multiple dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives. At intake, as expected, a small percent of the followed-up sample (6%) was classified as having all eight dimensions of recovery. At follow-up, there was a significant increase of 30% which means that more than one-third had all dimensions of recovery.

To better understand which factors at entry to the program are associated with better status at follow-up, each element that defined the multidimensional status at intake was entered as predictor variables in a logistic regression model. The following predictor variables at intake were statistically significantly associated with better status at follow-up: meeting criteria for no substance use disorder, reporting no homelessness, reporting no arrests or incarceration, no suicidal ideation or attempts, and reporting a mid to higher quality of life.

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. Compared to intake, significantly more individuals reported they had recovery supportive interactions with a sponsor at follow-up. Also, individuals

reported having more people they could count on for recovery support at follow-up than at intake. The 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.

Relapse

Results of multivariate analysis show that when controlling for other variables in the model, being male, having fewer nights incarcerated, more months employed, more depression and anxiety symptoms, lower quality of life rating, and more adverse childhood experiences were significantly associated with greater odds of using alcohol and/or drugs in the follow-up period.

Client Satisfaction with Treatment Experience

Program clients were predominately satisfied with the treatment services they received at Kentucky's community mental health centers. Overall, clients rated their treatment experience as an 8.1 out of 10. Most clients indicated they would refer a close friend or family member to their treatment provider. The majority of clients reported at follow-up that the program staff believed in them and that the treatment would work for them, the program staff cared about them and their progress, they worked on and talked about things that were most important to them in the program, they felt listened to and heard by their counselor, they had input into their treatment goals, plans, and how they were progressing over time, their expectations and hopes for treatment and recovery were met, they had a connection with a staff person, and the treatment approach and method was a good fit for them.

Significant Gender Differences

There were several important gender differences at treatment intake and follow-up. Most, but not all of these, indicate that women had more comorbid mental health problems, and greater economic hardship than their male counterparts. Women had worse health and more interpersonal victimization experiences than men. Significantly more women reported using illegal drugs in the 12 months before intake, whereas significantly more men reported using illegal drugs in the 30 days before follow-up. Specifically, more men reported using marijuana and other drugs (i.e., hallucinogens, inhalants, and synthetic drugs) in the 12 months before follow-up. Significantly more women than men reported using opioids, CNS depressants, and cocaine at intake. More women than men also reported past-12-month opioid and CNS depressant use at intake. Also, significantly more women than men reported they had experienced problems with substance use in the 30 days before entering the program and that treatment for drug or alcohol problems was considerably or extremely important at follow-up. Significantly more women reported smoking tobacco at intake while significantly more men reported using smokeless tobacco at intake and follow-up. In contrast, significantly more men than women reported using alcohol, alcohol to intoxication in the 12 months before intake and follow-up, and binge drinking in the 12 months before intake.

More women than men reported mental health symptoms at intake and follow-up including

"They were nice and understanding from the time I went in. They answered my questions and helped me focus on what's important."

KTOS FOLLOW-UP CLIENT

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

Women's housing situation, employment, and economic hardship were worse than men's situations. First, significantly more women reported homelessness at intake when compared to men. 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 reported working significantly more months at both intake and follow-up. Employed men also had a significantly higher median hourly wage than employed women at both intake and follow-up. At intake, employed women made only $0.82 for every dollar employed men made and at follow-up, the gap in median hourly wages was even greater, with employed women making only $0.76 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 were still behind men in their economic standing.

A higher percentage of men reported arrests, incarceration, and criminal justice supervision (e.g., probation or parole) compared to women at intake. Compared to women, men also reported higher social well-being and more people they could count on for recovery support at intake. Finally, significantly more men reported they had recovery supportive interactions with family and friends in the 30 days before intake when compared to women.

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 $3.59 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 2020 outcome evaluation, using valid and reliable measures, 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 full-time employment, decreased homelessness, 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 2020 Kentucky Treatment Outcome Study showed positive changes for individuals from the 12 months before treatment intake to the 12-month follow-up.

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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, (4) criminal justice system involvement, and (5) quality of life. 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 the main sections and are presented for the overall sample and by gender when there were significant gender differences:

Section 1. Study Overview and Client Characteristics. 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, 2017 and June 30, 2018 (N = 5,528). This section also describes characteristics of 1,175 clients who completed a 12-month follow-up interview between July 1, 2018 and June 30, 2019.

Section 2. Substance Use. This section examines substance use changes, which include use of any illegal drugs or alcohol, and then separately for illegal drugs, alcohol, and tobacco at intake and follow-up. 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. In addition, self-reported severity of alcohol and drug use based on DSM-5 symptoms for substance use disorder and the Addiction Severity Index (ASI) alcohol and drug use composite scores are compared at intake and follow-up.

Section 3. Bivariate and Multivariate Analysis of Relapse. This section focuses on a multivariate analysis examining factors related to relapse in the 2020 KTOS follow-up sample.

Section 4. Mental Health, Physical Health, Stress, and Interpersonal Victimization. This section examines changes in mental health symptoms, physical health, stress-related health consequences, and interpersonal victimization from intake to follow-up. Specifically, this subsection examines: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicide ideation and attempts, (5) perceptions of poor physical and mental health, (6) substance use to reduce or manage stress, (7) overall health status, (8) chronic medical problems, (9) chronic pain, (10) health insurance, and (11) interpersonal victimization experiences.

Section 5. Economic and Living Circumstances. This section examines changes from intake to follow-up for: (1) living situation, (2) employment, and (3) economic hardship.

Section 6. 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) convictions for misdemeanors and felonies, (3) any incarceration, and (4) criminal justice supervision status.

Section 7. Quality of Life. This section describes change in client quality of life and satisfaction with life during the 12-month period before entering treatment and the 12-month period before the follow-up interview. Specifically, results include changes in: (1) quality of life rating and (2) client functioning and well-being.

Section 8. Multidimensional Recovery Status. This section examines multidimensional recovery at follow-up as well as change in multidimensional recovery before entering the program and at follow-up. Consistent with the framework that recovery is a multidimensional construct, encompassing multiple dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives.

Section 9. Recovery Supports. This section focuses on five main aspects of recovery support: (1) 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.

Section 10. Client Satisfaction with Substance Abuse Treatment Programs. This section describes three aspects of client satisfaction: (1) client involvement in the program and how they left, (2) recommend others to the program, and (3) overall client satisfaction and client ratings of program experiences.

Section 11. 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 12. 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 entered substance abuse treatment in one of Kentucky's Community Mental Health Centers between July 1, 2017 and June 30, 2018 (N = 5,528). This section also describes characteristics of 1,175 clients who completed a 12-month follow-up interview between July 1, 2018 and June 30, 2019.

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 for a client-level outcome study. 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 2018, 5,528 adults completed an intake survey between July 1, 2017 and June 30, 2018.[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 like 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 good follow-up rate of 69.4% and a low refusal rate (2.2%) for participation in the interviews. That means that 28.4% of clients were not successfully contacted to complete the follow-up telephone interviews (see Appendix A for detailed information on study methods).

> *"They sent me to a better program, they wanted what was best for me."*
>
> KTOS FOLLOW-UP CLIENT

[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.

Self-Report Data

The data (including drug and alcohol use) are self-reported by KTOS clients. There is reason to question the validity and reliability of self-reported data, particularly about sensitive topics, such as illegal behavior and stigmatizing issues such as mental health and substance use. However, some research has supported findings about the reliability and accuracy of individuals' reports of their substance use.[3,4,5] For example, in many studies that have compared agreement between self-report and urinalysis the concordance or agreement is acceptable to high.[6,7,8] In fact, in some studies, when there were discrepant results between self-report and urinalysis of drugs and alcohol, the majority were self-reported substance use that was not detected with the biochemical measures.[9,10,11] In other studies, higher percentages of underreporting have been found.[12] Prevalence of underreporting of substance use is quite varied in studies. Nonetheless, research has found that certain conditions facilitate the accuracy of self-report data such as assurances of confidentiality and memory prompts.[13] Moreover, the "gold standard" of biochemical measures of substance use have many limitations: short windows of detection that vary by substance; detection varies on many factors such as the amount of the substance consumed, chronicity of use, and sensitivity of the analytic method used.[14]

The study method includes several key strategies to facilitate accurate reporting of sensitive behaviors at follow-up including: (a) the follow-up interviews are conducted by telephone with a University of Kentucky Center on Drug and Alcohol Research (UK CDAR) staff person who is not associated with any treatment program; (b) the follow-up responses are confidential and are reported at a group level, meaning no individual responses are linked to participants' identities; (c) the study procedures, including data protections, are consistent with federal regulations and approved by the University of Kentucky Human Subjects

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[3] 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*, 347-360.

[4] 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.

[5] 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*, 343-348.

[6] Rowe, C., Vittinghoff, E., Colfax, G., Coffin, P. O., & Santos, G. M. (2018). Correlates of validity of self-reported methamphetamine use among a sample of dependent adults. *Substance Use & Misuse, 53* (10), 1742-1755.

[7] Rygaard Hjorthoj, C., Rygaard Hjorthoj, A., & Nordentoft, M. (2012). Validity of Timeline Follow-Back for self-reported use of cannabis and other illicit substances—Systematic review and meta-analysis. *Addictive Behaviors, 37*, 225-233.

[8] Wilcox, C. E., Bogenschutz, M. P., Nakazawa, M., & Woody, G. (2013). Concordance between self-report and urine drug screen data in adolescent opioid dependent clinical trial participants. *Addictive Behaviors, 38*, 2568-2574.

[9] Denis, C., Fatséas, M., Beltran, V., Bonnet, C., Picard, S., Combourieu, I., Daulouède, J., & Auriacombe, M. (2012). Validity of the self-reported drug use section of the Addiction Severity and associated factors used under naturalistic conditions. *Substance Use & Misuse, 47*, 356-363.

[10] Hilario, E. Y., Griffin, M. L., McHugh, R. K., McDermott, K. A., Connery, H. S., Fitzmaurice, G. M., & Weiss, R. D. (2015). Denial of urinalysis-confirmed opioid use in prescription opioid dependence. *Journal of Substance Abuse Treatment, 48*, 85-90.

[11] Williams, R. J., & Nowatzki, N. (2005). Validity of self-report of substance use. *Substance Use & Misuse, 40*, 299-313.

[12] Chermack, S. T., Roll, J., Reilly, M., Davis, L., Kilaru, U., Grabowski, J. (2000). Comparison of patient self-reports and urianalysis results obtained under naturalistic methadone treatment conditions. *Drug and Alcohol Dependence, 59*, 43-49.

[13] 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* (Suppl. 3), S347—S360.

[14] Williams, R. J., & Nowatzki, N. (2005). Validity of self-report of substance use. *Substance Use & Misuse, 40*, 299-313.

Institutional Review Board; (d) confidentiality is protected under Federal law through a Federal Certificate of Confidentiality; (e) participants can skip any question they do not want to answer; and (f) UK CDAR staff are trained to facilitate accurate reporting of behaviors and are regularly supervised for quality data collection and adherence to confidentiality.

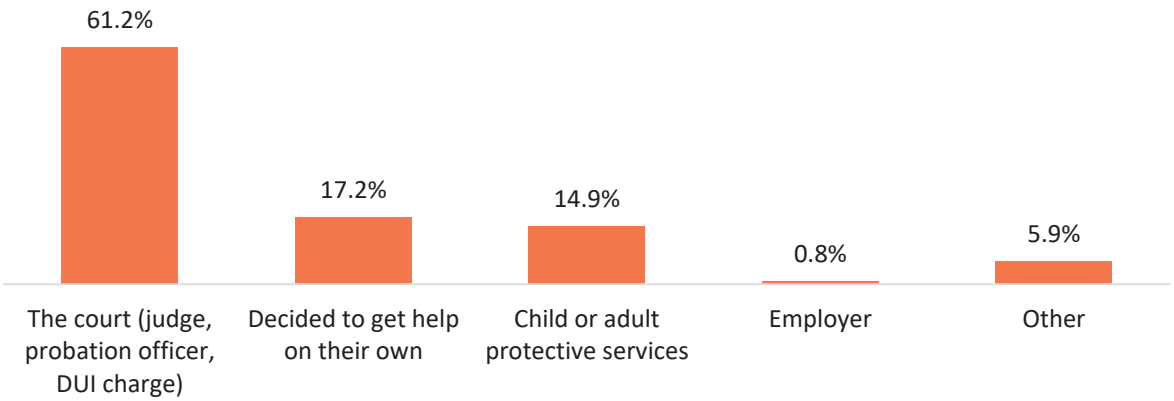
This report describes the sample of treatment clients in two main ways: (1) providing a description of characteristics for 5,528 adults who completed an intake interview in FY 2018 (July 1, 2017 – June 30, 2018), and (2) presentation of client characteristics for 1,175 adults who completed an intake interview in FY 2018 and a 12-month follow-up telephone interview with a target date between July 1, 2018 and June 30, 2019.

Description of All KTOS Clients at Treatment Intake

Self-Reported Referral Source

Figure 1.1 shows the self-reported treatment referral source for all KTOS clients at intake. About 61% 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 17% of clients self-reported they decided to get help on their own. A minority of clients reported they were referred to treatment by Child or Adult Protective Services (14.9%) or other referral sources (5.9%; 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 (0.8%).

FIGURE 1.1. SELF-REPORTED REFERRAL SOURCE FOR ALL KTOS CLIENTS AT INTAKE (N = 5,528)



Demographics

Table 1.1 shows that over half of clients with an intake survey completed in FY 2018 were male (56.6%) and the majority were White (92.8%). A minority of clients reported their race as African American/Black (5.3%) and 2.0% reported they were American Indian, Asian, Hispanic, or multiracial. Clients were, on average, 35.4 years old, ranging from 18 to 79 years old at intake.

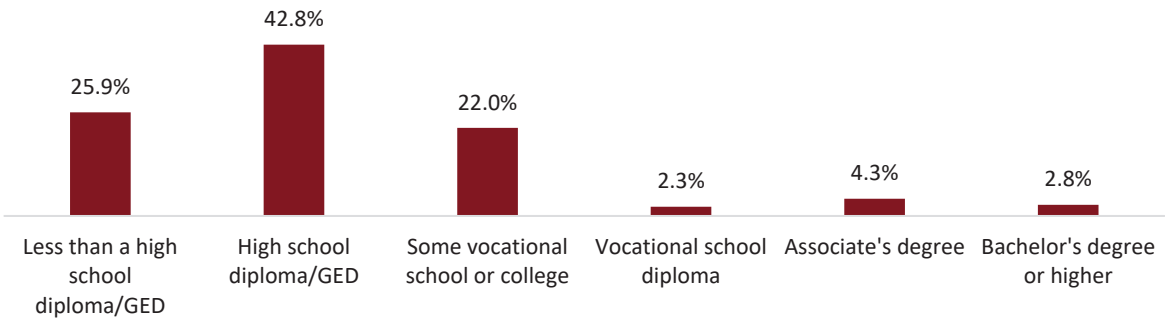
At intake, around 45% were married or cohabiting with a partner, 28.2% had never been married (and were not cohabiting), 25.3% were separated or divorced, and 2.1% were widowed. More than three-quarters of clients reported they had at least one child. A small number of KTOS clients (3.5%) reported they were a veteran or were currently serving in the military, Reserves, or National Guard.

TABLE 1.1. DEMOGRAPHICS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,528)[15]

Age	**35.4 years (range of 18-79)**
Gender	
Male	56.6%
Female	43.3%
Transgender	0.1%
Race	
White	92.8%
African American	5.3%
Other or multiracial	2.0%
Marital status	
Married or cohabiting	44.5%
Never married	28.2%
Separated or divorced	25.3%
Widowed	2.1%
Have children	**78.2%**
Veteran or currently serving in military	**3.5%**

A little more than one-fourth of clients (25.9%) had less than a high school diploma or GED at intake (see Figure 1.2). The highest level of education of 42.8% of the sample was a high school diploma or GED. Twenty-two percent of clients had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (2.3%), an associate's degree (4.3%), or a bachelor's degree or higher (2.8%).

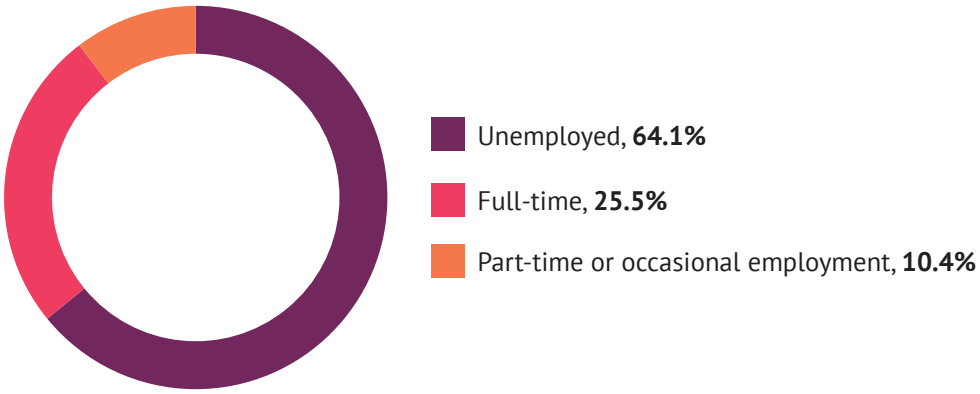
FIGURE 1.2. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 5,528)



[15] Four clients had missing data for race.

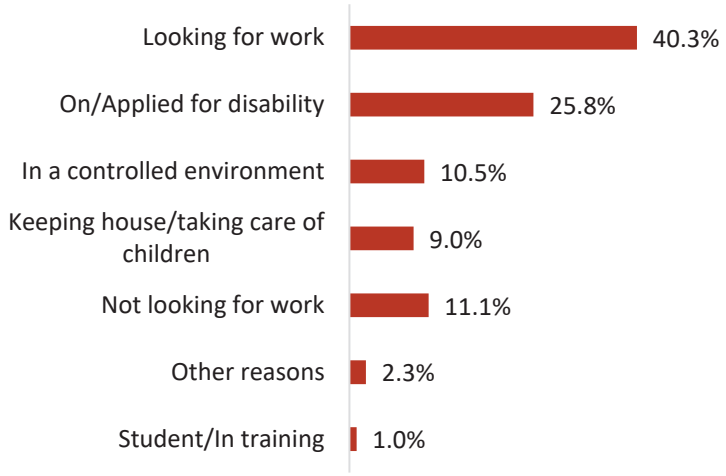
At intake, 40.6% of clients reported they had worked 0 months in the past 12 months, 21.4% had worked 1 to 5 months, and 38.1% had worked 6 or more months (not depicted in a figure). Also, the majority of individuals reported they were unemployed in the 30 days before entering treatment (64.1%), with 25.5% being employed full-time, and 10.4% 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.

FIGURE 1.3. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 5,528)



Of the individuals who were currently unemployed at intake (n = 3,526),[16] about 40.3% stated they were looking for work (see Figure 1.4). About one-quarter (25.8%) were on disability (or had applied for disability), 10.5% were in a controlled environment that prohibited them from working, 9.0% were keeping the house or taking care of children full-time at home, 11.1% were unemployed and not looking for work, 1.0% 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 were not on disability).

FIGURE 1.4. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 3,526)

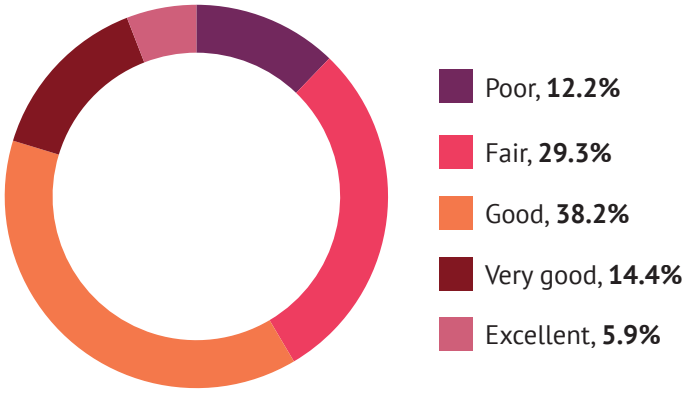


[16] Seventeen individuals had missing values for the reason they were unemployed at intake.

Physical Health

KTOS clients rated their overall health at intake (see Figure 1.5). About 12% of clients reported their health was poor and 29.3% said their health was fair. About 4 in ten clients reported their overall health was good, 14.4% reported very good overall health, and 5.9% said their health was excellent.

FIGURE 1.5. OVERALL HEALTH RATING AT INTAKE (N = 5,528)



About 33% 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). Fifty-four percent of clients reported they had at least one chronic health problem. The most common medical problems clients reported were arthritis (18.2%), cardiovascular/heart disease (14.9%), hepatitis C (14.0%), asthma (12.6%), and severe dental problems (10.3%).

A majority of KTOS clients reported they had insurance through Medicaid (76.7%) at intake. About one in ten clients did not have any insurance (9.7%). Small numbers of clients had insurance through an employer, including through a spouse, parent, or self-employment (6.2%), through Medicare (6.1%), through the Health Exchange (0.4%), or through the VA/Champus/Tricare (0.4%).

"I really liked the people there; they understand you and have been through addiction as well."

KTOS FOLLOW-UP CLIENT

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,528)

Chronic pain	**33.2%**
At least one chronic medical problem	**54.1%**
Arthritis	18.2%
Cardiovascular/heart disease	14.9%
Hepatitis C	14.0%
Asthma	12.6%
Severe dental problems	10.3%
Insurance	
No insurance	9.7%
Medicaid	76.7%
Through employer (including spouse's employer, parents' employer, and self-employed)	6.2%
Medicare	6.1%
Through Health Exchange	0.4%
VA/Champus/Tricare	0.4%
Other Insurance	0.7%

Substance Use

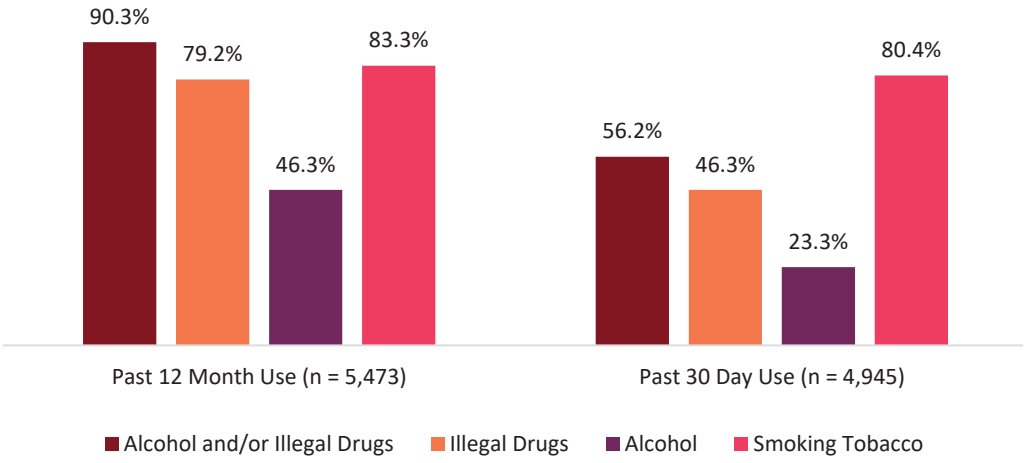
The majority of adults who completed an intake survey reported using alcohol and/or illegal drugs (90.3%) in the 12 months before entering treatment (see Figure 1.5).[17] The drug classes reported by the greatest number of clients were marijuana (49.4%), non-prescribed stimulants (43.9%), prescription opioids (35.0%), non-prescribed buprenorphine-naloxone (22.0%), and non-prescribed sedatives/tranquilizers/benzodiazepines (20.3%; not depicted in a figure). Overall, a higher percentage of individuals reported using illegal drugs (79.2%) compared to the percent of individuals who reported using alcohol (46.3%) in the 12 months before entering treatment. The majority of clients reported smoking tobacco (83.3%) in the 12 months before intake.

Of the 4,945 individuals who were not in a controlled environment all 30 days,[18] over half (56.2%) reported using illegal drugs and/or alcohol in the past 30 days at intake. Specifically, 46.3% reported using illegal drugs and 23.3% reported using alcohol. Also, 80.4% reported smoking tobacco in the 30 days before entering treatment (see Figure 1.6).

[17] 55 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.

[18] 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 = 583) are not included in the analysis of substance use in the 30 days before entering treatment.

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

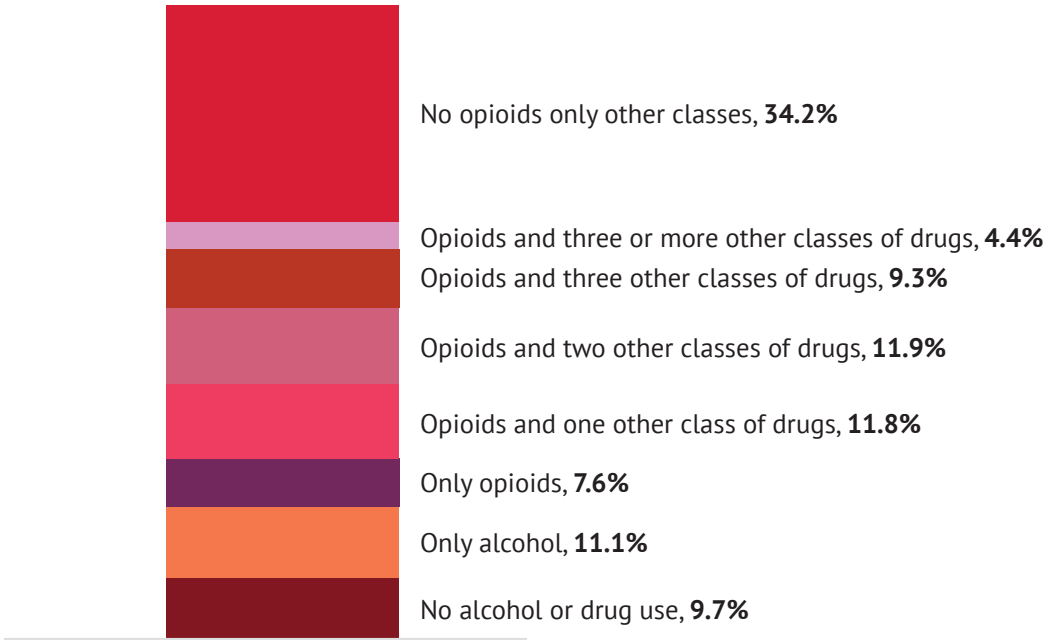


At intake, a little more than one-third of clients (35.6%) reported that they had ever injected drugs in their lifetime (not depicted in a figure).

The majority of clients reported they had been in substance abuse treatment in the past (56.0%). Of the 3,095 clients who reported they had previously been in treatment, they reported an average of 2.7 episodes before the current one (not depicted in a figure).

Among the individuals who were not in a controlled environment all 365 days before entering treatment, Figure 1.7 shows the percent of individuals who used no alcohol and or illegal drugs (9.7%), alcohol only (11.1%), no opioids and other drug classes only (34.2%), and opioids only (7.6%). Additionally, Figure 1.7 shows the percent of clients who reported using opioids with one other drug class (11.8%), opioids with two other drug classes (11.9%), opioids with three other drug classes (9.3%), and opioids with three or more other drug classes (4.4%).

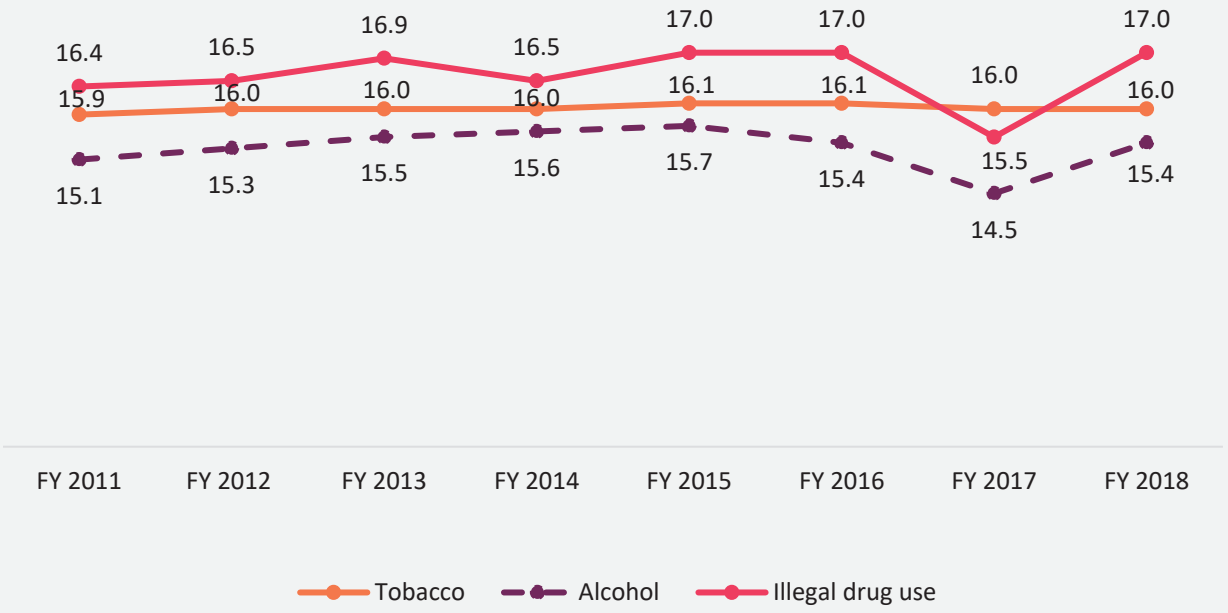
FIGURE 1.7. OPIOID AND OTHER DRUG CLASS USE IN THE 12 MONTHS BEFORE TREATMENT



Trends in Age of First Use

Clients were asked, at intake, how old they were when they first began to use illegal drugs, when they had their first alcoholic drink (more than just a sip), and when they began smoking cigarettes regularly (see Figure 1.8). The age at which KTOS clients reported drug use was steady for 6 years (close to age 17), with a slight decrease in FY 2017 to 15.5. Clients generally reported having their first alcoholic drink around 15 years old, with a slight decrease in FY 2017. The age of first tobacco use was slightly older than the age of first alcoholic drink (about 16 years old) and remained steady for 7 years.

FIGURE 1.8. TRENDS IN AGE OF FIRST USE REPORTED AT INTAKE, FY 2011-FY 2018



Adverse Childhood Experiences

Items about ten adverse childhood experiences from the Adverse Childhood Experiences Study (ACE) were included in the intake interviews.[19,20,21] In addition to providing the percent of men and women who reported each of the 10 types of adverse childhood experiences before the age of 18 years old captured in ACE, the number of types of experiences was computed such that items individuals answered affirmatively were added to create a score equivalent to the ACE score. A

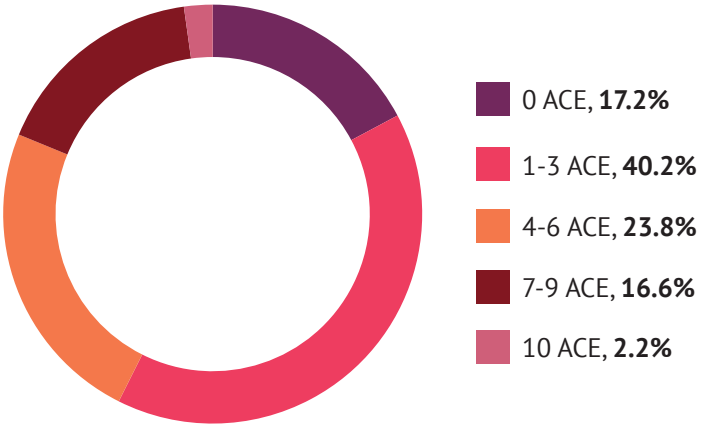
[19] Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal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

[20] Centers for Disease Control and Prevention. (2014). *Prevalence of individual adverse childhood experiences.* Atlanta, GA: National Center for Injury Prevention and Control, Division of Violence Prevention. http://www.cdc.gov/violenceprevention/acestudy/prevalence.html.

[21] The intake assessment asked about 10 major categories of adverse childhood experiences: (a) three types of abuse (e.g., emotional maltreatment, physical maltreatment, and sexual abuse), (b) two types of neglect (e.g., emotional neglect, physical neglect), and (c) five types of family risks (e.g., witnessing partner violence victimization of parent, household member who was an alcoholic or drug user, a household member who was incarcerated, a household member who was diagnosed with a mental disorder or had committed suicide, and parents who were divorced/separated).

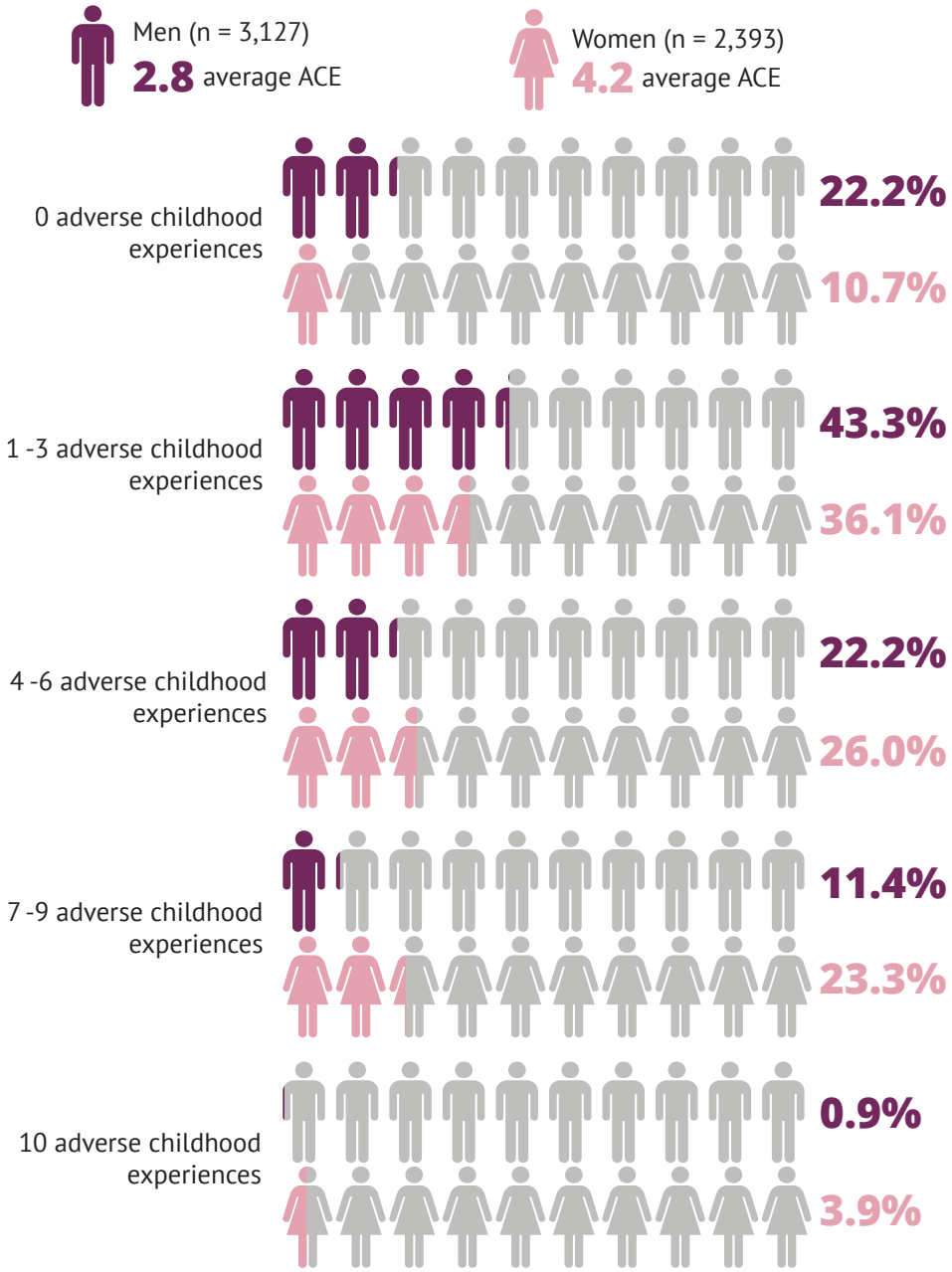
score of 0 means the participant answered "No" to the five abuse and neglect items and the five household dysfunction items in the intake interview. A score of 10 means the participant reported all five forms of child maltreatment and neglect, and all 5 types of household dysfunction before the age of 18. The average number of ACE clients reported was 3.4 (not depicted in figure). Figure 1.9 shows that 17.2% reported experiencing none of the ACE included in the interview. About 40% reported experiencing 1 to 3 ACE, a little less than one-fourth reported experiencing 4 – 6 ACE, and 16.6% reported experiencing 7 – 9 ACE. A very small percent reported experiencing all 10 types of adverse childhood experiences.

FIGURE 1.9. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES (n = 5,520)



There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.10). Significantly more men than women reported experiencing 1 to 3 types of ACE, whereas significantly more women than men reported experiencing 7 – 9 types of ACE. Women had a higher average number of ACE than men.

FIGURE 1.10. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER



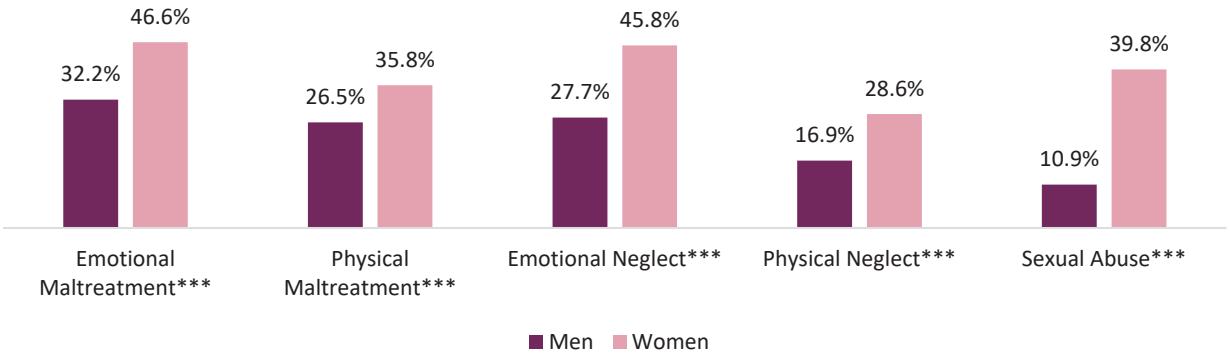
***p < .001.

Significantly more women than men reported experiencing all five types of measured childhood maltreatment. Nearly half of women (46.6%) reported they had experienced emotional maltreatment in their childhood, compared to 32.2% of men (see Figure 1.11). Around one-third of women and one-fourth of men reported physical maltreatment. Nearly half of women (45.8%) reported they had experienced emotional neglect compared to 27.7% of men.

"The counselor listens to me and gives me alternatives. They go above and beyond and are really involved."

KTOS FOLLOW-UP CLIENT

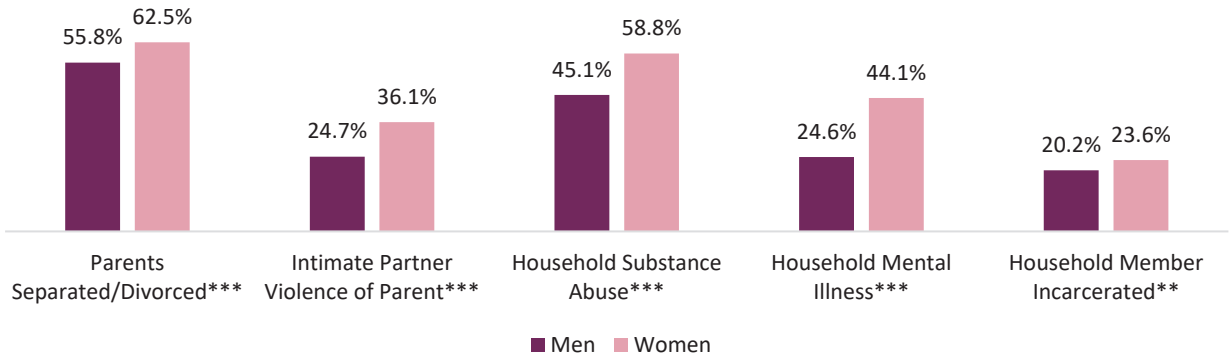
FIGURE 1.11. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD BY GENDER (n = 5,520)



***p < .001.

Significantly more women than men reported all five types of household risks (see Figure 1.12). The majority of individuals reported their parents were divorced or lived separately and had a household member with a substance abuse problem. Close to 44% of women reported that someone in their household was depressed, mentally ill, or had attempted suicide. About 1 in 5 individuals reported a household member had been incarcerated.

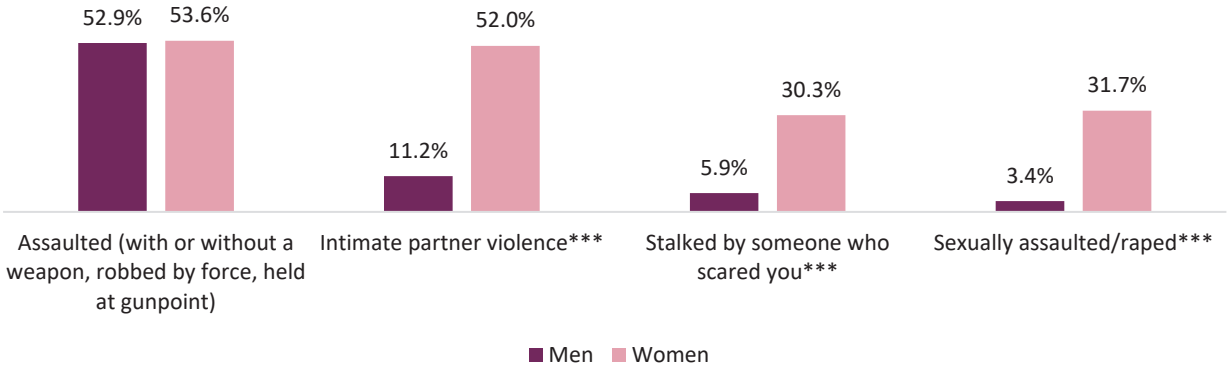
FIGURE 1.12. HOUSEHOLD RISKS IN CHILDHOOD BY GENDER (n = 5,520)



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

Individuals were also asked about victimization experiences (including when they may have been the victim of a crime, harmed by someone else, or felt unsafe) they had experienced in their lifetime and in the 12 months before entering treatment. The results of the most commonly reported experiences are presented by gender in Figure 1.13. Similar percentages of men and women reported ever being assaulted or attacked by someone (non-IPV). Compared to men, significantly higher percentages of women reported ever experiencing intimate partner violence, being stalked by someone who scared them, and being sexually assaulted or raped.

