

The background of the cover is an abstract, textured composition. A large, solid purple triangle occupies the left side, pointing towards the bottom right. The rest of the cover is filled with a vibrant, multi-colored abstract pattern. This pattern consists of various shades of blue, red, orange, yellow, green, and white, applied in thick, expressive brushstrokes that create a sense of movement and depth. The colors are layered and blended, giving the impression of a dynamic, evolving artwork.

# **Adult Kentucky Treatment Outcome Study**

2021

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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 victimization, (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 = 5,228 in FY 2019) and a follow-up interview administered by the University of Kentucky Center on Drug & Alcohol Research (CDAR) staff with 1,066 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 68.9%. 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 89% at intake to 33% 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, except for the past three 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 in the past 12 months decreased from 50% at intake to 26% at follow-up.

*They don't treat you like you're worthless. They actually help you. I've been clean for almost 2 years. Me and a couple of my buddies go here and might not be alive if we didn't.*

- KTOS FOLLOW-UP CLIENT

Overall, the percent of clients who met DSM-5 study criteria suggesting no substance use (alcohol and/or drug use) disorder increased from 19% at intake to 66% 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 more than one-half (55%) at intake to 11% 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 24% at follow-up.

Past-12-month (86%) and past-30-day (83%) rates of smoking tobacco use were very high and remained high at follow-up (81% and 77%, respectively). One-third of KTOS clients reported past-12-month use of vaporized nicotine at intake, with a non-significant decrease to 29% at follow-up.

For the second consecutive year, among individuals who completed an intake survey in FY 2019, a higher percentage of clients reported using methamphetamine (48%) in the past 12 months than reported using prescription opioids (29%), buprenorphine-naloxone (19%), heroin (12%), and methadone (4%).

## Mental Health, Physical Health, and Victimization

The mental health of clients who participated in treatment also significantly improved. Over half of clients (56%) met study criteria for depression at intake compared to 33% of clients at follow-up. Over half of clients (54%) met study criteria for generalized anxiety at intake compared to 29% at follow-up. About 44% of clients met study criteria for both depression and generalized anxiety compared to 21% at follow-up. In addition, 19% of clients reported suicidal ideation or attempts at intake compared to 8% at follow-up. Additionally, interpersonal victimization experiences in the past 12 months decreased from 33% of clients at intake to 16% at follow-up. Among individuals who reported any lifetime interpersonal victimization at intake, 28% screened positive for PTSD. Among the follow-up sample, 11% screened positive for PTSD.

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 (4.1 vs. 6.7) and mental health (6.0 vs. 13.2) were poor in the past 30 days at follow-up compared to intake. Trends for the past nine years show 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 2012 to a high of 7.3 in FY 2016, clients have reported significantly 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, with even greater decreases from intake to follow-up.

## 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 (7%) than at intake (29%). Trend data shows that the percent of clients reporting homelessness has increased since FY 2014 (8%) to FY 2019 (29%). Significantly fewer individuals reported their usual living situation was in a jail or prison in the 12 months before follow-up compared to the 12 months before intake. Also, significantly more clients reported their usual living situation was in a residential program, recovery center, or sober living home at follow-up when compared to intake (8% vs. 3%).

Furthermore, about 39% 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 5.7 months at follow-up. Additionally, at intake, 46% 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 31%. The percent of clients who reported they had difficulty obtaining health care (e.g., doctor visits, dental visits, and

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



### REPORTED ANY ILLEGAL DRUG USE\*\*\*

**89%** at intake | **33%** at follow-up

### MET STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY\*\*\*

**44%** at intake | **21%** at follow-up

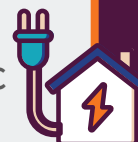


### CURRENTLY EMPLOYED FULL-TIME\*\*\*

**23%** at intake | **39%** at follow-up

### DIFFICULTY MEETING BASIC LIVING NEEDS\*\*

**46%** at intake | **31%** at follow-up



### ANY ARREST\*\*\*

**62%** at intake | **26%** at follow-up

### ATTENDED MUTUAL HELP RECOVERY GROUP MEETING\*\*\*

**34%** at intake | **49%** at follow-up



prescription medications) for financial reasons did not change significantly from 26% at intake to 19% at follow-up.

### 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 62% at intake to 26% at follow-up. The percent of individuals who reported they had been incarcerated in the past 12 months decreased from 66% at intake to 31% at follow-up. Trend analyses show that, overall, the percent of clients who reported an arrest was consistent over the past 13 years at intake (minimum of 53%, maximum of 62%) 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, at follow-up significantly fewer individuals reported they had been convicted of a misdemeanor (13% vs. 41%) and felony (7% vs. 30%) than at intake.

### Quality of Life

Compared to intake (7.0%), individuals rated their quality of life as significantly higher at follow-up (8.0) on a scale from 1 to 10. 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 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. The multidimensional recovery measure uses items from the intake and follow-up surveys to classify individuals who have all positive dimensions of recovery. At intake, as expected, a small percent of the followed-up sample (5%) was classified as having all eight dimensions of recovery. At follow-up, there was a significant increase of 33% which means that more than one-third (38%) had all dimensions of recovery.

To better understand which factors at entry to the program are associated with having all positive dimensions of recovery 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 having all positive dimensions of recovery at follow-up: meeting criteria for no substance use disorder, reporting employment (or being unemployed because of retirement, caregiving, disability, or being a student), and reporting a mid to higher quality of life.

## Recovery Supports

Compared to intake (34%), significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up (49%). Compared to intake, significantly more individuals reported they had recovery supportive interactions with a sponsor at follow-up (18% vs. 33%). Also, individuals reported having more people they could count on for recovery support at follow-up (17.1) than at intake (6.8). 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 and the following intake factors were significantly associated with greater odds of using alcohol and/or drugs in the follow-up period: having fewer nights incarcerated, more depression and anxiety symptoms, lower quality of life rating, and more adverse childhood experiences.

## 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 8.3 out of 10. Most clients (91%) 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, worse physical health, more interpersonal victimization experiences, and greater economic hardship than their male counterparts. 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. Significantly more women than men reported using opioids and stimulants in the past 12 months at intake. Significantly more women than men reported using CNS depressants and stimulants in the past 30 days at intake. Also, significantly more women than men reported that they were considerably or extremely bothered by drug or alcohol problems 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 than men reported smoking tobacco at intake and follow-up, while significantly more men reported using smokeless tobacco at intake and follow-up. In contrast, significantly more men than women reported using alcohol and binge drinking in the 12 months and 30 days before intake and follow-up, and alcohol use to intoxication in the 12 months before intake.

More women than men reported mental health symptoms at intake and follow-up including depression, generalized anxiety, comorbid depression and anxiety, suicidality, and post-traumatic stress disorder. Of those who met study criteria for depression and anxiety at intake, women reported significantly more symptoms than men. Also, women rated their overall health lower at intake and follow-up compared to men. They reported their mental health was not good for significantly more days than men at intake and follow-up and that poor mental and/or physical health limited their activities in the 30 days before intake.

Women's housing situation, employment, and economic hardship were worse than men's situations. First, significantly more women reported homelessness at intake and follow-up 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 at intake and at follow-up. 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 incarceration and criminal justice supervision at intake compared to women. Significantly more women reported a conviction for a felony offense at follow-up compared to men.

Compared to women, men also reported higher overall well-being and interpersonal well-being. Significantly more women than men attended mutual help recovery meetings in the 30 days before intake and follow-up. Finally, significantly more women reported they had recovery supportive interactions with family and friends and a sponsor in the 30 days before follow-up when compared to men.

## Cost Savings

Estimates on the total costs of drug and alcohol abuse derived from national estimates applied to the follow-up sample of KTOS for this year's report



suggest that for every dollar spent on publicly-funded substance abuse treatment programs there was an estimated \$4.54 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).

## Conclusion

The KTOS 2021 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. Overall, findings from the 2021 Kentucky Treatment Outcome Study showed positive changes for individuals from the 12 months before treatment intake to the 12-month follow-up. 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. These decreases in substance use, mental health symptoms, physical health problems, victimization, homelessness, economic hardship, and involvement in the criminal justice system as well as increases in quality of life, employment, and recovery supports have been found in multiple years' reports. 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.

Nonetheless, sizeable minorities of clients had negative outcomes at the 12-month follow-up. For example, half were unemployed at follow-up, a little more than one-third of KTOS clients reported using illegal drugs, one-fourth of clients reported using alcohol, and one-fifth met criteria for severe SUD at follow-up. Half of followed up clients were unemployed at follow-up. Nearly one-third of clients still reported having difficulty meeting basic living needs and nearly one-fifth reported having difficulty obtaining health care needs for financial reasons at follow-up. Even though there were significantly more individuals who had all positive dimensions of recovery at follow-up than at intake (37.5% vs. 4.6%), the majority of individuals (62.5%) were still classified as not having all eight positive dimensions of recovery. Most of the statistically significant differences between men and women on outcomes showed that women had more comorbid mental health problems, worse physical health, more interpersonal victimization experiences, and greater economic hardship than their male counterparts.

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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 victimization, (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, 2018 and June 30, 2019 (N = 5,228). This section also describes characteristics of 1,066 clients who completed a 12-month follow-up interview between July 1, 2019 and June 30, 2020.

**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 2021 KTOS follow-up sample.

**Section 4. Mental Health, Physical Health, and Victimization.** This section examines changes in mental health symptoms, physical health, 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, 2018 and June 30, 2019 (N = 5,228). This section also describes characteristics of 1,066 clients who completed a 12-month follow-up interview between July 1, 2019 and June 30, 2020.*

### 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.<sup>1</sup> In FY 2019, 5,228 adults completed an intake survey between July 1, 2018 and June 30, 2019.<sup>2</sup>

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 68.9% and a low refusal rate (3.0%) for participation in the interviews. That means that 28.1% of clients were not successfully contacted to complete the follow-up telephone interviews (see Appendix A for detailed information on study methods).

*I really liked my counselor and everyone wanted to help us get on the right path.*

- KTOS FOLLOW-UP CLIENT

<sup>1</sup>Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2020). Evidence Base for the Kentucky Treatment Outcome Study (KTOS) Assessment and Methods. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

<sup>2</sup>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.<sup>3,4,5</sup> For example, in many studies that have compared agreement between self-report and urinalysis the concordance or agreement is acceptable to high.<sup>6,7,8</sup> 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.<sup>9,10,11</sup> In other studies, higher percentages of underreporting have been found.<sup>12</sup> 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.<sup>13</sup> 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.<sup>14</sup>

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

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

<sup>6</sup> 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.

<sup>7</sup> 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.

<sup>8</sup> 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.

<sup>9</sup> 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.

<sup>10</sup> 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.

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

<sup>12</sup> Chermack, S. T., Roll, J., Reilly, M., Davis, L., Kilari, U., Grabowski, J. (2000). Comparison of patient self-reports and urinalysis results obtained under naturalistic methadone treatment conditions. *Drug and Alcohol Dependence*, 59, 43-49.

<sup>13</sup> 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.

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

Subjects 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.

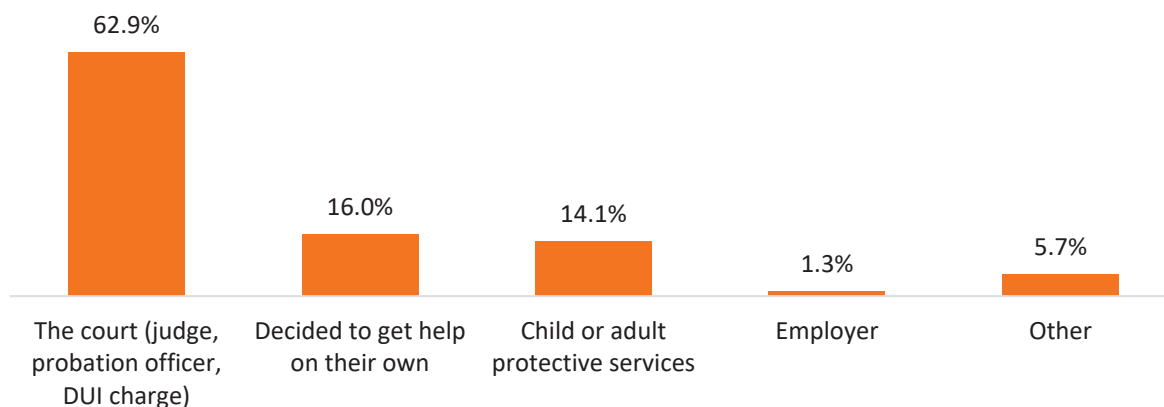
This report describes the sample of treatment clients in two main ways: (1) providing a description of characteristics for 5,228 adults who completed an intake interview in FY 2019 (July 1, 2018 – June 30, 2019), and (2) presentation of client characteristics for 1,066 adults who completed an intake interview in FY 2019 and a 12-month follow-up telephone interview with a target date between July 1, 2019 and June 30, 2020.

## 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 63% 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, instead it is the client's perception of referral source. Sixteen percent 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 (14.1%) or other referral sources (5.7%; 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 (1.3%).

FIGURE 1.1. SELF-REPORTED REFERRAL SOURCE FOR ALL KTOS CLIENTS AT INTAKE (N = 5,228)



## DEMOGRAPHICS

Table 1.1 shows that over half of clients with an intake survey completed in FY 2019 were male (56.3%) and the majority were White (93.2%). A minority of clients reported their race as African American/Black (4.3%) and 2.5% reported they were American Indian, Asian, Hispanic, or multiracial. Clients were, on average, 35.8 years old, ranging from 18 to 76 years old at intake. At intake, around two-fifths (41.5%) were married or cohabiting with a partner,



28.3% had never been married (and were not cohabiting), 27.8% were separated or divorced, and 2.4% were widowed. More than three-quarters of clients reported they had at least one child, and 61.4% had children under the age of 18. A small number of KTOS clients (3.1%) reported they were a veteran or were currently serving in the military, Reserves, or National Guard.

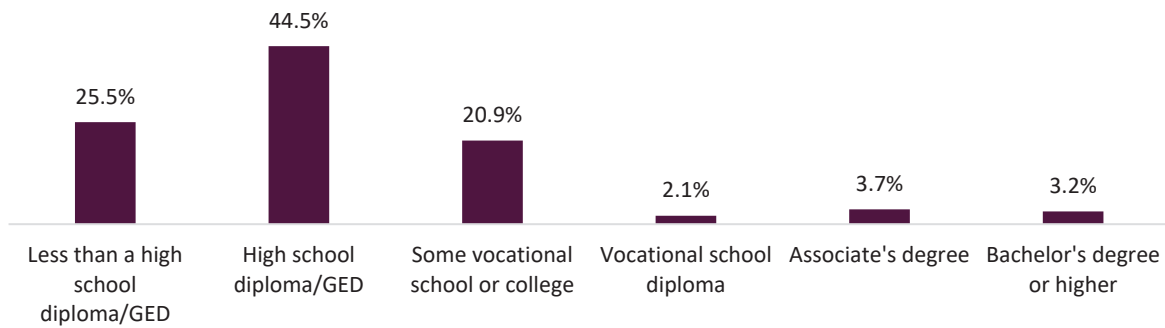
TABLE 1.1. DEMOGRAPHICS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,228)

<b>Age</b> .....	35.8 years (range of 18-76)
<b>Gender</b>	
Male .....	56.3%
Female .....	43.6%
Transgender .....	0.1%
<b>Race<sup>15</sup></b>	
White.....	93.2%
African American.....	4.3%
Other or multiracial.....	2.5%
<b>Marital status</b>	
Married or cohabiting .....	41.5%
Never married.....	28.3%
Separated or divorced.....	27.8%
Widowed .....	2.4%
<b>Have children</b> .....	76.7%
Have children under the age of 18 .....	61.4%
 Veteran or currently serving in military.....	 3.1%

About one-fourth of clients (25.5%) had less than a high school diploma or GED at intake (see Figure 1.2). The highest level of education of 44.5% of the sample was a high school diploma or GED. One-fifth of clients (20.9%) 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 (3.7%), or a bachelor's degree or higher (3.2%).

<sup>15</sup> Four clients had missing data for race.

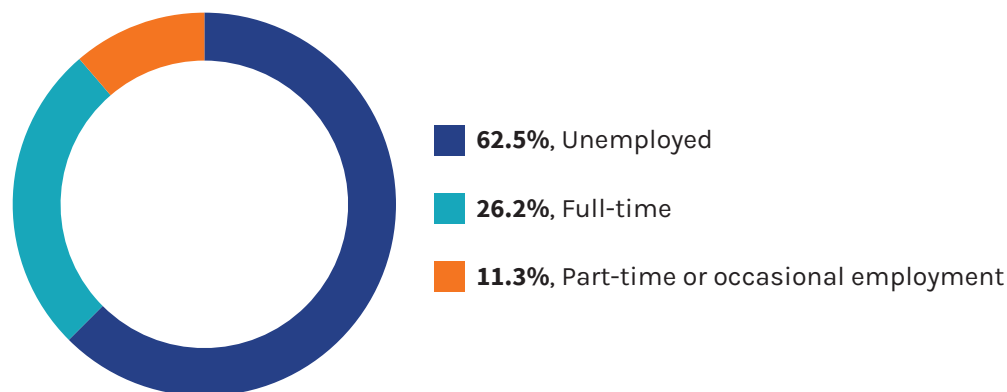
FIGURE 1.2. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 5,228)



## EMPLOYMENT

At intake, 41.3% of clients reported they had worked 0 months in the past 12 months, 20.7% had worked 1 to 5 months, and 38.0% 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 (62.5%), with 26.2% being employed full-time, and 11.3% 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.

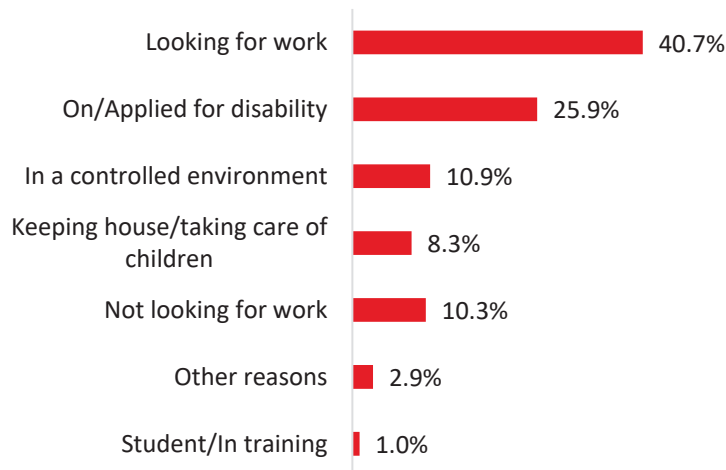
FIGURE 1.3. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 5,528)



Of the individuals who were currently unemployed at intake ( $n = 3,265$ )<sup>16</sup>, about 40.7% stated they were looking for work (see Figure 1.4). About one-quarter (25.9%) were on disability (or had applied for disability), 10.9% were in a controlled environment that prohibited them from working, 8.3% were keeping the house or taking care of children full-time at home, 10.3% were unemployed and not looking for work, 1.0% were students or in training, and the remaining 2.9% 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).

<sup>16</sup> Seventeen individuals had missing values for the reason they were unemployed at intake.

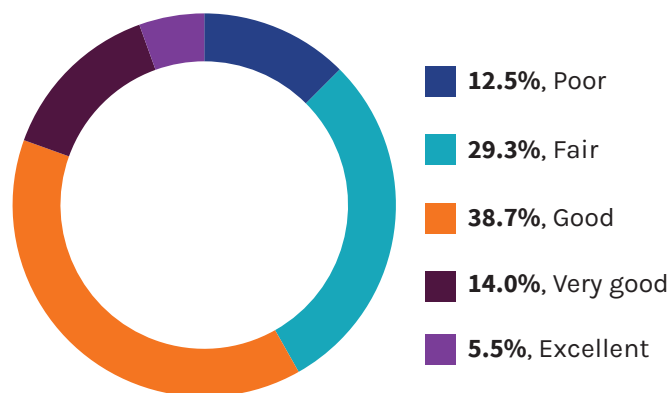
FIGURE 1.4. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 3,265)



## PHYSICAL HEALTH

KTOS clients rated their overall health at intake (see Figure 1.5). Nearly 13% of clients reported their health was poor and 29.3% said their health was fair. Nearly two-fifths of clients (38.7%) reported their overall health was good, 14.0% reported very good overall health, and 5.5% said their health was excellent.

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



A little less than one-third of KTOS clients (31.4%) reported they experienced chronic pain that persisted for at least 3 months in the 12 months before entering treatment (see Table 1.2). More than half of clients reported they had at least one chronic health problem. The most common medical problems clients reported were arthritis (18.3%), cardiovascular/heart disease (15.6%), hepatitis C (13.8%), asthma (12.4%), and severe dental problems (10.9%).

Three-fourths of KTOS clients reported they had insurance through Medicaid (74.9%) at intake. About one in ten clients did not have any insurance (10.6%). Small numbers of clients had insurance through an employer, including through their own employer, a spouse's,

parent's, or self-employment (6.1%), through Medicare (6.2%), through the Health Exchange (0.3%), or through the VA/Champus/Tricare (0.5%). A small percent of clients gave the name of an insurer, but did not specify the source, such as through the Health Exchange, private insurance.

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KTOS CLIENTS AT INTAKE (N = 5,228)

<b>Chronic pain .....</b>	<b>31.4%</b>
<b>At least one chronic medical problem .....</b>	<b>52.7%</b>
Arthritis .....	18.3%
Cardiovascular/heart disease .....	15.6%
Hepatitis C .....	13.8%
Asthma.....	12.4%
Severe dental problems .....	10.9%
Chronic obstructive pulmonary disease.....	5.9%
Seizures.....	5.6%
Diabetes.....	5.4%
<b>Insurance</b>	
No insurance.....	10.6%
Medicaid.....	74.9%
Through employer (including client's employer, spouse's employer, parents' employer, and self- employed).....	6.1%
Medicare.....	6.2%
Through Health Exchange.....	0.3%
VA/Champus/Tricare.....	0.5%
Insured, but source is not known.....	1.4%

## SUBSTANCE USE

The majority of adults who completed an intake survey reported using alcohol and/or illegal drugs (87.7%) in the 12 months before entering treatment (see Figure 1.5).<sup>17</sup> The drug classes reported by the greatest number of clients were marijuana (48.6%) and non-prescribed stimulants (48.6%), followed by prescription opioids (28.7%), non-prescribed buprenorphine-naloxone (19.2%), and non-prescribed sedatives/tranquilizers/benzodiazepines (18.9%; not depicted in a figure). Overall, a higher percentage of individuals reported using illegal drugs (77.9%) compared to the percent of individuals who reported using alcohol (43.0%) in the 12 months before entering treatment. Most clients reported smoking tobacco (82.6%) in the 12

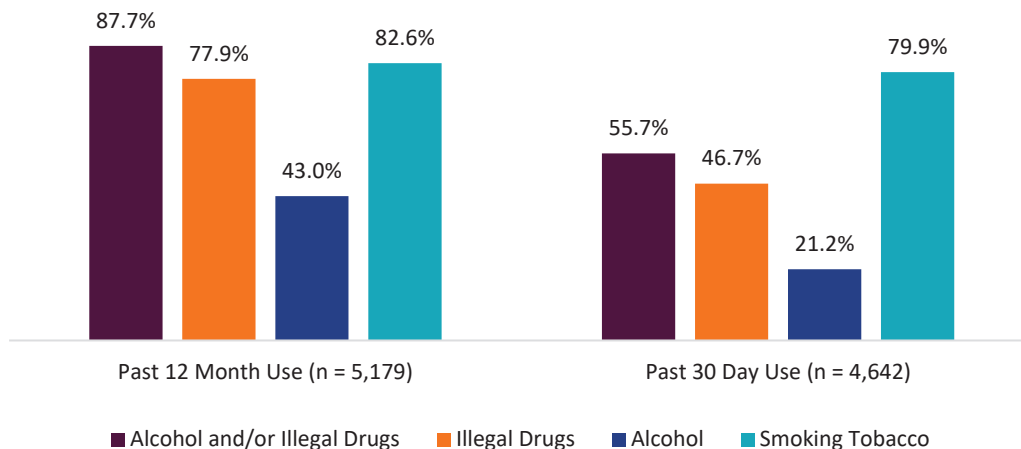
<sup>17</sup> Forty-nine individuals reported being incarcerated all 365 days before intake. Because opportunities to use alcohol and drugs are severely reduced while incarcerated these 49 individuals were not included in this analysis.



months before intake.

Of the 4,642 individuals who were not in a controlled environment all 30 days,<sup>18</sup> over half (55.7%) reported using illegal drugs and/or alcohol in the past 30 days at intake. Specifically, 46.7% reported using illegal drugs and 21.2% reported using alcohol. Also, 79.9% reported smoking tobacco in the 30 days before entering treatment (see Figure 1.6).

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



At intake, a little more than one-third of clients (34.0%) reported that they had ever injected drugs in their lifetime (not depicted in a figure).

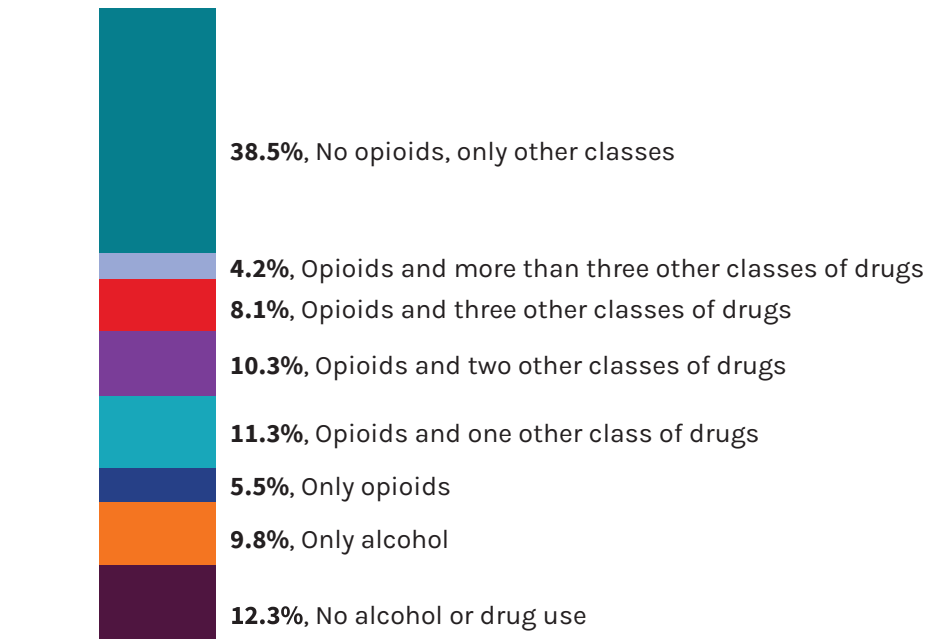
The majority of clients reported they had been in substance abuse treatment in the past (56.1%). Of the 2,931 clients who reported they had previously been in treatment, they reported an average of 2.7 episodes before the current one (not depicted in a figure).

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 (12.3%), alcohol only (9.8%), no opioids and other drug classes only (38.5%), and opioids only (5.5%). Additionally, Figure 1.7 shows the percent of clients who reported using opioids with one other drug class (11.3%), opioids with two other drug classes (10.3%), opioids with three other drug classes (8.1%), and opioids with three or more other drug classes (4.2%).

*The counselors really care and really want to hear what we have to say.*

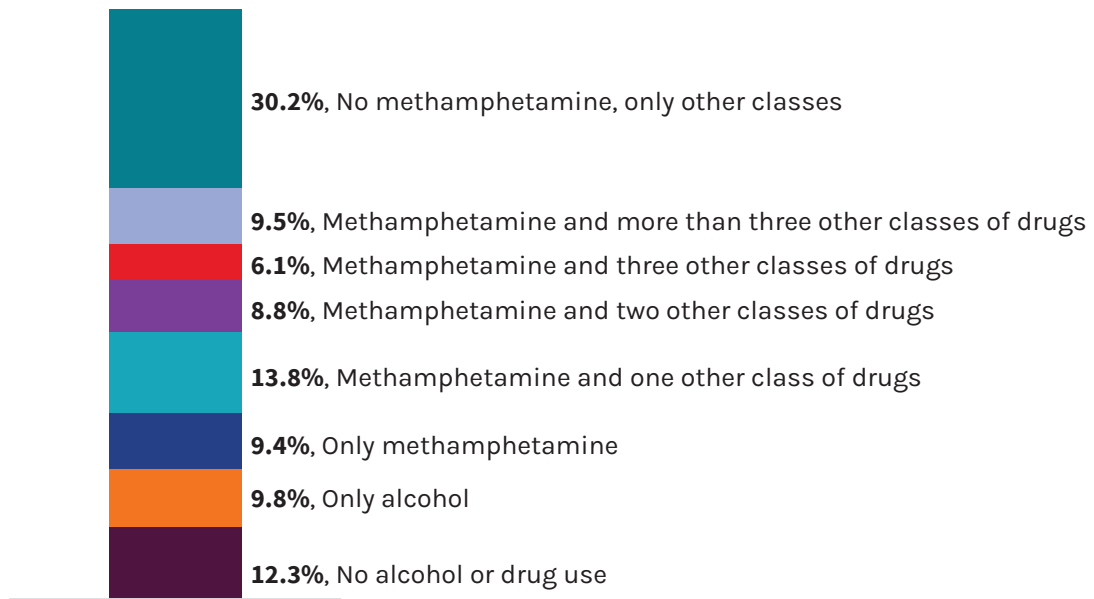
- KTOS FOLLOW-UP CLIENT

<sup>18</sup> 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 = 586) are not included in the analysis of substance use in the 30 days before entering treatment.

FIGURE 1.7. OPIOID AND OTHER DRUG CLASS USE IN THE 12 MONTHS BEFORE TREATMENT<sup>19</sup>

Like the analysis for opioid use with other classes of substances presented in Figure 1.7, the percent of clients who reported using methamphetamine with other substances in the 12 months before entering treatment is presented in Figure 1.8. Among the individuals who were not in a controlled environment all 365 days before entering treatment, Figure 1.8 shows the percent of individuals who used no alcohol and or illegal drugs (12.3%), alcohol only (9.8%), no methamphetamine and other drug classes only (30.2%), and methamphetamine only (9.4%). The following percentages of clients reported using methamphetamine and other drug classes at intake: one other drug class (13.8%), two other drug classes (8.8%), three other classes (6.1%), and more than three classes (9.5%).

<sup>19</sup> The broad drug classes examined were (1) Marijuana/cannabis, (2) Opioids other than heroin, (3) CNS depressants, (4) Cocaine and stimulants, and (5) Other drugs (hallucinogens, inhalants, synthetic drugs).

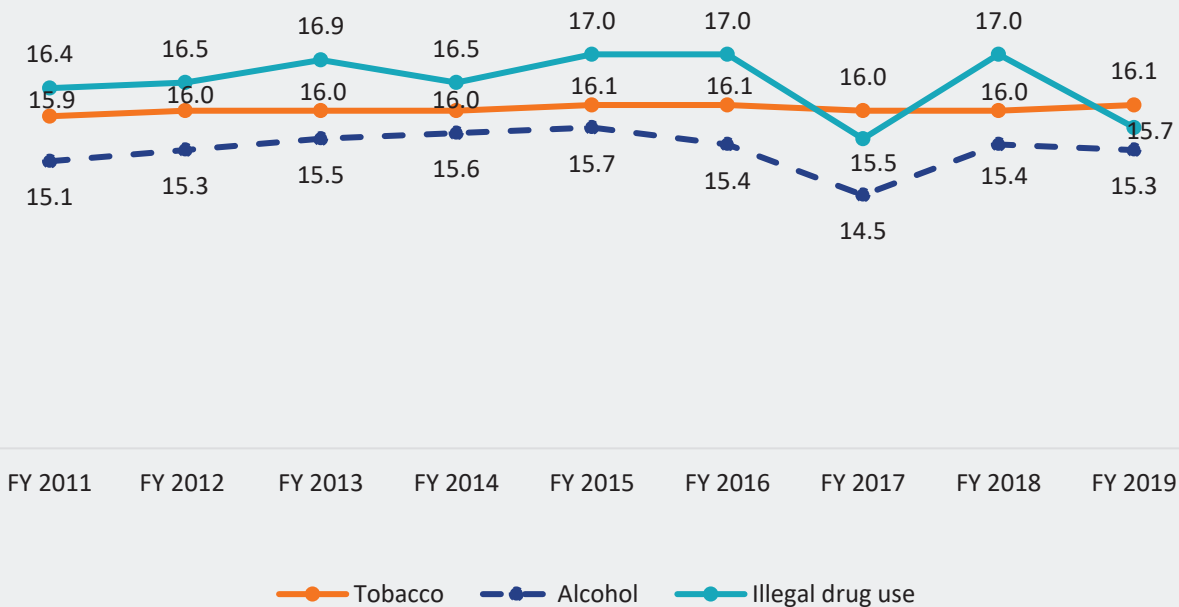
FIGURE 1.8. METHAMPHETAMINE AND OTHER DRUG CLASS USE IN THE 12 MONTHS BEFORE TREATMENT<sup>20</sup>

<sup>20</sup>The broad drug classes examined were (1) Marijuana/cannabis, (2) Opioids other than heroin, (3) Heroin, (4) CNS depressants, (5) Cocaine and stimulants, and (5) Other drugs (hallucinogens, inhalants, synthetic drugs).

## 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 1.9). 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 9 years.

FIGURE 1.9. TRENDS IN AGE OF FIRST USE REPORTED AT INTAKE, FY 2011-FY 2019

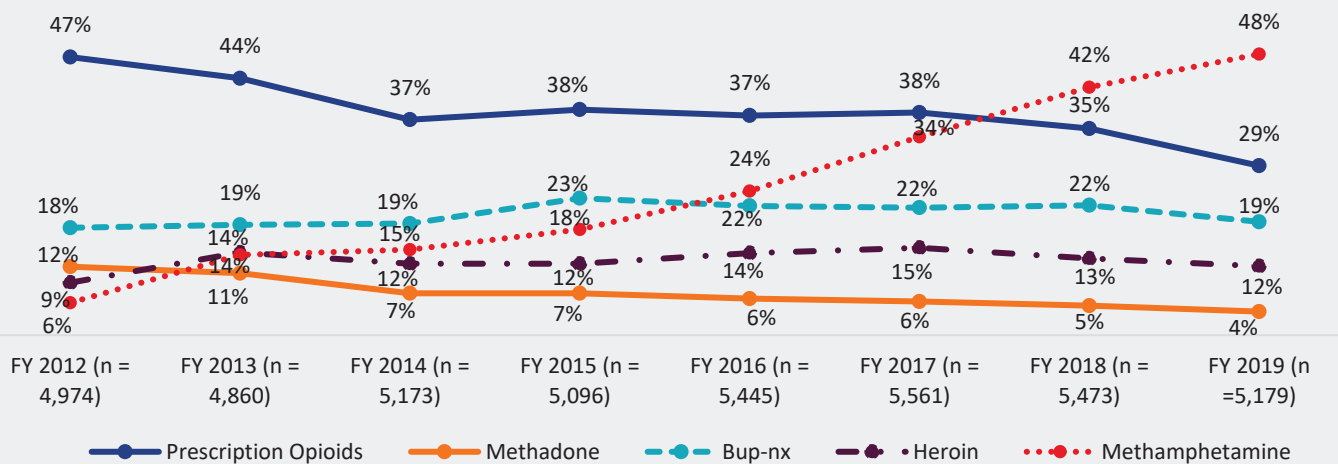




## Trends in Specific Drug Use

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% and decreased even more in FY19 to 29%. The percent of clients who reported using non-prescribed methadone in the 12 months before entering treatment has declined from FY12 (12%) to FY19 (4%). 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 four 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 and has remained between 12% and 15% since FY13. In FY12, the number of clients reporting methamphetamine use was relatively low (6%) but has steadily increased in the past six years to 48% in FY19, surpassing the number of clients reporting illegal use of prescribed opioids.

FIGURE 1.10. 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 = 41,761)<sup>21</sup>

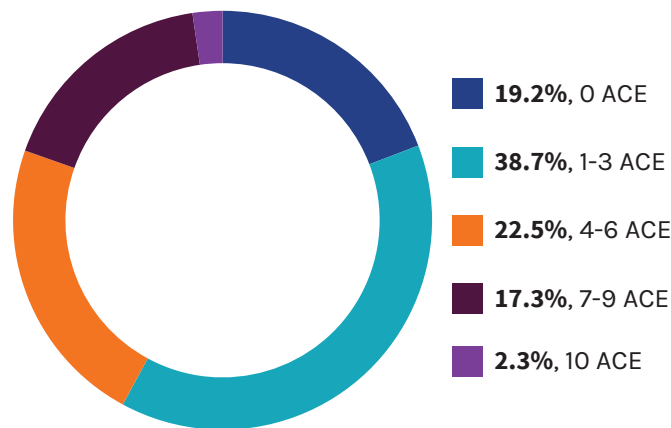


<sup>21</sup> Clients who reported being in a controlled environment all 365 days before entering treatment are not included in this analysis.

## ADVERSE CHILDHOOD EXPERIENCES

Items about ten adverse childhood experiences from the Adverse Childhood Experiences Study (ACE) were included in the intake interviews.<sup>22, 23, 24</sup> 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 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 1.11 shows that 19.2% reported experiencing none of the ACE included in the interview. About 39% reported experiencing 1 to 3 ACE, 22.5% reported experiencing 4 – 6 ACE, and 17.3% reported experiencing 7 – 9 ACE. A very small percent reported experiencing all 10 types of adverse childhood experiences.

FIGURE 1.11. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES (n = 5,228)



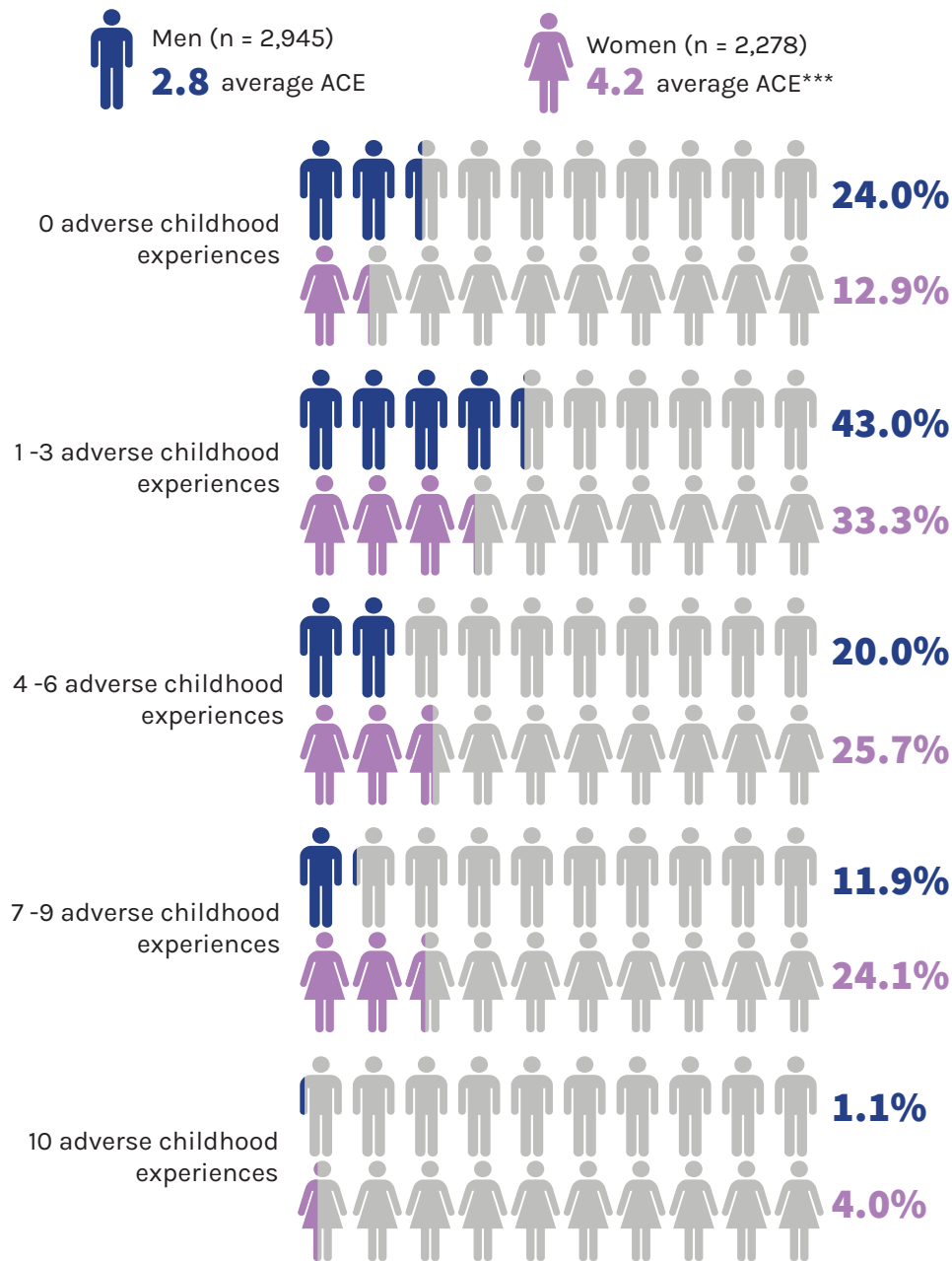
There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.12). Significantly more men than women reported experiencing 0 ACE as well as 1 to 3 types of ACE, whereas significantly more women than men reported experiencing 4 – 6 types of ACE, 7 – 9 types of ACE, and 10 ACE. Women had a higher average number of ACE compared to men.

<sup>22</sup> 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.

<sup>23</sup> 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>.

<sup>24</sup> 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).

FIGURE 1.12. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER

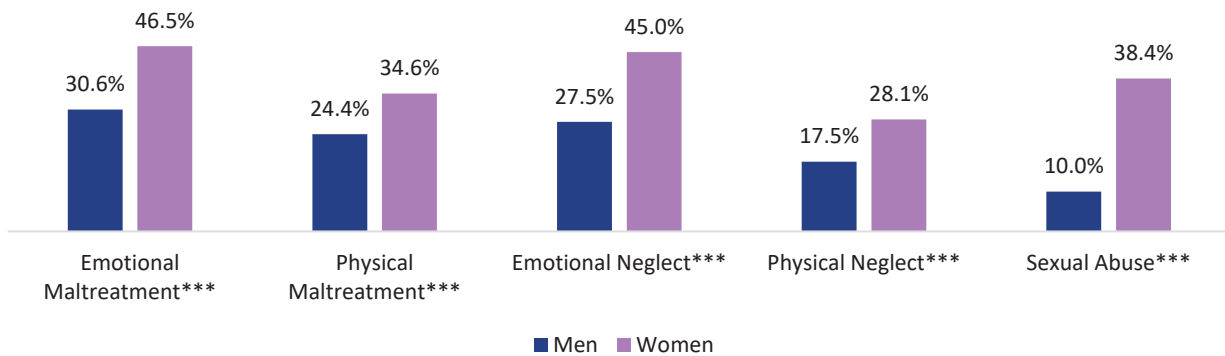


\*\*\*p &lt; .001.

