Kentucky Treatment Outcome Study

2022 ANNUAL REPORT

PROJECT ACKNOWLEDGMENTS

Sponsored by:

Kentucky Department of Behavioral Health, Developmental and Intellectual Disabilities
Division of Behavioral Health
275 E. Main St. 4WG, Frankfort, KY 40621
(502) 564-4448

Wendy Morris
Commissioner
Department of Behavioral Health, Developmental and Intellectual Disabilities

Koleen Slusher
Director
Division of Behavioral Health

Maggie Schroeder
Program Manager
Substance Abuse Treatment and Recovery Services

Prepared by:

University of Kentucky
Center on Drug & Alcohol Research
333 Waller Avenue, Suite 480, Lexington, KY 40504
http://cdar.uky.edu/bho

Intake Surveys Completed from July 2019 to June 2020 and Follow-Up Surveys Completed from July 2020 through June 2021

Suggested citation: Cole, J., Logan, T., & Scrivner, A. (2022). *Adult Kentucky Treatment Outcome Study 2022 Annual Report*. Lexington, KY: University of Kentucky, Center on Drug & Alcohol Research.

TABLE OF CONTENTS

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 = 4,575 in FY 2020) and a follow-up interview administered by the University of Kentucky Center on Drug & Alcohol Research (CDAR) staff with 839 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 60.6%. 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 91% at intake to 31% at follow-up. A trend report of illegal drug use at intake and follow-up over the past 14 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 four years (88%-91%) 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 52% at intake to 24% at follow-up.

Overall, the percent of clients who met DSM-5 study criteria suggesting no substance use (alcohol and/or drug use) disorder increased from 22% at intake to 77% 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 about one-half (49%) 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 49% at intake to 30% at follow-up.

Past-12-month (85%) and past-30-day (81%) rates of smoking tobacco use were very high at intake, and even though there was a significant decrease at follow-up, the percent of individuals smoking tobacco was still high (78% and 73%, respectively). There was a significant, but small decrease in the percent of KTOS clients who reported past-12-month use of vaporized nicotine from intake (35%) to follow-up (29%).

For the third consecutive year, among individuals who completed an intake survey in FY 2020, a higher percentage of clients reported using methamphetamine (50%) in the past 12 months than reported using prescription opioids (26%), buprenorphine-naloxone (18%), heroin (12%), and methadone (3%).

MENTAL HEALTH, PHYSICAL HEALTH, AND VICTIMIZATION

The mental health of clients who participated in treatment also significantly improved from treatment intake to 12-month follow-up. Over half of clients (54%) met study criteria for depression at intake compared to 33% of clients at follow-up. Over half of clients (55%) met study criteria for generalized anxiety at intake compared to 30% at follow-up. About 42% of clients met study criteria for both depression and generalized anxiety compared to 20% at follow-up. In addition, 20% of clients reported suicidal ideation or attempts at intake compared to 9% at follow-up. The average number of days individuals reported their mental health was not good out of the past 30 decreased significantly from 13 at intake to 5.9 at follow-up. At intake, one-fourth of individuals (25%) screened positive for PTSD, while at follow-up, 15% screened positive for PTSD. Additionally, interpersonal victimization experiences in the past 12 months decreased from 34% of clients at intake to 16% at follow-up. Trends for the past ten years show that the average number of days clients reported poor mental health in the past 30 days has increased from 9.7 in FY 2014 to 13.0 in FY 2020. Nonetheless, the average number of days clients reported their mental health was not good has remained significantly lower at follow-up, compared to intake, each year since FY 2013.

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 was poor in the past 30 days at follow-up compared to intake (4.2 vs. 6.3). Trends for the past ten 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.

ECONOMIC AND LIVING CIRCUMSTANCES

KTOS clients showed improvements in economic and living circumstances from intake to follow-up. First, significantly fewer

> *They made me feel comfortable and listened to. Taught me coping skills inside and outside the facility. Helping me find different things to help the actual problem.*
>
> - KTOS FOLLOW-UP CLIENT

clients reported they were homeless at follow-up (7%) than at intake (29%). Trend data shows that the percent of clients reporting homelessness at treatment intake has increased since FY 2014 (8%) to FY 2020 (29%), while at follow-up, the percent of clients reported homelessness has been between 3% to 8% in the same timeframe.

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 (6% vs. 3%).

Furthermore, about 43% of clients reported being currently employed full time at follow-up compared to only 25% at intake. The average number of months clients reported working in the past 12 months increased significantly from 4.7 months at intake to 5.8 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 34%. The percent of clients who reported they had difficulty obtaining health care (e.g., doctor visits, dental visits, and prescription medications) for financial reasons decreased significantly from 28% at intake to 21% 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 52% at intake to 26% at follow-up. The percent of individuals who reported they had been incarcerated in the past 12 months decreased from 65% at intake to 28% at follow-up. Trend analyses show that, overall, the percent of clients who reported an arrest was consistent over the past 14 years at intake (minimum of 52% in FY 2020, maximum of 62% in FY 2019) 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 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 (9% vs. 37%) and felony (6% vs. 29%) than at intake.

QUALITY OF LIFE

Compared to intake (7.0), individuals rated their quality of life as significantly higher at follow-up (7.7) on a scale from 1 to 10.

RECOVERY SUPPORTS

Compared to intake (35%), significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up (48%). Compared to intake, significantly more individuals reported they had recovery supportive interactions with a sponsor at follow-up (20% vs. 31%). Also, individuals reported having more people they could count on for recovery support at follow-up (9.5) than at intake (6.2). 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.

Overall, Kentucky substance abuse treatment clients made significant improvements in all targeted areas

Significant decreases in substance use

REPORTED ANY ILLEGAL DRUG USE***

91% at intake | **31%** at follow-up

REPORTED ANY ALCOHOL USE***

52% at intake | **24%** at follow-up

Significant improvements in mental health

MET STUDY CRITERIA FOR DEPRESSION***

54% at intake | **33%** at follow-up

MET STUDY CRITERIA FOR ANXIETY***

55% at intake | **30%** at follow-up

Significant improvements in employment and economic hardship

CURRENTLY EMPLOYED FULL-TIME***

25% at intake | **43%** at follow-up

REPORTED DIFFICULTY MEETING BASIC LIVING NEEDS***

46% at intake | **34%** at follow-up

REPORTED DIFFICULTY MEETING HEALTH CARE NEEDS***

28% at intake | **21%** at follow-up

Significant decreases in criminal justice involvement

REPORTED ANY ARREST***

52% at intake | **26%** at follow-up

REPORTED BEING INCARCERATED***

65% at intake | **28%** at follow-up

Significant improvements in recovery support

REPORTED ATTENDING MUTUAL HELP RECOVERY MEETING IN THE PAST 30 DAYS ***

35% at intake | **48%** at follow-up

AVERAGE NUMBER OF RECOVERY SUPPORT PERSONS***

6.2 at intake | **9.5** 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. 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 35% which means that more than one-third (40%) had all eight dimensions of recovery.

RELAPSE

Results of multivariate analysis show that when controlling for other variables in the model, being male, being younger, and having more depression and/or anxiety symptoms at intake were significantly associated with greater odds of illegal drug use and/or problematic alcohol use in the 12 months before follow-up.

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 8.0 out of 10. Most clients (89%) indicated they would refer a close friend or family member to their treatment provider. The majority of clients reported the following at follow-up: program staff believed in them and that the treatment would work for them; program staff cared about them and their progress; when they told their counselor or program staff personal things, they felt listened to and heard by them; their expectations and hopes for treatment and recovery were met; they had input into their treatment goals, plans, and how they were progressing over time; they had a connection with a staff person; they worked on and talked about things that were most important to them in the program; 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 alcohol in the 12 months before intake. Significantly more women than men reported using opioids, CNS depressants, and stimulants in the past 12 months before intake. Significantly more men than women reported using other illegal drugs (i.e., inhalants, hallucinogens) in the 12 months before intake, and alcohol, alcohol to intoxication, and binge drinking in the 30 days before intake. Significantly more men reported using smokeless tobacco at intake and follow-up (for the 12-month and 30-day periods), while significantly more women used vaporized nicotine in the 12 months before follow-up.

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 anxiety at follow-up, 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 and follow-up.

Women's housing situation, employment, and economic hardship were worse than men's situations. First, significantly more women reported homelessness at intake when compared to men. Significantly more women were unemployed at intake and follow-up when compared to men. Likewise, significantly more men reported they had full-time employment at intake and follow-up when compared to women. Among individuals who were currently employed, men reported working significantly more months at both intake and follow-up. Employed men also had a significantly higher median hourly wage than employed women at both intake and follow-up. At intake, employed women made only $0.77 for every dollar employed men made, and at follow-up, employed women made $0.74 for every dollar employed men made. Women also reported more economic difficulties at both intake and follow-up compared to men. Thus, even though women made significant overall gains in their employment by follow-up, they were still behind men in their economic standing.

A higher percentage of men reported arrests and criminal justice supervision at intake compared to women. Significantly more men reported a conviction for misdemeanor offenses at intake and follow-up compared to women. Significantly more men reported incarceration at intake and follow-up when compared to women.

Significantly more women than men attended mutual help recovery meetings and had contact with a sponsor in the 30 days before follow-up. Finally, even though only a small percent of women and men had all eight dimensions of recovery at intake, significantly more women had all eight dimensions at intake.

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 $4.52 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 2022 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 interpersonal victimization, improved physical health, increased full-time employment, decreased homelessness, decreased economic hardship, decreased involvement with the criminal justice system, and increased recovery support. 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 consistently 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, sizable minorities of clients had negative outcomes at the 12-month follow-up. For example, half were unemployed at follow-up, nearly one-third of KTOS clients reported using illegal drugs, nearly one-fourth of clients reported using alcohol, and 15.0% met criteria for severe SUD at follow-up. A little less than half of followed up clients were unemployed at follow-up. Nearly one-third of clients still reported having difficulty meeting basic living needs and about 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 (39.5% vs. 5.0%), the majority of individuals (61.5%) were still classified as having at least one negative recovery dimension. 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.

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, 2019 and June 30, 2020 (N = 4,575). This section also describes characteristics of 839 clients who completed a 12-month follow-up interview between July 1, 2020 and June 30, 2021.

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 2022 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) Posttraumatic stress disorder, (6) perceptions of poor physical and mental health, (7) overall health status, (8) chronic medical problems at intake, (9) chronic pain, (10) health insurance, and (11) interpersonal victimization experiences. Mental health and physical health questions in the KTOS intake and follow-up surveys were self-report measures.

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 during the 12-month period before entering treatment and the 12-month period before the follow-up interview.

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, 2019 and June 30, 2020 (N = 4,575). This section also describes characteristics of 839 clients who completed a 12-month follow-up interview between July 1, 2020 and June 30, 2021.

STUDY OVERVIEW

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

KTOS includes an evidence-based face-to-face interview with clients that is completed by program staff at treatment intake to assess targeted factors prior to entering treatment.[1] In FY 2020, 4,575 adults completed an intake survey between July 1, 2019 and June 30, 2020.[2]

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

The UK CDAR research team secured a good follow-up rate of 60.6% and a low refusal rate (3.1%) for participation in the interviews. That means that 36.3% of clients were not successfully contacted to complete the follow-up telephone interviews (see Appendix A for detailed information on study methods). The lower response rate was, in part, due to being shut down during COVID for almost 3 months and because people were less likely to answer their phones and agree to a survey during COVID.

[1] 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.

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

SELF-REPORT DATA

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

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

---

[3] Del Boca, F.K., & Noll, J.A. (2000). Truth or consequences: The validity of self-report data in health services research on addictions. *Addiction, 95*, 347-360.

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

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

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

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

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

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

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

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

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

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

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

(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.

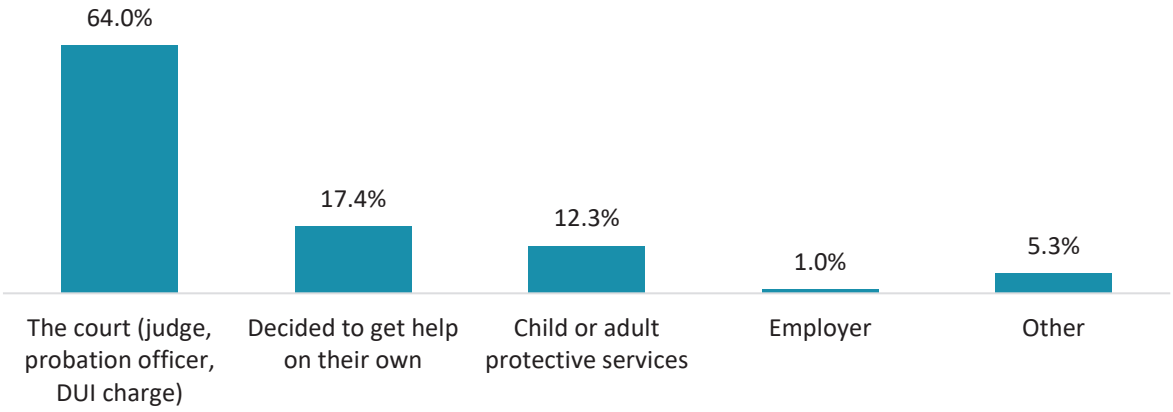
This report describes the sample of treatment clients in two main ways: (1) providing a description of characteristics for 4,575 adults who completed an intake interview in FY 2020 (July 1, 2019 – June 30, 2020), and (2) presentation of client characteristics for 893 adults who completed an intake interview in FY 2020 and a 12-month follow-up telephone interview with a target date between July 1, 2020 and June 30, 20210.

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. The majority of clients (64.0%) 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. About 17 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 (12.3%) or other referral sources (5.3%; 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 (1.0%).

FIGURE 1.1. SELF-REPORTED REFERRAL SOURCE FOR ALL KTOS CLIENTS AT INTAKE (N = 4,575)



DEMOGRAPHICS

Table 1.1 shows that over half of clients with an intake survey completed in FY 2020 were male (56.9%) and the majority were White (90.9%). A minority of clients reported their race as African American/Black (5.4%) and 3.7% reported they were American Indian, Asian, Hispanic, or multiracial. Clients were, on average, 36.0 years old, ranging from 18 to 74 years old at intake. At intake, around two-fifths (42.2%) were married or cohabiting with a partner, 29.5% had never been married (and were not cohabiting), 26.3% were separated or divorced, and 2.0% were widowed. More than three-quarters of clients reported they had at least one child, and 59.4% had children under the age of 18. A small number of KTOS clients (3.1%) reported they were a

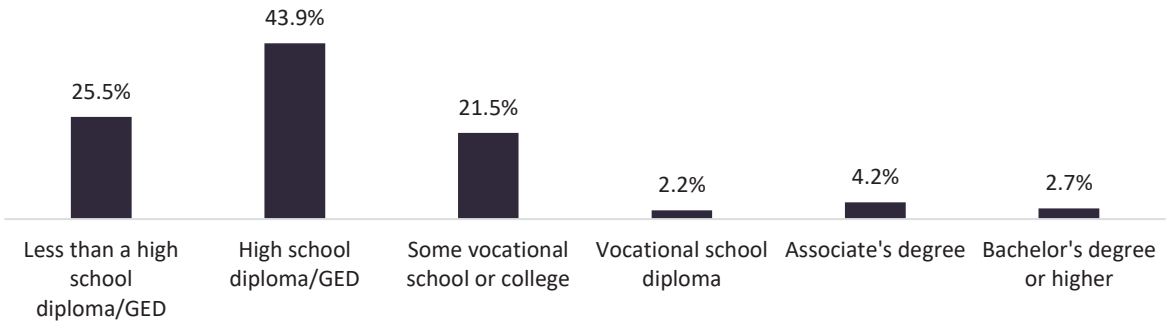
veteran or were currently serving in the military, Reserves, or National Guard.

TABLE 1.1. DEMOGRAPHICS FOR ALL KTOS CLIENTS AT INTAKE (N = 4,575)[15]

Age	36.0 years *(range of 18-74)*
Gender	
Male	56.9%
Female	42.9%
Transgender	0.2%
Race	
White	90.9%
African American	5.4%
Other or multiracial	3.7%
Marital Status	
Married or cohabiting	42.2%
Never married	29.5%
Separated or divorced	26.3%
Widowed	2.0%
Have Children	76.2%
Have Children under the age of 18	59.4%
Veteran or Currently Serving in Military	3.5%

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 43.9% of the sample was a high school diploma or GED. Around one-fifth of clients (21.5%) had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (2.2%), an associate's degree (4.2%), or a bachelor's degree or higher (2.7%).

FIGURE 1.2. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 4,575)

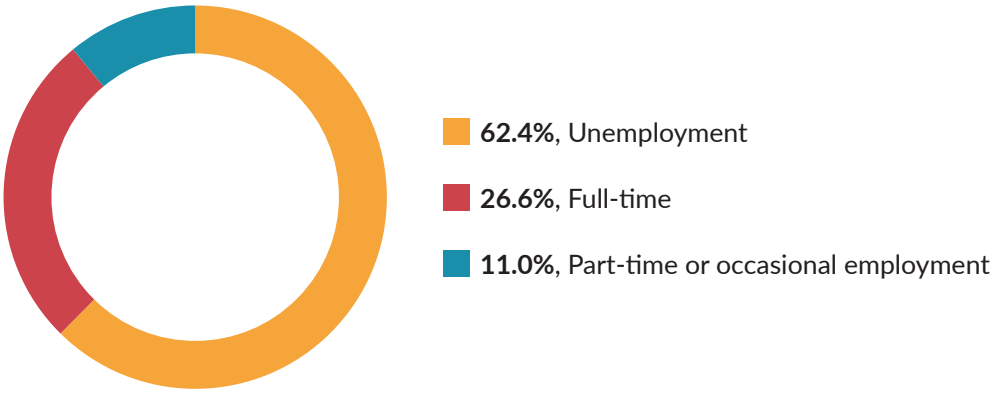


[15] One client had missing data for DOB, and thus, their age. Three clients had missing data for their race.

EMPLOYMENT

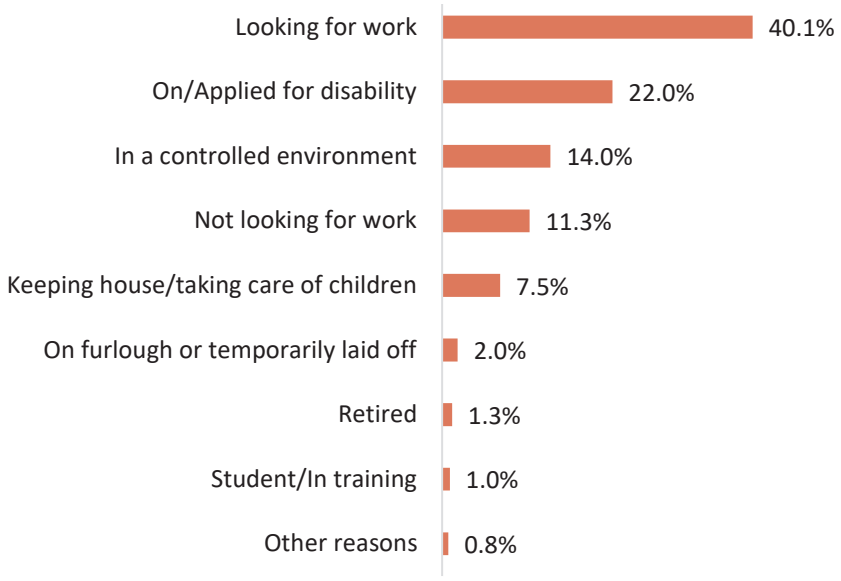
At intake, 40.6% of clients reported they had worked 0 months in the past 12 months, 21.0% had worked 1 to 5 months, and 38.4% had worked 6 or more months (not depicted in a figure). Also, the majority of individuals reported they were unemployed in the 30 days before entering treatment (62.4%), with 26.6% being employed full-time, and 11.0% 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 $11.00.

FIGURE 1.3. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 4,575)



Of the individuals who were currently unemployed at intake (n = 2,856)[16], 40.1% stated they were looking for work, 22.0% were on disability (or had applied for disability), 14.0% were in a controlled environment that prohibited them from working, 11.3% were unemployed and not looking for work, 7.5% were keeping the house or taking care of children full-time at home, 2.0% were on furlough or temporarily laid off, 1.3% were retired, and 1.0% were students or in training. The remaining 0.8% gave other reasons for not being employed (e.g., health problems prevented them from work but they were not on disability, were doing odds jobs on the side) (see Figure 1.4).

FIGURE 1.4. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 2,847)

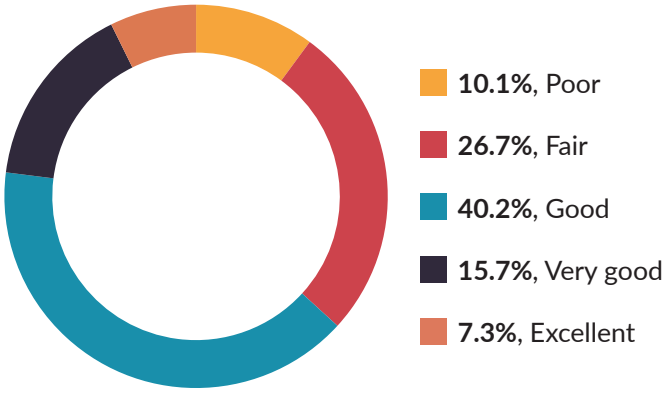


[16] Nine individuals had missing values for the reason they were unemployed at intake.

PHYSICAL HEALTH

KTOS clients rated their overall health at intake (see Figure 1.5). One in 10 clients reported their health was poor and 26.7% said their health was fair. Two-fifths of clients (40.2%) reported their overall health was good, 15.7% reported very good overall health, and 7.3% said their health was excellent.

FIGURE 1.5. OVERALL HEALTH RATING AT INTAKE (N = 4,575)



Three in 10 KTOS clients (30.3%) 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 (17.4%), hepatitis C (14.3%), cardiovascular/heart disease (13.7%), asthma (12.7%), and severe dental problems (10.5%).

The majority of KTOS clients reported they had insurance through Medicaid (70.2%) at intake. About one in ten clients did not have any insurance (11.8%). Small numbers of clients had insurance through an employer, including through their own employer, a spouse's, parent's, or self-employment (7.0%), through Medicare (8.2%), through the Health Exchange (0.5%), 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.