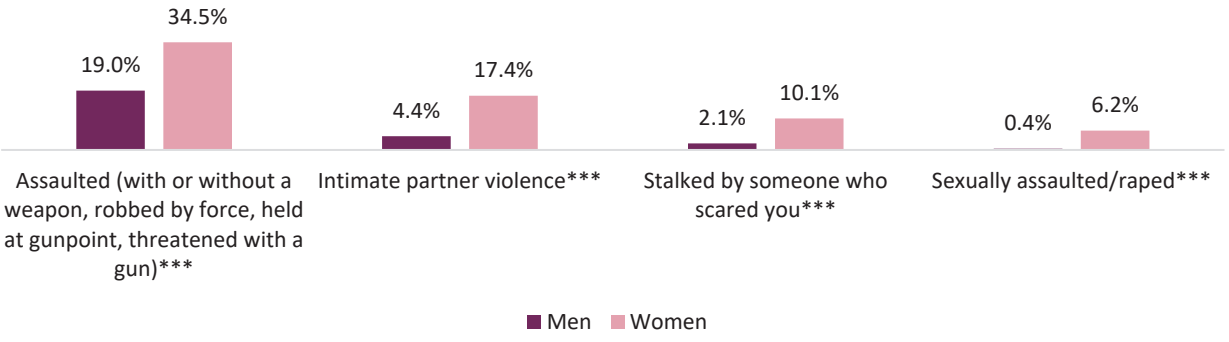
FIGURE 1.13. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 5,520)



***p < .001.

Smaller percentages of clients reported experiencing crime and interpersonal victimization in the 12 months before entering programs (see Figure 1.14). However, the pattern of gender differences was similar for the 12-month-period as it was for lifetime prevalence percentages. Significantly higher percentages of women than men reported being assaulted or attacked by someone (non-IPV), intimate partner violence, stalked by someone who scared them, and sexually assaulted or raped in the 12 months before entering treatment.

FIGURE 1.14. PAST-12-MONTH CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 5,520)



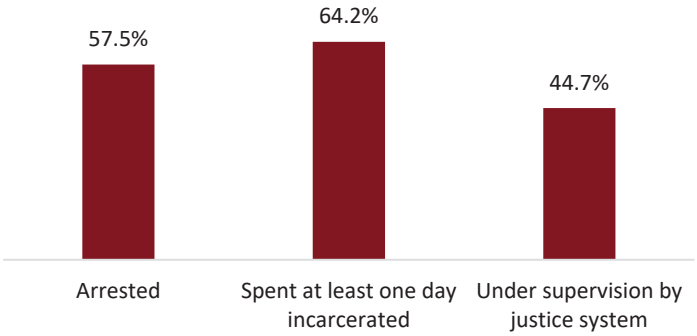
***p < .001.

Criminal Justice Involvement

Over half of individuals reported being arrested at least once (57.5%) and 64.2% of clients reported being incarcerated at least one night in the 12 months before treatment (see Figure 1.15). Nearly 45% 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 (n = 3,180), they were arrested an average of 2.0 times. Among those who were incarcerated in the past 12 months (n = 3,549), they were incarcerated an average of 69.6 nights (not depicted in a figure).

FIGURE 1.15. CRIMINAL JUSTICE INVOLVEMENT 12 MONTHS BEFORE TREATMENT AT INTAKE (N = 5,528)



Description of KTOS Follow-Up Sample at Intake

This report describes outcomes for 1,175 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 355.6 days) after the intake survey was completed.[22] Detailed information about the methods is presented in Appendix A.

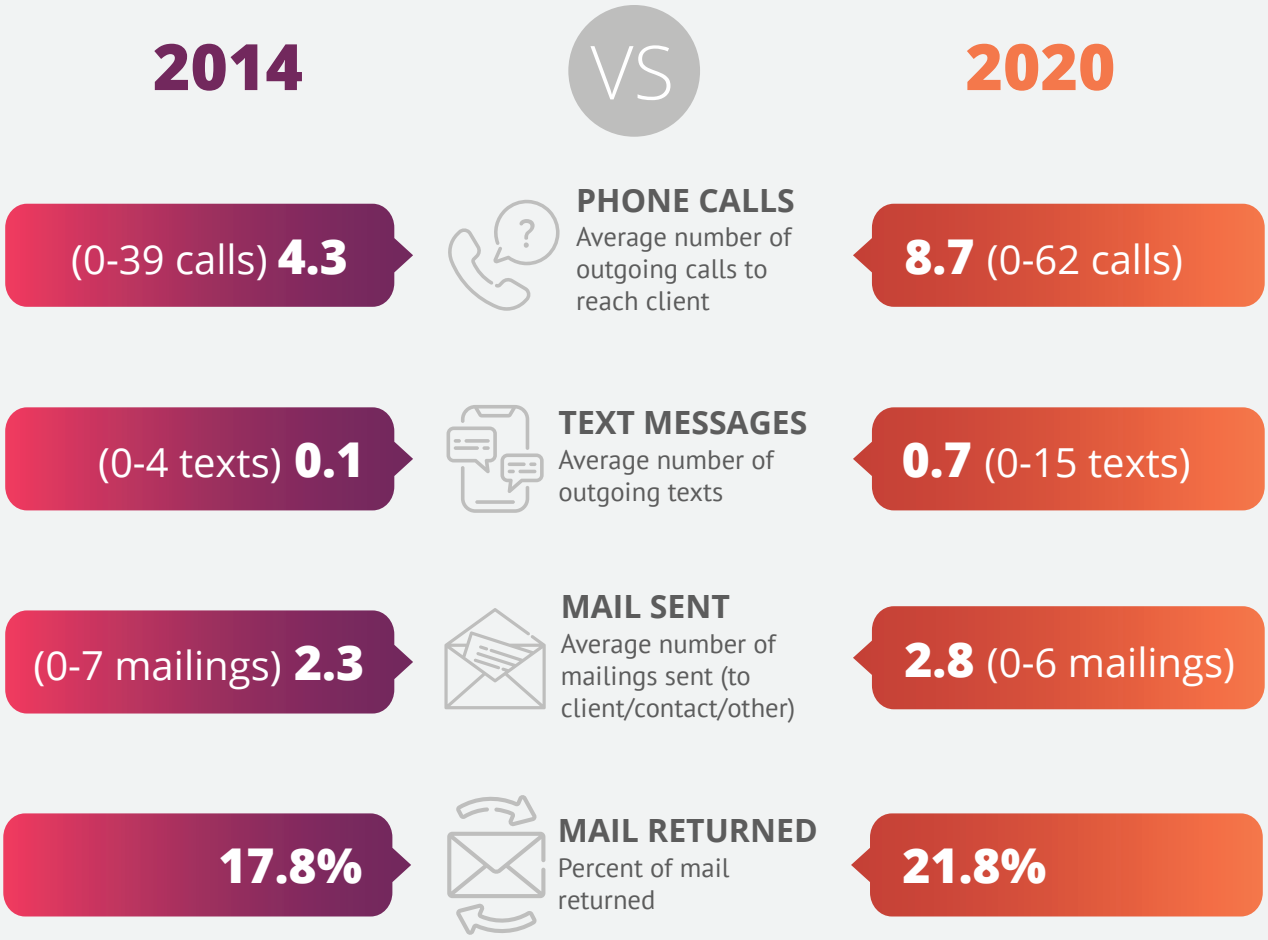
Follow-up interviews are conducted with a selected sample of KTOS clients about 12 months after the intake survey is completed. All individuals who agree to be contacted by UK CDAR for the follow-up interview and have given at least one mailing address and one phone number, or two phone numbers if they 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 (about 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 (2.2%) and in the high follow-up rate (69.4%). This means that 28.4% of individuals included in the sample to be followed up were not successfully contacted.[23] 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 Appendix A.

[22] The average number of days between when the baseline was submitted to UK CDAR and when the follow-up was completed was 353.2 days.

[23] 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.

KTOS Locating Efforts of Total Sample

In 2014, 523[24] cases that were included in the follow-up sample were randomly selected to examine efforts in locating and contacting participants. In 2020, these efforts were repeated to compare how locating efforts have changed for the entire sample of 2,026[25] cases selected into the follow-up sample for the 2020 Report. Comparison of the efforts interviewers have had to put into conducting the follow-up interviews from 2014 to 2020 shows that the average number of calls has doubled, the average number of text messages has increased 7-fold, and the average number of mailings sent has increased by 22%.



[24] 20% random sample of completed, ineligible, expired, and refused files across all 12 months.

[25] There were 8 missing files when the extraction project was completed.

Review of the quality of contact information shows that the percent of files with no phone number listed for a first contact person has more than doubled from 25.4% in 2014 to 58.9% in 2020.

CLIENT LOCATOR NUMBER

0.0% None listed

1.4%

28.5% Number worked, but not successful

27.6%

FIRST CONTACT LOCATOR NUMBER

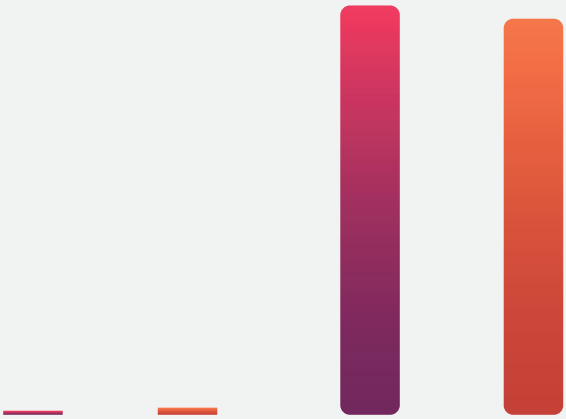
25.4% None listed

58.9%

21.8% Number worked

15.2%

CLIENT LOCATOR ADDRESS



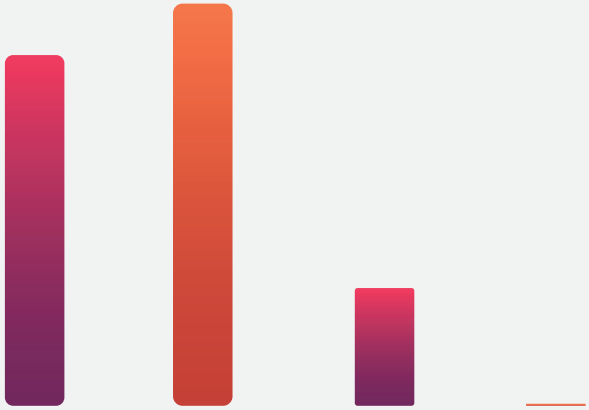
0.8% None listed

1.4%

80.3% Address worked, no returned mail

77.7%

FIRST CONTACT LOCATOR ADDRESS



68.8% None listed

78.9%

23.1% Complete address

0.4%

Demographics

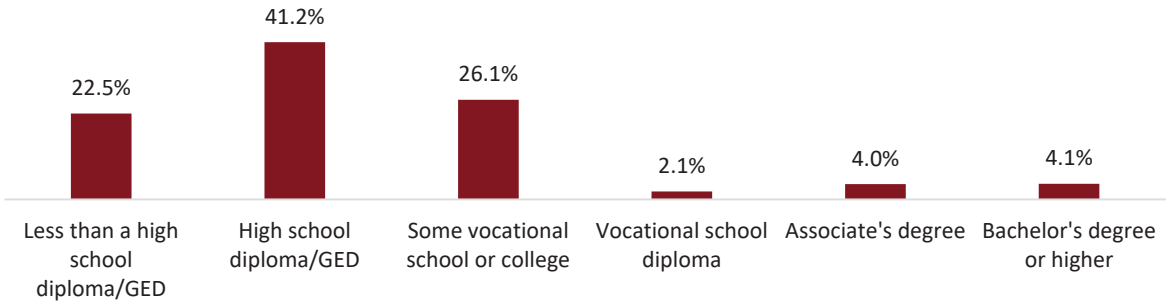
Of the 1,175 adults who completed a 12-month follow-up interview, 50.4% were male and 49.6% were female (see Table 1.3). The majority of follow-up clients were White (92.9%). A minority were African American/Black (5.0%) and 2.0% were Hispanic, American Indian, or multiracial. Clients in the follow-up sample were an average of 34.9 years old at the time of the intake interview. Less than half (46.0%) reported they were married or cohabiting at intake, 27.3% were not married (and not cohabiting), 25.3% were separated or divorced, and 1.4% were widowed. A little more than three-fourths (78.6%) of followed-up clients had at least one child. A small percentage of the follow-up sample (3.4%) 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 = 1,175)

Age	**34.9 years (range of 18-75)**
Gender	
Male	50.4%
Female	49.6%
Transgender	0.0%
Race	
White	92.9%
African American	5.0%
Other or multiracial	2.0%
Marital status	
Married or cohabiting	46.0%
Never married	27.3%
Separated or divorced	25.3%
Widowed	1.4%
Have children	**78.6%**
Veteran or currently serving in military	**3.4%**

Less than one-quarter of follow-up clients (22.5%) had less than a high school diploma or GED at intake (see Figure 1.16). The highest level of education of 41.2% of the follow-up sample was a high school diploma or GED. About one-quarter of clients (26.1%) had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (2.1%), an associate's degree (4.0%), or a bachelor's degree or higher (4.1%).

FIGURE 1.16. HIGHEST LEVEL OF EDUCATION COMPLETED BY FOLLOW-UP CLIENTS AT INTAKE (n = 1,175)



When individuals 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, economic hardship, criminal justice involvement, physical health, mental health, substance use, and severity of substance use. These differences indicate that followed-up individuals were worse off in several key domains compared to those who were not followed up (see Table 1.4). See Appendix B for detailed comparisons of clients who completed a follow-up interview (n = 1,175) and clients who did not complete a follow-up interview (n = 4,353).

First, significantly more women were followed up than were not followed up. Second, significantly more followed-up clients reported they had difficulty meeting basic needs for financial reasons. Third, 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. Fourth, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Fifth, significantly more clients who were followed up reported using marijuana, stimulants, and illegal use of prescription opioids, alcohol, and vaporized tobacco compared to clients who were not followed up. Sixth, 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 alcohol use SUD, and had a higher average composite score for drug use and for alcohol use when compared to clients who did not complete a follow-up. Nonetheless, there were a few statistically significant differences in which the followed-up clients had better indicators than the individuals who were not followed-up: education, criminal justice supervision, and any incarceration in the past 12 months.

"The program teaches you skills, and I loved the way they made you think about your experiences."

KTOS FOLLOW-UP CLIENT

TABLE 1.4. FOLLOWED-UP VERSUS NOT FOLLOWED-UP

	Followed up	
	No (n = 4,353)	Yes (n = 1,175)
Demographic	More male	More female
Socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs)	Lower level of education	More had difficulty meeting basic needs for financial reasons
Substance use, severity of alcohol and drug use		• More reported marijuana, stimulants, and illicit use of prescription opioids in the 12 months before entering treatment • More reported alcohol use, alcohol to intoxication, binge drinking, and vaporized tobacco use in the 12 months before treatment • More met or surpassed the cutoff score for alcohol or drug use substance use disorder
Health (e.g., overall health status, chronic medical problems, chronic pain)		More had chronic pain and chronic medical problems
Mental health (e.g., depression, generalized anxiety, suicidality)		More met study criteria for depression, generalized anxiety, and suicidality
Criminal justice involvement (e.g., arrested, incarcerated)	More under criminal justice supervision and any incarceration in 12 months before treatment	

Section 2. Substance Use

This section examines substance use changes, which include use of any illegal drugs or alcohol, and then separately for illegal drugs, alcohol, and tobacco at intake and follow-up. 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. In addition, self-reported severity of alcohol and drug use based on the DSM-5 and the Addiction Severity Index (ASI) alcohol and drug use composite scores are compared at intake and follow-up. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

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]; and (g) other illegal drugs not mentioned above [i.e., hallucinogens, inhalants, and synthetic drugs]. 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 = 1,153)[26] are presented.

The number of clients reporting alcohol and/or illegal drug use decreased by 52%

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 = 1,017)[27] is also examined.

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

[26] 16 cases were excluded from this analysis because they were incarcerated all 365 days before entering treatment, and 4 cases were excluded because either the interviewer skipped the question (n = 2), the client did not know how many days they were incarcerated (n = 1), or the client declined to answer (n = 2) at follow-up.

[27] 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 = 131) or all 30 days before the follow-up (n = 26) from the change in past-30-day substance use analysis is that being in a controlled environment inhibits opportunities for alcohol and drug use. An additional 8 clients were excluded because the interviewer skipped the question ((n = 6), the client refused to answer (n = 1), or the client did not know how many days they were in a controlled environment at follow-up (n = 1).

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.

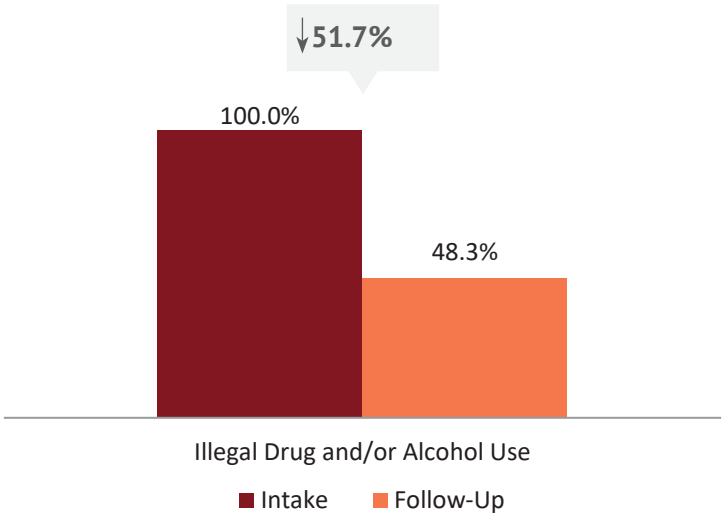
The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs (n = 542), alcohol (n = 348) and those with alcohol and/or illegal drug use (n = 701) among individuals who reported use of the substance at either intake or follow-up. The ASI composite score assesses 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 past-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 Illegal Drug Use

Past-12-Month Alcohol and/or Illegal Drug Use

All clients (100%) reported using alcohol and/or illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 48.3% at follow-up. As a result, there was a 51.7% decrease in the number of clients reporting use of alcohol and/or illegal drugs (see Figure 2.1).

FIGURE 2.1. PAST-12-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,153)[a]

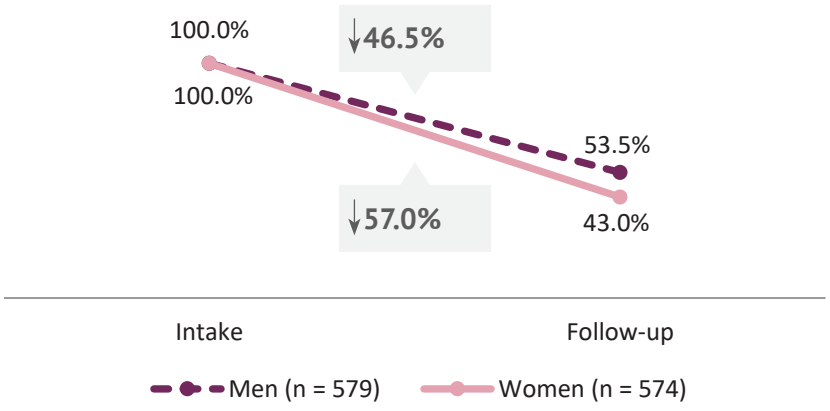


a--No test of statistical association could be computed for illegal drug/alcohol use in the 12 months before entering treatment because one of the cell values was 0.

Gender Differences in Past-12-month Alcohol and/or Illegal Drug Use

At intake, there were no significant differences in the number of men and women reporting alcohol and/or drug use in the past 12 months, because all clients reported using any alcohol and/or illegal drugs in the 12 months before they entered treatment (see Figure 2.2). The percent of women and men who reported any past-12-month alcohol and/or illegal drug use decreased from intake to follow-up by 57.0% and 46.5% respectively. At follow-up, significantly more men reported alcohol and/or illegal drug use in the past 12 months compared to women (53.5% vs. 43.0%, respectively).

FIGURE 2.2. GENDER DIFFERENCES IN PAST-12-MONTH ILLEGAL DRUG AND/OR ALCOHOL USE AT INTAKE AND FOLLOW-UP[a,b]

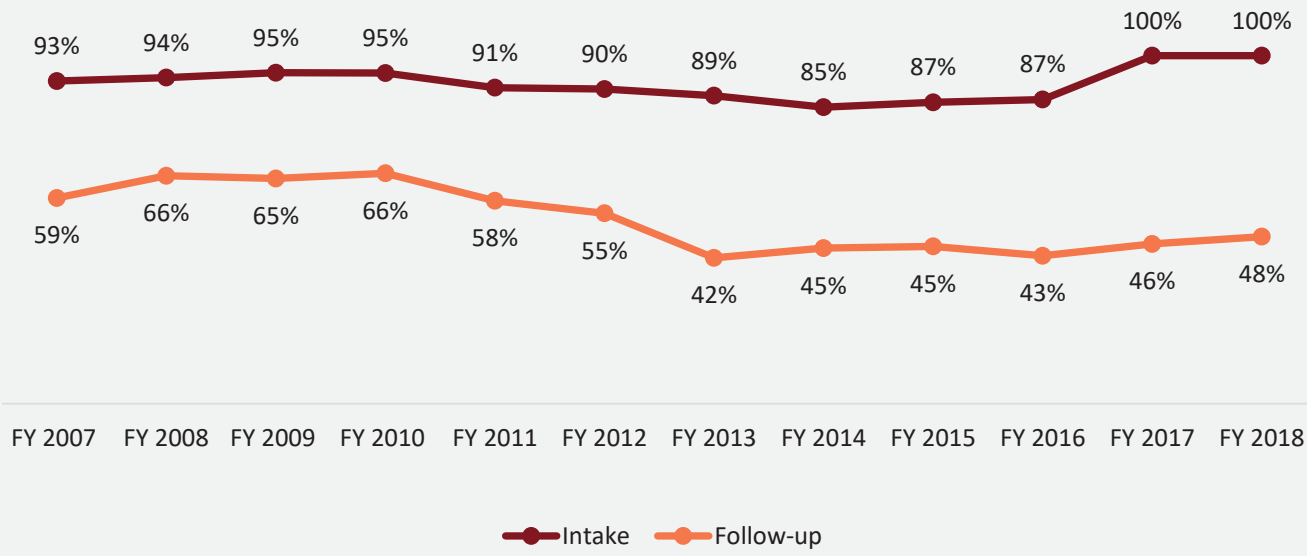


a—Significant difference by gender at follow-up, $p < .001$
b--No test of statistical association could be computed for illegal drug/alcohol use in the 12 months before entering treatment because one of the cell values was 0.

Trends in Any Alcohol and/or Drug Use

The number of KTOS clients reporting alcohol and/or drug use in the 12 months before treatment was consistently high.[28] Overall, at follow-up, the number of clients reporting alcohol and/or drug use has decreased over the years.

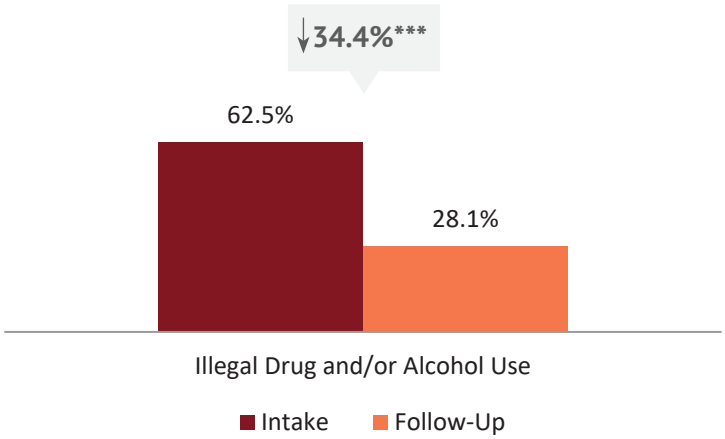
FIGURE 2.3. TRENDS IN ANY ALCOHOL AND/OR ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, FY 2007-2018



Past-30-Day Alcohol and/or Illegal Drug Use

Over half of clients (62.5%) reported using alcohol and/or illegal drugs in the 30 days before entering substance abuse treatment, which decreased to 28.1% at follow-up. As a result, there was a 34.4% significant decrease in the number of clients reporting past-30-day use of alcohol and/or illegal drugs (see Figure 2.4).

FIGURE 2.4. PAST-30-DAY ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,017)



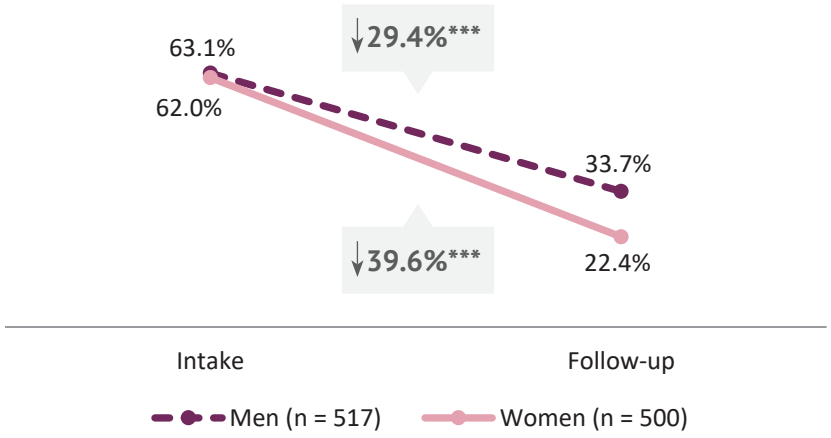
***p < .001.

[28] In the several years preceding FY 2017, the research team noticed that an increasing proportion of clients with completed KTOS intake surveys reported no substance use. Because the focus of this report is on substance abuse treatment outcomes, to be included in the follow-up study individuals had to report past-12-month alcohol and/or drug use, if they were not incarcerated the entire 12 months before entering the program.

Gender Differences in Past-30-day Alcohol and/or Illegal Drug Use

At intake, there were no significant differences in the number of women (62.0%) and men (63.1%) reporting any alcohol and/or illegal drug use in the past 30 days (see Figure 2.5). The number of women and men who reported any past-30-day alcohol and/or illegal drug use significantly decreased from intake to follow-up by 39.6% and 29.4% respectively. At follow-up, significantly more men reported alcohol and/or illegal drug use in the past 30 days compared to women (33.7% vs. 22.4%, respectively).

FIGURE 2.5. GENDER DIFFERENCES IN PAST-30-DAY ILLEGAL DRUG AND/OR ALCOHOL USE AT INTAKE AND FOLLOW-UP[a]



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

Any Illegal Drugs

Past-12-Month Illegal Drug Use

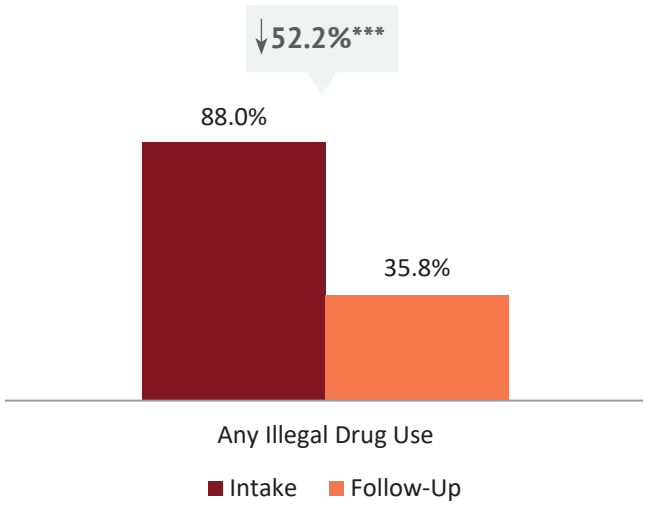
At intake, clients were asked how old they were when they first began to use illicit drugs. On average, KTOS clients reported they were 17.0 years old when they first used illegal drugs (not depicted in figure).[29]

About 9 in 10 clients (88.0%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 35.8% at follow-up. Overall, for the KTOS follow-up sample, there was a 52.2% decrease in the number of clients reporting use of any illegal drug in the past 12 months (see Figure 2.6).

The number of clients reporting illegal drug use in the past 12 months decreased by 52%

[29] 91 clients reported they had never used illegal drugs, so they were not included in this analysis.

FIGURE 2.6. PAST-12-MONTH DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,139)[30]



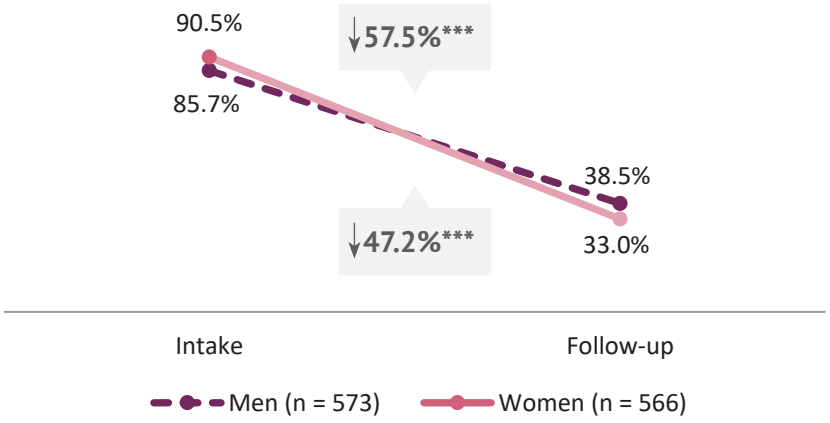
***p < .001.

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

At intake, significantly more women than men reported any past-12-month illegal drug use, 90.5% vs. 85.7% (see Figure 2.7). The number of women and men who reported illegal drug use in the past 12 months significantly decreased from intake to follow-up by 57.5% and 47.2% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any illegal drugs in the past 12 months.

Significantly more women than men reported using any illegal drugs in the 12 months before intake

FIGURE 2.7. GENDER DIFFERENCES IN PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP[a]



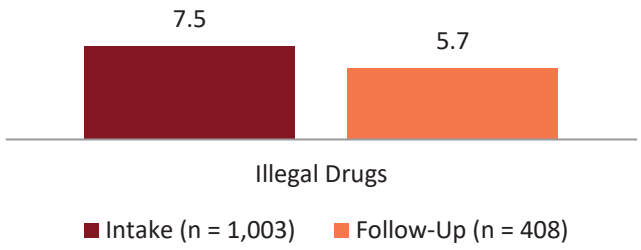
a—Significant difference by gender at intake (p < .05).
***p < .001.

[30] Fourteen clients were missing data for illegal drug use at follow-up.

Average Maximum Number of Months Used Any Illegal Drugs

Among the clients who reported using illegal drugs in the 12 months before entering treatment (n = 1,003), they reported using illegal drugs an average maximum of 7.5 months (see Figure 2.8).[31] Clients who reported using illegal drugs at follow-up (n = 408) reported using an average maximum of 5.7 months.

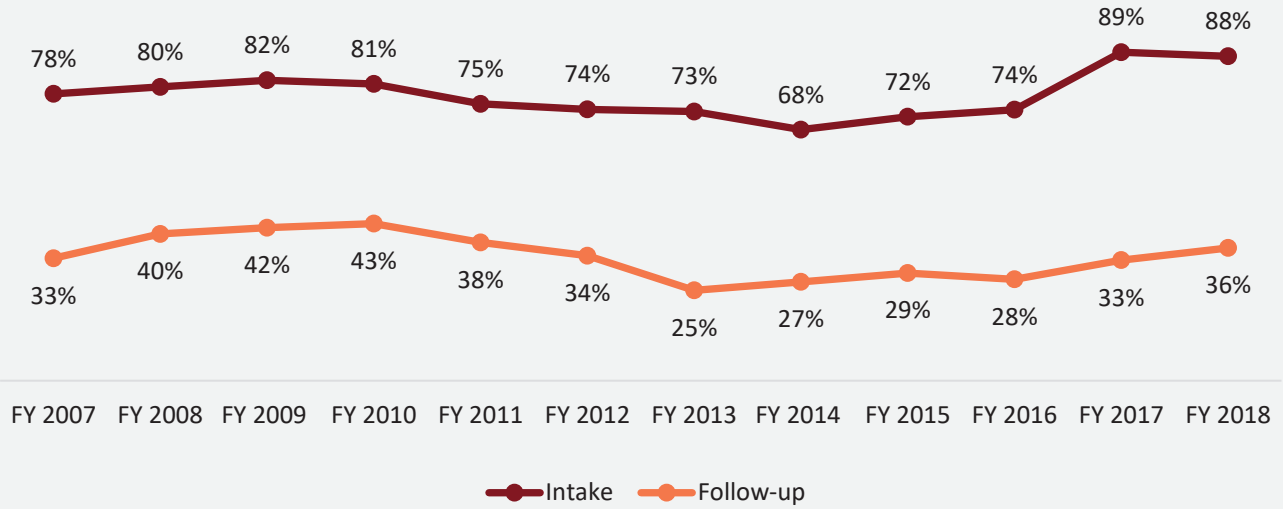
FIGURE 2.8. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS



Trends in Past-12-month Overall Illegal Drug Use

Around three-quarters of KTOS clients reported any illegal drug use in the 12 months before treatment from FY 2007 to FY 2016. In FY 2017, that percent increased to almost 90% and remained high in FY 2018.[32] Overall, at follow-up, the percent of clients reporting any illegal drug use decreased from FY 2010 to FY 2013 but has slowly increased in recent years.

FIGURE 2.9. TRENDS IN ANY PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, FY 2007-2018



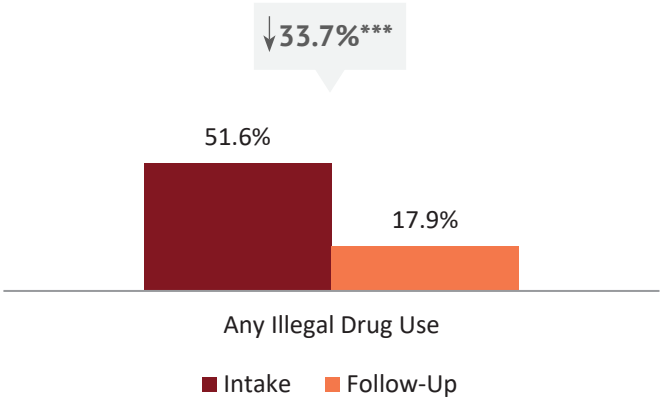
[31] Because number of months of illegal drugs was measured separately for each class of substance, the value is a calculation of the maximum number of months clients used any class of substance.

[32] In the several years preceding FY 2017, the research team noticed that an increasing proportion of clients with completed KTOS intake surveys reported no substance use. Because the focus of this report is on substance abuse treatment outcomes, to be included in the follow-up study individuals had to report past-12-month alcohol and/or drug use, if they were not incarcerated the entire 12 months before entering the program.

Past-30-Day Illegal Drug Use

A little more than half of clients (51.6%) who were not in a controlled environment all 30 days reported they had used illegal drugs in the 30 days before entering treatment (see Figure 2.10). At follow-up, only 17.9% of clients reported they had used illegal drugs in the past 30 days—a significant decrease of 33.7%.

FIGURE 2.10. PAST-30-DAY USE OF ANY ILLEGAL DRUG AT INTAKE AND FOLLOW-UP (N = 999)[33]

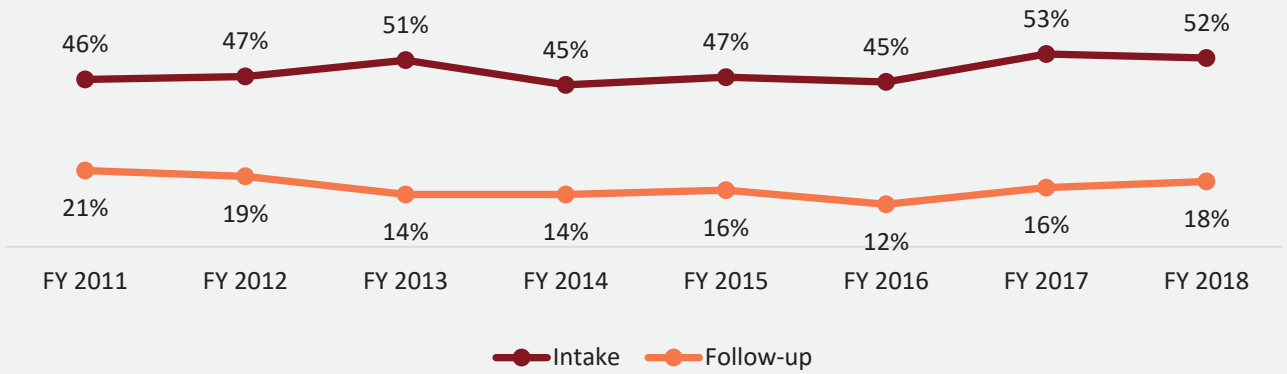


***p < .001.

Trends in Past-30-day Illegal Drug Use

Of those clients who were not in a controlled environment in the 30 days before program entry and the 30 days before the follow-up interview, around half (45% - 53%) reported using any illegal drugs in the past 30 days at intake. At follow-up, the percent of clients reporting any illegal drug use decreased over the past 6 years, from 21% in FY 2011 to 12% in FY 2016 but increased in FY 2017 (16%) and FY 2018 (18%).

FIGURE 2.11. TRENDS IN PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, FY 2011-2018

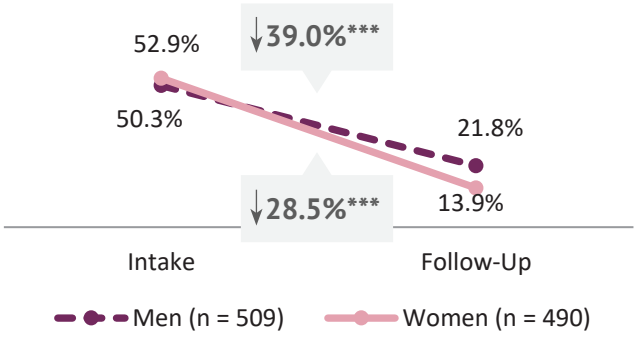


[33] Eighteen clients had missing data for past-30-day illegal drug use at follow-up.

Gender Differences in Past-30-Day Illegal Drug Use

A similar number of women reported illegal drug use in the 30 days before intake when compared to men (52.9% vs. 50.3%). The number of women and men who reported illegal drug use decreased significantly, with the decrease for women being greater. The difference between men and women who reported past-30-day illegal drug use was statistically significant at follow-up, with more men reporting illegal drug use at follow-up when compared to women (see Figure 2.12).

FIGURE 2.12. GENDER DIFFERENCES IN PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP[a]

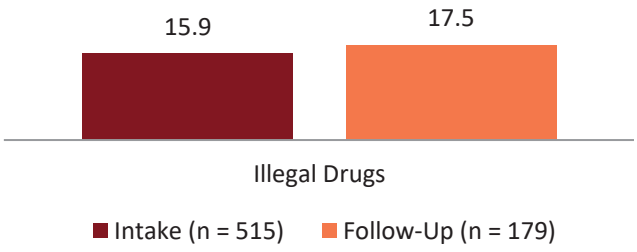


a—Significant difference by gender at follow-up ($p < .01$).
***$p < .001$.

Average Maximum Number of Days Used Any Illegal Drugs

Among the clients who reported using illegal drugs in the 30 days before entering treatment (n = 515), they reported using illegal drugs an average maximum of 15.9 days (see Figure 2.13). Clients who reported using illegal drugs at follow-up (n = 179) reported using an average maximum of 17.5 days.[34]

FIGURE 2.13. AVERAGE MAXIMUM NUMBER OF DAYS CLIENTS USED ILLEGAL DRUGS IN PAST 30 DAYS



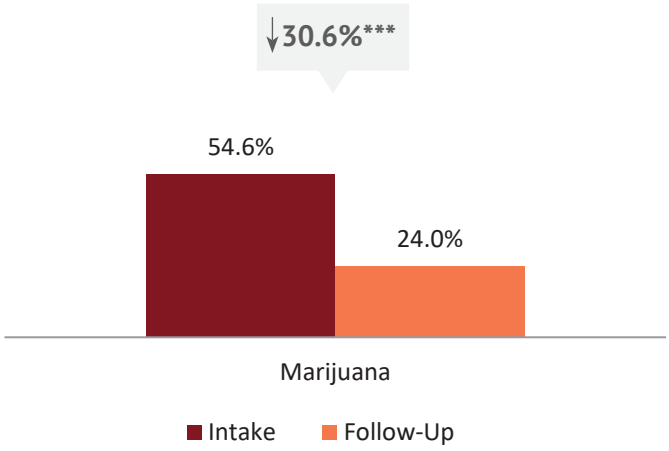
[34] Because number of days of illegal drugs was measured separately for each class of substance, the value is a calculation of the maximum number of days clients used any class of illegal drug.

Marijuana

Past-12-Month Marijuana Use

More than half of clients reported using marijuana in the 12 months before entering treatment, which decreased to 24.0% at follow-up. Overall, for the KTOS follow-up sample, there was a 30.6% significant decrease in the number of clients reporting marijuana use (see Figure 2.14).

FIGURE 2.14. PAST-12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,152)[35]

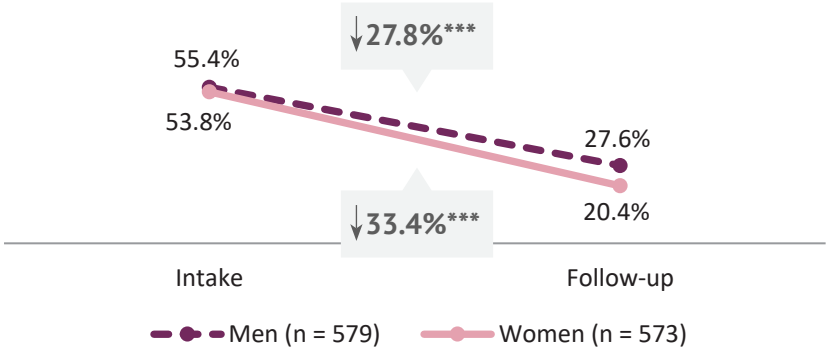


***p < .001.

Gender Differences in Past-12-Month Marijuana Use

At intake, a similar percentage of men and women reported any marijuana use in the past 12 months, 55.4% vs. 53.8% (see Figure 2.15). The percent of women and men who reported past-12-month marijuana use significantly decreased from intake to follow-up by 33.4% and 27.8% respectively. At follow-up, significantly more men than women reported they had used marijuana in the past 12 months.

FIGURE 2.15. GENDER DIFFERENCES IN PAST-12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP[a]



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

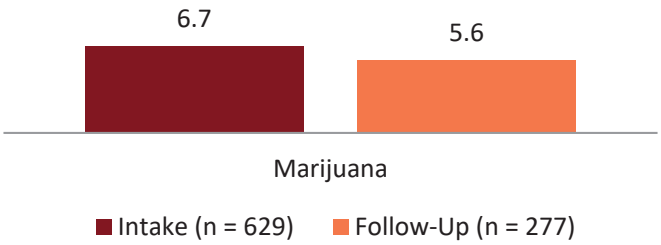
[35] One client had missing data for past-12-month marijuana use.

Average Number of Months Used Marijuana

Among the clients who reported using marijuana in the 12 months before entering treatment (n = 629), they reported using marijuana, on average, 6.7 months (see Figure 2.16). Among clients who reported using marijuana at follow-up (n = 277), they reported using, on average 5.6 months.