Significantly more women than men reported experiencing all five types of measured childhood maltreatment. Nearly half of women (46.5%) reported they had experienced emotional maltreatment in their childhood, compared to 30.6% of men (see Figure 1.13). Around one-third of women and nearly one-fourth of men reported physical maltreatment. A little less than half of women (45.0%) reported they had experienced emotional neglect compared to 27.5% of men. More than one-fourth of women reported they experienced physical neglect in their childhood homes, which was significantly lower than the 17.5% of men who reported this. Nearly four times as many women reported sexual abuse before the

age of 18 as men. Nonetheless, 1 in 10 men reported sexual abuse before the age of 18.

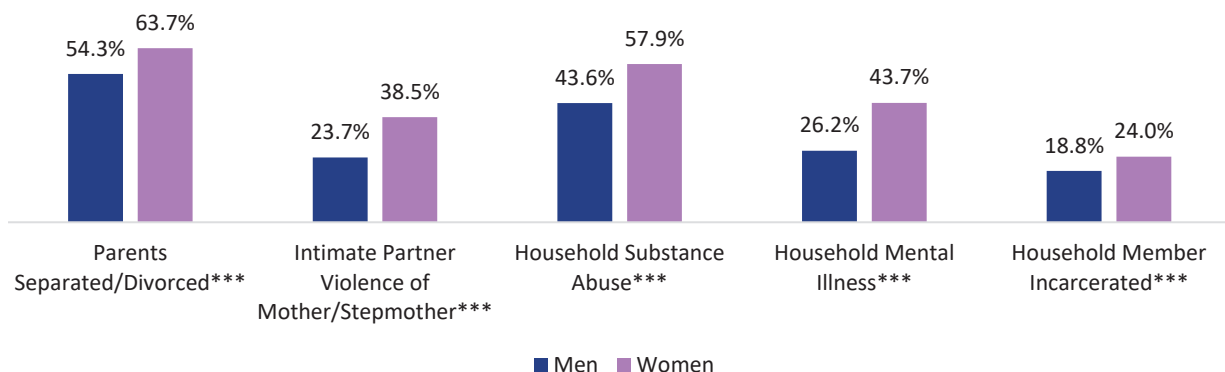
FIGURE 1.13. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD BY GENDER (n = 5,223)



\*\*\*p < .001.

Significantly more women than men reported all five types of household risks (see Figure 1.14). The majority of individuals reported their parents were divorced or lived separately and had a household member with a substance abuse problem. Nearly one-fourth of men and more than one-third of women reported witnessing partner violence perpetrated against their mother/stepmother in their childhood home. 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 1.14. HOUSEHOLD RISKS IN CHILDHOOD BY GENDER (n = 5,223)

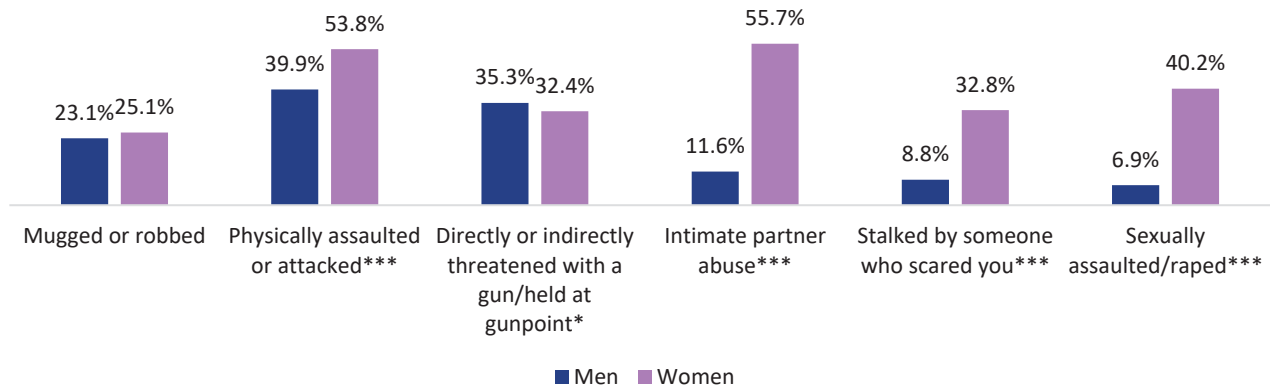


\*\*\*p < .001.

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. Nearly three-fourths of women (73.8%) and more than half of men (55.6%) reported experiencing at least one type of victimization not classified as an ACE that are presented in Figure 1.15. The results of the most common experiences are presented by gender in Figure 1.15. Similar percentages of men and women reported ever being mugged or robbed by someone threatening to use

force or using force. Compared to men, significantly higher percentages of women reported ever being physically assaulted or attacked, abused by an intimate partner, stalked by someone who scared them, and sexually assaulted or raped.

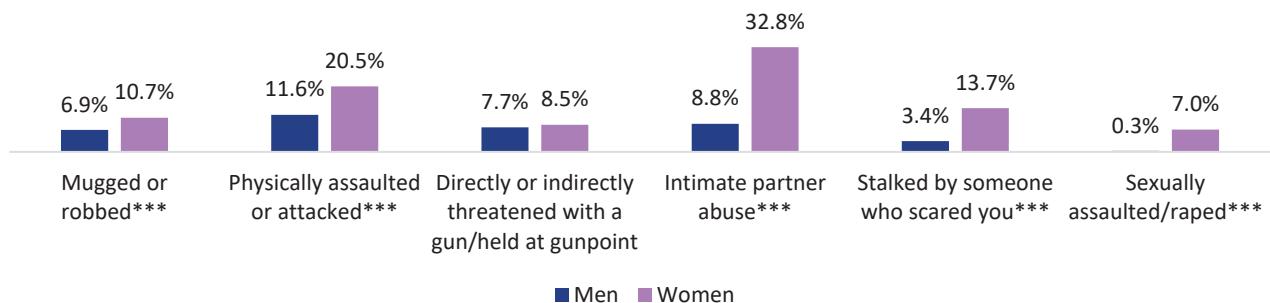
FIGURE 1.15. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 5,223)



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

Smaller percentages of clients reported experiencing crime and interpersonal victimization in the 12 months before entering programs (see Figure 1.16). However, the pattern of gender differences was similar for the 12-month-period as it was for lifetime prevalence percentages, except there being a significant difference by gender in mugging/robbing victimization in the past 12 months. Significantly higher percentages of women than men reported being mugged/robbed, assaulted or attacked by someone, intimate partner violence, stalked by someone who scared them, and sexually assaulted or raped in the 12 months before entering treatment.

FIGURE 1.16. PAST-12-MONTH CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 5,520)



\*\*\*p < .001.

## CRIMINAL JUSTICE INVOLVEMENT

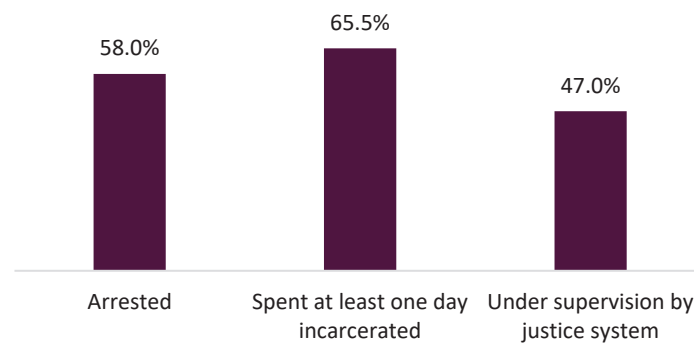
Over half of individuals reported being arrested at least once (58.0%) and 65.5% of clients reported being incarcerated at least one night in the 12 months before treatment (see Figure



1.17). A little less than one half (47.0%) 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 ( $n = 3,030$ ), they were arrested an average of 2.0 times. Among those who were incarcerated in the past 12 months ( $n = 3,422$ ), they were incarcerated an average of 70.8 nights (not depicted in a figure).

FIGURE 1.17. CRIMINAL JUSTICE INVOLVEMENT 12 MONTHS BEFORE TREATMENT AT INTAKE ( $N = 5,228$ )



## DESCRIPTION OF KTOS FOLLOW-UP SAMPLE AT INTAKE

This report describes outcomes for 1,066 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 357.1 days) after the intake survey was completed.<sup>25</sup> Detailed information about the methods is presented in Appendix A.

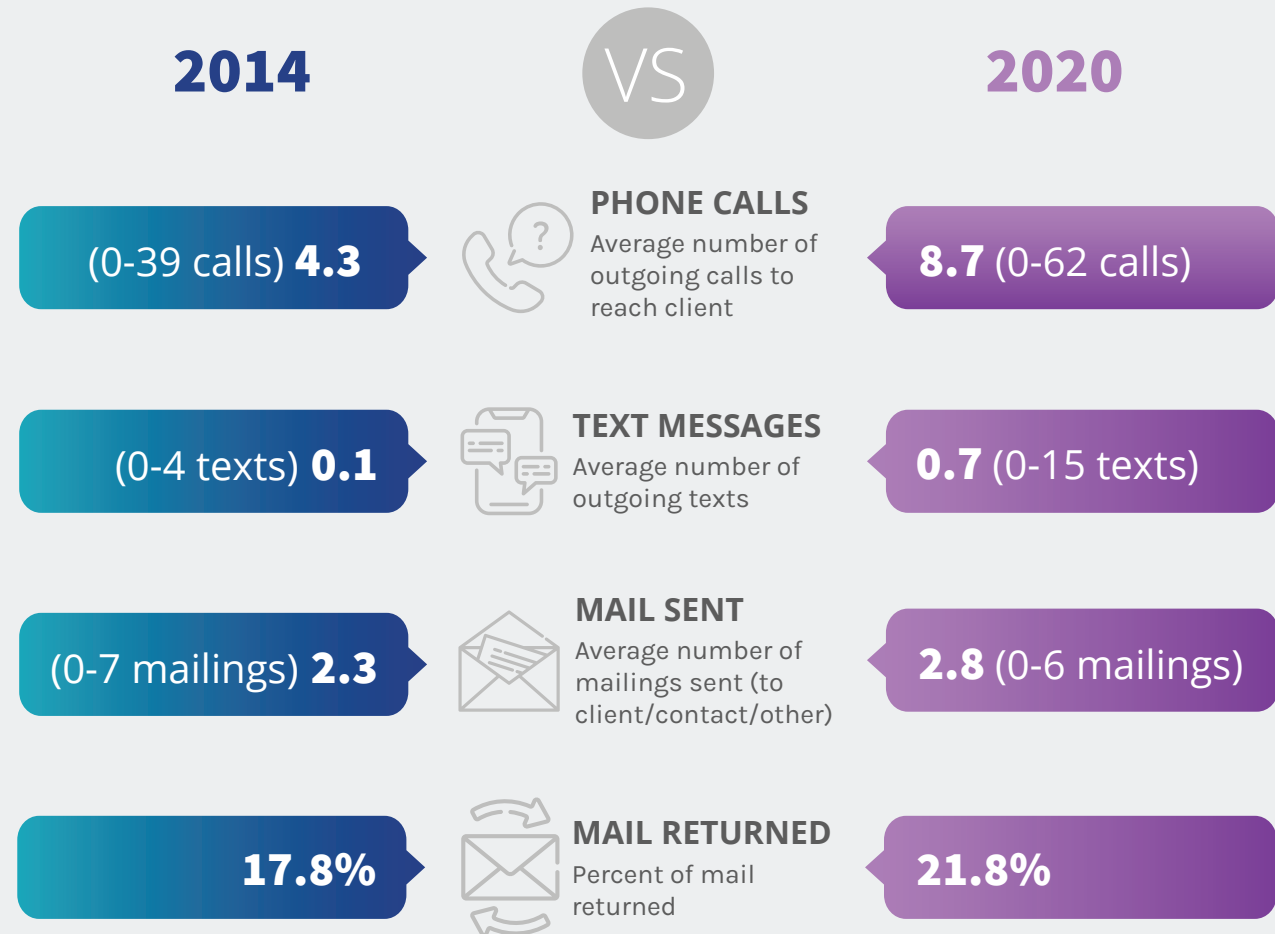
Follow-up interviews are conducted with a selected sample of KTOS clients about 12 months after the intake survey is completed. All individuals who agree to be contacted by UK CDAR for the follow-up interview and have given at least one mailing address and one phone number, or two phone numbers if they do not have a mailing address in their locator information, are eligible for the follow-up component of the study. Of those eligible, 1,900 individuals are then randomly selected by the month in which they completed intake surveys. 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 (3.0%) and in a good follow-up rate (68.9%). This means that 28.1% of individuals included in the sample to be followed up were not successfully contacted.<sup>26</sup> 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.

<sup>25</sup> The average number of days between when the baseline was submitted to UK CDAR and when the follow-up was completed was 355.0 days.

<sup>26</sup> 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<sup>27</sup> 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<sup>28</sup> 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%.

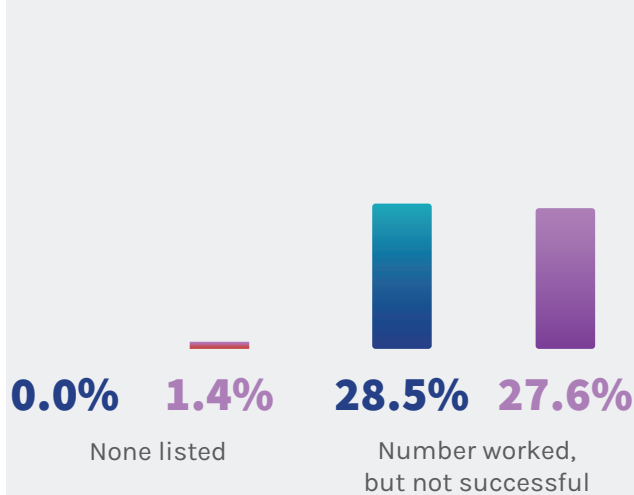


<sup>27</sup> 20% random sample of completed, ineligible, expired, and refused files across all 12 months.

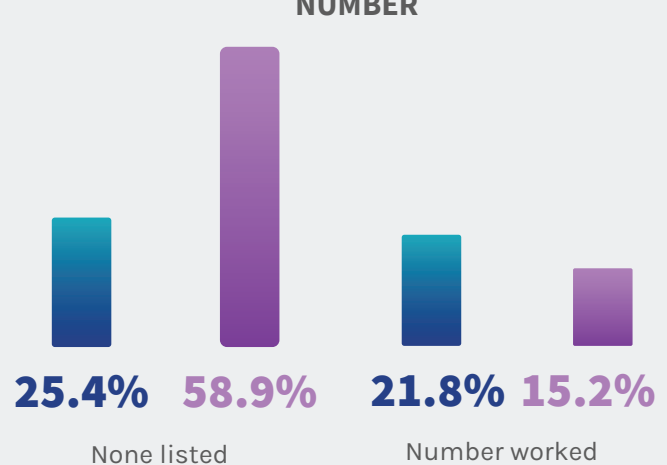
<sup>28</sup> There were 8 missing files when the extraction project was completed.

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.

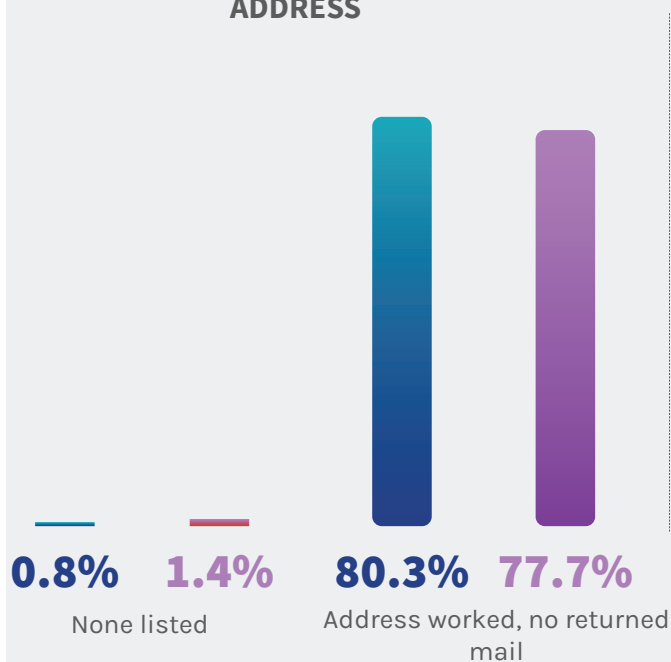
#### CLIENT LOCATOR NUMBER



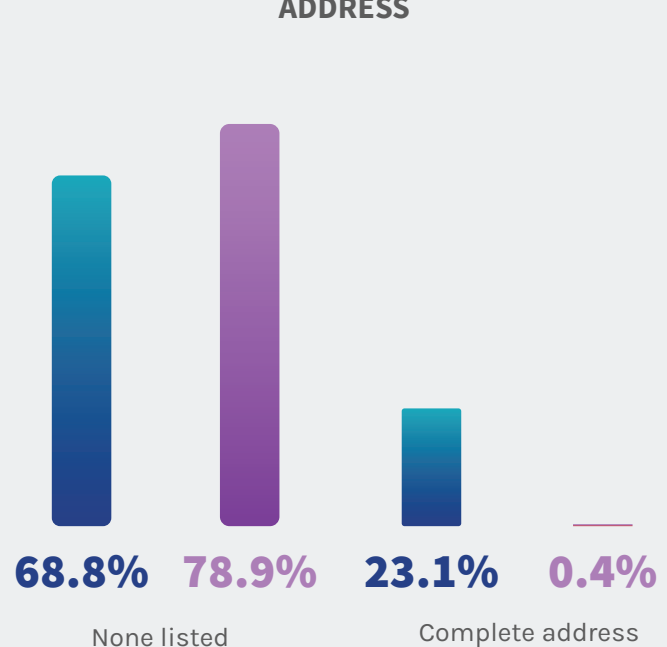
#### FIRST CONTACT LOCATOR NUMBER



#### CLIENT LOCATOR ADDRESS



#### FIRST CONTACT LOCATOR ADDRESS



## DEMOGRAPHICS

Of the 1,066 adults who completed a 12-month follow-up interview, 47.2% were male and 52.8% were female (see Table 1.3). The majority of follow-up clients were White (92.2%). A minority were African American/Black (4.9%) and 2.9% 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. Two-fifths of clients (40.9%) reported they were married or cohabiting at intake, 29.7% were not married (and not cohabiting), 27.6% were separated or divorced, and 1.8% were widowed. A little more than three-fourths (77.6%) of followed-up clients had at least one child, with 63.6% having at least one child under the age of 18. A small percentage of the follow-up sample (2.9%) 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 = 1,066)

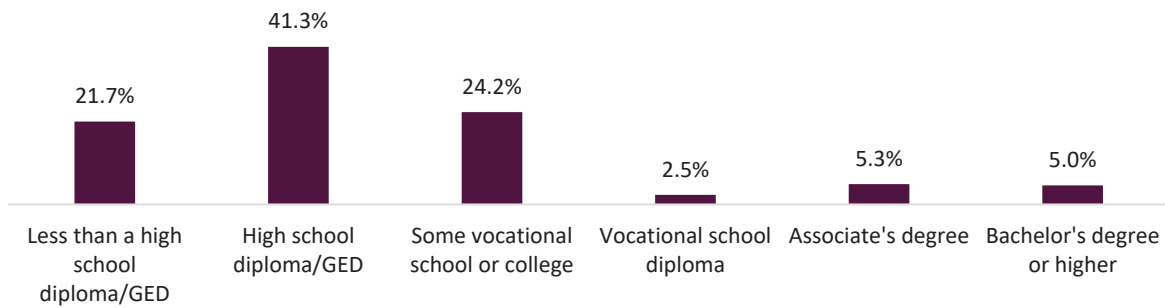
<b>Age .....</b>	<b>34.6 years (range of 18-76)</b>
<b>Gender</b>	
Male .....	47.2%
Female .....	52.8%
Transgender .....	0.0%
<b>Race<sup>29</sup></b>	
White .....	92.2%
African American .....	4.9%
Other or multiracial .....	2.9%
<b>Marital status</b>	
Married or cohabiting .....	40.9%
Never married .....	29.7%
Separated or divorced .....	27.6%
Widowed .....	1.8%
<b>Have children .....</b>	<b>77.6%</b>
Have children under the age of 18 .....	63.6%
<b>Veteran or currently serving in military .....</b>	<b>2.9%</b>

About one-fifth of follow-up clients (21.7%) had less than a high school diploma or GED at intake (see Figure 1.18). The highest level of education of 41.3% of the follow-up sample was a high school diploma or GED. Almost one-quarter of clients (24.2%) had completed some vocational/technical school or college. Only a small minority of clients had completed

<sup>29</sup>Two individuals had missing data for race.

vocational/technical school (2.5%), an associate's degree (5.3%), or a bachelor's degree or higher (5.0%).

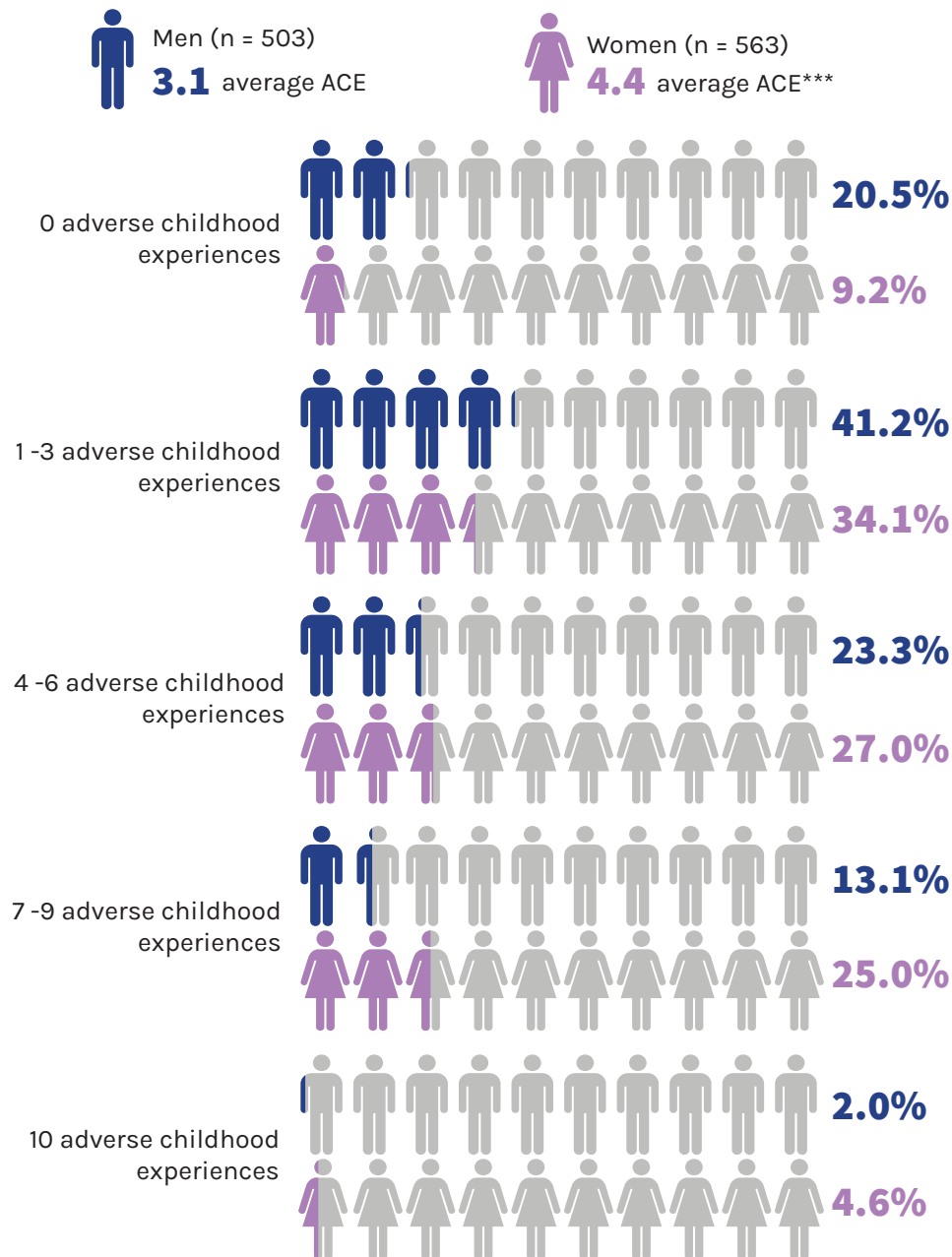
FIGURE 1.18. HIGHEST LEVEL OF EDUCATION COMPLETED BY FOLLOW-UP CLIENTS AT INTAKE (n = 1,066)



There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.19). Significantly more men than women reported experiencing 0 ACE as well as 1 to 3 types of ACE, whereas significantly more women than men reported 7 – 9 types of ACE, and 10 ACE. Women had a higher average number of ACE compared to men (4.4 vs. 3.1).



FIGURE 1.19. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES FOR FOLLOW-UP SAMPLE BY GENDER

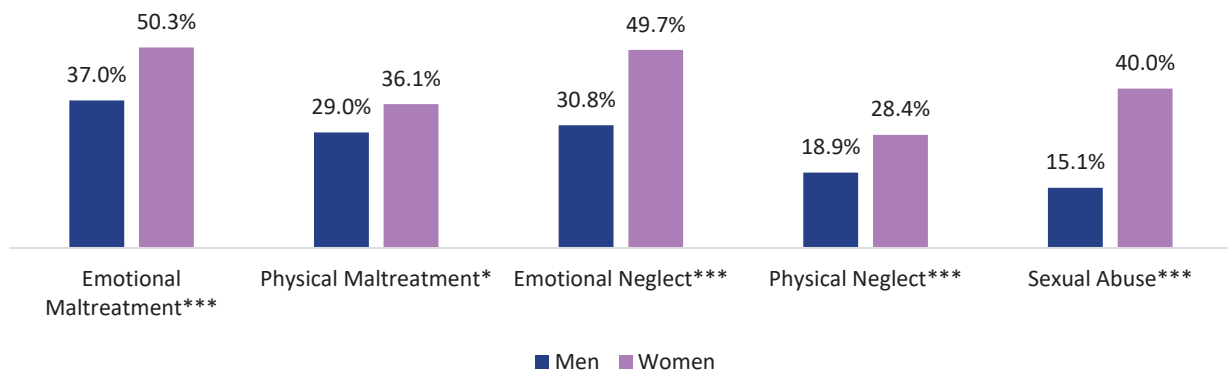


\*\*\*p &lt; .001.

Compared to men significantly more women reported experiencing all five types of measured childhood maltreatment. About half of women (50.3%) reported they had experienced emotional maltreatment in their childhood, compared to 37.0% of men (see Figure 1.20). More than one-third of women and more than one-fourth of men reported physical maltreatment. Half of women (49.7%) reported they had experienced emotional neglect compared to 30.8% of men. More than one-fourth of women reported they experienced physical neglect in their childhood homes, which was significantly higher than the 18.9% of men who reported this. More than 2.5 as many women reported sexual abuse before the age of 18 compared to men. Nonetheless, about 1 in 7 men reported sexual abuse

before the age of 18.

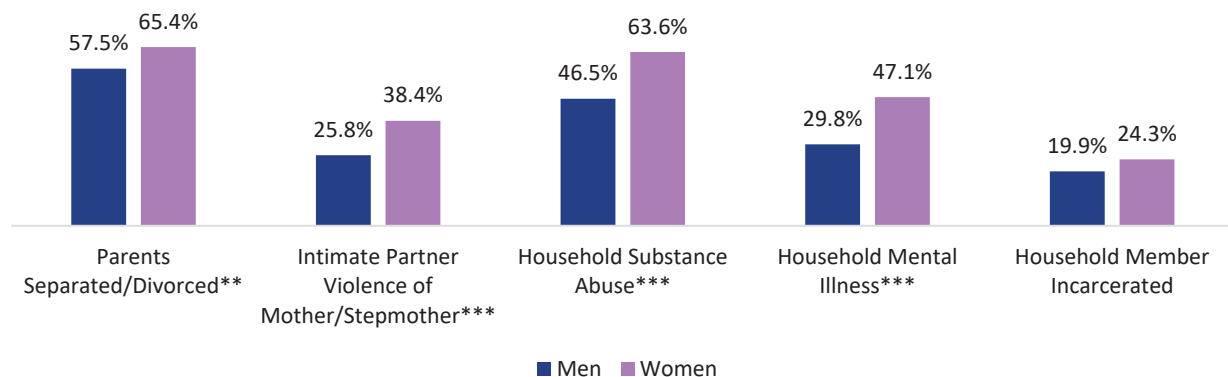
FIGURE 1.20. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD FOR FOLLOW-UP SAMPLE BY GENDER (n = 1,066)



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

Compared to men significantly more women reported four of five types of household risks (see Figure 1.21). The majority of individuals reported their parents were divorced or lived separately and had a household member with a substance abuse problem. One-fourth of men and more than one-third of women reported witnessing partner violence perpetrated against their mother/stepmother in their childhood home. A little less than one-half of women reported that someone in their household was depressed, mentally ill, or had attempted suicide compared to 29.8% of men. About 1 in 5 individuals reported a household member had been incarcerated, with no difference by gender.

FIGURE 1.21. HOUSEHOLD RISKS IN CHILDHOOD FOR FOLLOW-UP SAMPLE BY GENDER (n = 1,066)

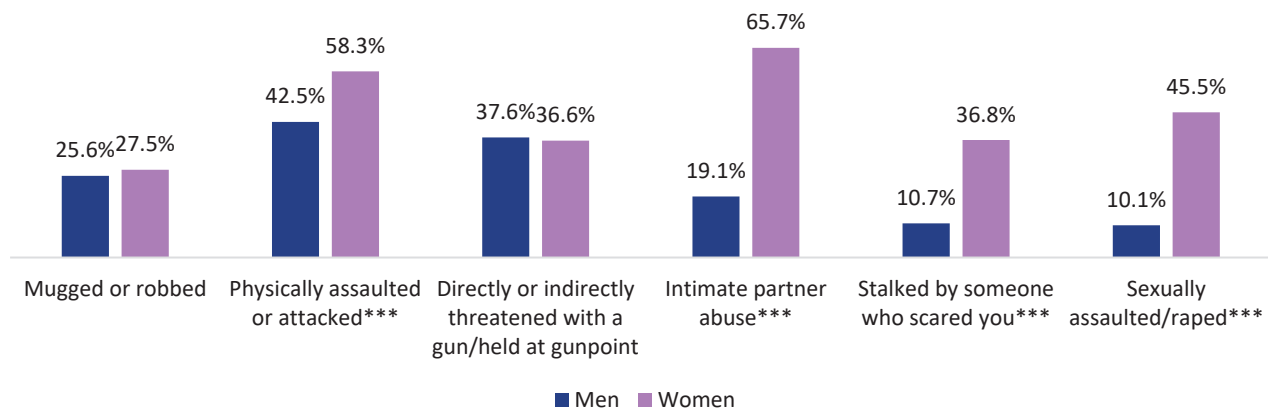


\*\*p < .01, \*\*\*p < .001.

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. More than three-fourths

of women (78.0%) and more than three-fifths of men 62.0%) reported experiencing at least one type of victimization not classified as an ACE that are presented in Figure 1.22. Similar percentages of men and women reported ever being mugged or robbed by someone threatening to use force or using force and being directly or indirectly threatened with a gun or held at gunpoint. Compared to men, significantly higher percentages of women reported ever being physically assaulted or attacked, abused by an intimate partner, stalked by someone who scared them, and sexually assaulted or raped.

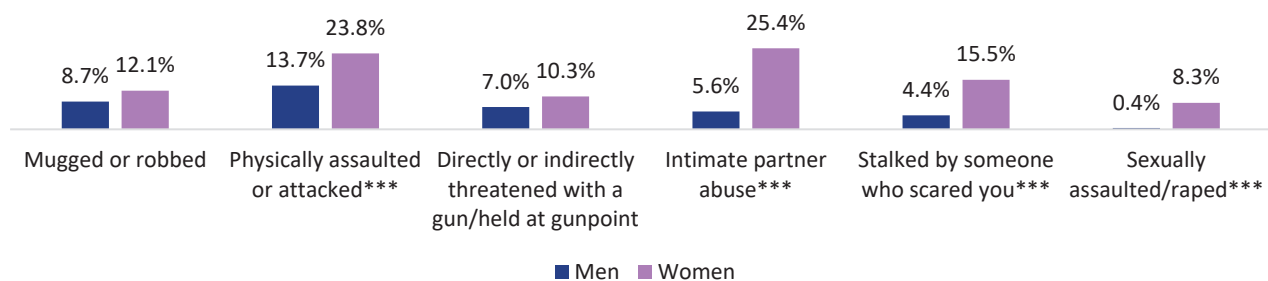
FIGURE 1.22. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION FOR FOLLOW-UP SAMPLE BY GENDER  
(n = 1,066)



\*\*\*p < .001.

Smaller percentages of clients reported experiencing crime and interpersonal victimization in the 12 months before entering programs (see Figure 1.23). 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 physically assaulted or attacked by someone, abused by an intimate partner, stalked by someone who scared them, and sexually assaulted or raped in the 12 months before entering treatment.

FIGURE 1.23. PAST-12-MONTH CRIME AND INTERPERSONAL VICTIMIZATION FOR FOLLOW-UP SAMPLE BY GENDER  
(n = 1,066)



\*\*\*p < .001.

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, living situation, 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 = 1,066) and clients who did not complete a follow-up interview (n = 4,162).

In summary, there were some significant differences between clients who were followed up and those who were not. Significantly more women were followed up than were not followed up. Many of the significant differences suggest that followed-up clients were worse off than clients who were not followed up. For example, significantly more followed-up clients reported they had difficulty meeting basic living needs as well as health care needs for financial reasons. Second, significantly more clients who were included in the follow-up sample reported they had a chronic medical problem, and they had a lower average rating of their overall health and more days their physical health was not good when compared to clients who were not in the follow-up sample. Third, significantly more followed-up clients reported they were currently homeless at treatment intake when compared to clients who were not followed up. Fourth, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Fifth, significantly more followed-up clients reported an arrest in the 12 months before entering treatment. Sixth, significantly more clients who were followed up reported using marijuana, stimulants, cocaine, and heroin, and illegal use of prescription opioids, buprenorphine-naloxone, and tranquilizers/sedatives/benzodiazepines. Significantly more followed-up clients reported using alcohol, smoking tobacco, and using vaporized tobacco compared to clients who were not followed up. Seventh, 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, met or surpassed the cutoff score for drug 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. A higher percentage of clients who were not followed up reported their usual living situation was in jail or prison than clients who were followed up. Also, 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 1.4. FOLLOWED-UP VERSUS NOT FOLLOWED-UP

	Followed up	
	No (n = 4,162)	Yes (n = 1,066)
Demographic	More male Older	More female Younger
Socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs)	Lower level of education More lived in jail or prison	More had difficulty meeting basic living and health care needs for financial reasons
Substance use, severity of alcohol and drug use		<ul style="list-style-type: none"> <li>• More reported marijuana, stimulants, cocaine, heroin, and illicit use of prescription opioids, buprenorphine, and tranquilizers/sedatives/ benzodiazepines in the 12 months before entering treatment</li> <li>• More reported alcohol use, alcohol to intoxication, binge drinking, smoking tobacco, and vaporized tobacco use in the 12 months before treatment</li> <li>• More met or surpassed the cutoff score for alcohol and drug use substance use disorder</li> </ul>
Physical health (e.g., chronic pain, chronic medical problems)		<ul style="list-style-type: none"> <li>• Lower rating of overall health</li> <li>• Higher average number of days of poor physical health</li> <li>• More had chronic medical problems</li> </ul>
Mental health (e.g., depression, generalized anxiety, suicidality)		<ul style="list-style-type: none"> <li>• More met study criteria for depression, generalized anxiety, and suicidality</li> <li>• Higher average number of days mental health was not good</li> </ul>
Criminal justice involvement (e.g., arrested, incarcerated)	Among incarcerated individuals, reported a higher average number of nights incarcerated	More reported an arrest in the 12 months before entering 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 = 1,054)<sup>30</sup> are presented.
- 2. Average Number of Months Clients Used Substances at Intake and Follow-up.** For those who used any of the substances, the average number of months used in the 12 months before treatment intake and during the 12-month follow-up period are reported.
- 3. Change in 30-day Substance Use from Intake to Follow-up.** In addition to looking at past-12-month substance use, change in substance use in the 30 days before program entry and the 30 days before the follow-up interview for any illegal drug use (including marijuana, opioids, heroin, CNS depressants, cocaine, other stimulants, and other illegal drugs), alcohol use, and tobacco use (n = 899)<sup>31</sup> 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 change in degree of severity of substance use is to ask participants

<sup>30</sup> Eight cases were excluded from this analysis because they were incarcerated all 365 days before entering treatment, and 2 cases were excluded because either the interviewer skipped the question (n = 1) or the client did not know how many days they were incarcerated (n = 1) at follow-up.

<sup>31</sup> 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 = 153) or all 30 days before the follow-up (n = 12) 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 2 clients were excluded because the interviewer skipped the question.

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 = 517), alcohol (n = 290) and those with alcohol and/or illegal drug use (n = 641) 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.

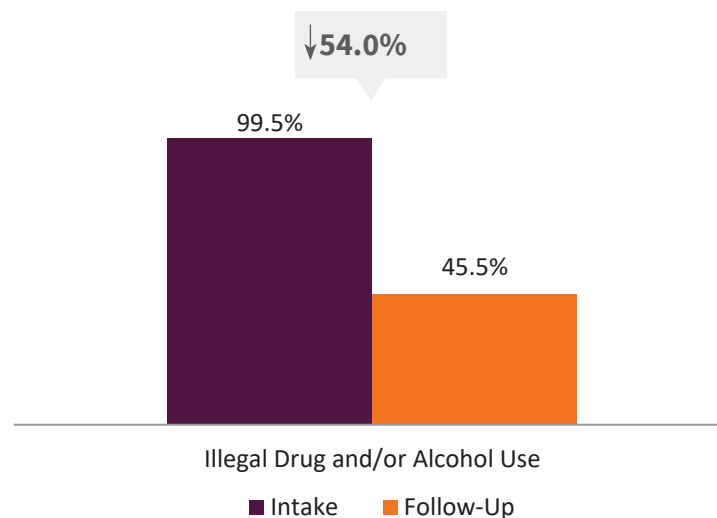
## ALCOHOL AND/OR ILLEGAL DRUG USE

### PAST-12-MONTH ALCOHOL AND/OR ILLEGAL DRUG USE

Almost all clients (99.5%) reported using alcohol and/or illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 45.5% at follow-up. As a result, there was a 54.0% decrease in the number of clients reporting use of alcohol and/or illegal drugs (see Figure 2.1).

**The number of clients reporting alcohol and/or illegal drug use decreased by 54%**

FIGURE 2.1. PAST-12-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,054)<sup>a</sup>

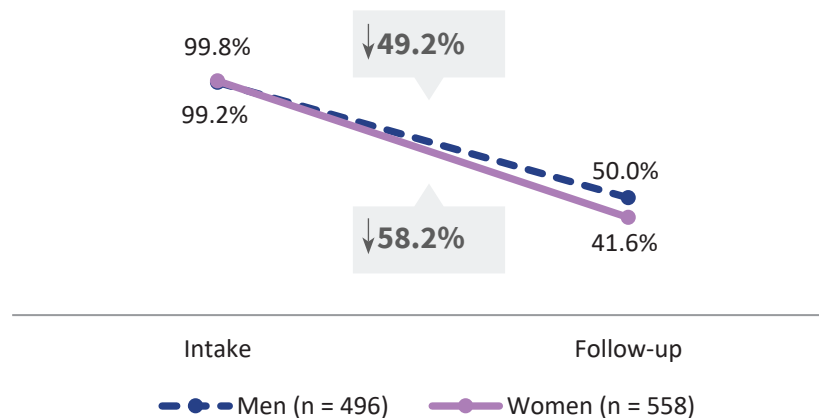


a—No test of statistical association could be computed for illegal drug/alcohol use in the 12 months before entering treatment because one of the cell values was 0.

## 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 58.2% and 49.2% respectively. At follow-up, significantly more men reported alcohol and/or illegal drug use in the past 12 months compared to women (50.0% vs. 41.6%, respectively).

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



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

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.

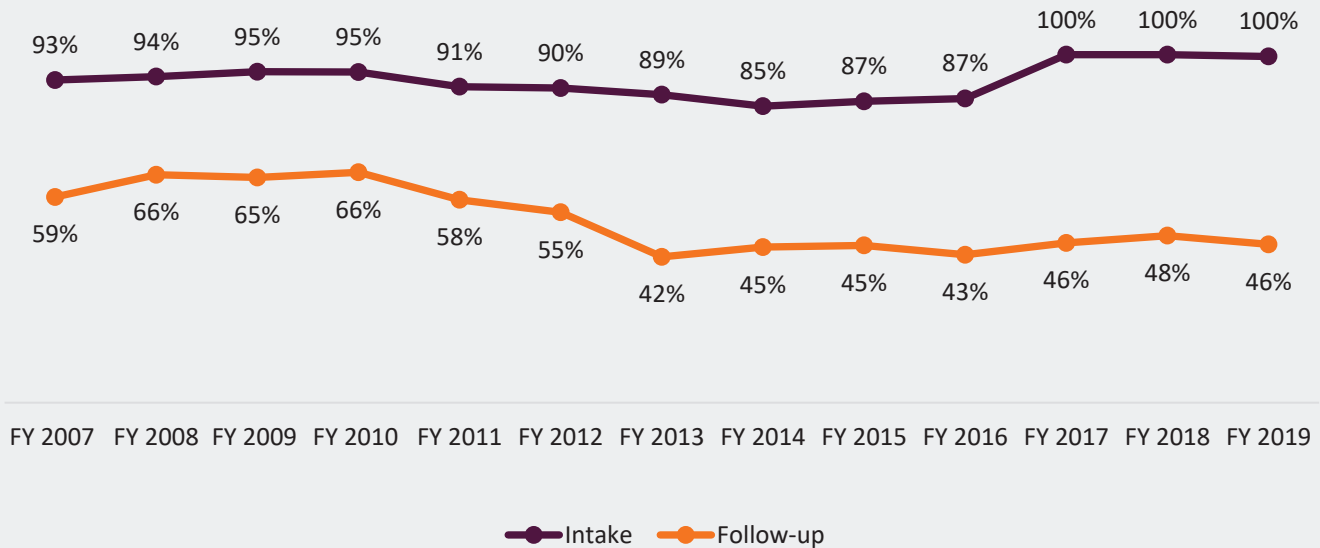
*They really work with you, they matched me up with the perfect counselor, they've been there the entire way.*

- KTOS FOLLOW-UP CLIENT

## 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.<sup>32</sup> 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 2007-2019<sup>33</sup>



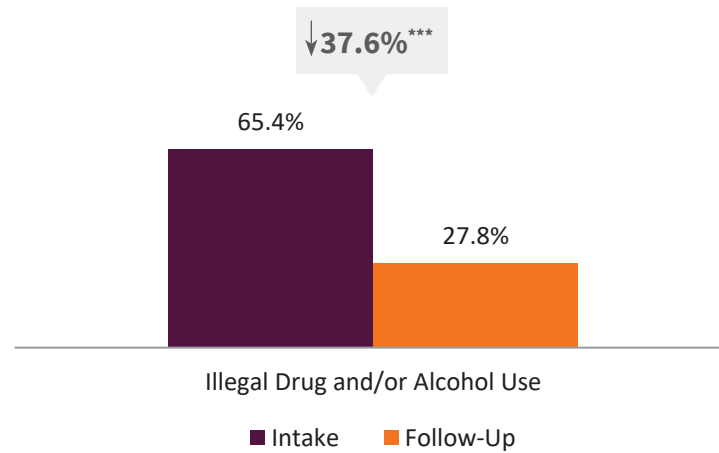
## PAST-30-DAY ALCOHOL AND/OR ILLEGAL DRUG USE

Over half of clients (65.4%) reported using alcohol and/or illegal drugs in the 30 days before entering substance abuse treatment, which decreased to 27.8% at follow-up. As a result, there was a 37.6% significant decrease in the number of clients reporting past-30-day use of alcohol and/or illegal drugs (see Figure 2.4).