> *It helped 100%, mentally and they made me feel welcomed.*
>
> - KTOS FOLLOW-UP CLIENT

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KTOS CLIENTS AT INTAKE (N = 4,575)

Chronic Pain	30.3%
At Least One Chronic Medical Problem	52.8%
Arthritis	17.4%
Hepatitis C	14.3%
Cardiovascular/heart disease	13.7%
Asthma	12.7%
Severe dental problems	10.5%
Chronic obstructive pulmonary disease	6.2%
Seizures	6.0%
Diabetes	5.3%
Insurance	
No insurance	11.8%
Medicaid	70.2%
Through employer *(including client's employer, spouse's employer, parents' employer, and self-employed)*	7.0%
Medicare	8.2%
Through Health Exchange	0.5%
VA/Champus/Tricare	0.5%
Insured, but source is not known	1.8%

SUBSTANCE USE

The majority of adults who completed an intake survey reported using alcohol and/or illegal drugs (88.0%) in the 12 months before entering treatment (see Figure 1.6).[17] The drug classes reported by the greatest number of clients were marijuana (51.0%) and non-prescribed stimulants (49.5%), followed by prescription opioids (26.3%), non-prescribed buprenorphine-naloxone (17.9%), and non-prescribed sedatives/tranquilizers/benzodiazepines (16.1%; not depicted in a figure). A higher percentage of individuals reported using illegal drugs (77.4%) compared to the percentage of individuals who reported using alcohol (43.5%) in the 12 months before entering treatment. Most clients reported smoking tobacco (82.0%) in the 12 months before intake.

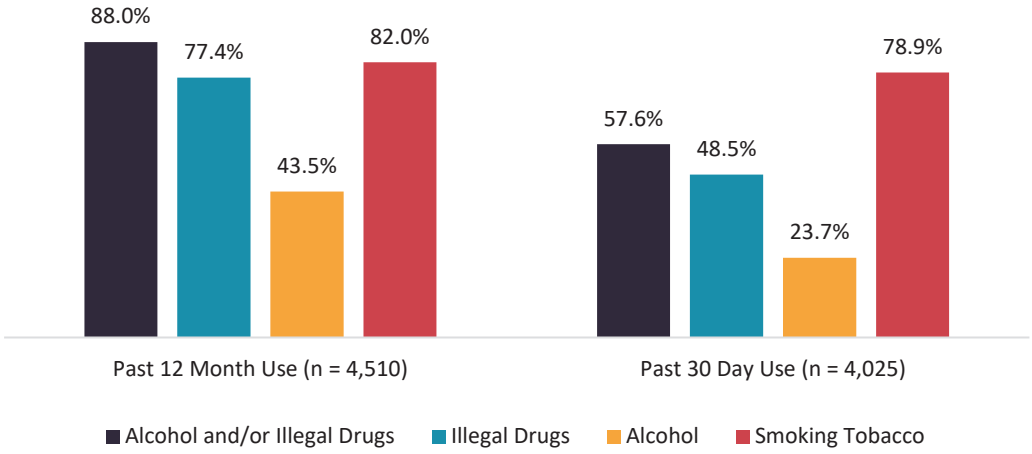
Of the 4,025 individuals who were not in a controlled environment all 30 days,[18] over half (57.6%) reported using illegal drugs and/or alcohol in the past 30 days at intake. Specifically, 48.5% reported using illegal drugs and 23.7% reported using alcohol. Also, 78.9% reported

[17] Sixty-five individuals reported being incarcerated all 365 days before intake. Because opportunities to use alcohol and drugs are reduced while incarcerated, these 65 individuals were not included in this analysis.

[18] Because being in a controlled environment decreases opportunities for substance use, individuals who were in a controlled environment all 30 days before entering treatment (n = 550) are not included in the analysis of substance use in the 30 days before entering treatment.

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

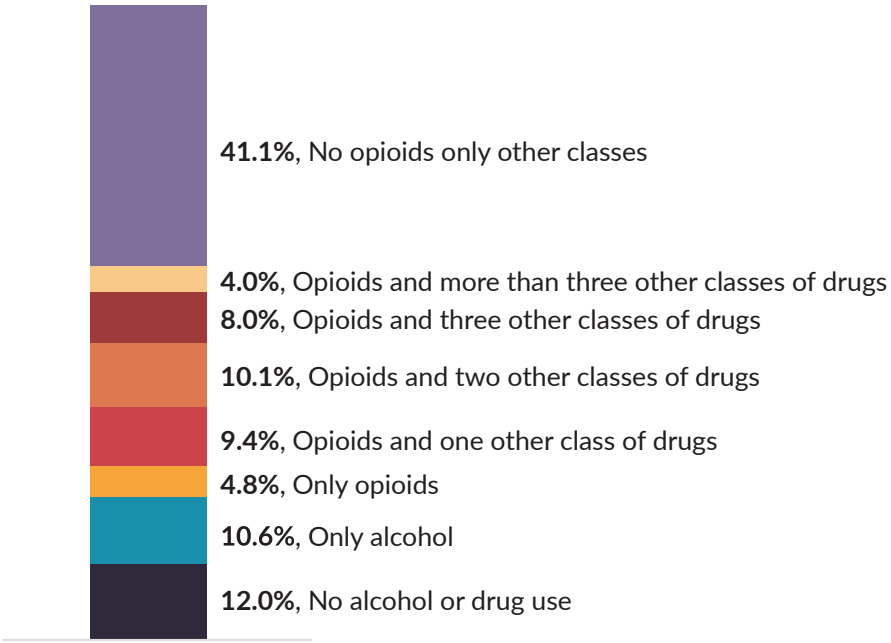


At intake, about one-third of clients (33.9%) reported that they had ever injected drugs in their lifetime (not depicted in a figure).

The majority of clients reported they had been in substance abuse treatment in the past (58.1%). Of the 2,659 clients who reported they had previously been in treatment, they reported an average of 2.9 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 (12.0%), alcohol only (10.6%), no opioids and other drug classes only (41.1%), and opioids only (4.8%). Figure 1.7 shows the percent of clients who reported using opioids with one other drug class (9.4%), opioids with two other drug classes (10.1%), opioids with three other drug classes (8.0%), and opioids with three or more other drug classes (4.0%).

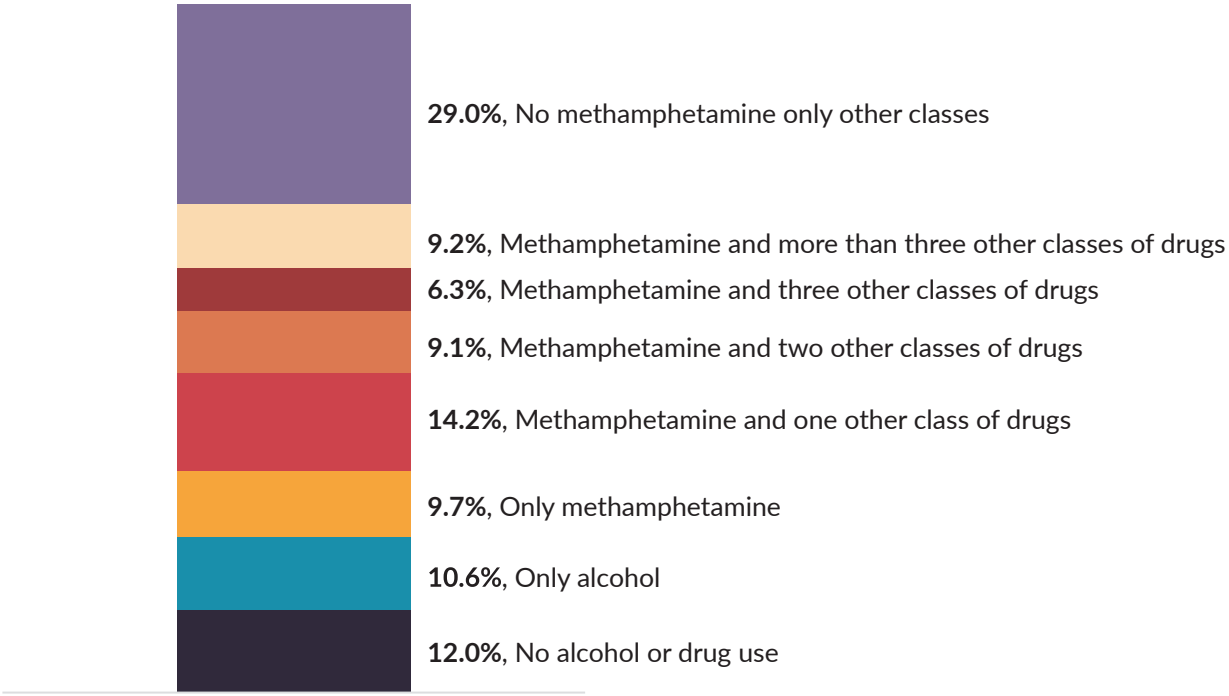
FIGURE 1.7. OPIOID AND OTHER DRUG CLASS USE IN THE 12 MONTHS BEFORE TREATMENT[19]



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 (12.0%), alcohol only (10.6%), no methamphetamine and other drug classes only (29.0%), and methamphetamine only (9.7%). The following percentages of clients reported using methamphetamine and other drug classes at intake: one other drug class (14.2%), two other drug classes (9.1%), three other classes (6.3%), and more than three classes (9.2%).

[19] 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[20]

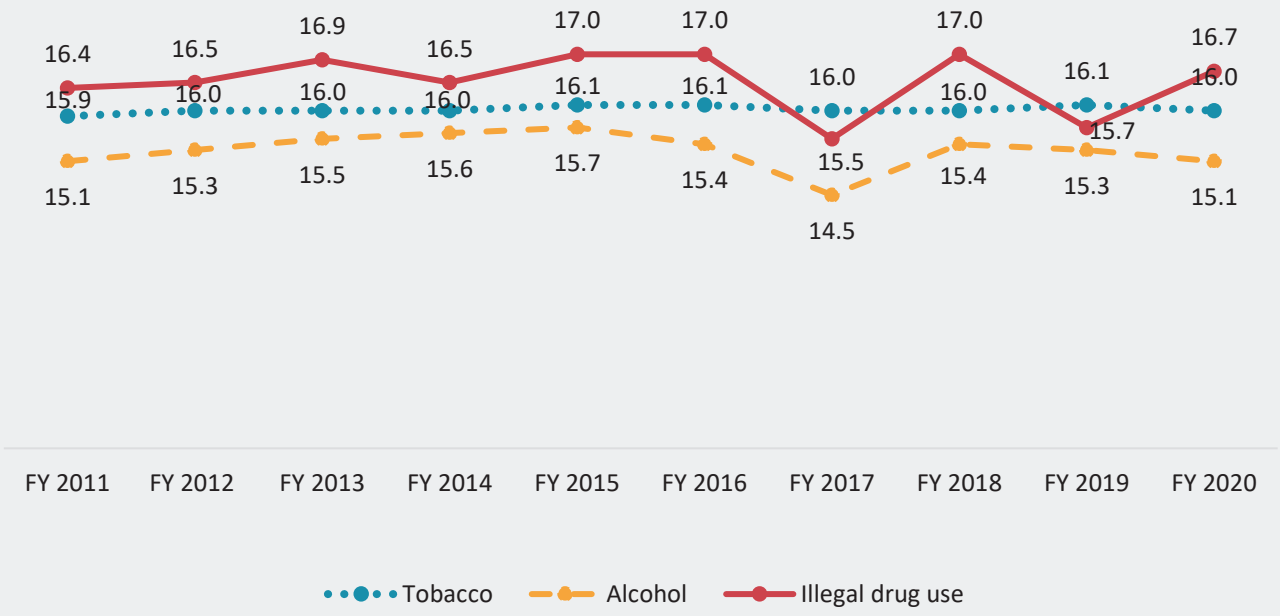


[20] The broad drug classes examined were (1) Marijuana/cannabis, (2) Opioids other than heroin, (3) Heroin, (4) CNS depressants, (5) Cocaine and stimulants, and (5) Other drugs (hallucinogens, inhalants, synthetic drugs).

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 decrease in FY 2017 to 15.5 and in FY 2018 to 15.7. 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 10 years.

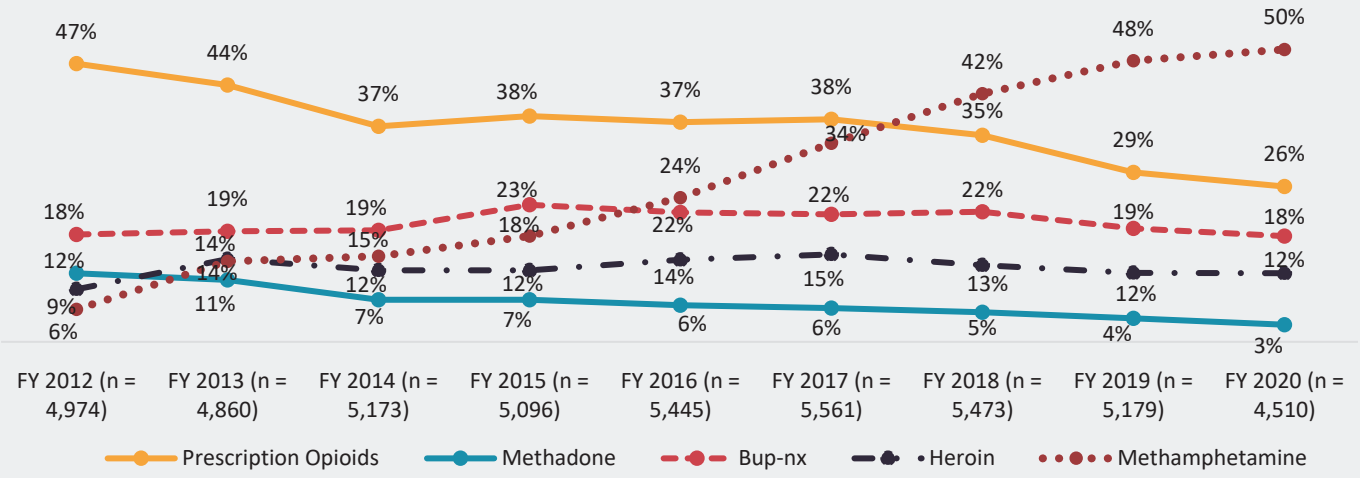
FIGURE 1.9. TRENDS IN AGE OF FIRST USE REPORTED AT INTAKE, FY 2011-FY 2020



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 (47%) and steadily dropped in FY13 and FY14, stayed steady through FY 2018, and decreased in FY 2019 (29%) and FY 2020 (26%). The percent of clients who reported using non-prescribed methadone in the 12 months before entering treatment has declined from FY12 (12%) to FY20 (3%). 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 and remaining at 22% in FY 2016 through FY 2018. The past two years, the percent of clients reporting non-prescription bup-nx use has been just under 20%. 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 seven years to 50% in FY20, 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 = 46,271)[21]

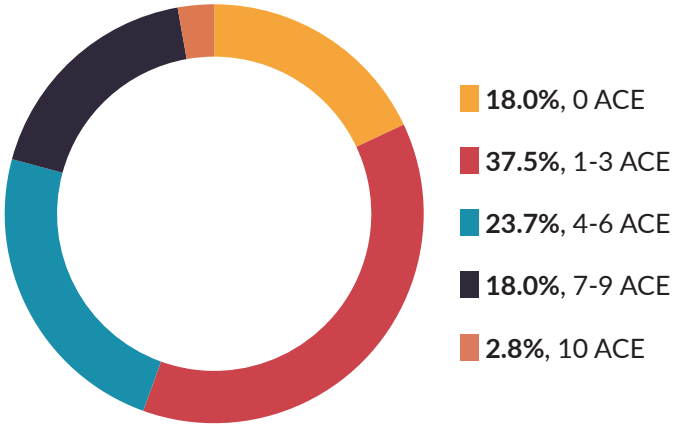


[21] Clients who reported being in a controlled environment all 365 days before entering treatment are not included in this analysis.

ADVERSE CHILDHOOD EXPERIENCES

Items about ten adverse childhood experiences from the Adverse Childhood Experiences Study (ACE) were included in the intake interviews.[22], [23], [24] 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 3.5 (not depicted in figure). Figure 1.11 shows that 18.0% reported experiencing none of the ACE included in the interview. Under two-fifths (37.5%) reported experiencing 1 to 3 ACE, 23.7% reported experiencing 4 – 6 ACE, and 18.0% reported experiencing 7 – 9 ACE. A very small percent (2.8%) reported experiencing all 10 types of adverse childhood experiences.

FIGURE 1.11. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES (n = 4,575)



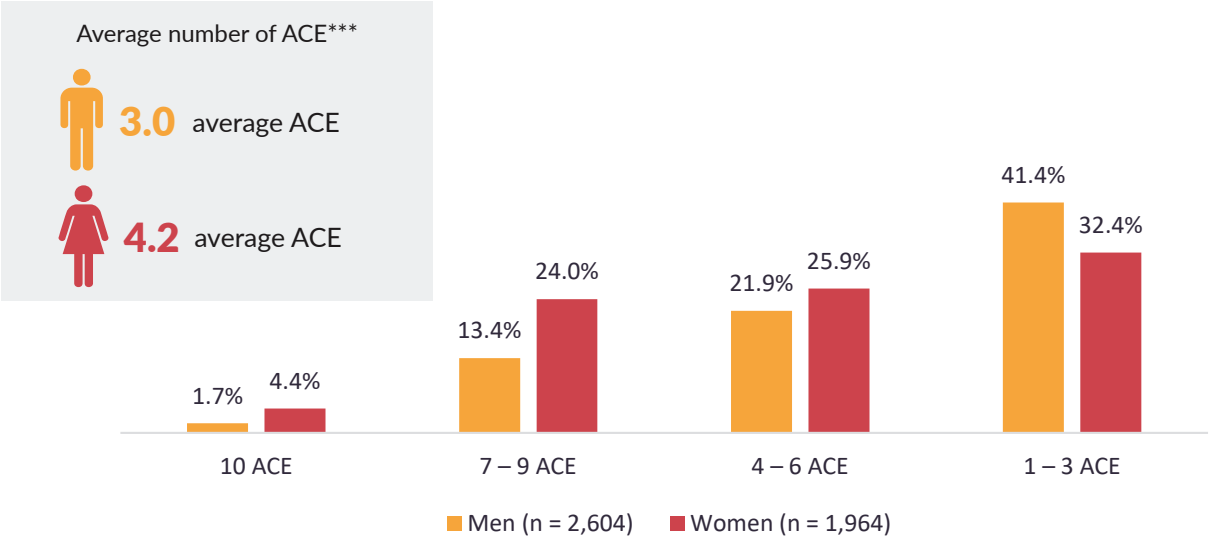
There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.12). Significantly more men than women reported experiencing 0 ACE as well as 1 to 3 types of ACE, whereas significantly more women than men reported experiencing 4 – 6 types of ACE,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

[22] 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.

[23] 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.

[24] 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).

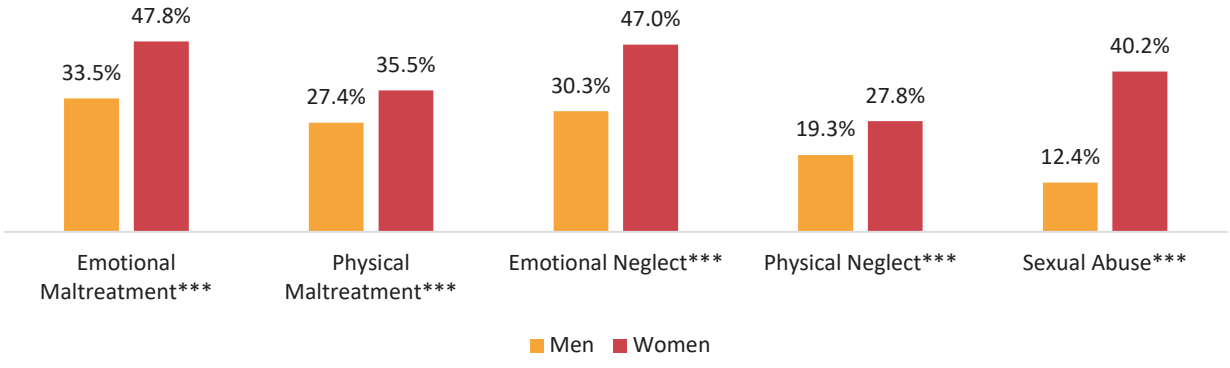
FIGURE 1.12. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER



***p < .001.

Significantly more women than men reported experiencing all five types of measured childhood maltreatment. Nearly half of women (47.8%) reported they had experienced emotional maltreatment in their childhood, compared to 33.5% of men (see Figure 1.13). More than one-third of women and more than one-fourth of men reported physical maltreatment. A little less than half of women (47.0%) reported they had experienced emotional neglect compared to 30.3% of men. More than one-fourth of women reported they experienced physical neglect in their childhood homes, which was significantly higher than the 19.3% of men who reported this. About 3.25 times as many women compared to men reported sexual abuse before the age of 18 as men. Nonetheless, 1 in 8 men reported sexual abuse before the age of 18.

FIGURE 1.13. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD BY GENDER (n = 4,568)

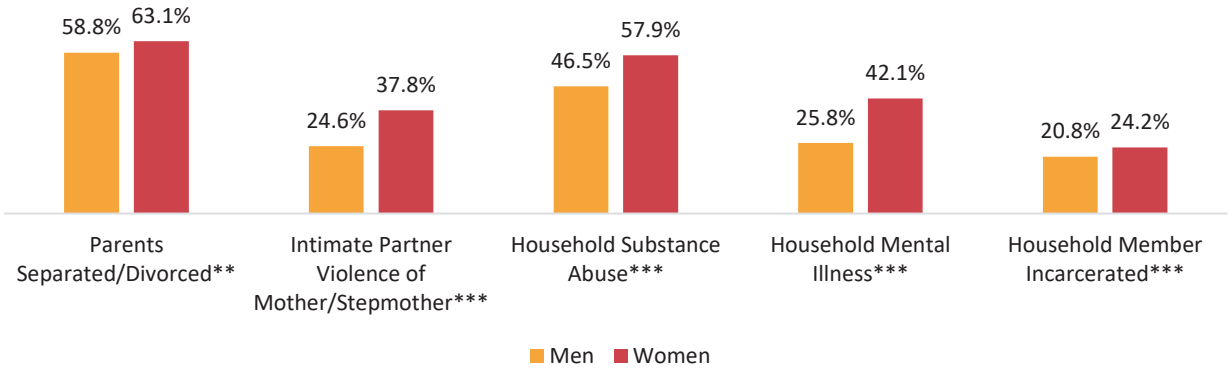


***p < .001.

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. About 42% of women reported that someone in their household was depressed, mentally ill, or had attempted suicide compared to 25.8% of men. About 1 in 5 men and almost 1 in 4 women reported a household member had been incarcerated.