Significantly more men than women reported using marijuana 12 months before follow-up

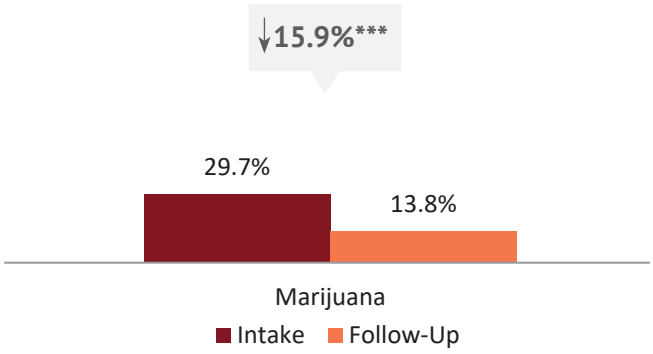
FIGURE 2.16. AVERAGE NUMBER OF MONTHS CLIENTS USED MARIJUANA



Past-30-Day Marijuana Use

The number of clients who reported using marijuana in the past 30 days decreased significantly by 15.9%, from 29.7% at intake to 13.8% at follow-up (see Figure 2.17).

FIGURE 2.17. PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,016)[36]



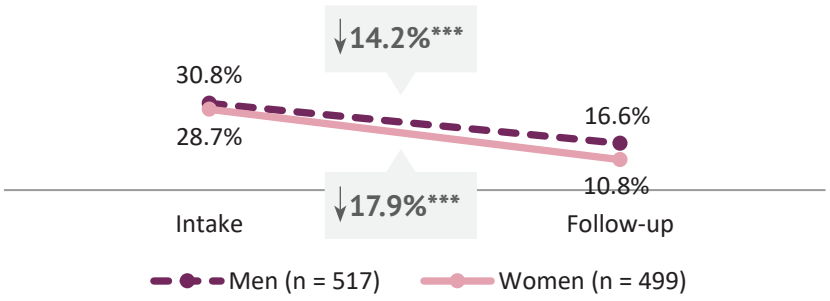
***p < .001.

Gender Differences in Past-30-Day Marijuana Use

At intake, similar percentages of men (30.8%) and women (28.7%) reported marijuana use in the past 30 days (see Figure 2.18). The percent of men and women who reported marijuana use significantly decreased from intake to follow-up by 14.2% and 17.9% respectively. At follow-up, significantly more men (16.6%) reported marijuana use in the past 30 days compared to women (10.8%).

[36] One client had missing data on past-30-day marijuana use at follow-up.

FIGURE 2.18. GENDER DIFFERENCES IN PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP[a]



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

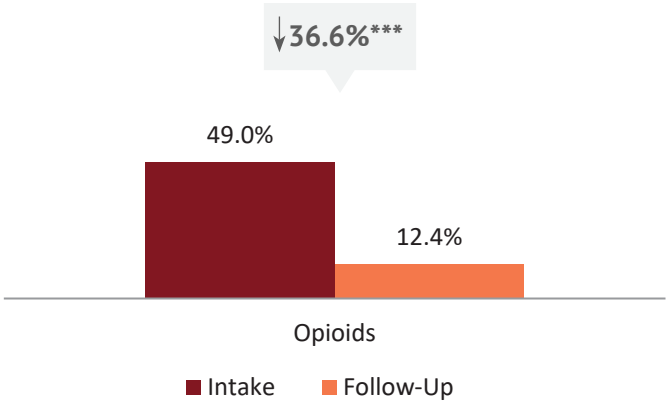
Opioids

Past-12-Month Opioid Misuse

About half of clients (49.0%) 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 12.4% at follow-up. Overall, for the KTOS follow-up sample, there was a 36.6% decrease in the number of clients reporting past-12-month opioid misuse other than heroin (see Figure 2.19).

The number of clients reporting past-12-month opioid misuse decreased by 37%

FIGURE 2.19. PAST-12-MONTH OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 1,152)[37]



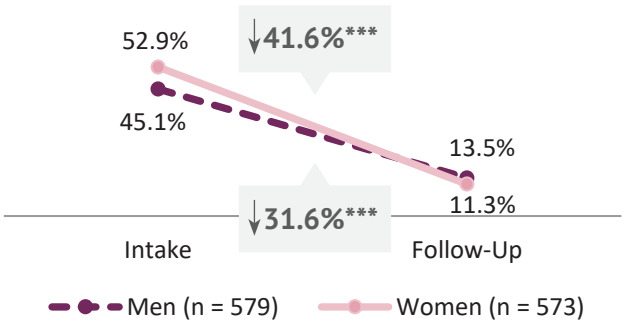
***$p < .001$.

Gender Differences in Past-12-month Opioid Misuse

Significantly more women than men reported opioid misuse in the 12 months before intake, 52.9% vs. 45.1%. The percent 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 percent of women (11.3%) and men (13.5%) who reported past-12-month opioid misuse (see Figure 2.20).

[37] One case had a missing value for opioid use in the 12 months before follow-up.

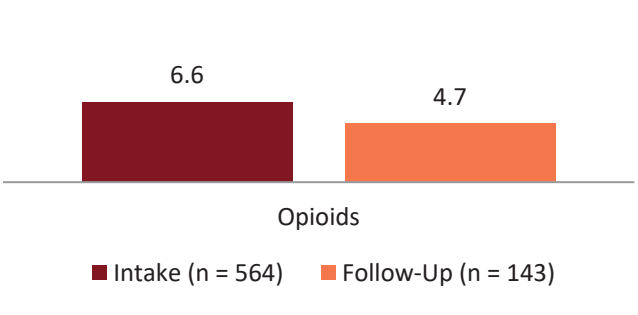
FIGURE 2.20. GENDER DIFFERENCES IN PAST-12-MONTH OPIOID MISUSE AT INTAKE AND FOLLOW-UP[a]



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

Among the clients who reported misusing opioids in the 12 months before entering treatment (n = 564), they reported misusing opioids on average 6.6 months (see Figure 2.21).[38] Among clients who reported misusing opioids at follow-up (n = 143), they reported misusing an average 4.7 months.

FIGURE 2.21. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS MISUSED OPIOIDS



Past-30-Day Opioid Misuse

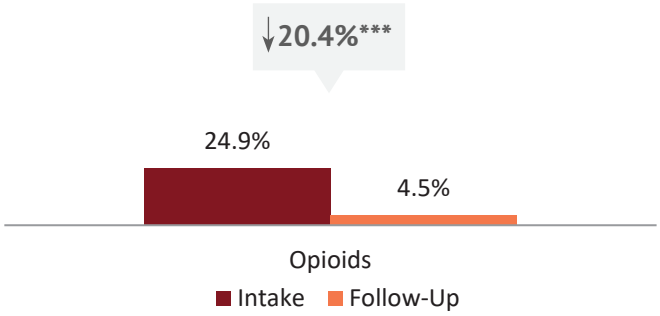
The number of clients who reported misusing opioids in the past 30 days decreased significantly by 20.4%, from 24.9% at intake to 4.5% at follow-up (see Figure 2.22).

"They helped me with what I needed, and they set out a plan for the best things to do to help me that was realistic and made for me."

KTOS FOLLOW-UP CLIENT

[38] 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 2.22. PAST-30-DAY OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 1,016)[39]



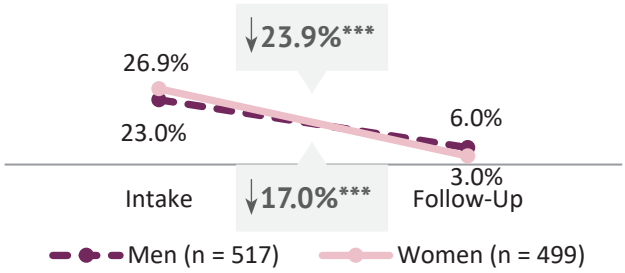
***p < .001.

Gender Differences in Past-30-Day Opioid Misuse

Significantly more women than men reported opioid misuse in the 30 days before intake, 26.9% vs. 23.0%. The percent 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 percent of women (3.0%) and men (6.0%) who reported past-30-day opioid misuse (see Figure 2.23).

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

FIGURE 2.23. GENDER DIFFERENCES IN PAST-30-DAY OPIOID MISUSE AT INTAKE AND FOLLOW-UP[a]



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

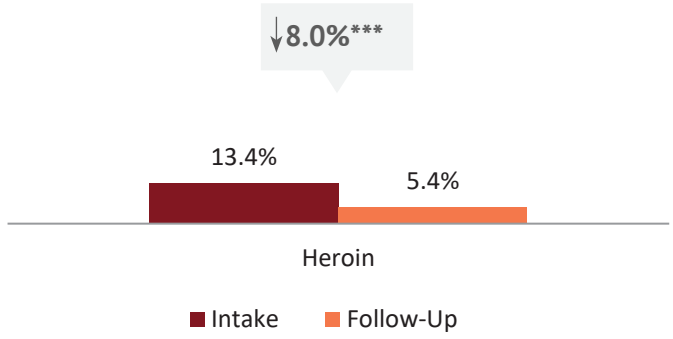
Heroin

Past-12-Month Heroin Use

About 13% of clients reported using heroin in the 12 months before entering treatment, which decreased 8.0% to 5.4% at follow-up (see Figure 2.24).

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

FIGURE 2.24. PAST-12-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,148)[40]



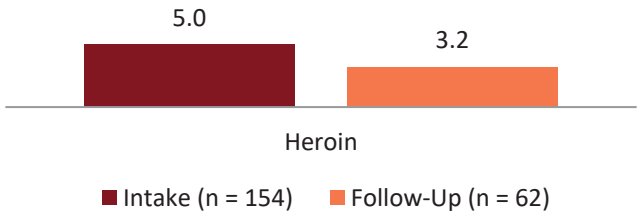
***p < .001.

Average Number of Months Used Heroin

Among the clients who reported using heroin in the 12 months before entering treatment (n = 154), they reported using heroin, on average, 5.0 months (see Figure 2.25). Among clients who reported using heroin at follow-up (n = 62), they reported using, on average, 3.2 months.

The number of clients reporting past-12-month heroin use decreased by 8%

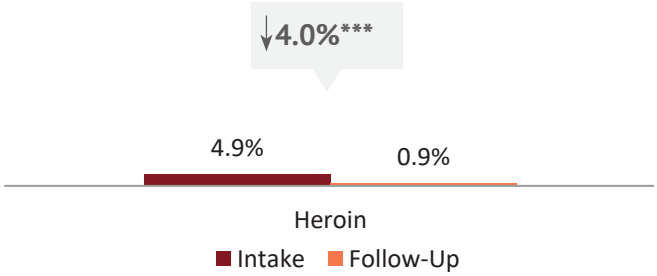
FIGURE 2.25. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



Past-30-Day Heroin Use

A minority of clients (4.9%) reported using heroin in the 30 days before intake, with a significant decrease of 4.0% by follow-up to 0.9% (see Figure 2.26).

FIGURE 2.26. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,012)[41]



***p < .001.

[40] Five clients had missing data for past-12-month heroin use at follow-up.

[41] Five clients had missing data for past-30-day heroin use at follow-up.

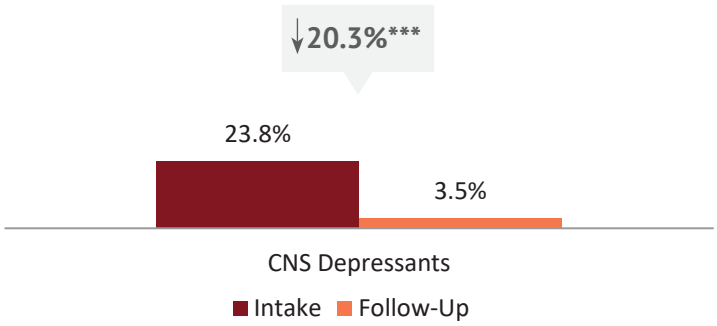
CNS Depressants

Past-12-Month CNS Depressant Use

Less than one-fourth of clients (23.8%) reported using CNS depressants, including tranquilizers, benzodiazepines, sedatives, and barbiturates in the 12 months before entering treatment, which decreased to 3.5% at follow-up. Overall, for the KTOS follow-up sample, there was a 20.3% decrease in the number of clients reporting CNS depressant use in the past 12 months (see Figure 2.27).

The number of clients reporting past-12-month CNS depressant use decreased by 20%

FIGURE 2.27. PAST-12-MONTH CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,149)[42]



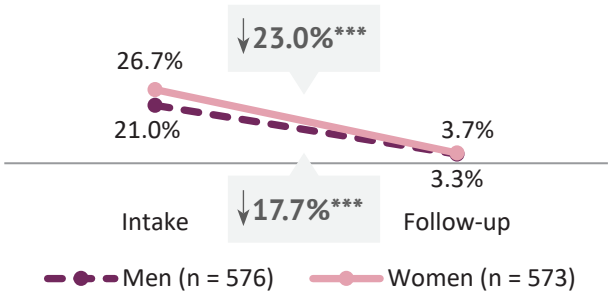
***p < .001.

Gender Differences in Past-12-Month CNS Depressant Use

Significantly more women than men reported CNS depressant use in the 12 months before intake, 26.7% vs. 21.0% (see Figure 2.28). The number of women and men who reported CNS depressant use significantly decreased from intake to follow-up by 23.0% and 17.7% 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 2.28. GENDER DIFFERENCES IN PAST-12-MONTH CNS DEPRESSANT USE FROM INTAKE TO FOLLOW-UP[a]



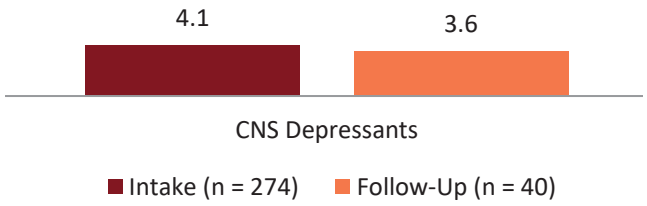
a—Significant difference by gender at intake (p < .05).
***p < .001.

[42] Four clients had missing values on past-12-month CNS depressant use at follow-up.

Average Maximum Number of Months Used CNS Depressants

Figure 2.29 shows the average maximum number of months clients who used CNS depressants reported using these illegal drugs.[43] Among the clients who reported using these substances in the 12 months before entering treatment (n = 274), they reported using CNS depressants an average 4.1 months. Among clients who reported using CNS depressants in the 12 months before follow-up (n = 40), they reported using an average of 3.6 months.

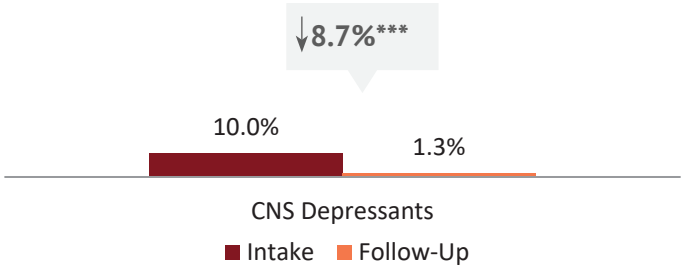
FIGURE 2.29. AVERAGE MAXIMUM NUMBER OF MONTHS OF CNS DEPRESSANT USE



Past-30-Day CNS Depressant Use

The percent of clients who reported using CNS depressants in the 30 days before intake decreased significantly by 8.7%, from 10.0% at intake to 1.3% at follow-up (see Figure 2.30).

FIGURE 2.30. PAST-30-DAY CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,013)[44]



***p < .001.

Cocaine

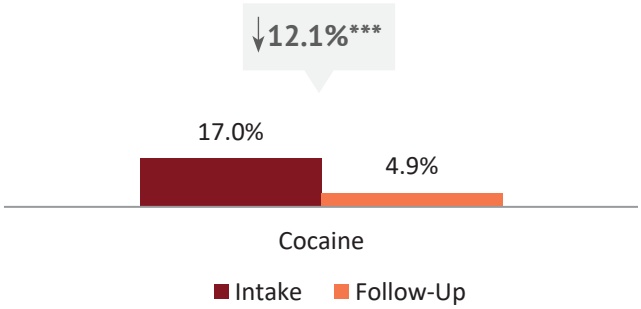
Past-12-Month Cocaine Use

Seventeen percent of clients reported using cocaine (including crack) in the 12 months before entering treatment, which decreased to 4.9% at follow-up. Overall, there was a 12.1% decrease in the number of clients reporting cocaine use (see Figure 2.31).

[43] 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.

[44] Four cases had missing values on past-30-day CNS depressant use at follow-up.

FIGURE 2.31. PAST-12-MONTH COCAINE USE AT INTAKE AND FOLLOW-UP (N = 1,152)[45]

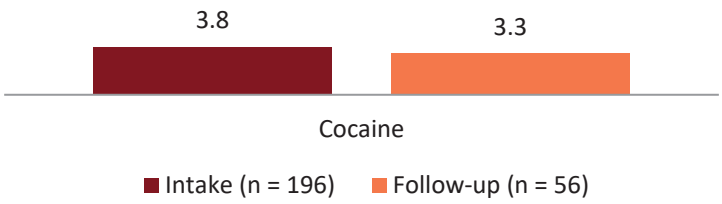


***p < .001.

Average Number of Months Used Cocaine

Among the clients who reported using cocaine in the 12 months before entering treatment (n = 196), they reported using cocaine an average of 3.8 months (see Figure 2.32). Clients who reported using cocaine in the 12 months before follow-up (n = 56) reported using cocaine, on average 3.3 months.

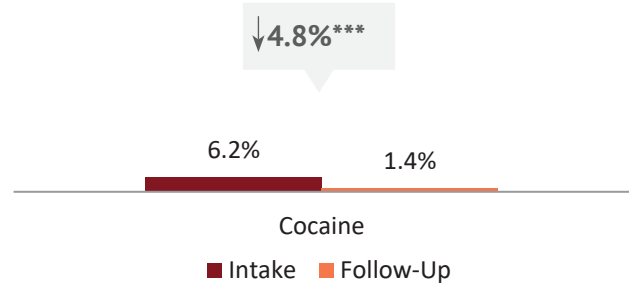
FIGURE 2.32. AVERAGE NUMBER OF MONTHS OF COCAINE USE



Past-30-Day Cocaine Use

The percent of clients who reported using cocaine in the past 30 days at intake decreased significantly by 4.8%, from 6.2% at intake to 1.4% at follow-up (see Figure 2.33).

FIGURE 2.33. PAST-30-DAY COCAINE USE AT INTAKE AND FOLLOW-UP (N = 1,016)[46]



***p < .001.

[45] One client was missing data for past-12-month cocaine use at follow-up.

[46] One client was missing data for past-30-day cocaine use at follow-up.

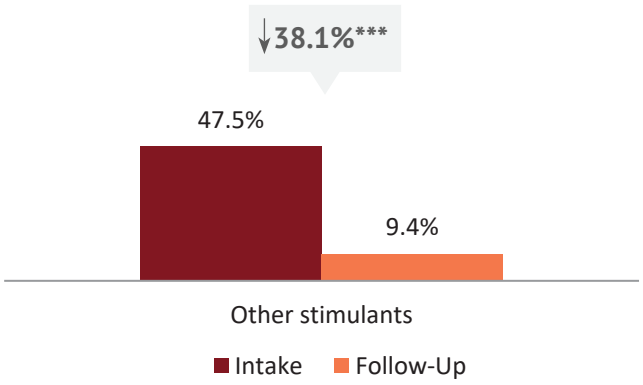
Other Stimulants

Past-12-Month Other Stimulant Use

Less than half of clients (47.5%) 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 9.4% at follow-up.[47] Overall, for the KTOS follow-up sample, there was a 38.1% decrease in the number of clients reporting other stimulant use (see Figure 2.34).

The number of clients reporting stimulant use other than cocaine decreased by 38%

FIGURE 2.34. PAST-12-MONTH STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 1,153)

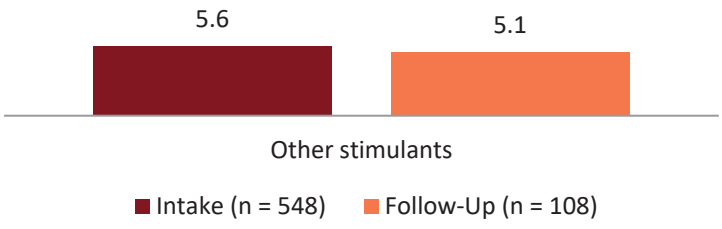


***p < .001.

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 = 548), they reported using other stimulants an average of 5.6 months (see Figure 2.35). Clients who reported using other stimulants in the 12 months before follow-up (n = 108) reported using other stimulants, on average, 5.1 months.

FIGURE 2.35. AVERAGE NUMBER OF MONTHS OF OTHER STIMULANT USE

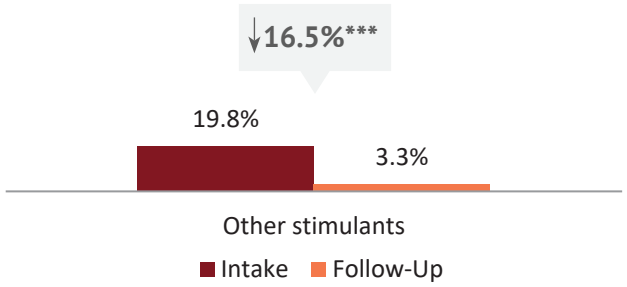


[47] Among the individuals who reported using stimulants in the 12 months before intake (n = 550), 95.5% reported using methamphetamine, crank, crystal meth only. Thus, most of the amphetamine use is methamphetamine.

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 16.5%, from 19.8% at intake to 3.3% at follow-up (see Figure 2.36).

FIGURE 2.36. PAST-30-DAY STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 1,017)



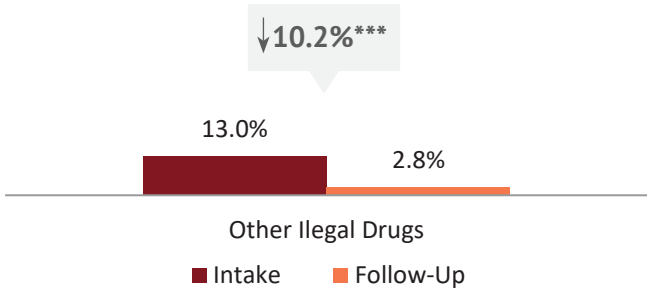
***p < .001.

Other Illegal Drugs

Past-12-Month Other Illegal Drugs

A small minority of KTOS clients (13.0%) reported using any other illegal drugs (i.e., hallucinogens, inhalants, synthetic drugs) in the 12 months before entering treatment. The number of clients who reported using other illegal drugs decreased to 2.8% at follow-up – a significant decrease of 10.2% (see Figure 2.37).

FIGURE 2.37. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,133)[48]



***p < .001.

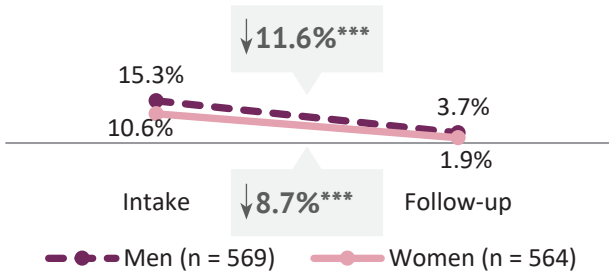
Gender Differences in Past-12-month Other Illegal Drug Use

Significantly more men than women reported other illegal drug use in the 12 months before intake, 15.3% vs. 10.6% (see Figure 2.38). The number of women and men who reported other illegal drug use significantly decreased from intake to follow-up by 8.7% and 11.6% respectively. At follow-up, there was no significant difference in the percent of women and men who reported using other illegal drugs.

Significantly more men than women reported other illegal drug use at intake

[48] Eight clients had missing data for past-12-month use of other illegal drugs at intake and 12 clients had missing data for past-12-month use of other illegal drugs at follow-up.

FIGURE 2.38. GENDER DIFFERENCES IN PAST-12-MONTH OTHER ILLEGAL DRUG USE FROM INTAKE TO FOLLOW-UP[a]

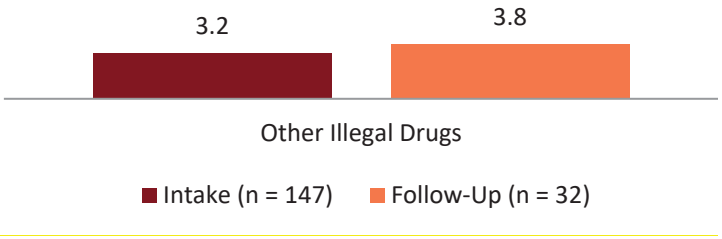


a—Significant difference by gender at intake ($p < .05$).
***$p < .001$.

Average Maximum Number of Months Used Other Illegal Drugs

Figure 2.39 shows the average maximum number of months clients who used other illegal drugs (e.g., hallucinogens, inhalants, synthetic drugs) reported using those illegal drugs[49] in the past 12 months. Among the clients who reported using these drugs in the 12 months before entering treatment (n = 147), they reported using other illegal drugs an average of 3.2 months. Among clients who reported using other illegal drugs in the 12 months before follow-up (n = 32), they reported using an average of 3.8 months.

FIGURE 2.39. AVERAGE MAXIMUM NUMBER OF MONTHS OF OTHER ILLEGAL DRUG USE



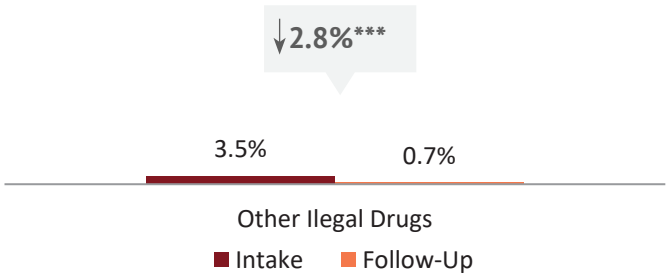
Past-30-Day Other Illegal Drug Use

The percent of clients who reported using other illegal drugs in the 30 days before the intake and follow-up interviews decreased significantly by 2.8%, from 3.5% at intake to 0.7% at follow-up (see Figure 2.40).

A small percentage of clients used hallucinogens, inhalants, or synthetic drugs at intake and follow-up

[49] 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 2.40. PAST-30-DAY USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,005)[50]

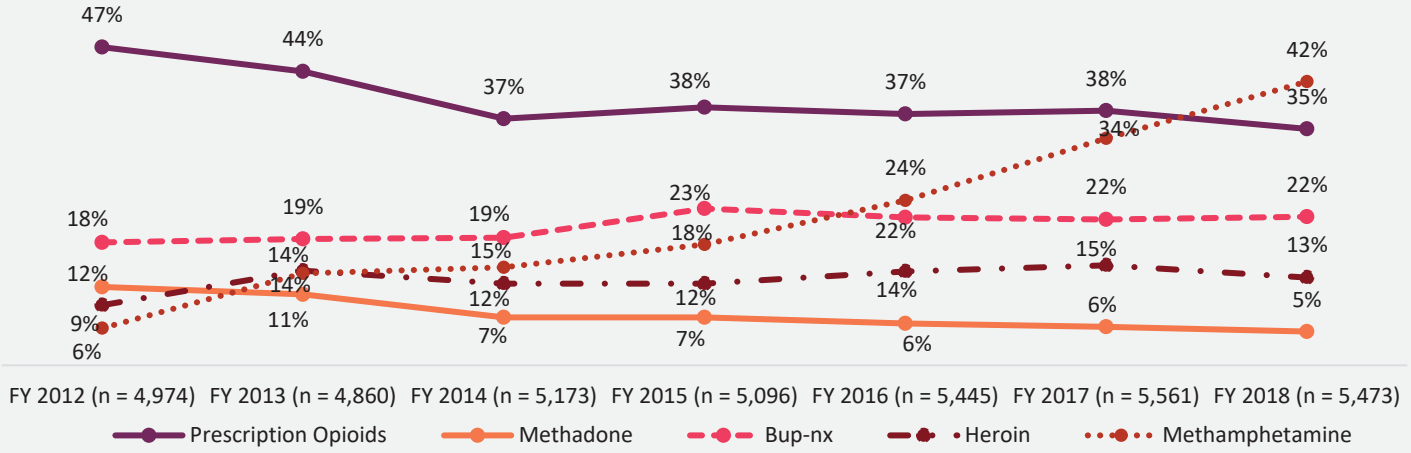


***p < .001.

Trends in Specific Drug 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% of clients reported prescription opioid misuse at intake and that percent remained similar in FY16 and FY17. In FY18, the percent of clients reporting misuse of prescription opioids decreased slightly to 35%. The percent of clients who reported using non-prescribed methadone in the 12 months before entering treatment has declined from FY12 (12%) to FY18 (5%). The percent of clients who reported using non-prescribed buprenorphine-naloxone (bup-nx) remained stable from FY12 through FY14 before increasing to 23% in FY15. The past 3 years, the number of clients reporting non-prescription bup-nx use has remained steady. The percent of KTOS clients who reported using heroin increased from FY12 to FY13, remained stable in FY14 and FY15 (12%), and increased again slightly in FY16 and FY17. In FY12, the number of clients reporting methamphetamine use was relatively low (6%) but has steadily increased in the past 5 years to 42% in FY18, surpassing the number of clients reporting illegal use of prescribed opioids.

FIGURE 2.41. PERCENT OF ALL CLIENTS WITH A COMPLETED INTAKE SURVEY REPORTING NON-PRESCRIBED USE OF PRESCRIPTION OPIOIDS, METHADONE, BUPRENORPHINE-NALOXONE, HEROIN, AND METHAMPHETAMINE IN THE 12 MONTHS BEFORE ENTERING TREATMENT AT THE CMHC (n = 32,082)[51]



[50] Twelve clients had missing data for past-30-day other illegal drug use at follow-up.

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

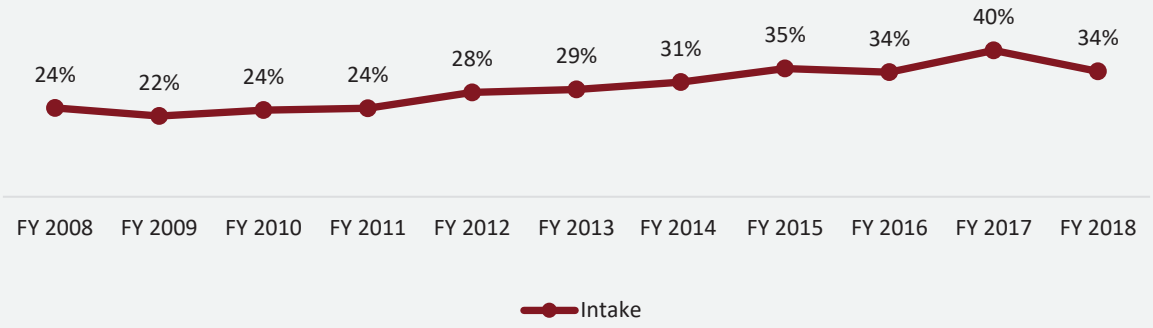
Injection Drug Use

At intake, 34.1% of clients reported having ever injected any drug. Of those clients (n = 401), 11.2% reported having ever used a Needle Exchange Program in Kentucky. At follow-up, 9.1% of clients reported injecting drugs in the past 12 months.[52] Of those clients (n = 107), 27.9% reported having used a Needle Exchange program in Kentucky.[53]

Trends in Injection Drug Use

The number of clients reporting at intake that they had ever injected any drug has generally increased from FY 2008 (24%) to FY 2017 (40%). This number decreased in FY 2018 to 34%.

FIGURE 2.42. TRENDS CLIENTS REPORTING HAVING EVER INJECTED ANY DRUG AT INTAKE, FY 2008-2018



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.[54]

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 15.5 years old when they had their first alcoholic drink (not depicted in figure).[55]

A little more than half of clients (52.9%) reported using alcohol in the 12 months before entering treatment while 28.9% of clients reported alcohol use in the 12 months before follow-up (see

[52] Six clients had missing values for the question on injection drug use at follow-up.

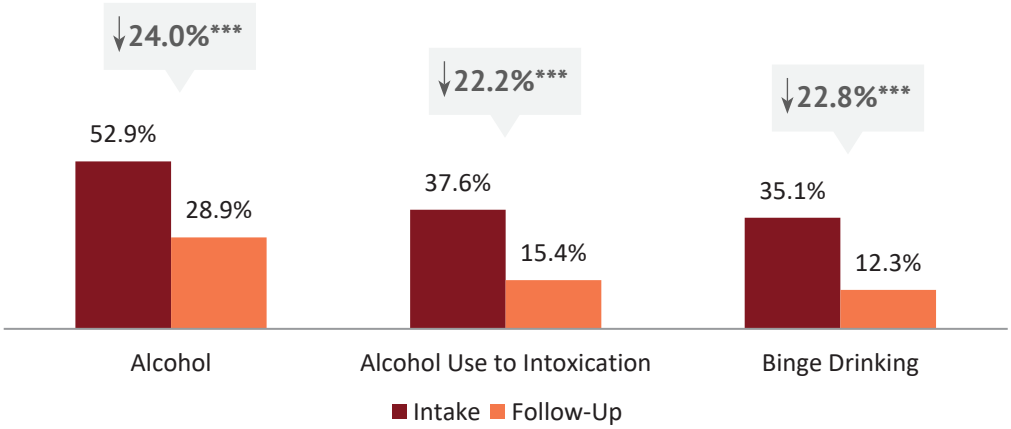
[53] Three cases had missing data for the needle exchange program at follow-up.

[54] 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.

[55] Of the individuals in the follow-up sample, 64 reported they have never had an alcoholic drink.

Figure 2.43). Overall, for the KTOS follow-up sample, there was a 24.0% decrease in the number of clients reporting alcohol use in the past 12 months. More than one-third of clients (37.6%) reported using alcohol to intoxication at intake, with 15.4% reporting alcohol use to intoxication in the 12 months before follow-up. Similarly, there was a significant decrease of 22.8% in the number of clients who reported past-12-month binge drinking from intake to follow-up (35.1% vs. 12.3%).[56]

FIGURE 2.43. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,152)



***p < .001.

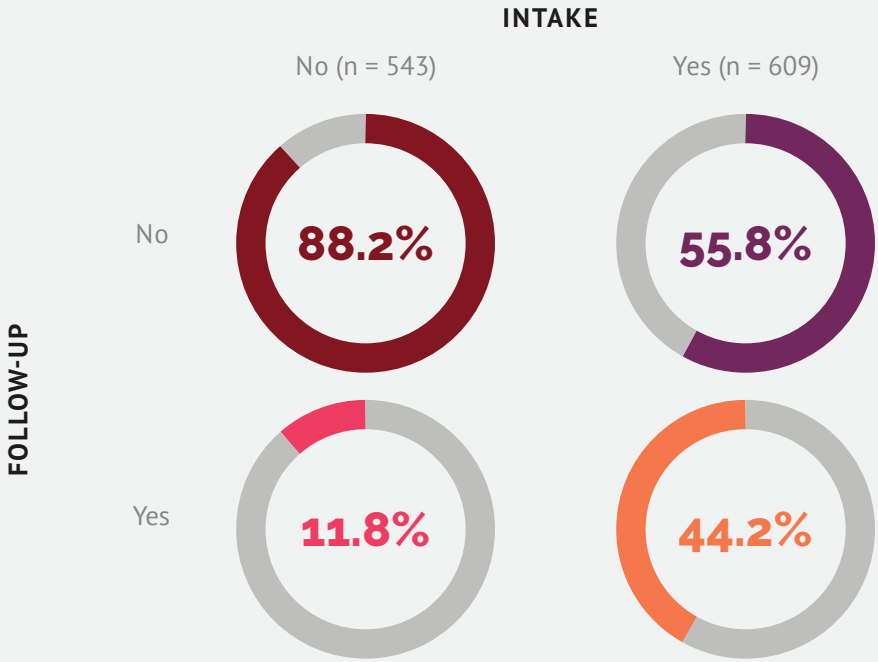
[56] There was missing data for the 12-month follow-up measures of alcohol use (n = 1), alcohol use to intoxication (n = 1), and binge drinking (n = 1).

Taking a Closer Look at Alcohol Use

A little over half of KTOS clients reported using alcohol in the 12 months before entering treatment (52.9%; n = 609). Of these clients who reported using alcohol in the past 12 months at intake, 55.8% did not use alcohol in the past 12 months at follow-up (see Figure 2.44). However, 44.2% 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 (88.2%) while 11.8% of clients reported using alcohol at follow-up after reporting no use at intake.

FIGURE 2.44. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP BASED ON ALCOHOL USE AT INTAKE



Gender Differences in Past-12-Month Alcohol Use

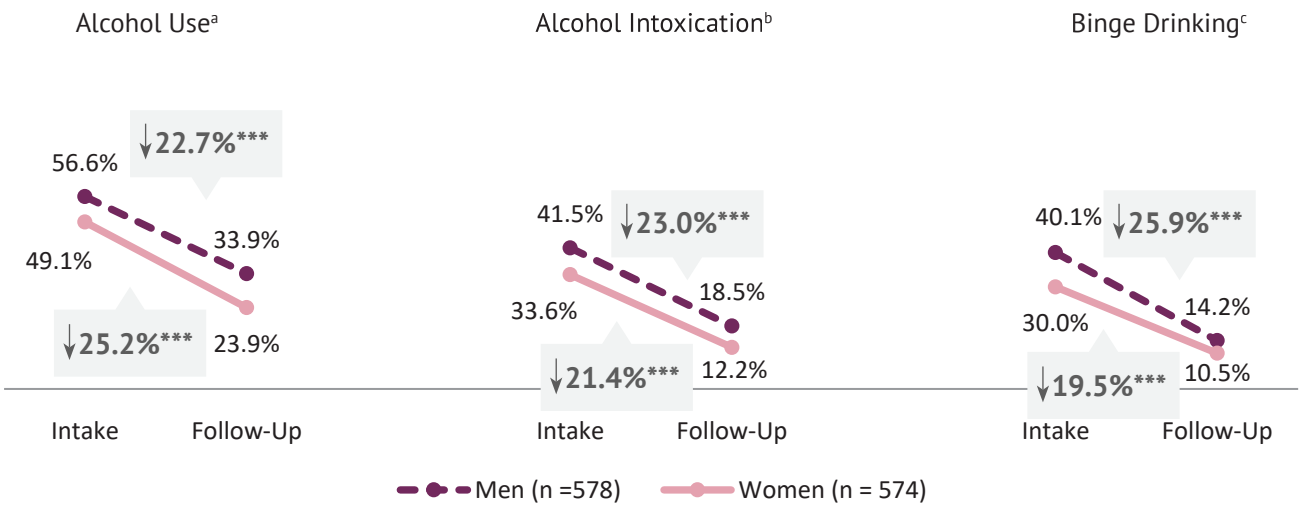
At intake, significantly more men (56.6%) reported alcohol use compared to women (49.1%; see Figure 2.45). The number of men and women reporting alcohol use decreased significantly from intake to follow-up, however, at follow-up, more men still reported using alcohol compared to women.

Similar patterns were found for alcohol use to intoxication in the 12 months before intake and follow-up and binge drinking in the 12 months before intake.

"I battled with drugs and alcohol on and off and went in thinking it wouldn't work for me. I thought the program was really good for me and I liked the curriculum."

KTOS FOLLOW-UP CLIENT

FIGURE 2.45. GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP[57]

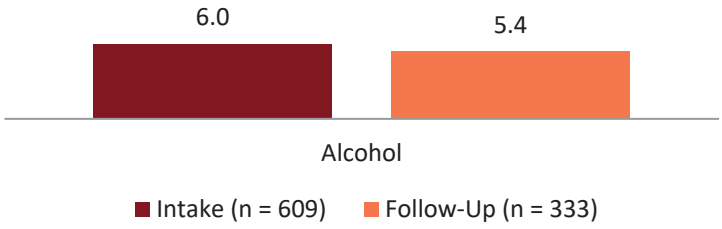


a—Significant difference by gender at intake ($p < .05$) and follow-up ($p < .001$).
b—Significant difference by gender at intake ($p < .01$) and follow-up ($p < .01$).
c – Significant difference by gender at intake ($p < .001$).
***$p < .001$.

Average Number of Months Used Alcohol

Figure 2.46 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 = 609), they reported using alcohol, on average, 6.0 months. Among clients who reported using alcohol in the 12 months before follow-up (n = 333), they reported using, on average, 5.4 months.

FIGURE 2.46. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE

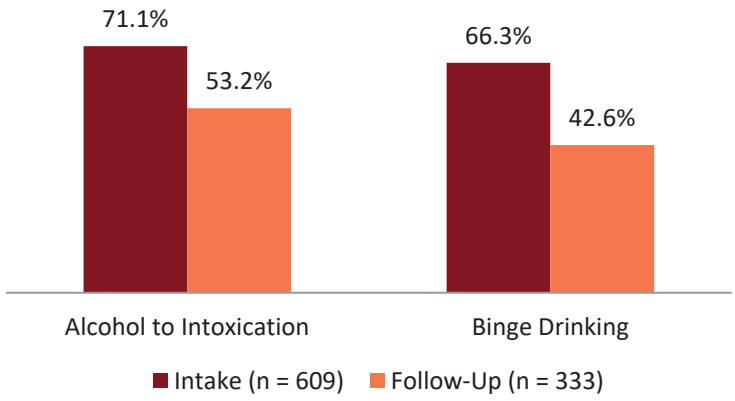


Past-12-month Alcohol Intoxication and Binge Drinking Among Those Who Used Alcohol at Each Point

Of the clients who used alcohol in the 12 months before entering treatment (n = 609), 71.1% used alcohol to intoxication in the 12 months before intake and 66.3% reported binge drinking (see Figure 2.47). Of the clients who used alcohol in the 12 months before follow-up (n = 333), 53.2% of clients reported alcohol use to intoxication and 42.6% reported binge drinking.

[57] There were missing values on the past-12-month alcohol use variables at follow-up: alcohol use (n = 1), alcohol use to intoxication (n = 1), and binge drinking (n = 1).

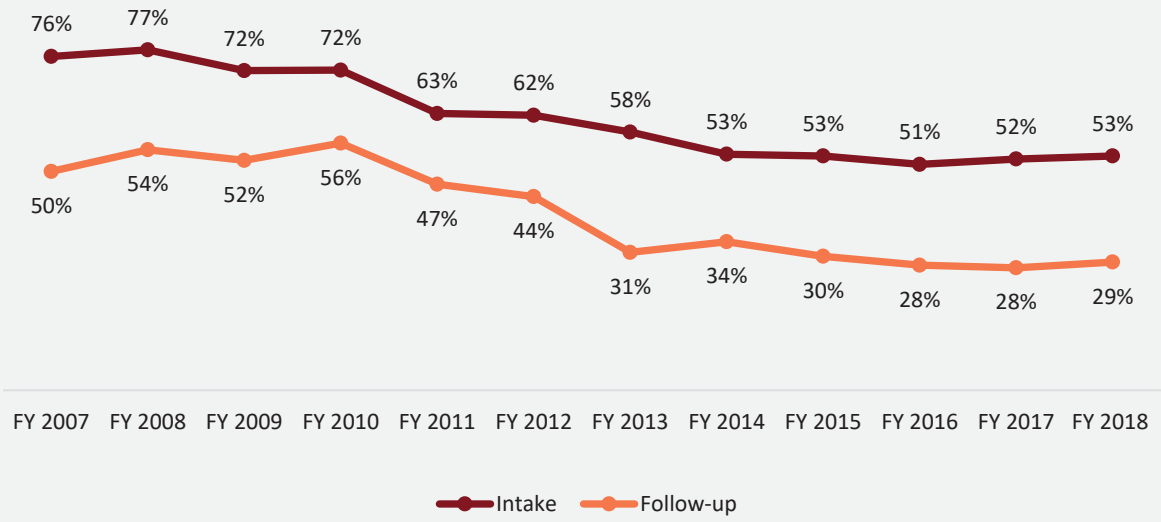
FIGURE 2.47. PAST-12-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Trends in Past-12-month Alcohol Use

The percent of KTOS clients reporting alcohol use in the 12 months before treatment has decreased over time. Overall, at follow-up, the percent of clients reporting alcohol use has also decreased over the years.