**The number of clients reporting alcohol and/or illegal drug use in the past 30 days decreased by 38%**

<sup>32</sup> 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.

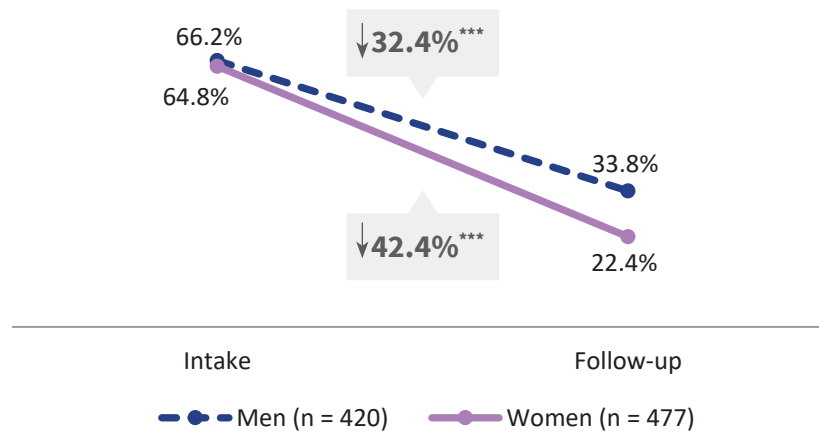
<sup>33</sup> The percent of individuals who reported alcohol and/or drug use in the 12 months before intake in FY 2019 was 99.5%. Because the percentages presented in trend analysis are rounded to the nearest integer, 99.5% rounds up to 100%.

FIGURE 2.4. PAST-30-DAY ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 897)<sup>34</sup>

\*\*\*p &lt; .001.

### GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL AND/OR ILLEGAL DRUG USE

At intake, there were no significant differences in the number of women (64.8%) and men (66.2%) 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 42.4% and 32.4% respectively. At follow-up, significantly more men reported alcohol and/or illegal drug use in the past 30 days compared to women (33.8% vs. 22.4%, respectively).

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

a—Significant difference by gender at follow-up (p &lt; .001).

\*\*\*p &lt; .001.

<sup>34</sup>Two individuals had missing data for illegal drug use in the 30 days before follow-up.

## ANY ILLEGAL DRUGS

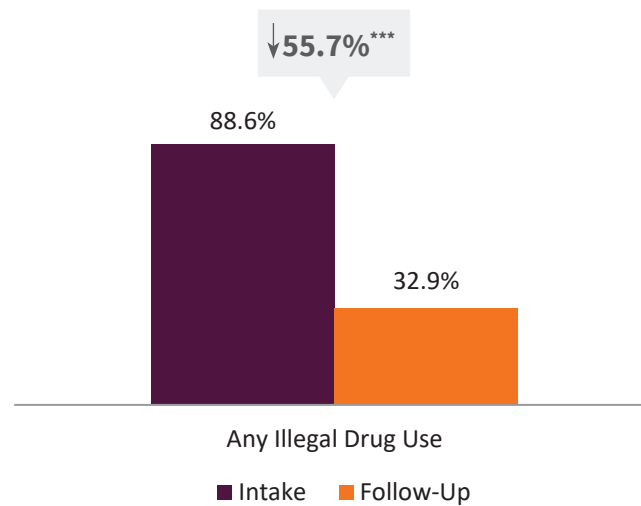
### PAST-12-MONTH ILLEGAL DRUG USE

At intake, clients were asked how old they were when they first began to use illicit drugs. On average, KTOS clients reported they were 16.7 years old when they first used illegal drugs (not depicted in figure).<sup>35</sup>

Nearly 9 in 10 clients (88.6%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 32.9% at follow-up. Overall, for the KTOS follow-up sample, there was a 55.7% 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 56%**

FIGURE 2.6. PAST-12-MONTH DRUG USE AT INTAKE AND FOLLOW-UP (N = 1,054)<sup>36</sup>



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

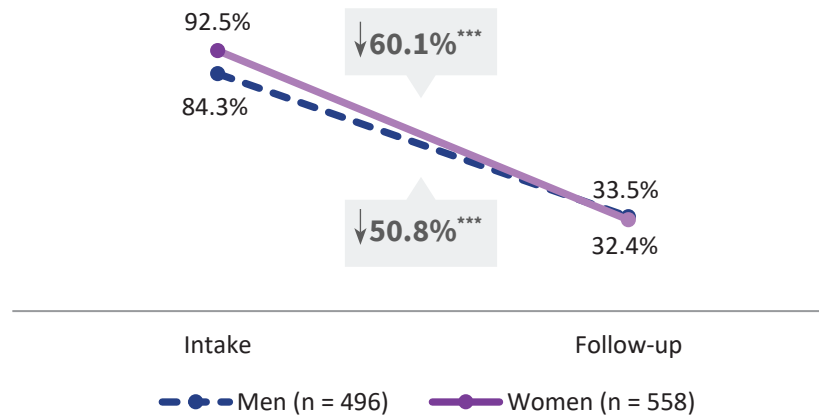
At intake, significantly more women than men reported any past-12-month illegal drug use, 92.5% vs. 84.3% (see Figure 2.7). The number of women and men who reported illegal drug use in the past 12 months significantly decreased from intake to follow-up by 60.1% and 50.8% respectively. At follow-up, there 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**

<sup>35</sup> 78 clients reported they had never used illegal drugs, so they were not included in this analysis.

<sup>36</sup> Two individuals were missing data for illegal drug use at follow-up.



FIGURE 2.7. GENDER DIFFERENCES IN PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP<sup>a</sup>

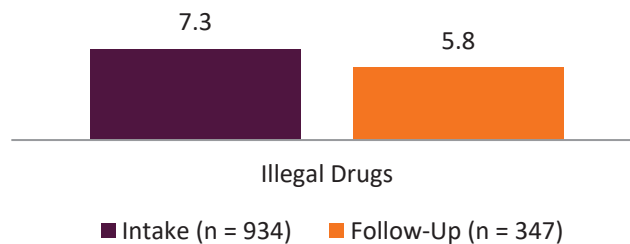
a—Significant difference by gender at intake ( $p < .001$ ).

\*\*\* $p < .001$ .

### AVERAGE MAXIMUM NUMBER OF MONTHS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 12 months before entering treatment ( $n = 934$ ), they reported using illegal drugs an average maximum of 7.3 months (see Figure 2.8).<sup>37</sup> Clients who reported using illegal drugs at follow-up ( $n = 347$ ) reported using an average maximum of 5.8 months.

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

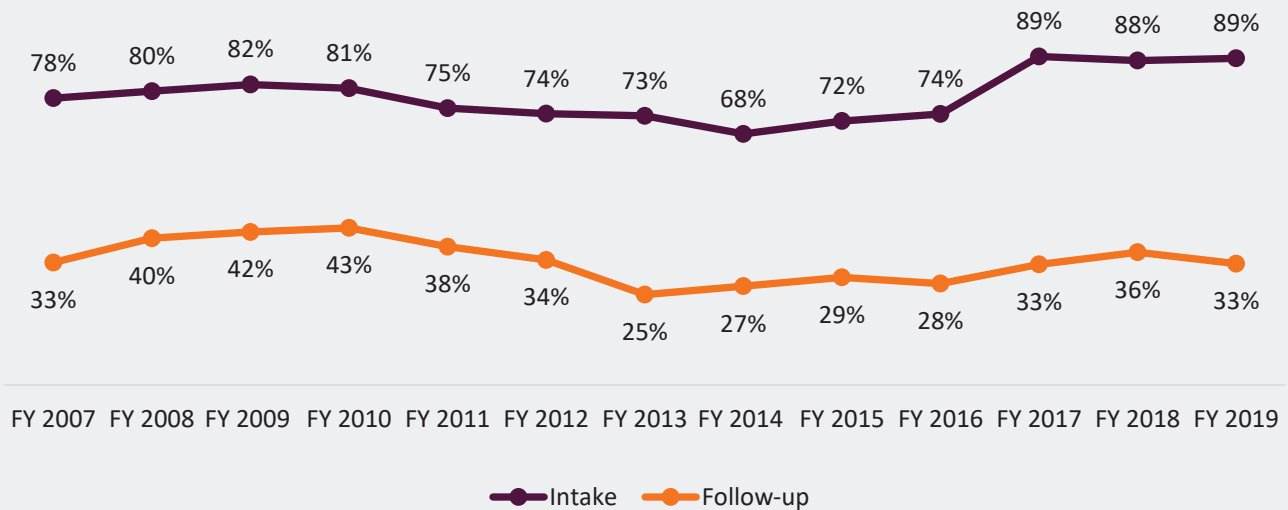


<sup>37</sup> Because number of months of illegal drugs was measured separately for each class of substance, the value is a calculation of the maximum number of months clients used any class of substance.

## 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.<sup>38</sup> 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.

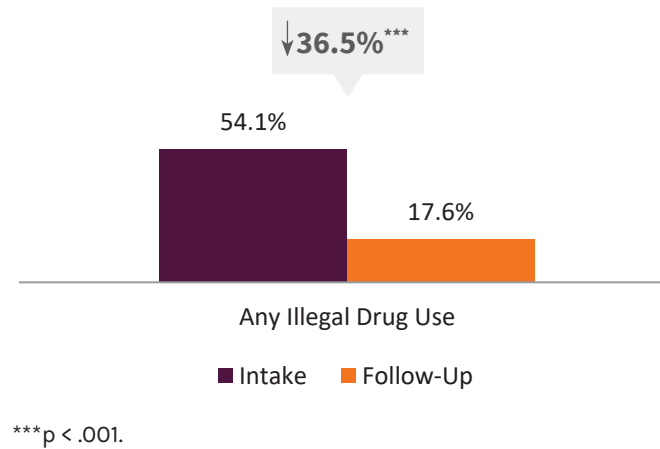
FIGURE 2.9. TRENDS IN ANY PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, FY 2007-2019



## PAST-30-DAY ILLEGAL DRUG USE

More than half of clients (54.1%) 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 17.6% of clients reported they had used illegal drugs in the past 30 days—a significant decrease of 36.5%.

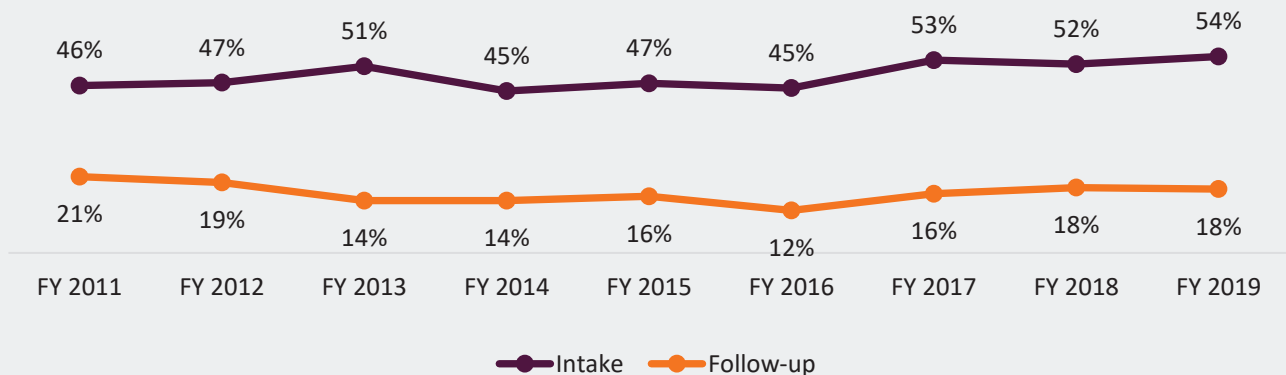
<sup>38</sup> In the several years preceding FY 2017, the research team noticed that an increasing proportion of clients with completed KTOS intake surveys reported no substance use. Because the focus of this report is on substance abuse treatment outcomes, to be included in the follow-up study individuals had to report past-12-month alcohol and/or drug use, if they were not incarcerated the entire 12 months before entering the program.

FIGURE 2.10. PAST-30-DAY USE OF ANY ILLEGAL DRUG AT INTAKE AND FOLLOW-UP (N = 897)<sup>39</sup>

### 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%), FY 2018 and FY 2019 (18%).

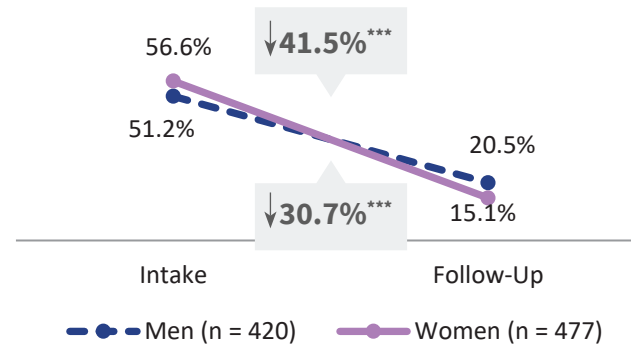
FIGURE 2.11. TRENDS IN PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, FY 2011-2019



### 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 (56.6% vs. 51.2%). 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).

<sup>39</sup> Two clients had missing data for past-30-day illegal drug use at follow-up.

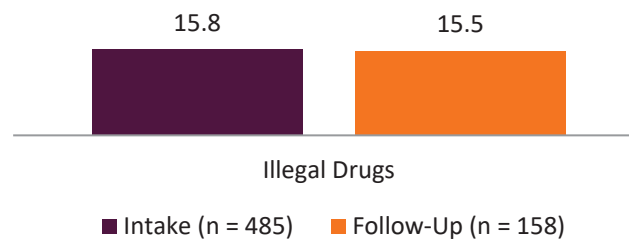
FIGURE 2.12. GENDER DIFFERENCES IN PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP<sup>a</sup>

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

### AVERAGE MAXIMUM NUMBER OF DAYS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 30 days before entering treatment ( $n = 485$ ), they reported using illegal drugs an average maximum of 15.8 days (see Figure 2.13). Clients who reported using illegal drugs at follow-up ( $n = 158$ ) reported using an average maximum of 15.5 days.<sup>40</sup>

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



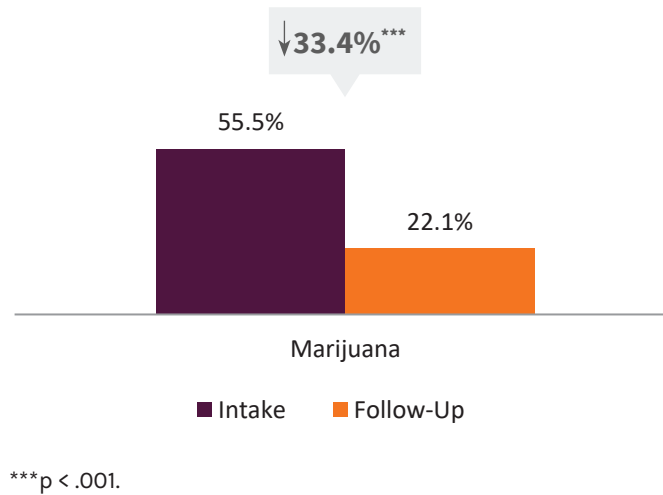
## MARIJUANA

### PAST-12-MONTH MARIJUANA USE

More than half of clients reported using marijuana in the 12 months before entering treatment, which decreased to 22.1% at follow-up. Overall, for the KTOS follow-up sample, there was a 33.4% significant decrease in the number of clients reporting marijuana use (see Figure 2.14).

**The number of clients reporting past-12-month marijuana use decreased by 33%**

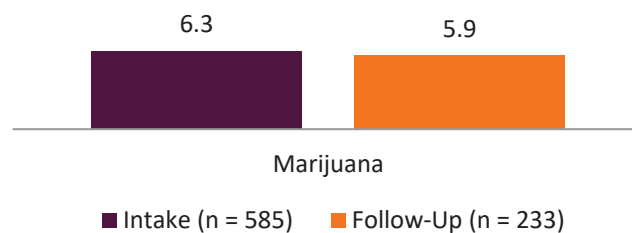
<sup>40</sup> Because number of days of illegal drugs was measured separately for each class of substance, the value is a calculation of the maximum number of days clients used any class of illegal drug.

FIGURE 2.14. PAST-12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 1,054)<sup>41</sup>

### AVERAGE NUMBER OF MONTHS USED MARIJUANA

Among the clients who reported using marijuana in the 12 months before entering treatment (n = 585), they reported using marijuana, on average, 6.3 months (see Figure 2.15). Among clients who reported using marijuana at follow-up (n = 233), they reported using, on average 5.9 months.

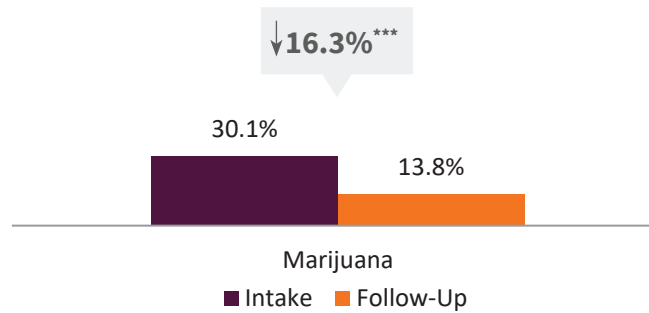
FIGURE 2.15. AVERAGE NUMBER OF MONTHS CLIENTS USED MARIJUANA



### PAST-30-DAY MARIJUANA USE

The number of clients who reported using marijuana in the past 30 days decreased significantly by 16.3%, from 30.1% at intake to 13.8% at follow-up (see Figure 2.16).

<sup>41</sup>Two clients had missing data for past-12-month marijuana use.

FIGURE 2.16. PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 897)<sup>42</sup>

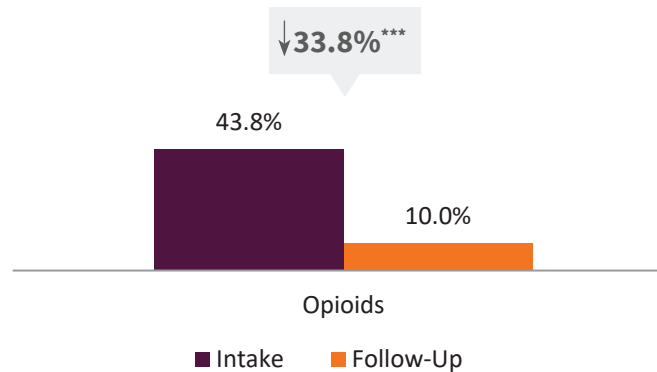
\*\*\*p &lt; .001.

## OPIOIDS

### PAST-12-MONTH OPIOID MISUSE

A little more than two-fifths of clients (43.8%) 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 10.0% at follow-up. Overall, for the KTOS follow-up sample, there was a 33.8% decrease in the number of clients reporting past-12-month opioid misuse other than heroin (see Figure 2.17).

**The number of clients reporting past-12-month opioid misuse decreased by 34%**

FIGURE 2.17. PAST-12-MONTH OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 1,055)<sup>43</sup>

\*\*\*p &lt; .001.

<sup>42</sup> Two clients had missing data on past-30-day marijuana use at follow-up.

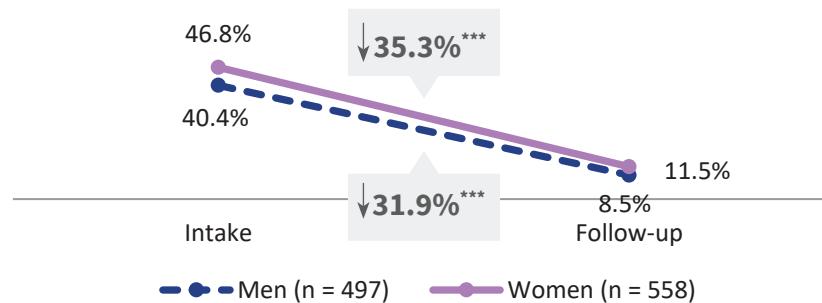
<sup>43</sup> One case had a missing value for opioid use in the 12 months before follow-up.

## GENDER DIFFERENCES IN PAST-12-MONTH OVERALL OPIOID USE

At intake, significantly more women than men reported any past-12-month opioid use, 46.8% vs. 40.4% (see Figure 2.18). The number of women and men who reported opioid use in the past 12 months significantly decreased from intake to follow-up by 35.3% and 31.9% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any opioids in the past 12 months.

**Significantly more women than men reported using any opioids in the 12 months before intake**

FIGURE 2.18. GENDER DIFFERENCES IN PAST-12-MONTH OPIOID USE AT INTAKE AND FOLLOW-UP<sup>a</sup>



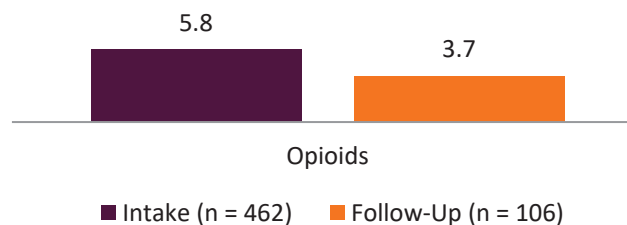
a—Significant difference by gender at intake ( $p < .05$ ).

\*\*\* $p < .001$ .

## AVERAGE NUMBER OF MONTHS USED OPIOIDS

Among the clients who reported misusing opioids in the 12 months before entering treatment ( $n = 462$ ), they reported misusing opioids on average 5.8 months (see Figure 2.19).<sup>44</sup> Among clients who reported misusing opioids at follow-up ( $n = 106$ ), they reported misusing an average 3.7 months.

FIGURE 2.19. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS MISUSED OPIOIDS



<sup>44</sup> 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.

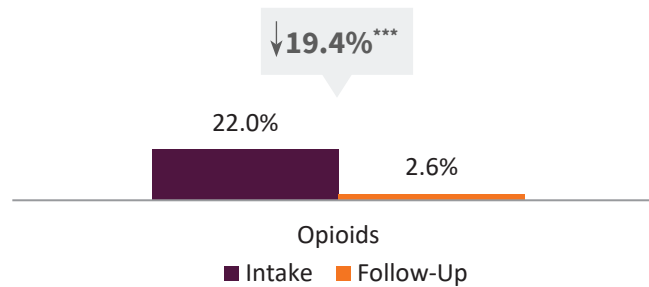


## PAST-30-DAY OPIOID MISUSE

The number of clients who reported misusing opioids in the past 30 days decreased significantly by 19.4%, from 22.0% at intake to 2.6% at follow-up (see Figure 2.20).

**The number of clients who misused opioids in the past 30 days decreased significantly by 19%**

FIGURE 2.20. PAST-30-DAY OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 898)<sup>45</sup>



\*\*\*p < .001.

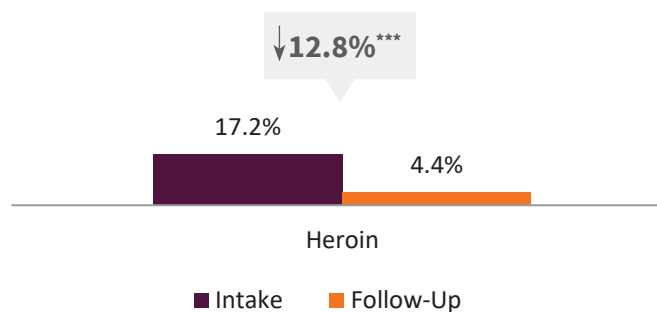
## HEROIN

### PAST-12-MONTH HEROIN USE

About 17% of clients reported using heroin in the 12 months before entering treatment, which decreased 12.8% to 4.4% at follow-up (see Figure 2.21).

**The number of clients reporting past-12-month heroin use decreased by 13%**

FIGURE 2.21. PAST-12-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 1,056)



\*\*\*p < .001.

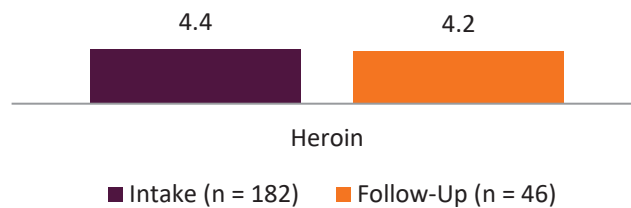
### AVERAGE NUMBER OF MONTHS USED HEROIN

Among the clients who reported using heroin in the 12 months before entering treatment (n = 182), they reported using heroin, on average, 4.4 months (see Figure 2.22). Among clients

<sup>45</sup> One case had missing values on past-30-day opioid misuse at follow-up.

who reported using heroin at follow-up (n = 46), they reported using, on average, 4.2 months.

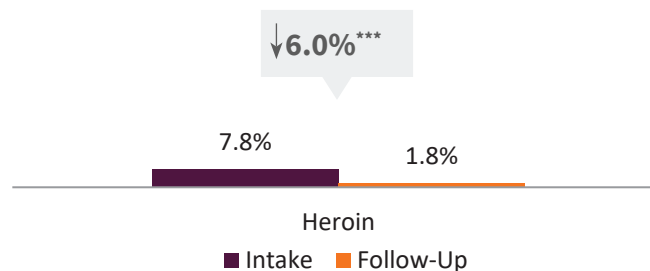
FIGURE 2.22. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



## PAST-30-DAY HEROIN USE

A minority of clients (7.8%) reported using heroin in the 30 days before intake, with a significant decrease of 6.0% by follow-up to 1.8% (see Figure 2.23).

FIGURE 2.23. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 899)



\*\*\*p < .001.

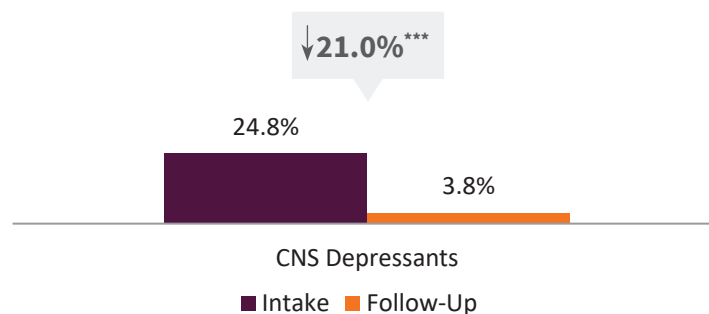
## CNS DEPRESSANTS

### PAST-12-MONTH CNS DEPRESSANT USE

Less than one-fourth of clients (24.8%) reported using CNS depressants, including tranquilizers, benzodiazepines, sedatives, and barbiturates in the 12 months before entering treatment, which decreased to 3.8% at follow-up. Overall, for the KTOS follow-up sample, there was a 21.0% decrease in the number of clients reporting CNS depressant use in the past 12 months (see Figure 2.24).

**The number of clients reporting past-12-month CNS depressant use decreased by 21%**

FIGURE 2.24. PAST-12-MONTH CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 1,056)

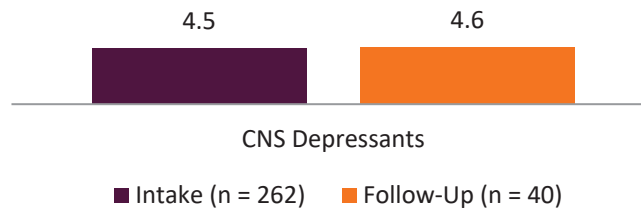


\*\*\*p < .001.

### AVERAGE MAXIMUM NUMBER OF MONTHS USED CNS DEPRESSANTS

Figure 2.25 shows the average maximum number of months clients who used CNS depressants reported using these illegal drugs.<sup>46</sup> Among the clients who reported using these substances in the 12 months before entering treatment (n = 262), they reported using CNS depressants an average 4.5 months. Among clients who reported using CNS depressants in the 12 months before follow-up (n = 40), they reported using an average of 4.6 months.

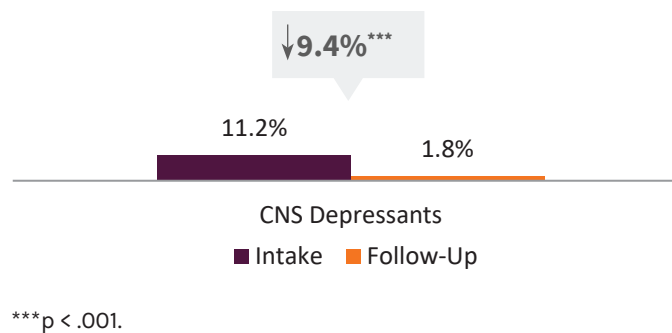
FIGURE 2.25. AVERAGE MAXIMUM NUMBER OF MONTHS OF CNS DEPRESSANT USE



### PAST-30-DAY CNS DEPRESSANT USE

The percent of clients who reported using CNS depressants in the 30 days before intake decreased significantly by 9.4%, from 11.2% at intake to 1.8% at follow-up (see Figure 2.26).

FIGURE 2.26. PAST-30-DAY CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 899)

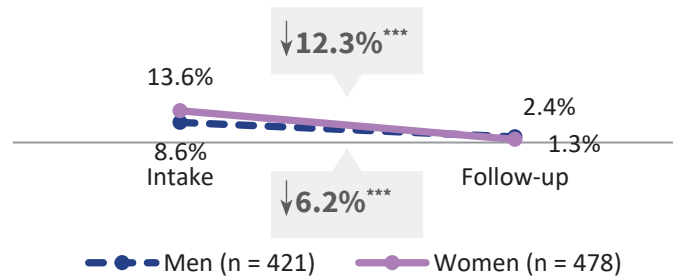


### GENDER DIFFERENCES IN PAST-30-DAY OVERALL CNS DEPRESSANT USE

At intake, significantly more women than men reported any past-30-day CNS depressant use, 13.6% vs. 8.6% (see Figure 2.27). The number of women and men who reported CNS depressant use in the past 30 days significantly decreased from intake to follow-up by 12.3% and 6.2% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any CNS depressants in the past 30 days.

**Significantly more women than men reported using any CNS depressants in the 30 days before intake**

<sup>46</sup> Because number of months of use barbiturates and tranquilizers/sedatives/benzodiazepines were measured separately, the value is a calculation of the maximum number of months clients used any substance class.

FIGURE 2.27. GENDER DIFFERENCES IN PAST-30-DAY CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP<sup>a</sup>

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

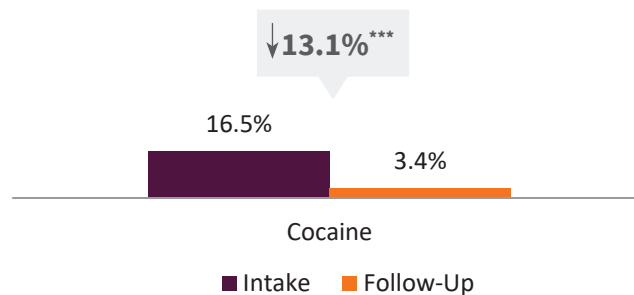
\*\*\* $p < .001$ .

## COCAINE

### PAST-12-MONTH COCAINE USE

Less than one-fifth of clients reported using cocaine (including crack) in the 12 months before entering treatment, which decreased to 3.4% at follow-up. Overall, there was a 13.1% decrease in the number of clients reporting cocaine use (see Figure 2.28).

FIGURE 2.28. PAST-12-MONTH COCAINE USE AT INTAKE AND FOLLOW-UP (N = 1,056)

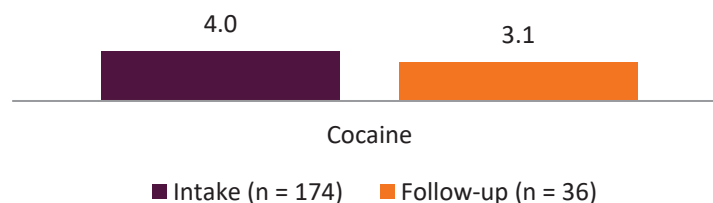


\*\*\* $p < .001$ .

### AVERAGE NUMBER OF MONTHS USED COCAINE

Among the clients who reported using cocaine in the 12 months before entering treatment ( $n = 174$ ), they reported using cocaine an average of 4.0 months (see Figure 2.29). Clients who reported using cocaine in the 12 months before follow-up ( $n = 36$ ) reported using cocaine, on average 3.1 months.

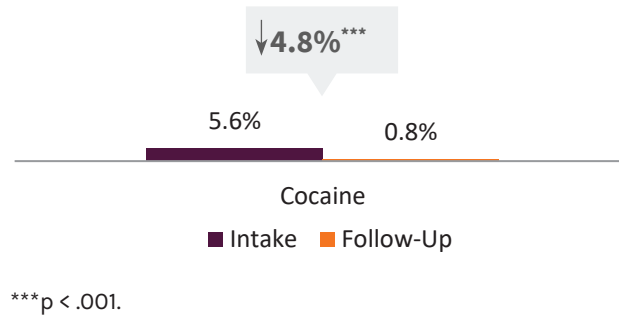
FIGURE 2.29. AVERAGE NUMBER OF MONTHS OF COCAINE USE



## 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 5.6% at intake to 0.8% at follow-up (see Figure 2.30).

FIGURE 2.30. PAST-30-DAY COCAINE USE AT INTAKE AND FOLLOW-UP (N = 899)



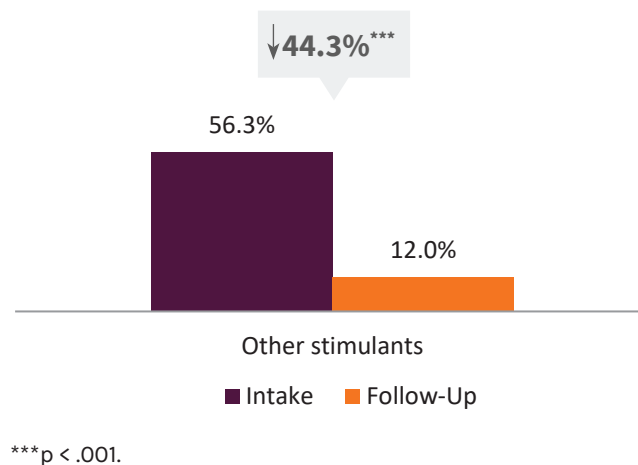
## OTHER STIMULANTS

### PAST-12-MONTH OTHER STIMULANT USE

More than half of clients (56.3%) 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 12.0% at follow-up.<sup>47</sup> Overall, for the KTOS follow-up sample, there was a 44.3% decrease in the number of clients reporting other stimulant use (see Figure 2.31).

**The number of clients reporting stimulant use other than cocaine decreased by 44%**

FIGURE 2.31. PAST-12-MONTH STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 1,056)



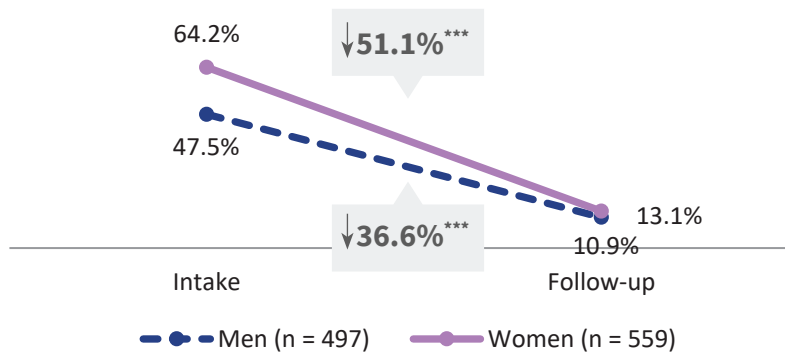
<sup>47</sup> Among the individuals who reported using stimulants in the 12 months before intake (n = 595), 97.5% reported using methamphetamine, crank, crystal meth only.

### GENDER DIFFERENCES IN PAST-12-MONTH STIMULANT USE

At intake, significantly more women than men reported any past-12-month stimulant use, 64.2% vs. 47.5% (see Figure 2.32). The number of women and men who reported stimulant use in the past 12 months significantly decreased from intake to follow-up by 51.1% and 36.6% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any stimulants in the past 12 months.

**Significantly more women than men reported using any stimulants in the 12 months before intake**

FIGURE 2.32. GENDER DIFFERENCES IN PAST-12-MONTH STIMULANT USE AT INTAKE AND FOLLOW-UP<sup>a</sup>

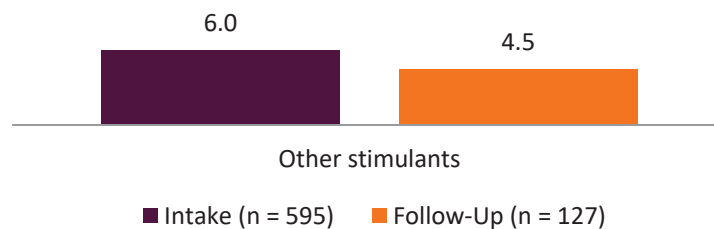


a—Significant difference by gender at intake ( $p < .001$ ).  
 \*\*\* $p < .001$ .

### AVERAGE NUMBER OF MONTHS USED OTHER STIMULANTS

Among the clients who reported using stimulants other than cocaine in the 12 months before entering treatment ( $n = 595$ ), they reported using other stimulants an average of 6.0 months (see Figure 2.33). Clients who reported using other stimulants in the 12 months before follow-up ( $n = 127$ ) reported using other stimulants, on average, 4.5 months.

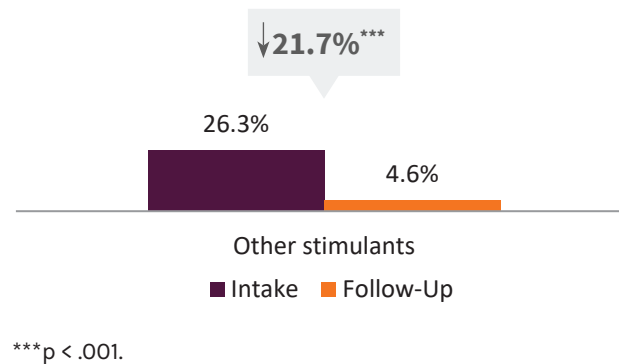
FIGURE 2.33. AVERAGE NUMBER OF MONTHS OF OTHER STIMULANT USE



## PAST-30-DAY OTHER STIMULANT USE

About one-fourth of clients reported using stimulants other than cocaine in the past 30 days. At follow-up, only 4.6% of individuals reported past-30-day use of stimulants—a significant decrease of 21.7% (see Figure 2.34).

FIGURE 2.34. PAST-30-DAY STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 899)

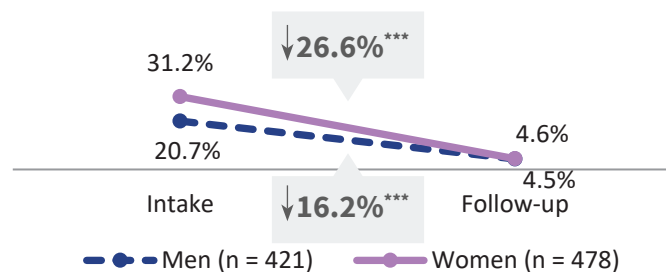


## GENDER DIFFERENCES IN PAST-30-DAY STIMULANT USE

At intake, significantly more women than men reported any past-30-day stimulant use, 31.2% vs. 20.7% (see Figure 2.35). The number of women and men who reported stimulant use in the past 30 days significantly decreased from intake to follow-up by 26.6% and 16.2% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any stimulants (other than cocaine) in the past 30 days.

**Significantly more women than men reported using stimulants (other than cocaine) in the 30 days before intake**

FIGURE 2.35. GENDER DIFFERENCES IN PAST-30-DAY STIMULANT USE AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

## OTHER ILLEGAL DRUGS

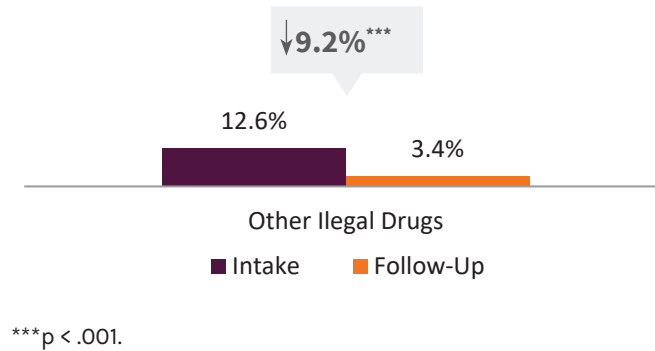
### PAST-12-MONTH OTHER ILLEGAL DRUGS

A small minority of KTOS clients (12.6%) 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 3.4% at follow-up – a significant decrease of 9.2% (see Figure 2.36).