FIGURE 1.14. HOUSEHOLD RISKS IN CHILDHOOD BY GENDER (n = 4,568)

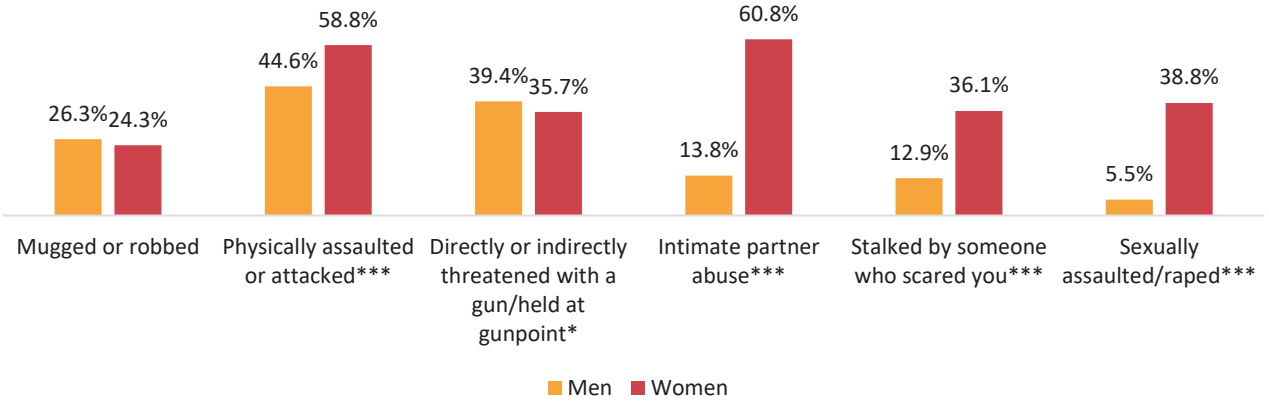


**p < .01, ***p < .001.

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. Around three-fourths of women (76.2%) and 60.0% reported experiencing at least one type of victimization not classified as an ACE that are presented in Figure 1.15. 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. Significantly more men than women reported having been directly or indirectly threatened with a gun/held at gunpoint.

> *They have compassion and care about their jobs. Most of the people there used to be addicts and understand where you are coming from.*
>
> - KTOS FOLLOW-UP CLIENT

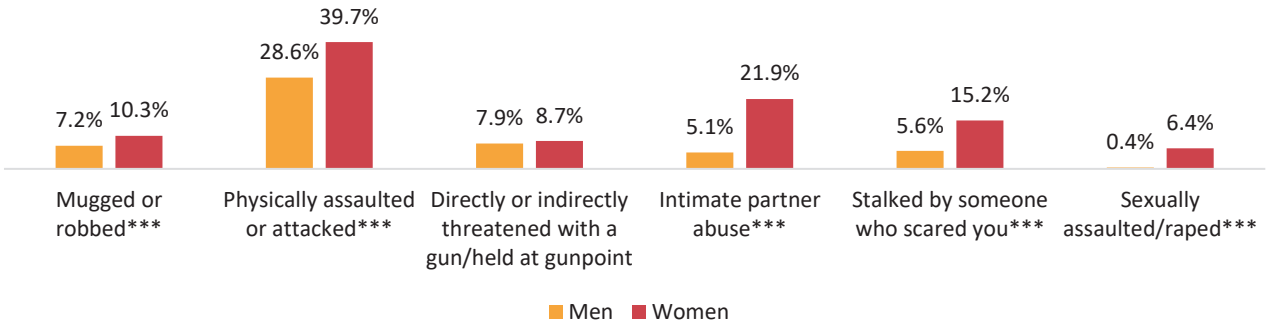
FIGURE 1.15. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 4,568)



*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 = 4,568)



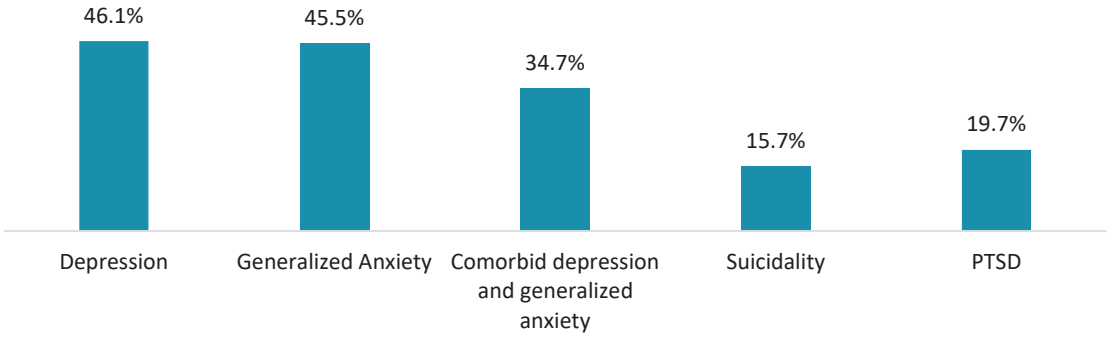
***p < .001.

MENTAL HEALTH

At intake, 46.7% of individuals met study criteria for depression in the 12 months before they entered treatment (see Figure 1.17). Additionally, 45.5% of clients met study criteria for

generalized anxiety at intake and 34.7% of clients met study criteria for comorbid depression and generalized anxiety. About 16% of individuals reported suicidal thoughts or attempts in the 12 months before entering treatment and 19.7% of clients had PTSD scores that indicated a risk of PTSD.

FIGURE 1.17. DEPRESSION, GENERALIZED ANXIETY, SUICIDALITY, AND POST TRAUMATIC STRESS DISORDER IN THE PAST 6 MONTHS AT INTAKE (N = 4,575)

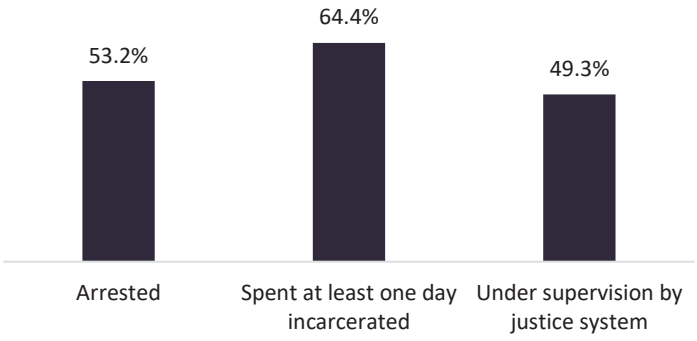


CRIMINAL JUSTICE INVOLVEMENT

Over half of individuals reported being arrested at least once (53.2%) and 64.4% of clients reported being incarcerated at least one night in the 12 months before treatment (see Figure 1.18). Around one half (49.3%) 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 = 2,435), they were arrested an average of 2.0 times. Among those who were incarcerated in the past 12 months (n = 2,947), they were incarcerated an average of 77.2 nights (not depicted in a figure).

FIGURE 1.18. CRIMINAL JUSTICE INVOLVEMENT 12 MONTHS BEFORE TREATMENT AT INTAKE (N = 4,575)



DESCRIPTION OF KTOS FOLLOW-UP SAMPLE AT INTAKE

This report describes outcomes for 839 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 375.3 days) after the intake survey was completed.[25] 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, 1,592 individuals were then randomly selected by the month in which they completed intake surveys. The number of individuals eligible for follow-up was lower than in previous years, because of the lower number of intake surveys completed in 2020 (i.e., the first year of the COVID-19 pandemic). 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 (3.1%) and in a good follow-up rate (60.6%). This means that 36.3% of individuals included in the sample to be followed up were not successfully contacted.[26] 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.

DEMOGRAPHICS

Of the 839 adults who completed a 12-month follow-up interview, 50.4% were male and 49.6% were female (see Table 1.3). The majority of follow-up clients were White (90.8%). A minority were African American/Black (5.7%) and 3.5% were Hispanic, American Indian, or multiracial. Clients in the follow-up sample were an average of 35.2 years old at the time of the intake interview. Over two-fifths of clients (44.6%) reported they were married or cohabiting at intake, 28.0% were never married (and not cohabiting), 25.4% were separated or divorced, and 2.0% were widowed. A little more than three-fourths (76.5%) of followed-up clients had at least one child, with 60.6% having at least one child under the age of 18. A small percentage of the follow-up sample (3.6%) reported they were a veteran or currently serving in the military, Reserves, or National Guard.

[25] The average number of days between when the baseline was submitted to UK CDAR and when the follow-up was completed was 374.3 days.

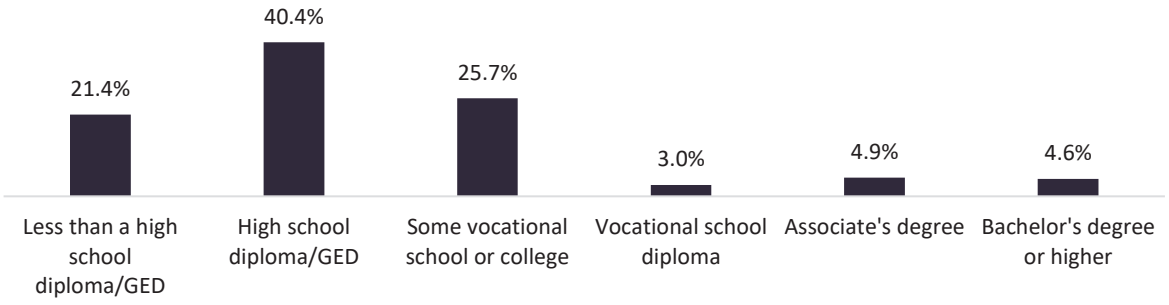
[26] Clients are not contacted for a variety of reasons including follow-up staff are not able to find a working address or phone number or are unable to contact any friends or family members of the client.

TABLE 1.3. DEMOGRAPHICS FOR KTOS CLIENTS WHO WERE FOLLOWED-UP AT INTAKE (n = 839)

Age	35.2 years *(range of 18-71)*
Gender	
Male	50.4%
Female	49.6%
Transgender	0.0%
Race	
White	90.8%
African American	5.7%
Other or multiracial	3.5%
Marital Status	
Married or cohabiting	44.6%
Never married	28.0%
Separated or divorced	25.4%
Widowed	2.0%
Have Children	76.5%
Have Children under the age of 18	60.9%
Veteran or Currently Serving in Military	3.6%

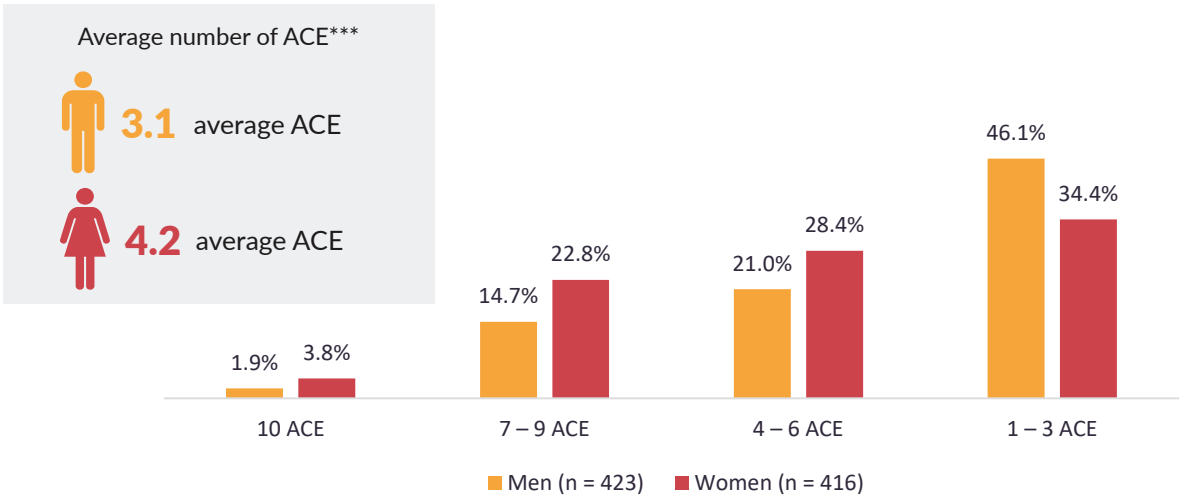
About one-fifth of follow-up clients (21.4%) had less than a high school diploma or GED at intake (see Figure 1.19). The highest level of education of 40.4% of the follow-up sample was a high school diploma or GED. About one-quarter of clients (25.7%) had completed some vocational/technical school or college. Only a small minority of clients had completed vocational/technical school (3.0%), an associate's degree (4.9%), or a bachelor's degree or higher (4.6%).

FIGURE 1.19. HIGHEST LEVEL OF EDUCATION COMPLETED BY FOLLOW-UP CLIENTS AT INTAKE (n = 839)



There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.20). 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 4 –6 and 7 – 9 types of ACE. Women had a higher average number of ACE compared to men (4.2 vs. 3.1).

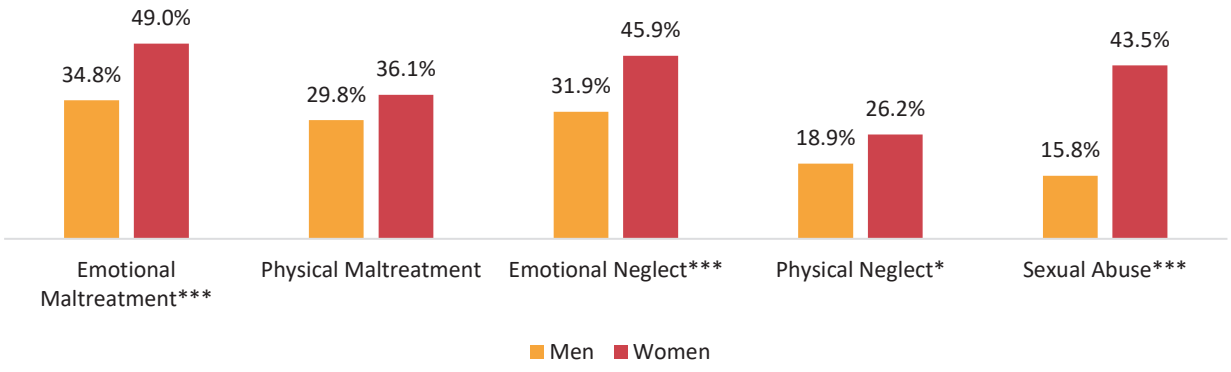
FIGURE 1.20. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES FOR FOLLOW-UP SAMPLE BY GENDER



***p < .001.

Compared to men significantly more women reported experiencing four of the five types of childhood maltreatment measured in the intake survey: emotional maltreatment, emotional neglect, physical neglect, and sexual abuse. Nearly half of women (49.0%) reported they had experienced emotional maltreatment in their childhood, compared to 34.8% of men (see Figure 1.21). More than one-third of women and more than one-fourth of men reported physical maltreatment, with no statistically significant difference by gender. Less than half of women (45.9%) reported they had experienced emotional neglect compared to 31.9% 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. About 2.75 as many women reported sexual abuse before the age of 18 compared to men. Nonetheless, 15.8% men reported sexual abuse before the age of 18.

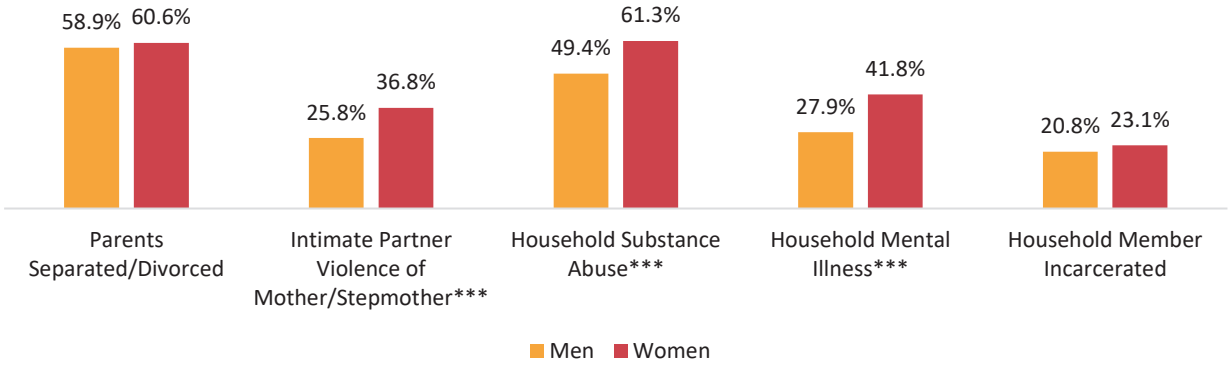
FIGURE 1.21. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD FOR FOLLOW-UP SAMPLE BY GENDER (n = 839)



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

Compared to men significantly more women reported three of five types of household risks: witnessing IPV of mother/stepmother, a household member having a substance abuse problem, and a household member being depressed, mentally ill or attempted suicide (see Figure 1.22). 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. About two-fifths of women reported that someone in their household was depressed, mentally ill, or had attempted suicide compared to 27.9% of men. About 1 in 5 individuals reported a household member had been incarcerated, with no difference by gender.

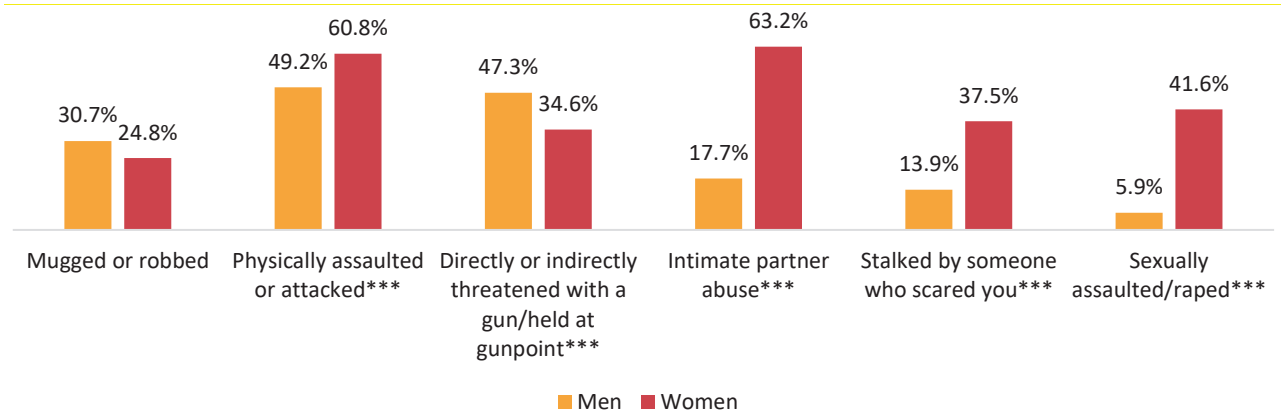
FIGURE 1.22. HOUSEHOLD RISKS IN CHILDHOOD FOR FOLLOW-UP SAMPLE BY GENDER (n = 839)



***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 (79.8%) and 68.1% of men reported experiencing at least one type of victimization not classified as an ACE that are presented in Figure 1.23. Similar percentages of men and women reported ever being mugged or robbed by someone threatening to use force or using force. Compared to women, significantly more men reported they had been directly or indirectly threatened with a gun or held at gunpoint in their lifetime. 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.

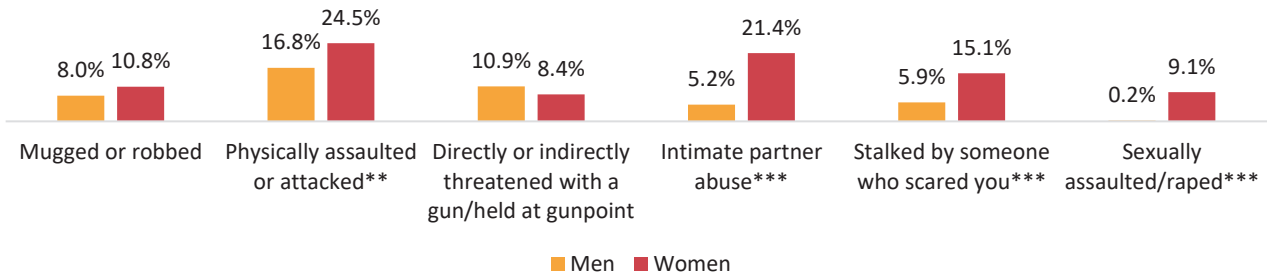
FIGURE 1.23. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION FOR FOLLOW-UP SAMPLE BY GENDER (n = 839)



***p < .001.

Smaller percentages of clients reported experiencing crime and interpersonal victimization in the 12 months before entering programs (see Figure 1.24). In contrast to the gender difference found for lifetime physical assault, significantly more women than men reported being physically assaulted/attacked in the 12 months before entering treatment. Significantly higher percentages of women than men reported being abused by an intimate partner, stalked by someone who scared them, and sexually assaulted or raped in the 12 months before entering treatment.

FIGURE 1.24. PAST-12-MONTH CRIME AND INTERPERSONAL VICTIMIZATION FOR FOLLOW-UP SAMPLE BY GENDER (n = 839)



**p < .01, ***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, education, employment, 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 = 839) and clients who did not complete a follow-up interview (n = 3,736).

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 chronic pain and a chronic medical problem compared to clients who were not in the follow-up sample. Third, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Because individuals who did not report any alcohol or drug use in the 12 months before entering treatment, were excluded from the follow-up sample, followed-up clients had higher percentages for many drug classes and alcohol use. Specifically, significantly more clients in the follow up sample reported using marijuana, stimulants, heroin, and illicit use of prescription opioids, buprenorphine-nalaxone, tranquilizers/sedatives/benzodiazepines compared to those who did not complete a follow-up. Significantly more followed-up clients reported using alcohol, alcohol use to intoxication, binge drinking, smoking tobacco, and using vaporized tobacco compared to clients who were not followed up. Along the same lines, 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. Some of the significant differences by follow-up status suggest that followed up clients had higher levels of education and more months of employment when compared to clients who did not complete a follow-up survey.