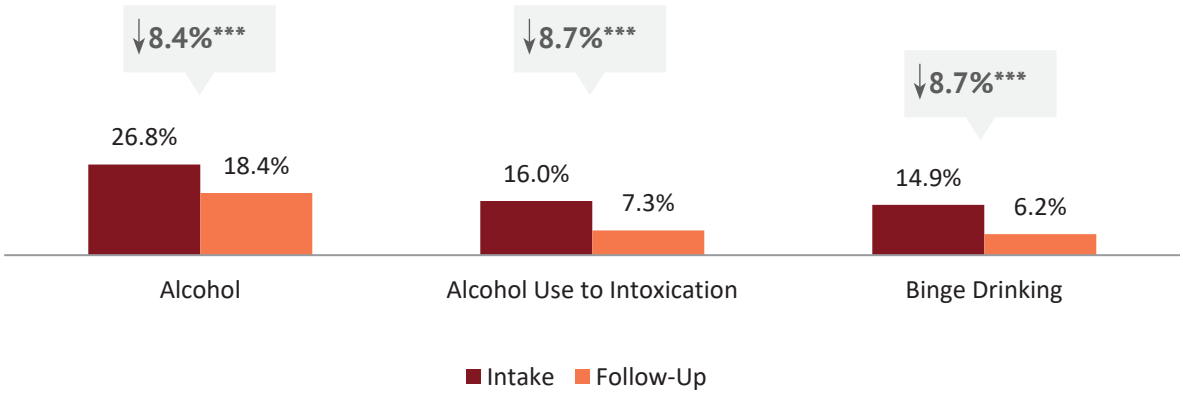
FIGURE 2.48. TRENDS IN ALCOHOL USE AT INTAKE AND FOLLOW-UP, FY 2007-2018



Past-30-Day Alcohol Use

There was an 8.4% decrease in the percent of clients who reported using alcohol in the past 30 days from intake (26.8%) to follow-up (18.4%; see Figure 2.49. The decrease in the number of clients who reported using alcohol to intoxication was 8.7% and 8.7% for those who reported binge drinking in the 30 days before entering treatment.

FIGURE 2.49. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,016)[58]



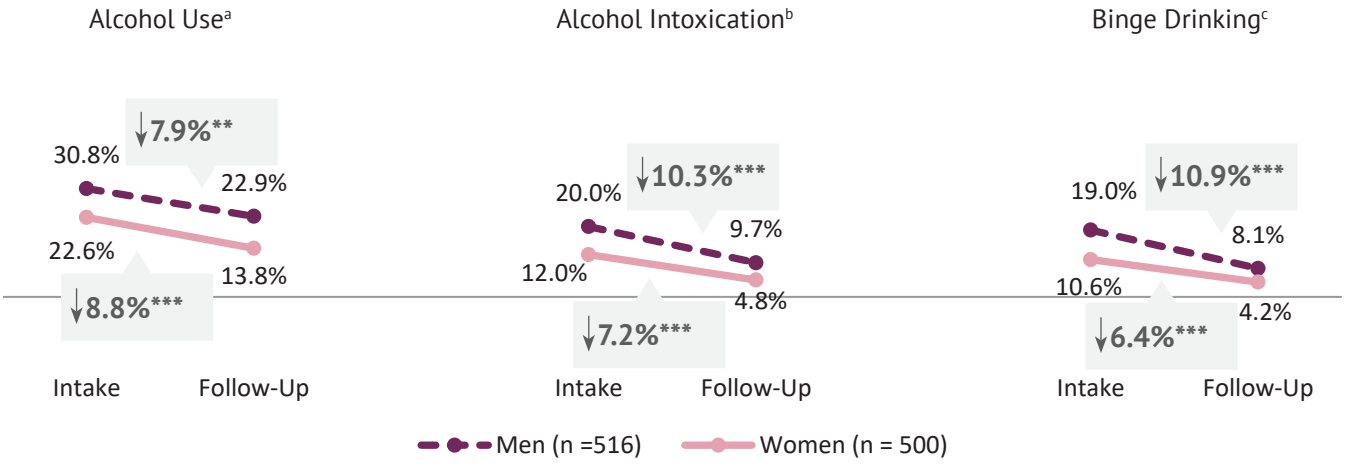
***p < .001.

Gender Differences in Past-30-Day Alcohol Use

Significantly more men than women reported using alcohol, alcohol to intoxication, and binge drinking in the 30 days before intake and follow-up (see Figure 2.50). The number of men and women who reported alcohol use, alcohol use to intoxication, and binge drinking decreased significantly from intake to follow-up.

Significantly more men than women reported alcohol use, alcohol to intoxication, and binge drinking in the 30 days before follow-up

FIGURE 2.50. GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP



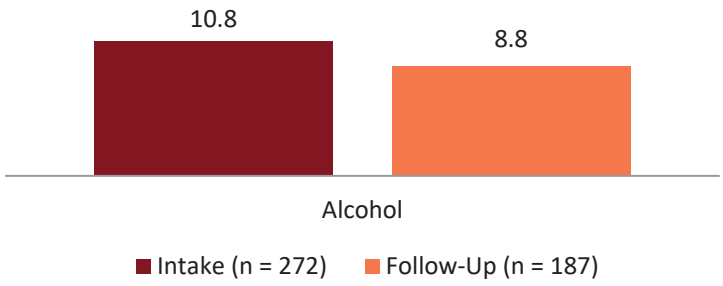
a—Significant difference by gender at intake (p < .01) and follow-up (p < .001).
b – Significant difference by gender at intake (p < .01) and follow-up (p < .01).
c – Significant difference by gender at intake (p < .001) and follow-up (p < .01).
**p < .01, ***p < .001.

[58] The following numbers of cases had missing data for the past-30-day measures at follow-up: alcohol (n = 1), alcohol to intoxication (n = 1), and binge drinking (n = 1).

Average Number of Days Used Alcohol

Figure 2.51 shows the average number of days alcohol users reported using alcohol in the 30 days before intake and follow-up. Among the clients who reported using alcohol in the 30 days before entering treatment (n = 272), they reported using alcohol, on average, 10.8 days. Among clients who reported using alcohol in the 30 days before follow-up (n = 187), they reported using, on average, 8.8 days.

FIGURE 2.51. AVERAGE NUMBER OF DAYS OF ALCOHOL USE

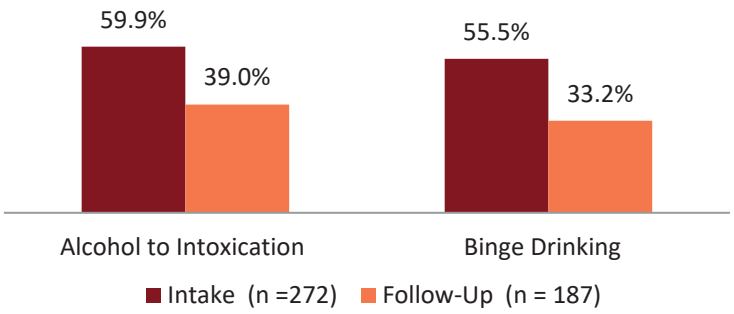


Past-30-day Alcohol Intoxication and Binge Drinking Among Those Who Used Alcohol

Of the 272 clients who used alcohol in the 30 days before intake, 59.9% used alcohol to intoxication and 55.5% binge drank in the 30 days before intake (see Figure 2.52).

Of the 187 clients who reported using alcohol in the 30 days before follow-up, 39.0% reported using alcohol to intoxication and 33.2% reported binge drinking in the 30 days before follow-up.

FIGURE 2.52. PAST-30-DAY ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT

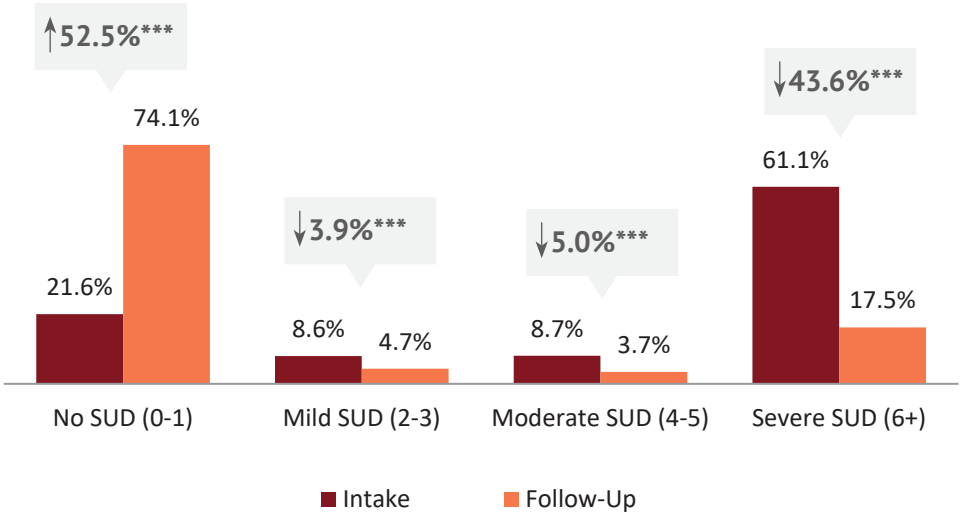


Self-reported Symptoms of Alcohol and Drug Use Severity

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 met any of the 11 symptoms included in the DSM-5 criteria for diagnosing substance use disorder (SUD) in the past 12 months.[59] The DSM-5 substance use disorder diagnosis has four levels of severity which were used to classify severity groups in this study: (1) no SUD (0 or 1 criterion met), (2) mild SUD (2 or 3 criteria met), (3) moderate SUD (4 or 5 criteria met), and (4) severe disorder (6 or more criteria met). Client self-reports of DSM-5 criteria suggest, but do not diagnose, a substance use disorder. At intake, the majority of clients met criteria for severe SUD, while at follow-up, the majority of clients met criteria for no SUD (see Figure 2.53).[60]

FIGURE 2.53. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 1,139)[a]



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

[59] 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.

[60] Fourteen individuals had missing data for DSM-5 criteria for substance use disorder at follow-up.

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 several 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 2.54 displays the change in average composite scores.[61,62] The average for the alcohol composite score decreased significantly from 0.28 at intake to 0.14 at follow-up. The average for the drug composite score decreased significantly from 0.18 at intake to 0.07 at follow-up.

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

[61] The following number of cases were not included in the analysis of change in alcohol composite score: 131 clients were in a controlled environment all 30 days before treatment; 19 additional individuals were in a controlled environment all 30 days before follow-up; an additional 665 clients reported abstaining from alcohol in the 30 days before intake and follow-up; and 4 individuals had missing data from items included in the calculation of the alcohol composite at follow-up.

[62] The following numbers were not included in the analysis of change in drug composite score: 131 clients were in a controlled environment all 30 days before treatment; 19 additional individuals were in a controlled environment all 30 days before follow-up; 435 clients reported abstaining from drugs in the 30 days before intake and follow-up, and 40 clients had missing data from items included in the calculation of the drug composite score at follow-up.

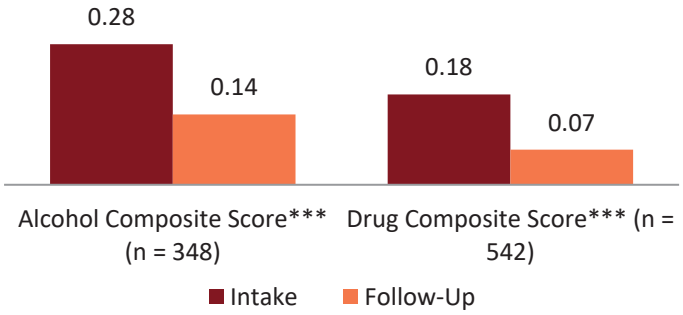
ASI Alcohol and Drug Composite Scores and Substance Use Disorder

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 about 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.

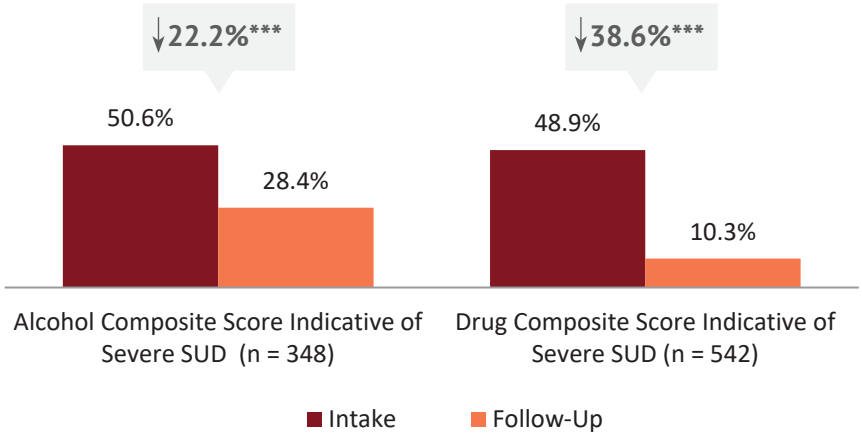
FIGURE 2.54. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



***p < .001.

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 2.55). Half of individuals (50.6%) 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 28.4%. Less 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 (48.9%). At follow-up, 1 in 10 had drug composite scores indicative of severe SUD (10.3%).

FIGURE 2.55. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP[63]

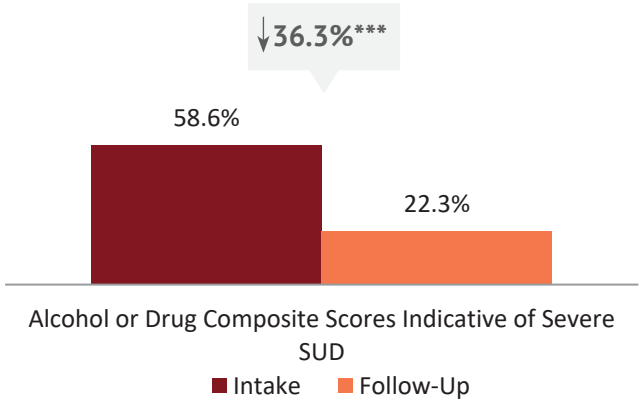


***p < .001.

Among the individuals who were not in a controlled environment all 30 days before entering treatment and who reported using alcohol and/or drugs at intake or follow-up, a majority of individuals had alcohol or drug composite scores that met the cutoff for severe SUD at intake (see Figure 2.56). The percent of clients who had composite scores that met the cutoff for severe SUD for either alcohol or drugs decreased by 36.3% at follow-up.

[63] Eighteen clients had missing data for the alcohol score variables at follow-up and 45 clients had missing data for the drug composite score variables at follow-up.

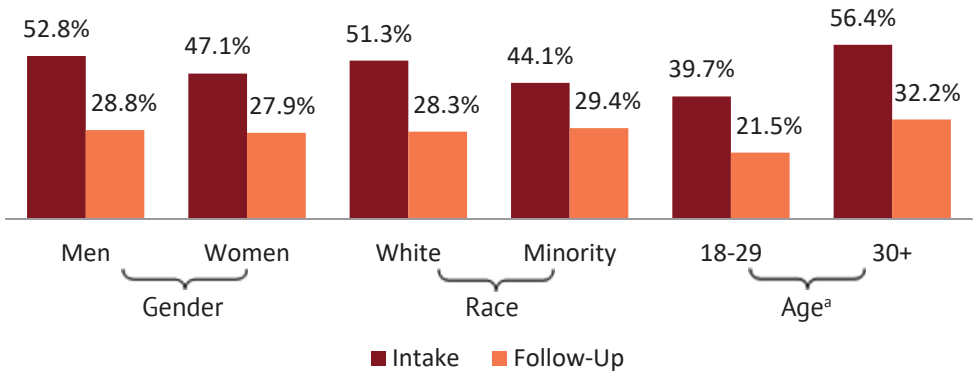
FIGURE 2.56. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR ALCOHOL OR DRUG SEVERE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 701)



***p < .001.

The data was 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 2.57). At intake and follow-up, significantly more clients who were 30 years of age and older compared to clients younger than 30 had an alcohol composite score indicative of severe SUD. There were no other statistically significant differences.

FIGURE 2.57. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 348)



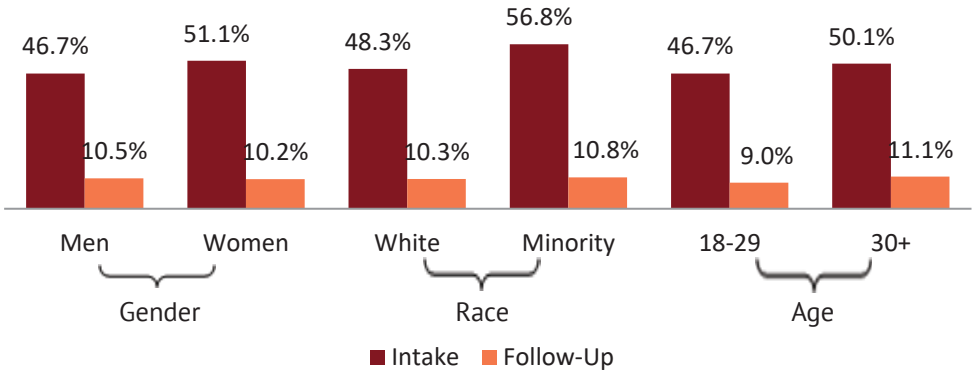
a – Significant difference by gender at intake (p < .01) and follow-up (p < .05).

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 2.58). There were no significant differences at intake or follow-up.

"It was really beneficial to me and helped me get through a lot of personal problems. The staff was nice and understood me."

KTOS FOLLOW-UP CLIENT

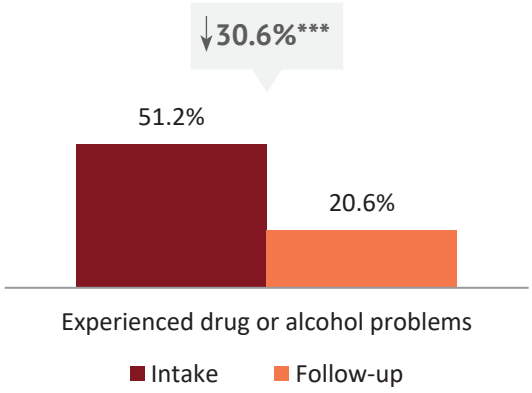
FIGURE 2.58. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 542)



Problems Experienced with Substance Use in the Past 30 Days

In the past 30 days at intake, 51.2% of clients reported they experienced problems with drugs or alcohol such as craving, withdrawal, wanting to quit but being unable, or worrying about relapse (see Figure 2.59). In the past 30 days at follow-up, 20.6% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 30.6%).

FIGURE 2.59. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,174)[64]



***p < .001.

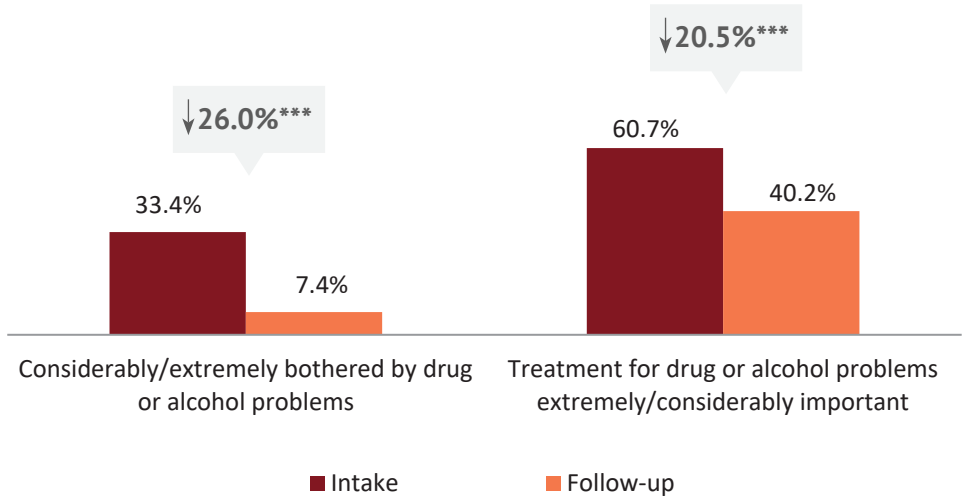
Readiness for Substance Abuse Treatment

Figure 2.60 shows that 33.4% of clients reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the past 30 days at intake. In the past 30 days at follow-up, 7.4% of clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems (a significant decrease of 26.0%).

The figure below also shows that 60.7% of clients in the past 30 days at intake and 40.2% of clients in the past 30 days at follow-up reported that treatment for drug or alcohol problems was considerably or extremely important – a significant decrease of 20.5%

[64] One individual had missing values on drug or alcohol problems at follow-up.

FIGURE 2.60. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP (n = 1,173)[65]

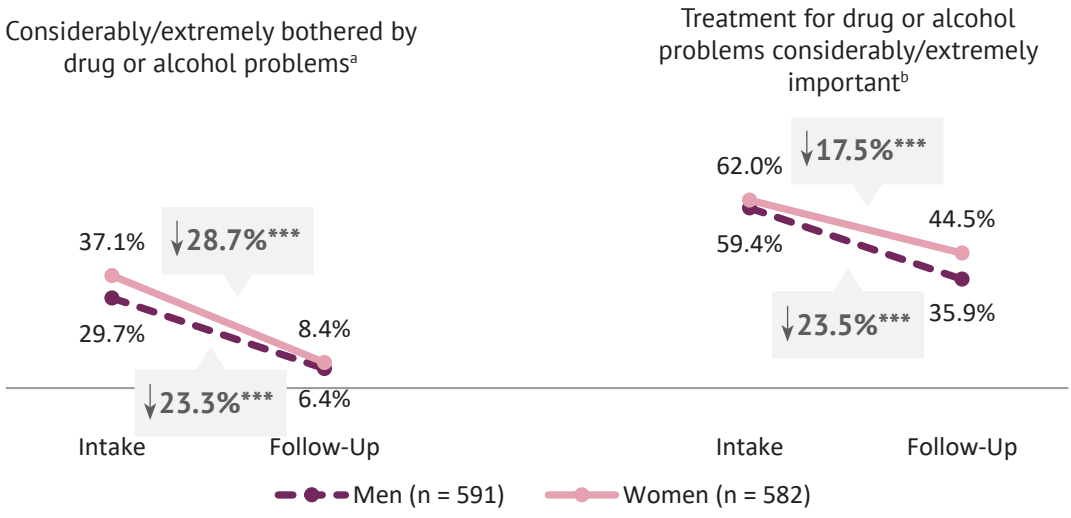


***p < .001.

Gender Differences in Readiness for Treatment in the Past 30 Days

At intake, significantly more women (37.1%) reported experiencing problems with substance use in the past 30 days at intake compared to men (29.7%; see Figure 2.61). There were significant decreases for both men and women in experiencing problems with substance use and reporting that treatment for drug or alcohol problems was considerably or extremely important. At follow up, there was no significant difference in the percent of men and women who reported experiencing problems related to drug or alcohol use. However, at follow-up, significantly more women reported that treatment was considerably or extremely important to them.

FIGURE 2.61. GENDER DIFFERENCES IN READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP



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

[65] Three individuals had missing data for bothered variable and 2 individuals had missing data for treatment variable at follow-up.

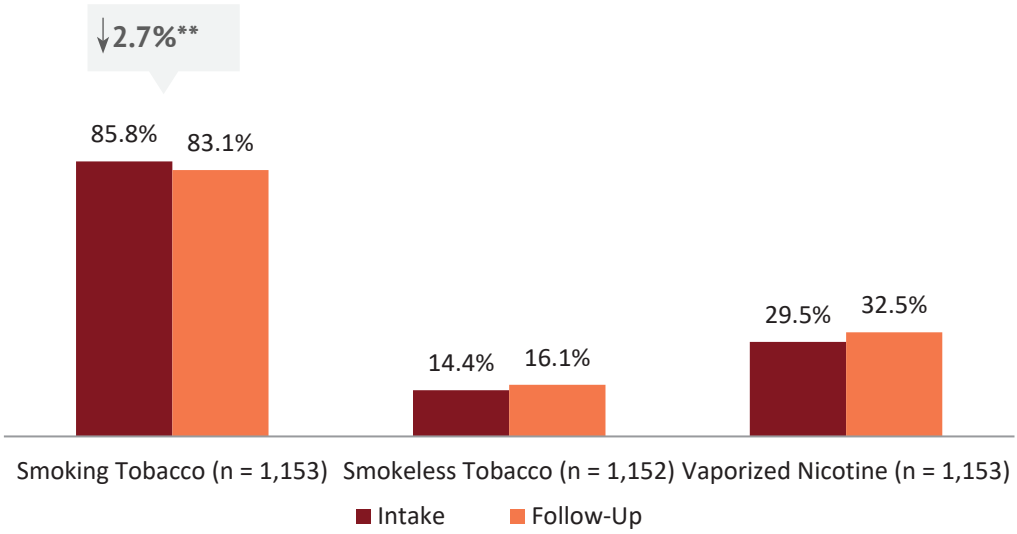
Tobacco Use

Past-12-Month Smoking, Smokeless Tobacco, and Vaporized Nicotine 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 16.0 years old when they started smoking tobacco regularly (not depicted in figure).[66]

Past-12-month smoking tobacco use significantly decreased from intake to follow-up while smokeless tobacco and vaporized nicotine use remained stable (see Figure 2.62). Most clients reported smoking tobacco in the 12 months before entering treatment (85.8%) and in the 12 months before follow-up (83.1%). A minority of clients (14.4%) reported using smokeless tobacco in the 12 months before entering treatment and 16.1% reported using smokeless tobacco in the 12 months before follow-up. Almost 30% of clients reported using e-cigarettes in the 12 months before entering treatment and 32.5% of clients reported using e-cigarettes in the 12 months before follow-up.

FIGURE 2.62. CHANGE IN PAST-12-MONTH TOBACCO AND VAPORIZED NICOTINE USE FROM INTAKE TO FOLLOW-UP



**p < .01.

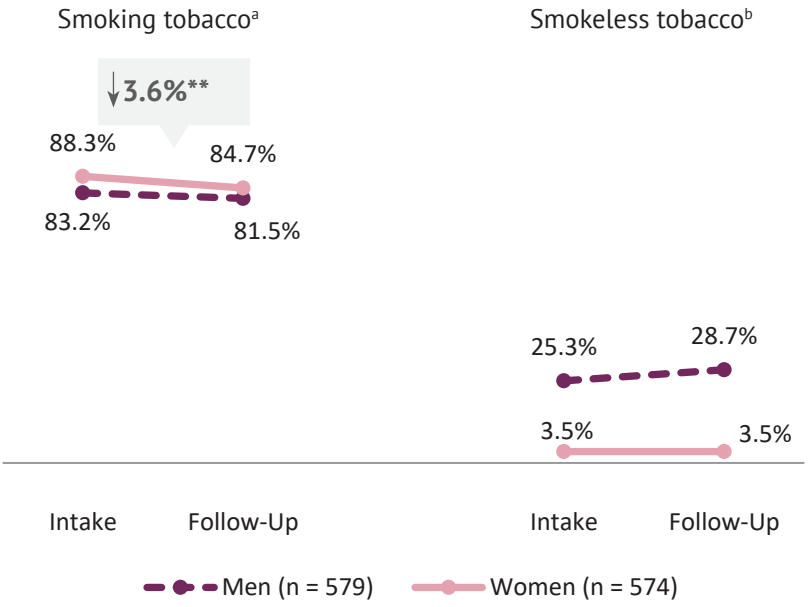
Gender Differences in Past-12-Month Smoking Tobacco, and Smokeless Tobacco

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 2.63).[67] The percent of women who reported smoking tobacco in the past 12 months significantly decreased from intake to follow-up.

[66] Of those individuals in the follow-up sample, 143 reported they had never smoked regularly, so they were not included in the analysis.

[67] One man had missing values for smokeless tobacco use in the 12 months before follow-up.

FIGURE 2.63. GENDER DIFFERENCES IN PAST-12-MONTH SMOKING TOBACCO AND SMOKELESS TOBACCO FROM INTAKE TO FOLLOW-UP



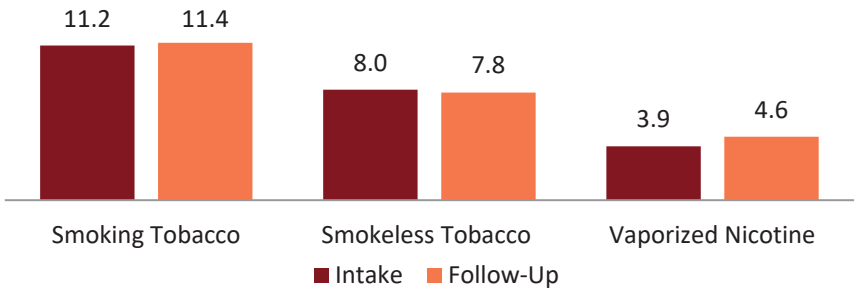
The number of clients reporting smoking tobacco significantly decreased from intake to follow-up while smokeless tobacco and vaporized nicotine use remained stable

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

Average Number of Months of Smoking, Smokeless Tobacco, and Vaporized Nicotine Use

Figure 2.64 shows the average number of months clients who smoked tobacco or used smokeless tobacco or vaporized nicotine products reported using tobacco at intake and follow-up. Among the clients who reported using smoking tobacco in the 12 months before entering treatment (n = 989), they reported using tobacco, on average, 11.2 months. Of the clients who reported using smoking tobacco in the 12 months before follow-up (n = 958), they reported using, on average, 11.4 months. Among the clients who reported using smokeless tobacco in the 12 months before entering treatment (n = 166), they reported using it, on average, 8.0 months. Of the clients who reported using smokeless tobacco in the 12 months before follow-up (n = 186), they reported using it, on average, 7.8 months. Among the clients who reported using vaporized nicotine in the 12 months before entering treatment (n = 340), they reported using it, on average, 3.9 months. Of the clients who reported using vaporized nicotine products in the 12 months before follow-up (n = 375), they reported using them, on average, 4.6 months.

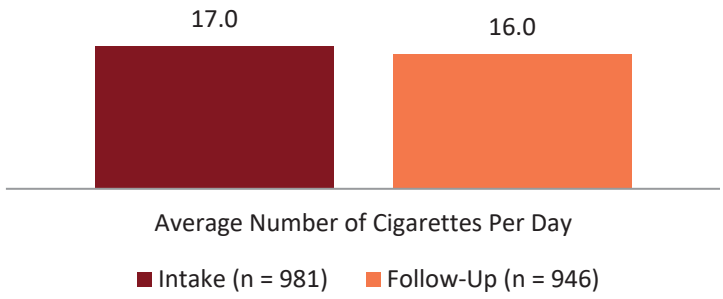
FIGURE 2.64. AVERAGE NUMBER OF MONTHS OF SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE



Average Number of Cigarettes Smoked

The average number of cigarettes clients reported smoking at intake and follow-up remained stable (see Figure 2.65). Of those who smoked tobacco in the 12 months before entering treatment, clients reported smoking an average of 17.0 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 16.0 cigarettes per day.

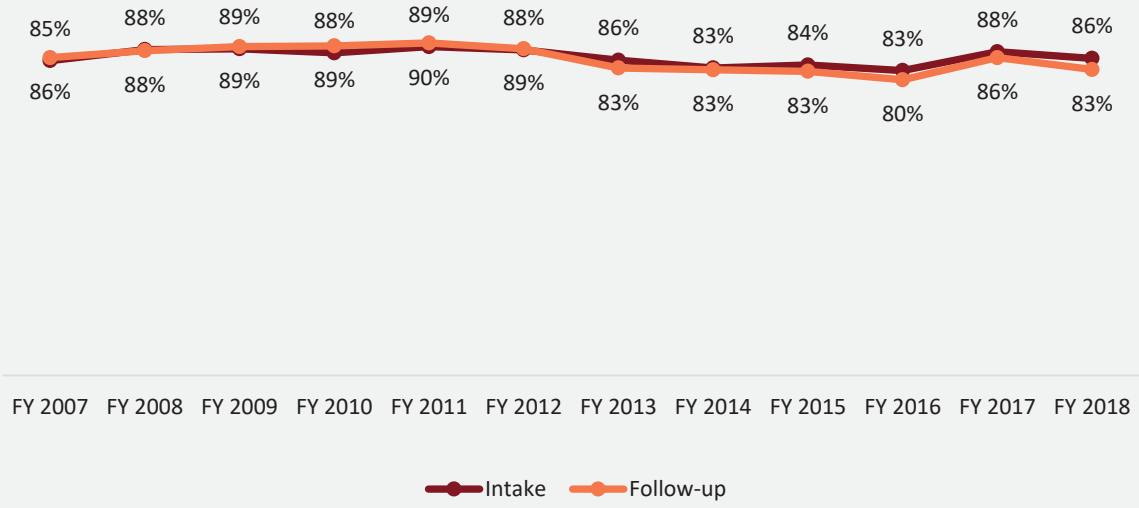
FIGURE 2.65. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO[68]



Trends in Past-12-month Smoking Tobacco Use

The majority of KTOS clients at intake and follow-up reported smoking tobacco. The percent of clients reporting smoking tobacco use at either intake or follow-up has decreased slightly over time; however, in FY 2017, the percent of clients reporting smoking tobacco increased from previous years. In FY 2018, there was a significant decrease from intake to follow-up in the percent of clients reporting smoking tobacco in the past 12 months.

FIGURE 2.66. TRENDS IN SMOKING TOBACCO USE AT INTAKE AND FOLLOW-UP, FY 2007-FY 2018

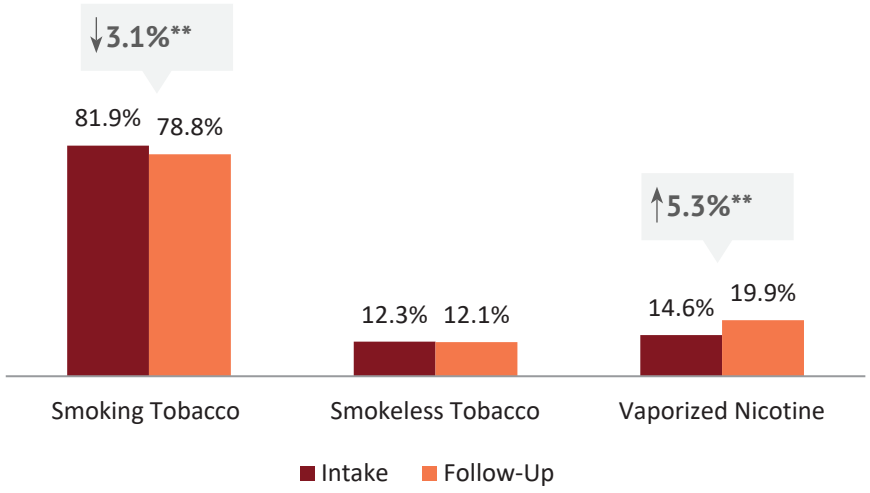


[68] Eight cases had missing data for number of cigarettes smoked at intake, and 12 cases had missing data for number of cigarettes smoked at follow-up.

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

The number of clients who reported any past-30-day smoking tobacco significantly decreased from intake (81.9%) to follow-up (78.8%; see Figure 2.67). Past-30-day smokeless tobacco use remained stable while the number of clients reporting vaporized nicotine use in the past 30 days increased significantly from intake to follow-up.

FIGURE 2.67. PAST-30-DAY SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE AT INTAKE AND FOLLOW-UP (n = 1,017)[69]



**p < .01.

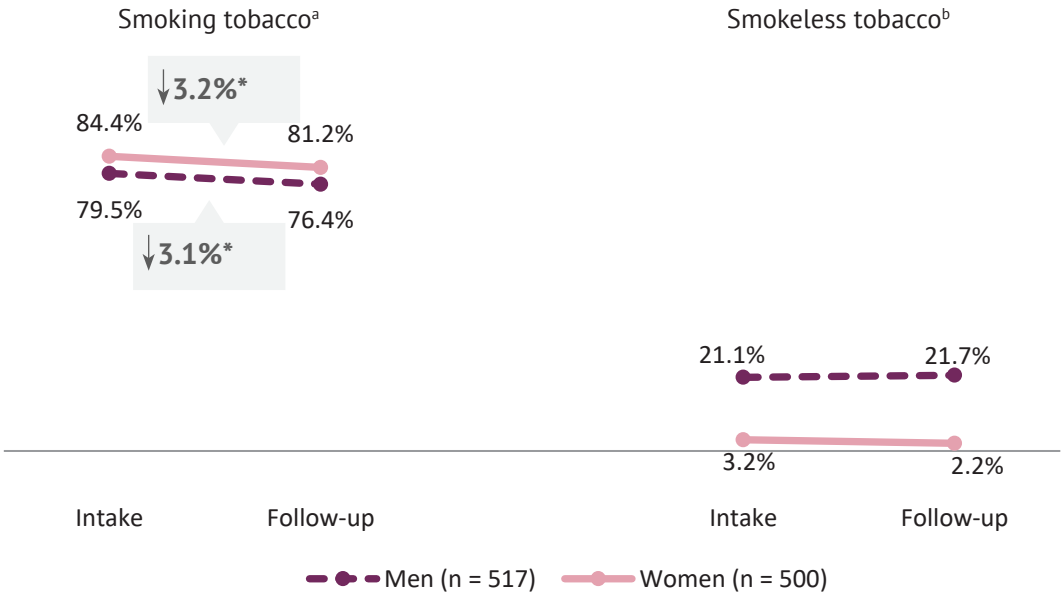
Gender Differences in Past-30-Day Smoking, Smokeless Tobacco, and Vaporized Nicotine Use

Like 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 2.68). However, the number of both men and women who reported smoking tobacco in the past 30 days decreased significantly from intake to follow-up. More men than women reported using smokeless tobacco in the 30 days before intake and follow-up.

> *"I've had the chance to work there now, and they have done many good things for me."*
>
> KTOS FOLLOW-UP CLIENT

[69] One case had missing data for past-30-day smokeless tobacco use and past-30-day vaporized nicotine use at follow-up.

FIGURE 2.68. GENDER DIFFERENCES IN PAST-30-DAY SMOKING AND SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP



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

Section 3. Bivariate and Multivariate Analysis of Factors Associated with Relapse

This section focuses on a multivariate analysis examining factors related to relapse in the 2020 KTOS follow-up sample.

KTOS clients who reported using any illegal drugs and/or alcohol in the 12 months before follow-up (n = 563, 47.9%) were compared to clients who did not report use of any drugs or alcohol in the 12 months before follow-up (n = 612, 52.1%) in bivariate statistical tests. Several factors measured at intake were significantly associated with relapse in the follow-up period (see Table 3.1): gender, number of nights incarcerated, average number of months employed, average number of depression and anxiety symptoms, average quality of life rating, and average number of adverse childhood experiences.

TABLE 3.1. BIVARIATE COMPARISON OF TARGETED FACTORS FOR RELAPSE AND NON-RELAPSE GROUPS

Intake Factors	Used illegal drugs or alcohol in the 12 months before follow-up (n = 563)	Did not use illegal drugs or alcohol in the 12 months before follow-up (n = 612)
Average age at intake	34.9	35.0
Male***	55.8%	45.4%
Met criteria for moderate or severe SUD per DSM-5	70.9%	67.2%
Number of nights incarcerated in the 12 months before intake**	31.3	43.9
Number of months employed in the 12 months before intake**	4.8	4.0
Average number of mental health symptoms (depression and anxiety) reported at intake**	8.1	6.9
Number of people client could count on for recovery support at intake	6.2	6.8
Average quality of life rating at intake***	6.0	6.6
Average number of adverse childhood experiences*	3.8	3.4

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

Factors that were significantly associated with drug and/or alcohol use at follow-up (i.e., relapse) were included in a logistic regression to examine which factors were still significantly associated with relapse, after controlling for other factors. Gender, number of nights incarcerated, number of months employed, number of depression and anxiety symptoms, quality of life, and number of adverse childhood experiences were entered as predictor variables. Any drug or alcohol use in the 12-month follow-up period was the dependent variable. Results of the logistic regression show that when controlling for other variables in the model, gender, number of nights incarcerated, number of months employed, number of depression and anxiety symptoms, quality of life rating, and number of adverse childhood experiences were significantly associated with alcohol and/or drug use in the follow-up period (see Table 3.2). Specifically, males had greater odds of using

alcohol and/or drugs at follow-up. Individuals who spent fewer nights incarcerated had greater odds of using alcohol and/or drugs at follow-up. Individuals who were employed more months, individuals with more depression and anxiety symptoms, and individuals who reported more adverse childhood experiences had greater odds of using alcohol and/or drugs at follow-up. Finally, individuals with lower quality of life ratings at intake had greater odds of reporting alcohol and/or drug use in the 12-month follow-up period.

TABLE 3.2. ASSOCIATION OF TARGETED FACTORS AND RELAPSE

Factors at intake	B	Wald	Odds ratio	95% CI	
				Lower	Upper
Gender	-.511	15.738	.600***	.466	.772
Number of nights incarcerated	-.002	8.323	.998**	.996	.999
Number of months employed	.035	6.748	1.036**	1.009	1.063
Number of depression and anxiety symptoms	.025	5.271	1.026*	1.004	1.048
Quality of life rating	-.076	6.922	.927**	.876	.981
Number of adverse childhood experiences	.055	5.871	1.056*	1.010	1.104

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

Section 4. Mental Health, Physical Health, Stress, and Interpersonal Victimization

This section examines changes in mental health symptoms, physical health, stress-related health consequences, and interpersonal victimization from intake to follow-up. Specifically, this subsection examines: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicide ideation and attempts, (5) perceptions of poor physical and mental health, (6) substance use to reduce or manage stress, (7) overall health status, (8) chronic medical problems, (9) chronic pain, (10) health insurance, and (11) interpersonal victimization experiences. Mental health and physical health questions in the KTOS intake and follow-up surveys were self-report measures.

Depression Symptoms

To assess depression, first participants were asked two screening questions:
"Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?" and "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).

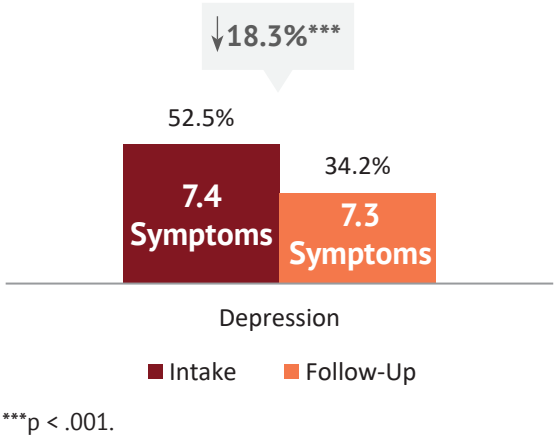
Study Criteria for Depression

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

More than half of clients (52.5%) met criteria for depression in the 12 months before they entered treatment (see Figure 4.1). At follow-up, 34.2% met criteria for depression—a significant decrease of 18.3%. Of those who met study criteria at intake (n = 614), they had an average of 7.4 symptoms out of 9. At follow-up, among those who met study criteria for depression (n = 399), clients reported an average of 7.3 symptoms out of 9.