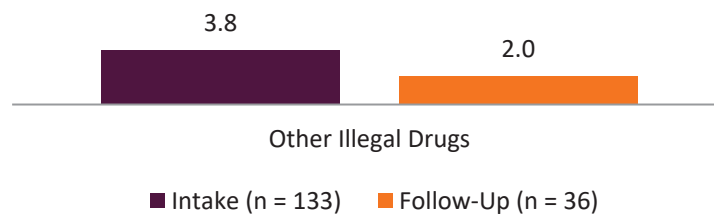
FIGURE 2.36. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 1,056)



### AVERAGE MAXIMUM NUMBER OF MONTHS USED OTHER ILLEGAL DRUGS

Figure 2.37 shows the average maximum number of months clients who used other illegal drugs (e.g., hallucinogens, inhalants, synthetic drugs) reported using those illegal drugs<sup>48</sup> in the past 12 months. Among the clients who reported using these drugs in the 12 months before entering treatment (n = 133), they reported using other illegal drugs an average of 3.8 months. Among clients who reported using other illegal drugs in the 12 months before follow-up (n = 36), they reported using an average of 2.0 months.

FIGURE 2.37. AVERAGE MAXIMUM NUMBER OF MONTHS OF OTHER ILLEGAL DRUG USE



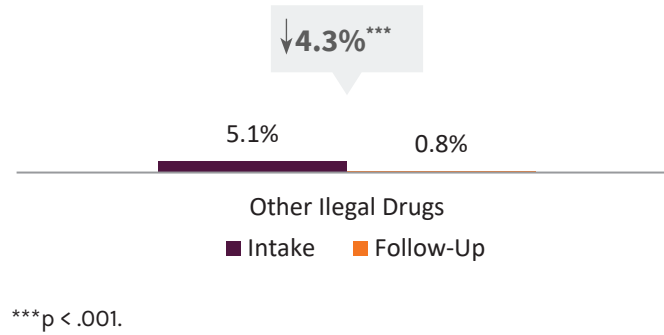
### PAST-30-DAY OTHER ILLEGAL DRUG USE

The percent of clients who reported using other illegal drugs in the 30 days before the intake and follow-up interviews decreased significantly by 4.3%, from 5.1% at intake to 0.8% at follow-up (see Figure 2.38).

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

<sup>48</sup> 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 2.38. PAST-30-DAY USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 899)



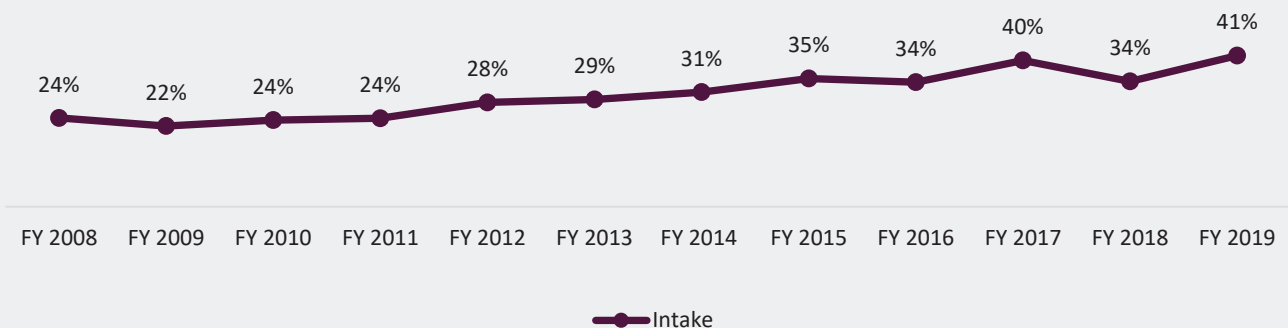
## INJECTION DRUG USE

At intake, 41.0% of clients reported having ever injected any drug. Of those clients (n = 437), 17.8% reported having ever used a Needle Exchange Program in Kentucky. At follow-up, 6.9% of clients reported injecting drugs in the past 12 months.<sup>49</sup> Of those clients (n = 73), 30.1% reported having used a Needle Exchange program in Kentucky.<sup>50</sup>

### Trends in Injection Drug Use

The percent 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%, and then increased in FY 2019 to 41%.

FIGURE 2.39. TRENDS CLIENTS REPORTING HAVING EVER INJECTED ANY DRUG AT INTAKE, FY 2008-2019



<sup>49</sup> Fifteen clients had missing values for the question on injection drug use at follow-up.

<sup>50</sup> One client had missing data for the needle exchange program at follow-up.

## ALCOHOL USE

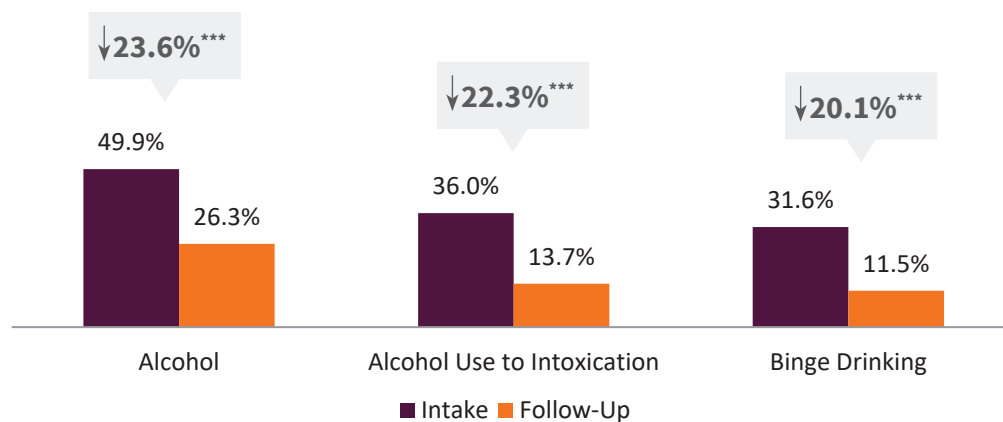
There were three measures of alcohol use including: (1) any alcohol use, (2) alcohol use to intoxication, and (3) binge drinking. Binge drinking was defined as having 5 or more (4 or more if client was female) alcoholic drinks in a period of about 2 hours.<sup>51</sup>

### 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 15.2 years old when they had their first alcoholic drink (not depicted in figure).<sup>52</sup>

Half of clients (49.9%) reported using alcohol in the 12 months before entering treatment while 26.3% of clients reported alcohol use in the 12 months before follow-up (see Figure 2.40). Overall, for the KTOS follow-up sample, there was a 23.6% decrease in the number of clients reporting alcohol use in the past 12 months. More than one-third of clients (36.0%) reported using alcohol to intoxication at intake, with 13.7% reporting alcohol use to intoxication in the 12 months before follow-up. Similarly, there was a significant decrease of 20.1% in the number of clients who reported past-12-month binge drinking from intake to follow-up (31.6% vs. 11.5%).<sup>53</sup>

FIGURE 2.40. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 1,056)



\*\*\*p < .001.

<sup>51</sup> 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.

<sup>52</sup> Of the individuals in the follow-up sample, 47 reported they have never had an alcoholic drink.

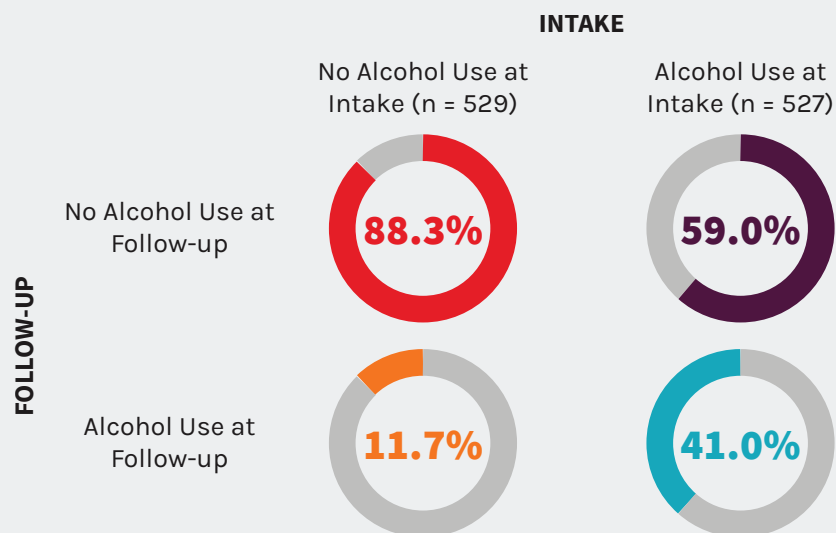
<sup>53</sup> There was missing data for the 12-month follow-up measures of alcohol use to intoxication (n = 2), and binge drinking (n = 3).

## Taking a Closer Look at Alcohol Use

Half of KTOS clients reported using alcohol in the 12 months before entering treatment (49.9%; n = 527). Of these clients who reported using alcohol in the past 12 months at intake, 59.0% did not use alcohol in the past 12 months at follow-up (see Figure 2.41). However, 41.0% of those who reported alcohol use at intake also reported use at follow-up.

A majority of those who did not use alcohol at intake also reported abstinence at follow-up (88.3%) while 11.7% of clients reported using alcohol at follow-up after reporting no use at intake.

FIGURE 2.41. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP BASED ON ALCOHOL USE AT INTAKE

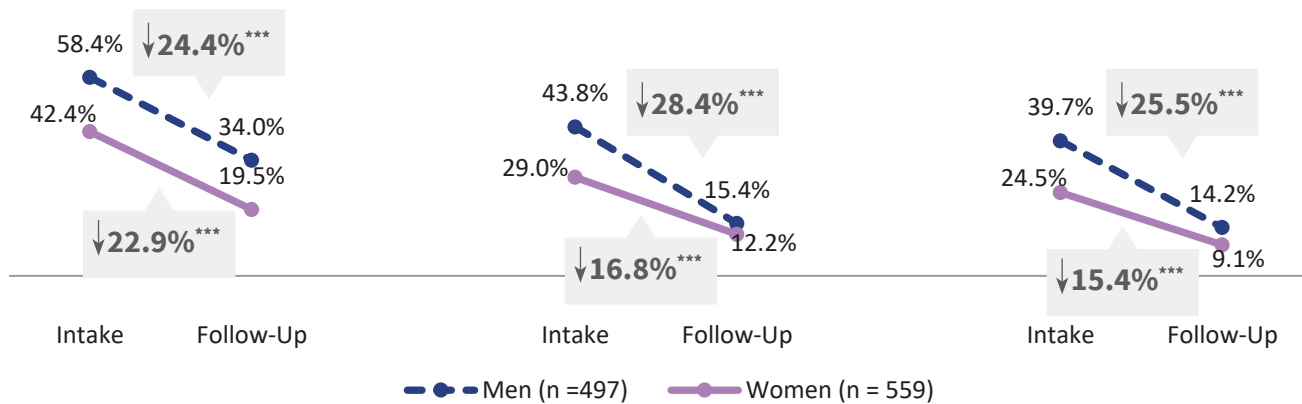


### GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE

At intake, significantly more men (58.4%) reported alcohol use compared to women (42.4%; see Figure 2.42). The number of men and women reporting alcohol use decreased significantly from intake to follow-up; however, at follow-up, more men 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.

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

FIGURE 2.42. GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP<sup>54</sup>

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

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

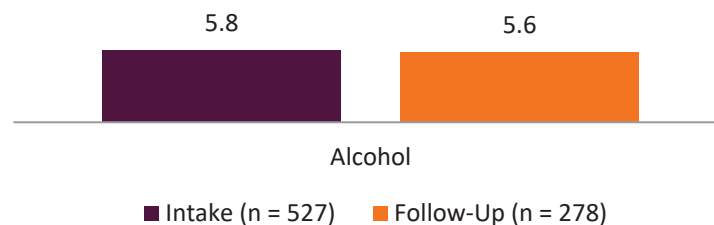
c—Significant difference by gender at intake ( $p < .001$ ) and follow-up ( $p < .05$ ).

\*\*\* $p < .001$ .

### AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2.43 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 ( $n = 527$ ), they reported using alcohol, on average, 5.8 months. Among clients who reported using alcohol in the 12 months before follow-up ( $n = 278$ ), they reported using, on average, 5.6 months.

FIGURE 2.43. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE

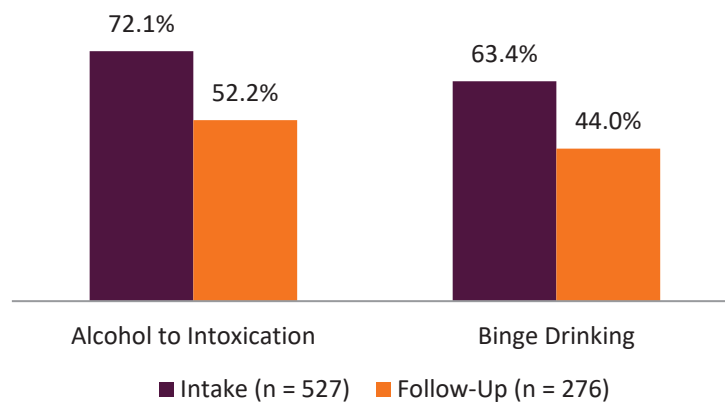


### PAST-12-MONTH ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL AT EACH POINT

Of the clients who used alcohol in the 12 months before entering treatment ( $n = 527$ ), 72.1% used alcohol to intoxication in the 12 months before intake and 63.4% reported binge drinking (see Figure 2.44). Of the clients who used alcohol in the 12 months before follow-up ( $n = 333$ ), 52.2% of clients reported alcohol use to intoxication and 44.0% reported binge drinking.

<sup>54</sup> There was missing data for the 12-month follow-up measures of alcohol use to intoxication ( $n = 2$ ), and binge drinking ( $n = 3$ ).

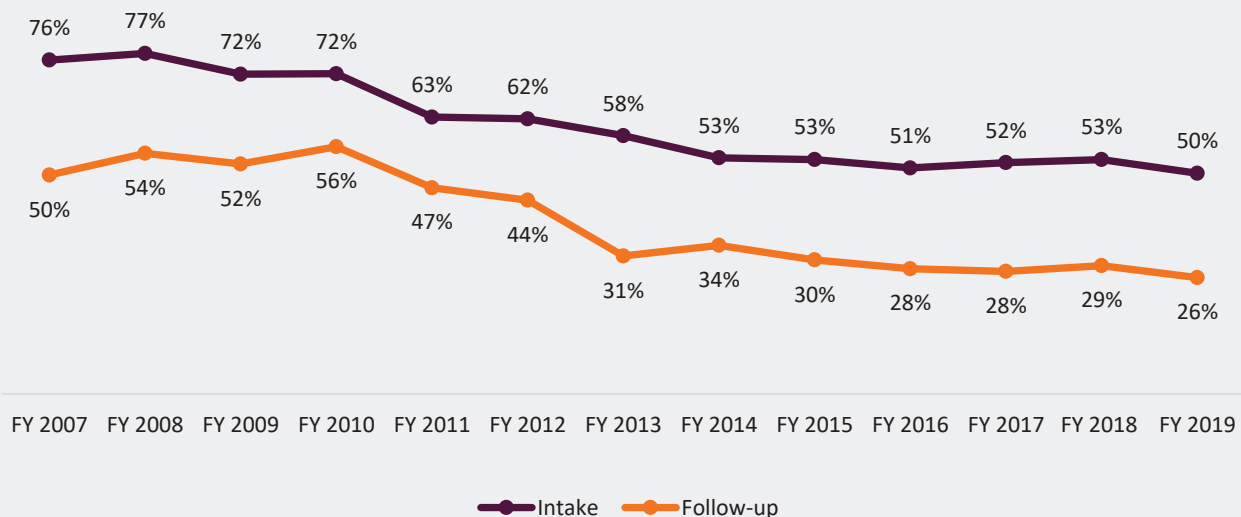
FIGURE 2.44. PAST-12-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



### Trends in Past-12-month Alcohol Use

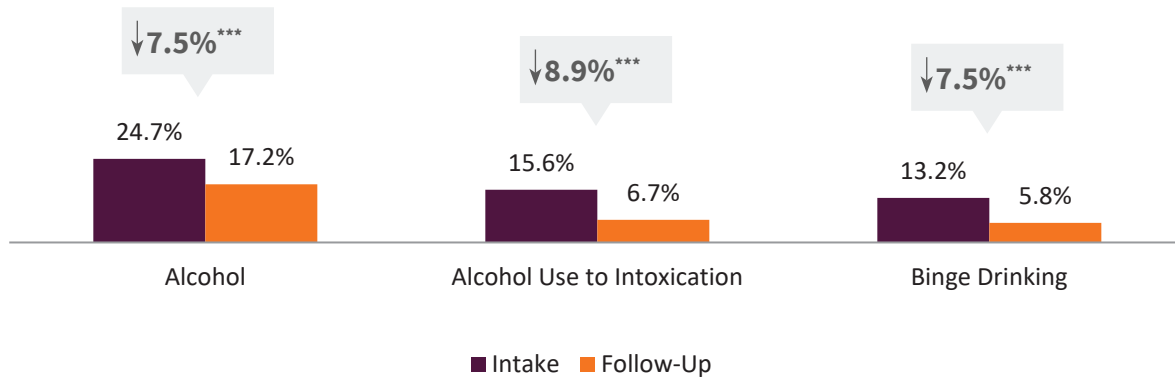
The percent of KTOS clients reporting alcohol use in the 12 months before treatment has decreased over time (see Figure 2.45). Overall, at follow-up, the percent of clients reporting alcohol use has also decreased over the years.

FIGURE 2.45. TRENDS IN ALCOHOL USE AT INTAKE AND FOLLOW-UP, FY 2007-2019



### PAST-30-DAY ALCOHOL USE

There was a 7.5% decrease in the percent of clients who reported using alcohol in the past 30 days from intake (24.7%) to follow-up (17.2%; see Figure 2.46). The decrease in the number of clients who reported using alcohol to intoxication was 8.9% and 7.4% for those who reported binge drinking in the 30 days before entering treatment.

FIGURE 2.46. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 899)<sup>55</sup>

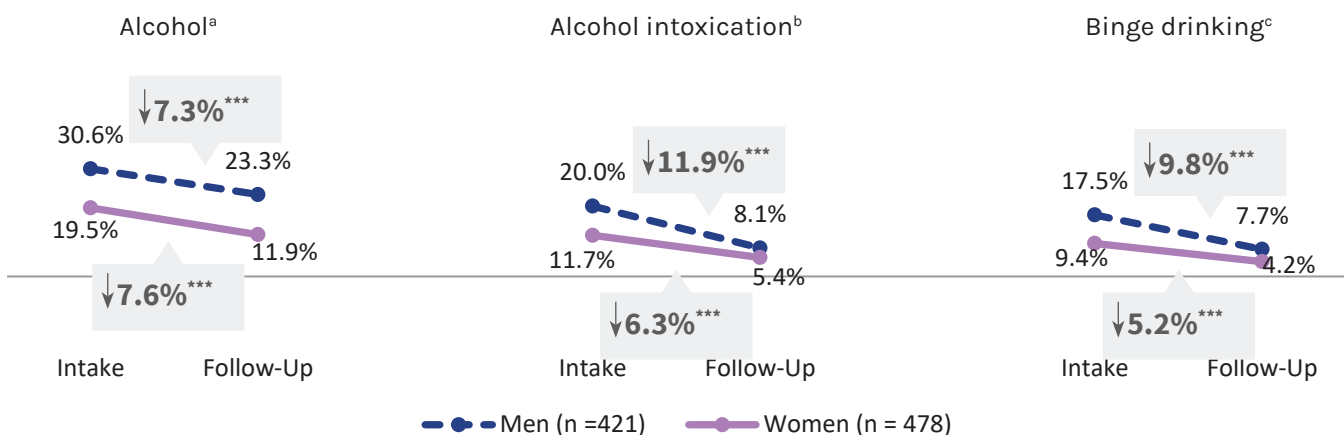
\*\*\*p &lt; .001.

### GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE

Significantly more men than women reported using alcohol and binge drinking in the 30 days before intake and follow-up, and alcohol to intoxication in the 30 days before intake (see Figure 2.47). 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 2.47. GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP



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

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

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

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

### AVERAGE NUMBER OF DAYS USED ALCOHOL

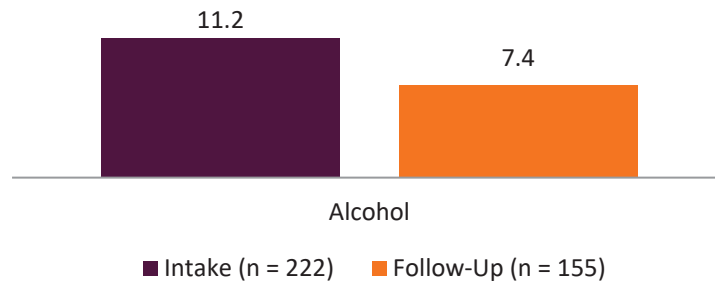
Figure 2.48 shows the average number of days alcohol users reported using alcohol in the

<sup>55</sup>The following numbers of cases had missing data for the past-30-day measures at follow-up: alcohol to intoxication (n = 2), and binge drinking (n = 5).



30 days before intake and follow-up. Among the clients who reported using alcohol in the 30 days before entering treatment (n = 222), they reported using alcohol, on average, 11.2 days. Among clients who reported using alcohol in the 30 days before follow-up (n = 155), they reported using, on average, 7.4 days.

FIGURE 2.48. AVERAGE NUMBER OF DAYS OF ALCOHOL USE

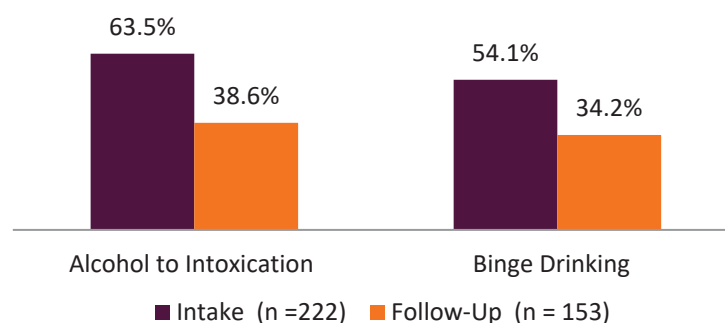


### **PAST-30-DAY ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL**

Of the 222 clients who used alcohol in the 30 days before intake, 63.5% used alcohol to intoxication and 54.1% binge drank in the 30 days before intake (see Figure 2.49).

Of the 153 clients who reported using alcohol in the 30 days before follow-up, 38.6% reported using alcohol to intoxication and 34.2% reported binge drinking in the 30 days before follow-up.

FIGURE 2.49. 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**

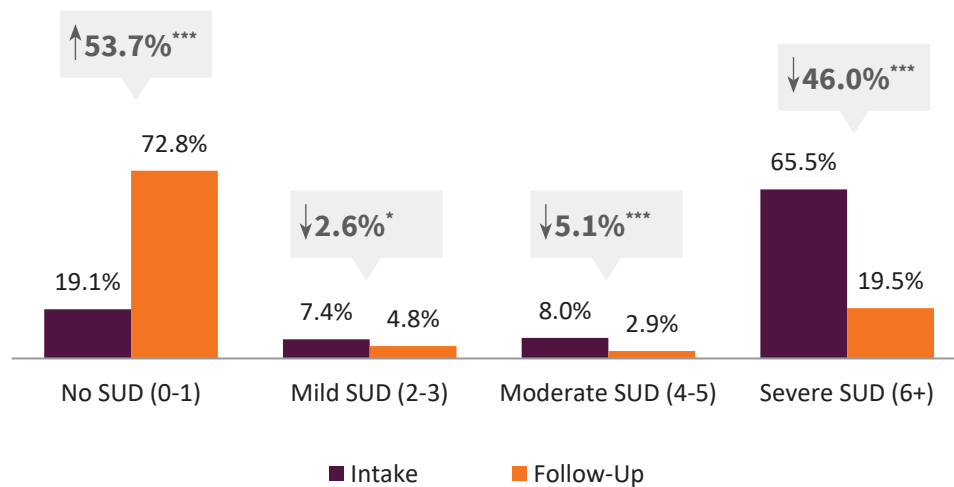
### **DSM-5 CRITERIA FOR SUBSTANCE USE DISORDER, PAST 12 MONTHS**

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.<sup>56</sup> 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 2.50).<sup>57</sup> Significant changes in the proportion of individuals classified in each category for severity of SUD were found.

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

FIGURE 2.50. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 1,026)<sup>a</sup>



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

\*\*\* $p < .001$ .

## ADDICTION SEVERITY INDEX (ASI), PAST 30 DAYS

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

<sup>56</sup> 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.

<sup>57</sup> Thirty individuals had missing data for DSM-5 criteria for substance use disorder at follow-up.

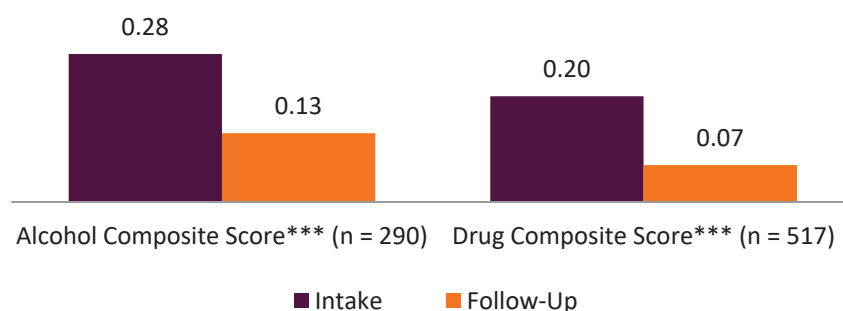
- How important treatment is to them for their alcohol (or drug) problems (see sidebar).

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 2.51 displays the change in average composite scores.<sup>58, 59</sup> The average for the alcohol composite score decreased significantly from 0.28 at intake to 0.13 at follow-up. The average for the drug composite score decreased significantly from 0.20 at intake to 0.07 at follow-up.

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

FIGURE 2.51. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



\*\*\*p < .001.

<sup>58</sup> The following number of cases were not included in the analysis of change in alcohol composite score: 153 clients were in a controlled environment all 30 days before treatment; 12 additional individuals were in a controlled environment all 30 days before follow-up; 2 individuals had missing data for the number of days in a controlled environment before follow-up; an additional 604 clients reported abstaining from alcohol in the 30 days before intake and follow-up; and 5 individuals had missing data from items included in the calculation of the alcohol composite at follow-up.

<sup>59</sup> The following numbers were not included in the analysis of change in drug composite score: 153 clients were in a controlled environment all 30 days before treatment; 12 additional individuals were in a controlled environment all 30 days before follow-up; 2 individuals had missing data for the number of days in a controlled environment before follow-up; an additional 367 clients reported abstaining from drugs in the 30 days before intake and follow-up, and 15 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

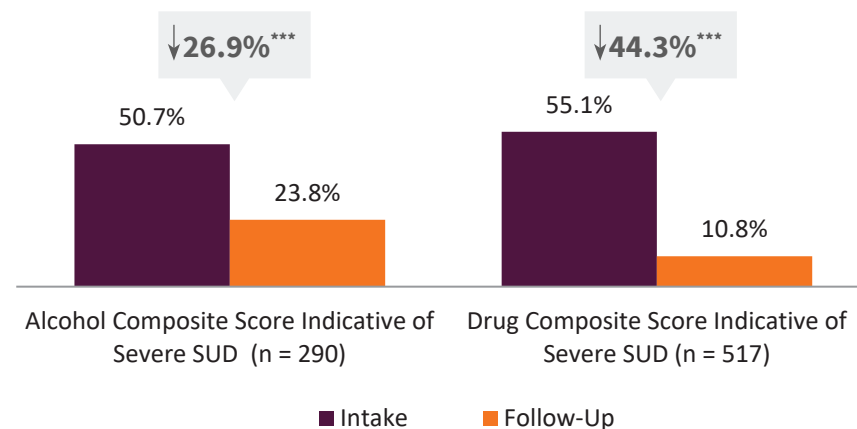
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI composite scores for alcohol and drug use and DSM-IV substance dependence diagnoses. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity about identifying DSM-IV 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.

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 2.52). Half of individuals (50.7%) 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 23.8%. More than one half of individuals who reported any drug use in the 30 days before intake and/or follow-up had drug composite scores indicative of severe SUD at intake (55.1%). At follow-up, about 1 in 10 had drug composite scores indicative of severe SUD (10.8%).

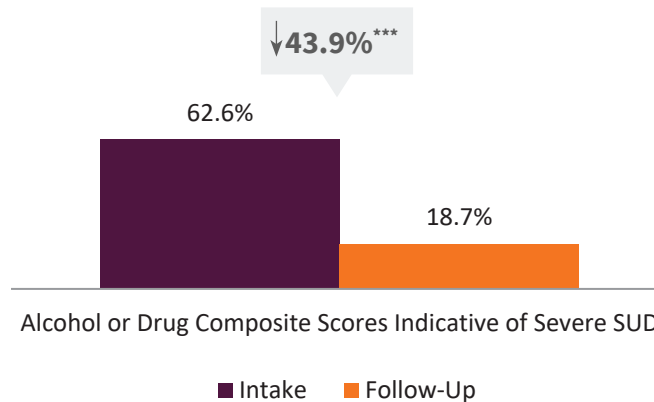
FIGURE 2.52. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP<sup>60</sup>



\*\*\*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 2.53). The percent of clients who had composite scores that met the cutoff for severe SUD for either alcohol or drugs decreased by 43.9% at follow-up.

FIGURE 2.53. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR ALCOHOL OR DRUG SEVERE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 641)

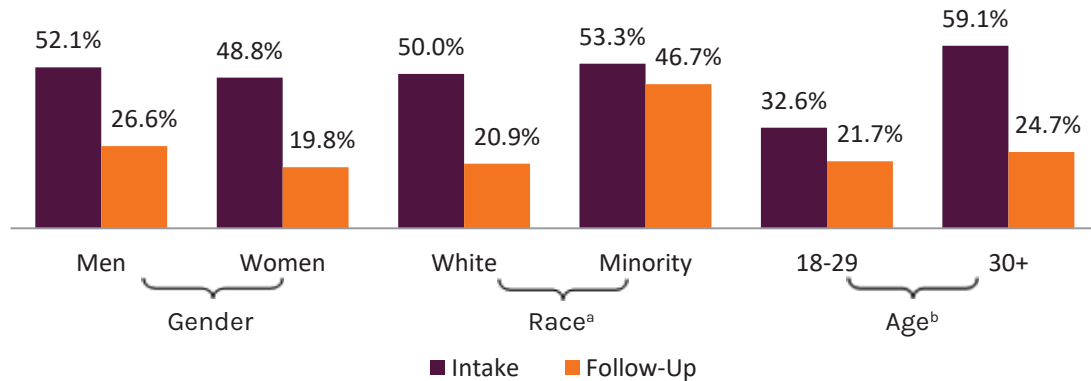


\*\*\*p < .001.

<sup>60</sup> Five clients had missing data for the alcohol score variables at follow-up and 15 clients had missing data for the drug composite score variables at follow-up.

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 2.54). At follow-up, significantly more clients who were racial minorities compared to White clients had an alcohol composite score indicative of severe SUD. At intake, significantly more of the individuals who were 30 years old and older had an alcohol composite score indicative of severe SUD compared to individuals who were younger than 30. There were no other statistically significant differences.

FIGURE 2.54. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 290)

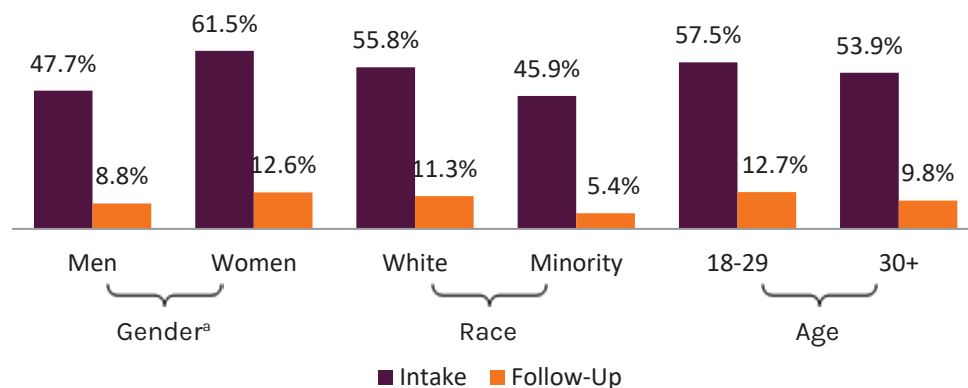


a – Significant difference by race at follow-up ( $p < .01$ ).

b—Significant difference by age group at intake ( $p < .001$ ).

Analyses were also conducted to determine if clients who had a drug composite score indicative of severe SUD at intake and follow-up differed by gender, race/ethnicity, or age (see Figure 2.55). At intake, significantly more female clients had a drug composite score indicative of severe SUD than did not. There were no other statistically significant differences at intake and none at follow-up by gender, race, and age group.

FIGURE 2.55. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 517)

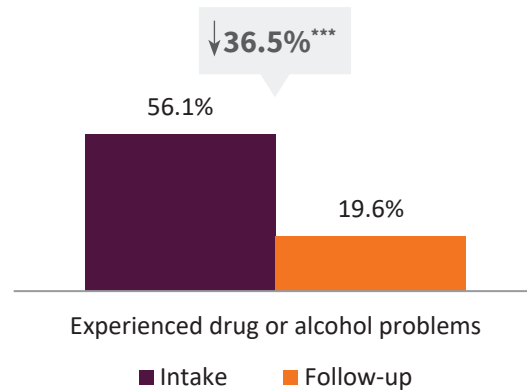


a--Significant difference by gender at intake ( $p < .01$ ).

## PROBLEMS EXPERIENCED WITH SUBSTANCE USE IN THE PAST 30 DAYS

In the past 30 days at intake, 56.1% 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 2.56). In the past 30 days at follow-up, 19.6% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 36.5%).

FIGURE 2.56. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,062)<sup>61</sup>



\*\*\*p < .001.

## READINESS FOR SUBSTANCE ABUSE TREATMENT

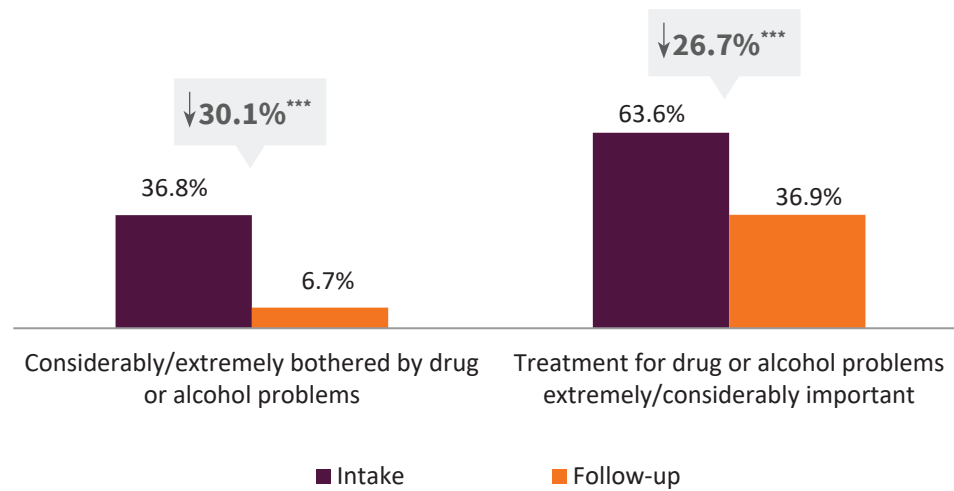
Figure 2.57 shows that 36.8% of clients reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the past 30 days at intake. In the past 30 days at follow-up, 6.7% of clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems (a significant decrease of 30.1%).

The figure below also shows that 63.6% of clients in the past 30 days at intake and 36.9% 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 26.7%.

*At first I hated going to treatment, but it got better. I liked how they really got personal with the clients, it felt very inspiring.*

- KTOS FOLLOW-UP CLIENT

<sup>61</sup> Four individuals had missing values on drug or alcohol problems at follow-up.

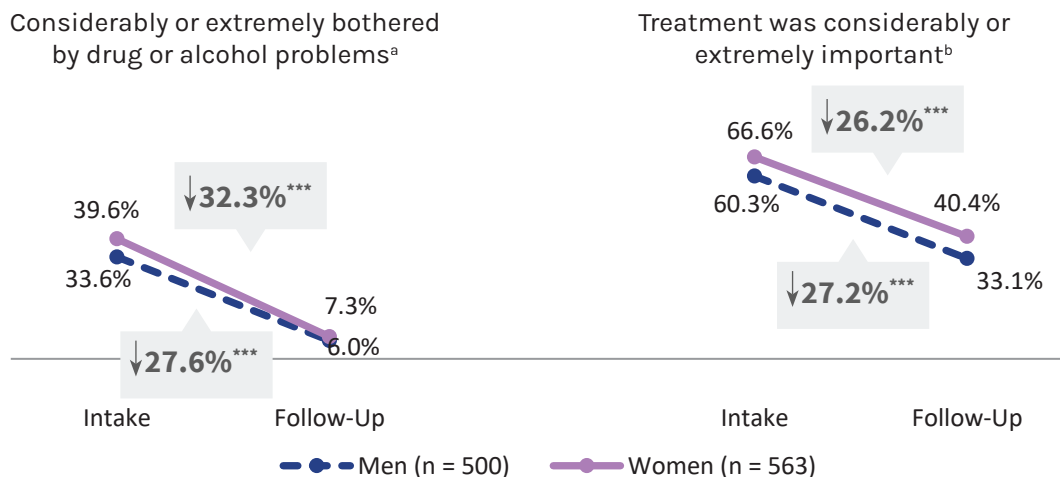
FIGURE 2.57. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP (n = 1,066)<sup>62</sup>

\*\*\*p &lt; .001.

### GENDER DIFFERENCES IN READINESS FOR TREATMENT IN THE PAST 30 DAYS

At intake, significantly more women (39.6%) reported being considerably or extremely bothered by drug or alcohol problems in the past 30 days at intake compared to men (33.6%; see Figure 2.58). There were significant decreases from intake to follow-up for both men and women in being considerably or extremely bothered by drug or alcohol problems. Compared to men, significantly more women reported that treatment was considerably or extremely important to them at intake and follow-up.

FIGURE 2.58. 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 &lt; .01).

b—Significant difference by gender at follow-up (p &lt; .05).

\*\*\*p &lt; .001.

<sup>62</sup> Three individuals had missing data for bothered variable and 7 individuals had missing data for treatment variable at follow-up.



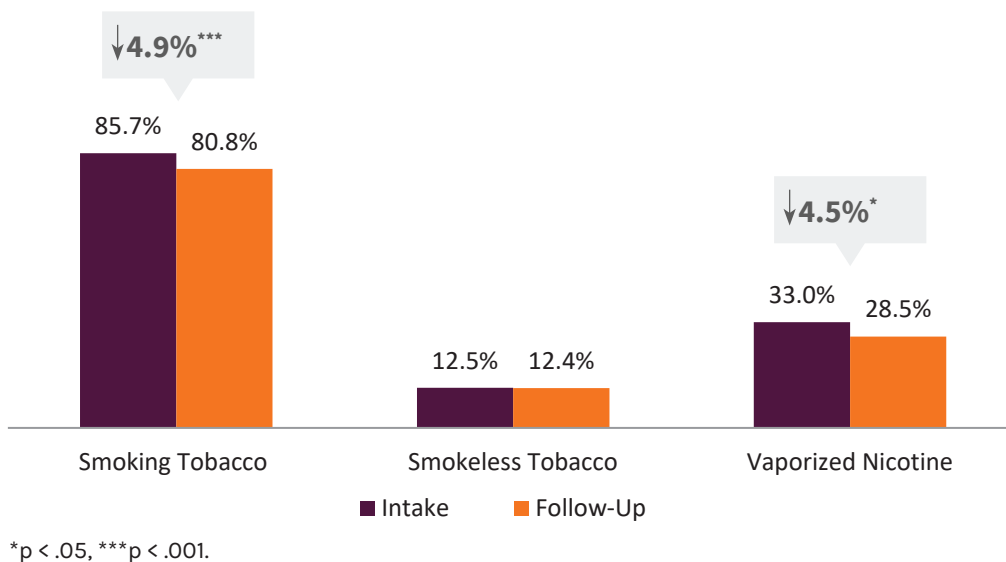
## TOBACCO USE

### 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 15.9 years old when they started smoking tobacco regularly (not depicted in figure).<sup>63</sup>

Past-12-month smoking tobacco use significantly decreased from intake to follow-up while smokeless tobacco use remained stable (see Figure 2.59). Most clients reported smoking tobacco in the 12 months before entering treatment (85.7%) and in the 12 months before follow-up (80.8%). A minority of clients reported using smokeless tobacco in the 12 months before entering treatment and follow-up. One-third of clients (33.0%) reported using vaporized nicotine in the 12 months before entering treatment and 28.5% of clients reported using vaporized nicotine in the 12 months before follow-up, which was a small but significant decrease.

FIGURE 2.59. CHANGE IN PAST-12-MONTH TOBACCO AND VAPORIZED NICOTINE USE FROM INTAKE TO FOLLOW-UP (n = 1,056)



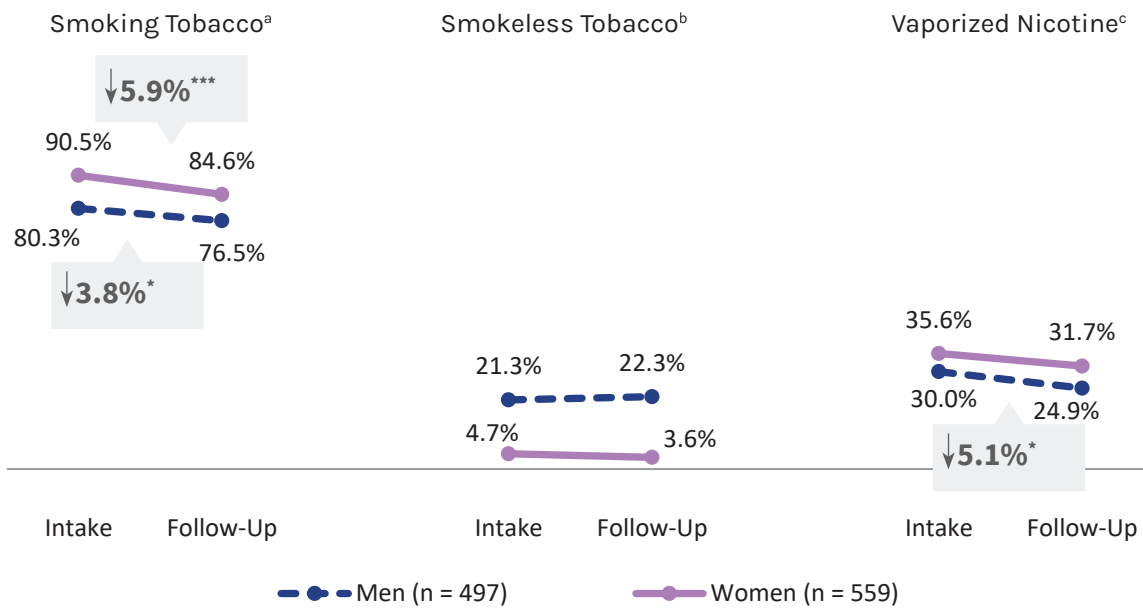
### GENDER DIFFERENCES IN PAST-12-MONTH SMOKING TOBACCO, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE

Significantly more women than men reported smoking tobacco at intake and follow-up, whereas significantly more men than women reported using smokeless tobacco at intake and follow-up (see Figure 2.60). The percent of women and men who reported smoking tobacco in the past 12 months significantly decreased from intake to follow-up. Similar percentages of men and women reported using vaporized nicotine at intake, but there was a significant decrease in the percent of men who used vaporized nicotine in the 12 months before follow-up, such that significantly fewer men used vaporized nicotine at follow-up

<sup>63</sup> Of those individuals in the follow-up sample, 129 reported they had never smoked regularly, so they were not included in the analysis.

compared to women.