TABLE 1.4. FOLLOWED-UP VERSUS NOT FOLLOWED-UP

	Followed up	
	No (n = 3,736)	Yes (n = 839)
Demographic	Fewer female	More female
Socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs)	Lower level of education More worked 0 months	Higher level of education More worked 6 months or more More had difficulty meeting basic living and health care needs for financial reasons
Substance use, severity of alcohol and drug use		More reported marijuana, stimulants, heroin, and illicit use of prescription opioids, buprenorphine, and tranquilizers/sedatives/ benzodiazepines in the 12 months before entering treatment More reported alcohol use, alcohol to intoxication, binge drinking, smoking tobacco, and vaporized tobacco use in the 12 months before treatment More met or surpassed the cutoff score for alcohol and drug use substance use disorder
Physical health (e.g., chronic pain, chronic medical problems)		More had chronic pain More had chronic medical problems
Mental health (e.g., depression, generalized anxiety, suicidality)		More met study criteria for depression, generalized anxiety, and suicidality
Criminal justice involvement (e.g., arrested, incarcerated)	Among incarcerated individuals, reported a higher average number of nights incarcerated	

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 = 825)[27] 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 = 708)[28] 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 to self-report whether they met any of the 11 DSM-5 symptoms for substance use disorder (SUD)

[27] Cases were excluded from this analysis for the following reasons: they were incarcerated all 365 days before entering treatment (n = 11), they were incarcerated all 365 days before follow-up (n = 1), and they had missing values for the number of days incarcerated in the 12 months before follow-up (n = 2).

[28] 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 = 120) or all 30 days before the follow-up (n = 8 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 3 clients were excluded because the interviewer skipped the question about number of days in a controlled environment at follow-up.

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 = 434), alcohol (n = 232) and those with alcohol and/or illegal drug use (n = 513) 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.

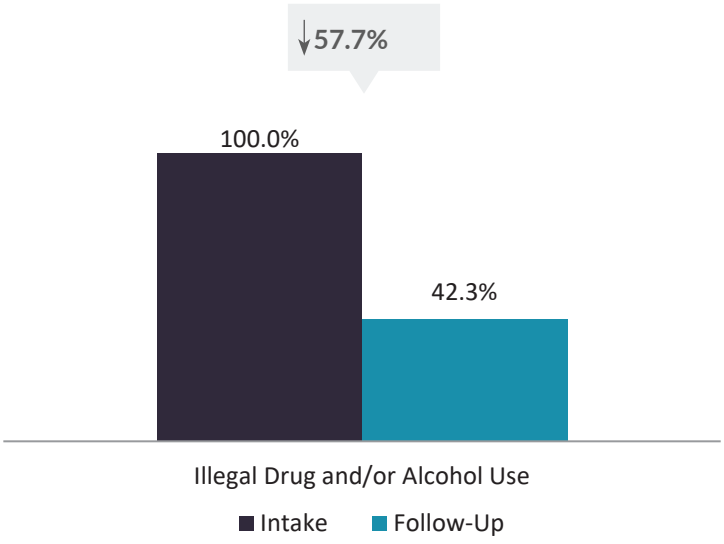
ALCOHOL AND/OR ILLEGAL DRUG USE

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

Because clients were excluded from the follow-up sample if they reported no substance use in the 12 months before intake and were out on the street at least one day in that period, all clients (100%) reported using alcohol and/or illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 42.3% at follow-up (see Figure 2.1).

The number of clients reporting alcohol and/or illegal drug use decreased by 58%

FIGURE 2.1. PAST-12-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 825)[a]

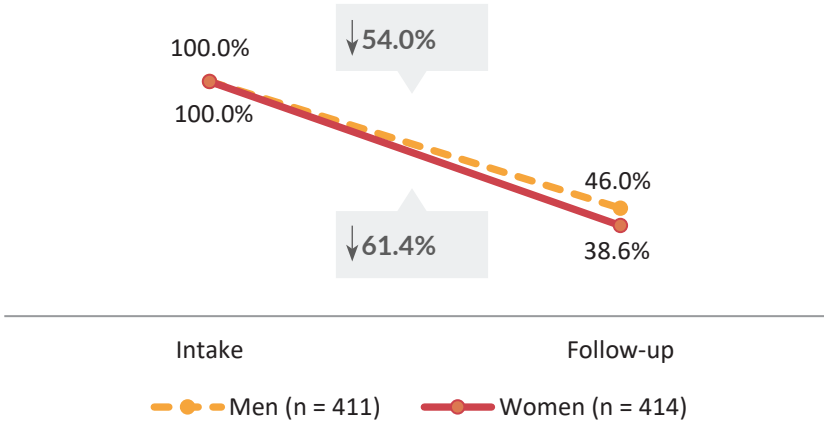


a--No test of statistical association could be computed for illegal drug/alcohol use in the 12 months before entering treatment because one of the cell values was 0.

GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL AND/OR ILLEGAL DRUG USE

At intake, there were no significant differences in the number of men and women reporting alcohol and/or drug use in the past 12 months, because all clients reported using any alcohol and/or illegal drugs in the 12 months before they entered treatment (see Figure 2.2). The percent of men and women who reported any past-12-month alcohol and/or illegal drug use decreased from intake to follow-up by 54.0% and 61.4% respectively. At follow-up, significantly more men reported alcohol and/or illegal drug use in the past 12 months compared to women (46.0% vs. 38.6%, respectively).

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



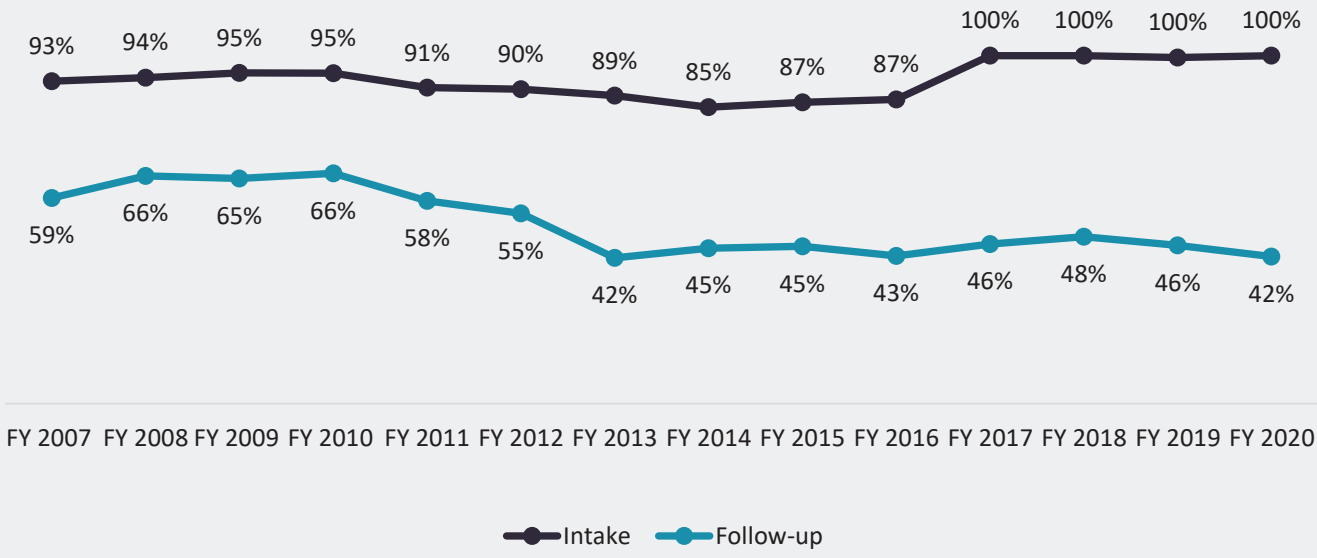
a—Significant difference by gender at follow-up, $p < .05$
b--No test of statistical association could be computed for illegal drug/alcohol use in the 12 months before entering treatment because one of the cell values was 0.

> *There were good and bad people, but the good people outweighed the bad. The program was good. Some people were not "made for this".*
>
> - 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 has been consistently high.[29] 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 2007-2020[30]



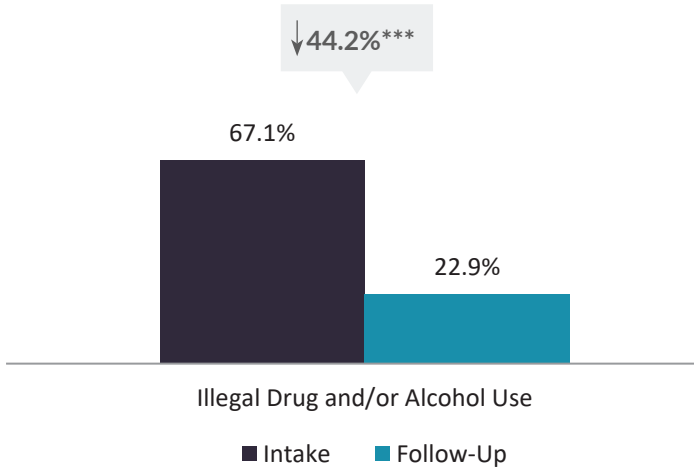
PAST-30-DAY ALCOHOL AND/OR ILLEGAL DRUG USE

About two-thirds of clients (67.1%) reported using alcohol and/or illegal drugs in the 30 days before entering substance abuse treatment, which decreased to 22.9% at follow-up. As a result, there was a 44.2% significant decrease in the number of clients reporting past-30-day use of alcohol and/or illegal drugs (see Figure 2.4).

[29] 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.

[30] 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 = 708)[31]

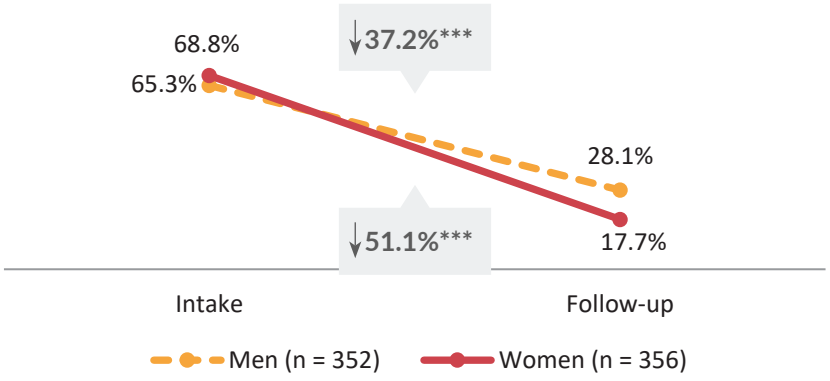


***p < .001.

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

At intake, there were no significant differences in the number of men (65.3%) and women (68.8%) reporting any alcohol and/or illegal drug use in the past 30 days (see Figure 2.5). The number of men and women who reported any past-30-day alcohol and/or illegal drug use significantly decreased from intake to follow-up by 37.2% and 51.1% respectively. At follow-up, significantly more men reported alcohol and/or illegal drug use in the past 30 days compared to women (28.1% vs. 17.7%, respectively).

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



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

[31] Two individuals had missing data for illegal drug use in the 30 days before follow-up.

ANY ILLEGAL DRUGS

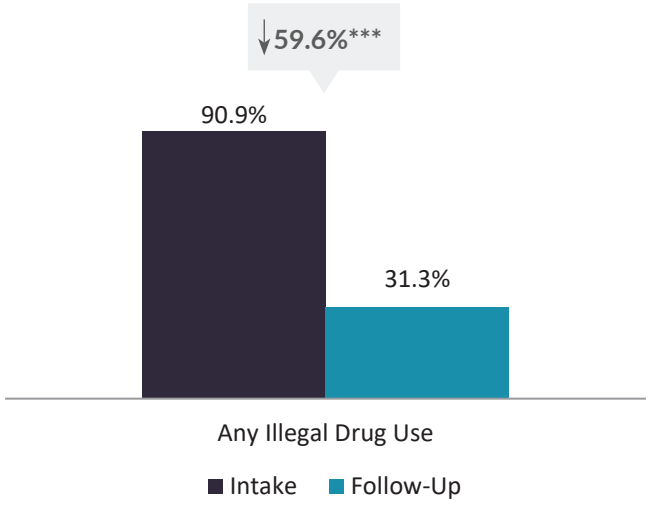
PAST-12-MONTH ILLEGAL DRUG USE

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).[32]

Nine in 10 clients (90.9%) reported using illegal drugs in the 12 months before entering substance abuse treatment, which decreased to 31.3% at follow-up. Overall, for the KTOS follow-up sample, there was a 59.6% 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 60%

FIGURE 2.6. PAST-12-MONTH DRUG USE AT INTAKE AND FOLLOW-UP (N = 824)[33]



***p < .001.

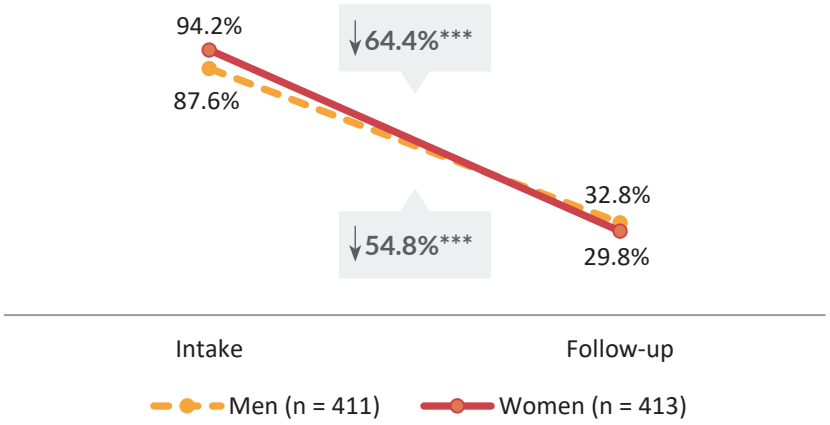
GENDER DIFFERENCES IN PAST-12-MONTH OVERALL ILLEGAL DRUG USE

At intake, significantly more women than men reported any past-12-month illegal drug use, 94.2% vs. 87.6% (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 64.4% and 54.8% 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.

[32] 64 clients reported they had never used illegal drugs, so they were not included in this analysis.

[33] One individual had 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[a]

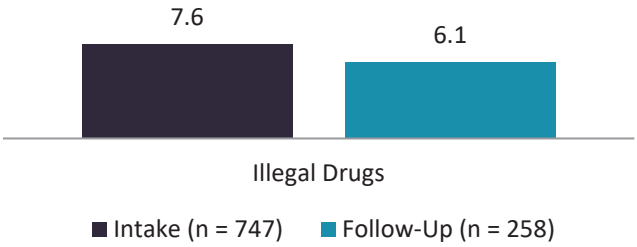


a—Significant difference by gender at intake ($p < .001$).
***$p < .001$.

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 = 747),[34] they reported using illegal drugs an average maximum of 7.6 months (see Figure 2.8).[35] Clients who reported using illegal drugs at follow-up (n = 258) reported using an average maximum of 6.1 months.

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



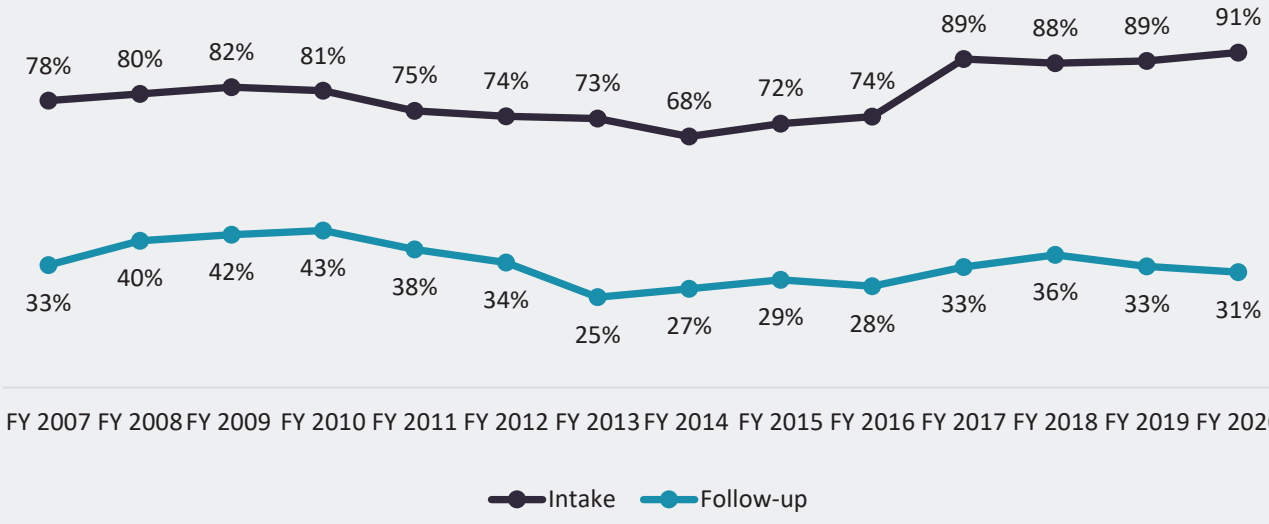
[34] Although 749 individuals reported any illegal drug use in the 12 months before intake, 2 individuals had missing data on the number of months they used illegal drugs (specifically, opioids).

[35] 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 2020.[36] Overall, at follow-up, the percent of clients reporting any illegal drug use decreased from FY 2010 to FY 2013 but slowly increased until FY 2018.

FIGURE 2.9. TRENDS IN ANY PAST-12-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, FY 2007-2020

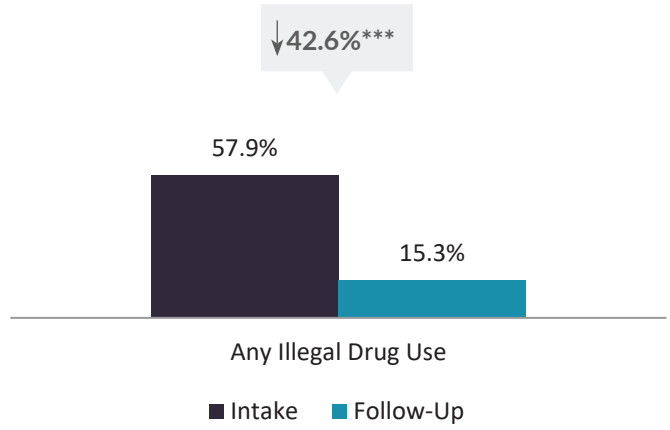


PAST-30-DAY ILLEGAL DRUG USE

More than half of clients (57.9%) 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 15.3% of clients reported they had used illegal drugs in the past 30 days—a significant decrease of 42.6%.

[36] 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 = 708)

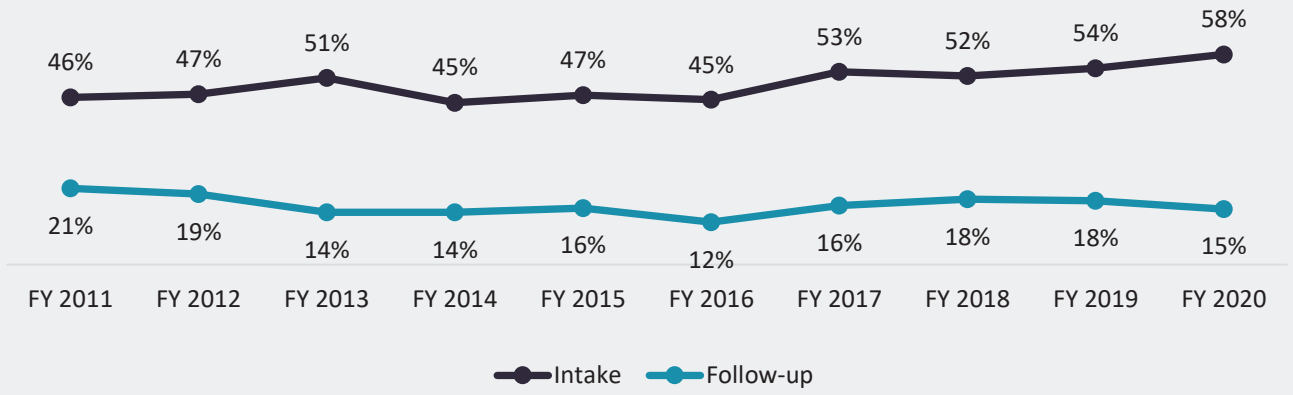


***p < .001.

Trends in Past-30-day Illegal Drug Use

Of those clients who were not in a controlled environment in the 30 days before program entry and the 30 days before the follow-up interview, around half (45% - 53%) reported using any illegal drugs in the past 30 days at intake. In FY 2020, the percent had increased to 58% for the 30 days before 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 2011-2020

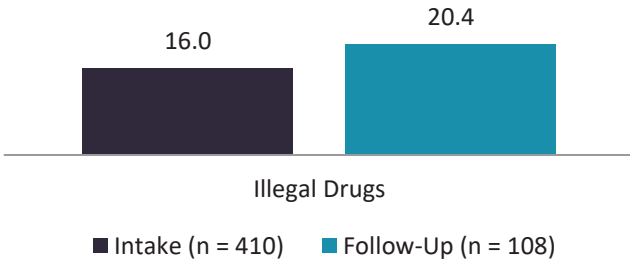


AVERAGE MAXIMUM NUMBER OF DAYS USED ANY ILLEGAL DRUGS

Among the clients who reported using illegal drugs in the 30 days before entering treatment (n = 410), they reported using illegal drugs an average maximum of 16.0 days (see Figure 2.12). Clients who reported using illegal drugs at follow-up (n = 108) reported using an average maximum of 20.4 days.[37]

[37] 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 2.12. AVERAGE MAXIMUM NUMBER OF DAYS CLIENTS USED ILLEGAL DRUGS IN PAST 30 DAYS

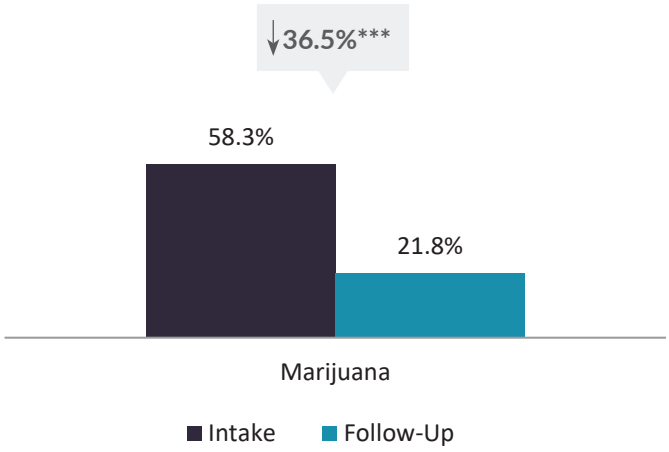


MARIJUANA

PAST-12-MONTH MARIJUANA USE

More than half of clients reported using marijuana in the 12 months before entering treatment, which decreased to 21.8% at follow-up. Overall, for the KTOS follow-up sample, there was a 36.5% significant decrease in the number of clients reporting marijuana use (see Figure 2.13).