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

FIGURE 4.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 1,169)[70]



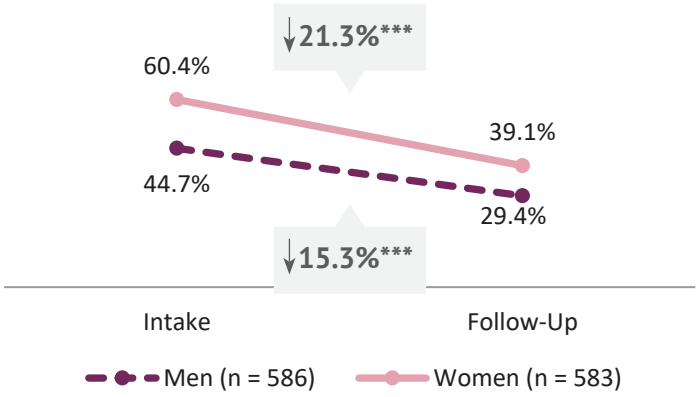
[70] Six individuals had missing data for depression criteria at follow-up.

Gender Differences in Depression

Significantly more women met study criteria for depression at intake and follow-up compared to men. At intake, 60.4% of women met study criteria compared to 44.7% of men. At follow-up, the percent of women who reported depression was 39.1% compared to 29.4% of men (see Figure 4.2). The number of women and men who met criteria for depression decreased significantly.

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

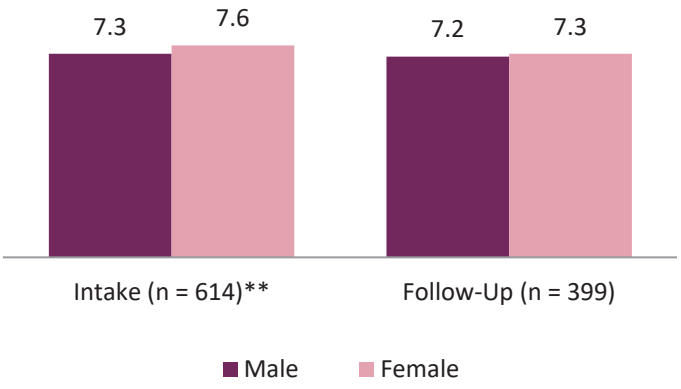
FIGURE 4.2. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION[a]



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

Of those who met study criteria for depression at intake, women reported significantly more depression symptoms than men (7.3 vs. 7.6; see Figure 4.3). Of those who met study criteria for depression at follow-up, there was no significant gender differences in depression symptoms reported (7.2 vs. 7.3).

FIGURE 4.3. GENDER DIFFERENCES IN NUMBER OF DEPRESSION SYMPTOMS REPORTED BY THOSE WHO MET STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP[a]

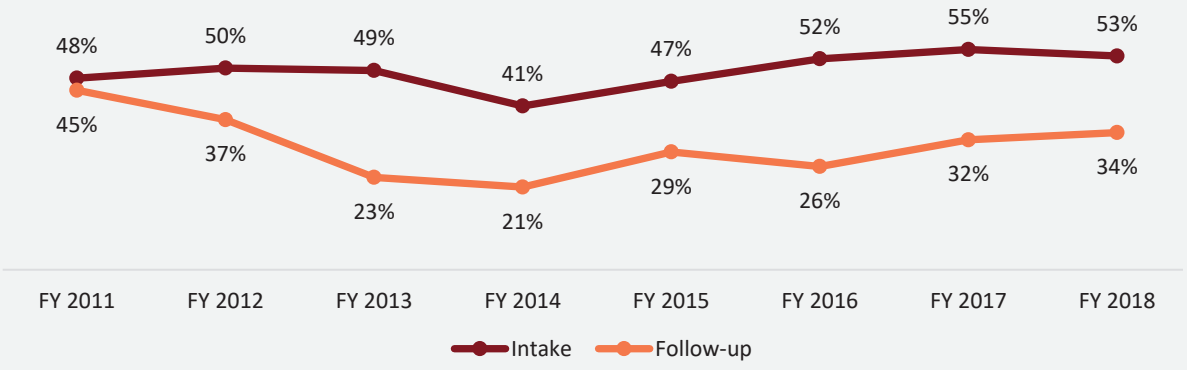


a – To meet study criteria, a client had to endorse at least 5 of 9 anxiety symptoms.
**$p < .01$.

Trends in Past-12-month Depression

The percent of clients who met criteria for depression at intake has been between a low of 41% in FY 2014 and a high of 55% in FY 2017 over the past 8 years. In 2018, the percent of individuals who met study criteria for depression at intake was 53%. The percent of clients who met criteria for depression at follow-up decreased from 45% in FY 2011 to 21% in FY 2014. In 2018, the percent of individuals who met criteria for depression at follow-up was 34%.

FIGURE 4.4. TRENDS IN THE NUMBER OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP, FY 2011-FY 2018



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).

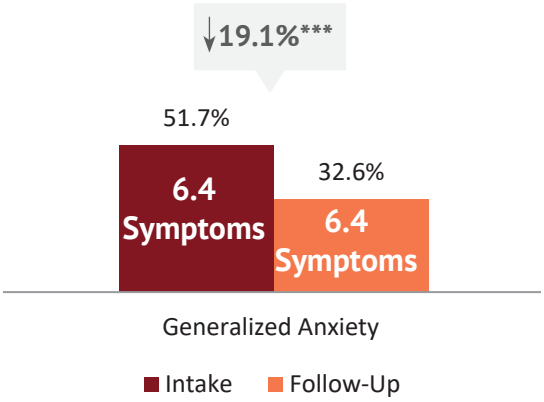
Study Criteria for Generalized Anxiety

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

In the 12 months before entering treatment, about half of clients reported symptoms that met study criteria for generalized anxiety (51.7%; see Figure 4.5). By follow-up, the percent of clients meeting study criteria for generalized anxiety had decreased by 19.1% to 32.6%. At intake, among those who met study criteria for generalized anxiety (n = 603), clients reported an average of 6.4 symptoms out of 7. Among those who met study criteria for generalized anxiety at follow-up (n = 381), clients reported an average of 6.4 symptoms out of 7.

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

FIGURE 4.5. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,167)[71]

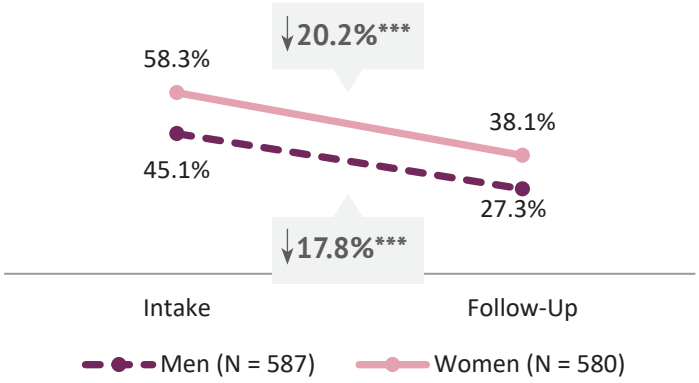


***p < .001.

Gender Differences in Generalized Anxiety Symptoms

Significantly more women met criteria for generalized anxiety at intake and follow-up compared to men (see Figure 4.6). The percent of women and men who met criteria for generalized anxiety decreased significantly from intake.

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



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

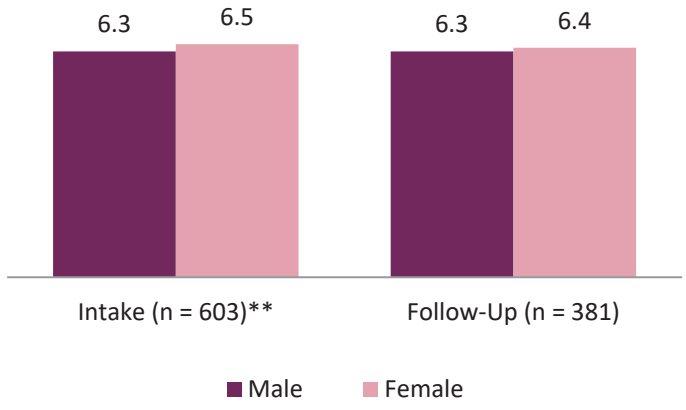
Of those who met study criteria for generalized anxiety at intake, women reported significantly more anxiety symptoms than men (6.5 vs. 6.3; see Figure 4.7). Of those who met study criteria for generalized anxiety at follow-up, there were no significant gender differences in anxiety symptoms reported (6.4 vs. 6.3).

"They were very thorough explaining everything, they listened. I had great support and encouragement."

KTOS FOLLOW-UP CLIENT

[71] Missing data on generalized anxiety at follow-up for 8 clients.

FIGURE 4.7. GENDER DIFFERENCES IN NUMBER OF GENERALIZED ANXIETY SYMPTOMS REPORTED BY THOSE WHO MET STUDY CRITERIA FOR GAD AT INTAKE AND FOLLOW-UP[a]

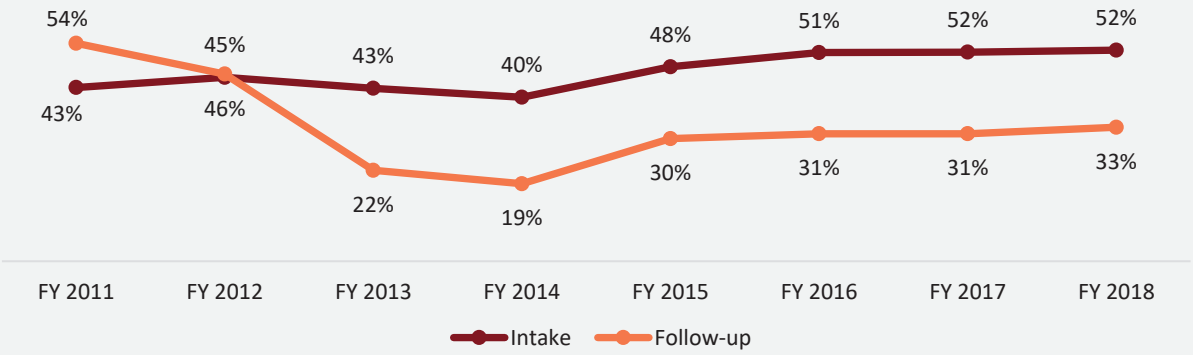


a – To meet study criteria, a client had to endorse at least 4 of 7 anxiety symptoms.
**p < .01.

Trends in Past-12-month Generalized Anxiety

The percent of clients who met criteria for generalized anxiety at intake has slightly increased over the past eight years. The percent of clients who met study criteria for generalized anxiety at follow-up decreased from FY 2011 through FY 2014, but has remained steady for the past four years.

FIGURE 4.8. TRENDS IN THE NUMBER OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP, FY 2011-FY 2018

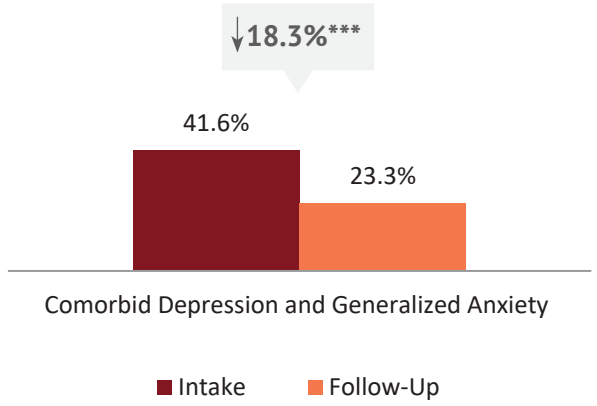


Comorbid Depression and Anxiety Symptoms

Figure 4.9 shows that at intake, 41.6% of clients met study criteria for both depression and generalized anxiety and there was a significant 18.3% decrease in the percent of individuals who met study criteria for depression and generalized anxiety at follow-up (23.3%).

The percent of clients meeting criteria for both depression and generalized anxiety decreased 18%

FIGURE 4.9. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,165)[72]



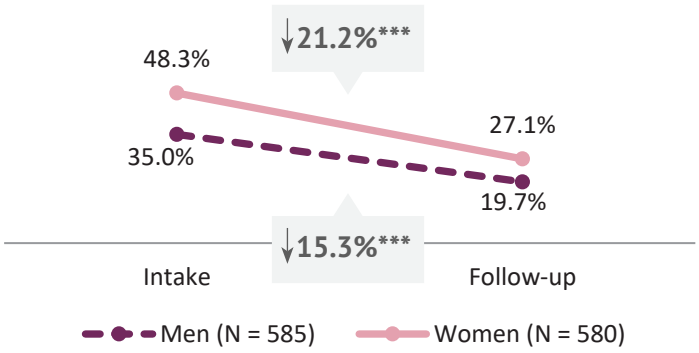
***p < .001.

Gender Differences in Comorbid Depression and Generalized Anxiety Symptoms

Significantly more women met criteria for comorbid depression and generalized anxiety at intake and follow-up compared to men (see Figure 4.10). The percent of women and men who met criteria for depression and generalized anxiety decreased significantly by 21.2% and 15.3% respectively.

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

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



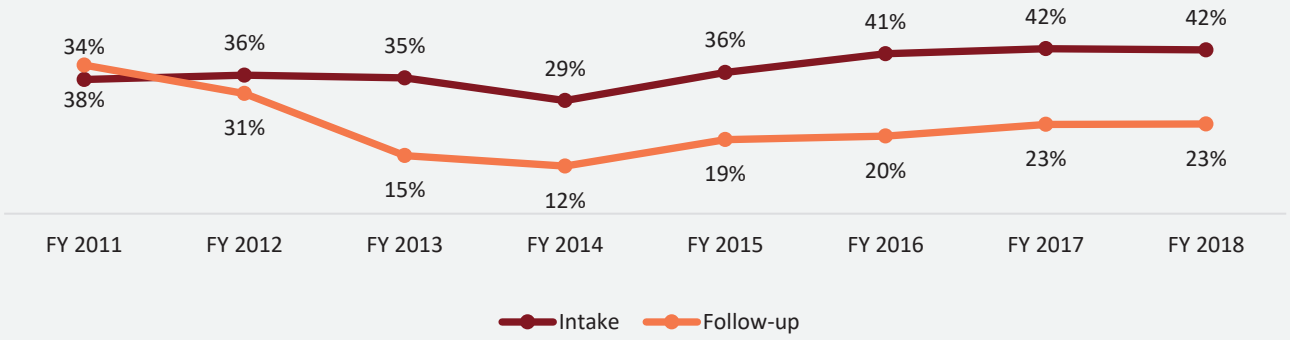
a—Statistical difference by gender at intake (p<.001) and follow-up (p < .01).
***p < .001.

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

Trends in Comorbid Depression and Anxiety

Past-8-year trends for comorbid depression and anxiety show that, in general, more clients met study criteria for comorbid depression and anxiety at intake in FY 2018 (42%) than in FY 2011. At follow-up, however, the percent of clients meeting criteria for comorbid depression and anxiety has remained fairly steady the past 4 years.

FIGURE 4.11. TRENDS IN THE PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY AT INTAKE AND FOLLOW-UP, FY 2011-FY 2018

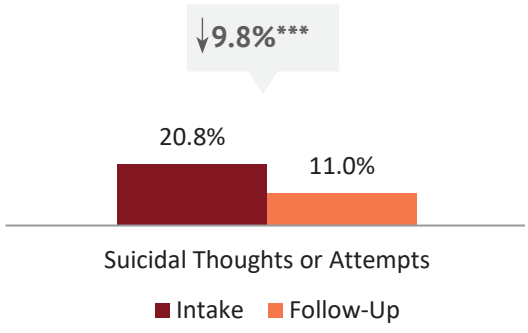


Suicidal Thoughts and/or Attempts

Suicide ideation and attempts were measured with self-reported questions about thoughts of suicide and actual attempts of suicide. In the 12 months before entering treatment, 20.8% of clients reported thoughts of suicide or attempted suicide and 11.0% of clients reported thoughts of suicide or attempted suicide in the 12 months before follow-up. There was an 9.8% decrease from intake to follow-up in the number of clients reporting suicidal thoughts and attempts (see Figure 4.12).

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

FIGURE 4.12. CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 1,175)

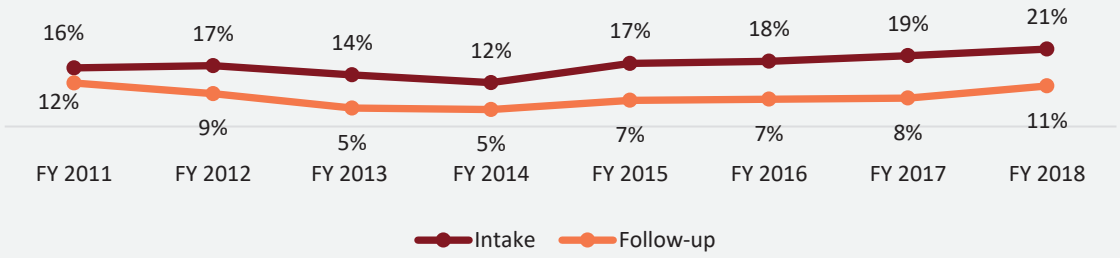


***p < .001.

Trends in Past-12-month Suicidal Thoughts and/or Attempts

The percent of clients who reported suicidal ideation and attempts at intake decreased slightly from 16% in FY 2011 to 12% in FY 2014 and then increased to 21% in FY 2018. The percent of clients reporting suicidal ideation and attempts at follow-up also decreased slightly from 12% in FY 2011 to 5% in FY 2014 and then increased to 11% in FY 2018.

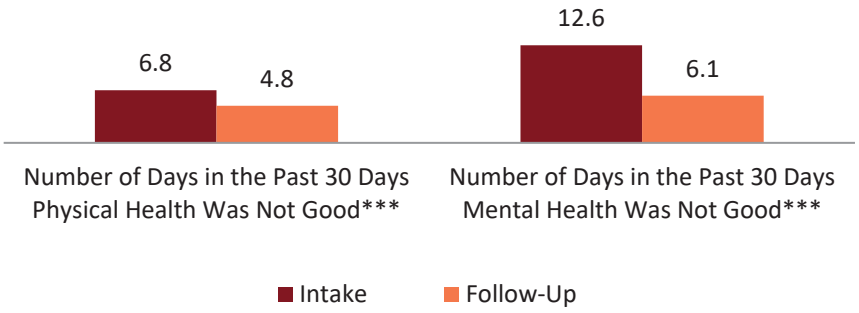
FIGURE 4.13. TRENDS IN THE NUMBER OF CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP, FY 2011-2018



Perceptions of Poor Physical and Mental Health

Clients were asked how many days in the past 30 days their physical health was not good and their mental health was not good at intake and follow-up (see Figure 4.14). There was a significant decrease from intake to follow-up in the number of days clients reported their physical health was not good (6.8 vs. 4.8). The number of days clients' mental health was not good also decreased significantly from 12.6 at intake to 6.1 at follow-up.

FIGURE 4.14. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,170)[73]



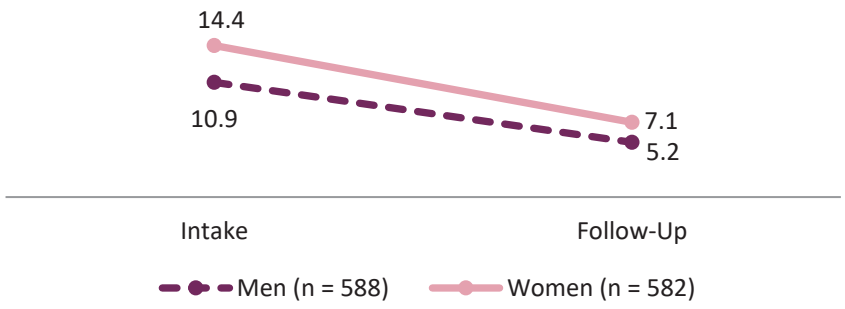
***p < .001.

[73] Three clients had missing data for the physical health question at intake and 3 clients had missing data for physical health at follow-up (n = 1,169). Five clients had missing data for the mental health question at follow-up (n = 1,170).

Gender Differences in Perceptions of Mental Health

Women's reported number of days their mental health was not good was significantly higher at intake and follow-up compared to men (see Figure 4.15). For both men and women, there was a significant decrease in the reported number of days mental health was not good from intake to follow-up.

FIGURE 4.15. GENDER DIFFERENCES IN NUMBER OF DAYS IN THE PAST 30 DAYS MENTAL HEALTH WAS NOT GOOD[a,b]

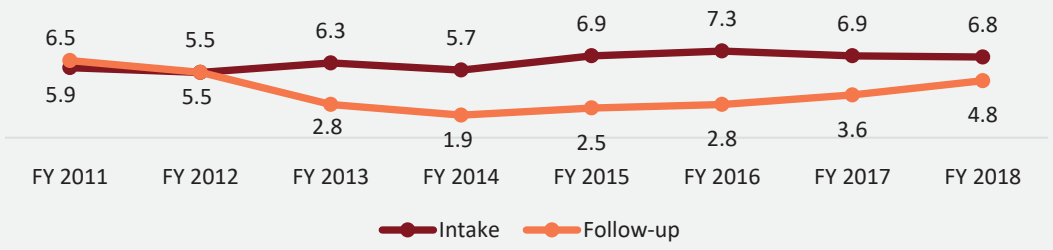


a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .001$).
b – Significant decrease for men and women from intake to follow-up ($p < .001$).

Trends in Self-reported Average Number of Days of Poor Physical Health

The average number of days clients reported their physical health was not good in the past 30 days at intake has increased from 5.9 days in FY 2011 to 7.3 days in FY 2016. This number is down slightly to 6.8 in FY 2018. The average number of days clients reported their physical health was not good in the past 30 days at follow-up has decreased from 6.5 days in FY 2011 to a low of 1.9 in FY 2014. In FY 2018, the average number of days physical health was not good in the 30 days before follow-up was highest since FY 2012.

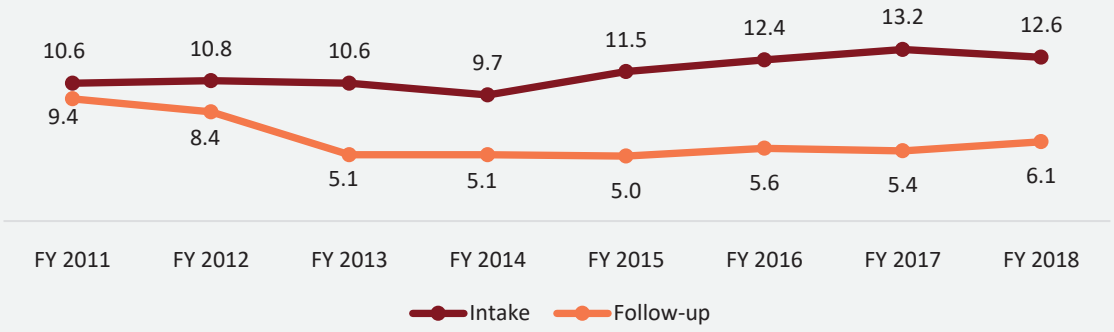
FIGURE 4.16. TRENDS IN SELF-REPORTED AVERAGE NUMBER OF DAYS OF POOR PHYSICAL HEALTH AT INTAKE AND FOLLOW-UP, REPORTS FY 2011-FY 2018



Trends in Self-reported Average Number of Days of Poor Mental Health

The average number of days clients reported their mental health was not good in the past 30 days has increased at intake in the past several years to a high of 13.2 in FY 2017. In FY 2018, the reported number of days mental health was not good was 12.6. The average number of days clients reported their mental health was not good in the past 30 days at follow-up has decreased from 9.4 days in FY 2011 to 6.1 days in FY 2018, which is a slight increase from the previous 5 years.

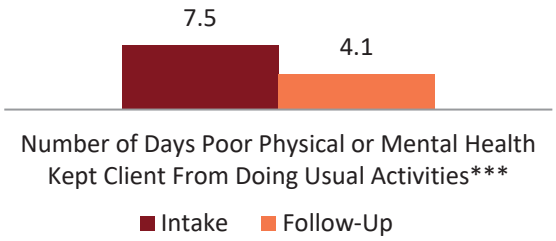
FIGURE 4.17. TRENDS IN SELF-REPORTED AVERAGE NUMBER OF DAYS OF POOR MENTAL HEALTH AT INTAKE AND FOLLOW-UP, FY 2011 – FY 2018



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 7.5 days at intake to 4.1 days at follow-up (see Figure 4.18).

FIGURE 4.18. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,167)[74]

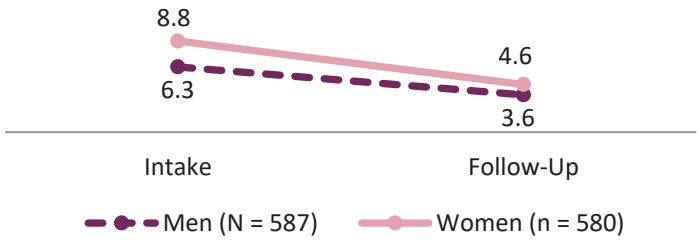


[74] Eight clients had missing data for the question about perceptions of their physical or mental health limiting their activities at follow-up.

Gender Differences in Perceptions of Physical or Mental Health Limiting Activities

The average number of days clients indicated their physical or mental health had kept them from doing their usual activities was higher for women than for men at intake and follow-up (see Figure 4.19).

FIGURE 4.19. GENDER DIFFERENCES IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEPT CLIENT FROM DOING USUAL ACTIVITIES[a,b]

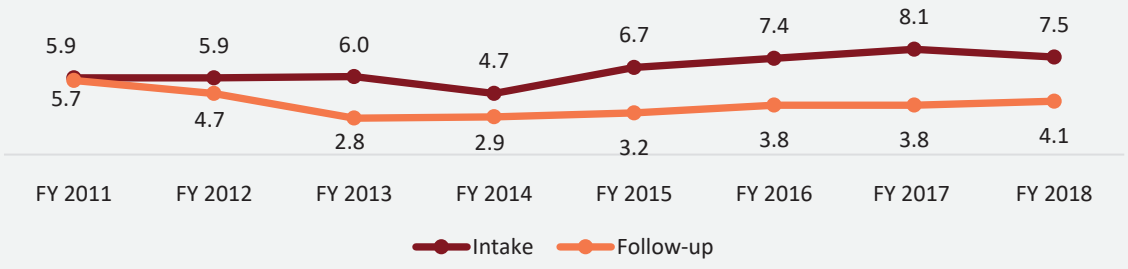


a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
b – Significant decrease from intake to follow-up for men and women ($p < .001$).

Trends in Number of Days Physical or Mental Health Kept Client from Doing Usual Activities

The average number of days in the past 30 days clients reported their physical or mental health kept them from doing their usual activities has gradually increased at intake. At intake in FY 2014, clients reported an average of 4.7 days that their physical or mental health kept them from doing their usual activities and in FY 2018 clients reported an average of 7.5 days. The average number of days clients reported their physical or mental health kept them from doing their usual activities in the past 30 days at follow-up decreased from FY 2011 (5.7) to FY 2013 (2.8) and increased from FY 2014 (2.9) to FY 2018 (4.1).

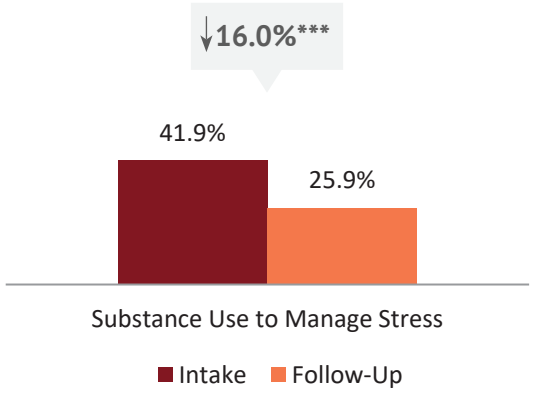
FIGURE 4.20. TRENDS IN THE NUMBER OF DAYS THEIR PHYSICAL OR MENTAL HEALTH KEEP CLIENT FROM DOING USUAL ACTIVITIES AT INTAKE AND FOLLOW-UP, REPORTS FY 2011-FY 2018



Using Substances to Reduce or Manage Stress

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.[75] Figure 4.21 shows that 41.9% 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 25.9%.

FIGURE 4.21. CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE STRESS AT INTAKE AND FOLLOW-UP (N = 1,168)



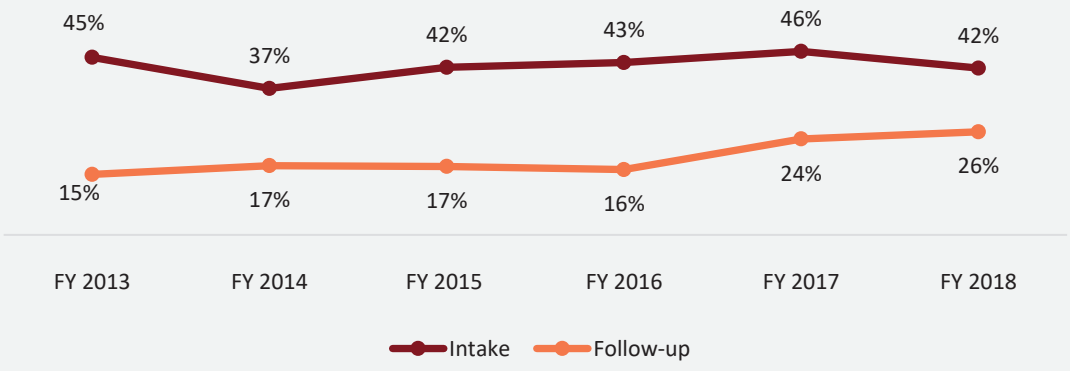
***p < .001.

Trends in Substance Use to Reduce or Manage Stress

Clients are asked at both intake and follow up if they have used alcohol, prescription drugs, or illegal drugs to reduce any stress, anxiety, worry, or fear in the past 7 days. The percent of clients at intake who reported using substances to manage stress has been in the low to mid-40 percent with the exception of FY 2014 (37%). The highest percentage was in FY 2017 (46%).

At follow-up, the percent of clients who reported using substances to reduce or manage stress also remained relatively steady until FY 2017, when it climbed to 24%, and was its highest in FY 2018 (26%).

FIGURE 4.22. TRENDS IN THE NUMBER OF CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE THEIR STRESS AT INTAKE AND FOLLOW-UP, FY 2013-FY 2018



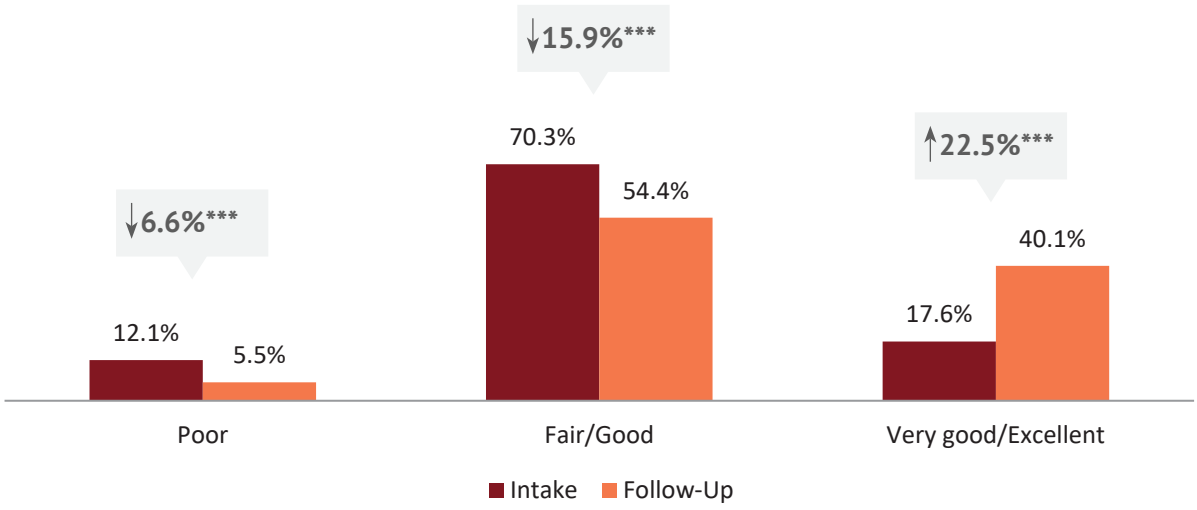
[75] Seven clients had missing data for this question at follow-up.

Physical 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 4.23 shows that significantly more clients rated their overall physical health as very good or excellent (40.1%) at follow-up when compared to intake (17.6%). Additionally, significantly fewer clients reported their health was poor, or fair/good at follow-up than at intake.[76]

FIGURE 4.23. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 1,173)[a]



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

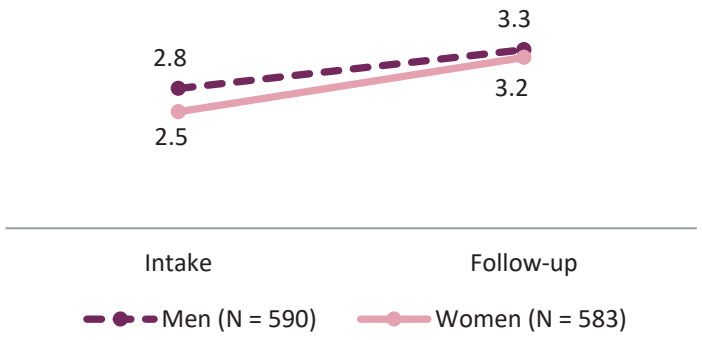
Gender Differences in Overall Health Status

At intake, women rated their overall health significantly lower than men rated their health (2.5 vs. 2.8; see Figure 4.24). For both men and women, there was a significant increase in overall health status rating and at follow-up, women (3.2) still rated their overall health significantly lower than men (3.3).

> *"They took opposite approach of what people usually do—they loved me back to life. I'm doing a lot better."*
>
> KTOS FOLLOW-UP CLIENT

[76] Two clients had missing data for overall health status at follow-up.

FIGURE 4.24. GENDER DIFFERENCES IN CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP[a,b]

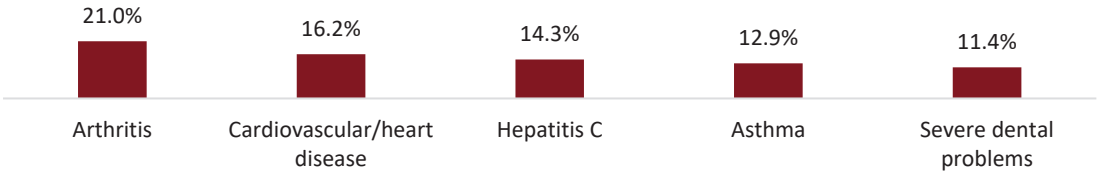


a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
b – Significant increase from intake to follow-up for men and women ($p < .001$).

Chronic Medical Problems

Over half of clients (58.7%) reported they had at least one chronic health problem at program entry. Overall, the most common medical problems clients reported were arthritis (21.0%), heart disease (16.2%), hepatitis C (14.3%), asthma (12.9%), and severe dental problems (11.4%).

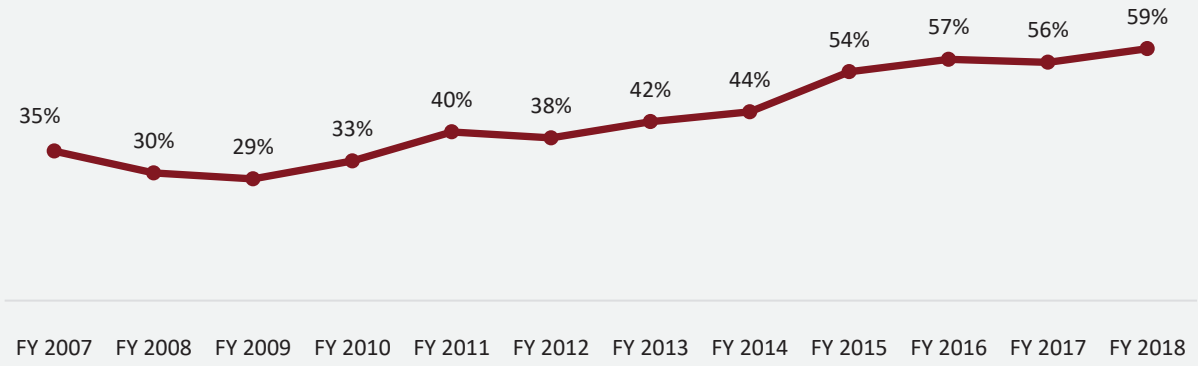
FIGURE 4.25. CHRONIC MEDICAL PROBLEMS REPORTED AT INTAKE (N = 1,175)



Trends in Chronic Medical Problems

Overall, the trend shows that the percent of clients reporting having at least one chronic medical problem at intake has increased over the past 12 years. In FY 2009, over one-quarter of clients (29%) reported having a chronic medical problem compared to 59% of clients in FY 2018.

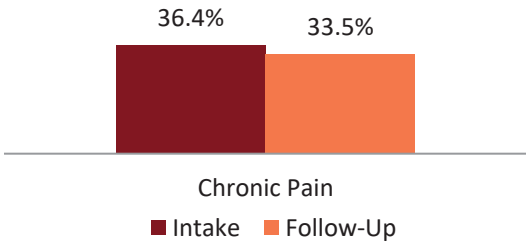
FIGURE 4.26. TRENDS IN THE CLIENTS REPORTING A CHRONIC MEDICAL PROBLEM AT INTAKE, FY 2007-2018



Chronic Pain

The percent of clients who reported chronic pain that was persistent and lasted at least 3 months was 36.4% at intake and 33.5% at follow-up (see Figure 4.27). There was no significant change.

FIGURE 4.27. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 1,170)[77]

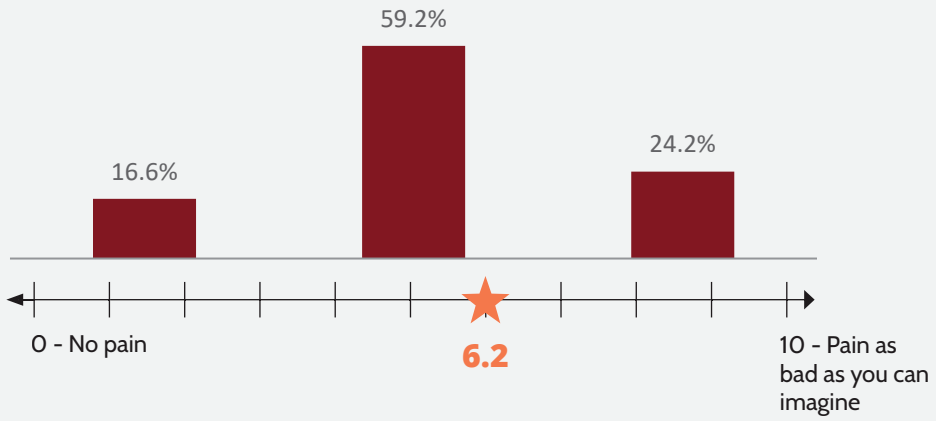


[77] Five individuals had missing data for chronic pain at follow-up.

Taking a Closer Look at Chronic Pain

At intake, 36.4% (n = 429) of KTOS clients reported experiencing chronic pain for at least 3 months before entering treatment. On average, clients reported their chronic pain began at age 26.1 (ranging from less than one year old to age 67). In the 30 days before entering treatment, clients experienced chronic pain, on average, 23.9 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). At intake, clients rated their pain as an average of 6.2 with 24.2% of clients giving their pain the highest ratings of 8, 9, and 10 (see Figure 4.28).

FIGURE 4.28. INTENSITY RATING OF CHRONIC PAIN AT INTAKE (n = 429)



Prescription Opioid Misuse and Chronic Pain

Of those who misused prescription opioids at intake (n = 471), 42.5% reported chronic pain in the 12 months before entering substance abuse treatment and 37.4% experienced chronic pain at follow-up,[78] which was a significant decrease of 5.1%.

Additionally, of those who reported misusing prescription opioids and experiencing chronic pain at intake (n = 201), 61.3% (n = 122) reported chronic pain in the past 12 months at follow-up[79] and 21.1% (n = 42) reported past-12-month misuse of prescription opioids.

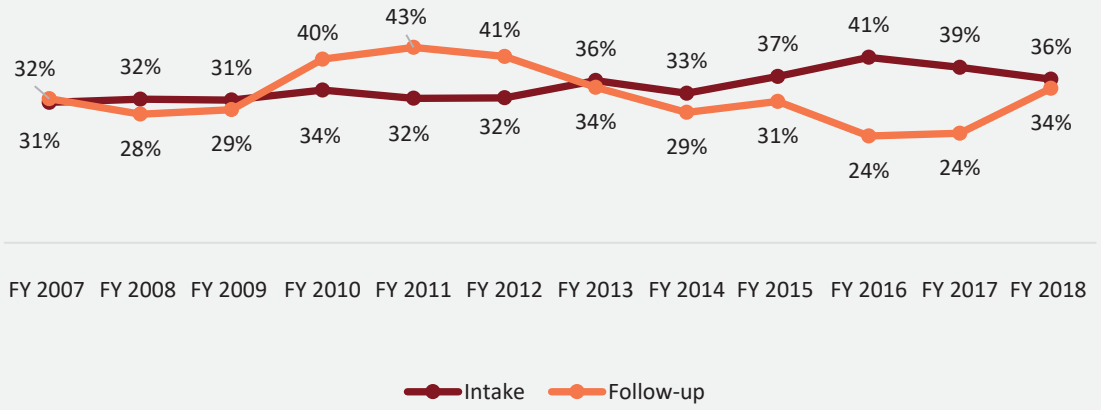
[78] Three clients who reported prescription opioid use at intake had missing data for chronic pain at follow-up; thus, the n = 468.

[79] Among the 201 individuals who reported misusing prescription opioids and experiencing chronic pain, two individuals had missing data about chronic pain at follow-up.

Trends in Chronic Pain

The percent of clients who reported chronic pain fluctuated over time at intake and follow-up. In FY 2008 and 2009, more clients reported chronic pain at intake than at follow-up. Between FY 2010 and FY 2012, however, more clients reported chronic pain at follow-up than at intake. From FY 2014 to FY 2017 the number of clients reporting chronic pain was higher at intake than at follow-up. In FY 2018, the number of clients reporting persistent chronic pain was similar at intake (36%) and follow-up (34%).