FIGURE 2.60. GENDER DIFFERENCES IN PAST-12-MONTH SMOKING TOBACCO AND SMOKELESS TOBACCO FROM INTAKE TO FOLLOW-UP



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

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

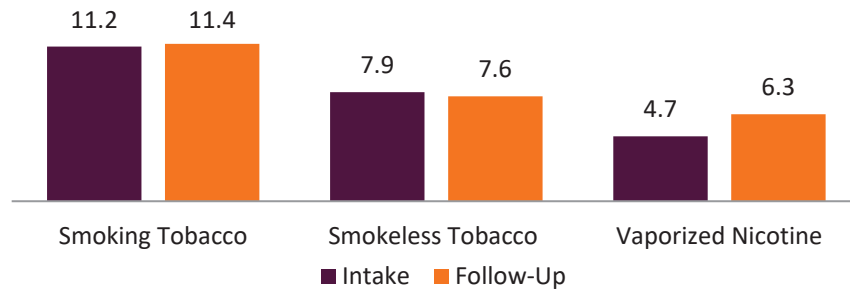
c—Significant difference by gender at follow-up ( $p < .05$ ).

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

### AVERAGE NUMBER OF MONTHS OF SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE

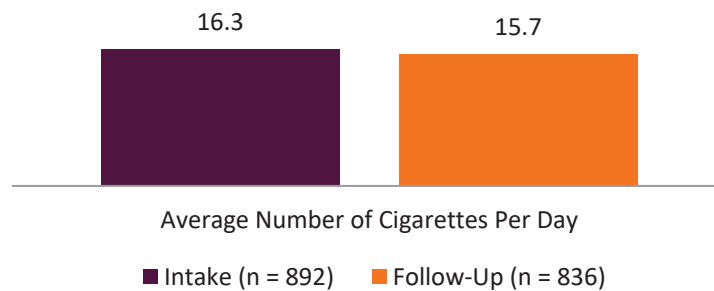
Figure 2.61 shows the average number of months clients who smoked tobacco or used smokeless tobacco or vaporized nicotine products reported using tobacco at intake and follow-up. Among the clients who reported using smoking tobacco in the 12 months before entering treatment ( $n = 905$ ), they reported using tobacco, on average, 11.2 months. Of the clients who reported using smoking tobacco in the 12 months before follow-up ( $n = 853$ ), they reported using, on average, 11.4 months. Among the clients who reported using smokeless tobacco in the 12 months before entering treatment ( $n = 132$ ), they reported using it, on average, 7.9 months. Of the clients who reported using smokeless tobacco in the 12 months before follow-up ( $n = 131$ ), they reported using it, on average, 7.6 months. Among the clients who reported using vaporized nicotine in the 12 months before entering treatment ( $n = 348$ ), they reported using it, on average, 4.7 months. Of the clients who reported using vaporized nicotine products in the 12 months before follow-up ( $n = 301$ ), they reported using them, on average, 6.3 months.

FIGURE 2.61. 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 relatively stable (see Figure 2.62). Of those who smoked tobacco in the 12 months before entering treatment, clients reported smoking an average of 16.3 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 15.7 cigarettes per day.

FIGURE 2.62. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO<sup>64</sup>

*It was the right program for me. They let me express myself.*

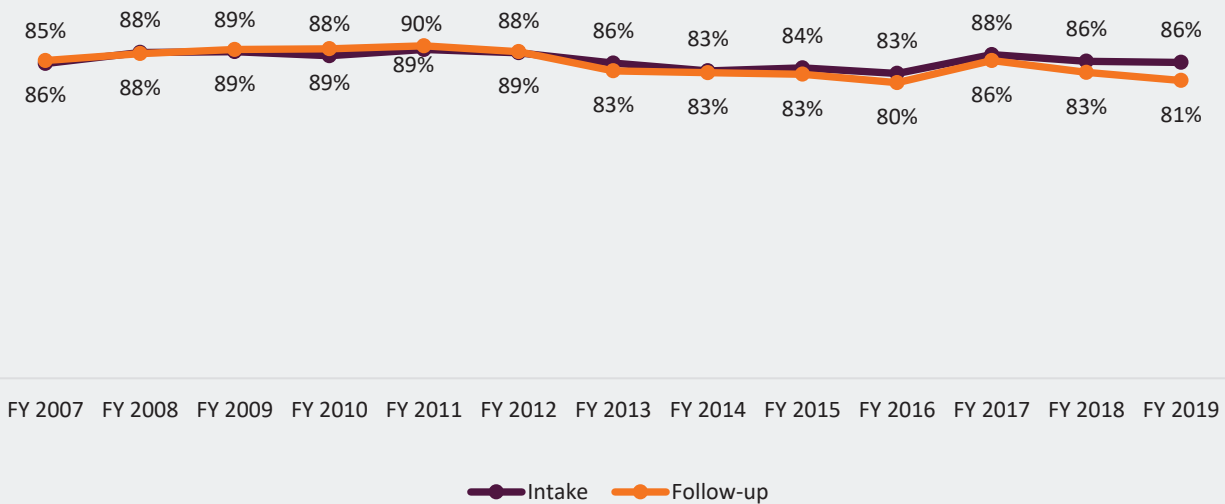
- KTOS FOLLOW-UP CLIENT

<sup>64</sup>Thirteen cases had missing data for number of cigarettes smoked at intake, and 17 cases had missing data for number of cigarettes smoked at follow-up.

## 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 remained between a low of 81% at follow-up in FY 2019 and a high of 90% at follow-up in FY 2011.

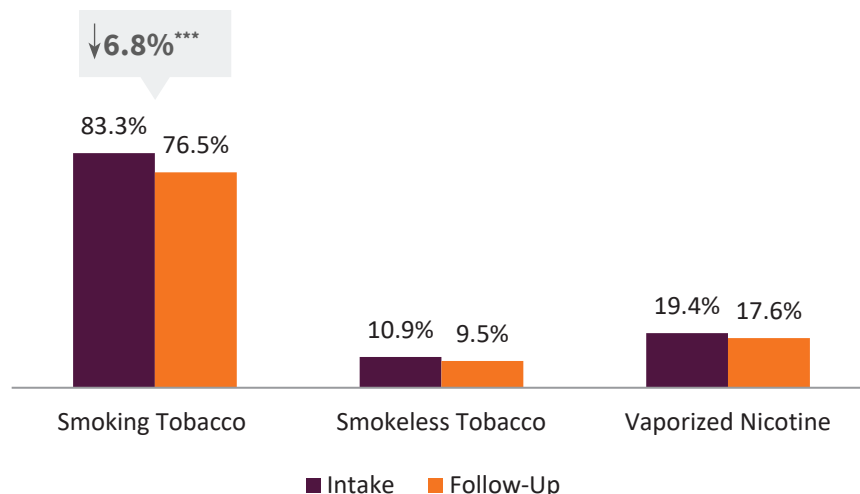
FIGURE 2.63. TRENDS IN SMOKING TOBACCO USE AT INTAKE AND FOLLOW-UP, FY 2007-FY 2018



## 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 (83.3%) to follow-up (76.5%; see Figure 2.64). Past-30-day use of smokeless tobacco use and vaporized nicotine did not change significantly intake to follow-up.

FIGURE 2.64. PAST-30-DAY SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE AT INTAKE AND FOLLOW-UP (n = 899)

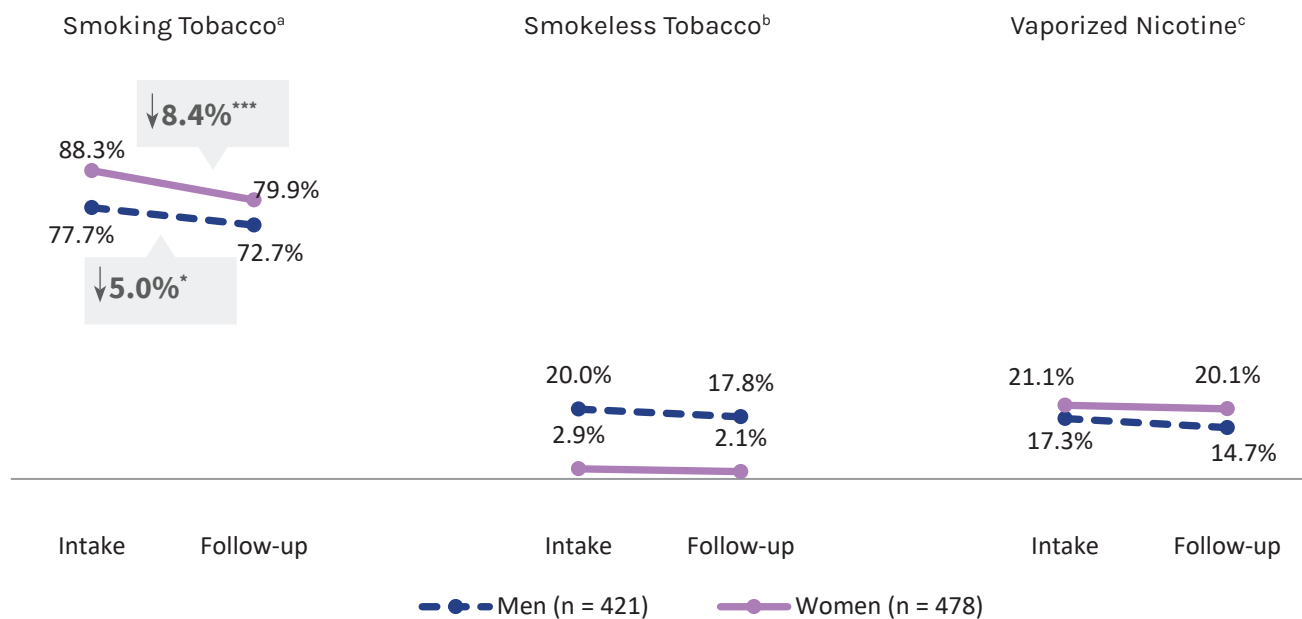


\*\*\*p < .001.

## 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 2.65). However, the number of both men and women who reported smoking tobacco in the past 30 days decreased significantly from intake to follow-up. Significantly more men than women reported using smokeless tobacco in the 30 days before intake and follow-up. There was no significant difference by gender in past-30-day use of vaporized nicotine at intake. At follow-up, significantly more women reported using vaporized nicotine compared to men.

FIGURE 2.65. GENDER DIFFERENCES IN PAST-30-DAY SMOKING AND SMOKELESS TOBACCO, AND VAPORIZED NICOTINE AT INTAKE AND FOLLOW-UP



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

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

c—Significant different by gender at follow-up ( $p < .05$ ).

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

## SECTION 3. BIVARATE AND MULTIVARIATE ANALYSIS OF FACTORS ASSOCIATED WITH RELAPSE

*This section focuses on a multivariate analysis examining factors related to relapse in the 2021 KTOS follow-up sample.*

KTOS clients who reported using any illegal drugs and/or alcohol in the 12 months before follow-up (n = 482, 45.3%) were compared to clients who did not report use of any drugs or alcohol in the 12 months before follow-up (n = 582, 54.7%) in bivariate statistical tests.<sup>65</sup> 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, and average quality of life rating.

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 = 482)	Did not use illegal drugs or alcohol in the 12 months before follow-up (n = 582)
Average age at intake.....	34.7	34.6
Male**.....	51.9%	43.3%
Met criteria for moderate or severe SUD per DSM-5.....	75.3%	71.1%
Number of nights incarcerated in the 12 months before intake**.....	32.7	45.2
Number of months employed in the 12 months before intake*.....	4.7	4.0
Average number of mental health symptoms (depression and anxiety) reported at intake.....	8.3	7.6
Number of people client could count on for recovery support at intake.....	6.5	6.9
Average quality of life rating at intake**.....	6.8	7.2
Average number of adverse childhood experiences.....	3.7	3.9

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

These same factors in Table 3.1 were included in a logistic regression to examine which factors were significantly associated with relapse, after controlling for other factors. 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, total number of anxiety and depression symptoms, number of types of adverse childhood experiences, and quality of life rating 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.

<sup>65</sup> Two individuals had missing values for alcohol/drug use in the 12 months before follow-up.

Individuals with more depression and anxiety symptoms and individuals with fewer ACE had greater odds of alcohol and/or drug use 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. Nonetheless, all the adjusted odds ratios were close to 1.00.

TABLE 3.2. ASSOCIATION OF TARGETED FACTORS AND RELAPSE

Factors at intake	B	Wald	Odds ratio	95% CI	
				Lower	Upper
Age .....	-.006	.759	.994	.982	1.007
Gender .....	-.372	7.790	.689**	.531	.895
Number of nights incarcerated .....	-.003	6.650	.997*	.996	.999
Number of months employed .....	.026	3.264	1.026	.998	1.056
Number of depression and anxiety symptoms	.027	5.307	1.027*	1.004	1.050
Number of people client could count on for recovery support .....	-.005	.537	.995	.981	1.009
Quality of life rating .....	-.085	7.894	.919**	.866	.975
Number of adverse childhood experiences .....	-.046	3.971	.955*	.912	.999

\*p &lt; .05, \*\*p &lt; .01.

## SECTION 4. MENTAL HEALTH, PHYSICAL HEALTH, AND INTERPERSONAL VICTIMIZATION

*This section examines changes in mental health symptoms, physical health, 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, (6) overall health status, (7) chronic medical problems at intake, (8) chronic pain, (9) health insurance, and (10) 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).

More than half of clients (55.8%) met criteria for depression in the 12 months before they entered treatment (see Figure 4.1). At follow-up, 33.0% met criteria for depression—a significant decrease of 22.8%. Of those who met study criteria at intake ( $n = 594$ ), they had an average of 7.5 symptoms out of 9. At follow-up, among those who met study criteria for depression ( $n = 348$ )<sup>66</sup>, clients reported an average of 7.2 symptoms out of 9.

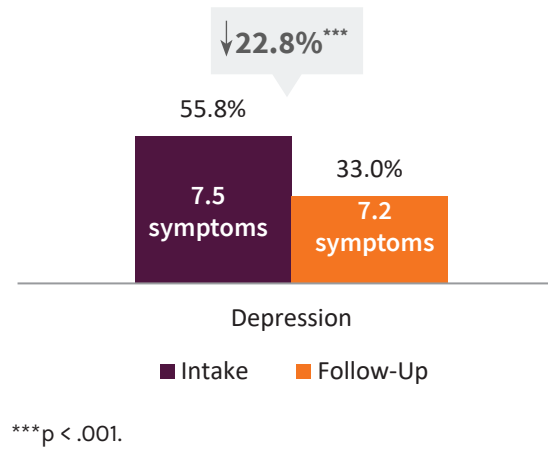
#### Study Criteria for Depression

To meet study criteria for depression, clients had to say “yes” to at least one of the two screening questions and at least 4 of the other 7 symptoms. Thus, minimum score to meet study criteria: 5 out of 9.

**The percent of clients meeting criteria for depression decreased significantly by 23% from intake to follow-up**

<sup>66</sup>Three individuals answered enough questions to meet criteria for depression at follow-up, but not all the items about depression symptoms, so the total number of symptoms was missing.

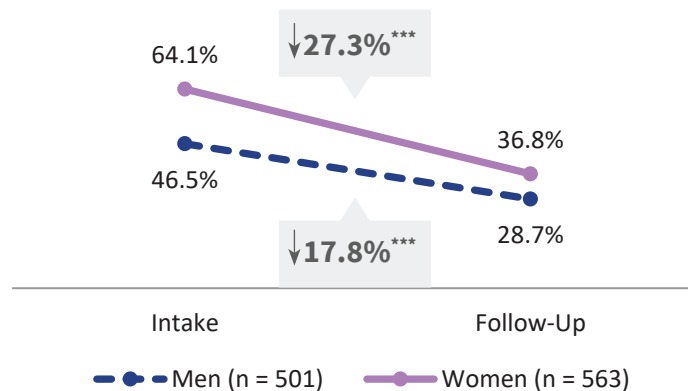


FIGURE 4.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 1,064)<sup>67</sup>

## GENDER DIFFERENCES IN DEPRESSION

Significantly more women met study criteria for depression at intake and follow-up compared to men. At intake, 64.1% of women met study criteria compared to 46.5% of men. At follow-up, the percent of women who reported depression was 36.8% compared to 28.7% 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**

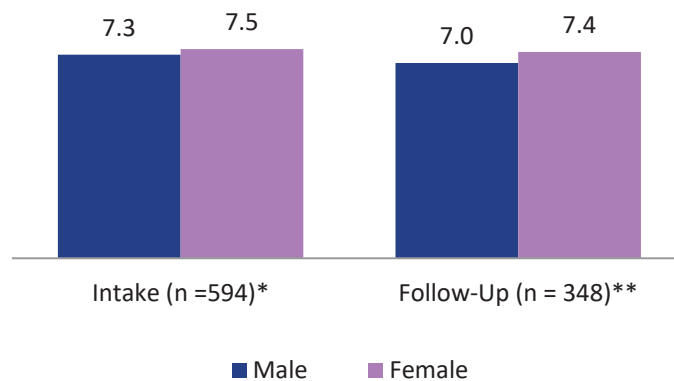
FIGURE 4.2. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION<sup>a</sup>

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

Of those who met study criteria for depression at intake, women reported significantly more depression symptoms than men (7.5 vs. 7.3; see Figure 4.3). Of those who met study criteria for depression at follow-up, women reported significantly more depression symptoms than men (7.4 vs. 7.0).

<sup>67</sup>Two individuals had missing data for depression criteria at follow-up.

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



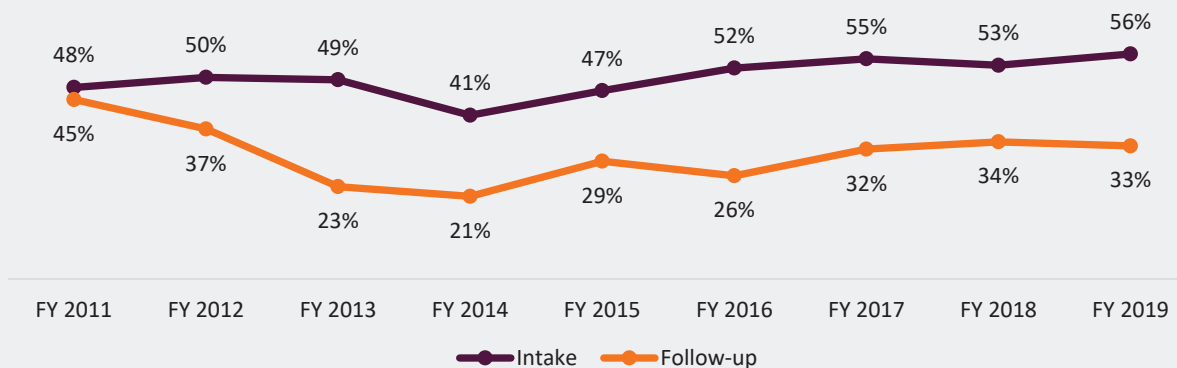
a – To meet study criteria, a client had to endorse at least 5 of 9 anxiety symptoms.

\*p < .05, \*\*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 56% in FY 2019 over the past 9 years. The percent of clients who met criteria for depression at follow-up decreased from 45% in FY 2011 to 21% in FY 2014. In 2019, the percent of individuals who met criteria for depression at follow-up was 33%.

FIGURE 4.4. TRENDS IN THE NUMBER OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP, FY 2011-FY 2019



## ANXIETY SYMPTOMS

To assess for generalized anxiety symptoms, participants were first asked:

“In the 12 months before you entered this program, did you have a period lasting 6 months or longer where you worried excessively or were anxious about multiple things on more days than not (like family, health, finances, school, or work difficulties)?”

Participants who answered “yes” were then asked 6 additional questions about anxiety symptoms (e.g., felt restless, keyed up or on edge, have difficulty concentrating, feel irritable).

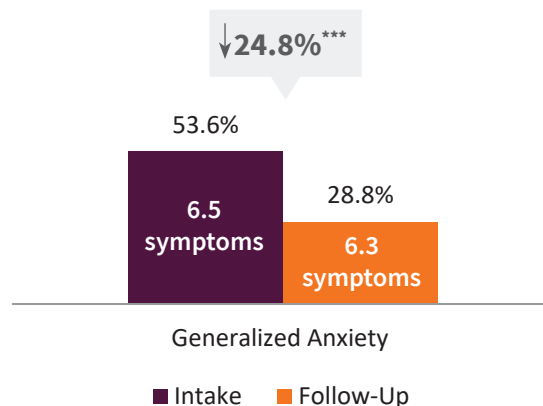
In the 12 months before entering treatment, about half of clients reported symptoms that met study criteria for generalized anxiety (53.6%; see Figure 4.5). By follow-up, the percent of clients meeting study criteria for generalized anxiety had decreased by 24.8% to 28.8%. At intake, among those who met study criteria for generalized anxiety ( $n = 568$ ), clients reported an average of 6.5 symptoms out of 7. Among those who met study criteria for generalized anxiety at follow-up ( $n = 305$ ), clients reported an average of 6.3 symptoms out of 7.

### 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.

**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 ( $N = 1,060$ )<sup>68</sup>



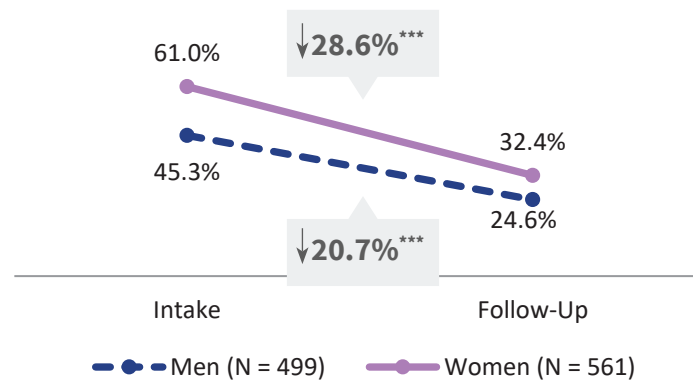
\*\*\* $p < .001$ .

<sup>68</sup> Missing data on generalized anxiety at follow-up for 6 clients.

## 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.

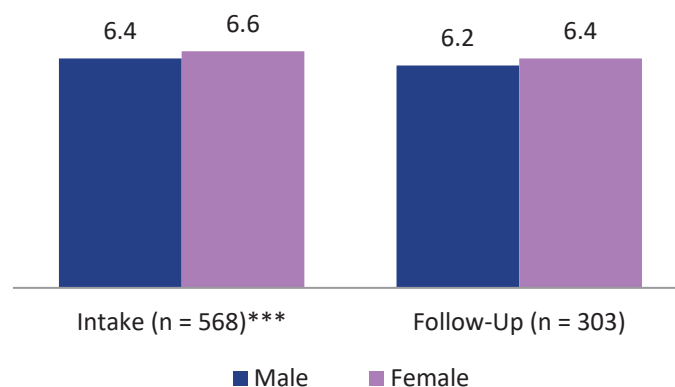
FIGURE 4.6. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY<sup>a</sup>



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

Of those who met study criteria for generalized anxiety at intake, women reported significantly more anxiety symptoms than men (6.6 vs. 6.4; 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 (6.2 vs. 6.4).

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<sup>a</sup>

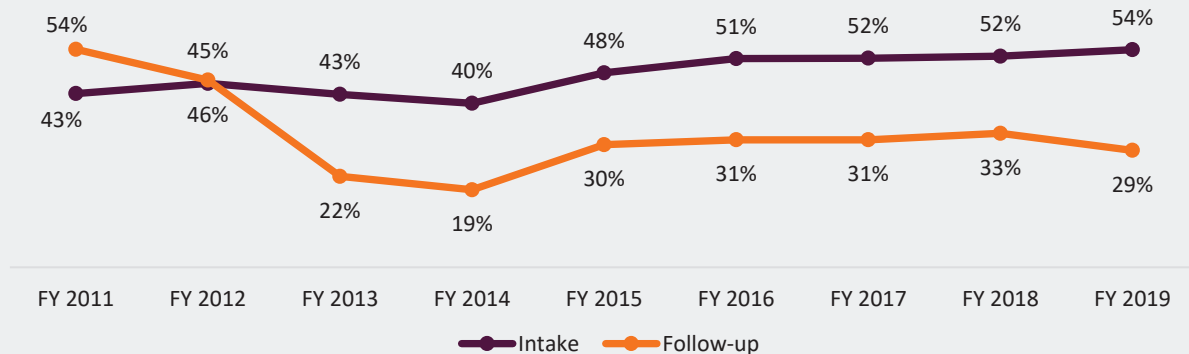


a – To meet study criteria, a client had to endorse at least 4 of 7 anxiety symptoms.  
\*\* $p < .01$ .

## Trends in Past-12-month Generalized Anxiety

The percent of clients who met criteria for generalized anxiety at intake has steadily increased over the past nine years. The percent of clients who met study criteria for generalized anxiety at follow-up decreased from FY 2011 through FY 2014, but was in the low 30s from FY 2015 - 2018.

FIGURE 4.8. TRENDS IN THE NUMBER OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP, FY 2011-FY 2019

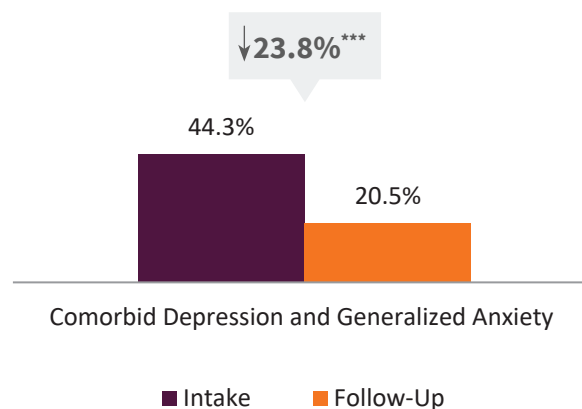


## COMORBID DEPRESSION AND ANXIETY SYMPTOMS

Figure 4.9 shows that at intake, 44.3% of clients met study criteria for both depression and generalized anxiety and there was a significant 23.8% decrease in the percent of individuals who met study criteria for depression and generalized anxiety at follow-up (20.5%).

**The percent of clients meeting criteria for both depression and generalized anxiety decreased 24%**

FIGURE 4.9. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 1,059)<sup>69</sup>



\*\*\*p < .001.

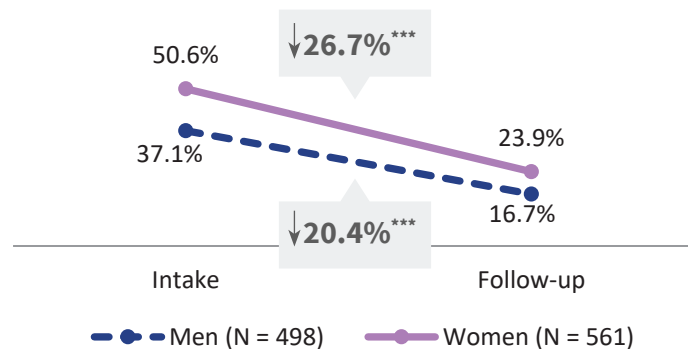
<sup>69</sup> Seven cases had missing data for depression and/or generalized anxiety at follow-up.

## 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 26.7% and 20.4% 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<sup>a</sup>

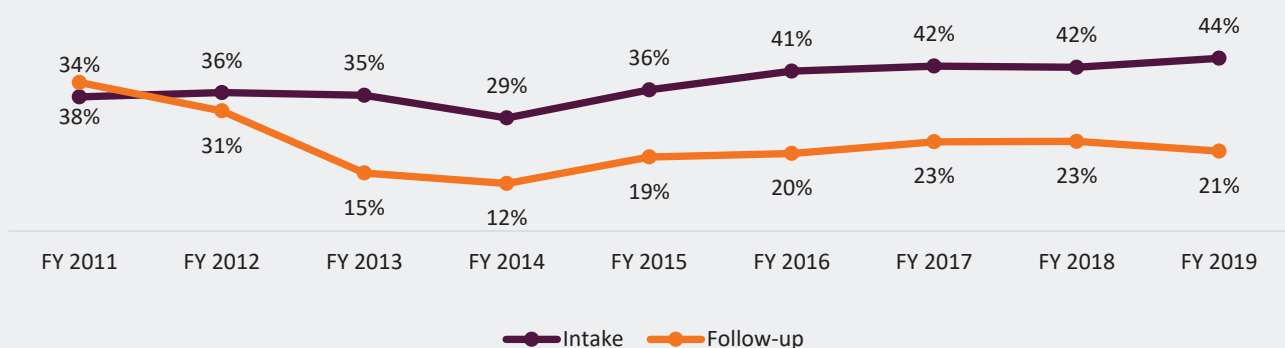


a—Statistical difference by gender at intake ( $p < .001$ ) and follow-up ( $p < .01$ ).  
\*\*\* $p < .001$ .

## Trends in Comorbid Depression and Anxiety

Past-9-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 2019 (44%) than in FY 2011 (38%). At follow-up, however, the percent of clients meeting criteria for comorbid depression and anxiety has remained stable for the past five 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 2019

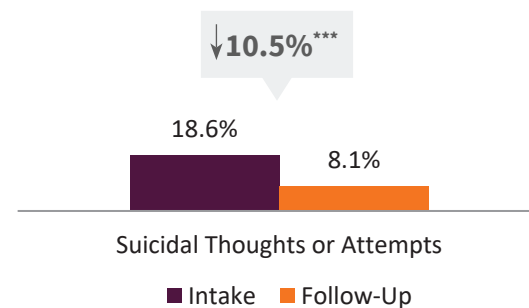


## SUICIDAL THOUGHTS AND/OR ATTEMPTS

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, 18.6% of clients reported thoughts of suicide or attempted suicide and 8.1% of clients reported thoughts of suicide or attempted suicide in the 12 months before follow-up. There was an 10.5% 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 11% at follow-up**

FIGURE 4.12. CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 1,061)<sup>70</sup>

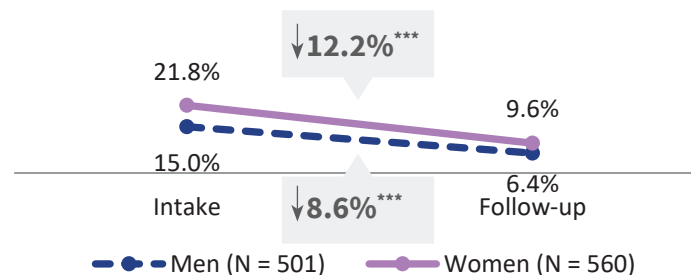


## GENDER DIFFERENCES IN SUICIDAL THOUGHTS AND/OR ATTEMPTS

Significantly more women reported suicidality at intake and follow-up compared to men (see Figure 4.13). The percent of women and men who met criteria for depression and generalized anxiety decreased significantly by 12.2% and 8.6% respectively.

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

FIGURE 4.13. GENDER DIFFERENCES IN PERCENT OF CLIENTS REPORTING SUICIDALITY AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

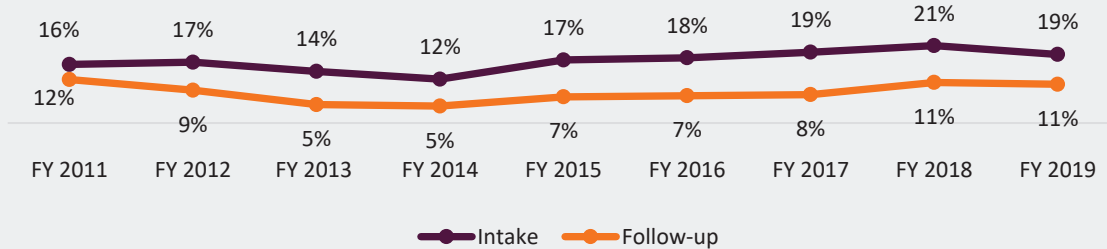
\*\*\*p < .001.

<sup>70</sup> Five individuals had missing data for suicidal thoughts and/or attempts at follow-up.

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

The percent of clients who reported suicidal ideation and attempts at intake was a low of 12% in FY 2014 and a high of 21% in FY 2018. The percent of clients reporting suicidal ideation and attempts at follow-up was a high of 12% in FY 2011 and a low of 5% in FY 2013 and FY 2014.

FIGURE 4.14. TRENDS IN THE NUMBER OF CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP, FY 2011-2019



## POSTTRAUMATIC STRESS DISORDER SYMPTOMS

Clients who reported any lifetime victimization experiences (other than adverse childhood experiences) in the intake interview and clients at follow-up, were asked to answer the four-item PTSD checklist about how bothered they had been about the symptoms in the prior 12 months.<sup>71</sup> Even though victimization experiences do not encompass all potential traumatic events by any means, they are an important class of Criterion A stressors.

At intake, 841 individuals reported any of the victimization experiences assessed in the interview in their lifetime. Among the individuals who reported any of the victimization experiences assessed at intake and answered the PTSD symptom items, 28.1% screened positive for PTSD, and 10.9% screened positive for PTSD at follow-up (see Figure 4.15).<sup>72</sup>

*Counselor was very supportive and she went above and beyond to help me. We became friends after my treatment.*

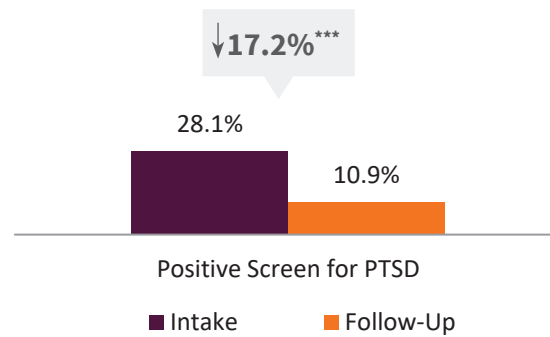
- KTOS FOLLOW-UP CLIENT

<sup>71</sup>Price, M., Szafranski, D., van Stolk-Cooke, K., & Gros, D. (2016). Investigation of an abbreviated 4 and 8-item version of the PTSD Checklist 5. *Psychiatry Research*, 239, 124-130.

<sup>72</sup>Because we do not assess for lifetime victimization again in the follow-up survey as we do in the intake survey, we have modified the PTSD items to be asked of everyone at follow-up, and not just individuals who report past-12-month victimization. Thus, excluded from this analysis are 225 individuals who had no lifetime victimization reported at intake and 14 additional persons who did not answer the PTSD items at follow-up.



FIGURE 4.15. CLIENTS WHO SCREENED POSITIVE FOR PTSD AT INTAKE AND PAST-12-MONTHS AT FOLLOW-UP  
(n = 827)<sup>73</sup>



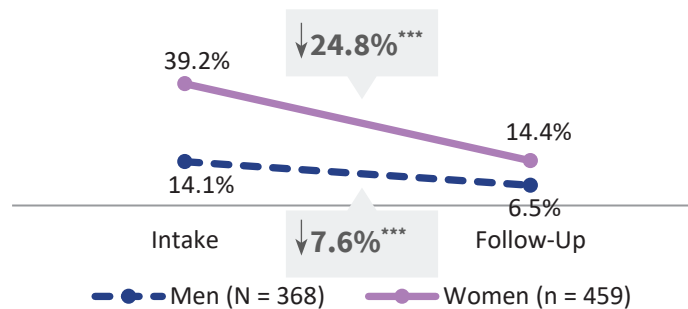
\*\*\*p < .001.

## GENDER DIFFERENCES IN POSTTRAUMATIC STRESS DISORDER SYMPTOMS

Significantly more women had a positive screen for PTSD at intake and follow-up compared to men (see Figure 4.16). The percent of women and men who had a positive screen for PTSD decreased significantly by 24.8% and 7.6% respectively.

**Significantly more women had a positive screen for PTSD compared to men at intake and follow-up**

FIGURE 4.16. GENDER DIFFERENCES IN PERCENT OF CLIENTS WITH A POSITIVE SCREEN FOR PTSD AT INTAKE AND FOLLOW-UP<sup>a</sup>

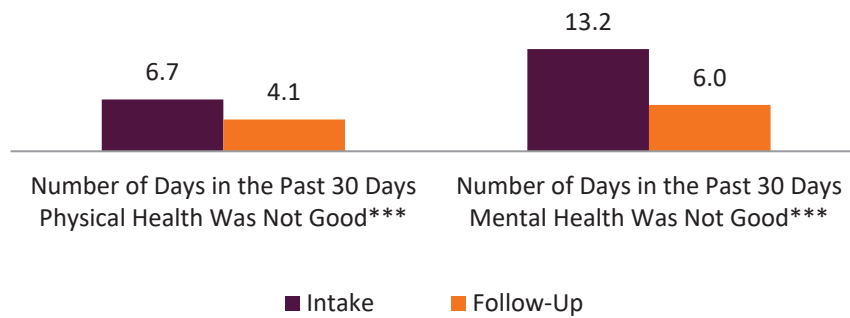


a—Statistical difference by gender at intake (p<.001) and follow-up (p < .001).  
\*\*\*p < .001.

## 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 4.17). There was a significant decrease from intake to follow-up in the number of days clients reported their physical health was not good (6.7 vs. 4.1). The number of days clients' mental health was not good also decreased significantly from 13.2 at intake to 6.0 at follow-up.

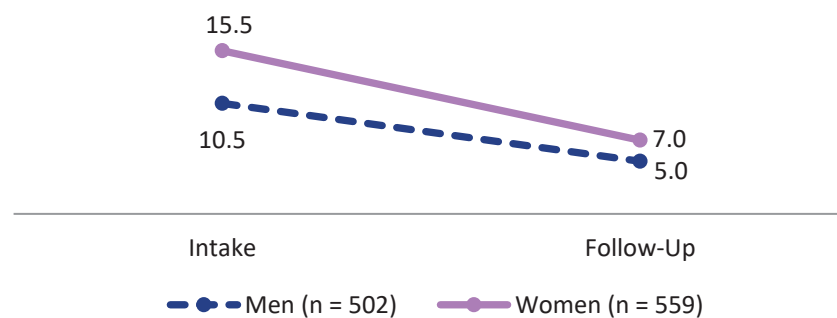
<sup>73</sup> One individual had a missing value on items about PTSD symptoms in the 6 months before follow-up.

FIGURE 4.17. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,066)<sup>74</sup>

\*\*\*p &lt; .001.

### 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 4.18). 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 4.18. GENDER DIFFERENCES IN NUMBER OF DAYS IN THE PAST 30 DAYS MENTAL HEALTH WAS NOT GOOD<sup>a,b</sup>

a—Statistical difference by gender at intake (p &lt; .001) and follow-up (p &lt; .01).

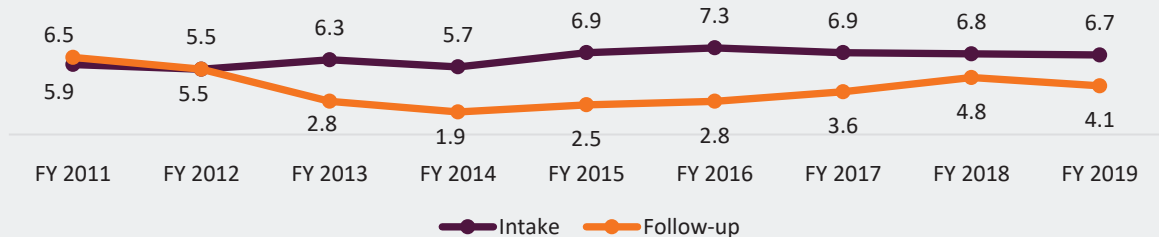
b – Significant decrease from intake to follow-up for men and women (p &lt; .001).

<sup>74</sup> Three clients had missing data for the physical health question at follow-up. Five clients had missing data for the mental health question at follow-up.

## Trends in Perceptions 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 6.7 in FY 2019. 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 the highest it has been since FY 2012, with a decrease to 4.1 in FY 2019.

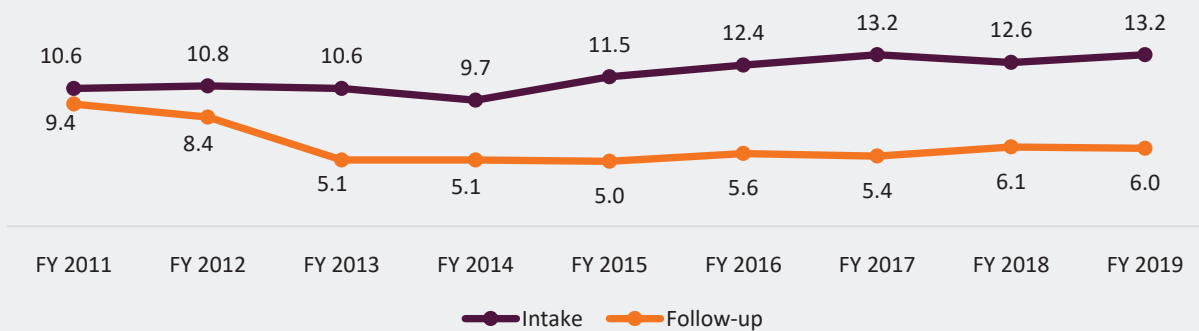
FIGURE 4.19. TRENDS IN SELF-REPORTED AVERAGE NUMBER OF DAYS OF POOR PHYSICAL HEALTH AT INTAKE AND FOLLOW-UP, REPORTS FY 2011-FY 2019



## Trends in Perceptions 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 and FY 2019. At follow-up, the average number of days clients reported their mental health was not good in the past 30 days has decreased from a high of 9.4 days in FY 2011 to a low of 5.0 in FY 2015.