FIGURE 2.13. PAST-12-MONTH MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 825)

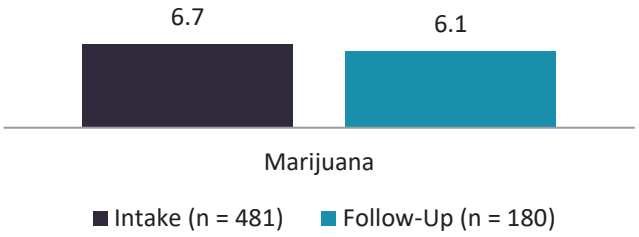


***p < .001.

AVERAGE NUMBER OF MONTHS USED MARIJUANA

Among the clients who reported using marijuana in the 12 months before entering treatment (n = 481), they reported using marijuana, on average, 6.7 months (see Figure 2.14). Among clients who reported using marijuana at follow-up (n = 180), they reported using, on average 6.1 months.

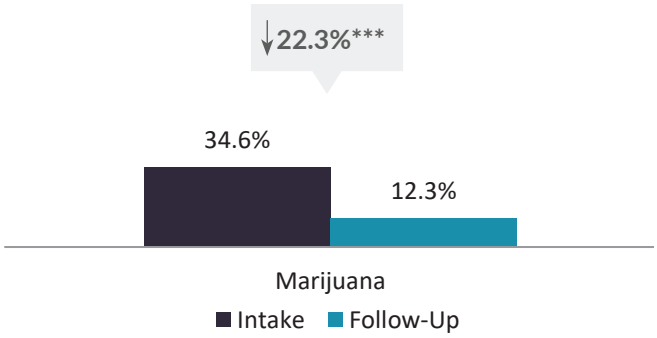
FIGURE 2.14. AVERAGE NUMBER OF MONTHS CLIENTS USED MARIJUANA



PAST-30-DAY MARIJUANA USE

The number of clients who reported using marijuana in the past 30 days decreased significantly by 22.3%, from 34.6% at intake to 12.3% at follow-up (see Figure 2.15).

FIGURE 2.15. PAST-30-DAY MARIJUANA USE AT INTAKE AND FOLLOW-UP (N = 708)



***p < .001.

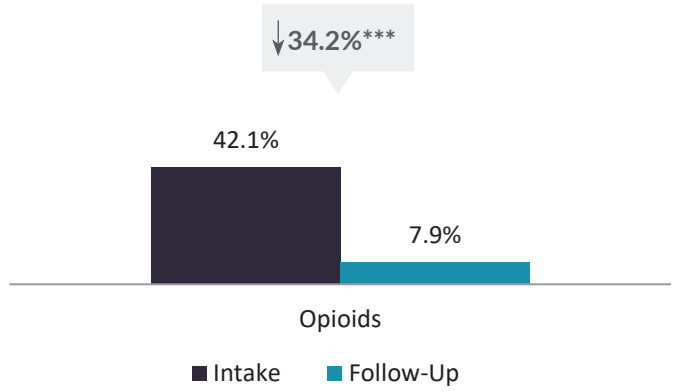
OPIOIDS

PAST-12-MONTH OPIOID MISUSE

A little more than two-fifths of clients (42.1%) 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 7.9% at follow-up. Overall, for the KTOS follow-up sample, there was a 34.2% decrease in the number of clients reporting past-12-month opioid misuse other than heroin (see Figure 2.16).

> *They do more than just help with addicts. They take it on themselves to help. They will pick up people who don't have transportation. They are life savers.*
>
> - KTOS FOLLOW-UP CLIENT

FIGURE 2.16. PAST-12-MONTH OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 825)

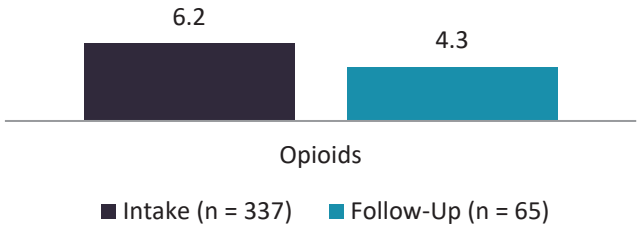


***p < .001.

AVERAGE NUMBER OF MONTHS USED OPIOIDS

Among the clients who reported misusing opioids in the 12 months before entering treatment (n = 337),[38] they reported misusing opioids on average 6.2 months (see Figure 2.17).[39] Among clients who reported misusing opioids at follow-up (n = 65), they reported misusing an average 4.3 months.

FIGURE 2.17. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS MISUSED OPIOIDS



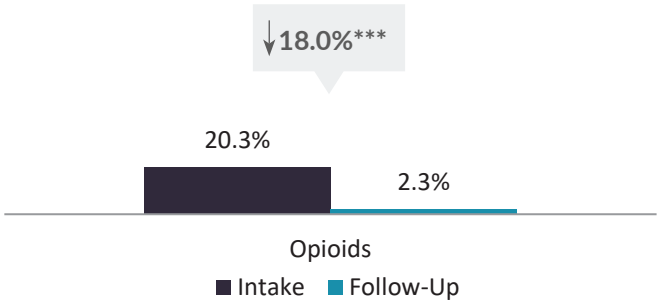
PAST-30-DAY OPIOID MISUSE

The number of clients who reported misusing opioids in the past 30 days decreased significantly by 18.0%, from 20.3% at intake to 2.3% at follow-up (see Figure 2.18).

[38] Ten cases reported they had used prescription opioids but had missing values for the number of months.

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

FIGURE 2.18. PAST-30-DAY OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 708)

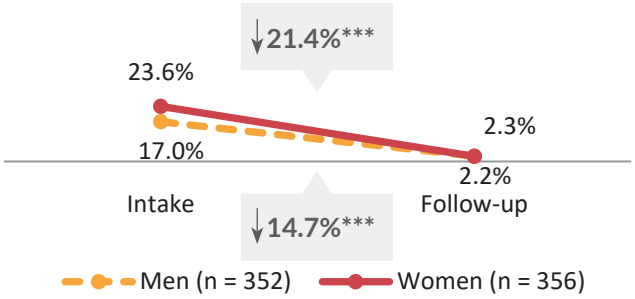


***p < .001.

GENDER DIFFERENCES IN PAST-30-DAY OPIOID USE

At intake, significantly more women than men reported any past-30-day opioid use, 23.6% vs. 17.0% (see Figure 2.19). The number of women and men who reported opioid use in the past 30 days significantly decreased from intake to follow-up by 21.4% and 14.7% respectively. At follow-up, there was no significant difference in the number of men and women who reported using any opioids in the past 30 days.

FIGURE 2.19. GENDER DIFFERENCES IN PAST-30-DAY OPIOID USE AT INTAKE AND FOLLOW-UP[a]



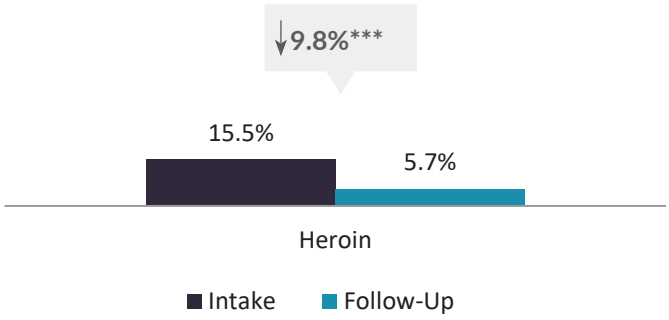
a—Significant difference by gender at intake (p < .05).

HEROIN

PAST-12-MONTH HEROIN USE

About 16% of clients reported using heroin in the 12 months before entering treatment, which decreased 9.8% to 5.7% at follow-up (see Figure 2.20).

FIGURE 2.20. PAST-12-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 825)

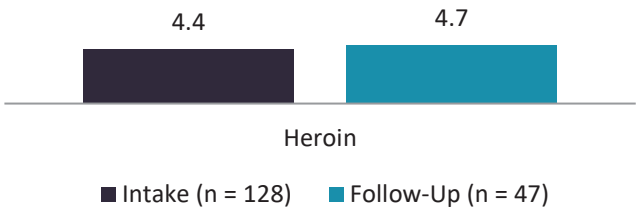


***p < .001.

AVERAGE NUMBER OF MONTHS USED HEROIN

Among the clients who reported using heroin in the 12 months before entering treatment (n = 128), they reported using heroin, on average, 4.4 months (see Figure 2.21). Among clients who reported using heroin at follow-up (n = 47), they reported using, on average, 4.7 months.

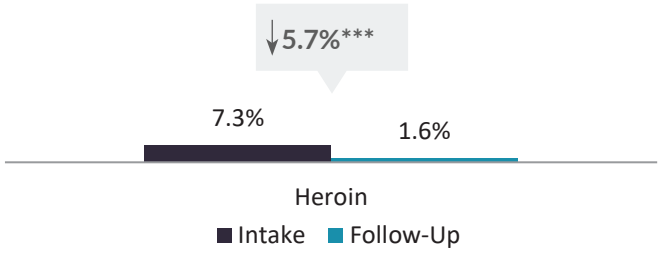
FIGURE 2.21. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



PAST-30-DAY HEROIN USE

A minority of clients (7.3%) reported using heroin in the 30 days before intake, with a significant decrease of 5.7% by follow-up to 1.6% (see Figure 2.22).

FIGURE 2.22. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 708)



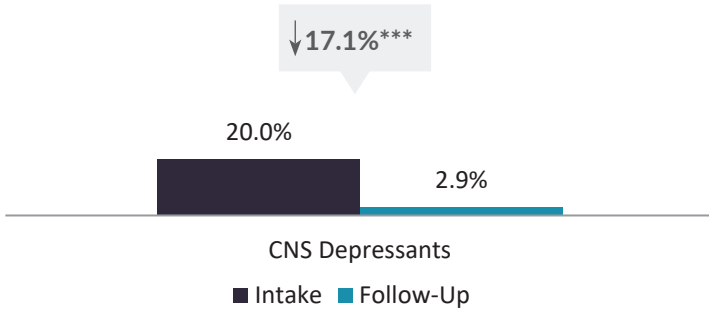
***p < .001.

CNS DEPRESSANTS

PAST-12-MONTH CNS DEPRESSANT USE

One-fifth of clients (20.0%) reported using CNS depressants, including tranquilizers, benzodiazepines, sedatives, and barbiturates in the 12 months before entering treatment, which decreased to 2.9% at follow-up. Overall, for the KTOS follow-up sample, there was a 17.1% decrease in the number of clients reporting CNS depressant use in the past 12 months (see Figure 2.23).

FIGURE 2.23. PAST-12-MONTH CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 824)

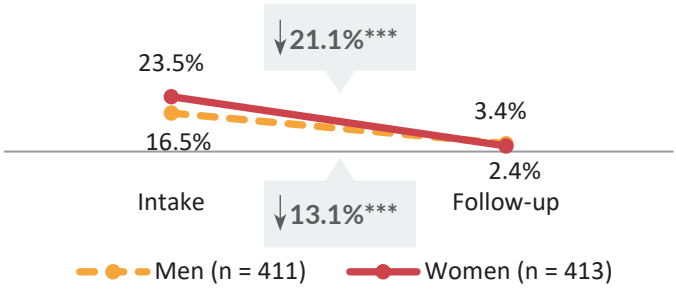


***p < .001.

GENDER DIFFERENCES IN PAST-12-MONTH OVERALL CNS DEPRESSANT USE

At intake, significantly more women than men reported any past-30-day CNS depressant use, 23.5% vs. 16.5% (see Figure 2.24). The number of women and men who reported CNS depressant use in the past 30 days significantly decreased from intake to follow-up by 21.1% and 13.1% 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.

FIGURE 2.24. GENDER DIFFERENCES IN PAST-12-MONTH CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP[a]



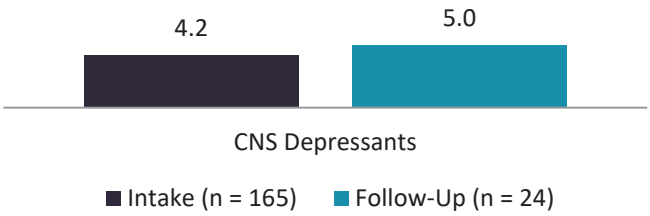
a—Significant difference by gender at intake (p < .05).

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[40]. Among the clients who reported using these substances in the 12 months before entering treatment (n = 165), they reported using CNS depressants an average 4.2 months. Among clients who reported using CNS depressants in the 12 months before follow-up (n = 24), they reported using an average of 5.0 months.

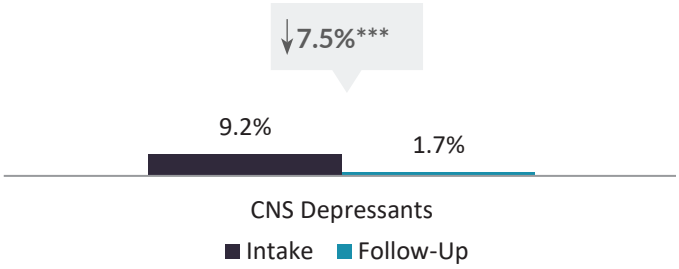
FIGURE 2.25. AVERAGE MAXIMUM NUMBER OF MONTHS OF CNS DEPRESSANT USE



PAST-30-DAY CNS DEPRESSANT USE

The percent of clients who reported using CNS depressants in the 30 days before intake decreased significantly by 7.5%, from 9.2% at intake to 1.7% at follow-up (see Figure 2.26).

FIGURE 2.26. PAST-30-DAY CNS DEPRESSANT USE AT INTAKE AND FOLLOW-UP (N = 707)[41]



***p < .001.

COCAINE

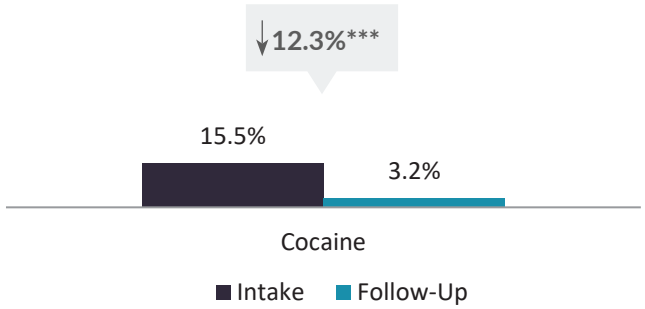
PAST-12-MONTH COCAINE USE

A minority of clients reported using cocaine (including crack) in the 12 months before entering treatment, which decreased to 3.2% at follow-up. Overall, there was a 12.3% decrease in the number of clients reporting cocaine use (see Figure 2.27).

[40] 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.

[41] One person had a missing value for CNS depressant use in the 30 days before follow-up.

FIGURE 2.27. PAST-12-MONTH COCAINE USE AT INTAKE AND FOLLOW-UP (N = 824)

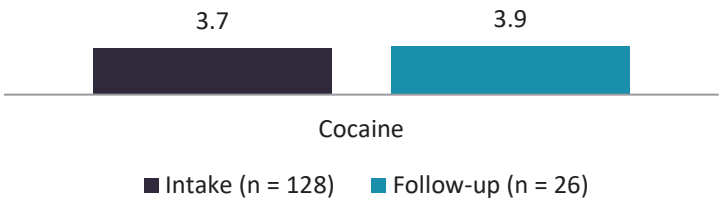


***p < .001.

AVERAGE NUMBER OF MONTHS USED COCAINE

Among the clients who reported using cocaine in the 12 months before entering treatment (n = 128), they reported using cocaine an average of 3.7 months (see Figure 2.28). Clients who reported using cocaine in the 12 months before follow-up (n = 26) reported using cocaine, on average 3.9 months.

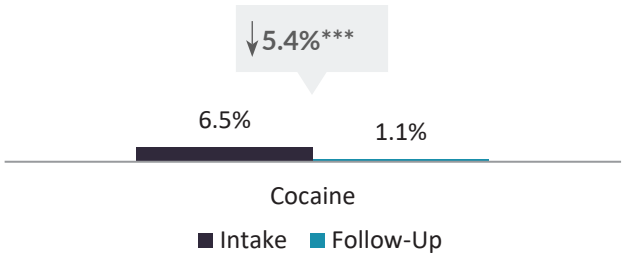
FIGURE 2.28. AVERAGE NUMBER OF MONTHS OF COCAINE USE



PAST-30-DAY COCAINE USE

The percent of clients who reported using cocaine in the past 30 days at intake decreased significantly by 5.4%, from 6.5% at intake to 1.1% at follow-up (see Figure 2.29).

FIGURE 2.29. PAST-30-DAY COCAINE USE AT INTAKE AND FOLLOW-UP (N = 707)



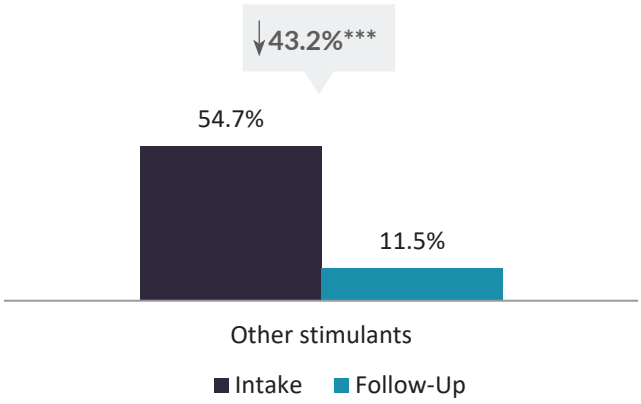
***p < .001.

OTHER STIMULANTS

PAST-12-MONTH OTHER STIMULANT USE

More than half of clients (54.7%) 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 11.5% at follow-up.[42] Overall, for the KTOS follow-up sample, there was a 43.2% decrease in the number of clients reporting other stimulant use (see Figure 2.30).

FIGURE 2.30. PAST-12-MONTH STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 825)

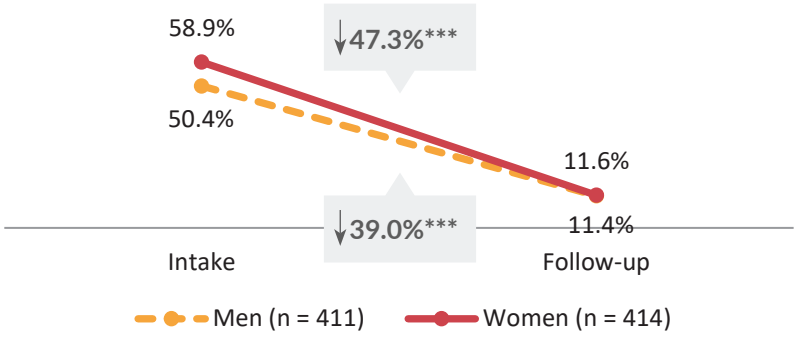


***p < .001.

GENDER DIFFERENCES IN PAST-12-MONTH STIMULANT USE

At intake, significantly more women than men reported any past-12-month stimulant use, 58.9% vs. 50.4% (see Figure 2.31). The number of women and men who reported stimulant use in the past 12 months significantly decreased from intake to follow-up by 47.3% and 39.0% 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.

FIGURE 2.31. GENDER DIFFERENCES IN PAST-12-MONTH STIMULANT USE AT INTAKE AND FOLLOW-UP[a]



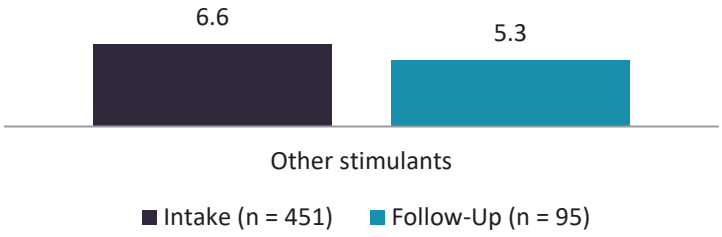
a—Significant difference by gender at intake (p < .05).
***p < .001.

[42] Among the individuals who reported using stimulants in the 12 months before intake (n = 454), 81.1% reported using methamphetamine, crank, crystal meth only.

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 = 451), they reported using other stimulants an average of 6.6 months (see Figure 2.32). Clients who reported using other stimulants in the 12 months before follow-up (n = 95) reported using other stimulants, on average, 5.3 months.

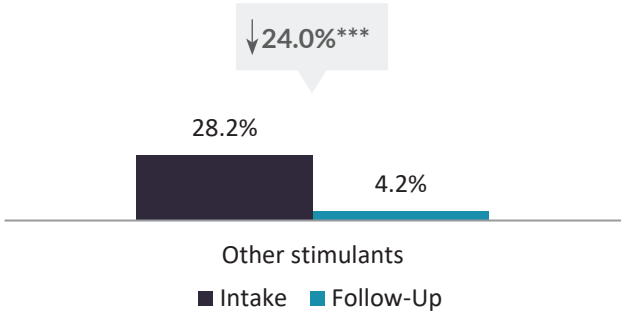
FIGURE 2.32. AVERAGE NUMBER OF MONTHS OF OTHER STIMULANT USE



PAST-30-DAY OTHER STIMULANT USE

A little more than one-fourth of clients reported using stimulants other than cocaine in the past 30 days. At follow-up, only 4.2% of individuals reported past-30-day use of stimulants—a significant decrease of 24.0% (see Figure 2.33).

FIGURE 2.33. PAST-30-DAY STIMULANT USE OTHER THAN COCAINE AT INTAKE AND FOLLOW-UP (N = 708)



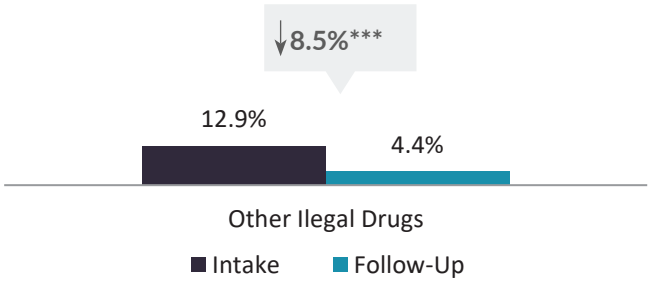
***p < .001.

OTHER ILLEGAL DRUGS

PAST-12-MONTH OTHER ILLEGAL DRUGS

A small minority of KTOS clients (12.9%) 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 4.4% at follow-up – a significant decrease of 8.5% (see Figure 2.34).