FIGURE 4.29. TRENDS IN THE NUMBER OF CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP, FY 2007-FY 2018



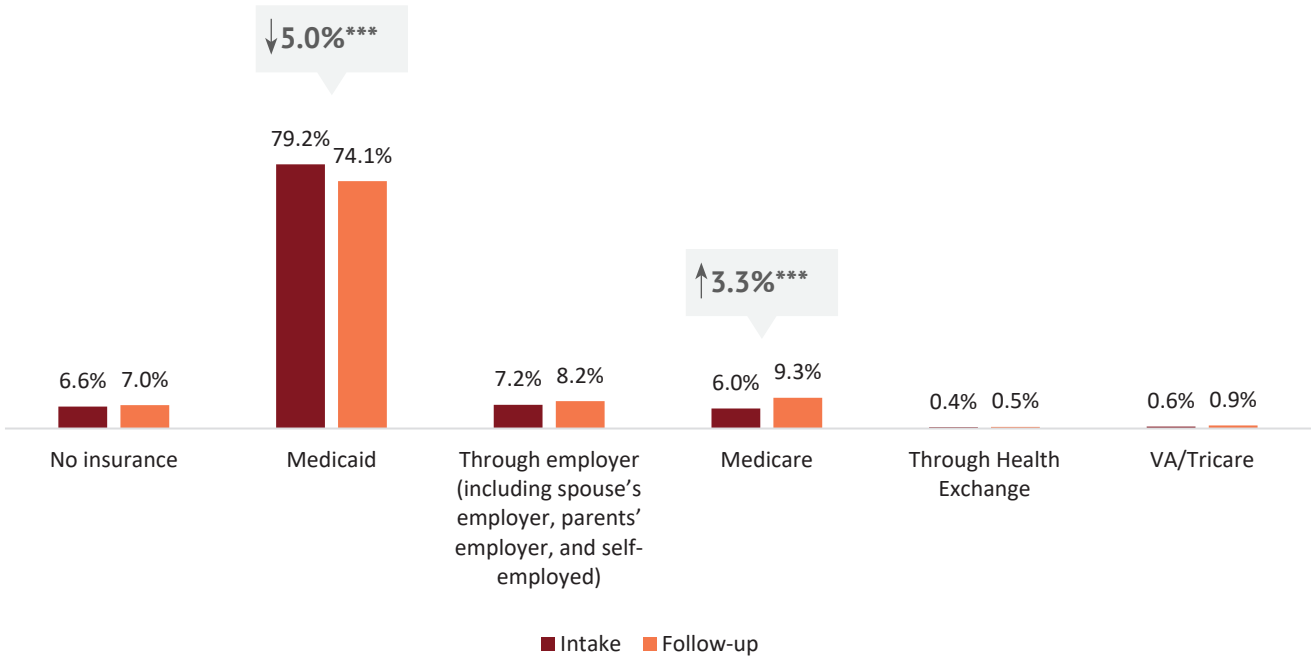
Health Insurance

At intake, the majority of KTOS clients reported they had health insurance through Medicaid (79.2%; see Figure 4.30). A small percentage did not have any insurance (6.6%). Small numbers of clients had insurance through an employer, including through a spouse, parent, or self-employment (7.1%), through Medicare (6.0%), and through Health Exchange (0.4%). At follow-up, the number of clients reporting they had Medicaid decreased significantly and the number reporting they had Medicare increased significantly.

"It was easy to understand what they were saying to me. They were there for me and I was able to open up. It was a great experience."

KTOS FOLLOW-UP CLIENT

FIGURE 4.30. HEALTH INSURANCE FOR KTOS CLIENTS AT INTAKE AND FOLLOW-UP (N = 1,165)[80]



a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .01$).
***$p < .001$.

A Closer Look at Insurance

Of those clients who were employed full-time at intake (n = 274), only 17.5% had insurance through an employer (including a spouse's, parent's employer and self-employed). At follow-up, of those clients employed full-time (n = 471)[81], only 16.6% had insurance through an employer.

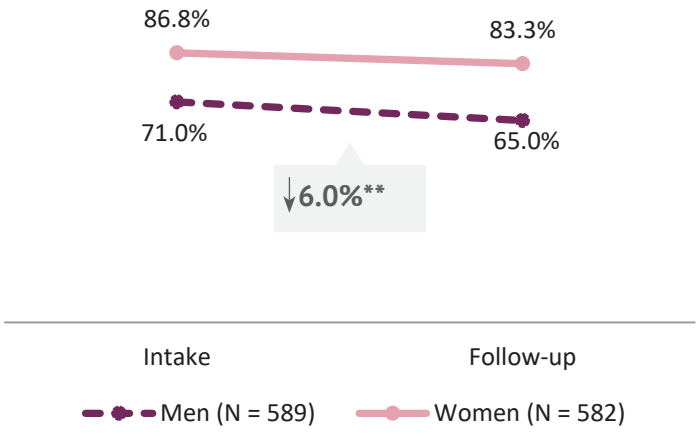
Gender Differences in Medical Insurance

Significantly more women reported being insured by Medicaid at both intake and follow-up compared to men (see Figure 4.31). There was no significant change in the percent of women who had Medicaid at follow-up compared to intake. Significantly fewer men had Medicaid at follow-up than at intake.

[80] Four clients at follow-up had missing data for insurance at follow-up, and 6 individuals had responses that fit under "other" or could not be classified. The missing responses are not included in this analysis.

[81] Of the 442 clients employed full-time at follow-up, two had missing information for insurance at follow-up.

FIGURE 4.31. GENDER DIFFERENCES IN CLIENTS REPORTING HAVING MEDICAID INSURANCE AT INTAKE AND FOLLOW-UP[a]



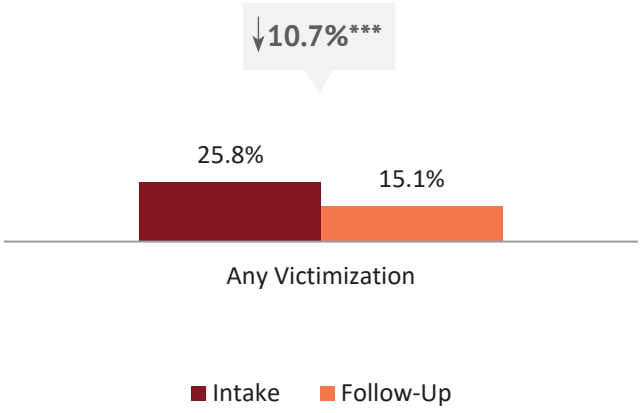
a—Statistical difference by gender at intake and follow-up ($p < .001$).

Interpersonal Victimization

In addition to items about adverse childhood experiences, clients were asked about several types of interpersonal victimization they may have experienced in two periods: (1) lifetime, and (2) past 12 months. These items were included in the intake and follow-up surveys. Because relatively small percentages of clients reported each type of victimization experience in the 12-month periods, several related items were collapsed into one category: (1) any victimization (e.g., robbed or mugged by force, assaulted with or without a weapon, threatened with a gun, intimate partner violence, stalking).

The percent of clients who reported experiencing any victimization in the past 12 months decreased significantly from intake to follow-up (see Figure 4.32).

FIGURE 4.32. INTERPERSONAL VICTIMIZATION IN THE PAST 12 MONTHS AT INTAKE AND FOLLOW-UP (N = 1,165)

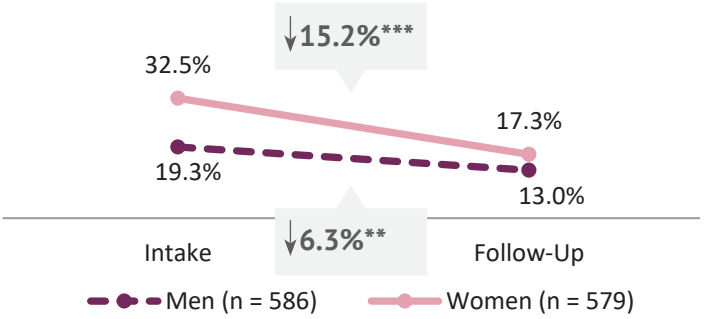


***$p < .001$.

Gender Differences in Interpersonal Victimization

Significantly more women reported experiencing any victimization in the past year at intake and follow-up when compared to men (see Figure 4.33). The percent of men and women who reported experiencing any victimization decreased significantly from intake to follow-up: 19.3% vs. 13.0% for men and 32.5% vs. 17.3% for women.

FIGURE 4.33. GENDER DIFFERENCES IN INTERPERSONAL VICTIMIZATION IN THE PAST 12 MONTHS



a—Statistical difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
b – Significant decrease from intake to follow-up for men ($p < .01$) and women ($p < .001$).

Section 5. Economic and Living Circumstances

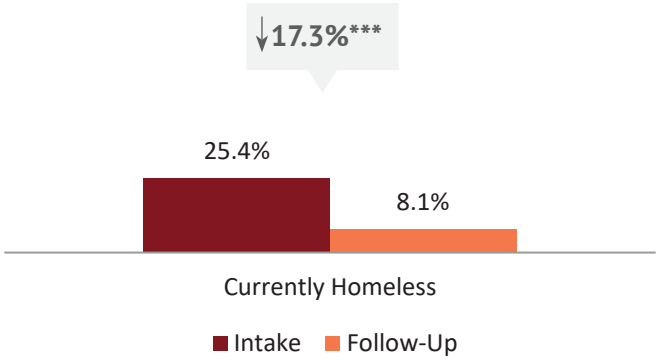
This section examines changes from intake to follow-up on: (1) living situation, (2) employment, and (3) economic hardship. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Living Situation

Homelessness

About 1 in 4 clients (25.4%) reported at treatment intake they were currently homeless and at follow-up 8.1% of clients reported they were currently homeless – a significant decrease of 17.3% (see Figure 5.1).

FIGURE 5.1. CURRENT HOMELESSNESS AT INTAKE AND FOLLOW-UP (N=1,170)[82]

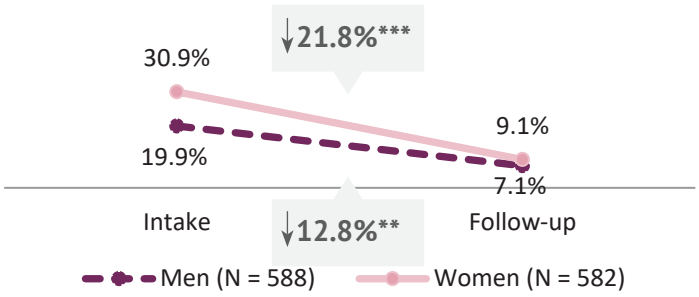


***p < .001.

Gender Differences in Homelessness

Significantly more women reported being homeless at the time of intake when compared to men (see Figure 5.2). The percent of women and men reporting homelessness at follow-up significantly decreased (21.8% and 12.8%, respectively).

FIGURE 5.2. GENDER DIFFERENCES IN CLIENTS REPORTING HOMELESSNESS AT INTAKE AND FOLLOW-UP[a]



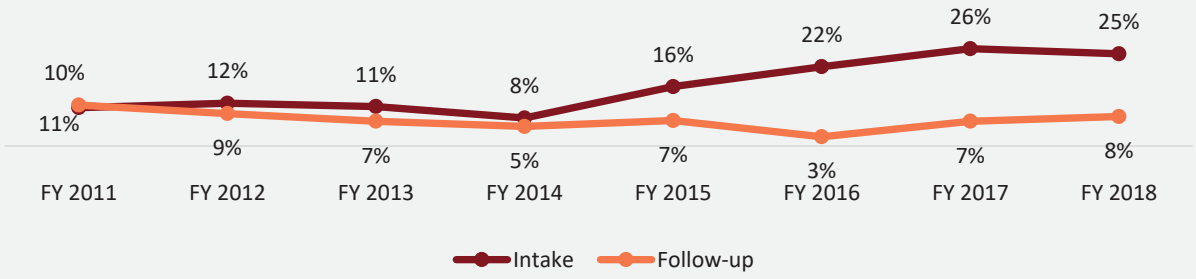
a—Statistical difference by gender at intake (p < .001).
***p < .001.

[82] Five cases had missing data for homelessness at follow-up.

Trends in Homelessness

From FY 2011 to FY 2014, the percent of clients reporting being currently homeless was consistent at both intake and follow-up. At intake in FY 2015, however, the percent of clients reporting homelessness increased to 16%, increased again to 22% in FY 2016, and was its highest in FY 2017 (26%). In FY 2018, one-quarter of clients reported homelessness at intake.

FIGURE 5.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING HOMELESSNESS AT INTAKE AND FOLLOW-UP, FY 2011-FY 2018



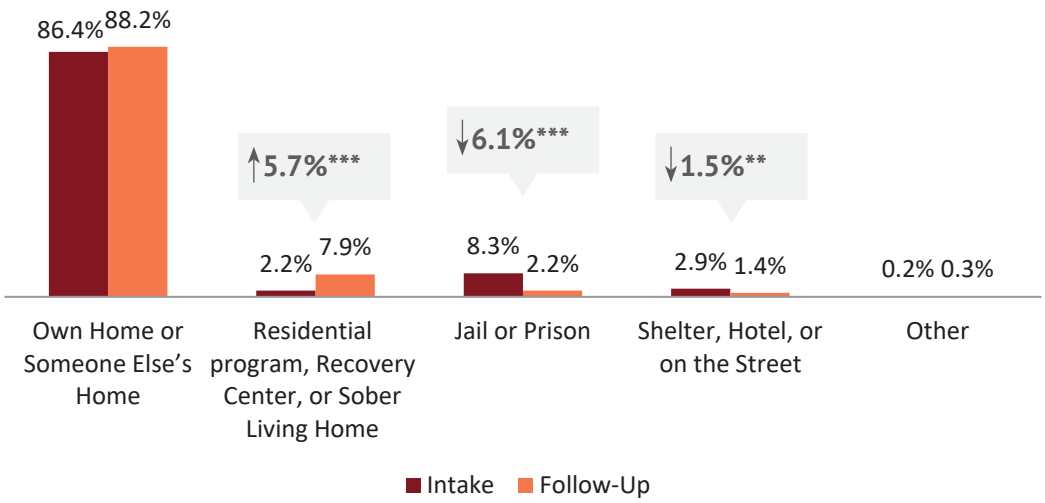
Usual Living Situation

Change in usual living situation from intake to follow-up was examined for the KTOS follow-up sample (see Figure 5.4). 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 (86.4%) and follow-up (88.2%). A small percentage of clients reported their usual living situation was in a residential program, Recovery Center, or Sober Living Home at intake and that number increased significantly to 7.9% at 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: 8.3% vs. 2.2%. A very small percentage of clients reported living in a shelter or on the street at intake, with this percent decreasing significantly at follow-up.

> *"It just felt like a family that understood me."*
>
> KTOS FOLLOW-UP CLIENT

FIGURE 5.4. USUAL LIVING SITUATION AT INTAKE AND FOLLOW-UP (N=1,169)[83]



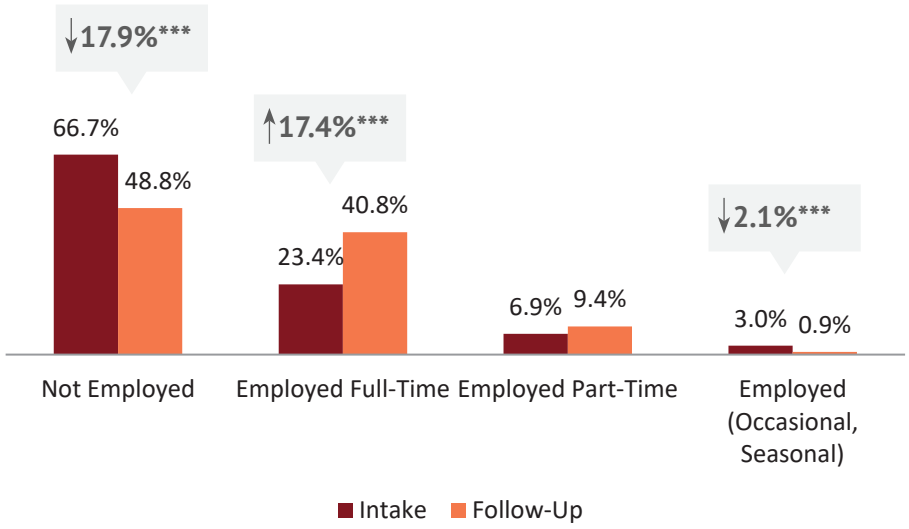
a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
**$p < .01$, ***$p < .001$.

Employment

Current Employment Status

There were significant changes in current employment status from intake to follow-up (see Figure 5.5).[84] Two-thirds of clients reported they were not employed when they entered treatment, while less than half of clients (48.8%) reported they were unemployed at follow-up. This represents a 17.9% significant decrease in the number of clients who were currently unemployed. The number of clients who were employed full-time increased significantly by 17.4% from intake to follow-up (23.4% vs. 40.8%).

FIGURE 5.5. CHANGE IN CURRENT EMPLOYMENT STATUS (N = 1,158)[a]



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

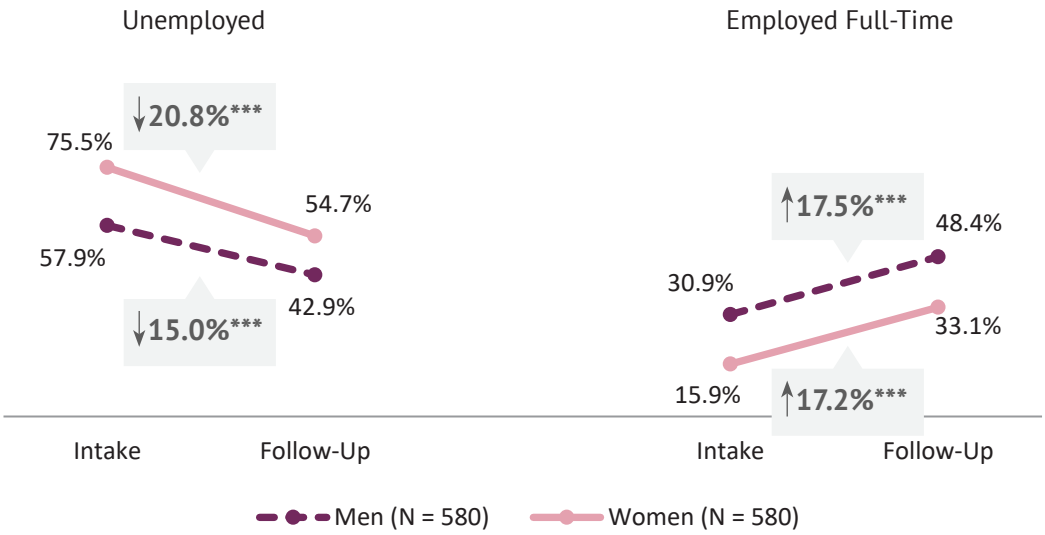
[83] Six cases had missing data for living situation at follow-up.

[84] Seventeen cases had missing data for current employment at follow-up.

Gender Differences in Current Employment Status

Significantly more women reported at intake and follow-up that they were currently unemployed compared to men: 75.5% vs. 57.9% at intake and 54.7% vs. 42.9% at follow-up. The percent of clients who were currently unemployed decreased significantly for both women and men (see Figure 5.6). The percent of men who reported they were employed full-time was significantly greater than the percent of women who were employed full-time at intake (30.9% vs. 15.9%) and at follow-up (48.4% vs. 33.1%). Both genders, however, had significant increases in full-time employment from intake to follow-up (17.2% for women and 17.5% for men).

FIGURE 5.6. GENDER DIFFERENCES IN EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP[a]

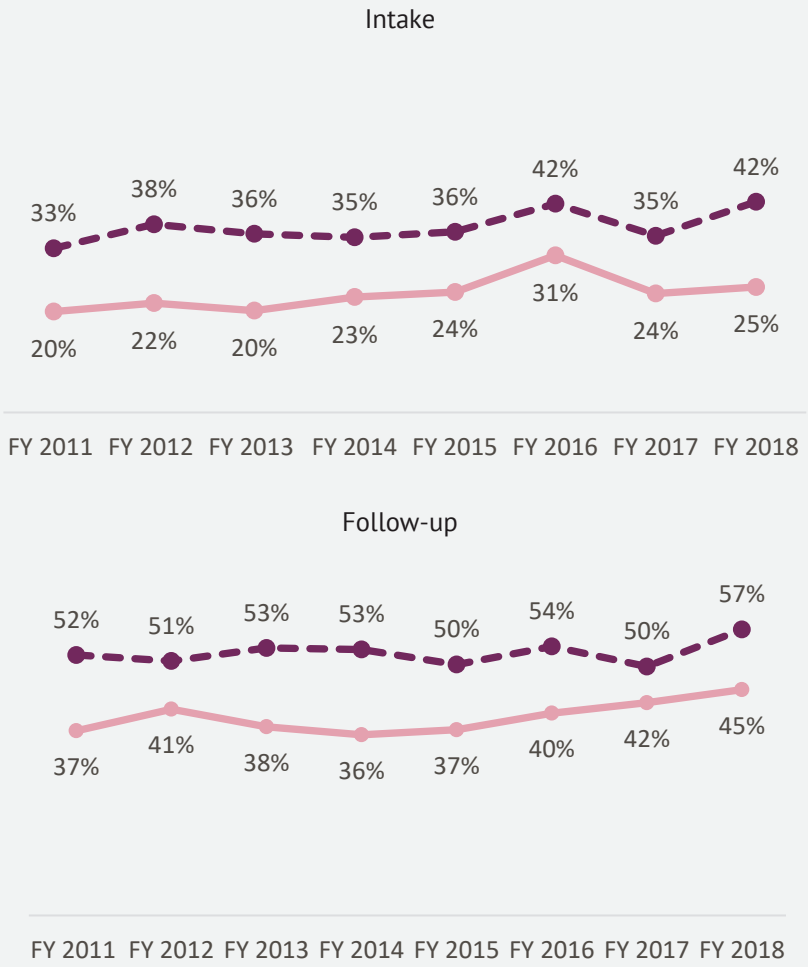


a – Significant difference by gender at intake and follow-up ($p < .001$).
***$p < .001$.

Trends in Employment

At intake in any year, less than one-third to less than one-fourth of women reported being employed (part- or full-time) compared to as much as 42% of men in FY 2016 and FY 2018. At follow-up, about half or a little over half of men reported being employed in any year compared to 45% of women, at the highest percentage, in FY 2018. While the employment gender gap at follow-up narrowed slightly in FY 2012, it increased again in FY 2013 and continued to widen in the following years until FY 2017.

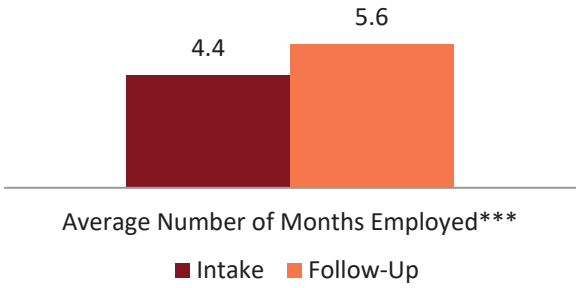
FIGURE 5.7. TRENDS IN GENDER DIFFERENCES IN CLIENTS EMPLOYED AT INTAKE AND FOLLOW-UP, FY 2011-FY 2018



Average Number of Months Employed

Clients were asked in the intake survey and follow-up survey to report the number of months they were employed full-time or part-time in the 12 months before they entered treatment (past 12 months at follow-up). As seen in Figure 5.8, clients reported working significantly more months at follow-up (5.6) than at intake (4.4).

FIGURE 5.8. AVERAGE NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP (N = 1,163)[85]

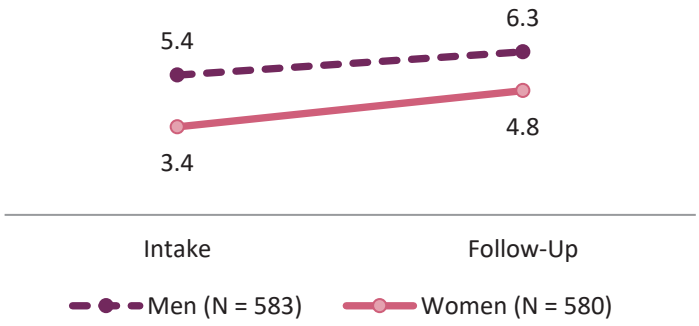


***p < .001.

Gender Differences in the Number of Months Employed

Men reported working significantly more months at both periods compared to women (intake, 5.4 vs. 3.4 and follow-up, 6.3 vs. 4.8). The average number of months both men and women worked increased significantly from intake to follow-up (see Figure 5.9).

FIGURE 5.9. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP[a,b]

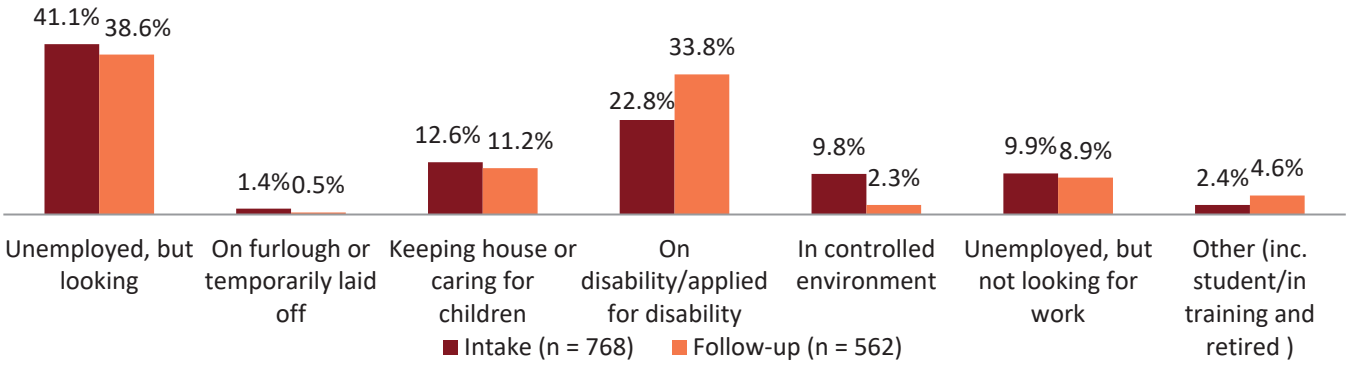


a—Significant difference by gender in number of months worked at intake and follow-up (p < .001).
b – Significant increase from intake to follow-up for men (p< .001) and women (p < .001).

Among individuals who were not employed at each point, clients were asked why they were not currently employed. At intake (n = 768), 41.1% of clients reported they were unemployed, but looking for work, and 22.8% were on disability or had applied for disability. Among clients who were not employed at follow-up (n = 562), 38.6% were unemployed, but looking for work and 33.8% reported they were on disability or had applied for disability.

[85] Twelve cases had missing data for number of months employed.

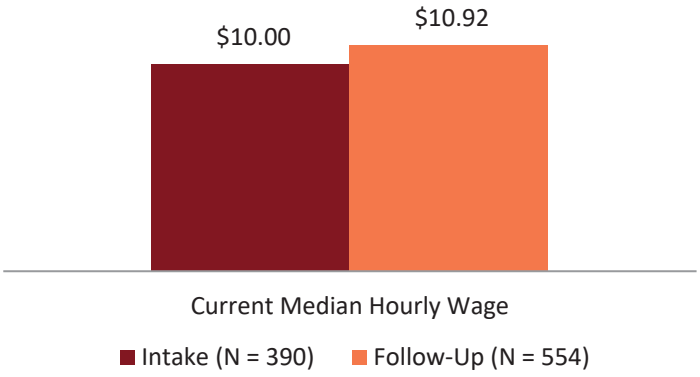
FIGURE 5.10. REASONS FOR UNEMPLOYMENT STATUS AT EACH POINT



Hourly Wage

Among clients who were employed at intake (n = 390), the median hourly wage was $10.00. Among clients who were employed at follow-up (n = 554),[86] the median hourly wage was $10.92 (see Figure 5.11).

FIGURE 5.11. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO WORKED



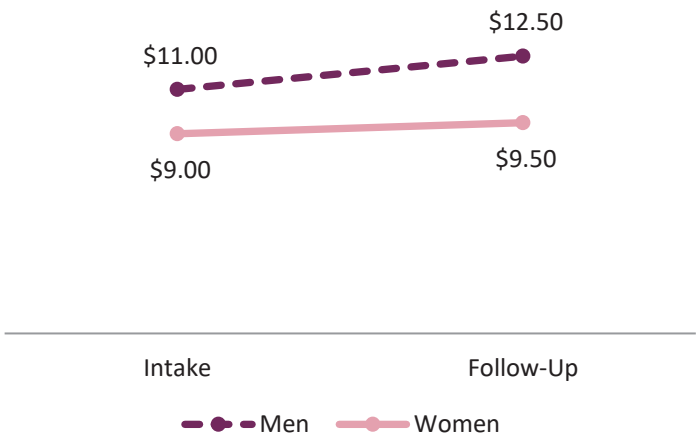
Gender Differences in Hourly Wage

Among clients who were employed at each period, men had significantly higher hourly wages than women (see Figure 5.12). At intake, employed women made $0.82 for every dollar employed men made in this sample, while at follow-up, employed women made $0.76 for every dollar that employed men made.

At follow-up, employed women made only $0.76 for every $1 men made

[86] Of the 594 individuals who reported being employed full-time, part-time, or seasonally at intake, 40 individuals had missing data on hourly wage because they did not know the answer, they declined to answer, or they gave a response that was an outlier (>$200 per hour).

FIGURE 5.12. GENDER DIFFERENCES IN CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP[a]



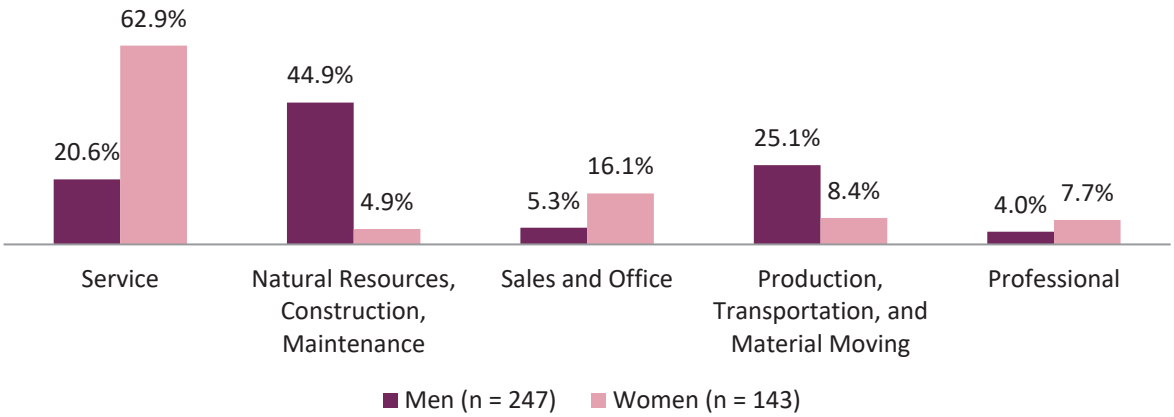
a—Significant difference in median hourly wage at intake and follow-up by gender, tested with Mann-Whitney U test ($p < .001$).

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.[87] At intake, nearly two-thirds of employed women (62.9%) had a service sector job, whereas only 20.6% of employed men had a service sector job (see Figure 5.13a). In addition, 44.9% of men reported having a job in the natural resources, construction, and maintenance sector, which has higher average wages than service sector jobs, when compared to women (4.9%). These patterns were also found at follow-up; more than half of employed women (56.5%) had a service sector job, whereas only 22.9% of employed men had a service sector job (see Figure 5.13b).

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

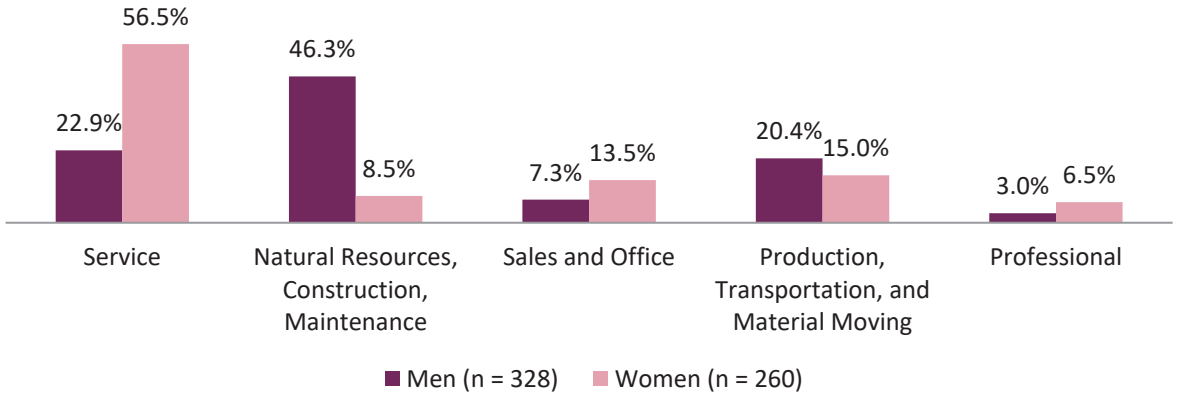
FIGURE 5.13a. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT INTAKE (N = 390)***



***$p < .001$.

[87] Occupation type was asked only of individuals who reported they were currently employed at intake and at follow-up. Five individuals had missing data on occupational type at follow-up.

FIGURE 5.13b. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 588)***

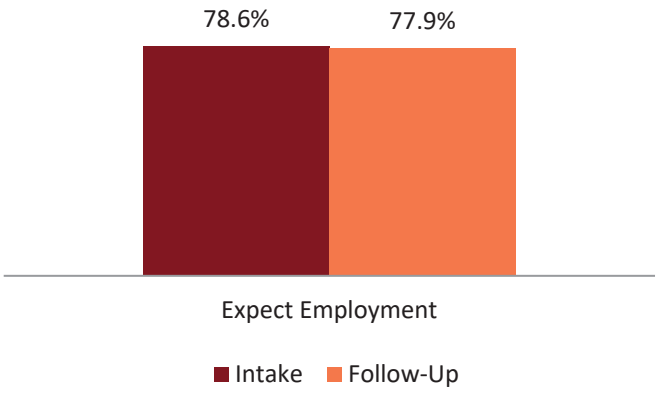


***p < .001.

Expected Employment

Clients are asked if they expect to be employed in the next 12 months at intake and follow-up. At intake, 78.6% reported they expected to be employed, and at follow-up, 77.9% reported they expected to be employed in the next 12 months (see Figure 5.14).

FIGURE 5.14. CLIENTS WHO EXPECT TO BE EMPLOYED IN THE FUTURE AT INTAKE AND FOLLOW-UP (N=1,158)[88]

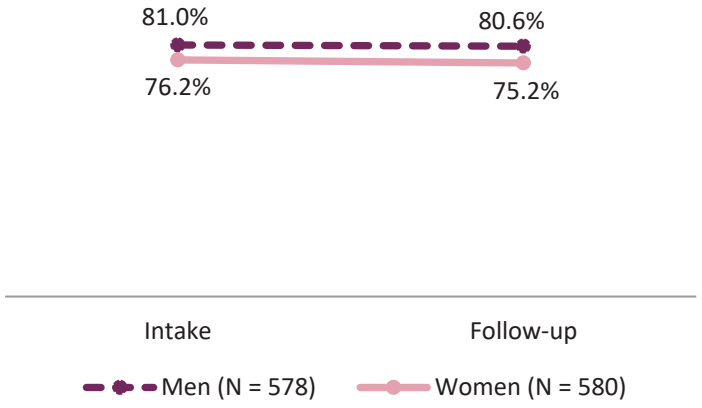


Gender Differences in Expected Employment

Significantly more men reported that they expected to be employed in the next 12 months at intake and follow-up compared to women (see Figure 5.15).

[88] Seventeen clients had missing data for expect employment at follow-up.

FIGURE 5.15. GENDER DIFFERENCES IN CLIENTS REPORTING EXPECTED EMPLOYMENT AT INTAKE AND FOLLOW-UP[a]



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

Economic Hardship

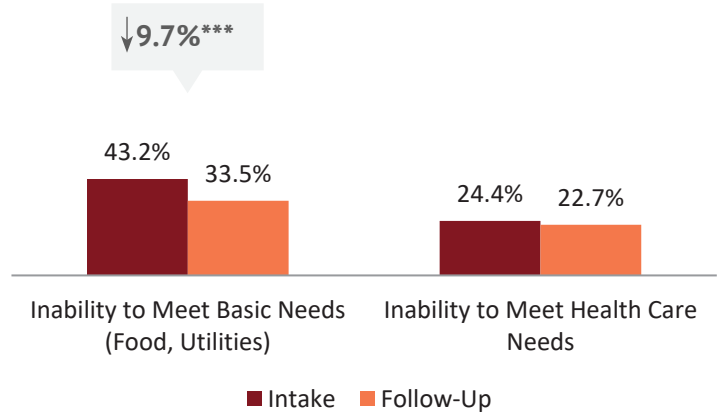
Economic hardship, rather than a measure of income, may be a better indicator of the actual day-to-day stressors clients face. Therefore, the intake and follow-up surveys included several questions about clients' ability to meet expenses for basic needs and food insecurity.[89] Clients were asked eight 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 (1.1) compared to intake (1.5; not depicted in figure).

About 2 in 5 clients (43.2%) reported at intake that they had difficulty meeting basic needs such as food, shelter, or utilities (see Figure 5.16). One-quarter (24.4%) reported their household had difficulty meeting health care needs in the 12 months before clients entered treatment. The percent of individuals who reported having difficulty meeting basic needs decreased significantly by 9.7% from intake to follow-up. Yet, at follow-up, one-third of clients stated they had difficulty meeting basic living needs. The percent of individuals reporting they had difficulty with health care needs did not change significantly. About 23% stated they had difficulty meeting health care needs at follow-up.

> *"It really was everything I needed. The weekly drug tests held me accountable and the group meetings were very personal."*
>
> KTOS FOLLOW-UP CLIENT

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

FIGURE 5.16. DIFFICULTY IN MEETING BASIC AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 1,157)[90]



***p < .001.

Gender Differences in Economic Hardship

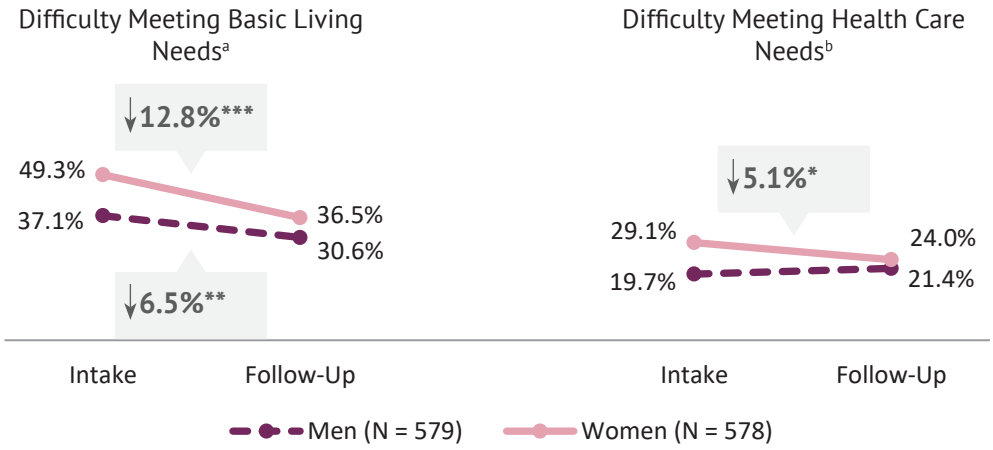
There were significant gender differences in clients' inability to meet basic living needs and health care needs at intake and follow-up (see Figure 5.17). At intake, women reported significantly more basic needs they had difficulty meeting (1.7) compared to men (1.3; not depicted in figure). More specifically, 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. Nearly 37% of women reported difficulty meeting basic living needs at follow-up compared to 30.6% of men. There was a significant decrease in the percent of women and men who reported having difficulty meeting basic living needs at follow-up.

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

Less than one-third of women (29.1%) reported difficulty meeting health care needs at intake compared to 19.7% of men; however, at follow-up, there was no difference by gender. The percent of women who reported difficulty meeting health care needs decreased significantly from intake to follow-up.

[90] Eighteen cases had missing data on basic living needs and seventeen cases had missing data for health care needs items at follow-up.

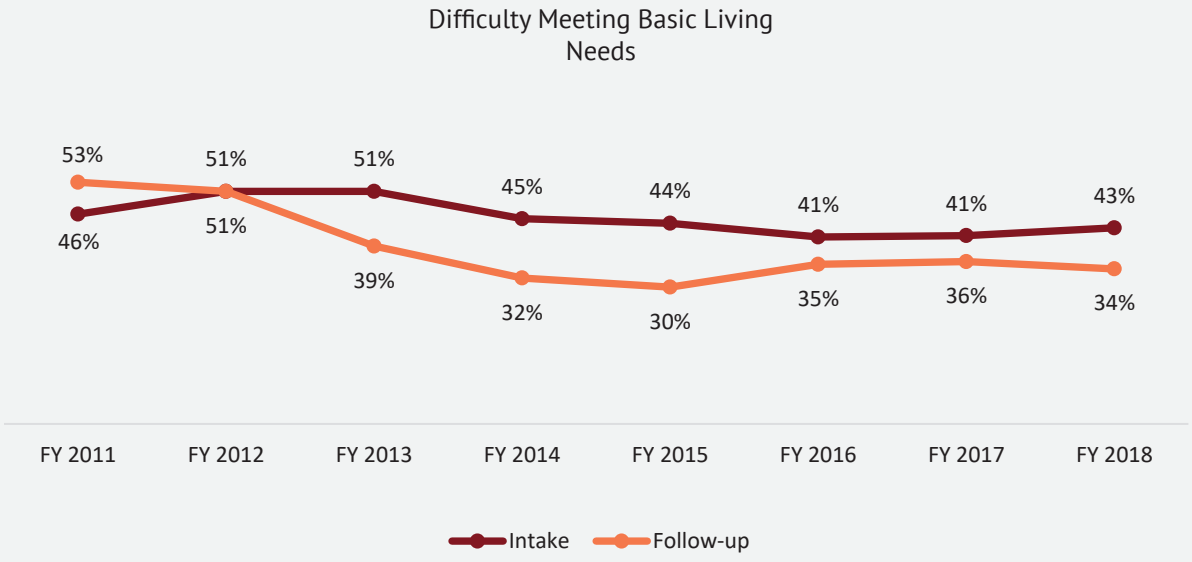
FIGURE 5.17. GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS

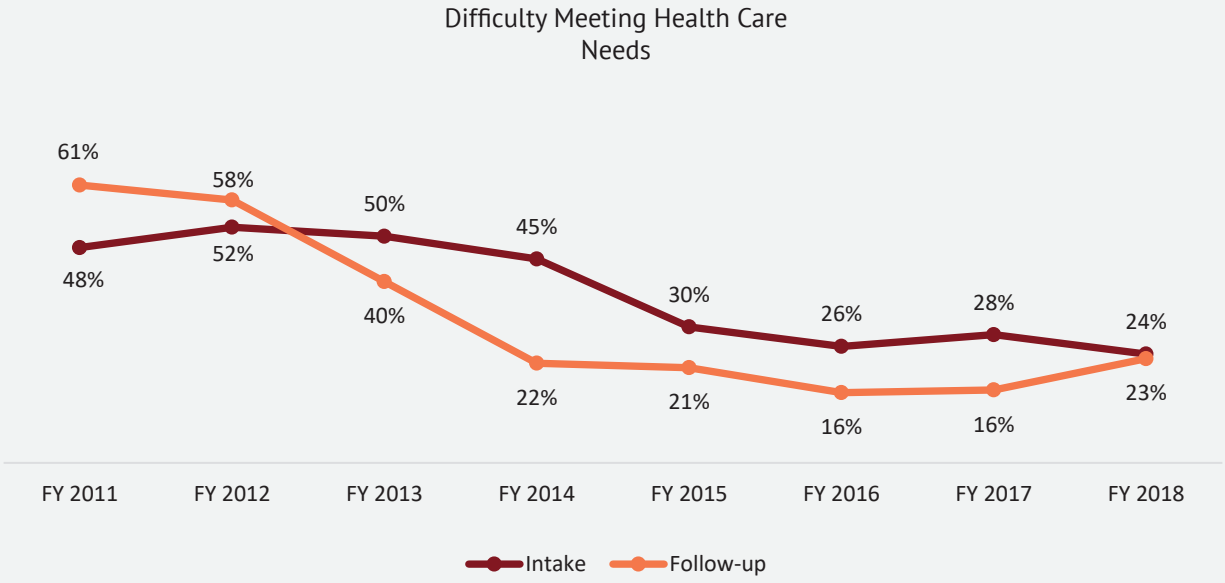


a—Significant difference by gender at intake ($p < .001$) and follow-up ($p < .05$).
b – Significant difference by gender at intake ($p < .001$).
*$p < .05$, **$p < .01$, ***$p < .001$.