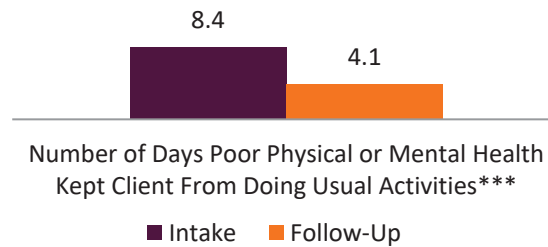
FIGURE 4.20. TRENDS IN SELF-REPORTED AVERAGE NUMBER OF DAYS OF POOR MENTAL HEALTH AT INTAKE AND FOLLOW-UP, FY 2011 - FY 2019



## 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 8.4 days at intake to 4.1 days at follow-up (see Figure 4.21).

FIGURE 4.21. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 1,056)<sup>75</sup>

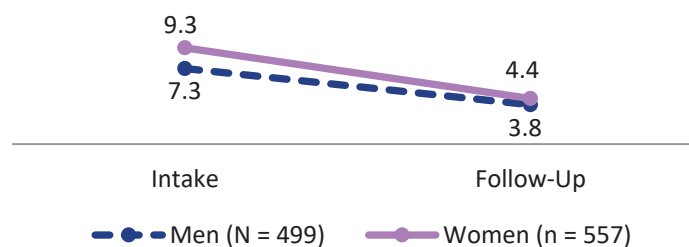


\*\*\*p < .001.

## 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 (see Figure 4.22). The average number of days physical or mental health kept clients from doing their usual activities decreased from intake to follow-up for men and women.

FIGURE 4.22. GENDER DIFFERENCES IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEPT CLIENT FROM DOING USUAL ACTIVITIES<sup>a,b</sup>



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

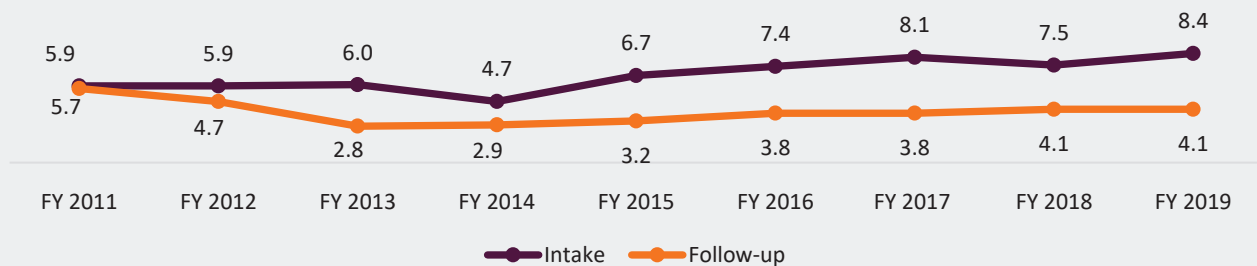
b – Significant decrease from intake to follow-up for men and women (p < .001).

<sup>75</sup> Ten clients had missing data for the question about perceptions of their physical or mental health limiting their activities at follow-up.

## Trends in Number of Days Poor 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 from 5.9 in FY 2011 to 8.4 in FY 2019, except in FY 2014 when it decreased to 4.7 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 2019 (4.1).

FIGURE 4.23. 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 2019

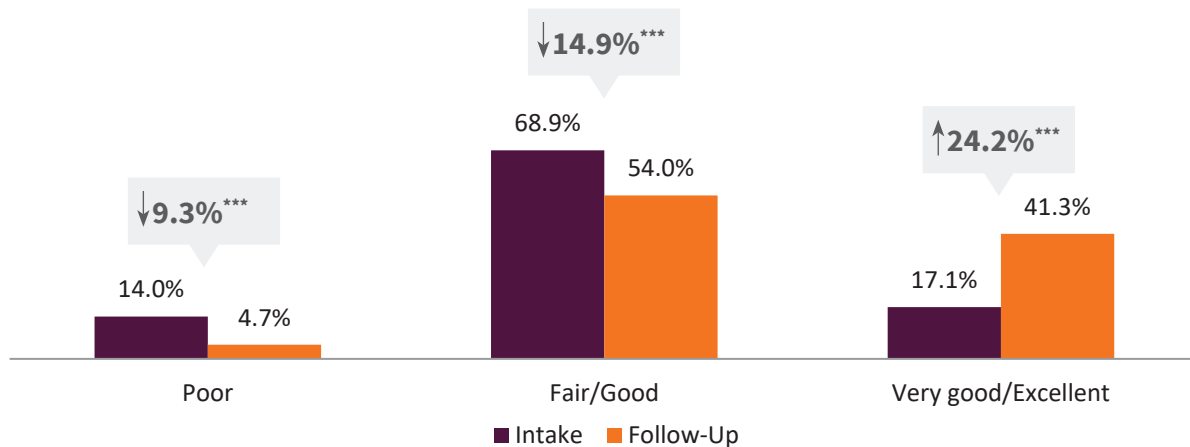


## PHYSICAL HEALTH STATUS

### 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 2.6 at intake and this significantly increased to 3.3 at follow-up (not depicted in figure). Figure 4.24 shows that significantly more clients rated their overall physical health as very good or excellent (41.3%) at follow-up compared to intake (17.1%). Additionally, significantly fewer clients reported their health was poor, or fair/good at follow-up than at intake.

FIGURE 4.24. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 1,065)<sup>a76</sup>



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

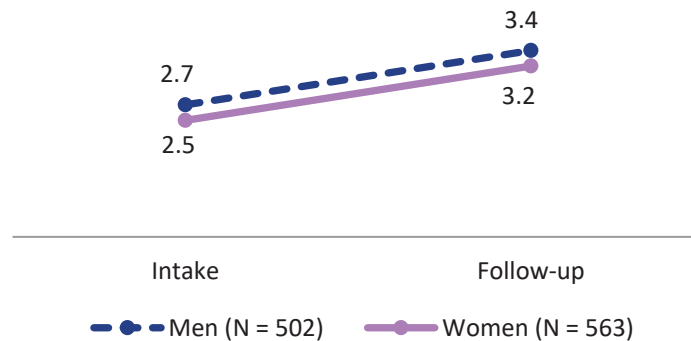
\*\*\* $p < .001$ .

<sup>76</sup> One client had missing data for overall health status at follow-up.

## GENDER DIFFERENCES IN OVERALL HEALTH STATUS

At intake, women rated their overall health significantly lower than men rated their health (2.5 vs. 2.7; see Figure 4.25). For both men and women, there was a significant increase in overall health status rating. At follow-up, women (3.2) still rated their overall health significantly lower than men (3.4).

FIGURE 4.25. GENDER DIFFERENCES IN CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP<sup>a,b</sup>



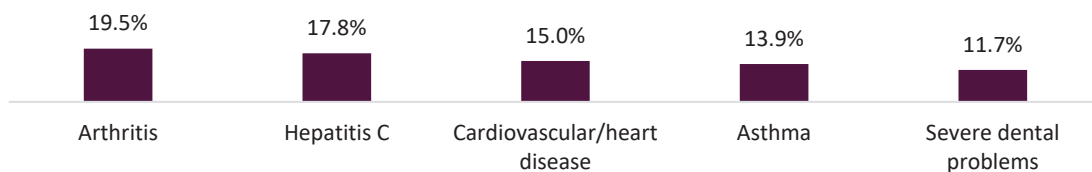
a—Statistical difference by gender at intake ( $p < .01$ ) and follow-up ( $p < .05$ ).

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

## CHRONIC MEDICAL PROBLEMS

Over half of clients (57.4%) reported they had at least one chronic health problem at program entry. Further, significantly more women reported a chronic health problem at intake than men (63.9% vs. 50.1%; not depicted in a figure). The most common medical problems clients reported by clients were arthritis (19.5%), hepatitis C (17.8%), heart disease (15.0%), asthma (13.9%), and severe dental problems (11.7%).

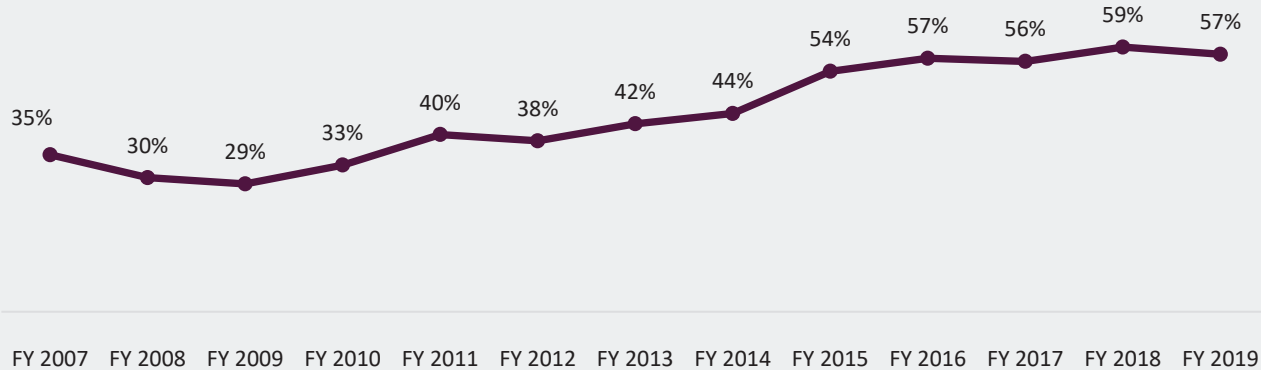
FIGURE 4.26. CHRONIC MEDICAL PROBLEMS REPORTED AT INTAKE (N = 1,066)



## 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 13 years. In FY 2009, over one-quarter of clients (29%) reported having a chronic medical problem compared to 59% of clients in FY 2018. In FY 2019, 57% reported having a chronic medical problem in their lifetime.

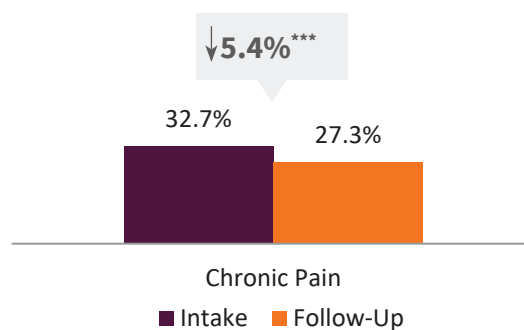
FIGURE 4.27. TRENDS IN THE CLIENTS REPORTING A LIFETIME CHRONIC MEDICAL PROBLEM AT INTAKE, FY 2007-2019



## CHRONIC PAIN

Nearly one-third of clients reported they had chronic pain at intake (see Figure 4.28). There was a significant decrease from intake to follow-up.

FIGURE 4.28. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 1,066)

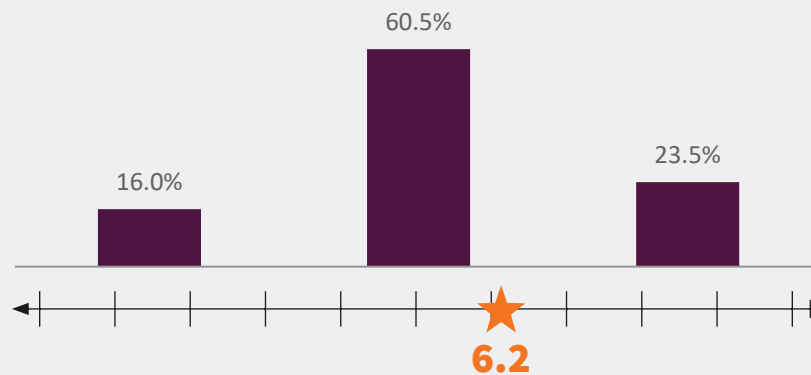


\*\*\*p < .001.

## Taking a Closer Look at Chronic Pain

At intake, 32.7% (n = 349) 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 26.0 (ranging from less than one year old to age 60). In the 30 days before entering treatment, clients experienced chronic pain, on average, 23.3 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 6.3 with 23.5% of clients giving their pain the highest ratings of 8, 9, and 10 (see Figure 4.29).

FIGURE 4.29. INTENSITY RATING OF CHRONIC PAIN AT INTAKE (n = 349)



## Prescription Opioid Misuse and Chronic Pain

Of those who misused prescription opioids at intake (n = 366), 38.5% reported chronic pain in the 12 months before entering substance abuse treatment and 29.5% experienced chronic pain at follow-up, which was a significant decrease of 9.0%.

Additionally, of those who reported misusing prescription opioids and experiencing chronic pain at intake (n = 141), 52.5% (n = 74) reported chronic pain in the past 12 months at follow-up and 18.4% (n = 26) reported past-12-month misuse of prescription opioids.

*I didn't have a choice, but it's just what I needed. The program changed my life.*

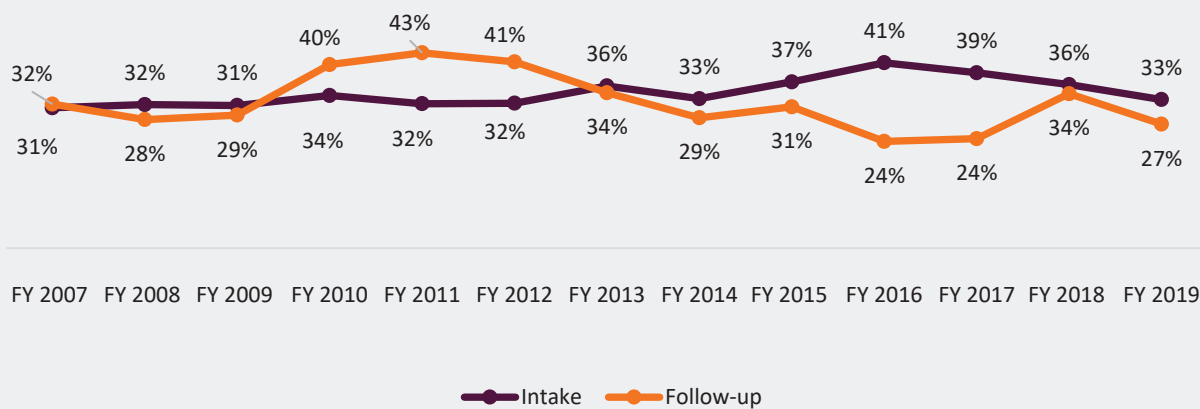
- KTOS FOLLOW-UP CLIENT



## Trends Chronic Pain

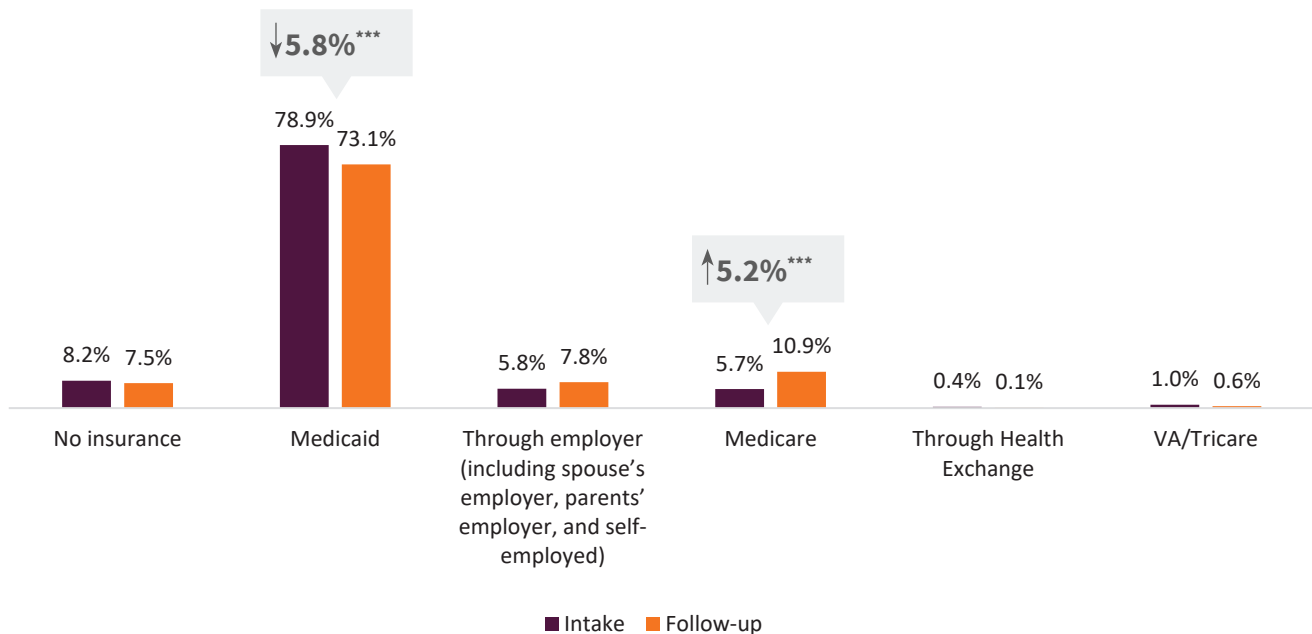
The percent of clients who reported chronic pain has fluctuated over time at intake and follow-up. In FY 2008 and 2009, more clients reported chronic pain at intake than at follow-up. Between FY 2010 and FY 2012, however, more clients reported chronic pain at follow-up than at intake. From FY 2014 to FY 2017 the number of clients reporting chronic pain was higher at intake than at follow-up, with the greatest difference in FY 2016. In FY 2019, the number of clients reporting persistent chronic pain at follow-up (27%) was lower than the percent at intake (33%).

FIGURE 4.30. TRENDS IN THE NUMBER OF CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP, FY 2007-FY 2019



## HEALTH INSURANCE

At intake, the majority of KTOS clients reported they had health insurance through Medicaid (78.9%; see Figure 4.31). A small percentage did not have any insurance (8.2%). Small numbers of clients had insurance through an employer, including through a spouse, parent, or self-employment (5.8%), through Medicare (5.7%), 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.

FIGURE 4.31. HEALTH INSURANCE FOR KTOS CLIENTS AT INTAKE AND FOLLOW-UP (N = 1,032)<sup>77</sup>

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

\*\*\* $p < .001$ .

### A closer look at insurance

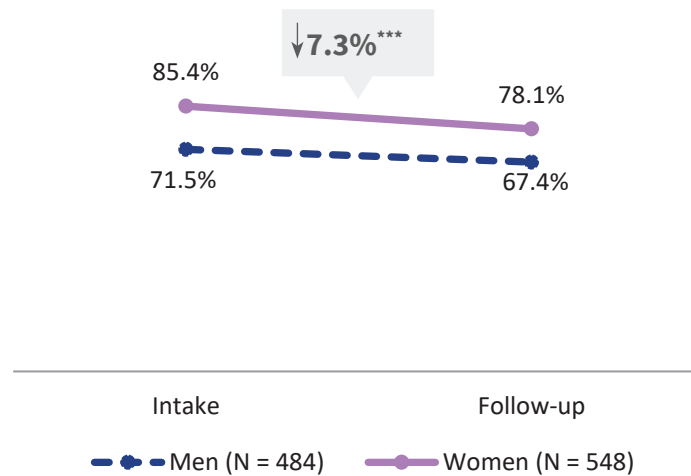
Of those clients who were employed full-time at intake ( $n = 241$ ), only 13.3% had insurance through their employer. At follow-up, of those clients employed full-time ( $n = 408$ )<sup>78</sup>, only 12.3% had insurance through their employer.

### GENDER DIFFERENCES IN MEDICAL INSURANCE

Significantly more women reported being insured by Medicaid at both intake and follow-up compared to men (see Figure 4.32). Significantly fewer women had Medicaid at follow-up compared to intake. There was no significant change for men.

<sup>77</sup> At intake, 16 individuals had responses that fit under “other” and could not be classified, and one client responded, “Don’t know.” At follow-up, 8 clients had missing data for insurance at follow-up, and 9 individuals had responses that fit under “other” and could not be classified. The missing responses are not included in this analysis.

<sup>78</sup> Of the 442 clients employed full-time at follow-up, two had missing information for insurance at follow-up.

FIGURE 4.32. GENDER DIFFERENCES IN CLIENTS REPORTING HAVING MEDICAID INSURANCE AT INTAKE AND FOLLOW-UP<sup>a</sup>

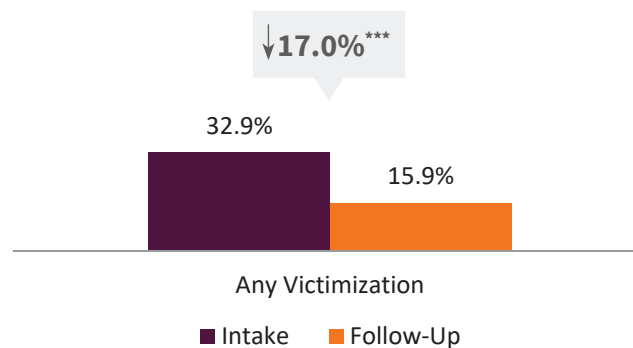
a—Statistical difference by gender at intake and follow-up ( $p < .001$ ).

## 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).

Almost one-third of clients reported interpersonal victimization in the 12 months before entering treatment. The percent of clients who reported experiencing any victimization in the past 12 months decreased significantly from intake to follow-up (see Figure 4.33).

FIGURE 4.33. INTERPERSONAL VICTIMIZATION IN THE PAST 12 MONTHS AT INTAKE AND FOLLOW-UP (N = 1,066)

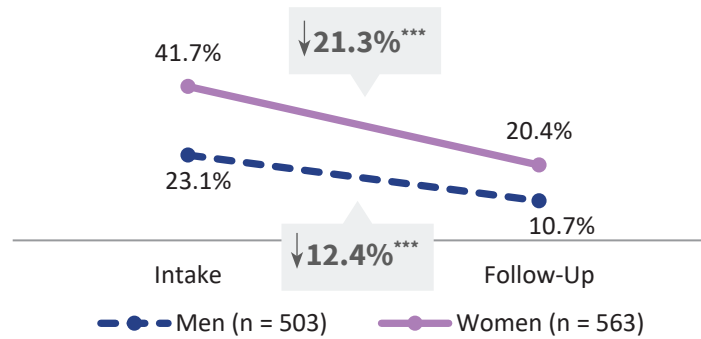


\*\*\* $p < .001$ .

## GENDER DIFFERENCES IN INTERPERSONAL VICTIMIZATION

Significantly more women reported experiencing any victimization in the 12 months intake and follow-up when compared to men (see Figure 4.34). The percent of women and men who reported experiencing any victimization decreased significantly from intake to follow-up by 21.3% and 12.4% respectively.

FIGURE 4.34. GENDER DIFFERENCES IN INTERPERSONAL VICTIMIZATION IN THE PAST 12 MONTHS



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

\*\*\* $p < .001$ .

## 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.

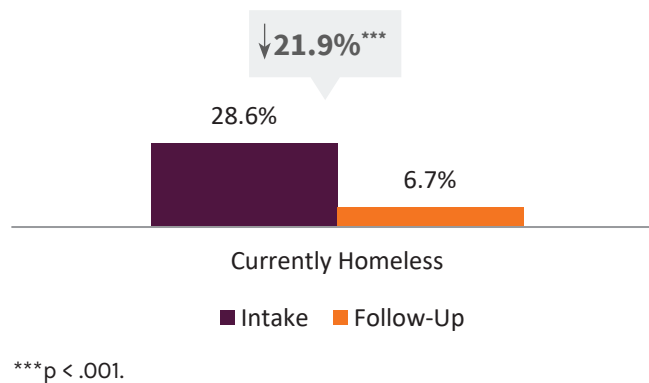
### LIVING SITUATION

#### HOMELESSNESS

More than 1 in 4 clients (28.6%) reported at treatment intake they were currently homeless and at follow-up 6.7% of clients reported they were currently homeless – a significant decrease of 21.9% (see Figure 5.1).

**More than one-fourth of clients were currently homeless at intake, with a significant decrease at follow-up**

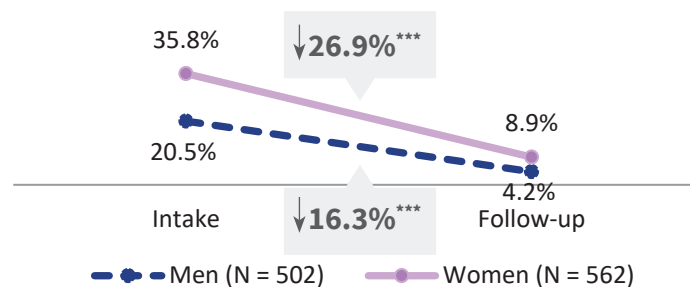
FIGURE 5.1. CURRENT HOMELESSNESS AT INTAKE AND FOLLOW-UP (N=1,064)<sup>79</sup>



#### GENDER DIFFERENCES IN HOMELESSNESS

Significantly more women reported being homeless at intake and follow-up when compared to men (see Figure 5.2).<sup>80</sup> The percent of women and men reporting homelessness at follow-up decreased significantly 26.9% and 16.3%, respectively).

FIGURE 5.2. GENDER DIFFERENCES IN CLIENTS REPORTING HOMELESSNESS AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

\*\*\*p < .001.

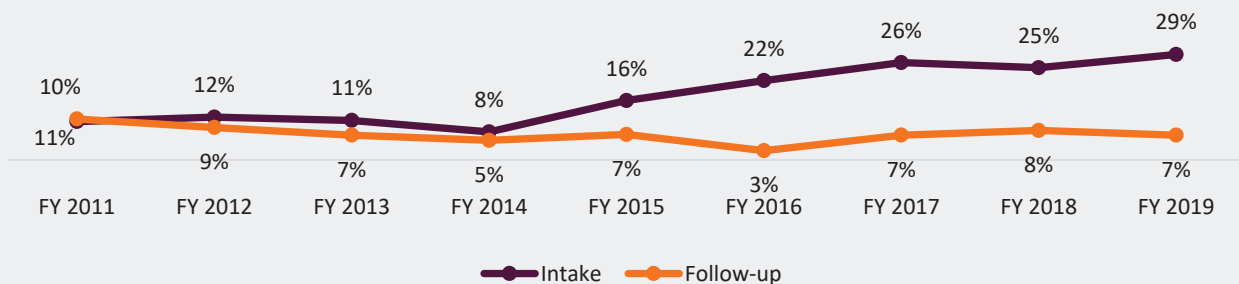
<sup>79</sup> Two individuals had missing data for homelessness at follow-up.

<sup>80</sup> Two individuals 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 2019 (29%). The percent of individuals who reported homelessness at follow-up has remained consistent over the nine years.

FIGURE 5.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING HOMELESSNESS AT INTAKE AND FOLLOW-UP, FY 2011-FY 2019



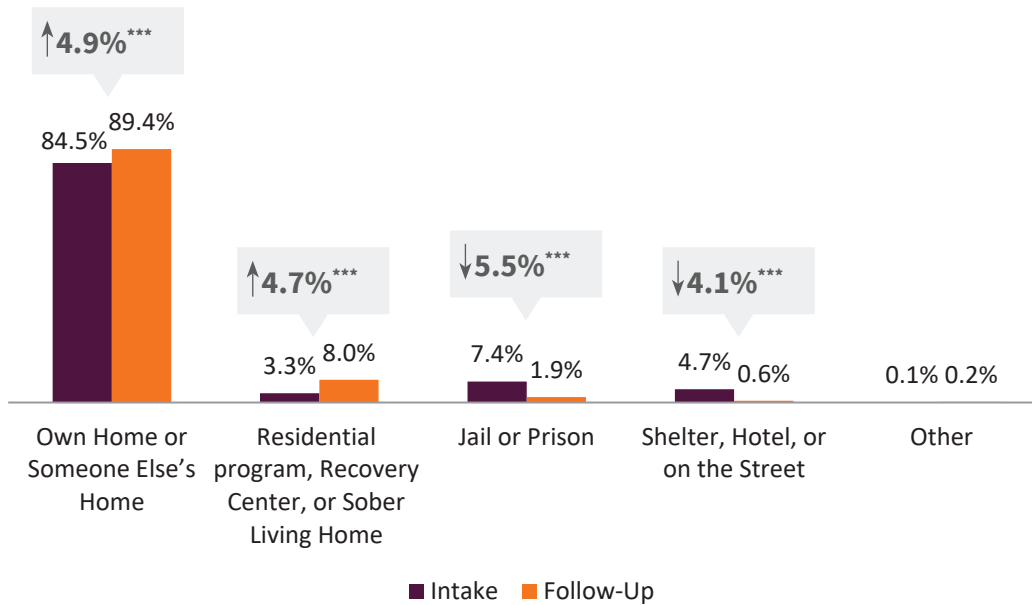
## USUAL LIVING SITUATION

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 most of the time in the 12 months before entering treatment and at follow-up clients were asked where they lived most 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 (84.5%) and follow-up (89.4%). 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 8.0% 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: 7.4% vs. 1.9%. 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.

*The people there (workers) were very helpful. I really liked this program and was very thankful for it. Excellent group of workers.*

- KTOS FOLLOW-UP CLIENT

FIGURE 5.4. USUAL LIVING SITUATION AT INTAKE AND FOLLOW-UP (N=1,063)<sup>81</sup>

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

\*\*\* $p < .001$ .

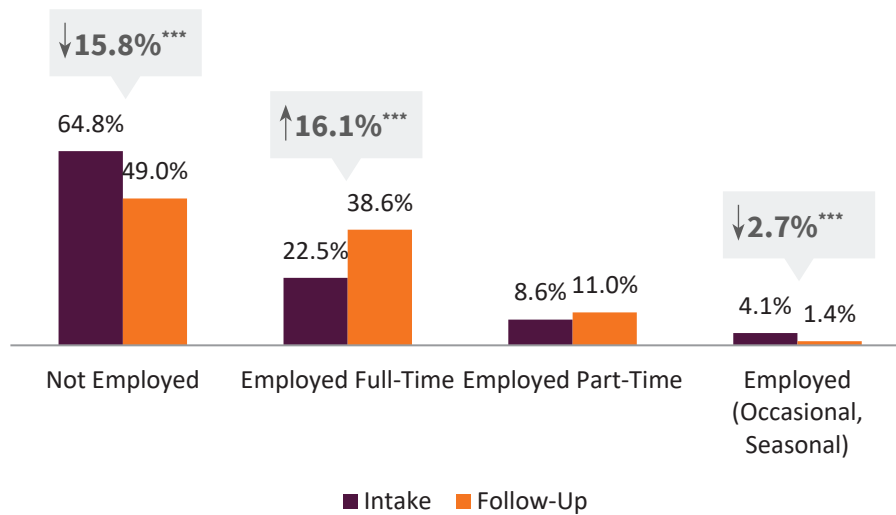
## EMPLOYMENT

### CURRENT EMPLOYMENT STATUS

There were significant changes in current employment status from intake to follow-up (see Figure 5.5).<sup>82</sup> Two-thirds of clients reported they were not employed when they entered treatment, while less than half of clients (49.0%) reported they were unemployed at follow-up. This represents a 15.8% significant decrease in the number of clients who were currently unemployed. The percent of clients who were employed full-time increased significantly by 16.1% from intake to follow-up (22.5% vs. 38.6%), and the percent with occasional/seasonal work decreased significantly at follow-up.

<sup>81</sup> Three individuals had missing data for living situation at follow-up.

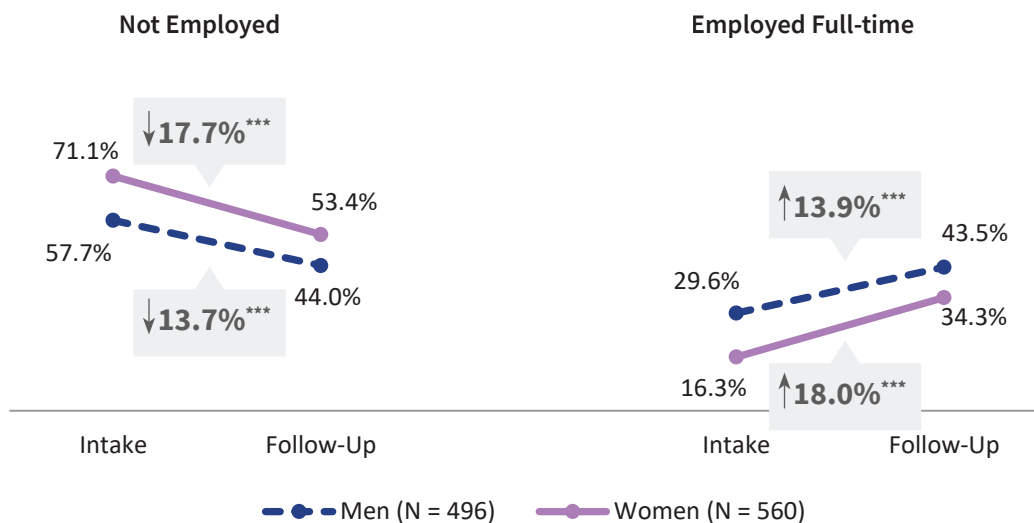
<sup>82</sup> Ten cases had missing data for current employment at follow-up.

FIGURE 5.5. CHANGE IN CURRENT EMPLOYMENT STATUS (N = 1,056)<sup>a</sup>

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

### GENDER DIFFERENCES IN CURRENT EMPLOYMENT STATUS

Significantly more women reported at intake and follow-up that they were currently unemployed compared to men: 71.1% vs. 57.7% at intake and 53.4% vs. 44.0% 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 (29.6% vs. 16.3%) and at follow-up (43.5% vs. 34.3%). Both genders, however, had significant increases in full-time employment from intake to follow-up (18.0% for women and 13.9% for men).

FIGURE 5.6. GENDER DIFFERENCES IN EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP<sup>a</sup>

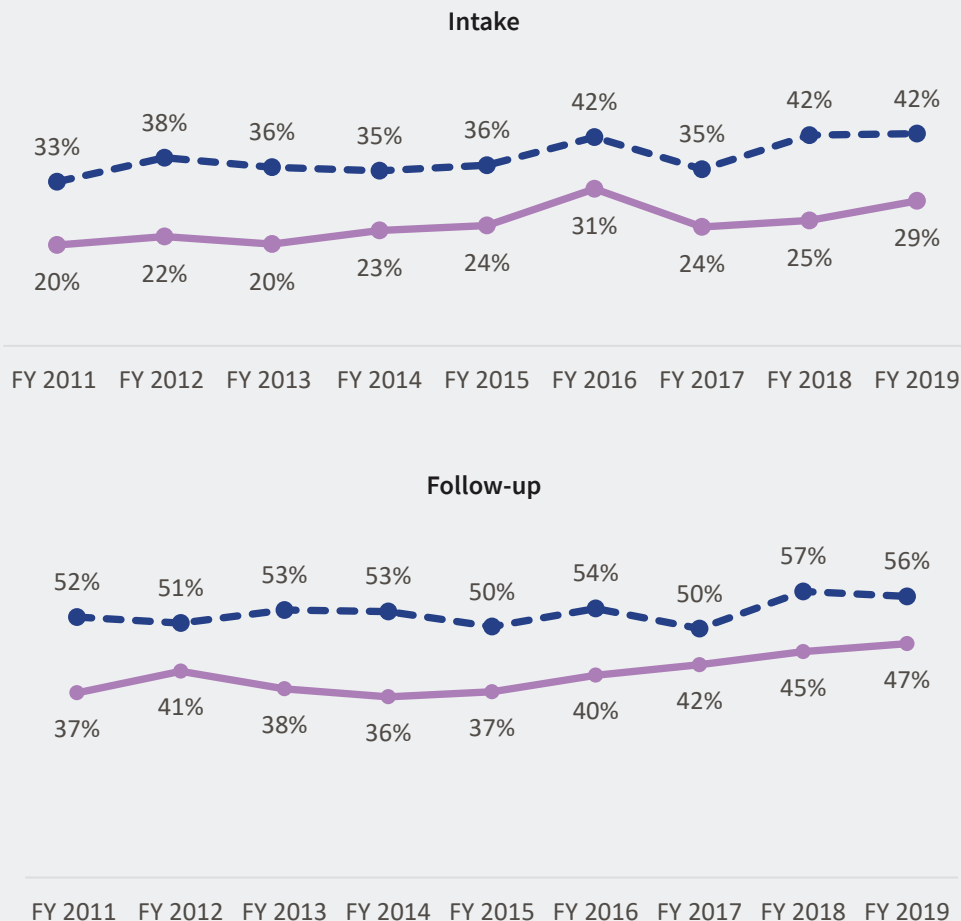
a – Significant difference by gender at intake and follow-up ( $p < .01$ ).  
 \*\*\* $p < .001$ .



## Trends in Employment

Over the nine years from FY 2011 through FY 2019, one-fifth to less than one-third of women reported being employed (part- or full-time) compared to as much as 42% of men in FY 2016, FY 2018 and FY 2019. At follow-up, about half or a little over half of men reported being employed in across the nine years compared to 47% of women, at the highest percentage, in FY 2019. 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.

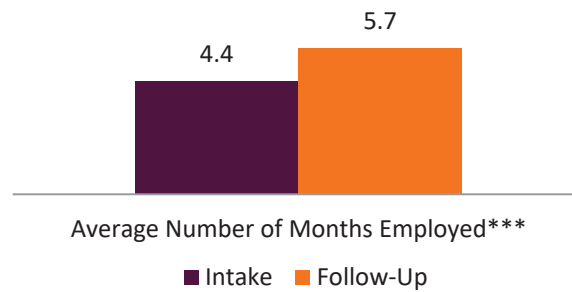
FIGURE 5.7. TRENDS IN GENDER DIFFERENCES IN CLIENTS EMPLOYED AT INTAKE AND FOLLOW-UP, FY 2011-FY 2019



### 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 (5.7) than at intake (4.4).

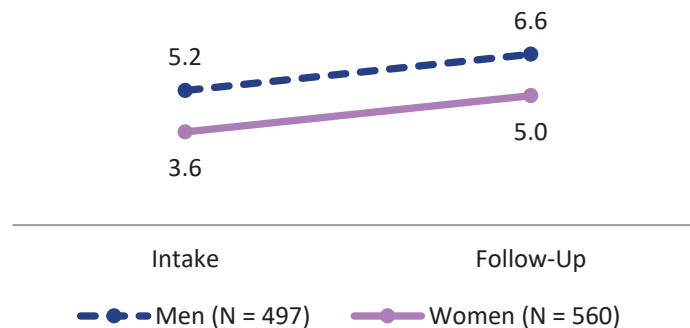
**Clients reported working significantly more months at follow-up than at intake**

FIGURE 5.8. AVERAGE NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP (N = 1,057)<sup>83</sup>

\*\*\*p &lt; .001.

### GENDER DIFFERENCES IN THE NUMBER OF MONTHS EMPLOYED

Men reported working significantly more months at both periods compared to women (intake, 5.2 vs. 3.6 and follow-up, 6.6 vs. 5.0). 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<sup>a,b</sup>

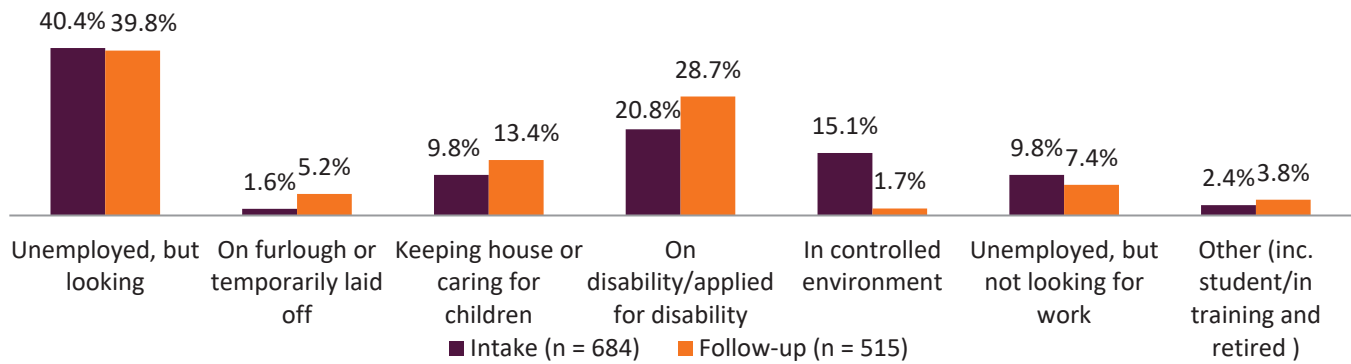
a—Significant difference by gender in number of months worked at intake and follow-up ( $p < .001$ ).

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 ( $n = 684$ ), 40.4% of clients reported they were unemployed, but looking for work, and 20.8% were on disability or had applied for disability. Among clients who were not employed at follow-up ( $n = 515$ ), 39.8% were unemployed, but looking for work and 28.7% reported they were on disability or had applied for disability.

<sup>83</sup> Nine individuals had missing data for number of months employed.

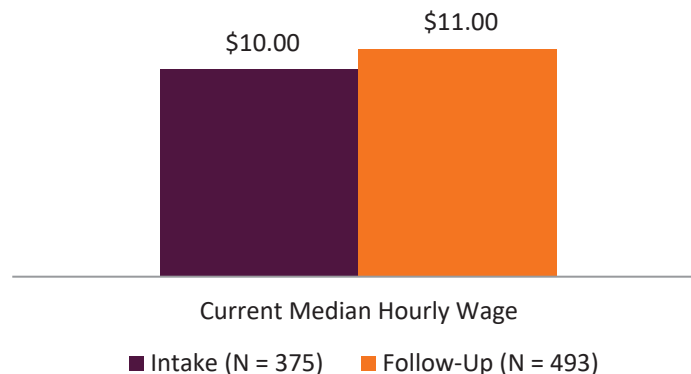
FIGURE 5.10. REASONS FOR UNEMPLOYMENT STATUS AT EACH POINT



## HOURLY WAGE

Among clients who were employed at intake (n = 375),<sup>84</sup> the median hourly wage was \$10.00. Among clients who were employed at follow-up (n = 554),<sup>85</sup> the median hourly wage was \$11.00 (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 and follow-up, employed women made \$0.82 for every dollar employed men made in this sample.

**At intake and follow-up, employed women made only \$0.82 for every \$1 men made**

<sup>84</sup> Of the 376 individuals who reported being employed full-time, part-time, or seasonally at intake, one individual had missing data on hourly wage. The top 1% of values for hourly wage were recoded to the value at the 99th percentile.

<sup>85</sup> Of the 539 individuals who reported being employed full-time, part-time, or seasonally at follow-up, 46 individuals had missing data on hourly wage because they did not know the answer, or they declined to answer. Also, the top 1% of values were recoded to the value at the 99th percentile.