FIGURE 2.34. PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 844)[43]

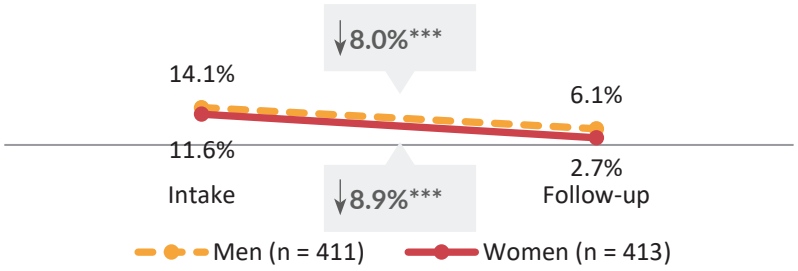


***p < .001.

GENDER DIFFERENCES IN PAST-12-MONTH USE OF OTHER ILLEGAL DRUGS

At intake, there was no difference in use of other illegal drugs by gender (see Figure 2.35). The number of men and women who reported other illegal drug use in the past 12 months significantly decreased from intake to follow-up. At follow-up, significantly more men than women reported using other illegal drugs in the past 12 months.

FIGURE 2.35. GENDER DIFFERENCES IN PAST-12-MONTH OTHER ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP[a]



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

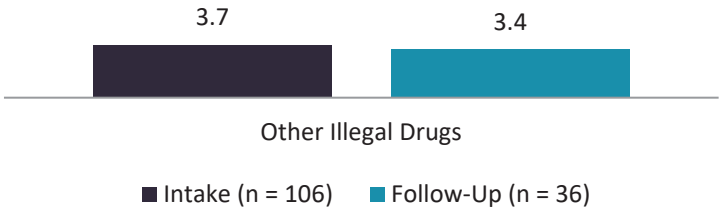
AVERAGE MAXIMUM NUMBER OF MONTHS USED OTHER ILLEGAL DRUGS

Figure 2.36 shows the average maximum number of months clients who used other illegal drugs (e.g., hallucinogens, inhalants, synthetic drugs) reported using those illegal drugs[44] in the past 12 months. Among the clients who reported using these drugs in the 12 months before entering treatment (n = 106), they reported using other illegal drugs an average of 3.7 months. Among clients who reported using other illegal drugs in the 12 months before follow-up (n = 36), they reported using an average of 3.4 months.

[43] One individual had a missing value for one of the classes of other illicit drugs in the 12 months before follow-up.

[44] 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.

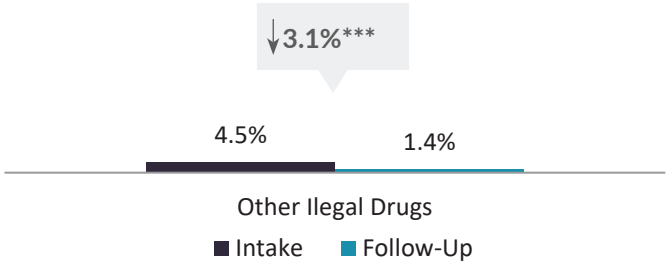
FIGURE 2.36. AVERAGE MAXIMUM NUMBER OF MONTHS OF OTHER ILLEGAL DRUG USE



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 3.1%, from 4.5% at intake to 1.4% at follow-up (see Figure 2.37).

FIGURE 2.37. PAST-30-DAY USE OF OTHER ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 707)



***p < .001.

INJECTION DRUG USE

At intake, 36.9% of clients reported having ever injected any drug. Of those clients (n = 310), 23.5% reported having ever used a Needle Exchange Program in Kentucky. At follow-up, 6.1% of clients reported injecting drugs in the past 12 months.[45] Of those clients (n = 51), 31.4% reported having used a Needle Exchange program in Kentucky.

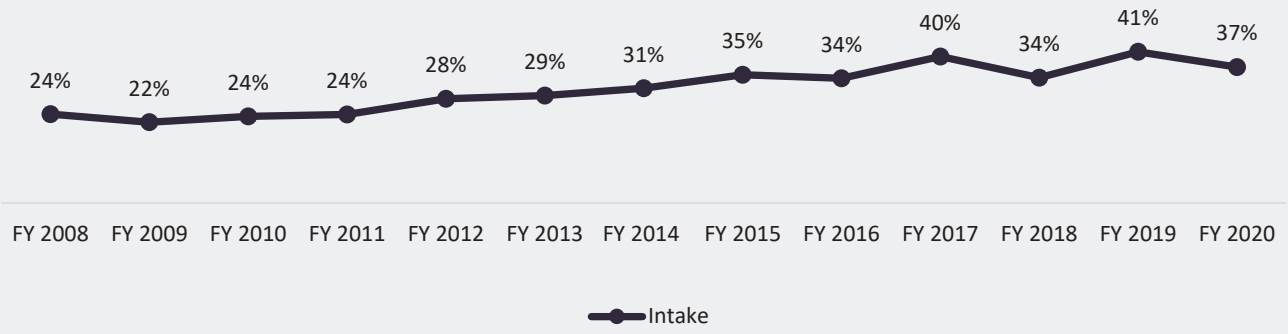
> *So caring and loving and understood and empathized with client . Really was personable and made an impression on client.*
>
> - KTOS FOLLOW-UP CLIENT

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

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 2.38. TRENDS CLIENTS REPORTING HAVING EVER INJECTED ANY DRUG AT INTAKE, FY 2008-2020



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.[46]

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 14.9 years old when they had their first alcoholic drink (not depicted in figure).[47]

The number of clients reporting alcohol use in the past 12 months decreased by 28%

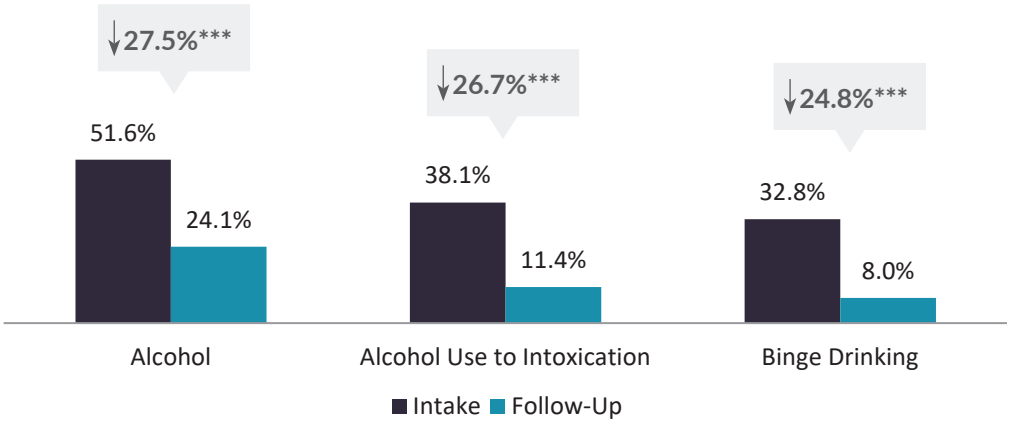
Half of clients (51.6%) reported using alcohol in the 12 months before entering treatment while 24.1% of clients reported alcohol use in the 12 months before follow-up (see Figure 2.39). Overall, for the KTOS follow-up sample, there was a 27.5% decrease in the number of clients reporting alcohol use in the past 12 months. More than one-third of clients (38.1%) reported using alcohol to intoxication at intake, with 11.4% reporting alcohol use to intoxication in the 12 months before follow-up. Similarly, there was a significant decrease of 24.8% in the number of clients who reported past-12-month binge drinking from intake to follow-up (32.8% vs. 8.0%).[48]

[46] 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.

[47] Of the individuals in the follow-up sample, 28 reported they have never had an alcoholic drink.

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

FIGURE 2.39. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 825)



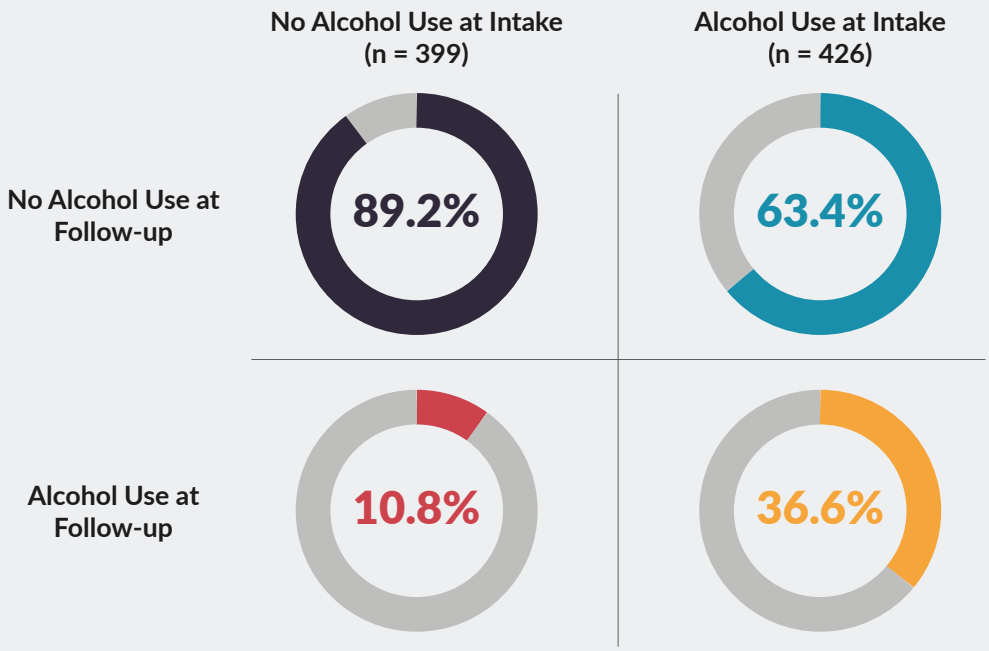
***p < .001.

Taking a Closer Look at Alcohol Use

About half of KTOS clients reported using alcohol in the 12 months before entering treatment (51.6%; n = 426). Of these clients who reported using alcohol in the past 12 months at intake, 63.4% did not use alcohol in the past 12 months at follow-up (see Figure 2.40). However, 36.6% 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 (89.2%) while 10.8% of clients reported using alcohol at follow-up after reporting no use at intake.

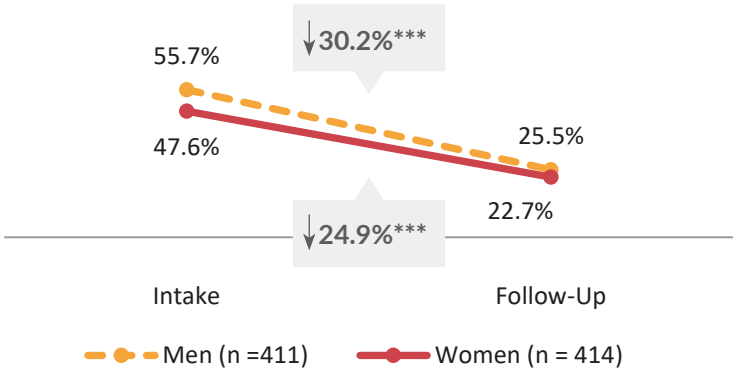
FIGURE 2.40. PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP BASED ON ALCOHOL USE AT INTAKE



GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE

At intake, significantly more men (55.7%) reported alcohol use compared to women (47.6%; see Figure 2.41). The number of men and women reporting alcohol use decreased significantly from intake to follow-up. There was no difference by gender at follow-up for alcohol use.

FIGURE 2.41. GENDER DIFFERENCES IN PAST-12-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP[a]

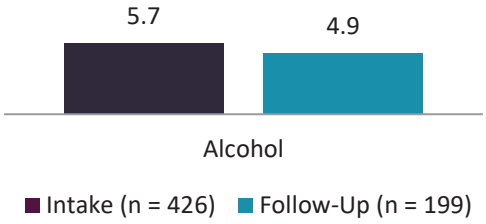


a—Significant difference by gender at intake ($p < .05$)
***$p < .001$.

AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2.42 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 = 426), they reported using alcohol, on average, 5.7 months. Among clients who reported using alcohol in the 12 months before follow-up (n = 199), they reported using, on average, 4.9 months.

FIGURE 2.42. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE



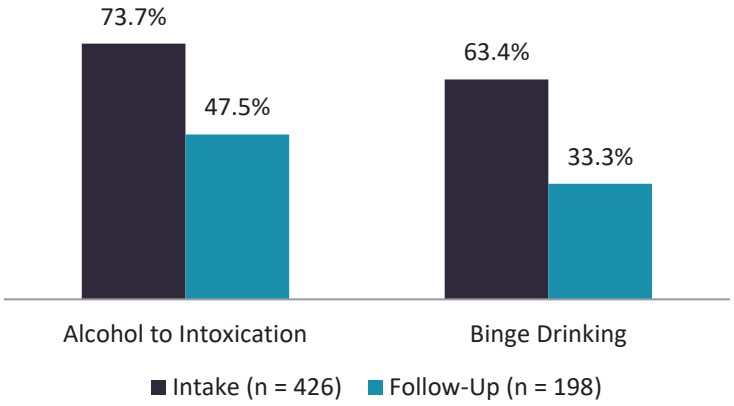
PAST-12-MONTH ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL AT EACH POINT

Of the clients who used alcohol in the 12 months before entering treatment (n = 426), 73.7% used alcohol to intoxication in the 12 months before intake and 63.4% reported binge drinking (see Figure 2.43). Of the clients who used alcohol in the 12 months before follow-up (n = 198),[49]

[49] One person had missing data for alcohol use to intoxication and binge drinking for the 12 months before follow-up.

47.5% of clients reported alcohol use to intoxication and 33.3% reported binge drinking.

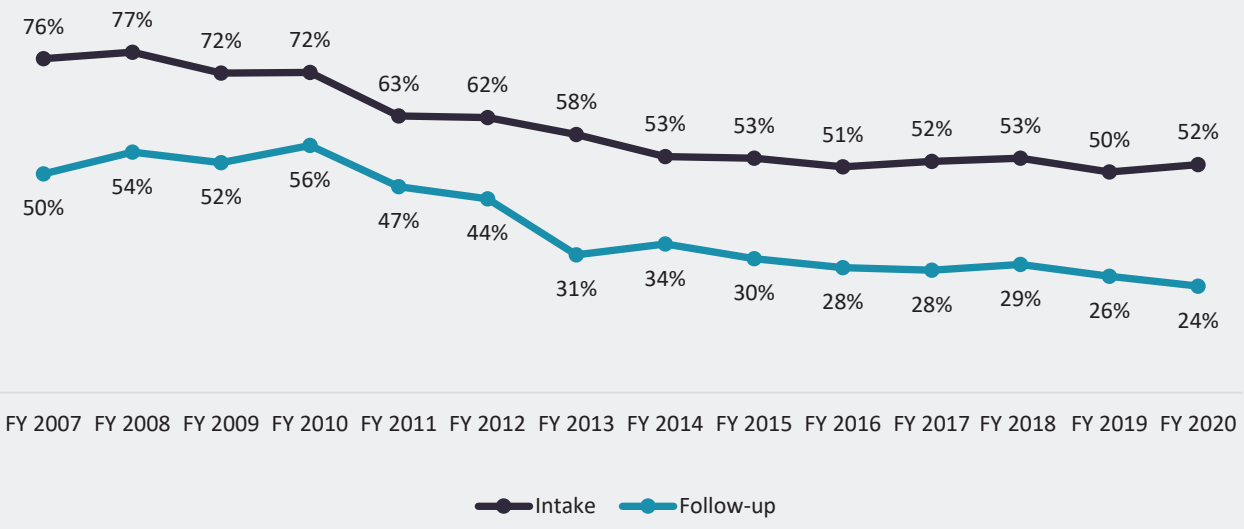
FIGURE 2.43. PAST-12-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



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 2.44). Overall, at follow-up, the percent of clients reporting alcohol use has also decreased over the years.

FIGURE 2.44. TRENDS IN ALCOHOL USE AT INTAKE AND FOLLOW-UP, FY 2007-2020

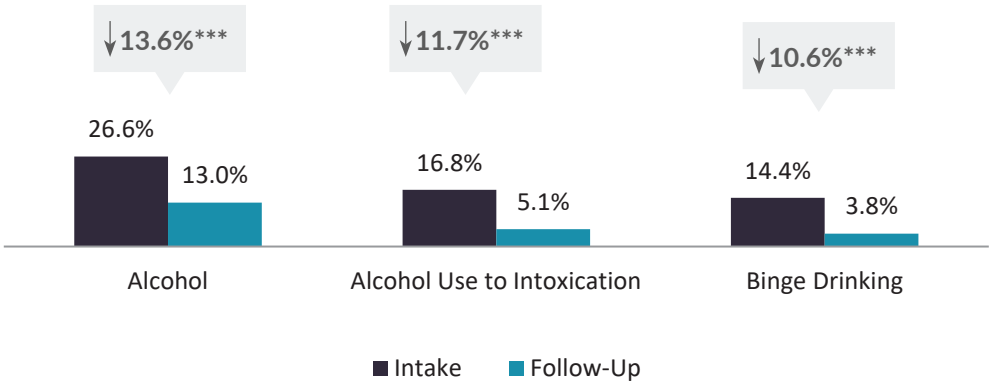


PAST-30-DAY ALCOHOL USE

There was a 13.6% decrease in the percent of clients who reported using alcohol in the past 30 days from intake (26.6%) to follow-up (13.0%; see Figure 2.45). The decrease in the number of clients who reported using alcohol to intoxication was 11.7% and 10.6% for those who reported

binge drinking in the 30 days before entering treatment.

FIGURE 2.45. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 707)[50]

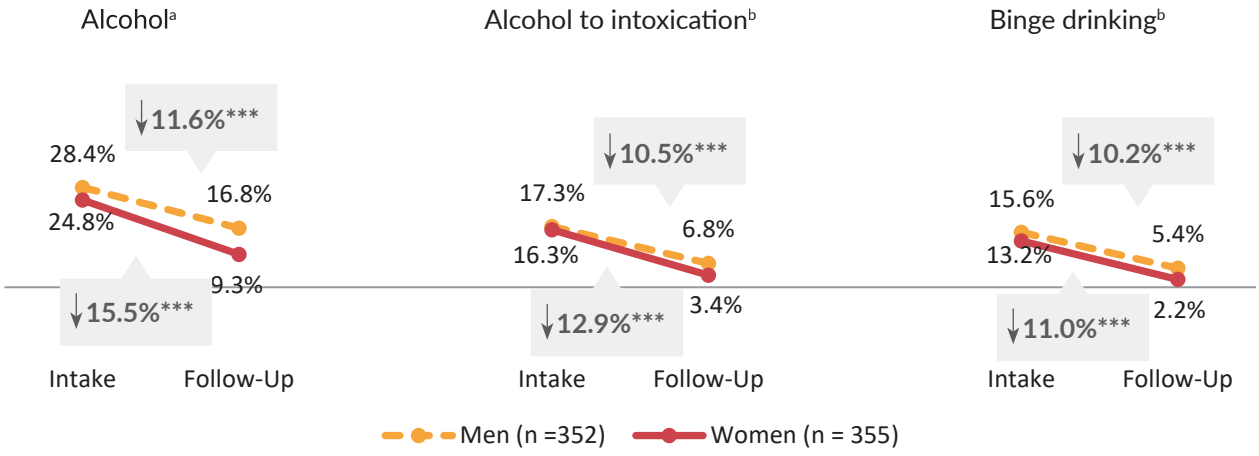


***p < .001.

GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE

Significantly more men than women reported using alcohol, alcohol to intoxication, and binge drinking in the 30 days before follow-up (see Figure 2.46). The number of men and women who reported alcohol use, alcohol use to intoxication, and binge drinking decreased significantly from intake to follow-up.

FIGURE 2.46. GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP



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

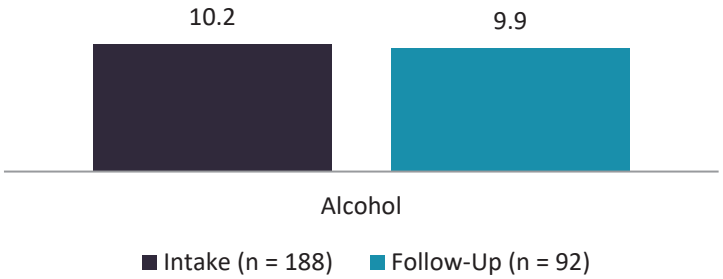
AVERAGE NUMBER OF DAYS USED ALCOHOL

Figure 2.47 shows the average number of days alcohol users reported using alcohol in the 30 days before intake and follow-up. Among the clients who reported using alcohol in the 30 days

[50] One person had a missing value for alcohol use in the 30 days before follow-up.

before entering treatment (n = 188), they reported using alcohol, on average, 10.2 days. Among clients who reported using alcohol in the 30 days before follow-up (n = 92), they reported using, on average, 9.9 days.

FIGURE 2.47. AVERAGE NUMBER OF DAYS OF ALCOHOL USE

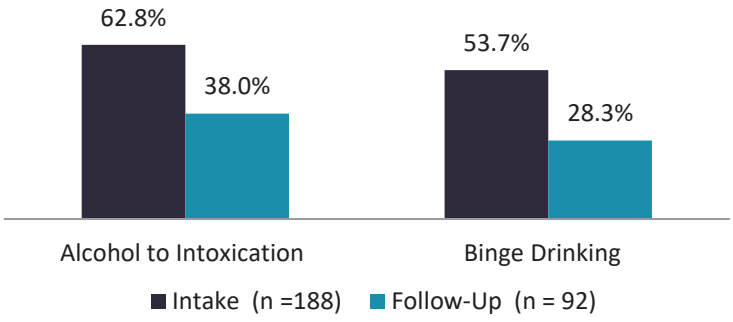


PAST-30-DAY ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL

Of the 188 clients who used alcohol in the 30 days before intake, 62.8% used alcohol to intoxication and 53.7% binge drank in the 30 days before intake (see Figure 2.48).

Of the 92 clients who reported using alcohol in the 30 days before follow-up, 38.0% reported using alcohol to intoxication and 28.3% reported binge drinking in the 30 days before follow-up.