Trends in Difficulty Meeting Basic Living and Health Care Needs

The percent of KTOS clients who have reported difficulty meeting basic living needs at follow-up decreased from FY 2011 until FY 2015, when it began increasing again to 34% in FY 2018, but not to the level it was in FY 2011 (53%). The decrease in the percent of clients reporting difficulty meeting health care needs at follow-up was even more dramatic: 61% in FY 2011 to 16% in FY 2017. In FY 2018, this percent increased to 23%, the highest rate since FY 2013.





Section 6. 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) convictions for misdemeanors and felonies, (3) any incarceration, and (4) criminal justice supervision status. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

Arrests

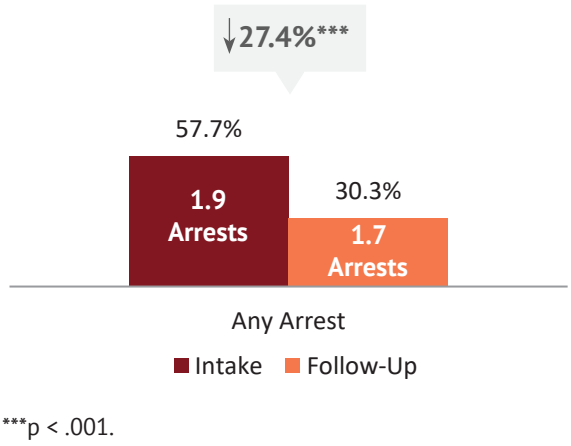
Arrested in the Past 12 Months

Clients were asked about their arrests in the 12 months before they entered treatment (at intake) and the past 12 months (at follow-up). Over half of clients (57.7%) reported at least one arrest in the 12 months before entering treatment (see Figure 6.1). At follow-up, 30.3% reported at least one arrest in the past 12 months, which was a significant 27.4% decrease from intake.

The number of clients reporting any arrest significantly decreased 27% at follow-up

Among those clients who reported at least one arrest in the 12 months before intake (n = 670), clients were arrested an average of 1.9 times. Among those clients who reported at least one arrest in the 12 months before follow-up (n = 352), the average number of arrests was 1.7.

FIGURE 6.1. CLIENTS REPORTING ARRESTS AT INTAKE AND FOLLOW-UP (N = 1,162)[91]



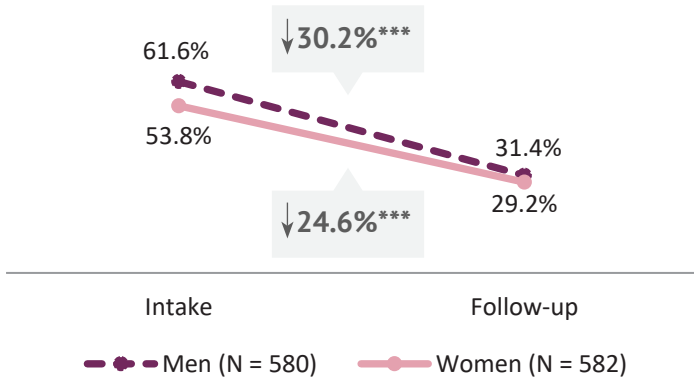
***p < .001.

Gender Differences in Arrests

Significantly more men reported at least one arrest in the past 12 months at intake when compared to women (see Figure 6.2). The percent of men and women reporting at least one arrest in the past 12 months at follow-up significantly decreased (30.2% and 24.6%, respectively).

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

FIGURE 6.2. GENDER DIFFERENCES IN CLIENTS REPORTING ANY ARREST AT INTAKE AND FOLLOW-UP[a]

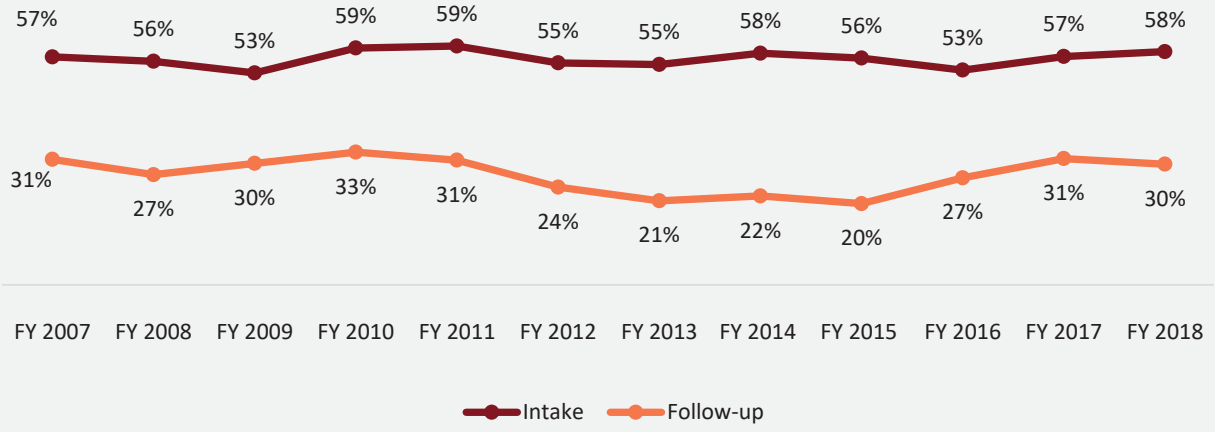


a—Statistical difference by gender at intake ($p < .01$).
***$p < .001$.

Trends in Past-12-month Arrests

The percent of clients reporting an arrest in the past 12 months at intake has remained stable over the past 12 years with over half of clients reporting an arrest. Between one-quarter and one-third of clients reported an arrest at follow-up since FY 2007.

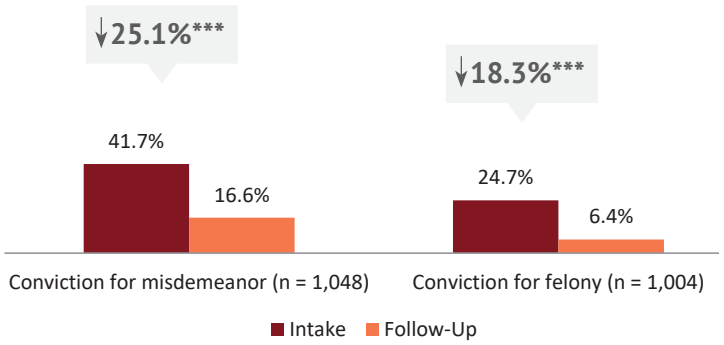
FIGURE 6.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING AN ARREST IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2018



Convictions

About 2 in 5 individuals (41.7%) reported they had at least one conviction for a misdemeanor in the 12 months before entering treatment (see Figure 6.4). The percent of individuals with a conviction for a misdemeanor in the 12 months before follow-up was significantly lower at 16.6%. One-quarter of clients reported at least one felony conviction in the 12 months before intake. That percent decreased significantly to 6.4% in the 12 months before follow-up.

FIGURE 6.4. CONVICTIONS FOR MISDEMEANOR AND FELONY OFFENSES (N = 1,048)[92]



***p < .001.

Incarceration

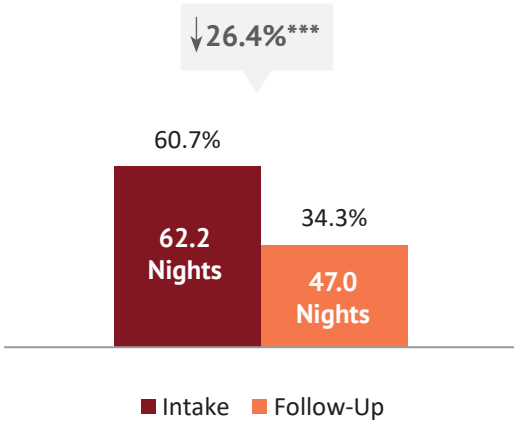
Incarcerated in the Past 12 Months

Six in 10 clients reported spending at least one night in jail or prison in the 12 months prior to entering treatment (see Figure 6.5). At follow-up, 34.3% of clients reported spending at least one day incarcerated in the past 12 months--a significant decrease of 26.4%.

The number of clients who spent at least one night incarcerated decreased by 26%

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 = 401, 47.0 nights) when compared to intake (n = 709, 62.2 nights).

FIGURE 6.5. CLIENTS REPORTING BEING INCARCERATED AT INTAKE AND FOLLOW-UP (N = 1,168)[93]



***p < .001.

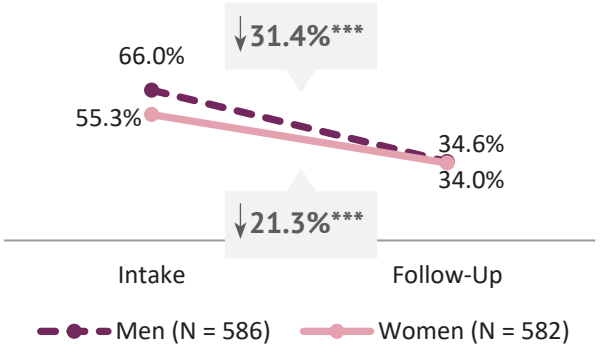
[92] Ninety-eight cases had missing data on convictions for misdemeanor offenses at intake and 31 additional cases had missing data for convictions for misdemeanor offenses at follow-up. For convictions for felony offenses, 145 cases had missing data at intake and 28 additional cases had missing data for convictions for felony offenses at follow-up.

[93] Seven cases had missing data for incarceration at follow-up.

Gender Differences in Incarceration

Significantly more men reported being incarcerated at least one night in the 12 months before entering treatment when compared to women (see Figure 6.6). There was a significant decrease in the percent of men and women who reported incarceration from intake to follow-up. At follow-up, there was no difference by gender.

FIGURE 6.6. GENDER DIFFERENCES IN ANY INCARCERATION AT INTAKE AND FOLLOW-UP[a]

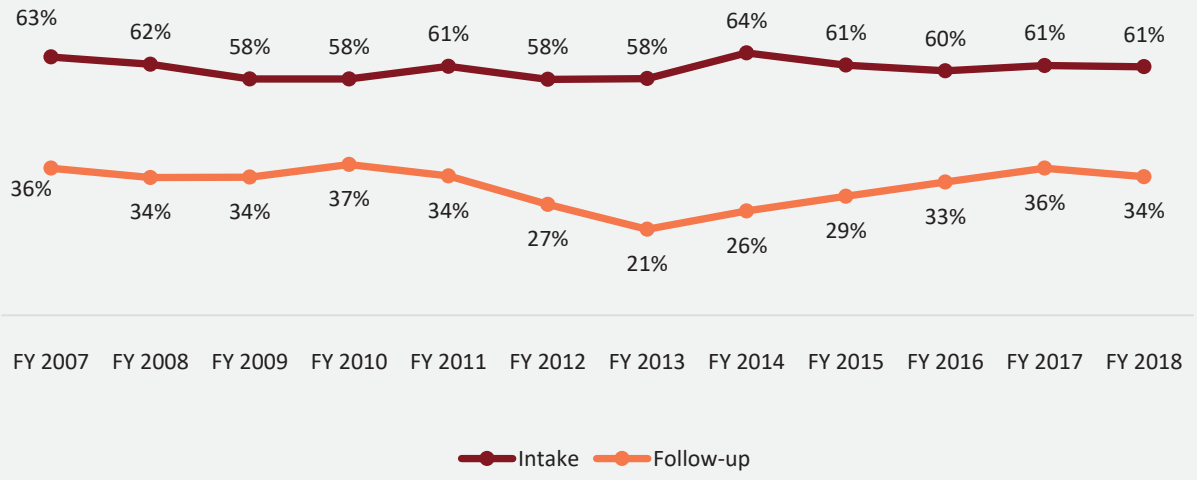


a—Significant difference by gender at intake ($p < .001$)
***$p < .001$.

Trends in Past-12-month Incarceration

The percent of clients reporting spending at least one night in jail or prison has been relatively steady over the past 12 years with between 58% and 64% of clients reporting incarceration at intake. At follow-up, the percent of clients reporting spending at least one night in jail or prison in the past 12 months has fluctuated more than at intake: from a low of 21% in FY 2013 to a high of 37% in FY 2010.

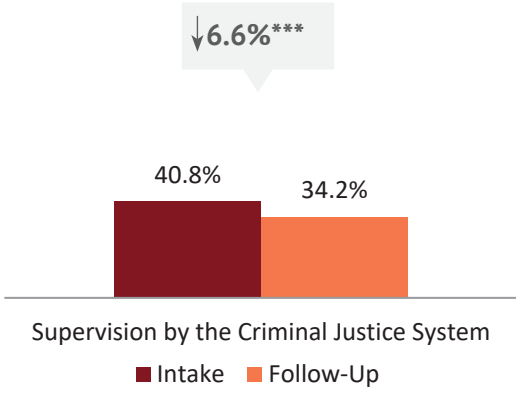
FIGURE 6.7. TRENDS IN THE PERCENT OF CLIENTS REPORTING BEING INCARCERATED IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2018



Criminal Justice System Supervision

The percent 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 (34.2%; see Figure 6.8).

FIGURE 6.8. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 1,168)[94]

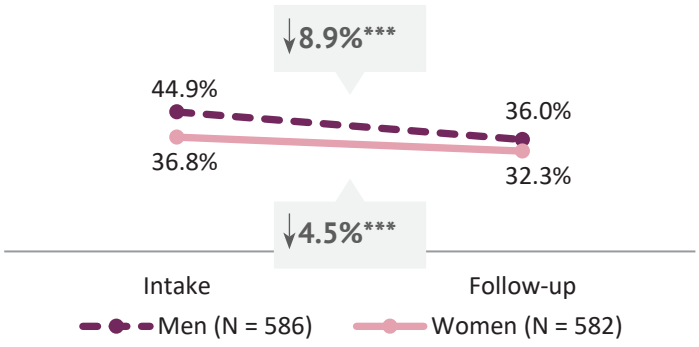


***p < .001.

Gender Differences in Criminal Justice Supervision

Significantly more men (44.9%) than women (36.8%) reported being under supervision by the criminal justice system in the 12 months before entering treatment (see Figure 6.9). The percent of men and women reporting supervision decreased significantly from intake to follow-up. At follow-up, there was no gender difference in those self-reporting criminal justice supervision.

FIGURE 6.9. GENDER DIFFERENCES IN CLIENTS REPORTING CRIMINAL JUSTICE SUPERVISION[a]



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

[94] Seven cases had missing data on criminal justice system supervision at follow-up.

Section 7. Quality of Life

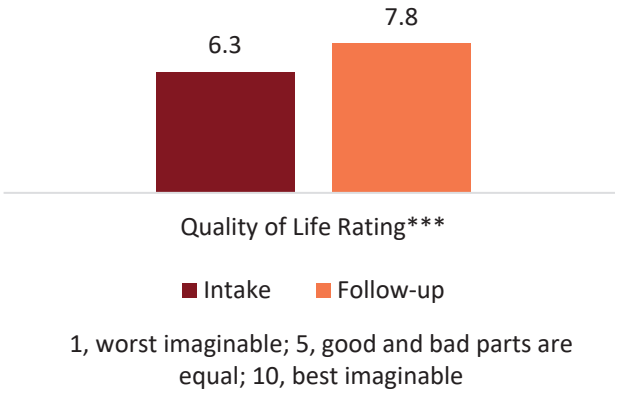
This section describes change in client quality of life and well-being during the 12-month period before entering treatment and the 12-month period before the follow-up interview. Specifically, results include changes in: (1) quality of life rating, and (2) client functioning and well-being. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

Quality of Life Ratings

At intake and follow-up, clients were asked to rate their quality of life at the time of the interview. Ratings were from 1 = 'Worst imaginable' to 5 = 'Good and bad parts were about equal' to 10 = 'Best imaginable'. KTOS clients rated their quality of life as a 6.3 at intake (see Figure 7.1). The average quality of life rating significantly increased to 7.8 at follow-up.

Average rating of quality of life significantly increased from 6.3 at intake to 7.8 at follow-up

FIGURE 7.1. PERCEPTION OF QUALITY OF LIFE AT INTAKE AND FOLLOW-UP (N = 1,165)[95]



***p < .001.

Client Functioning and Well-Being

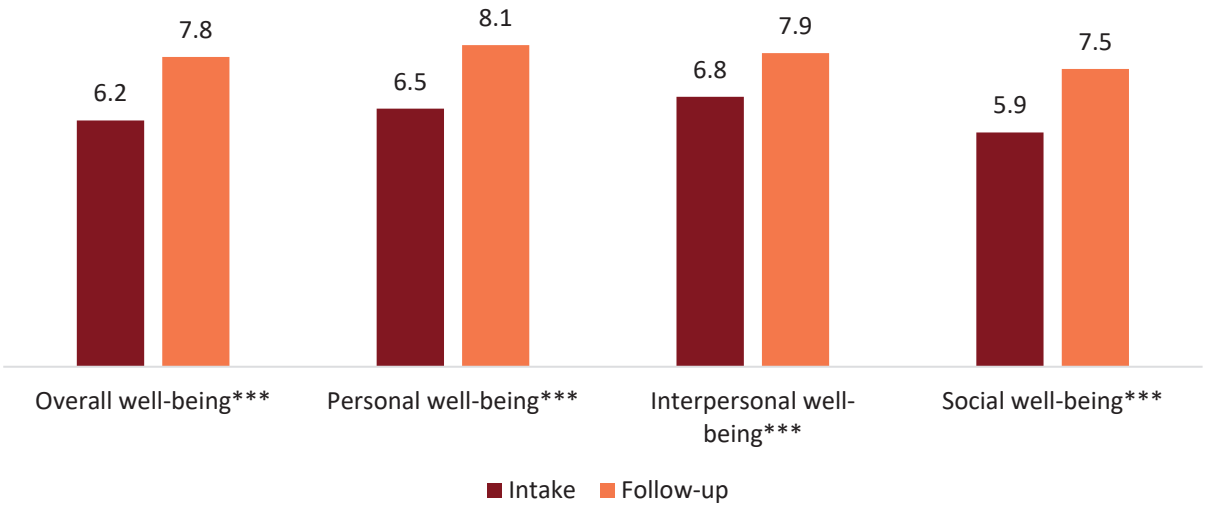
At intake and follow-up, clients were presented with four items asking them to think about the past week and rate how well they had been doing in the following areas of their lives: (1) individually (i.e., personal well-being), (2) interpersonally (i.e., family, close relationships), (3) socially (i.e., work, school, friendships), and (4) overall (i.e., general sense of well-being). These items were taken from the Outcome Rating Scale,[96] which uses a visual analog scale for respondents to mark their responses on corresponding 10 cm lines; however, because the follow-up interviews are conducted over the telephone, the visual analog format was modified to be a scale with anchors: 0, "Not at all good" to 10, "Extremely good."

[95] Ten cases had missing data for the quality of life rating at follow-up.

[96] Miller, S.D., Duncan, B. L., Brown, J., Sparks, J.A., & Claud, D.A. (2003). The Outcome Rating Scale: A preliminary study of the reliability, validity, and feasibility of a brief visual analog measure. *Journal of Brief Therapy, 2*(2), 91-100.

Clients' ratings of their functioning and well-being for all four dimensions increased significantly from intake to follow-up (see Figure 7.2).[97]

FIGURE 7.2. CLIENT FUNCTIONING AND WELL-BEING AT INTAKE AND FOLLOW-UP (N = 325)[a]



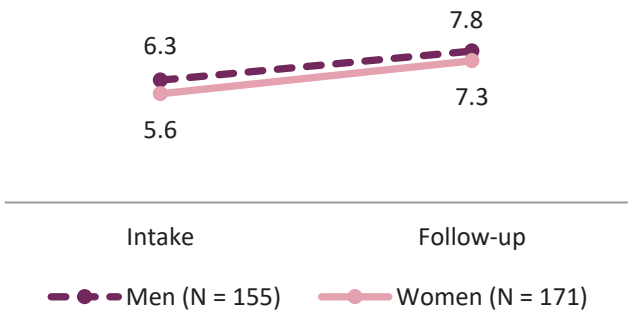
a— Significant increase from intake to follow-up as measured by paired t-Test.
***p < .001.

Gender Differences in Social Well-Being

At intake, men rated their social well-being significantly higher than women (see Figure 7.3). The average rating of social well-being significantly increased for both men and women from intake to follow-up. At follow-up, there was no significant gender difference in social well-being ratings.

Compared to women, men rated their social well-being significantly higher at intake

FIGURE 7.3. GENDER DIFFERENCES IN SOCIAL WELL-BEING AT INTAKE AND FOLLOW-UP[a,b]



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

[97] The Outcome Rating Scale items were added to the surveys around April 2018. Thus, the data is available for only 326 cases at intake for this data set. Of those 326 cases, 1 case had missing data for this scale at follow-up and was not included. In next year's report, all clients will have taken surveys including these items.

Section 8. Multidimensional Recovery Status

This section examines multidimensional recovery at follow-up as well as change in multidimensional recovery before entering the program and at follow-up.

Recovery goes beyond relapse or return to occasional drug or alcohol use. Recovery from substance use disorders can be defined as "a process of change through which an individual achieves abstinence and improved health, wellness and quality of life" (p. 5).[98] The SAMHSA definition of recovery is similarly worded and encompasses health (including but not limited to abstinence from alcohol and drugs), having a stable and safe home, a sense of purpose through meaningful daily activities, and a sense of community.[99] Consistent with the framework that recovery is a multidimensional construct, encompassing multiple dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives.

TABLE 8.1. MULTIDIMENSIONAL RECOVERY

INDICATOR	BETTER STATUS	WORSE STATUS
Substance use disorder (SUD) symptoms	No substance use disorder (SUD)	Mild, moderate or severe substance use disorder (SUD)
Employment	Employed at least part-time or in school	Unemployed (not on disability, not going to school, not a caregiver)
Homelessness	No reported homelessness	Reported homelessness
Criminal Justice System Involvement.	No arrest or incarceration	Any arrest or incarceration
Suicide ideation	No suicide ideation (thoughts or attempts)	Any suicide ideation (thoughts or attempts)
Overall health	Fair to excellent overall health	Poor overall health
Recovery support	Had at least one person he/she could count on for recovery support	Had no one he/she could count on for recovery support
Quality of life	Mid to high-level of quality of life	Low-level quality of life

At intake, as expected, a small percent of the followed-up sample (6.1%) was classified as having all eight dimensions of recovery (see Figure 8.1). At follow-up, there was a significant increase of 29.5% so that more than one-third of the sample had all dimensions of recovery.

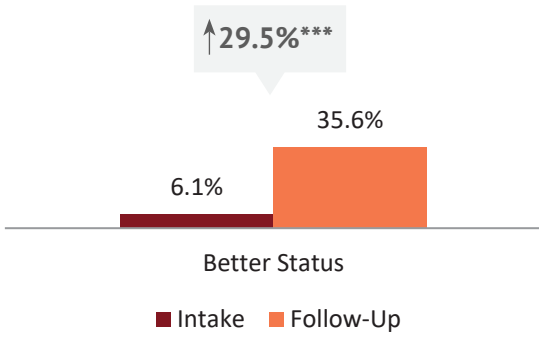
"I'm still involved and it's still helpful every day. They helped me find a job and get back in the community."

KTOS FOLLOW-UP CLIENT

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

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

FIGURE 8.1. MULTIDIMENSIONAL RECOVERY AT INTAKE AND FOLLOW-UP (N = 1,141)[100]



***p < .001.

Table 8.2 presents the frequency of clients who reported each of the specific components of the multidimensional recovery index at intake and follow-up. At intake, the factors with the lowest percent of individuals reporting the indicators of better status were meeting criteria for no substance use disorder and not being arrested or incarcerated. At follow-up, the factors with the lowest percent of individuals reporting the indicators of better status were not being arrested or incarcerated and meeting criteria for no substance use disorder.

TABLE 8.2. PERCENT OF CLIENTS WITH SPECIFIC COMPONENTS OF BETTER STATUS AT INTAKE AND AT FOLLOW-UP (n = 1,141)

FACTOR	INTAKE	FOLLOW-UP
Met DSM-5 criteria for no SUD in the past 12 months	22.7%	74.2%
Usual employment was employed full-time or part-time in the past 12 months (or retired, on disability, a student, or caregiver)	77.8%	75.5%
Reported no homelessness	74.7%	91.8%
Reported not being arrested and/or incarcerated in the past 12 months	34.9%	62.0%
Reported no thoughts of suicide or attempted suicide in the 12 months	79.1%	88.9%
Self-rating of overall health was fair, good, very good, or excellent	87.8%	94.4%
Reported having someone they could count on for recovery support	94.3%	97.2%
Reported a quality of life rating in the mid or higher range (rating of 5 or higher)	79.9%	93.0%

To better understand which factors at entry to the program are associated with better status at follow-up, each element that defined the multidimensional status at intake were entered as predictor variables in a logistic regression model (see Table 8.3). Having all dimensions of better status at follow-up is the criterion (i.e., dependent) variable. The following predictor variables were statistically significantly associated with better status at follow-up: meeting criteria for no substance use disorder, reporting no homelessness, reporting no arrests or incarceration, no suicidal ideation or attempts, and reporting a mid to higher quality of life at intake.

[100] Thirty-four individuals had missing data for at least one of the variables that was used to compute the multidimensional recovery status at follow-up and could not be assigned to a group.

TABLE 8.3. MULTIVARIATE ASSOCIATIONS WITH BETTER STATUS AT FOLLOW-UP

Factors at intake	B	Wald	Odds ratio	95% CI	
				Lower	Upper
Met DSM-5 criteria for no SUD in the 12 months before entering the program	.533	12.215	1.705***	1.264	2.299
Usual employment was employed (or retired, on disability, a student, or caregiver) in the 12 months before entering the program	.286	3.049	1.331	.966	1.836
No homelessness in the 12 months before entering the program	.403	6.087	1.496*	1.086	2.061
Not arrested or incarcerated in the 12 months before entering the program	.476	12.188	1.609***	1.232	2.102
Reported no thoughts of suicide or attempted suicide in the 12 months before entering the program	.564	9.742	1.609**	1.232	2.102
Self-rating of overall health at intake was fair, good, very good, or excellent	.062	.084	1.064	.702	1.612
Reported have at least one person he/she could count on for recovery support before entering the program	-.207	.551	.813	.471	1.404
Reported a mid to higher quality of life before entering the program	.653	12.932	1.921***	1.346	2.741

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

Note: Categorical variables were coded in the following ways: Met DSM-5 criteria for SUD (0= mild, moderate, or severe SUD, 1 = no SUD), Usual employment was employed (0=not employed or in a controlled environment, 1= employed full-time, part-time, or retired, on disability, a student, or caregiver), homeless (0 = yes, 1 = no), arrested or incarcerated (0 = yes, 1 = no), had thoughts of suicide or attempts (0 = yes, 1 = no), self-rating of overall health was fair, good, very good, or excellent (0 = no, 1 = yes), had at least one person the client could count on for recovery support (0=no, 1=yes), mid to high quality of life (0 = no, 1 = yes).

Section 9. Recovery Support

This section focuses on five main areas of recovery support: (1) clients attending mutual help recovery group meetings, (2) recovery supportive interactions with family/friends and a sponsor 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 by gender when there were significant gender differences.

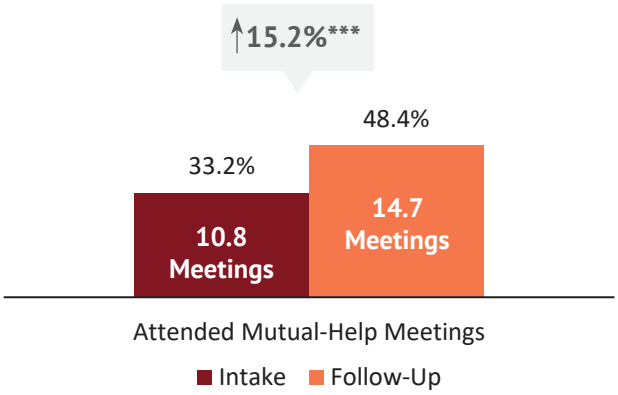
Mutual Help Recovery Group Meeting Attendance

At intake, only 33.2% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (see Figure 9.1). At follow-up, there was a significant increase of 15.2%, with 48.4% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days.

There was a 15% increase in the percent of clients reporting attending mutual help recovery groups

Among individuals who attended self-help meetings at intake (n = 389), they reported attending an average of 10.8 meetings in the past 30 days. Those who attended self-help meetings at follow-up (n = 567) reported an average of 14.7 meetings attended in the past 30 days.

FIGURE 9.1. MUTUAL HELP RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N=1,171)[101]



***p < .001.

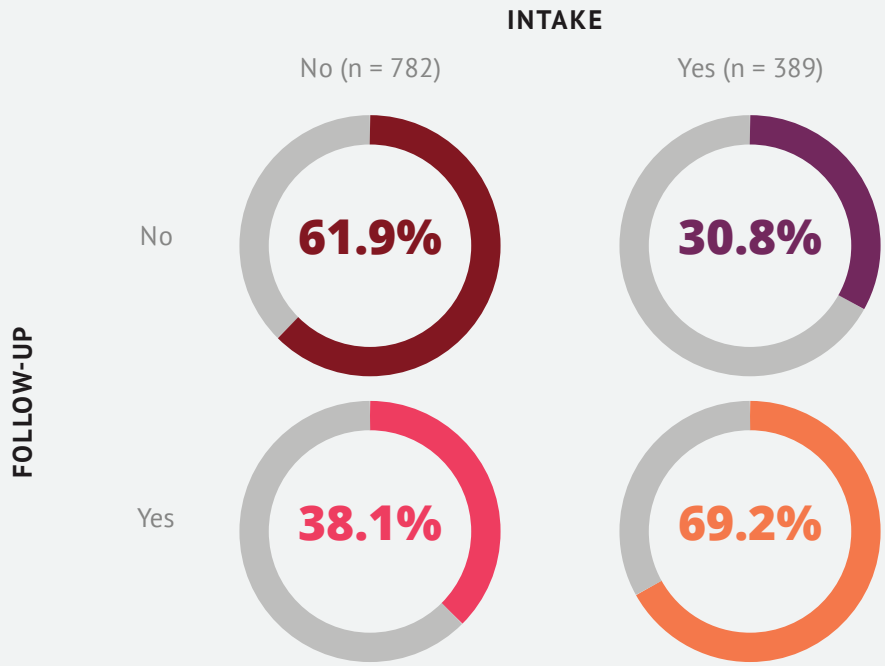
[101] Four cases had missing data for self-help meeting attendance at follow-up.

Taking a Closer Look at Recovery Support

About one-third of clients reported attending mutual help recovery group meetings in the 30 days before entering treatment (33.2%; n = 389). Among clients who reported attending mutual help recovery group meetings at intake, 69.2% also attended mutual help recovery group meetings at follow-up (see Figure 9.2).

Alternatively, 38.1% 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.

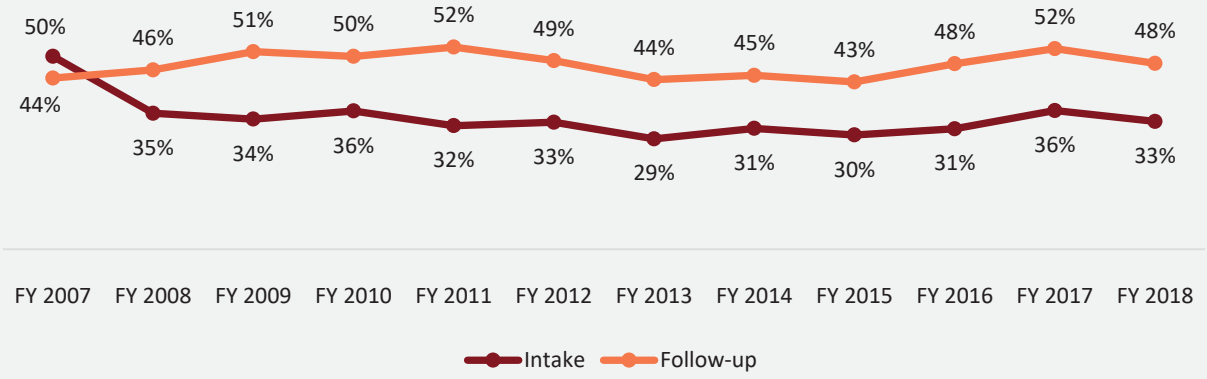
FIGURE 9.2. MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE AT INTAKE AND FOLLOW-UP BASED ON MEETING ATTENDANCE AT INTAKE



Trends in Clients Attending Mutual Help Recovery Meetings

With the exception of FY 2007 when the number of clients reporting attending mutual help recovery group meetings was higher at intake than follow-up, more clients reported attending meetings like AA/NA at follow-up compared to intake. Overall, around one-third of clients reported attending meetings at intake and less than one half to about one half reported attending meetings at follow-up.

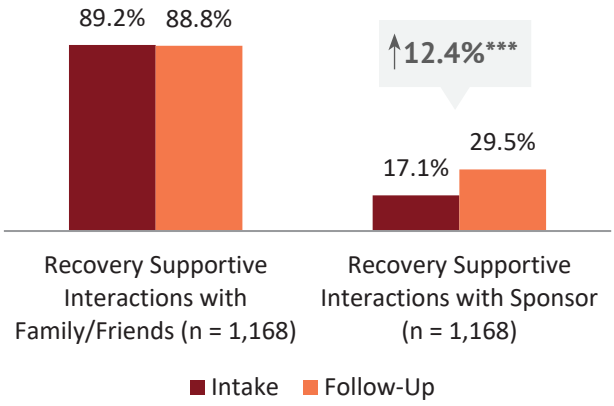
FIGURE 9.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING PAST-30-DAY MUTUAL HELP RECOVERY GROUP MEETINGS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2018



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 9.4). About 17% of clients reported being in contact with an AA/NA or other self-help group sponsor at intake. That number increased significantly to 29.5% at follow-up.

FIGURE 9.4. RECOVERY SUPPORTIVE INTERACTIONS IN THE PAST 30 DAYS[102]



***p < .001.

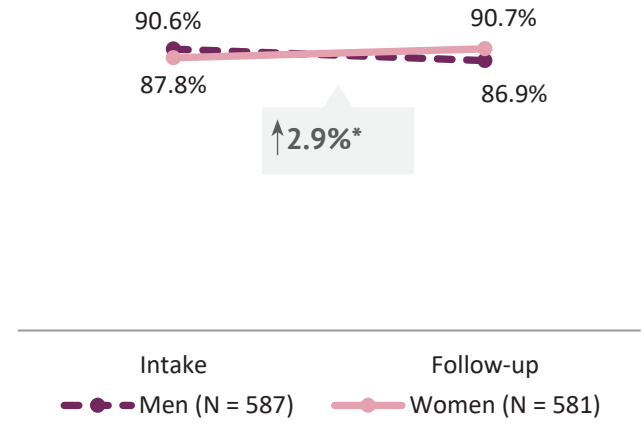
[102] Data on family/friends recovery supportive interactions was missing at follow-up for 7 cases and data on sponsor recovery supportive interactions was missing at follow-up for 7 cases.

Gender Differences in Recovery Supportive Interactions with Family/ Friends

Significantly more women than men reported they had contact with family or friends who were supportive of recovery in the 30 days before follow-up (see Figure 9.5). The percent of women who had contact with supportive family or friends increased significantly from intake to follow-up by 2.9%.

Significantly more women than men reported having contact with family and/or friends at follow-up

FIGURE 9.5. GENDER DIFFERENCES IN RECOVERY SUPPORTIVE INTERACTIONS WITH FAMILY/FRIENDS[a]

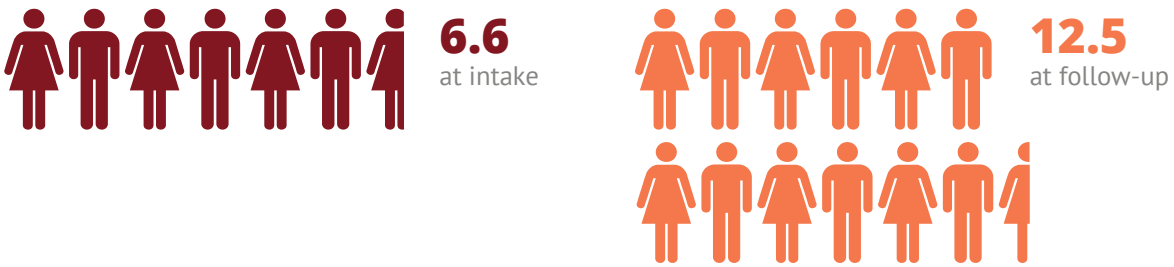


a— Significant difference by gender at follow-up ($p < .05$).
*$p < .05$.

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 6.6 people at intake to 12.5 people at follow-up (see Figure 9.6).

FIGURE 9.6. AVERAGE NUMBER OF PEOPLE CLIENTS COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 1,167)***[103]



***$p < .001$.

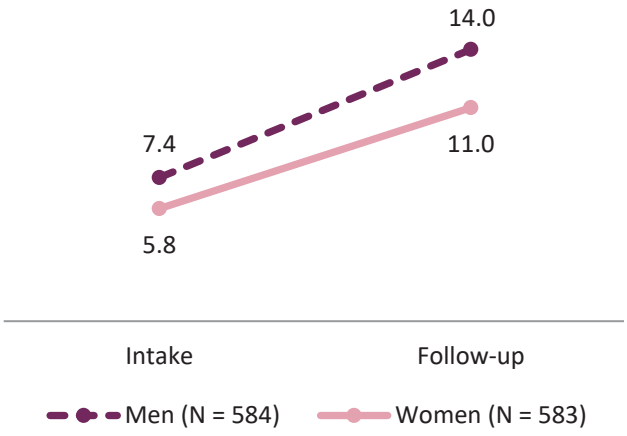
[103] Data on the number of people the client could count on for recovery support at follow-up was missing for 8 cases.

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

At intake, men reported having significantly more people they could count on for recovery support when compared to women (see Figure 9.7). The average number of people men and women said they could count on for recovery support increased from intake to follow-up.

Compared to women, men reported having more people they could count on for recovery support at intake

FIGURE 9.7. GENDER DIFFERENCES IN AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT[a,b]

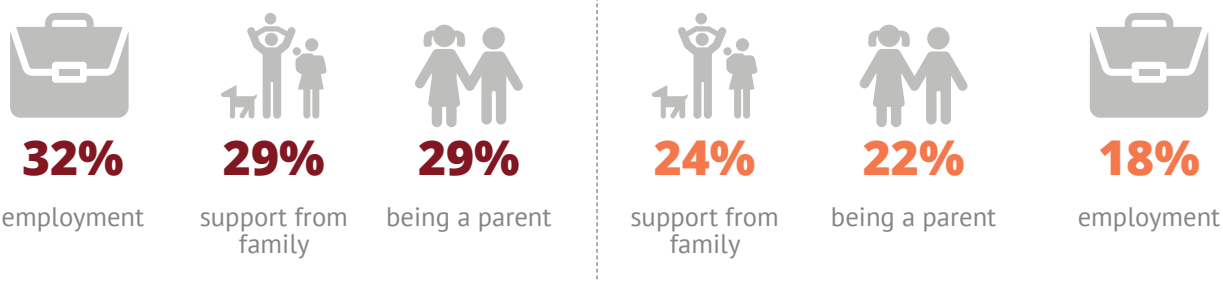


a— Significant difference by gender at intake ($p < .01$).
b—Significant change from intake to follow-up for both men and women ($p < .001$).

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, the top responses that were reported by clients are presented for descriptive purposes in Figure 9.8. The most common responses at intake were employment, support from family , and taking care of their children or dependents. At follow-up, the most common responses were support from family, caring for children or dependents, and employment.

FIGURE 9.8. TOP CATEGORIES CLIENTS REPORTED THAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,159)[104]



[104] Sixteen individuals had missing data on what will be most useful in staying off drugs and/or alcohol at follow-up.

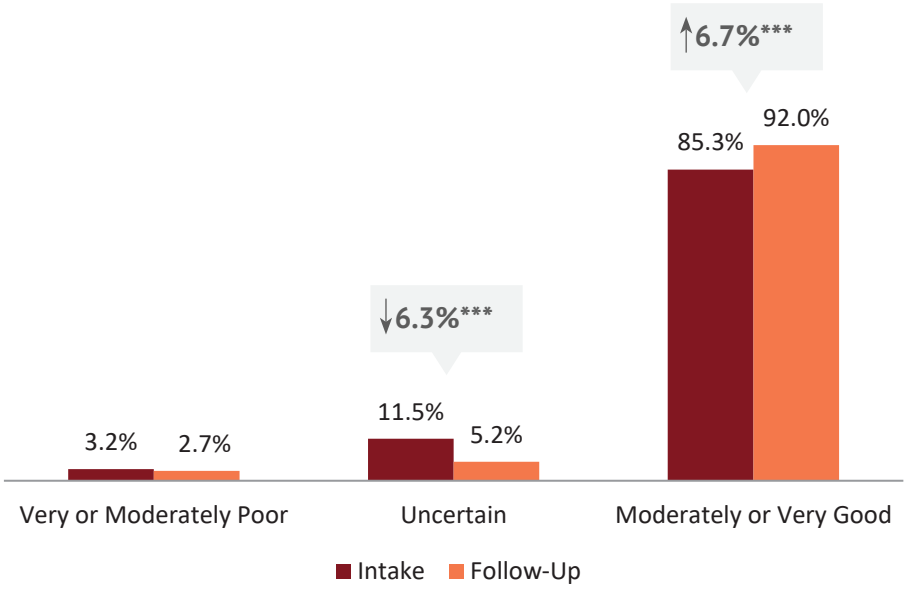
Chances of Staying Off Drugs/Alcohol

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 4.4 at intake and a 4.6 at follow-up, which was a significant increase (not depicted in figure). Overall, 85.3% of clients believed they had a moderately or very good chance of staying off drugs/alcohol at intake with a significant increase of 6.7% at follow-up (92.0%; see Figure 9.9).[105]

"Amazing people. They helped me find a home when I needed it and they changed my life."