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

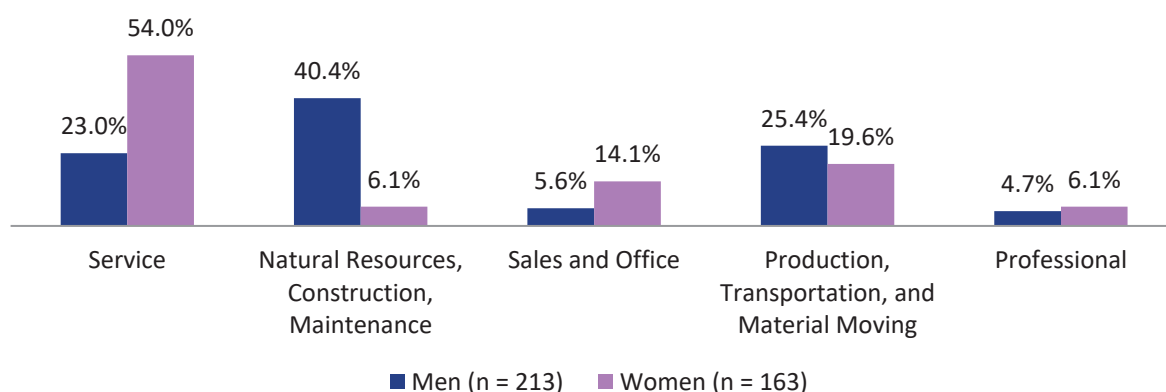


a—Significant difference in median hourly wage at intake and follow-up by gender, tested with Mann-Whitney U test ( $p < .001$ ).

### GENDER DIFFERENCES IN OCCUPATION TYPE

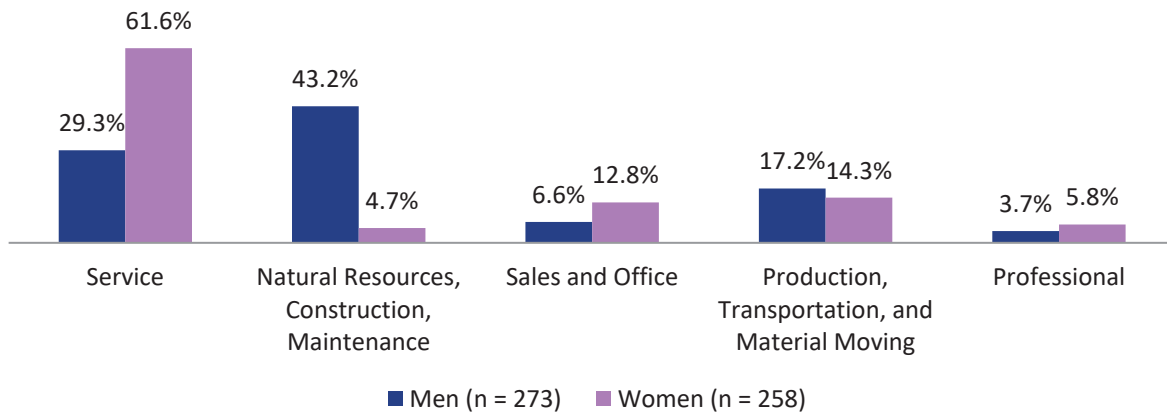
At least part of the reason for the marked difference in hourly wages between men and women is due to the significant difference in occupation type for employed individuals by gender.<sup>86</sup> At intake, more than half of employed women (54.0%) had a service sector job, whereas only 23.0% of employed men had a service sector job (see Figure 5.13a). In addition, 40.4% of men reported having a job in the natural resources, construction, and maintenance sector, which typically has higher average wages than service sector jobs, when compared to women (6.1%). These patterns were also found at follow-up; 54.0% of women had a service sector job, whereas only 23.0% 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 = 376)<sup>\*\*\*</sup>

<sup>\*\*\*</sup> $p < .001$ .

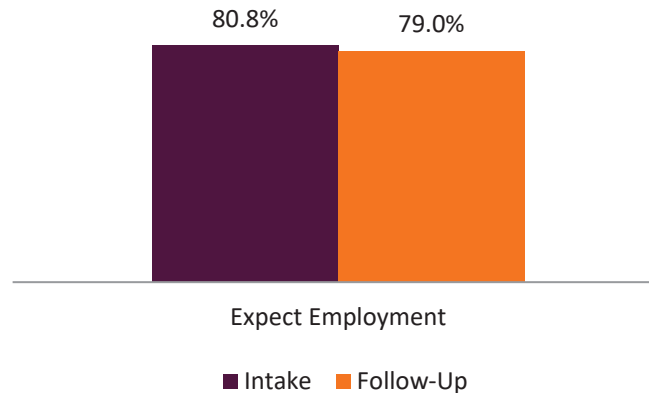
<sup>86</sup> Occupation type was asked at intake and at follow-up only of individuals who reported they were currently employed. Eight individuals had missing data on occupational type at follow-up.

FIGURE 5.13b. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 531)<sup>\*\*\*</sup>

\*\*\*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, 80.8% reported they expected to be employed, and at follow-up, 79.0% 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=1,056)<sup>87</sup>

## 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.<sup>88</sup> 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

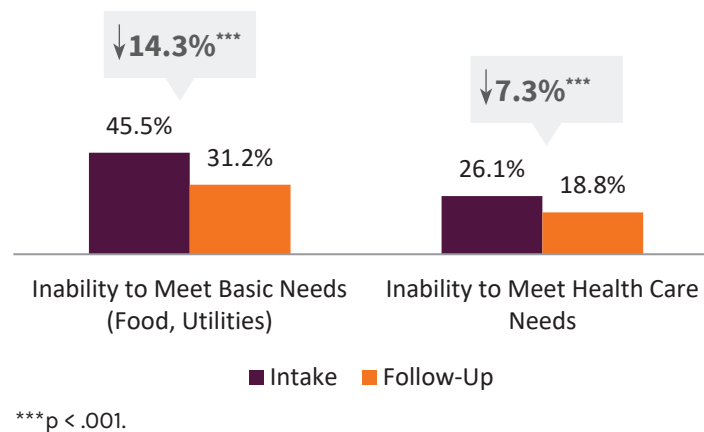
<sup>87</sup> Ten clients had missing data for expect employment at follow-up.

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

needs individuals reported they had difficulty meeting were summed at intake and follow-up. Individuals reported significantly fewer needs they had difficulty meeting at follow-up (1.0) compared to intake (1.7; not depicted in figure).

A little less than one half of clients (45.5%) reported at intake that they had difficulty meeting basic needs such as food, shelter, or utilities (see Figure 5.15). About one-fourth (26.1%) 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 14.3% from intake to follow-up. Yet, at follow-up, nearly one-third of clients stated they had difficulty meeting basic living needs. The percent of individuals reporting they had difficulty with health care decreased significantly from intake to follow-up.

FIGURE 5.15. DIFFICULTY IN MEETING BASIC AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 1,056)<sup>89</sup>



## 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 5.16). At intake, women reported significantly more basic needs they had difficulty meeting (2.0) compared to men (1.3; not depicted in figure). At follow-up, women reported significantly more basic needs they had difficulty meeting (1.1) compared to men (0.8).

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

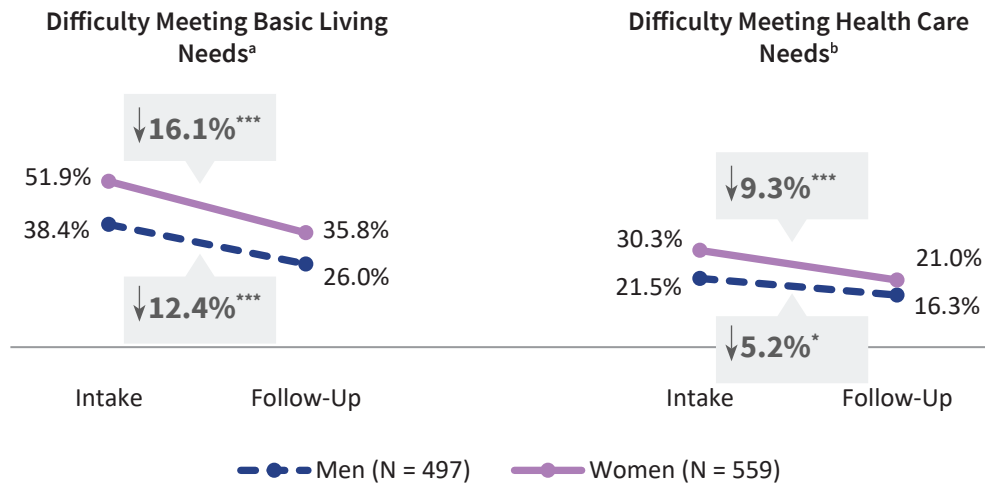
More specifically, compared to men, more women reported having difficulty meeting their basic living needs (e.g., housing, utilities, telephone, and food) at intake and follow-up. Half of women reported difficulty meeting basic living needs at intake compared to 38.4% of men. There was a significant decrease in the percent of women and men who reported having difficulty meeting basic living needs at follow-up.

Less than one-third of women (30.3%) reported difficulty meeting health care needs at intake compared to 21.5% of men. The percent of women and men who reported difficulty

<sup>89</sup> Ten individuals had missing data for basic living needs and health care needs items at follow-up.

meeting health care needs decreased significantly from intake to follow-up, and there was no significant difference by gender at follow-up.

FIGURE 5.16. 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 ( $p < .01$ ).

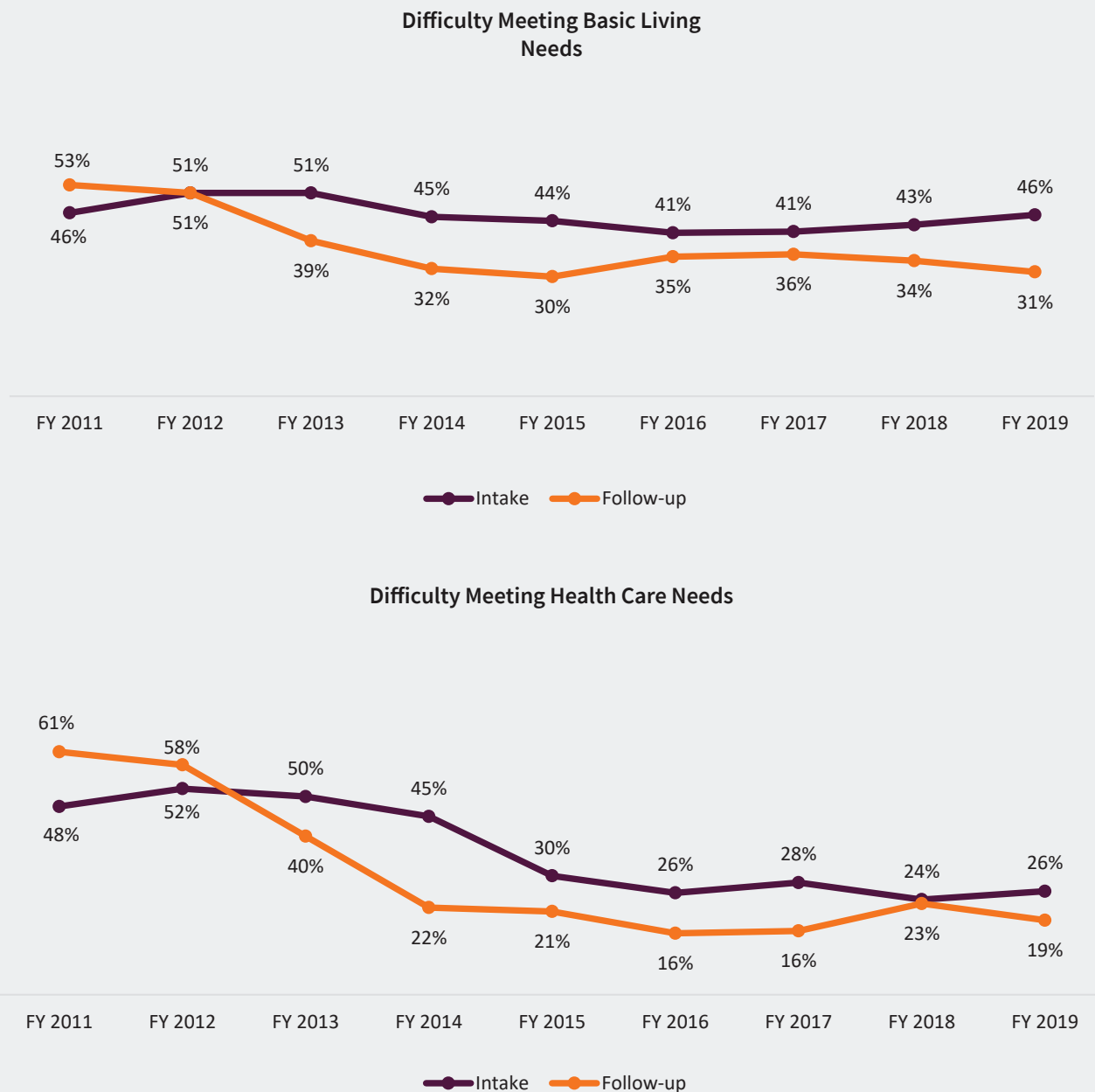
b – Significant difference by gender at intake ( $p < .01$ ).

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

## 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 36% in FY 2017, 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. Then in FY 2019, the percent was lower (19%).

FIGURE 5.17. TRENDS IN THE NUMBER OF CLIENTS REPORTING ECONOMIC DIFFICULTY IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2011-FY 2019





## 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

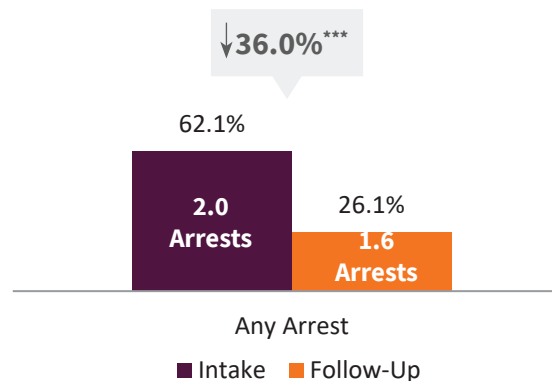
#### ARRESTED IN THE PAST 12 MONTHS

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 (62.1%) reported at least one arrest in the 12 months before entering treatment (see Figure 6.1). At follow-up, 26.1% reported at least one arrest in the past 12 months, which was a significant 36.0% decrease from intake.

Among those clients who reported at least one arrest in the 12 months before intake ( $n = 660$ ), clients were arrested an average of 2.0 times. Among those clients who reported at least one arrest in the 12 months before follow-up ( $n = 277$ ), the average number of arrests was 1.6.

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

FIGURE 6.1. CLIENTS REPORTING ARRESTS AT INTAKE AND FOLLOW-UP ( $N = 1,063$ )<sup>90</sup>



*First time around I didn't care for it but after I relapsed I wanted to go back because I already knew all the staff.*

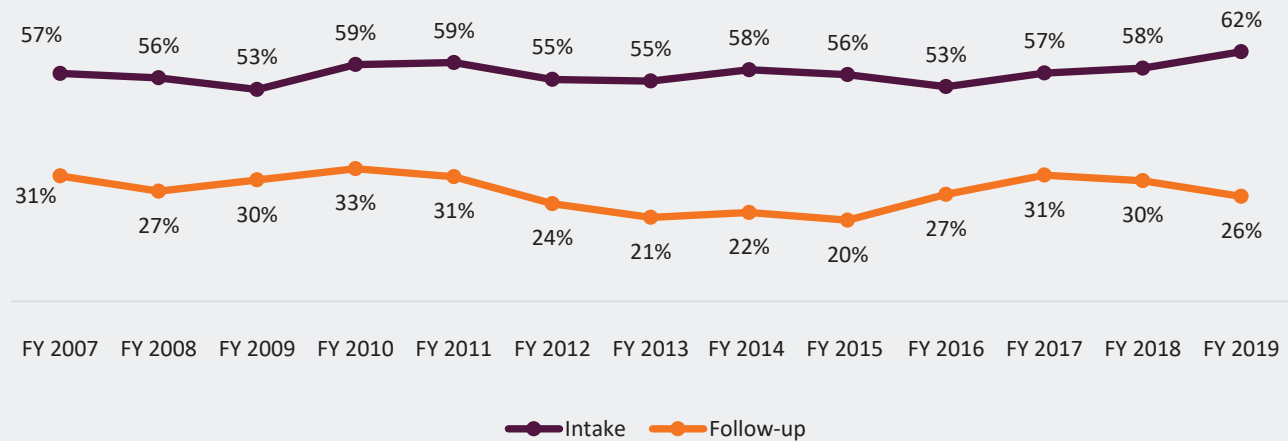
- KTOS FOLLOW-UP CLIENT

<sup>90</sup>Three cases had missing data on arrests in the 12 months before follow-up.

## Trends in Past-12-month Arrests

Over the past 13 years the percent of clients reporting an arrest in the past 12 months at intake has ranged from 53% in FY 2009 and FY 2016 to a high of 62% in FY 2019. At follow-up, between one-fifth to nearly one-third of clients reported an arrest since FY 2007.

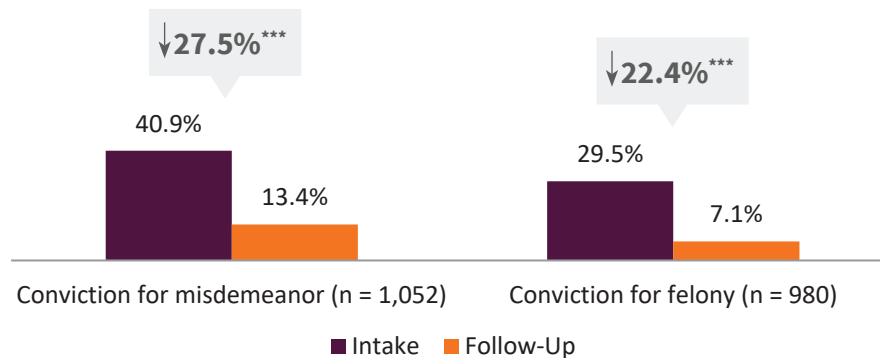
FIGURE 6.2. TRENDS IN THE PERCENT OF CLIENTS REPORTING AN ARREST IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2019



## CONVICTIONS

About 2 in 5 individuals (40.9%) reported they had at least one conviction for a misdemeanor in the 12 months before entering treatment (see Figure 6.3). The percent of individuals with a conviction for a misdemeanor in the 12 months before follow-up was significantly lower at 13.4%. About 3 in 10 clients (29.5%) reported at least one felony conviction in the 12 months before intake. That percent decreased significantly to 7.1% in the 12 months before follow-up.

FIGURE 6.3. CONVICTIONS FOR MISDEMEANOR AND FELONY OFFENSES (N = 1,052)<sup>91</sup>



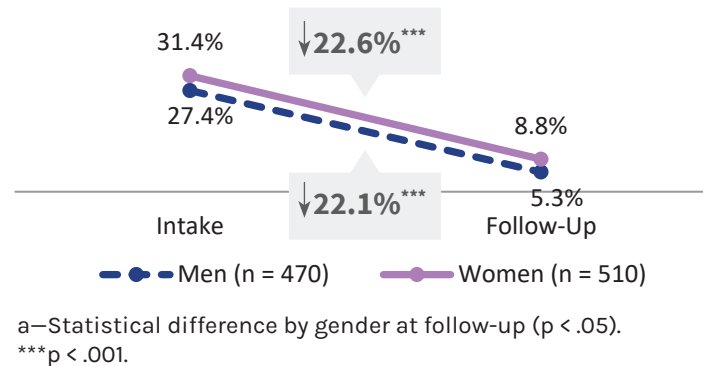
\*\*\*p < .001.

<sup>91</sup>Ten cases had missing data on convictions for misdemeanor offenses at intake and four additional cases had missing data for convictions for misdemeanor offenses at follow-up. For convictions for felony offenses, 82 cases had missing data at intake and four additional cases had missing data for convictions for felony offenses at follow-up.

## GENDER DIFFERENCES IN CONVICTIONS FOR FELONY OFFENSES

There were significant decreases from intake to follow-up in the percent of men and women who reported convictions for felony offenses. At follow-up, there was no difference in convictions for felony offenses by gender (see Figure 6.4). However, at follow-up, significantly more women reported they had received a conviction for a felony offense in the past 12 months when compared to men.

FIGURE 6.4. GENDER DIFFERENCES IN CONVICTIONS FOR FELONY OFFENSES IN THE PAST 12 MONTHS



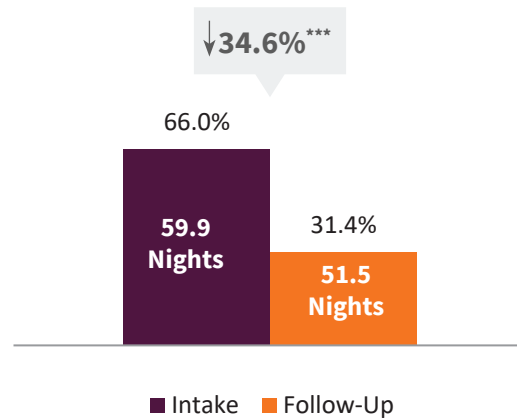
## INCARCERATION

### INCARCERATED IN THE PAST 12 MONTHS

Two-thirds of clients (66.0%) 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, 31.4% of clients reported spending at least one day incarcerated in the past 12 months--a significant decrease of 34.6%.

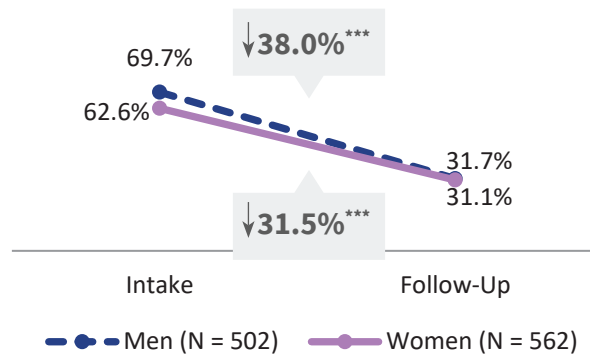
Among those who were incarcerated at least one night, they reported spending, on average, less time in jail or prison in the 12 months before follow-up ( $n = 334$ , 51.5 nights) when compared to intake ( $n = 702$ , 59.9 nights).

**The number of clients who spent at least one night incarcerated decreased by 35%**

FIGURE 6.5. CLIENTS REPORTING BEING INCARCERATED AT INTAKE AND FOLLOW-UP (N = 1,064)<sup>92</sup>

### 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<sup>a</sup>

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

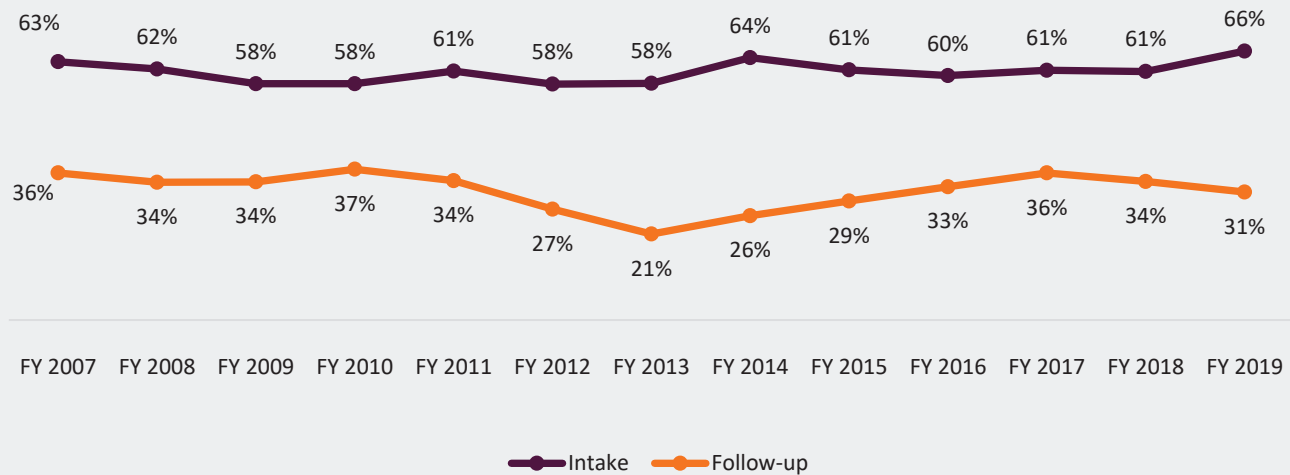
\*\*\*p < .001.

<sup>92</sup> Two individuals had missing data for incarceration at follow-up.

## 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 13 years with between 58% and 66% 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.

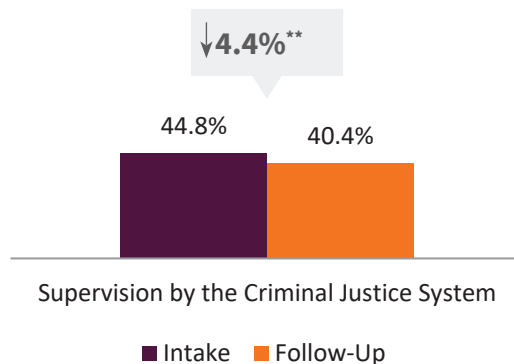
FIGURE 6.7. TRENDS IN THE PERCENT OF CLIENTS REPORTING BEING INCARCERATED IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2019



## 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 (44.8%) to follow-up (40.4%; see Figure 6.8).

FIGURE 6.8. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 1,066)



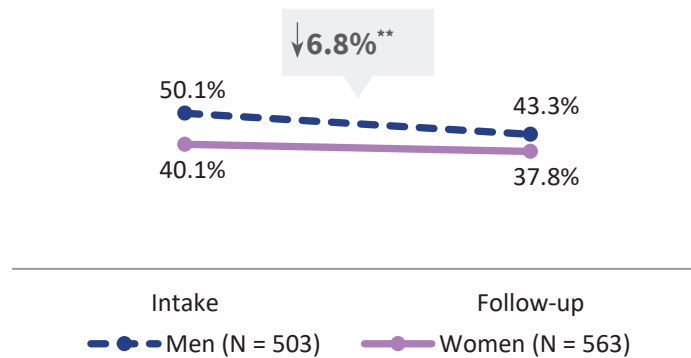
\*\*p < .01.

## GENDER DIFFERENCES IN CRIMINAL JUSTICE SUPERVISION

Significantly more men (50.1%) than women (40.1%) 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.

**Significantly more men than women reported being under criminal justice system supervision before intake**

FIGURE 6.9. GENDER DIFFERENCES IN CLIENTS REPORTING CRIMINAL JUSTICE SUPERVISION<sup>a</sup>



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

\*\* $p < .01$ .

## SECTION 7. QUALITY OF LIFE

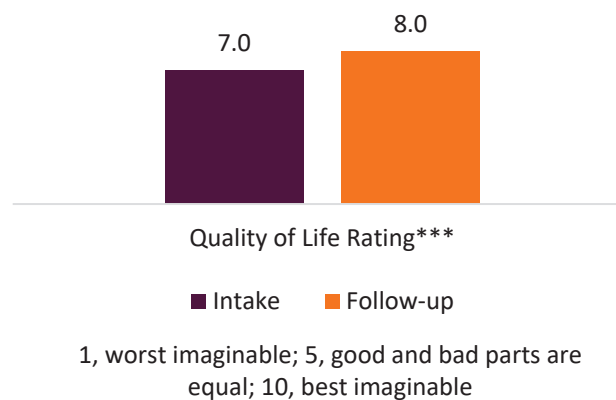
This section describes change in client quality of life and well-being during the 12-month period before entering treatment and the 12-month period before the follow-up interview. Specifically, results include changes in: (1) quality of life rating, and (2) client functioning and well-being. Results 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 7.0, on average, at intake (see Figure 7.1). The average quality of life rating significantly increased to 8.0 at follow-up.

**Average rating of quality of life significantly increased from 7.0 at intake to 8.0 at follow-up**

FIGURE 7.1. RATING OF QUALITY OF LIFE AT INTAKE AND FOLLOW-UP (N = 1,060)<sup>93</sup>



\*\*\*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,<sup>94</sup> 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."

<sup>93</sup> Ten cases had missing data for the rating of quality of life at follow-up.

<sup>94</sup> 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).<sup>95</sup>

FIGURE 7.2. CLIENT FUNCTIONING AND WELL-BEING AT INTAKE AND FOLLOW-UP (N = 1,025)<sup>a</sup>



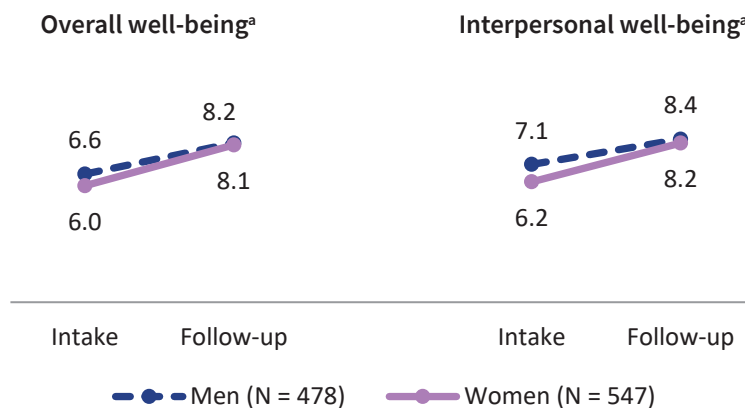
a— Significant increase from intake to follow-up as measured by paired t-test.  
\*\*\* $p < .001$ .

## GENDER DIFFERENCES IN OVERALL AND INTERPERSONAL WELL-BEING

At intake, men rated their overall and interpersonal well-being significantly higher than women (see Figure 7.3). The average rating of interpersonal and overall 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 overall and interpersonal well-being significantly higher at intake**

FIGURE 7.3. GENDER DIFFERENCES IN OVERALL AND INTERPERSONAL WELL-BEING AT INTAKE AND FOLLOW-UP<sup>a,b</sup>



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

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

<sup>95</sup> The Outcome Rating Scale items were added to the surveys around April 2018. Thus, the new items were not included on the follow-up surveys for 35 individuals. Additional numbers of clients had missing data at follow-up for the four items because they declined to answer, didn't know, or the interviewer skipped the item in error: overall well-being (n = 6), personal well-being (n = 6), interpersonal well-being (n = 4), social well-being (n = 9).



## SECTION 8. RECOVERY SUPPORT

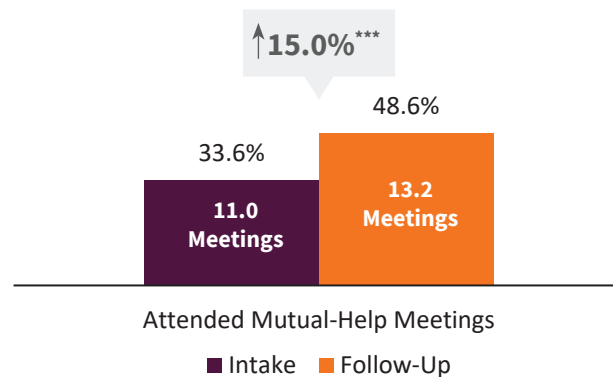
This section focuses on five main areas of recovery support: (1) clients attending mutual help recovery group meetings, (2) recovery supportive interactions with family/friends and a sponsor in the past 30 days, (3) the number of people the participant said they could count on for recovery support, (4) 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, one-third (33.6%) of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (see Figure 8.1). At follow-up, there was a significant increase of 15.0%, with 48.6% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days.

Among individuals who attended self-help meetings at intake (n = 358), they reported attending an average of 11.0 meetings in the past 30 days. Those who attended self-help meetings at follow-up (n = 518) reported an average of 13.2 meetings attended in the past 30 days.

FIGURE 8.1. MUTUAL HELP RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N=1,065)<sup>96</sup>

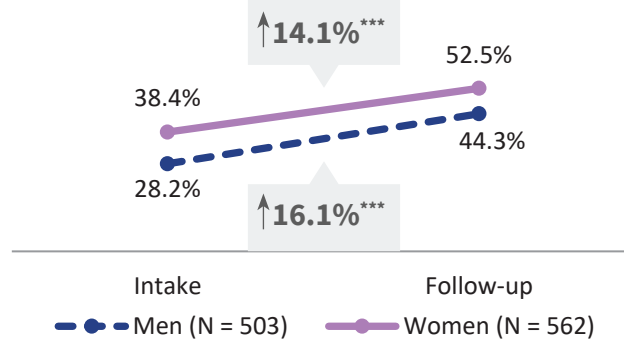


### GENDER DIFFERENCES IN MUTUAL HELP RECOVERY GROUP ATTENDANCE

Significantly more women than men reported they had attended mutual help recovery group meetings in the 30 days before entering the program and the 30 days before follow-up (see Figure 8.2). The percent of women and men who attended mutual help recovery group meetings increased significantly at follow-up.

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

<sup>96</sup> One individual had missing data for self-help meeting attendance at follow-up.

FIGURE 8.2. GENDER DIFFERENCES IN MUTUAL HELP RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP<sup>a</sup>

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

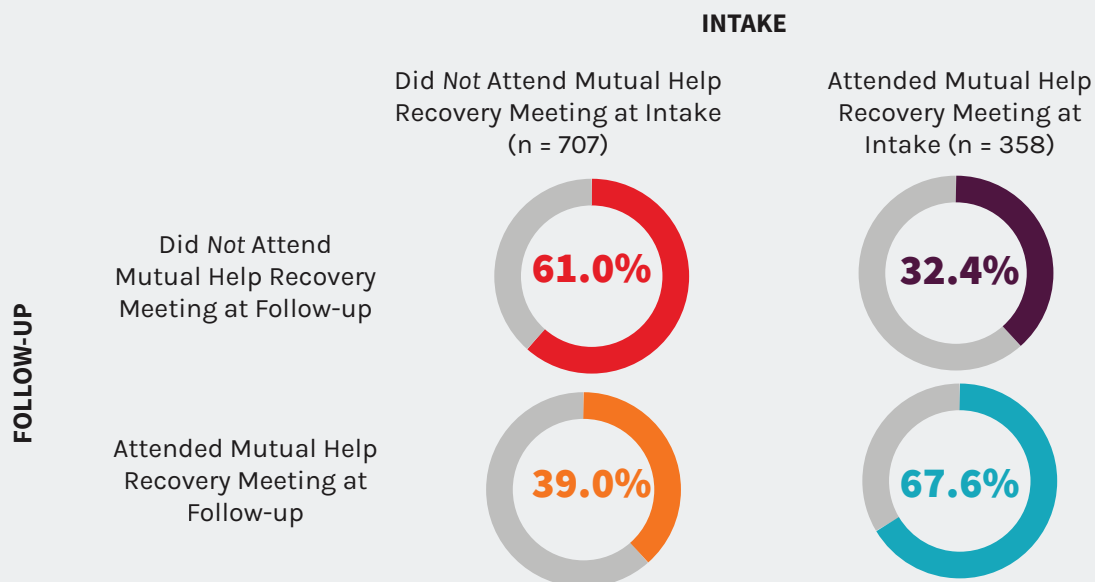
\*\*\* $p < .001$ .

### 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 (33.6%;  $n = 358$ ). Among clients who reported attending mutual help recovery group meetings at intake, 67.6% also attended mutual help recovery group meetings at follow-up (see Figure 8.3).

Alternatively, 39.0% of those who did not report attending mutual help recovery group meetings in the 30 days before entering treatment attended meetings at follow-up.

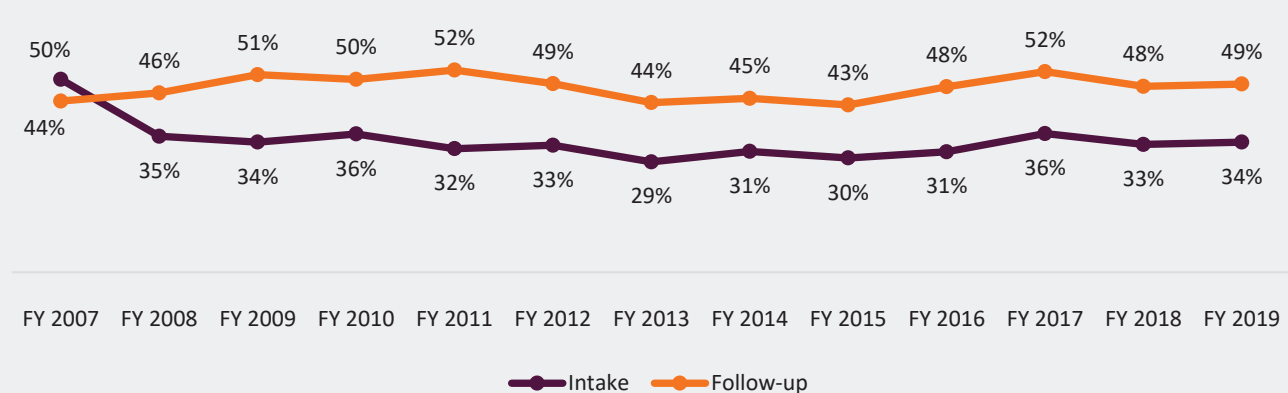
FIGURE 8.3. MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE AT INTAKE AND FOLLOW-UP BASED ON MEETING ATTENDANCE AT INTAKE



## Trends in Clients Attending Mutual Help Recovery Meetings

More clients reported attending meetings like AA/NA at follow-up compared to intake, except in FY 2007 when the number of clients reporting attending mutual help recovery group meetings was higher at intake than follow-up. 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 from FY 2008 through FY 2019.

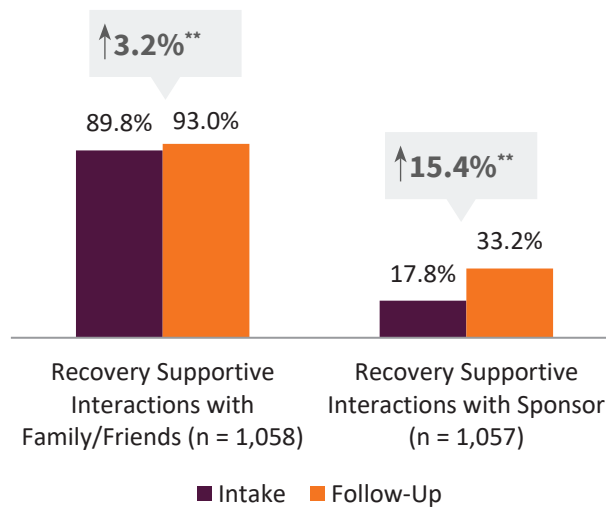
FIGURE 8.4. TRENDS IN THE PERCENT OF CLIENTS REPORTING PAST-30-DAY MUTUAL HELP RECOVERY GROUP MEETINGS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2019



## 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 8.5). 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 33.2% at follow-up.

FIGURE 8.5. RECOVERY SUPPORTIVE INTERACTIONS IN THE PAST 30 DAYS<sup>97</sup>



\*\*p < .01.

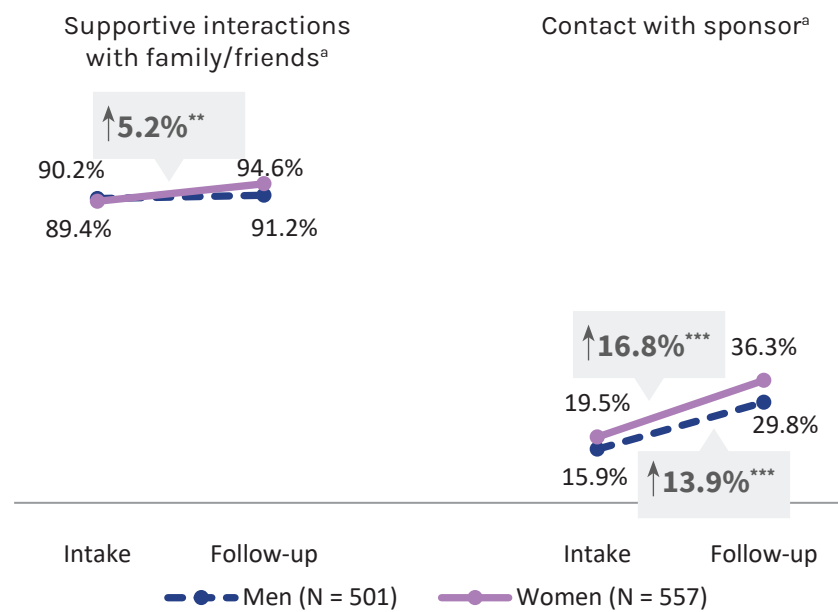
<sup>97</sup> Data on family/friends recovery supportive interactions was missing at follow-up for 8 cases and data on sponsor recovery supportive interactions was missing at follow-up for 9 cases.

## GENDER DIFFERENCES IN RECOVERY SUPPORTIVE INTERACTIONS

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 8.6). The percent of women who had contact with supportive family or friends increased significantly from intake to follow-up by 5.2%. Similarly, significantly more women reported having contact with a sponsor at follow-up when compared to men. The percent of men and women who reported having contact with a sponsor increased significantly from intake to follow-up.

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

FIGURE 8.6. GENDER DIFFERENCES IN RECOVERY SUPPORTIVE INTERACTIONS



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

## AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT

The average number of people clients reported that they could count on for recovery support increased significantly, from 6.8 people at intake to 17.1 people at follow-up (see Figure 8.7).

FIGURE 8.7. AVERAGE NUMBER OF PEOPLE CLIENTS COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 1,056)\*\*\*<sup>98</sup>

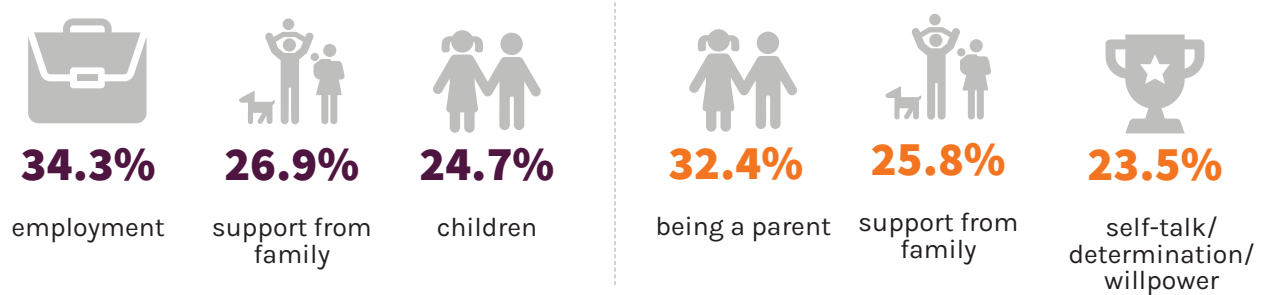


<sup>98</sup> Data on the number of people the client could count on for recovery support at follow-up was missing for 6 cases.

## 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 8.8. 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 caring for children or dependents, support from family, and self-talk/determination/will power.