FIGURE 2.48. PAST-30-DAY ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



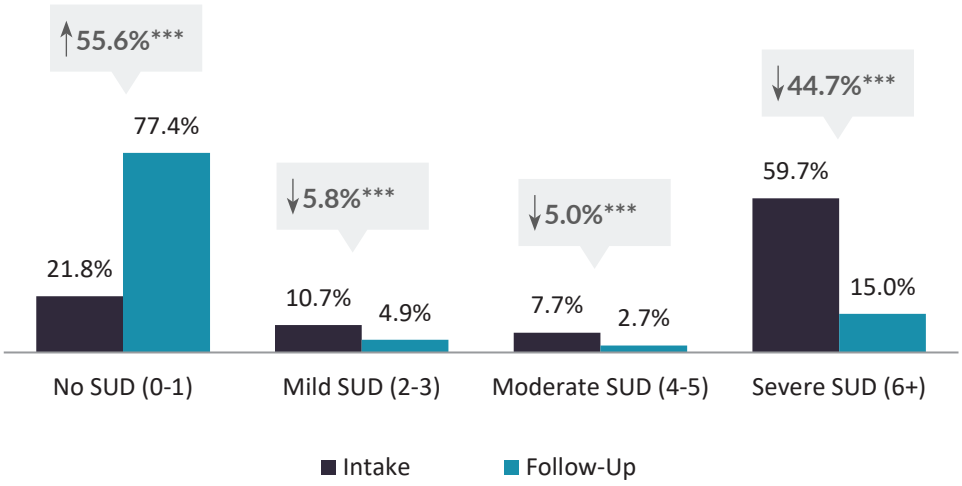
SELF-REPORTED SYMPTOMS OF ALCOHOL AND DRUG USE SEVERITY

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.[51] 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 2.49).[52] 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 2.49. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 801)[a]



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

[51] 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.

[52] Twenty-four individuals had missing data for DSM-5 criteria for substance use disorder at follow-up.

ADDICTION SEVERITY INDEX (ASI), PAST 30 DAYS

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

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

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

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

ASI Alcohol and Drug Composite Scores and Substance Use Disorder

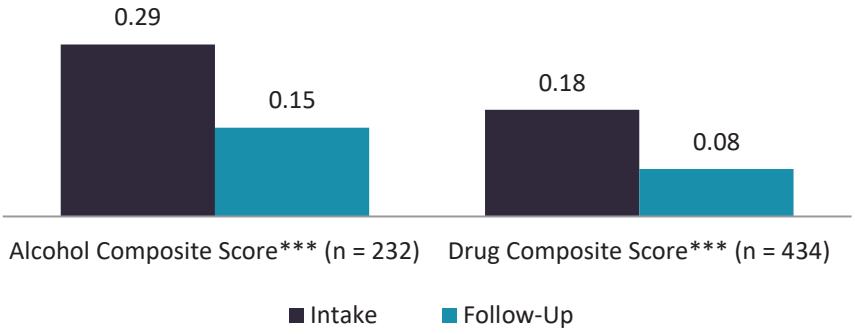
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI composite scores for alcohol and drug use and DSM-IV substance dependence diagnoses. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity about identifying DSM-IV substance dependence diagnoses: .17 for alcohol composite score and .16 for drug composite score. These composite score cutoffs can be used to estimate the number of individuals who are likely to meet criteria for active alcohol or drug dependence, and to show reductions in self-reported severity of substance use. In previous years we have used the ASI composite scores to estimate the number and percent of clients who met a threshold for alcohol and drug dependence. However, recent changes in the diagnostics for substance abuse call into question the distinction between dependence and abuse. Thus, ASI composite scores that met the threshold can be considered indicative of severe substance use disorder to be compatible with current thinking about substance use disorders in the DSM-V, where we would have previously referred to them as meeting the threshold for dependence. Change from intake to follow-up in the severity rating as the same clinical relevance as moving from dependence to abuse in the older criteria.

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

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

Figure 2.50 displays the change in average composite scores.[53, 54] The average for the alcohol composite score decreased significantly from 0.29 at intake to 0.15 at follow-up. The average for the drug composite score decreased significantly from 0.18 at intake to 0.08 at follow-up.

FIGURE 2.50. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



***p < .001.

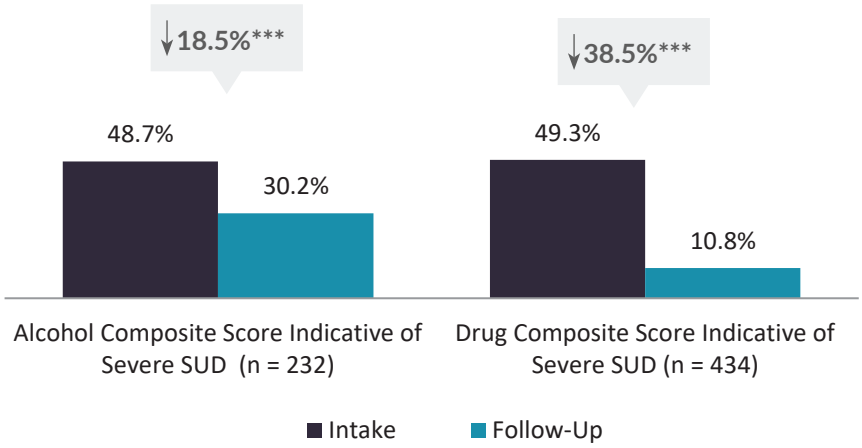
The percent of individuals who had ASI composite scores that met the cutoff for severe substance use disorder (SUD) decreased significantly from intake to follow-up (see Figure 2.51). A little less than half individuals (48.7%) who reported any alcohol use in the 30 days before intake and/or follow-up had alcohol composite scores indicative of severe SUD at intake. At follow-up, this percent had decreased to 30.2%. About 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 (49.3%). At follow-up, about 1 in 10 had drug composite scores indicative of severe SUD (10.8%).

> *Everybody was very understanding and it was helpful to be around others with similar stories. The counselors were very nonjudgmental.*
>
> - KTOS FOLLOW-UP CLIENT

[53] The following number of cases were not included in the analysis of change in alcohol composite score: 120 clients were in a controlled environment all 30 days before treatment; 8 additional individuals were in a controlled environment all 30 days before follow-up; 3 individuals had missing data for the number of days in a controlled environment before follow-up; an additional 473 clients reported abstaining from alcohol in the 30 days before intake and follow-up; and 3 individuals had missing data from items included in the calculation of the alcohol composite at follow-up.

[54] The following numbers were not included in the analysis of change in drug composite score: 120 clients were in a controlled environment all 30 days before treatment; 8 additional individuals were in a controlled environment all 30 days before follow-up; 3 individuals had missing data for the number of days in a controlled environment before follow-up; an additional 266 clients reported abstaining from drugs in the 30 days before intake and follow-up, and 8 clients had missing data from items included in the calculation of the drug composite score at follow-up.

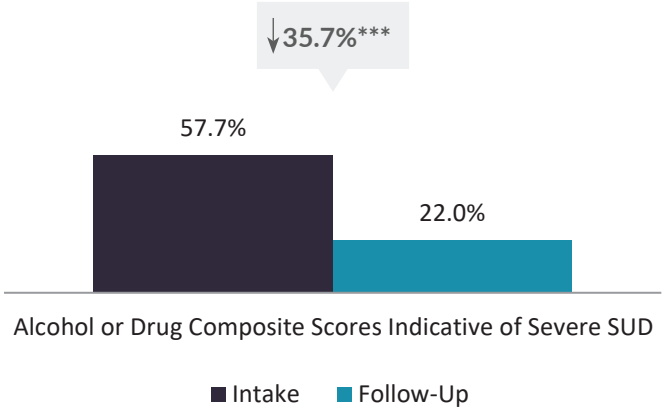
FIGURE 2.51. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP[55]



***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 2.52). The percent of clients who had composite scores that met the cutoff for severe SUD for either alcohol or drugs decreased by 35.7% at follow-up.

FIGURE 2.52. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR ALCOHOL OR DRUG SEVERE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 513)[56]



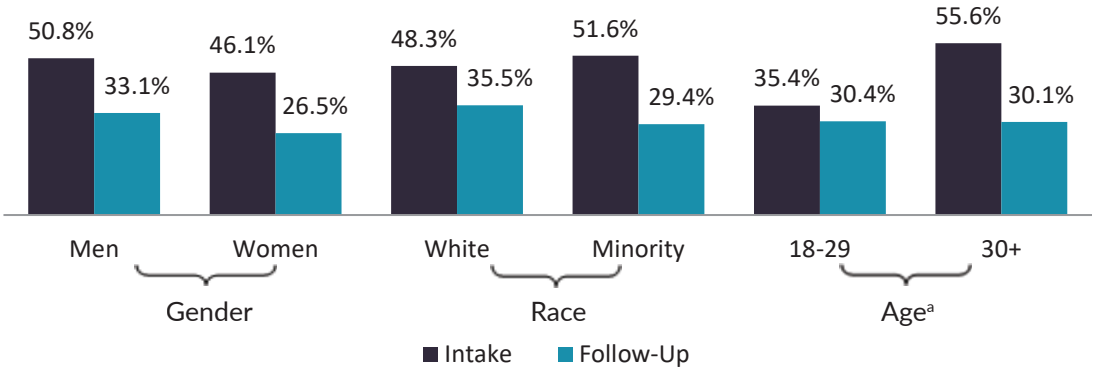
***p < .001.

[55] 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.

[56] The following number of cases were not included in the analysis of change in alcohol composite score: 120 clients were in a controlled environment all 30 days before treatment; 8 additional individuals were in a controlled environment all 30 days before follow-up; 3 individuals had missing data for the number of days in a controlled environment before follow-up; an additional 189 clients reported abstaining from alcohol and drugs in the 30 days before intake and follow-up; and 6 individuals had missing data from items included in the calculation of the alcohol or drug composite 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 2.53). 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.

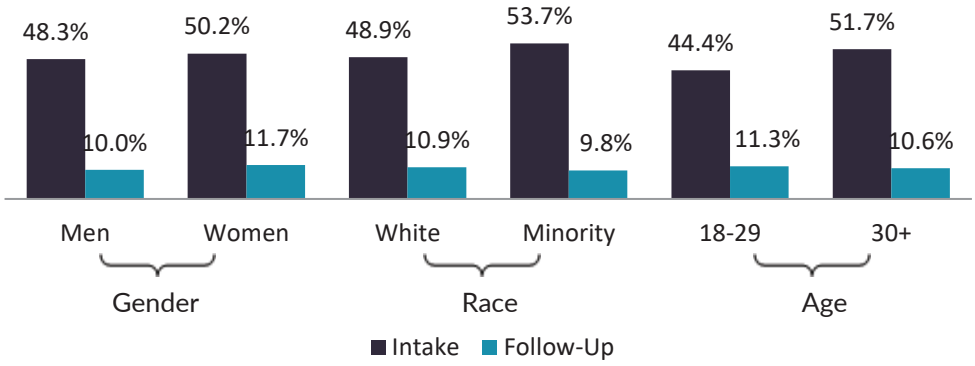
FIGURE 2.53. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 232)



a –Significant difference by age group at intake ($p < .01$).

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 2.54). There were no other statistically significant differences at intake and follow-up by gender, race, and age group.

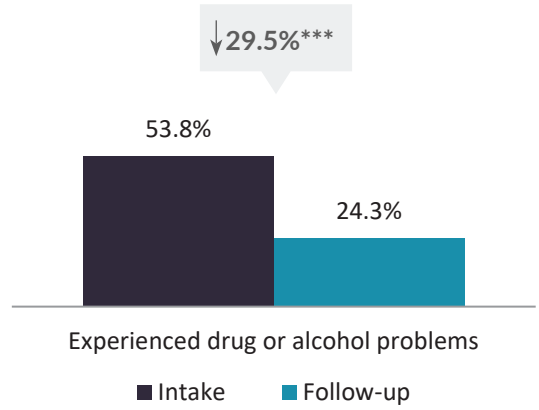
FIGURE 2.54. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 434)



PROBLEMS EXPERIENCED WITH SUBSTANCE USE IN THE PAST 30 DAYS

In the past 30 days at intake, 53.8% 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 2.55). In the past 30 days at follow-up, 24.3% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 29.5%).

FIGURE 2.55. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 838)[57]



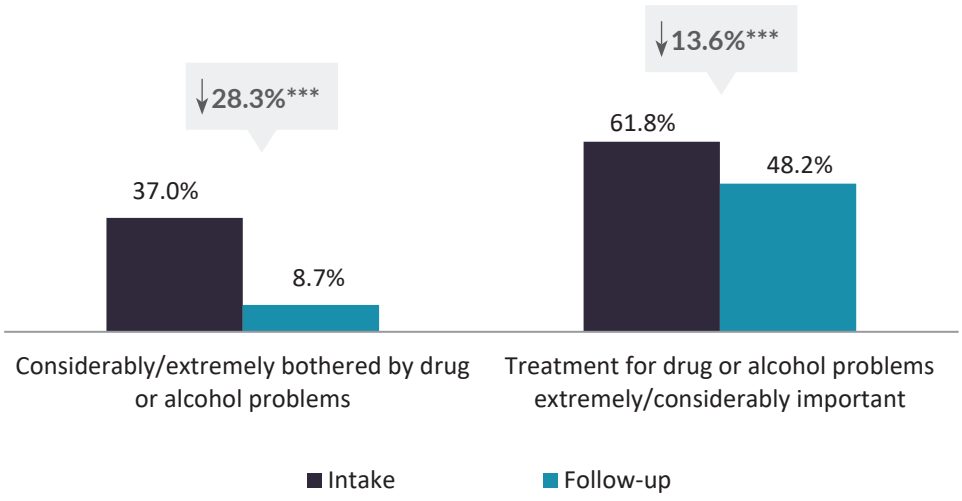
***p < .001.

READINESS FOR SUBSTANCE ABUSE TREATMENT

Figure 2.56 shows that 37.0% 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, 8.7% of clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems (a significant decrease of 28.3%).

The figure below also shows that 61.8% of clients in the past 30 days at intake and 48.2% of clients in the past 30 days at follow-up reported that treatment for drug or alcohol problems was considerably or extremely important – a significant decrease of 13.6%.

FIGURE 2.56. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP (n = 830)[58]



***p < .001.

[57] One individual had a missing value on drug or alcohol problems at follow-up.

[58] Two individuals had missing data for bothered variable and 9 individuals had missing data for treatment variable at follow-up.

TOBACCO USE

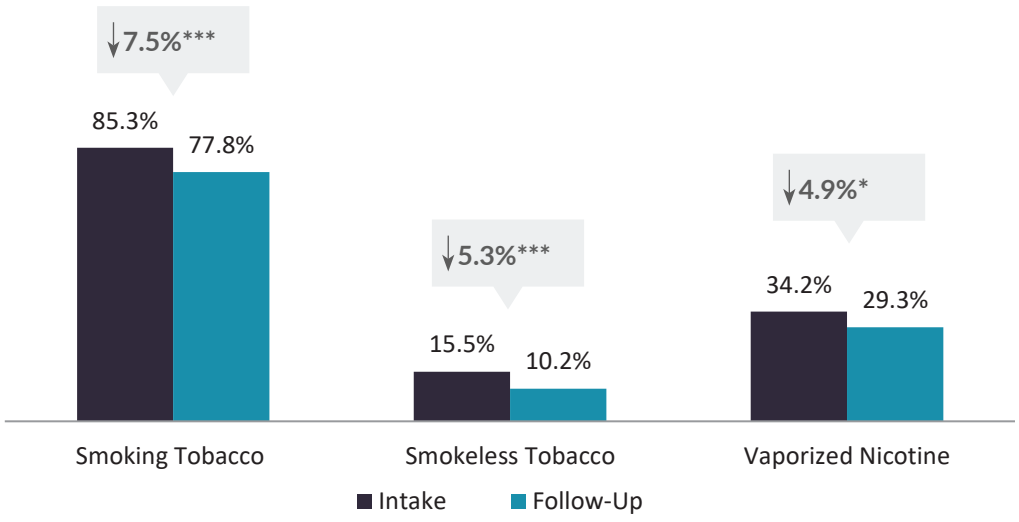
PAST-12-MONTH SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE

At intake, clients were asked how old they were when they first began to smoke tobacco regularly (i.e., on a daily basis). On average, KTOS clients reported they were 16.2 years old when they started smoking tobacco regularly (not depicted in figure).[59]

Past-12-month smoking tobacco use significantly decreased from intake to follow-up while smokeless tobacco use remained stable (see Figure 2.57). Most clients reported smoking tobacco in the 12 months before entering treatment (85.3%) and in the 12 months before follow-up (77.8%). A minority of clients reported using smokeless tobacco in the 12 months before entering treatment and follow-up. About one-third of clients (34.2%) reported using vaporized nicotine in the 12 months before entering treatment and 29.3% of clients reported using vaporized nicotine in the 12 months before follow-up, which was a small but significant decrease.

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

FIGURE 2.57. CHANGE IN PAST-12-MONTH TOBACCO AND VAPORIZED NICOTINE USE FROM INTAKE TO FOLLOW-UP (n = 825)



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

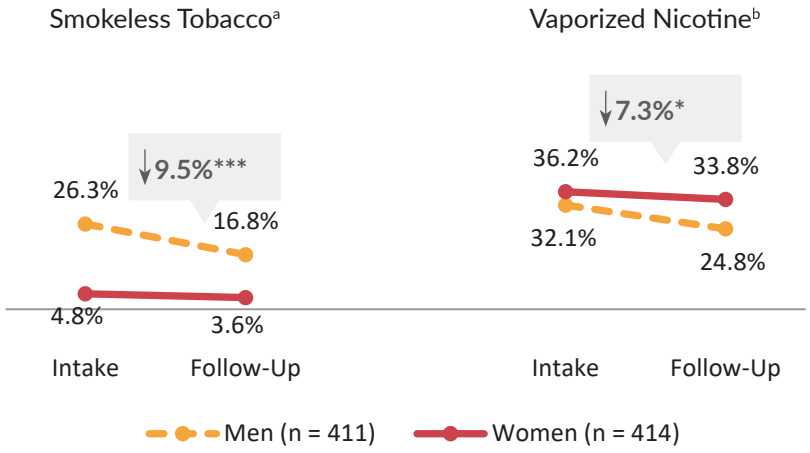
GENDER DIFFERENCES IN PAST-12-MONTH SMOKELESS TOBACCO AND VAPORIZED NICOTINE

Significantly more men than women reported using smokeless tobacco at intake and follow-up

[59] Of those individuals in the follow-up sample, 112 reported they had never smoked regularly, so they were not included in the analysis.

(see Figure 2.58). There was a significant decrease in the percent of men who reported using smokeless tobacco 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 compared to women.

FIGURE 2.58. GENDER DIFFERENCES IN PAST-12-MONTH SMOKING TOBACCO AND SMOKELESS TOBACCO FROM INTAKE TO FOLLOW-UP

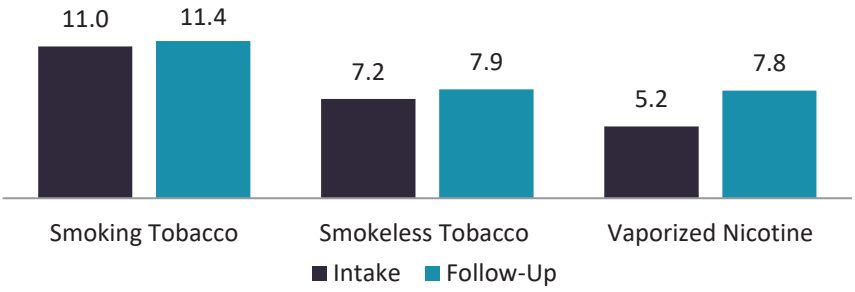


a—Significant difference by gender at intake and follow-up ($p < .001$).
b—Significant difference by gender at follow-up ($p < .01$).
*$p < .05$, ***$p < .001$.

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

Figure 2.59 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 = 704), they reported using tobacco, on average, 11.0 months. Of the clients who reported using smoking tobacco in the 12 months before follow-up (n = 642), they reported using, on average, 11.4 months. Among the clients who reported using smokeless tobacco in the 12 months before entering treatment (n = 128), they reported using it, on average, 7.2 months. Of the clients who reported using smokeless tobacco in the 12 months before follow-up (n = 84), they reported using it, on average, 7.9 months. Among the clients who reported using vaporized nicotine in the 12 months before entering treatment (n = 282), they reported using it, on average, 5.2 months. Of the clients who reported using vaporized nicotine products in the 12 months before follow-up (n = 242), they reported using them, on average, 7.8 months.

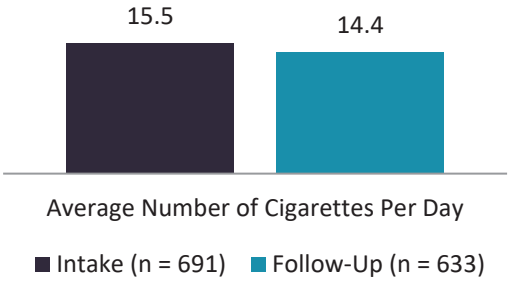
FIGURE 2.59. AVERAGE NUMBER OF MONTHS OF SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE



AVERAGE NUMBER OF CIGARETTES SMOKED

The average number of cigarettes clients reported smoking at intake and follow-up remained relatively stable (see Figure 2.60). Of those who smoked tobacco in the 12 months before entering treatment, clients reported smoking an average of 15.5 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 14.4 cigarettes per day.

FIGURE 2.60. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO[60]

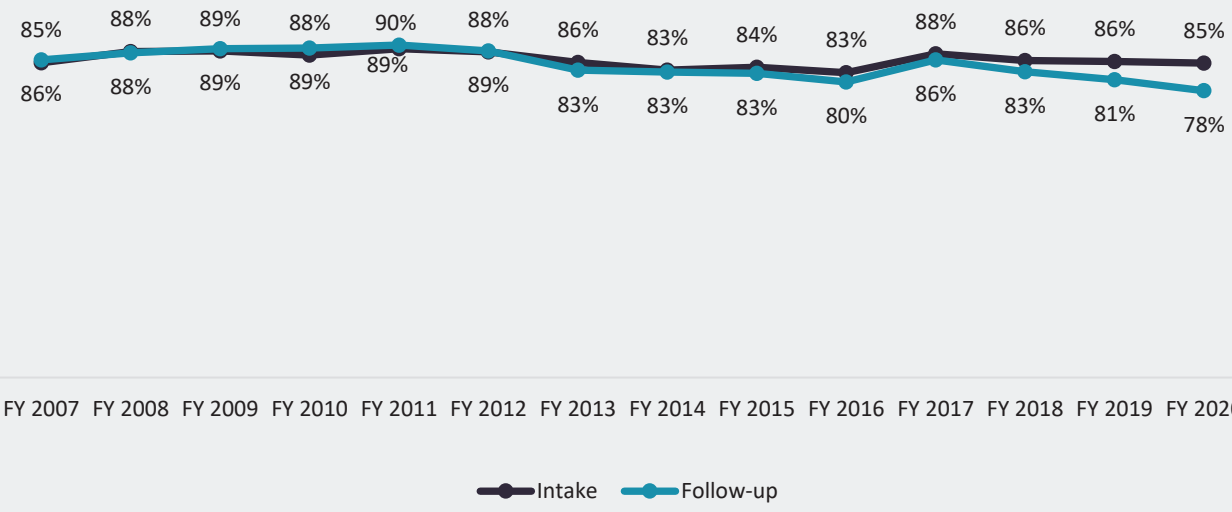


[60] Thirteen cases had missing data for number of cigarettes smoked at intake, and 17 cases had missing data for number of cigarettes smoked at follow-up.