KTOS FOLLOW-UP CLIENT

FIGURE 9.9. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,166)[a]



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

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

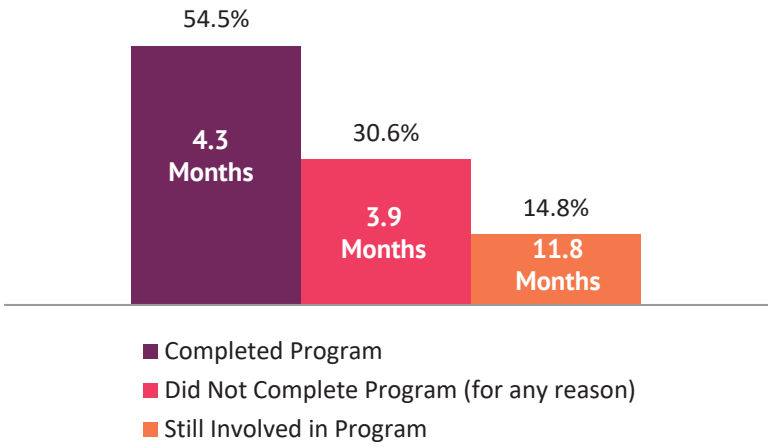
Section 10. Client Satisfaction with Substance Abuse Treatment Programs

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

Client Involvement in the Program and Manner in Which the Client Left

More the half of clients (54.5%) reported at follow-up that they had completed the program they attended or that the program agreed they were ready to leave, 30.6% did not complete the program, and 14.8% were still involved in the program at follow-up (see Figure 10.1). The average number of months individuals reported at follow-up they were involved in the program was 5.2. Individuals who reported they were still in the treatment program reported they had been involved in the program an average of 11.8 months. In contrast, individuals who had completed the program reported being in the program an average of 4.3 months and those who did not complete the program reported an average of 3.9 months.

FIGURE 10.1. CLIENTS WHO REPORTED HOW THE TREATMENT PROGRAM ENDED FOR THEM[106]



Of those who did not complete the program (n = 351), 41.9% reported they chose to leave the program before program staff thought they should but they told staff they were leaving and 23.6% chose to leave before completing the program and did not tell staff they were leaving. Ten percent reported they were not able to continue in the program due to issues other than missing too many appointments, 6.3% missed too many appointments or meetings and were not allowed to continue in the program, and 5.7% went back to jail or got into legal trouble before completing

[106] Twenty-nine individuals had missing data for this variable.

the program. About 7% transferred to a different program and 1.1% reported they never started the program.

FIGURE 10.2. REASONS WHY CLIENT DID NOT COMPLETE TREATMENT PROGRAM (N = 351)

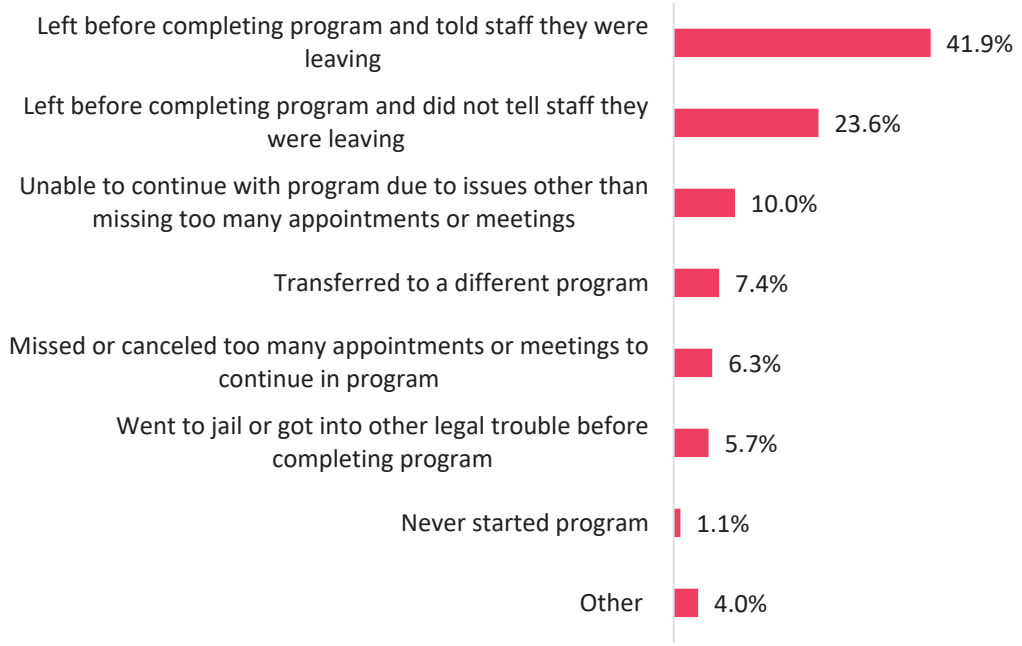
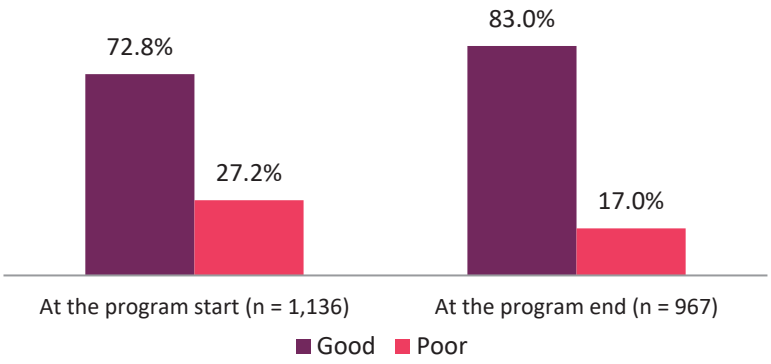


Figure 10.3 shows the percent of clients who reported the program started poor or good and ended poor or good. The majority of clients reported that the program started good (72.8%) and ended good (83.0%).

FIGURE 10.3. PERCENT OF CLIENTS WHO REPORTED AT FOLLOW-UP THE TREATMENT STARTED AND ENDED POOR OR GOOD[107]



Overall, the majority of clients (78.8%) reported that the treatment episode was working/worked pretty well or extremely well for them, 14.1% said the program worked somewhat well for them, and 7.1% said the program did not work for them at all.

[107] Thirty-nine individuals had missing data for program rating at the start of treatment and 38 had missing data for program rating at the end of treatment. Additionally, 170 clients reported they were still in the program at follow-up and therefore did not rate the program at the end.

About 23% reported they had been in other treatment programs since they left this treatment episode. Of those clients (n = 256),[108] they reported they had been involved in an average of 1.2 (range of 1 to 4) other treatment programs or episodes.

Recommend Others to the Program

The majority of clients (88.9%) indicated they would refer a close friend or family member to their treatment provider. Of the clients who reported they would refer a close friend or family member to the program (n = 1,015), 32.1% reported they would warn their friend or family member about certain things or tell them who to work with or who to avoid.[109]

Overall Client Satisfaction

At the beginning of the follow-up survey, interviewers asked participants questions about their satisfaction with the treatment programs where 1 represented the worst experience and 10 represented the best experience. Overall, the majority of clients (71.4%) gave a high positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table).[110] The average rating was 8.1.

> *"They worked with me at my level. They didn't pressure me into things I wasn't comfortable with, moved at my pace. Really great program."*
>
> KTOS FOLLOW-UP CLIENT

Figure 10.4 shows that KTOS clients were satisfied with the overall program services. Almost 80% said the program staff believed in them and believed that treatment would work for them, 78.3% reported the program staff cared about them and their treatment progress, and 78.2% said they worked on the things that were most important to them while in the program. About 78% of clients also said that when they told their counselor or program staff personal things, they felt listened to and heard by them. About three-fourths of clients agreed that they had input into their treatment goals, plans, and how they were progressing over time and their expectations and hopes for treatment and recovery were met. A majority of clients also said that they had a connection with their counselor or staff person (73.7%), the treatment approach and method was a good fit for them (70.4%), and the length of the program was just right (63.4%). About 3 in 5 clients said they fully discussed or talked about everything they wanted to with their counselor or program staff.

[108] Seven individuals who had been to other treatment programs had missing data for the number of other programs they attended.

[109] Eleven individuals who said they would refer their friends and family to the program had missing data for if they would warn them about certain things about the program.

[110] Thirty-five individuals had missing data for treatment satisfaction questions due to the interviewer skipping the questions, the client refusing to answer, or the client not remembering the program we were asking about.

FIGURE 10.4. RATINGS OF 8, 9, or 10 OF SPECIFIC TREATMENT PROGRAM EXPERIENCES (N = 1,143)[111]

[111] A range of 32-47 individuals had missing data for some satisfaction questions because the interviewer skipped the question, the client refused to answer, or the client did not remember the program we were asking about.

Section 11. 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.[112] In 2000 the estimated costs of alcohol abuse in the United States was updated[113] and in 2011 the National Drug Intelligence Center updated the estimates of drug abuse in the United States for 2007.[114] These updated costs were used in the calculations for the cost savings analysis in this KTOS follow-up report.

Cost of Alcohol and Drug Use Disorders

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 2018 dollars using Consumer Price Indexes (monthly data on the average change in prices paid over time in the market for goods and services released by the Bureau of Labor Statistics) from a federal reserve bank.[115] The estimate of the cost to society of alcohol use was $284,412,610,269 after conversion to 2018 dollars. The estimate of the cost to society of drug use was $233,850,868,732 after conversion to 2018 dollars.

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[112] 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.

[113] 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.

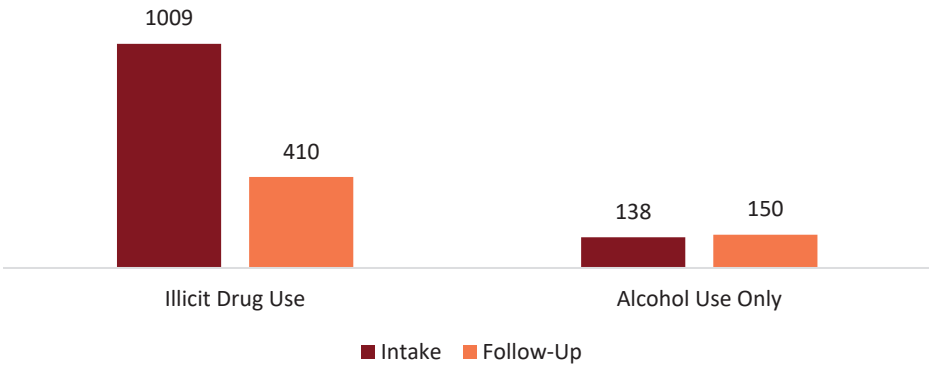
[114] National Drug Intelligence Center. (2011). *The economic impact of illicit drug use on American Society.* Washington, DC: United States Department of Justice.

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

Next, to calculate an estimate of the cost of alcohol and drug abuse per person, those updated national costs were divided by the 2018 federally derived estimates of the number of individuals (aged 12 or older) with alcohol use disorder (14.8 million) and drug use disorder (8.1 million) in the nation.[116] 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 11.1 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.[117] 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 use was higher per drug user than the cost per person of alcohol use. Clients who reported using alcohol only were counted in the alcohol use category. The change from intake to follow-up was significant. At intake, 1,009 clients reported using illicit drugs and an additional 138 clients reported using alcohol only. At follow-up, 410 clients reported using illicit drugs and 150 additional clients reported using any alcohol.

FIGURE 11.1. THE NUMBER OF CLIENTS WHO REPORTED USING ILLICIT DRUGS AND/OR ALCOHOL IN THE 12 MONTHS BEFORE INTAKE AND FOLLOW-UP (N = 1,159)



The average annual cost to society of an active drug abuser in 2018 dollars was $28,870. The average annual cost to society of an active alcohol abuser was $19,217. Thus, when this average annual cost per individual drug user was applied to the 1,009 clients who reported using illicit drugs at intake, the annual cost to society in 2018 was estimated at $29,129,830. When the average annual cost per individual alcohol abuser was applied to the 138 clients who reported using alcohol only at intake, the estimated annual cost to Kentucky in 2018 was $2,651,946. The estimated total annual cost of drug and alcohol use in the 12 months before intake applied to

[116] Substance Abuse and Mental health Services Administration. (2019). *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health* (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from http://www.samhsa.gov/data/.

[117] Fifteen cases had missing values for illicit drug use in the 12 months before follow-up and one additional case had a missing value for alcohol use in the 12 months before follow-up; thus, they were excluded from the cost savings analysis.

the follow-up sample of KTOS clients was $31,781,776. By follow-up, the estimated cost of the 410 individuals who reported illicit drug use was $11,836,700 and the estimated cost of the 150 individuals who reported using alcohol was $2,882,550, for a total of $14,719,250. Thus, as shown in Figure 11.2, after participation in publicly-funded substance abuse treatment, the gross cost to Kentucky taxpayers for these 1,159 clients was reduced by $17,062,526.

FIGURE 11.2. COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N=1,159)

Cost of Treatment

In KTOS reports from 2002 until the 2017 report, clinical service event data collected by the community mental health centers (CMHCs) that are submitted to DBHDID and managed by the University of Kentucky Institute for Pharmaceutical Outcomes and Policy (IPOP) was included in sections presenting clinical service data for KTOS participants. In these reports, the clinical service event data was matched to the KTOS survey data for the KTOS follow-up sample to calculate an estimate of the cost of substance abuse treatment 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,[118, 119] 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. However, the number of cases included the follow-up sample with no service data in the IPOP data has increased over the past few years. For example, in the KTOS 2018 report, when the clinical service data was matched to clients in the KTOS follow-up sample (n = 1,224), 1,047 cases had no services listed or no services that could be assigned a unit cost (e.g., miscellaneous services). 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 $4,098 (in 2018 dollars). The average cost of $4,098 was multiplied by 1,159, 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 $4,749,582.

[118] 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/BHandSUFeeSchduleIPFrev612016r1.pdf.

[119] 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: $17,062,526/$4,749,582, which equals $3.59 (see Table 11.1). In other words, for every dollar spent on publicly-funded substance abuse treatment in FY 2018, there was an estimated savings of $3.59 in costs to Kentucky taxpayers associated with alcohol and drug addiction.

TABLE 11.1. COST SAVINGS OF PROVIDING TREATMENT TO INDIVIDUALS WHO USED ILLICIT DRUGS AND/OR ALCOHOL

	USED ALCOHOL AND/OR ILLICIT DRUGS IN THE 12-MONTH PERIOD	
	INTAKE	FOLLOW-UP
Drug use		
Number of clients	1,009	410
Alcohol use		
Number of clients	138	150
Total cost to society of drug and alcohol use	$31,781,776	$14,719,250
Gross cost difference from intake to follow-up	$17,062,526	
Estimate of cost of treatment (based on average cost per client in 2012 – 2015)	$4,749,582	
Off-set as net cost/benefit ratio	$17,062,526/$4,749,582	
Return on $1.00 Investment	$3.59	

Section 12. Conclusions and Implications

The KTOS 2020 Annual Follow-Up Report describes characteristics of clients who participated in state-funded substance abuse treatment programs in Kentucky in FY 2018 and completed intake interviews (N = 5,528). In addition, outcomes are presented for 1,175 clients who completed a follow-up telephone interview about 12 months later which was a 69.4% follow up rate for those selected into the statewide sample.

Overall, of the clients with intake interviews (N = 5,528), over half were male and 43.3% were female with ages 18 to 79 (average age 35 years old). Most were White, and 64.1% were unemployed at intake. About 58% had been arrested and 64.2% spent at least one night in jail 12 months before treatment.

When looking at referral to treatment for all those with intakes, most clients self-reported they were court-referred (61.2%) and self-referred (17.2%) to treatment. The majority of adults who completed an intake interview reported using illegal drugs (79.2%), alcohol (46.3%), and smoking tobacco (83.3%) in the 12 months before intake. On average, clients reported being about 17.0 years old when they first began using drugs, 15.4 years old when they had their first alcoholic drink (other than a sip) and 16 years old when they began smoking tobacco.

Past-8-year trends in specific drug use at intake indicate that the percent of clients reporting non-prescribed opioid and methadone use have both decreased while the percent of clients reporting heroin use has remained relatively stable after an increase to the low teens in FY 2013. The use of bup-nx increased in FY 2015 and has been less than one-quarter since FY 2016. The percent of clients reporting methamphetamine use has increased from 6% in FY 2012 to 18% in FY 2015 to a high of 42% in FY 2018.

Of the 1,175 adults who completed a 12-month follow-up interview, half the sample was male and half was female. The majority of follow-up clients were White. Clients in the follow-up sample were an average of 35 years old at the time of the intake interview and less than half (42.5%) reported they were married or cohabiting at intake. When individuals 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, economic hardship, criminal justice involvement, physical health, mental health, substance use, and severity of substance use. These differences indicate that followed-up individuals were worse off in several key domains compared to those who were not followed up.

Despite these treatment barriers, many clients showed significant improvements in substance use, mental health, physical health, criminal justice system involvement, employment and economic hardship, quality of life, and recovery supports. Clients also report high levels of satisfaction with their substance abuse treatment experiences. These improvements will be summarized in more detail below.

Areas of Success

Substance Use

There was a significant decrease in self-reported illegal drug use over time, with 88.0% of clients reporting any illegal drug use at intake compared to 35.8% at follow-up. Trends in any illegal drug use show that the percent of clients reporting illegal drug use at follow-up has decreased over time with a slight increase in FY 2017 and FY 2018.

Analysis of specific past-12-month drug use indicates more than half of clients (54.6%) reported using marijuana at intake, whereas 24.0% reported marijuana use at follow-up. Nearly half of followed-up clients reported misusing prescription opioids at intake, whereas 12.4% of clients reported prescription opioid misuse at follow-up. Nearly one half of clients reported using stimulants (other than cocaine) at intake. Among the individuals who reported using stimulants at intake, 95.5% of them reported using methamphetamine. At follow-up, less than 10% reported stimulant use in the past 12 months. Nearly one-fourth of followed-up clients reported using CNS depressants in the 12 months before intake, with a significant decrease to 3.5% at follow-up.

About half of clients reported using alcohol in the 12 months before intake, with a 24.0% decrease at follow-up. There were similar percent decreases in the use of alcohol to intoxication and binge drinking. Since FY 2008, the percent of the KTOS follow-up sample that has reported past-12-month alcohol use has decreased steadily from 77% to a low of 51% in FY 2016 and remained relatively stable in FY 2017 and FY 2018.

The percent of clients who met DSM-5 study criteria for no substance use (alcohol and/or drug use) disorder increased from intake to follow-up. Along the same lines, 61.1% of clients met criteria for severe substance use disorder at intake, with a significant decrease to 17.5% at follow-up. Further, 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. There were significant decreases from intake to follow-up in the percent of clients reporting that they experienced problems with drugs and alcohol and that they were considerably or extremely bothered by drug or alcohol problems in the prior 30 days.

Mental Health

Clients' mental health showed significant improvements over the study follow-up period. The percent of individuals who reported depression, generalized anxiety, comorbid depression and anxiety, and suicidal thoughts or attempts decreased significantly from intake to follow-up. Both trends in depression and trends in anxiety show that the percent of clients reporting these mental health problems have increased at intake since FY 2014 when 40% of clients reported anxiety and 41% reported depression. The percent of clients with depression at follow-up has fluctuated from 21% in FY 2014 to a high of 34% in FY 2018, whereas the percent of clients with anxiety has increased from 19% in FY 2014 to 30%-33% in FY 2015 through FY 2018.

KTOS clients' perceptions of poor physical and mental health decreased significantly from intake to follow-up. Fewer clients reported using substances to reduce or manage their stress at follow-up compared to intake. Individuals' rating of overall health significantly improved from intake to

follow-up. One-quarter of clients reported they had experienced any interpersonal victimization in the 12 months before intake. By follow-up, significantly fewer clients reported they had experienced any interpersonal victimization in the past 12 months.

Economic Status and Living Conditions

Overall, individuals' economic and living circumstances improved from intake to follow-up. Significantly fewer clients considered themselves homeless in the past 12 months before follow-up than in the 12 months before entering treatment. About 41% of clients reported being employed full-time at follow-up compared to 23.4% at intake. Furthermore, the average number of months clients reported working in the past 12 months increased from 4.4 months at intake to 5.6 months at follow-up. At follow-up, fewer clients reported having economic hardship in terms of difficulty meeting basic living needs (such as food, shelter, and utilities).

Criminal Justice System Involvement

Individuals' involvement with the criminal justice system decreased from the 12 months before treatment intake to the 12 months before follow-up. Over half of individuals (57.7%) reported an arrest at intake, which decreased significantly to 30.3% at follow-up. A trend report shows that the percent of clients reporting an arrest in the past 12 months has remained relatively stable at both intake (with a high of 59% in FY 2011 and a low of 53% in FY 2009 and FY 2016) and follow-up (with a high of 33% in FY 2010 and a low of 20% in FY 2015). About 2 in 5 individuals reported they had a conviction for a misdemeanor in the 12 months before intake, and at follow-up, only 14.5% reported a conviction for a misdemeanor. One in 4 individuals reported a conviction for a felony in the 12 months before entering treatment, whereas at follow-up, only 6.9% of individuals had a conviction for a felony. The majority of clients (60.7%) reported being incarcerated at least one night in the past 12 months at intake compared to 34.3% of clients at follow-up. Like arrests, the trend report for incarceration shows that, overall, the number of clients reporting spending at least one night in jail has been relatively stable at both intake (with a high of 64% in FY 2014 and a low of 58% in FY 2012-2013) and follow-up (with a high of 37% in FY 2017 and a low of 21% in FY 2013).

Quality of Life and Well-Being

Clients rated their quality of life as significantly higher, on average, after participating in substance abuse treatment. In addition, clients rated their overall well-being, personal well-being, interpersonal well-being, and social well-being higher, on average, at follow-up when compared to intake.

Recovery Supports

Compared to intake (33.2%), significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up (48.4%). Also, at follow-up, clients reported having significantly more people they could count on for recovery support. Significantly more individuals reported they had recovery supportive interactions with a sponsor at follow-up than at intake. About 92% of clients stated they thought they had a moderately or very good chance of staying off drugs or alcohol at follow-up. Clients reported that support from their

families, parenting children, and employment would be most useful in staying off drugs/alcohol at follow-up.

Multidimensional Recovery Status

Consistent with the framework that recovery is a multidimensional construct, encompassing multiple dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives. At intake, as expected, a small percent of the followed-up sample (6.1%) was classified as having all eight dimensions of recovery. At follow-up, there was a significant increase of 29.5% so that more than one-third of the sample had all dimensions of recovery.

To better understand which factors at entry to the program are associated with better status at follow-up, each element that defined the multidimensional status at intake was entered as a predictor variable in a logistic regression model. The following predictor variables at intake were statistically significantly associated with better status at follow-up: meeting criteria for no substance use disorder, reporting no homelessness, reporting no arrests or incarceration, no suicidal ideation or attempts, and reporting a mid to higher quality of life at intake.

Program Satisfaction

Client ratings of the treatment services they received were high (an average of 8.1 out of 10, with 10 representing the best possible experience). Seven in 10 (71.4%) gave a high positive rating of 8 to 10. The majority of clients agreed that program staff believed in them and that treatment would work for them, program staff cared about them and their treatment progress, they talked about things in treatment that were most important to them, they felt listened to and heard by program staff, they had input into their treatment goals, plans, and how they were progressing over time, their expectations and hopes for treatment were met, they had a connection with a staff person during treatment, and the treatment approach and method was a good fit for them. Also, 78.8% reported that the treatment episode was working/worked pretty well or extremely well for them. The majority of clients indicated they would refer a close friend or family member to their treatment provider.

Areas of Concern

While there were many positive outcomes overall, there are also potential opportunities to make even more significant improvements in some clients' functioning after they begin treatment.

Drug Use

When looking at trends over time in past-12-month use at intake, results show that while prescription opioid and methadone use has decreased gradually over the past 5 years, the percent of clients reporting methamphetamine use has increased from 6% in FY 2012 to 42% in FY 2018. Furthermore, the percent of clients who reported at intake that they had ever injected drugs in their lifetime was 34% for the follow-up sample.

Even though there were significant decreases in substance use and severity of substance use

problems, it is worth noting that a little more than one-third of KTOS clients reported using illegal drugs and a little more than one-fourth of clients reported using alcohol in the 12 months before follow-up.

Smoking

Smoking rates remained very high for KTOS clients with 83.1% reporting smoking in the 12 months before follow-up. Moreover, the smoking rates at intake and follow-up have been stable since FY 2007. Further, nearly one-third of clients reported using vaporized nicotine products at 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.[120] 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.[121]

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.[122] Those with co-occurring substance use and mental health disorders often have medication noncompliance, relapse, homelessness, and suicidal behavior.[123] Overall, there was a significant decrease in mental health problems from intake to follow-up, however, about 1 in 3 individuals were still reporting symptoms of depression and almost one-third were still reporting symptoms of anxiety at follow-up. Further, trend reports show that the percent of clients reporting depression and anxiety at follow-up have been at similar levels for the past four years

Chronic Pain

At follow-up, one-third of KTOS clients reported persistent chronic pain that lasted at least 3 months. Research has shown that individuals with persistent or chronic pain are more likely to report anxiety, depression, lower overall health ratings[124] and substance use disorders.[125] Self-medication can be problematic in substance abuse treatment program participants who

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

121 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.

122 https://www.samhsa.gov/treatment#co-occurring.

123 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.

124 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.

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

report chronic pain.[126] Of those KTOS clients who reported misusing prescription opioids and experiencing chronic pain at intake (n = 201), 61.3% (n = 1122) reported chronic pain in the past 12 months at follow-up and 21.1% (n = 42) reported past-12-month misuse of prescription opioids.

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.[127] In this year's report, there was a significant decrease in the percent of individuals who reported having difficulty meeting basic living needs (such as paying for rent/mortgage, utilities, phone, or food) from intake to follow-up. The finding of a significantly lower percentage of individuals who experienced economic hardship is good news. However, while the percent of participants reporting difficulty meeting basic needs for financial reasons decreased over time, 36% of clients still reported having difficulty meeting basic living needs at follow-up. Moreover, there was no change in the percent of individuals having difficulty obtaining health care needs for financial reasons. Similarly, while the number of clients reporting current full-time employment increased significantly, 49% of clients remained unemployed at follow-up. The resulting financial strain from these economic factors could lead to increased substance use to alleviate the stress.[128] Providing referrals and support for these factors may help improve basic living situations for many clients and support continued recovery living for long-term positive results after treatment.

Multidimensional Recovery Status

Even though there were significantly more individuals who had better status at follow-up than at intake (35.6% vs. 6.1%), the majority of individuals (64.4%) were still classified as not having all eight dimensions of better recovery status. The greatest contributors to individuals being classified as having better status at follow-up were meeting criteria for no substance use disorder at intake, reporting no homelessness, reporting no arrests or incarceration, no suicidal ideation or attempts, and reporting a mid to higher quality of life at intake.

Gender Differences on Targeted Factors

Similar to previous years' reports, there were several gender differences in targeted factors found in this report.

Significantly more men than women reported using illegal drugs at follow-up. Specifically, significantly more men reported they had used marijuana and other illegal drugs (such as hallucinogens, inhalants, synthetic drugs) in the past 12 months at follow-up. However, significantly more women also reported opioid and CNS depressant use in the past 12 months at intake. Significantly more men reported past-12-month and past-30-day use of alcohol and alcohol use to intoxication at both intake and follow-up compared to women. Also, significantly

[126] 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.

[127] https://www.samhsa.gov/find-help/recovery

[128] Shaw, B. A., Agahi, N., & Krause, N. (2011). Are Changes in Financial Strain Associated With Changes in Alcohol Use and Smoking Among Older Adults? *Journal of Studies on Alcohol and Drugs, 72*(6), 917-925.

more men reported binge drinking at intake when compared to women. 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, and comorbid depression and anxiety. Also, women rated their overall health status as lower, on average, at intake and follow-up when compared to men. Women reported their mental health was not good significantly more days than men at intake and follow-up. Furthermore, women reported significantly more days their poor physical or mental health had kept them from doing their usual activities at intake and follow-up. Significantly more women reported they had experienced any interpersonal victimization than men at intake and follow-up. Research shows that women with co-occurring mental health and substance use disorders have poorer treatment outcomes and high rates of program dropout.[101] 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 than men reported being homeless at the time of intake. Significantly more women reported 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 $0.82 for every dollar employed men made and by follow-up the gap in hourly wages remained large with employed women making only $0.76 for every dollar employed men made. Significantly more women than men reported difficulty in accessing basic living needs for financial reasons 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, about half to more than half of employed women had a service sector job, whereas around one-fifth of employed men had a service sector job. In addition, at intake and follow-up more than two-fifths of employed men (44.9% and 46.9%, 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 (4.9% and 8.5%, respectively).

Overall, a higher percentage of men reported being involved with the criminal justice system in the 12 months before entering treatment compared to women. Specifically, more men reported they had been arrested, incarcerated, and under supervision by the criminal justice system at intake. Men reported, on average, having more people they could count on for recovery support than women.

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, chronic pain, depression, generalized anxiety, suicidality, and substance use disorder severity. Significantly more women were followed up than were not followed up. For the most part, the significant differences suggest that individuals who were followed up were worse off in terms of physical health, mental health, and substance use severity when compared to individuals who were not followed up. 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 were self-reported by clients. There is reason to question the validity and reliability of self-reported data, particularly about 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.[129,130,131,132] Earlier studies found that the context of the interview influences reliability.[133] 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 use disorder and drug use disorder in the U.S. to estimate a cost per person with a SUD. This cost per person was then applied to the KTOS clients based on their self-reported alcohol and drug use at intake and follow-up. As with any cost-offset analysis, there are several assumptions underlying the logic of this approach—any of which could prove to be faulty. Therefore, we have clearly laid out the

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[129] 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.

[130] 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.

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

[132] 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.

[133] 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.

assumptions in Section 11 to help interpret the findings.

Conclusion

This KTOS 2020 report provides a valuable examination of client-level outcomes for adults in publicly-funded substance abuse treatment in Kentucky. Overall, clients of publicly-funded substance abuse treatment, including a variety of treatment modalities, made significant strides in all the targeted outcomes. Specifically, there were significant decreases in use of alcohol and all drugs, depression and anxiety symptoms, suicidality, homelessness, economic hardship, arrests, convictions, and incarceration, and a significant increase in full-time employment, quality of life, well-being, and recovery supports. Moreover, an estimate of the cost to Kentucky for alcohol and drug use disorder 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.[134] 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 informed consent process clients are told 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 5,528 clients who completed an intake survey, 2,813 (50.9%) agreed to be contacted for the follow-up study.[135] 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 individuals who reported either alcohol or drug use in the 12 months before treatment (or if they did not they were incarcerated all 365 days before entering treatment), and then randomly selecting clients by intake month (n = 2,034).

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 2,034 clients included in the follow-up sample, 341 were ineligible for participating in the follow-up survey for a variety of reasons (e.g., incarcerated, in residential treatment, deceased), which left 1,693 clients eligible for follow-up. Of these clients, 1,175 completed a follow-up survey (see Table AA.1). Thus, the follow-up rate was 69.4%. The remaining clients either (1) refused (2.2%) to complete the follow-up survey, or (2) were never successfully contacted, or if contacted they never completed the follow-up survey (28.4%).

[134] 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.

[135] One client had a missing response for follow-up agreement.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 2,034)

	Number of Records	Percent
Ineligible for follow-up survey	341	16.8%
	Number of cases eligible for follow-up (N = 1,693)	
Completed follow-up surveys	1,175	
Follow-up rate ((the number of completed surveys/ the number of eligible cases)*100)		69.4%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	481	
Expired rate ((the number of expired cases/eligible cases)*100)		28.4%
Refusal	37	
Refusal rate (the number of refusal cases/eligible cases)*100)		2.2%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	1,553	
Percent of cases accounted for ((the number of cases accounted for/ total number of records in the follow-up sample)*100		76.4%

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 341 cases that were ineligible for follow-up, the majority (73.0%) were ineligible because they were incarcerated during the follow-up period. In other words, of the 2,034 individuals selected into the sample to be followed up, 12.2% were ineligible for participation at the time of follow-up because they were incarcerated. About 19% were ineligible because they were in residential treatment at the time of follow-up and 4.4% were ineligible because they were deceased. Other reasons a small number of clients were ineligible for follow-up were hospitalization, invalid locator information, recently in a previous follow-up sample, they had an unspecified health condition, or there was a language barrier.

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 341)

	Number	Percent
Incarcerated	249	73.0%
In residential treatment	64	18.8%
Deceased	15	4.4%
Hospitalized	7	2.1%
Invalid locator information	3	0.9%
Recently in previous sample	1	0.3%
Health condition	1	0.3%
Language barrier	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 reason[136] (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 (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 by follow-up status.

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

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Age	35.5 years	34.9 years
Gender**		
Male	58.2%	50.4%
Female	41.6%	49.6%
Race		
White	92.7%	92.9%
African American	5.3%	5.0%
Other or Multiracial	1.9%	2.0%
Marital status		
Never married	28.4%	27.3%
Married or cohabiting	44.1%	46.0%
Separated or divorced	25.3%	25.3%
Widowed	2.3%	1.4%

**$p < .001$.

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

Socioeconomic Indicators

The vast majority of clients reported that their usual living arrangement in the 12 months before entering substance abuse treatment was living in their own or someone else's home or apartment (i.e., private residence; see Table AB.2). About 10% of clients who did not complete a follow-up reported their usual living arrangement was in jail or prison compared to 8.3% of clients who did complete a follow-up. 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 of entering treatment, almost one-fourth of clients 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

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Usual living arrangement in the 12 months before entering the program		
Own or someone else's home or apartment	83.9%	86.5%
Residential treatment, Recovery Center, sober living home, personal care home, hospital, school or work dormitory	2.8%	2.2%
Jail or prison	9.8%	8.3%
Shelter, hotel/motel, or on the street	3.2%	2.9%
Other	0.3%	0.2%
Considers self to be currently homeless	24.0%	25.4%
Why the individual considers himself/herself to be homeless	(n = 1,046)	(n = 299)
Staying temporarily with friends or family	54.0%	59.2%
Staying on the street or living in car	32.6%	24.1%
Staying in a shelter	7.8%	8.4%
Staying in a hotel or motel	1.6%	1.0%
Incarcerated and does not have a place to stay after release	1.2%	2.0%
Staying in residential treatment, recovery center, or hospital	0.4%	0.7%
Other reason	2.3%	4.7%

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

Table 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 completed a follow-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 compared to those who did not complete a follow-up. There was no difference by follow-up status in the percent of clients who 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 = 4,353	YES n = 1,175
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)*	37.8%	43.1%
Had difficulty obtaining needed health care for financial reasons (e.g., doctor visit, dental care, or fill prescription)	21.4%	24.3%

*p < .01.

Table AB.4 describes clients' level of education when entering treatment. A higher percentage of clients who completed a follow-up interview reported they had some vocational school to higher levels of education at intake when compared to clients who did not complete a follow-up interview.

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

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Highest level of education completed**		
Less than GED or high school diploma	26.8%	22.5%
GED or high school diploma	43.2%	41.2%
Some vocational school to graduate school	30.0%	36.3%

**p < .001.

There were no differences in number of months clients were employed in the 12 months before entering treatment by follow-up status. About 40% of clients reported working 0 months in the 12 months before entering treatment (see Table AB.5). About 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 7.3 for clients who were not followed up and for clients who were followed up.

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

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Employment		
Percent of clients who reported working for:		
0 months	40.7%	40.0%
1 to 5 months	21.5%	20.9%
6 months or more	37.8%	39.1%
Among those who were employed:	n = 2,581	n = 705
Average # of months employed in the past 12 months	7.3 months	7.3 months

Criminal Justice System Involvement

Significantly more clients who were not followed-up reported being under supervision by the criminal justice system compared to clients who completed a follow-up (see Table AB.6).

Over half of clients in the followed-up and not followed-up groups reported they had been arrested in the 12 months before entering treatment. Of the clients who reported they were arrested, followed-up clients reported 1.9 average arrests and non-followed up clients reported an average of 2.0 arrests in the 12 months before entering treatment. Significantly more clients who were not followed-up reported being incarcerated at least one day in the past 12 months before entering treatment compared to those who completed a follow-up (see Table AB.6). Among the clients who were incarcerated at least one night, the average incarceration time in the 12 months before entering treatment was 71.4 days for clients who were not followed up and 62.4 average days for clients who were followed up.

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

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Currently under supervision by the criminal justice system*	45.7%	40.9%
Arrested for any charge in the 12 months before entering treatment	57.5%	57.4%
Of those with an arrest,	n = 2,505	n = 675
Average number of arrests	2.0	1.9
Incarcerated at least one day*	65.2%	60.7%
Of those incarcerated,	(n = 2,836)	(n = 713)
Average number of days incarcerated in the past 12 months	71.4	62.4
Staying in a shelter	7.8%	8.4%

*p < .01.

Physical Health

Physical health measures were included in the intake survey (see Table AB.7). There were significant differences between those clients who were not followed-up and those that were followed-up. Significantly more clients who were in the follow-up sample (36.5%) reported they had chronic pain than clients who were not followed-up (32.4%).

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 (58.7% vs. 52.8%).

TABLE AB.7. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Chronic pain (lasting at least 3 months)*	32.4%	36.5%
Ever told by a doctor that client had one of the 12 chronic medical problems listed**	52.8%	58.7%

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

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.8). 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: 52.3% vs. 45.6%.

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: 51.5% vs. 44.1%.

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.8. PERCENT OF CLIENTS REPORTING MENTAL HEALTH PROBLEMS IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Depression**	45.6%	52.3%
Generalized Anxiety Disorder**	44.1%	51.5%
Suicidality (e.g., thoughts of suicide or suicide attempts)**	16.4%	20.8%

**p < .001.

Substance Use

Use of illegal drugs in the 12 months before entering treatment is presented by follow-up status in Table AB.9. Significantly more clients in the follow up sample reported using marijuana, stimulants, and illicit use of prescription opioids compared to those who did not complete a follow-up.

The most frequently reported illegal drugs used in the 12 months before entering treatment were marijuana, stimulants, non-prescribed use of prescription opioids, non-prescribed buprenorphine-naloxone (bup-nx), and tranquilizers/sedatives/benzodiazepines.

TABLE AB.9. PERCENT OF CLIENTS REPORTING ILLEGAL DRUG USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Any illegal drug**	76.9%	87.8%
Marijuana**	48.0%	54.5%
Stimulants*	42.9%	47.5%
Prescription opioids (illegal use)**	33.6%	40.4%
Non-prescribed buprenorphine-naloxone (bup-nx)	21.3%	24.6%
Tranquilizers, sedatives, benzodiazepines	19.6%	22.9%
Cocaine	15.0%	17.0%
Heroin	13.0%	13.3%
Synthetic Drugs (synthetic marijuana, bath salts)	8.6%	10.0%
Non-prescribed methadone	5.0%	4.8%
Hallucinogens	4.0%	4.8%
Barbiturates	2.9%	2.7%
Inhalants	1.1%	1.8%

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

There were significant differences in alcohol use in the 12 months before entering treatment by follow-up status (see Table AB.10). Over half of followed-up clients reported alcohol use in the 12 months before entering treatment, whereas 44.5% of clients who were not followed up reported using alcohol. Significantly more followed-up clients reported using alcohol to intoxication and binge drinking than clients who were not followed up.

TABLE AB.10. PERCENT OF CLIENTS REPORTING ALCOHOL USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Alcohol**	44.5%	52.9%
Alcohol to intoxication**	29.6%	37.7%
Binge drank alcohol (i.e., drank 5 or more (4 for women) drinks in 2 hours**	25.9%	35.1%

**p < .001.

A majority of followed-up and non-followed-up clients reported they had smoked tobacco products in the 12 months before entering treatment (see Table AB.11). Significantly more clients who completed a follow-up reported using vaporized nicotine products (i.e., e-cigarettes, juul; 29.4%) compared to those not followed-up (23.1%). About 15% of both samples reported smokeless tobacco use.

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

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Smoked tobacco	82.7%	85.7%
Vaporized nicotine**	23.1%	29.4%
Used smokeless tobacco	15.9%	14.6%

**p < .001.

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.12 The lowest composite score is 0 and the highest composite score is 1.0.

Of clients who were not in a controlled environment all 30 days, almost 40% of those not followed-up and 46.3% of those followed-up met or surpassed the Addiction Severity Index (ASI) composite score cutoff for alcohol and/or drug severe SUD, which was a significant difference (see Table AB.12). Significantly more clients who completed a follow-up surpassed the cutoff score for severe alcohol use disorder when compared to those who did not complete a follow-up. There was no significant difference between clients who were followed-up or not followed up for the cutoff score for severe drug use disorder.

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 significantly higher for those who were followed up than for those who did not complete a follow-up survey (.13 vs. .09). 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 0.11 for clients who did not complete a follow-up interview and 0.13 for followed up clients, which was also significantly different (see Table AB.12).

TABLE AB.12. SUBSTANCE ABUSE AND DEPENDENCE PROBLEMS AT INTAKE

	Not in a controlled environment all 30 days before entering treatment	
	FOLLOWED UP	
	NO n = 3,901	YES n = 1,044
Percent of clients with ASI composite score equal to or greater than cutoff score for...		
Severe alcohol or drug use disorder	37.2%	46.3%**
Severe alcohol use disorder	16.2%	23.1%**
Severe drug use disorder	27.1%	30.1%
Average composite score for alcohol use[a]	.09	.13**
Average composite score for drug use[b]	.11	.13**

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.

A similar percent of clients in the follow-up and non-follow-up groups reported they had a history of prior substance abuse treatment in their lifetime (see Table AB.13). Among clients who reported a history of substance abuse treatment, the average number of lifetime treatment episodes was 2.7 for those not followed-up and 2.7 for those who completed a follow-up.

TABLE AB.13. HISTORY OF SUBSTANCE ABUSE TREATMENT IN LIFETIME

	FOLLOWED UP	
	NO n = 4,353	YES n = 1,175
Ever been in substance abuse treatment in lifetime	55.8%	56.6%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 2,430)	(n = 665)
Average number of times in treatment	2.7	2.7

In summary, there were some significant differences between clients who were followed up and those who were not, and most of these significant differences suggest that followed-up clients are worse off than clients who were not followed up. First, significantly more women were followed up than were not followed up. Second, significantly more followed-up clients reported they had

difficulty meeting basic needs for financial reasons. Third, 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. Fourth, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Fifth, significantly more clients who were followed up reported using marijuana, stimulants, and illegal use of prescription opioids, alcohol, and vaporized tobacco compared to clients who were not followed up. Sixth, 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 alcohol use SUD, and had a higher average composite score for drug use and for alcohol use when compared to clients who did not complete a follow-up. Nonetheless, there were a few statistically significant differences in which the followed-up clients had better indicators than the individuals who were not followed-up: education, criminal justice supervision, and any incarceration in the past 12 months.