FIGURE 8.8. TOP CATEGORIES CLIENTS REPORTED THAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,056)<sup>99</sup>



## 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, 86.1% of clients believed they had a moderately or very good chance of staying off drugs/alcohol at intake with a significant increase of 3.6% at follow-up (89.7%; see Figure 8.9).<sup>100</sup>

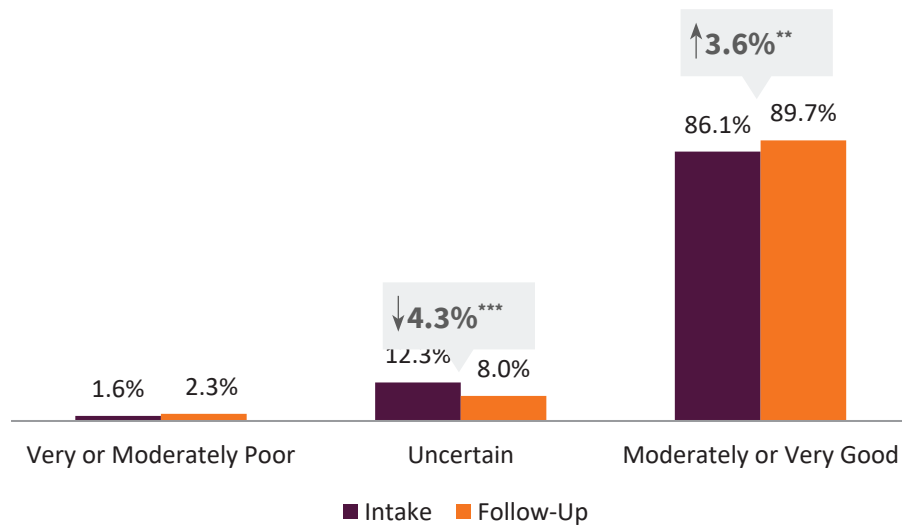
*They tried to make sure that I felt included. Counselors were great! No complaints.*

- KTOS FOLLOW-UP CLIENT

<sup>99</sup>Ten individuals had missing data on what will be most useful in staying off drugs and/or alcohol at follow-up.

<sup>100</sup>Nine individuals had missing data for chances of staying off drugs/alcohol at follow-up.

FIGURE 8.9. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 1,057)<sup>a</sup>



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

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

## SECTION 9. MULTIDIMENSIONAL RECOVERY STATUS

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

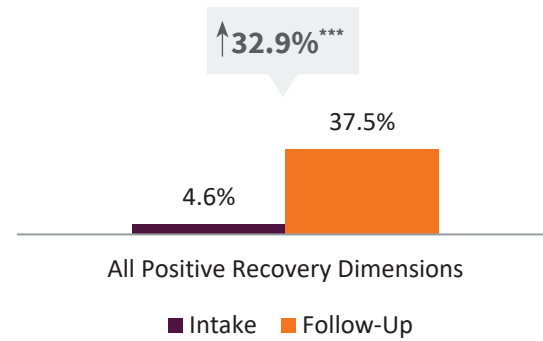
Recovery goes beyond relapse or return to occasional drug or alcohol use. Recovery from substance use disorders can be defined as “a process of change through which an individual achieves abstinence and improved health, wellness and quality of life” (p. 5).<sup>101</sup> The SAMHSA definition of recovery 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.<sup>102</sup> In other words, recovery encompasses multiple dimensions of individuals’ lives and functioning. The multidimensional recovery measure uses items from the intake and follow-up surveys to classify individuals who have all positive dimensions of recovery.

INDICATOR	POSITIVE RECOVERY DIMENSIONS	NEGATIVE RECOVERY DIMENSIONS
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 (4.6%) was classified as having all eight dimensions of recovery (see Figure 9.1). At follow-up, there was a significant increase of 32.9% so that more than one-third of the sample had all dimensions of recovery.

<sup>101</sup> 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.

<sup>102</sup> 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/dbassessite/documents/webpage/dbasse\\_171025.pdf](https://sites.nationalacademies.org/cs/groups/dbassessite/documents/webpage/dbasse_171025.pdf)

FIGURE 9.1. MULTIDIMENSIONAL RECOVERY AT INTAKE AND FOLLOW-UP (N = 1,051)<sup>103</sup>

\*\*\*p &lt; .001.

Table 9.2 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 positive dimensions of recovery with the lowest percent of individuals reporting them were meeting criteria for no substance use disorder and not being arrested or incarcerated. At follow-up, the positive dimensions of recovery with the lowest percent of individuals reporting them were not being arrested or incarcerated and meeting criteria for no substance use disorder.

TABLE 9.2. PERCENT OF CLIENTS WITH SPECIFIC POSITIVE DIMENSIONS OF RECOVERY AT INTAKE AND AT FOLLOW-UP (n = 1,051)

Factor	Intake Yes	Follow-Up Yes
Met DSM-5 criteria for no SUD in the past 12 months.....	19.4%	72.9%
Usual employment was employed full-time or part-time in the past 12 months (or retired, on disability, a student, or caregiver) .....	76.4%	77.0%
Reported no homelessness .....	71.1%	93.2%
Reported not being arrested and/or incarcerated in the past 12 months.....	30.3%	65.5%
Reported no thoughts of suicide or attempted suicide in the 12 months.....	81.4%	91.8%
Self-rating of overall health was fair, good, very good, or excellent.....	86.3%	95.2%
Reported having someone they could count on for recovery support.....	95.1%	98.6%
Reported a quality of life rating in the mid or higher range (rating of 5 or higher).....	87.0%	94.7%

To better understand which factors at entry to the program were associated with having all positive dimensions of recovery at follow-up, each element that defined the multidimensional status at intake was entered as predictor variables in a logistic regression model (see Table 9.3). Having all positive dimensions of recovery at follow-up is the criterion (i.e., dependent) variable. The following predictor variables were statistically significantly associated with having all the positive dimensions of recovery at follow-up: meeting criteria for no substance use disorder, client's usual employment was employed, no suicidal ideation or attempts, and reporting a mid to higher quality of life at intake.

<sup>103</sup> Fifteen 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 9.3. MULTIVARIATE ASSOCIATIONS HAVING ALL POSITIVE DIMENSIONS OF RECOVERY 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 .....	.510	9.659	1.666**	1.207	2.298
Usual employment was employed (or retired, on disability, a student, or caregiver) in the 12 months before entering the program.....	.530	10.325	1.699**	1.230	2.346
No homelessness in the 12 months before entering the program .....	.000	.000	1.000	.738	1.354
Not arrested or incarcerated in the 12 months before entering the program .....	-.042	.083	.959	.721	1.276
Reported no thoughts of suicide or attempted suicide in the 12 months before entering the program.....	.541	8.177	1.717	1.185	2.488
Self-rating of overall health at intake was fair, good, very good, or excellent.....	.231	1.237	1.260	.838	1.895
Reported have at least one person he/she could count on for recovery support before entering the program.....	-.275	.795	.760	.416	1.389
Reported a mid to higher quality of life before entering the program .....	.647	8.564	1.910**	1.238	2.945

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).

\*\*p<.01.

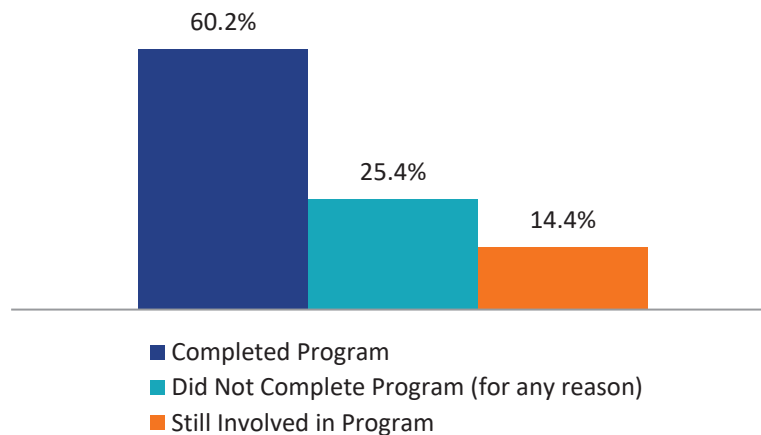
## SECTION 10. CLIENT SATISFACTION WITH SUBSTANCE ABUSE TREATMENT PROGRAMS

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

Three in five clients (60.2%) reported at follow-up that they had completed the program they attended or that the program agreed they were ready to leave, 25.4% did not complete the program, and 14.4% 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 5.0. Individuals who reported they were still in the treatment program reported they had been involved in the program an average of 11.3 months. In contrast, individuals who had completed the program reported being in the program an average of 4.1 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<sup>104</sup>



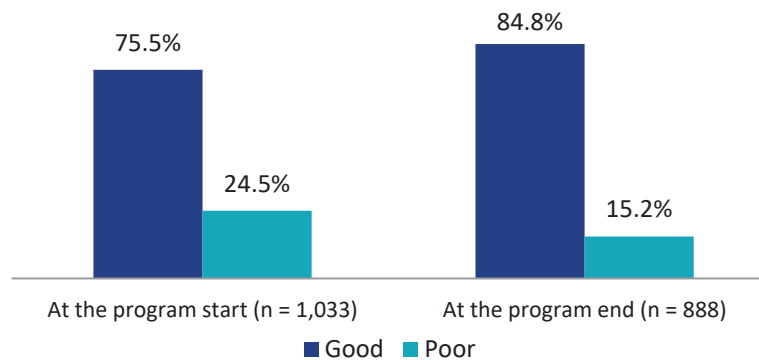
Of those who did not complete the program (n = 264), nearly half (47.7%) reported they chose to leave the program before program staff thought they should but they told staff they were leaving, and 17.4% chose to leave before completing the program and did not tell staff they were leaving (Figure 10.2). A little more than 1 in 10 (11.4%) reported they were not able to continue in the program due to issues other than missing too many appointments, 6.1% missed too many appointments or meetings and were not allowed to continue in the program, about 5% transferred to a different program, and 4.2% went back to jail or got into legal trouble before completing the program.

<sup>104</sup> Twenty-nine individuals had missing data for this variable.

FIGURE 10.2. REASONS WHY CLIENT DID NOT COMPLETE TREATMENT PROGRAM (N = 264)



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 (75.5%) and ended good (84.8%).

FIGURE 10.3. PERCENT OF CLIENTS WHO REPORTED AT FOLLOW-UP THE TREATMENT STARTED AND ENDED POOR OR GOOD<sup>105</sup>

Overall, the majority of clients (80.6%) reported that the treatment episode was working/ worked pretty well or extremely well for them, 14.0% said the program worked somewhat well for them, and 5.4% said the program did not work for them at all.

One-fourth (25.8%) reported they had been in other treatment programs since they left this

<sup>105</sup>Thirty-three individuals had missing data for program rating at the start of treatment and 33 had missing data for program rating at the end of treatment. Additionally, 145 clients reported they were still in the program at follow-up and therefore did not rate the program at the end.

treatment episode. Of those clients (n = 262),<sup>106</sup> they reported they had been involved in an average of 1.2 (Min. = 1, Max. = 10) other treatment programs or episodes.

## RECOMMEND OTHERS TO THE PROGRAM

The majority of clients (90.7%) 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),<sup>107</sup> 34.9% reported they would warn their friend or family member about certain things or tell them who to work with or who to avoid.

## OVERALL CLIENT SATISFACTION

At the beginning of the follow-up survey, interviewers asked participants questions about their satisfaction with the treatment programs where 1 represented the worst experience and 10 represented the best experience. Overall, the majority of clients (73.9%) gave a high positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table).<sup>108</sup> The average rating was 8.3.

Figure 10.4 shows that KTOS clients were satisfied with the overall program services. A little more than 4 in 5 individuals (82.8%) said the program staff believed in them and believed that treatment would work for them, reported the program staff cared about them and their treatment progress (81.0%), and clients also said that when they told their counselor or program staff personal things, they felt listened to and heard by them (80.4%). A little more than three-fourths of clients agreed that their expectations and hopes for treatment and recovery were met (77.9%), they worked on the things that were most important to them in treatment (77.8%), they had input into their treatment goals, plans, and how they were progressing over time (77.1%), they had a connection with their counselor or staff person (76.6%). The majority reported that the treatment approach and method was a good fit for them (73.2%), and the length of the program was just right (66.8%). About 3 in 5 clients said they fully discussed or talked about everything they wanted to with their counselor or program staff.

*I like how they did the layout of it. They made it fun for you. They made me realize there's more to life than drugs.*

- KTOS FOLLOW-UP CLIENT

<sup>106</sup>Three individuals who had been to other treatment programs had missing data for the number of other programs they attended.

<sup>107</sup>Ten individuals reported they would refer a close friend or family member to the treatment program but had missing values on the item about warning others about certain things of who to work with or who to avoid in the program.

<sup>108</sup>Thirty-four 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 = 1,024)<sup>109</sup>

<sup>109</sup> Two hundred fifty-two cases had missing values for the item about the length of the program: for 211 cases the item was not on the survey and for 41 the client did not know, declined to answer or the item was skipped in error. For the other treatment satisfaction items, between 37 – 42 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. To accommodate these complexities at an aggregate level, data were extrapolated from a large federal study that estimated annual costs drug abuse in the United States<sup>110</sup> and a separate study of the societal costs of excessive alcohol consumption in the U.S. in 2006.<sup>111</sup> In 2010 the estimated costs of excessive alcohol consumption in the United States was updated and in 2011 the National Drug Intelligence Center updated the estimates of drug abuse in the United States for 2007.<sup>112, 113</sup> 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. To calculate the estimate of the cost per alcohol user or drug user, the national cost estimates were divided by the estimate of the number of individuals with alcohol or drug use disorder in the corresponding

<sup>110</sup> 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.

<sup>111</sup> Bouchery, E.E., Harwood, H.J., Sacks, J.J., Simon, C.J., & Brewer, R.D. (2011). Economic costs of excessive alcohol consumption in the U.S., 2006. *American Journal of Preventive Medicine*, 41(5), 516–524.

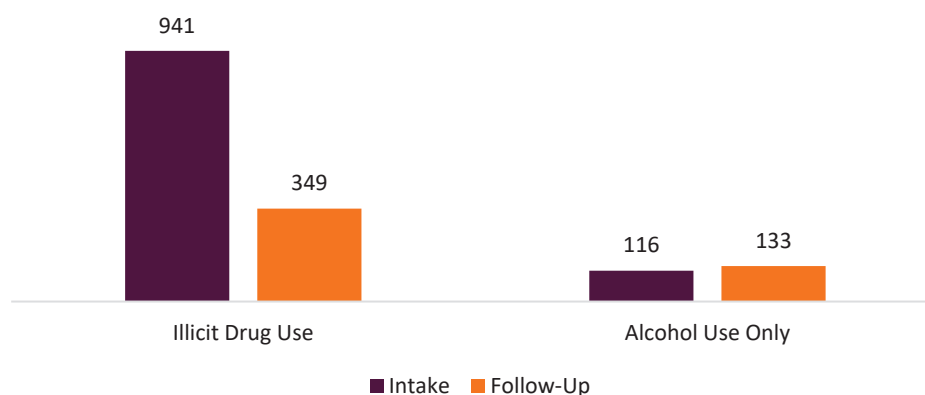
<sup>112</sup> Sacks, J.J., Gonzales, K.R., Bouchery, E.E., Tomedi, L.E., & Brewer, R.D. (2015). 2010 national and state costs of excessive alcohol consumption. *American Journal of Preventive Medicine*, 49(5), e73–e79.

<sup>113</sup> National Drug Intelligence Center. (2011). *The Economic Impact of Illicit Drug Use on American Society*. Washington, DC: United States Department of Justice.

years (2010 for alcohol use and 2011 for drug use).<sup>114</sup> The estimate of the cost to society of excessive alcohol consumption was \$249,026,400,000 in 2010. This amount was then divided by the 17,900,000 individuals estimated in the NSDUH in 2010 to have an alcohol use disorder, yielding a cost per person of alcohol abuse of \$13,912 (after rounding to a whole dollar) in 2010 dollars. The estimate of the cost to society of drug use was \$193,096,930,000 in 2007. This amount was then divided by the 6,900,000 individuals estimated in the NSDUH in 2007 to have an illicit drug abuse or dependence disorder, yielding a cost per person of drug abuse of \$27,985 (after rounding to a whole dollar) in 2007 dollars. The costs per person were then converted to 2019 dollars using a CPI indexing from a federal reserve bank (<http://www.minneapolisfed.org>). Thus, the estimate of cost per person of alcohol abuse is \$16,311 in 2019 dollars and the estimate of the cost per person of drug abuse is \$34,512 in 2019 dollars. 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.<sup>115</sup> 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, 941 clients reported using illicit drugs and an additional 1116 clients reported using alcohol only. At follow-up, 349 clients reported using illicit drugs and 133 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 = 1,064)



<sup>114</sup> 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>

<sup>115</sup> Two cases had missing values for illicit drug use in the 12 months before follow-up; thus, two cases were excluded from the cost savings analysis.



When the estimated cost per individual drug user was applied to the 941 individuals who were active drug users at intake, the annual estimated cost to society for the KTOS sample who used illegal drugs before entry into the recovery center was \$32,475,792. When the average annual cost per individual alcohol abuser was applied to the 116 clients who reported using alcohol only at intake, the estimated annual cost to Kentucky in 2019 was \$1,892,076. The estimated total annual cost of drug and alcohol use in the 12 months before intake applied to the follow-up sample of KTOS clients was \$34,367,868. By follow-up, the estimated cost of the 349 individuals who reported illicit drug use was \$12,044,688 and the estimated cost of the 133 individuals who reported using alcohol was \$2,169,363, for a total of \$14,214,051. Thus, as shown in Figure 11.2, after participation in publicly-funded substance abuse treatment, the estimated gross cost to Kentucky taxpayers for these 1,064 clients was reduced by \$20,153,817.

FIGURE 11.2. COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N=1,064)

$$\begin{array}{rcccl}
 \text{\textbf{\$31.7 million}} & - & \text{\textbf{\$14.7 million}} & = & \text{\textbf{\$17 million}} \\
 \text{COST TO SOCIETY AT INTAKE} & & \text{COST TO SOCIETY AT FOLLOW-UP} & & \text{GROSS DIFFERENCE IN COST TO SOCIETY}
 \end{array}$$

## 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,<sup>116, 117</sup> 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., other than 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

<sup>116</sup> 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/BHandSUFeeScheduleIPIFrev612016r1.pdf>.

<sup>117</sup> 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>.



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 \$4,173 (in 2019 dollars). The average cost of \$4,173 was multiplied by 1,064, 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 \$4,440,072.

## 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: \$20,153,817/\$4,440,072, which equals \$4.54 (see Table 11.1). In other words, for every dollar spent on publicly-funded substance abuse treatment in FY 2019, there was an estimated savings of \$4.54 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
<b>Drug use</b>		
Number of clients.....	941	349
<b>Alcohol use</b>		
Number of clients.....	116	133
<b>Total cost to society of drug and alcohol use .....</b>	\$34,367,868	\$14,214,051
<b>Gross cost difference from intake to follow-up .....</b>		\$20,153,817
<b>Estimate of cost of treatment (based on average cost per client in 2012 – 2015) .....</b>		\$4,440,072
<b>Off-set as net cost/benefit ratio .....</b>	\$20,153,817/\$4,440,072	
<b>Return on \$1.00 Investment .....</b>	\$4.54	

## SECTION 12. CONCLUSIONS AND IMPLICATIONS

The KTOS 2021 Annual Follow-Up Report describes characteristics of clients who participated in state-funded substance abuse treatment programs in Kentucky and completed intake interviews in FY 2019 (N = 5,228). In addition, outcomes are presented for 1,066 clients who completed a follow-up telephone interview about 12 months later which was a 68.9% follow up rate for those selected into the statewide sample.

Overall, of the clients with intake interviews (N = 5,228), over half were male (56.3%) and 43.6% were female, with ages 18 to 76 (average age 35.8 years old). Most were White (93.2%), had children under the age of 18 (61.4%), and 80.8% had experienced at least one adverse childhood experience. The majority of clients (62.5%) were unemployed at intake. About 58% had been arrested and 65.5% 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 (62.9%) and self-referred (16.0%) to treatment. The majority of adults who completed an intake interview reported using illegal drugs (77.9%), alcohol (43.0%), and smoking tobacco (82.6%) in the 12 months before intake. On average, clients reported being about 15.7 years old when they first began using drugs, 15.3 years old when they had their first alcoholic drink (other than a sip) and 16.1 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 48% in FY 2019.

Of the 1,175 adults who completed a 12-month follow-up interview, 52.8% of the sample was female, and 47.2% was male. The majority of follow-up clients (92.2%) were White. Clients in the follow-up sample were an average of 34.6 years old at the time of the intake interview and less than half (40.9%) 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 (substance use, health, mental health, criminal justice involvement) compared to those who were not followed up.

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

Severity of substance use decreased significantly at follow-up. The percent of individuals with self-reported symptoms of DSM-5 severe substance use disorder decreased from intake (65.5%) to follow-up (19.5%). 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.

Trends in any illegal drug use show that the percent of clients reporting illegal drug use at follow-up has been significantly lower at follow-up than at intake each year for the last 13 years. Percentages of clients reporting any illegal drug use in the 12 months before follow-up has been a high of 43% in FY 2010 and a low of 25% in FY 2013.

Analysis of specific past-12-month drug use indicates more than half of clients (55.5%) reported using marijuana at intake, whereas 22.1% reported marijuana use at follow-up. For the first year since the trend analyses have been included in the KTOS reports, more than half of clients reported using stimulants (other than cocaine) at intake. Among the individuals who reported using stimulants at intake, 97.5% of them reported using methamphetamine. Significantly fewer individuals reported stimulant use at follow-up than at intake. A little more than two-fifths of clients reported using prescription opioids at intake, whereas 10.0% of clients reported prescription opioid misuse at follow-up. Nearly one-fourth of followed-up clients reported using CNS depressants in the 12 months before intake, with a significant decrease to 3.8% at follow-up.

Half of clients reported using alcohol in the 12 months before intake, with a 23.6% decrease at follow-up. There were similar percent decreases in the use of alcohol to intoxication (22.3%) and binge drinking (20.1%). 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 50% in FY 2019.

### MENTAL HEALTH, PHYSICAL HEALTH, AND INTERPERSONAL VICTIMIZATION

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, suicidal thoughts or attempts, and screened positive for post-traumatic stress disorder 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 41% reported depression and 40% of clients reported anxiety. The percent of clients with depression at follow-up has fluctuated from a low of 21% in FY 2014 to a high of 45% in FY 2011, whereas the percent of clients with anxiety decreased from in FY 2011 (54%) until FY 2014 (19%), then increased to 30% in FY 2015 and has remained between 29%-33% in FY 2015 through FY 2019. One-third of clients (32.9%) reported they had experienced any interpersonal victimization in the 12

months before intake. By follow-up, significantly fewer clients (15.9%) reported they had experienced any interpersonal victimization in the past 12 months.

KTOS clients' perceptions of poor physical and mental health decreased significantly from intake to follow-up. For example, at intake, KTOS clients reported that for nearly half of the past 30 days their mental health was not good (average of 13.2 days), whereas at follow-up, the average number of days was 6.0. Individuals' rating of overall health significantly improved from intake to follow-up.

## **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 39% of clients reported being employed full-time at follow-up compared to 22.5% at intake. Furthermore, the average number of months clients reported working in the past 12 months increased from 4.4 months at intake to 5.7 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 three-fifths of individuals (62.1%) reported an arrest at intake, which decreased significantly to 26.1% 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 62% in FY 2019 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 (40.9%) individuals reported they had a conviction for a misdemeanor in the 12 months before intake, and at follow-up, only 13.4% reported a conviction for a misdemeanor. About 30% of individuals reported a conviction for a felony in the 12 months before entering treatment, whereas at follow-up, only 7.1% of individuals had a conviction for a felony. About two-thirds of clients (66.0%) reported being incarcerated at least one night in the past 12 months at intake compared to 31.4% 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 intake (with a high of 66% in FY 2019 and a low of 58% in FY 2012-2013, 2008-2009). Changes in the percent of individuals who were incarcerated in the past 12 months at follow-up have fluctuated from a low of 21% in FY 2013 to a high of 37% in FY 2010.

## **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 (33.6%), significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up (48.6%). Also, at follow-up, clients reported having significantly more people they could count on for recovery support: 17.1 vs. 6.8. Significantly more individuals reported they had recovery supportive interactions with friends and family and supportive interactions with a sponsor at follow-up than at intake. About 90% of clients stated at follow-up they thought they had a moderately or very good chance of staying off drugs or alcohol. Clients reported that parenting children, support from their families, and self-talk/determination 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 (4.6%) was classified as having all eight dimensions of recovery. At follow-up, there was a significant increase of 32.9% so that more than one-third of the sample (37.5%) had all dimensions of recovery.

To better understand which factors at entry to the program are associated with having all dimensions of recovery 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, client's usual employment was employed, 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 8.3 out of 10, with 10 representing the best possible experience). Almost three-fourths of individuals (73.9%) gave a high positive rating of 8 to 10. Nine in 10 clients stated they would refer a close friend or family member to the program they attended. 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 felt listened to and heard by program staff, their expectations and hopes for treatment were met, they talked about things in treatment that were most important to them, they had input into their treatment goals, plans, and how they were progressing over time, they had a connection with a staff person during treatment, and the treatment approach and method was a good fit for them. Also, 80.6% reported that the treatment episode was working/worked pretty well or extremely well for them.

## 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

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 7 years, the percent of clients reporting methamphetamine use has increased from 6% in FY 2012 to 48% in FY 2019. Furthermore, the percent of clients who reported at intake that they had ever injected drugs in their lifetime was 41.0% for the follow-up sample. The percent of clients reporting at intake that they had ever injected any drug has increased from FY 2008 (24%) to FY 2019 (41%).

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, one-fourth of clients reported using alcohol, and 19.5% met criteria for severe SUD in the 12 months before follow-up.

### SMOKING

Smoking rates remained very high for KTOS clients with 80.8% 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, more than one-fourth 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.<sup>118</sup> 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.<sup>119</sup>

### 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.<sup>120</sup> Those with co-occurring substance use and mental health disorders often have medication noncompliance, relapse,

<sup>118</sup> Baca, C., & Yahne, C. (2009). Smoking cessation during substance abuse treatment: What you need to know. *Journal of Substance Abuse Treatment*, 36, 205-219.

<sup>119</sup> 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.

<sup>120</sup> <https://www.samhsa.gov/treatment#co-occurring>.



homelessness, and suicidal behavior.<sup>121</sup> Overall, there was a significant decrease in mental health problems from intake to follow-up; however, 1 in 3 individuals were still reporting symptoms of depression and more than one-fourth were still reporting symptoms of anxiety at follow-up. Also, 1 in 10 screened positive for PTSD at follow-up. Also, even though there were significant reductions in the average number of days individuals reported their mental health was not good at follow-up, the average number of days was 6 at follow-up, which is 1 in 5 days, on average, individuals' mental health was poor in the past 30 days. Further, trend reports show that the percent of clients reporting depression and anxiety at follow-up have been at similar levels for the past five years' reports.

## CHRONIC PAIN

At follow-up, a little more than one-fourth 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<sup>122</sup> and substance use disorders.<sup>123</sup> Self-medication can be problematic in substance abuse treatment program participants who report chronic pain.<sup>124</sup> Of those KTOS clients who reported misusing prescription opioids and experiencing chronic pain at intake (n = 141), 52.5% (n = 74) reported chronic pain in the past 12 months at follow-up and 18.4% (n = 26) 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.<sup>125</sup> 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, 31% of clients still reported having difficulty meeting basic living needs and 18.8% reported having difficulty obtaining health care needs for financial reasons at follow-up. 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

<sup>121</sup> 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>.

<sup>122</sup> 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.

<sup>123</sup> Ballantyne, J. & LaForge, S. (2007). Opioid dependence and addiction during opioid treatment of chronic pain. *Pain*, 129(3), 235-255.

<sup>124</sup> 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.

<sup>125</sup> <https://www.samhsa.gov/find-help/recovery>

substance use to alleviate the stress.<sup>126</sup> 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 all positive dimensions of recovery at follow-up than at intake (37.5% vs. 4.6%), the majority of individuals (62.5%) were still classified as not having all eight positive dimensions of recovery. The following predictor variables were statistically significantly associated with having all the positive dimensions of recovery at follow-up: meeting criteria for no substance use disorder, client's usual employment was employed, 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. Most, but not all of these, indicate that women had more comorbid mental health problems, worse physical health, more interpersonal victimization experiences, and greater economic hardship than their male counterparts.

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. Significantly more women than men reported using opioids and stimulants in the past 12 months at intake. Significantly more women than men reported using CNS depressants and stimulants in the past 30 days at intake. Also, significantly more women than men reported that they were considerably or extremely bothered by drug or alcohol problems 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 than men reported smoking tobacco at intake and follow-up, while significantly more men reported using smokeless tobacco at intake and follow-up. In contrast, significantly more men than women reported using alcohol and binge drinking in the 12 months and 30 days before intake and follow-up, and alcohol use to intoxication in the 12 months before intake.

More women than men reported mental health symptoms at intake and follow-up including depression, generalized anxiety, comorbid depression and anxiety, suicidality, and post-traumatic stress disorder. Also, women rated their overall health lower at intake and follow-up compared to men. They reported their mental health was not good for significantly more days than men at intake and follow-up and that poor mental and/or physical health limited their activities in the 30 days before intake. 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.<sup>101</sup> Men and women have been shown to use different coping styles and thus may benefit from separate groups to plan recovery support.

<sup>126</sup> 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.



Women's housing situation, employment, and economic hardship were worse than men's situations. First, significantly more women reported homelessness at intake and follow-up when compared to men. Second, women also reported more economic difficulties at both intake and follow-up 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. Even though women made significant gains in their employment by follow-up, they still lagged behind men in their economic standing. 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 at intake and at follow-up. One possible explanation for men's higher median hourly wage when compared to women's is likely due to gender differences in occupation type. At intake and follow-up, more than half of employed women had a service sector job, whereas around two-fifths of employed men had a job in the natural resources, construction, and maintenance sector--which has higher average wages than service sector jobs.

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 incarcerated and were under supervision by the criminal justice system at intake. Nonetheless, men had higher average ratings for their overall and interpersonal well-being at intake when compared to 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.<sup>127, 128, 129, 130</sup> Earlier studies found that the context of the interview influences reliability.<sup>131</sup> 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 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 assumptions in Section 11 to help interpret the findings.

## CONCLUSION

This KTOS 2021 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 accounting for the cost of publicly-funded treatment, showed a significant estimated cost savings.

<sup>127</sup> 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.

<sup>128</sup> 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.

<sup>129</sup> Rutherford, M. J., Cacciola, J. S., Alterman, A. I., McKay, J. R., & Cook, T. G. (2000). Contrasts between admitters and deniers of drug use. *Journal of Substance Abuse Treatment*, 18(4), 343-348.

<sup>130</sup> 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.

<sup>131</sup> 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.

## 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.<sup>132</sup> 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 5,228 clients who completed an intake survey, 2,571 (49.2%) agreed to be contacted for the follow-up study.<sup>133</sup> 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 = 1,900).<sup>134</sup>

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 1,900 clients included in the follow-up sample, 352 were ineligible for participating in the follow-up survey for a variety of reasons (e.g., incarcerated, in residential treatment, deceased), which left 1,548 clients eligible for follow-up. Of these clients, 1,066 completed a follow-up survey (see Table AA.1). Thus, the follow-up rate was 68.9%. The remaining clients either (1) refused (3.0%) to complete the follow-up survey, or (2) were never successfully contacted, or if contacted they never completed the follow-up survey (28.1%).

<sup>132</sup> 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.

<sup>133</sup> Two clients had a missing response for follow-up agreement.

<sup>134</sup> The target number of cases to pull for the follow-up sample is 170 per month. Even so, Winter months typically have fewer numbers of completed intake interviews, including in FY 2019. For reasons we do not understand, this trend continued through the Spring months (March through June), thus there were fewer than 170 eligible individuals to be included in the follow-up sample for the follow-up target months of December 2019 through June 2020.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 1,900)

	Number of Records	Percent
Ineligible for follow-up survey .....	352	18.5%
	Number of cases eligible for follow-up (N = 1,548)	
Completed follow-up surveys.....	1,066	
Follow-up rate ((the number of completed surveys/ the number of eligible cases)*100).....		68.9%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period) .....	435	
Expired rate ((the number of expired cases/eligible cases)*100).....		28.1%
Refusal .....	47	
Refusal rate (the number of refusal cases/eligible cases)*100) .....		3.0%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals).....	1,465	
Percent of cases accounted for ((the number of cases accounted for/total number of records in the follow-up sample)*100).....		77.1%

Clients were considered ineligible for follow-up if they were living in a controlled environment during the follow-up period or were deceased (see Table AA.2). Of the 352 cases that were ineligible for follow-up, the majority (55.1%) were ineligible because they were incarcerated during the follow-up period. In other words, of the 1,900 individuals selected into the sample to be followed up, 10.2% were ineligible for participation at the time of follow-up because they were incarcerated. Among the 352 individuals who were ineligible at the time of follow-up, 38.1% were in residential treatment at the time of follow-up, 2.3% were hospitalized, and 3.7% were deceased. Other reasons a couple clients were ineligible for follow-up were invalid locator information and they had an unspecified health condition.

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 352)

	Number	Percent
Incarcerated .....	194	55.1%
In residential treatment.....	134	38.1%
Deceased .....	13	3.7%
Hospitalized.....	8	2.3%
Invalid locator information .....	2	0.6%
Recently in previous sample.....	0	0.0%
Health condition.....	1	0.3%
Language barrier .....	0	0.0%

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<sup>135</sup> (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. Individuals who completed a follow-up survey were significantly younger than individuals 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. 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 = 4,162	YES n = 1,066
<b>Age**</b> .....	36.1 years	34.6 years
<b>Gender**</b>		
Male .....	58.7%	47.2%
Female .....	41.2%	52.8%
Transgender .....	0.1%	0.0%
<b>Race</b>		
White .....	93.4%	92.0%
African american .....	4.2%	4.9%
Other or multiracial .....	2.4%	3.1%
<b>Marital status</b>		
Never married .....	28.0%	29.7%
Married or cohabiting .....	41.7%	40.9%
Separated or divorced .....	27.8%	27.6%
Widowed .....	2.6%	1.8%

\*\*p < .001.

<sup>135</sup> Significance is reported for p < .01 because of the large sample size.

## SOCIOECONOMIC INDICATORS

More than four-fifths 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). Significantly more clients who did not complete a follow-up reported their usual living situation was in jail or prison compared to clients who completed a follow-up. Small percentages 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, more than one-fourth of clients who were followed up reported they were currently homeless, which was significantly higher than the 23.8% of clients who were not followed up. Most clients who were currently homeless at intake, 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, with no significant difference by follow-up status (see Table AB.2).

TABLE AB.2 LIVING SITUATION OF CLIENTS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
<b>Usual living arrangement in the 12 months before entering the program*</b>		
Own or someone else's home or apartment.....	82.5%	84.5%
Residential treatment, recovery center, sober living home, personal care home, hospital, school or work dormitory .....	3.0%	3.3%
Jail or prison.....	11.0%	7.4%
Shelter, hotel/motel, or on the street.....	3.3%	4.7%
Other.....	0.1%	0.1%
<b>Considers self to be currently homeless* .....</b>		
Why the individual considers himself/herself to be homeless	(n = 991)	(n = 305)
Staying temporarily with friends or family .....	51.2%	46.6%
Staying on the street or living in car.....	33.1%	37.4%
Staying in a shelter.....	8.3%	8.2%
Staying in a hotel or motel .....	1.3%	3.0%
Incarcerated and does not have a place to stay after release .....	1.7%	1.0%
Staying in residential treatment, recovery center, or hospital.....	0.9%	0.3%
Other reason.....	1.7%	2.3%

\*p < .01.

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 and difficulty meeting health care needs because of financial reasons compared to those who did not complete a follow-up.

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

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)** ....	36.9%	45.6%
Had difficulty obtaining needed health care for financial reasons (e.g., doctor visit, dental care, or fill prescription)* .....	22.0%	26.3%

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

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 = 4,162	YES n = 1,066
<b>Highest level of education completed**</b>		
Less than GED or high school diploma.....	26.4%	21.8%
GED or high school diploma .....	45.4%	41.3%
Some vocational school to graduate school.....	28.2%	37.0%

\*\*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 7.4 for clients who were not followed up and 7.2 for clients who were followed up, with no statistically significant difference.

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

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
<b>Employment</b>		
Percent of clients who reported working for:		
0 months.....	41.8%	39.3%
1 to 5 months .....	20.5%	21.3%
6 months or more.....	37.7%	39.4%
Among those who were employed:	n = 2,422	n = 647
Average # of months employed in the past 12 months.....	7.4 months	7.2 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. Significantly more followed-up clients reported an arrest in the 12 months before entering treatment. Of the clients who reported they were arrested, both groups reported an average of 2.0 arrests. The majority of both groups reported being incarcerated at least one night in the 12 months before entering treatment (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 73.6 days for clients who were not followed up and 59.7 average days for clients who were followed up, which was a statistically significant difference.



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

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
<b>Currently under supervision by the criminal justice system .....</b>	<b>47.5%</b>	<b>44.8%</b>
<b>Arrested for any charge in the 12 months before entering treatment* .....</b>	<b>56.9%</b>	<b>62.2%</b>
Of those with an arrest,	n = 2,367	n = 663
Average number of arrests .....	2.0	2.0
<b>Incarcerated at least one day .....</b>	<b>65.3%</b>	<b>66.0%</b>
Of those incarcerated	(n = 2,718)	(n = 704)
Average number of days incarcerated in the past 12 months** .....	73.6	59.7

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

## PHYSICAL HEALTH

Physical health measures were included in the intake survey (see Table AB.7). Compared to individuals who did not complete a follow-up interview, individuals who were followed up reported a significantly lower average rating for their overall health and a higher average number of days their physical health was not good in the 30 days before entering treatment. There were no significant differences between those clients who were not followed-up and those that were followed-up in chronic pain at intake.

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 (57.4% vs. 51.5%).

TABLE AB.7. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
Average rating of overall health** .....	2.7	2.6
[1 = Poor, 5 = Excellent]		
Average number of days physical health was not good in the past 30 days* .....	5.8	6.7
Chronic pain (lasting at least 3 months) .....	31.1%	32.7%
Ever told by a doctor that client had one of the 12 chronic medical problems listed* .....	51.5%	57.4%

\*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: 55.8% vs. 43.0%.

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: 53.6% vs. 41.8%.

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 = 4,162	YES n = 1,066
Depression** .....	43.0%	55.8%
Generalized Anxiety Disorder** .....	41.8%	53.6%
Suicidality (e.g., thoughts of suicide or suicide attempts)** .....	14.1%	18.6%

\*\*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, cocaine, heroin, and illicit use of prescription opioids, buprenorphine-naloxone, tranquilizers/sedatives/benzodiazepines 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), tranquilizers/sedatives/benzodiazepines, and cocaine.

TABLE AB.9. PERCENT OF CLIENTS REPORTING ILLEGAL DRUG USE IN THE 12 MONTHS BEFORE ENTERING TREATMENT<sup>136</sup>

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
Any illegal drug** .....	75.1%	88.6%
Marijuana** .....	46.9%	55.4%
Stimulants** .....	46.6%	56.3%
Prescription opioids (illegal use)** .....	27.2%	34.6%
Non-prescribed buprenorphine-naloxone (bup-nx)** .....	17.8%	24.7%
Tranquilizers, sedatives, benzodiazepines** .....	17.6%	23.8%
Cocaine** .....	12.4%	16.5%
Heroin** .....	10.3%	17.2%
Synthetic Drugs (synthetic marijuana, bath salts) .....	7.0%	8.9%
Non-prescribed methadone .....	4.0%	4.1%
Hallucinogens .....	4.2%	5.5%
Barbiturates .....	2.4%	2.7%
Inhalants .....	1.4%	1.9%

\*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). Half of followed-up clients reported alcohol use in the 12 months before entering treatment, whereas 41.2% 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 = 4,162	YES n = 1,066
Alcohol** .....	41.2%	50.0%
Alcohol to intoxication** .....	27.3%	36.0%
Binge drank alcohol (i.e., drank 5 or more (4 for women) drinks in 2 hours)** .....	23.9%	31.7%

\*\*p < .001.

Significantly more followed-up clients reported using smoking tobacco and vaporized nicotine in the 12 months before entering treatment. A majority of followed-up and non-

<sup>136</sup>Footnote in the 2020 report: Data for this table were not available for a majority of followed-up and non-use comparison because they were incarcerated all 365 days before entering treatment.

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; 33.0%) compared to those not followed-up (25.2%). A minority of both groups reported smokeless tobacco use, with no difference by follow-up status.

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

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
Smoked tobacco* .....	81.8%	85.7%
Vaporized nicotine** .....	25.2%	33.0%
Used smokeless tobacco.....	14.0%	12.6%

\*p < .01, \*\*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, 34.9% of those not followed-up and 48.3% 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. Significantly more clients who completed a follow-up surpassed the cutoff score for severe drug use disorder when compared to those who did not complete a follow-up.

Among clients who were not in a controlled environment all 30 days before entering the program, the average score on the alcohol composite score was significantly higher for those who were followed up than for those who did not complete a follow-up survey (.12 vs. .08). 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 0.14 for followed up clients, which was also significantly different (see Table AB.12).

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

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
Percent of clients with ASI composite score equal to or greater than cutoff score for ...		
Severe alcohol or drug use disorder** .....	34.9%	48.3%
Severe alcohol use disorder** .....	14.1%	19.8%
Severe drug use disorder** .....	25.8%	34.5%
Average composite score for alcohol use <sup>a**</sup> .....	.08	.12
Average composite score for drug use <sup>b**</sup> .....	.11	.14

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, clients who were followed-up reported a significantly higher average number of lifetime treatment episodes when compared to clients who did not complete a follow-up interview.

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

	FOLLOWED UP	
	NO n = 4,162	YES n = 1,066
Ever been in substance abuse treatment in lifetime.....	55.2%	59.3%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 2,299)	(n = 632)
Average number of times in treatment.....	2.6	3.1

In summary, there were some significant differences between clients who were followed up and those who were not. Significantly more women were followed up than were not followed up. Many of the significant differences suggest that followed-up clients were worse off than clients who were not followed up. For example, significantly more followed-up clients reported they had difficulty meeting basic living needs as well as health care needs for financial reasons. Second, significantly more clients who were included in the follow-up sample reported they had a chronic medical problem and they had a lower average rating of their overall health and more days their physical health was not good when compared to clients who were not in the follow-up sample. Third, significantly more followed-up clients reported they were currently homeless at treatment intake when compared to clients who were not followed up. Fourth, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Fifth,

significantly more followed-up clients reported an arrest in the 12 months before entering treatment. Sixth, significantly more clients who were followed up reported using marijuana, stimulants, cocaine, and heroin, and illegal use of prescription opioids, buprenorphine-naloxone, and tranquilizers/sedatives/benzodiazepines. Significantly more followed-up clients reported using alcohol, smoking tobacco, and using vaporized tobacco compared to clients who were not followed up. Seventh, 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, met or surpassed the cutoff score for drug 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. A higher percentage of clients who were not followed up reported their usual living situation was in jail or prison than clients who were followed up. Also, 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.