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.

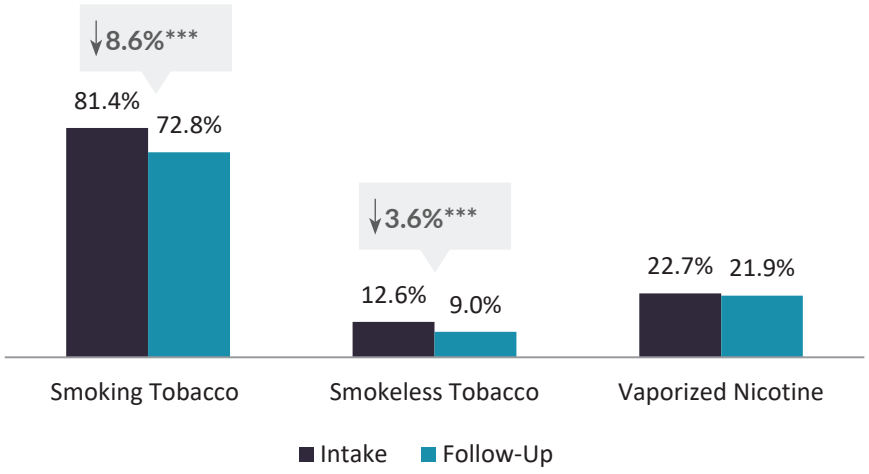
FIGURE 2.61. TRENDS IN SMOKING TOBACCO USE AT INTAKE AND FOLLOW-UP, FY 2007-FY 2020



PAST-30-DAY SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE

The percent of clients who reported any past-30-day smoking tobacco significantly decreased from intake (81.4%) to follow-up (72.8%; see Figure 2.62). Past-30-day use of smokeless tobacco use decreased significantly intake to follow-up. There was no significant change in the percent of individuals who reported using vaporized nicotine in the past 30 days.

FIGURE 2.62. PAST-30-DAY SMOKING, SMOKELESS TOBACCO, AND VAPORIZED NICOTINE USE AT INTAKE AND FOLLOW-UP (n = 708)[61]



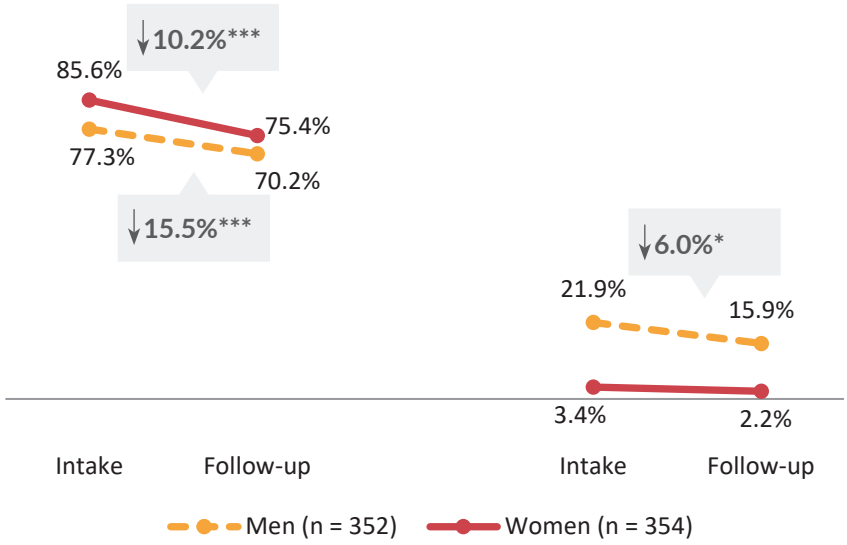
***p < .001.

[61] Two individuals had missing values for smoking tobacco in the 30 days before follow-up.

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

Significantly more women than men reported smoking tobacco in the 30 days before intake (see Figure 2.63). 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 a significant decrease in the percent of men who reported past-30-day smokeless tobacco use from intake to follow-up. There was no significant difference by gender in past-30-day use of vaporized nicotine at intake or follow-up.

FIGURE 2.63. GENDER DIFFERENCES IN PAST-30-DAY SMOKING AND SMOKELESS TOBACCO AT INTAKE AND FOLLOW-UPa



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

SECTION 3. BIVARIATE AND MULTIVARIATE ANALYSIS OF FACTORS ASSOCIATED WITH RELAPSE

This section focuses on a multivariate analysis examining factors related to relapse in the 2022 KTOS follow-up sample.

KTOS clients who reported using any illegal drugs and/or engaged in problem alcohol use (i.e., alcohol to intoxication or binge drinking) in the 12 months before follow-up (n = 299, 35.6%) were compared to clients who did not report use of any drugs or alcohol in the 12 months before follow-up (n = 540, 64.4%) in bivariate statistical tests.[62] Several factors measured at intake were significantly associated with relapse in the follow-up period (see Table 3.1): meeting criteria for moderate or severe SUD, average number of months employed, average number of mental health symptoms, 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 engaged in problem alcohol in the 12 months before follow-up (n = 299)	Did not use illegal drugs or engage in problem alcohol use in the 12 months before follow-up (n = 540)
Average age at intake	34.5	35.7
Male	54.5%	48.1%
Met criteria for moderate or severe SUD per DSM-5*	72.6%	64.3%
Number of nights incarcerated in the 12 months before intake	34.4	44.7
Number of months employed in the 12 months before intake*	4.5	4.7
Average number of mental health symptoms (depression and anxiety) reported at intake**	8.7	7.4
Number of people client could count on for recovery support at intake	6.1	6.2
Average quality of life rating at intake*	6.7	7.1
Average number of adverse childhood experiences	3.8	3.6

*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 illegal drug or problem 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, age, gender, and total number of anxiety and depression symptoms were significantly associated with illegal drug and/or problem alcohol use in the follow-up period (see Table 3.2). Specifically, males had greater odds of using illegal drugs and/or problem alcohol use at 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. Nonetheless, all the adjusted odds ratios were close to 1.00.

[62] Two individuals had missing values for alcohol/drug use in the 12 months before follow-up.

TABLE 3.2. ASSOCIATION OF TARGETED FACTORS AND RELAPSE

Factors at intake	B	Wald	Odds ratio	95% CI	
				Lower	Upper
Age	-.016	4.168	.984*	.969	.999
Gender [1 = Male, 2 = Female]	-.437	7.953	.646**	.477	.875
Number of nights incarcerated	-.002	4.122	.998	.996	1.000
Number of months employed	-.022	1.662	.979	.947	1.011
Number of depression and anxiety symptoms	.028	4.071	1.029*	1.001	1.057
Number of people client could count on for recovery support	.001	.024	1.001	.986	1.017
Quality of life rating	-.055	2.451	.946	.883	1.014
Number of adverse childhood experiences	.013	.235	1.013	.961	1.068

*p < .05, **p < .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) Posttraumatic stress disorder, (6) perceptions of poor physical and mental health, (7) overall health status, (8) chronic medical problems at intake, (9) chronic pain, (10) health insurance, and (11) interpersonal victimization experiences. Mental health and physical health questions in the KTOS intake and follow-up surveys were self-report measures.

DEPRESSION SYMPTOMS

To assess depression, first participants were asked two screening questions:
"Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?" and
"Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?"

Study Criteria for Depression

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

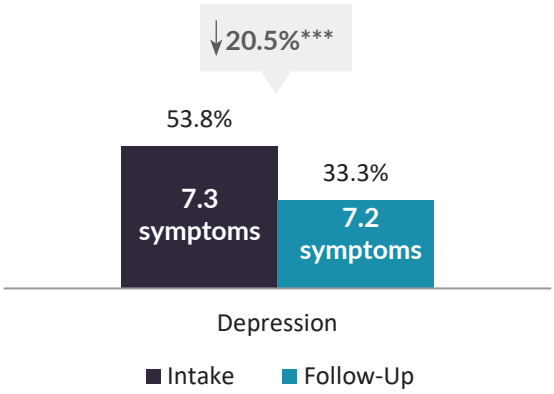
If participants answered "yes" to at least one of these two screening questions, they were then asked seven additional questions about symptoms of depression (e.g., sleep problems, weight loss or gain, feelings of hopelessness or worthlessness).

More than half of clients (53.8%) met criteria for depression in the 12 months before they entered treatment (see Figure 4.1). At follow-up, one-third of individuals (33.3%) met criteria for depression—a significant decrease of 20.5%. Of those who met study criteria at intake (n = 594), they had an average of 7.3 symptoms out of 9. At follow-up, among those who met study criteria for depression (n = 348)[63], clients reported an average of 7.2 symptoms out of 9.

The percent of clients meeting criteria for depression decreased significantly by 21% from intake to follow-up

[63] 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 = 839)

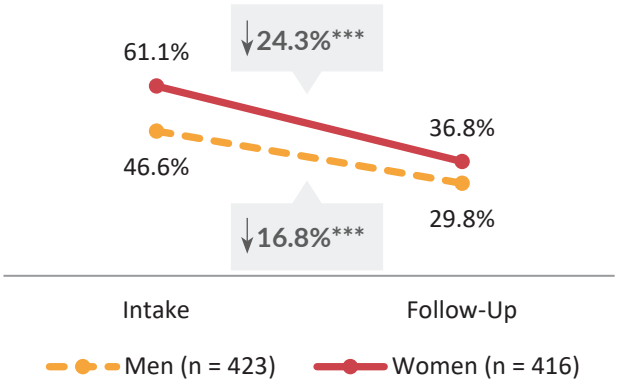


***p < .001.

GENDER DIFFERENCES IN DEPRESSION

Significantly more women met study criteria for depression at intake and follow-up compared to men. At intake, 61.1% of women met study criteria compared to 46.6% of men. At follow-up, the percent of women who reported depression was 36.8% compared to 29.8% of men (see Figure 4.2). The number of women and men who met criteria for depression decreased significantly.

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

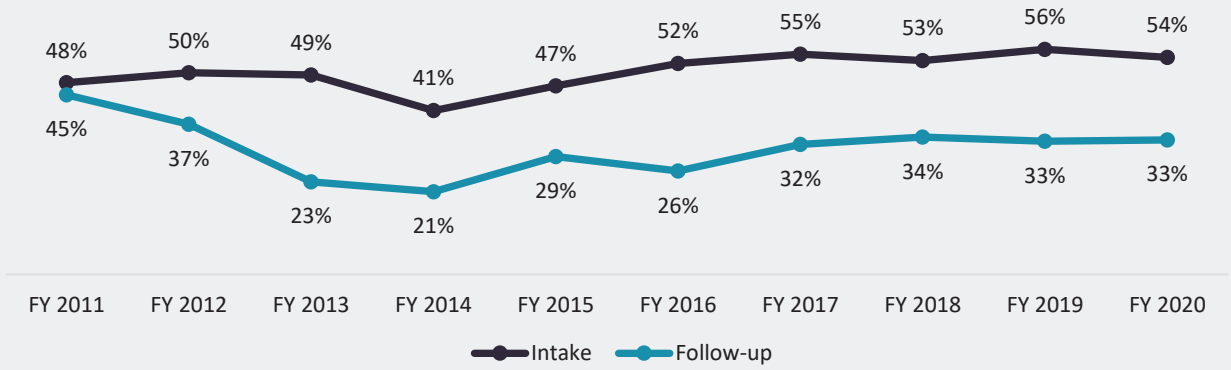


a—Statistical difference by gender at intake (p < .001) and follow-up (p < .05).
***p < .001.

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 10 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 and 2020, the percent of individuals who met criteria for depression at follow-up was 33%.

FIGURE 4.3. TRENDS IN THE NUMBER OF CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP, FY 2011-FY 2020



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).

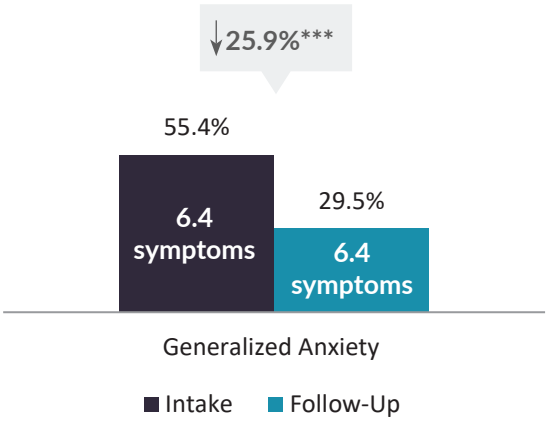
In the 12 months before entering treatment, about half of clients reported symptoms that met study criteria for generalized anxiety (55.4%; see Figure 4.4). By follow-up, the percent of clients meeting study criteria for generalized anxiety had decreased by 25.9% to 29.5%. At intake, among those who met study criteria for generalized anxiety (n = 458), clients reported an average of 6.4 symptoms out of 7. Among those who met study criteria for generalized anxiety at follow-up (n = 244), clients reported an average of 6.4 symptoms out of 7.

Study Criteria for General Anxiety Disorder

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

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

FIGURE 4.4. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 826)[64]

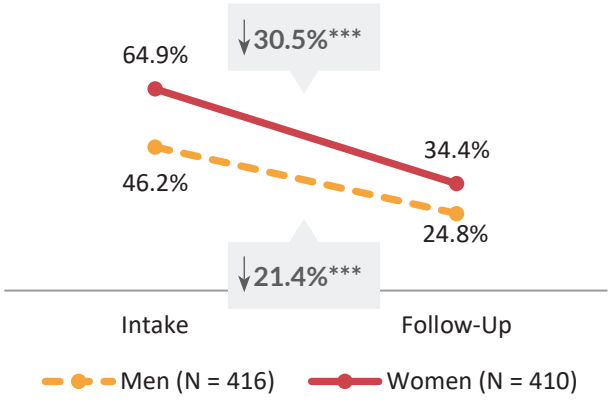


***p < .001.

GENDER DIFFERENCES IN GENERALIZED ANXIETY SYMPTOMS

Significantly more women met criteria for generalized anxiety at intake and follow-up compared to men (see Figure 4.5). The percent of women and men who met criteria for generalized anxiety decreased significantly from intake.

FIGURE 4.5. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY[a]

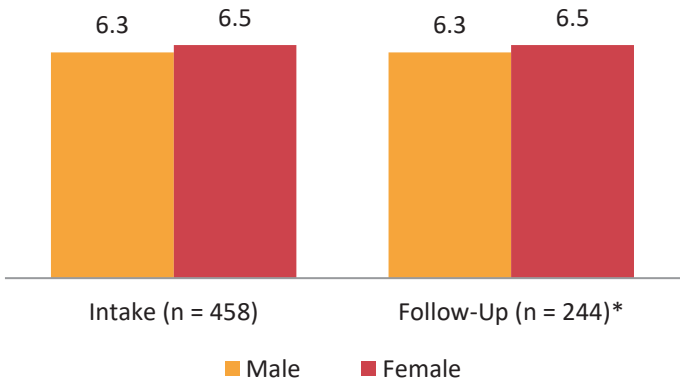


a—Statistical difference by gender at intake (p < .001) and follow-up (p < .01).
***p < .001.

Of those who met study criteria for generalized anxiety at intake, there was no statistical difference in the number of symptoms at intake by gender (see Figure 4.6). Of those who met study criteria for generalized anxiety at follow-up, women reported a significantly higher number of anxiety symptoms compared to men (6.5 vs. 6.3).

[64] Missing data on generalized anxiety at follow-up for 13 clients.

FIGURE 4.6. GENDER DIFFERENCES IN NUMBER OF GENERALIZED ANXIETY SYMPTOMS REPORTED BY THOSE WHO MET STUDY CRITERIA FOR GAD AT INTAKE AND FOLLOW-UP[a]

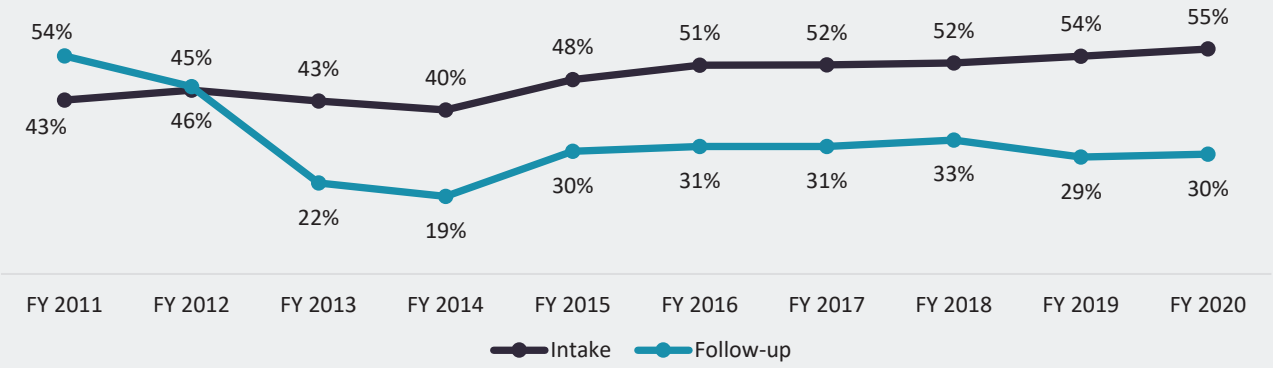


a – To meet study criteria, a client had to endorse at least 4 of 7 anxiety symptoms.
**p < .05.

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 ten 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 - 2020.

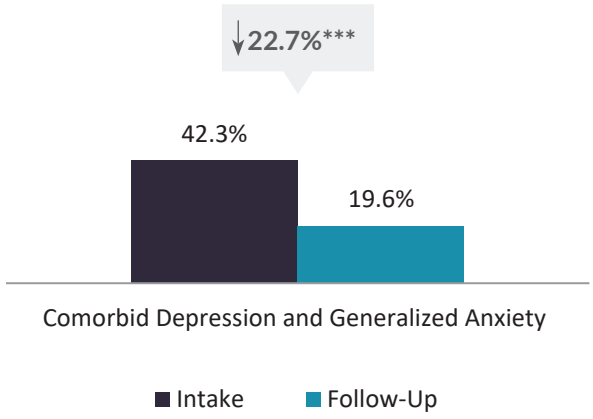
FIGURE 4.7. TRENDS IN THE NUMBER OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP, FY 2011-FY 2020



COMORBID DEPRESSION AND ANXIETY SYMPTOMS

Figure 4.8 shows that at intake, 42.3% of clients met study criteria for both depression and generalized anxiety and there was a significant 22.7% decrease in the percent of individuals who met study criteria for depression and generalized anxiety at follow-up (19.6%).

FIGURE 4.8. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 832)[65]

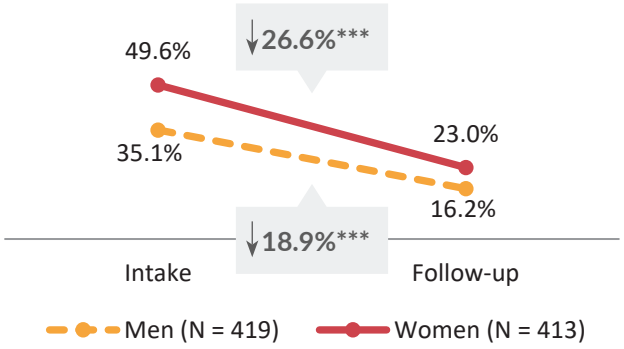


***p < .001.

GENDER DIFFERENCES IN COMORBID DEPRESSION AND GENERALIZED ANXIETY SYMPTOMS

Significantly more women met criteria for comorbid depression and generalized anxiety at intake and follow-up compared to men (see Figure 4.9). The percent of women and men who met criteria for depression and generalized anxiety decreased significantly by 26.6% and 18.9% respectively.

FIGURE 4.9. GENDER DIFFERENCES IN PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP[a]



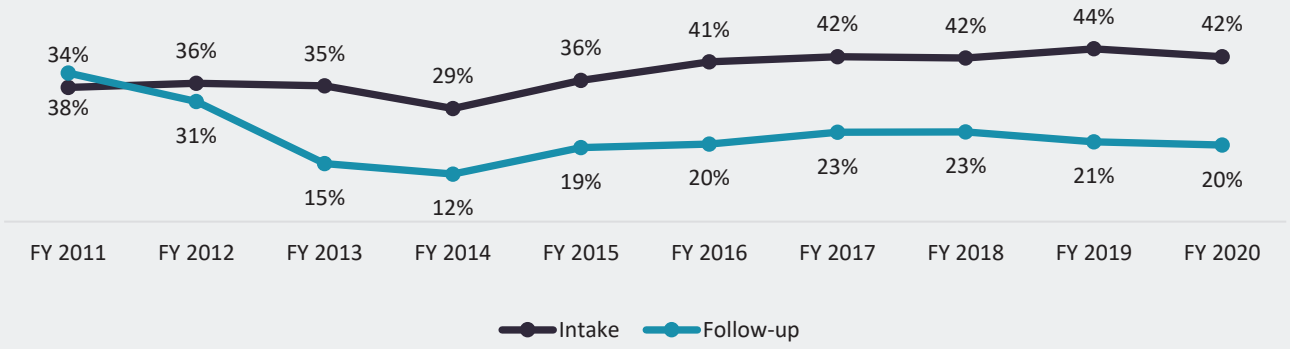
a—Statistical difference by gender at intake (p<.001) and follow-up (p < .05).
***p < .001.

[65] Seven individuals had missing data for depression and/or generalized anxiety at follow-up.

Trends in Comorbid Depression and Anxiety

Past-10-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. At follow-up, however, the percent of clients meeting criteria for comorbid depression and anxiety has remained stable for the past six years.

FIGURE 4.10. TRENDS IN THE PERCENT OF CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY AT INTAKE AND FOLLOW-UP, FY 2011-FY 2020

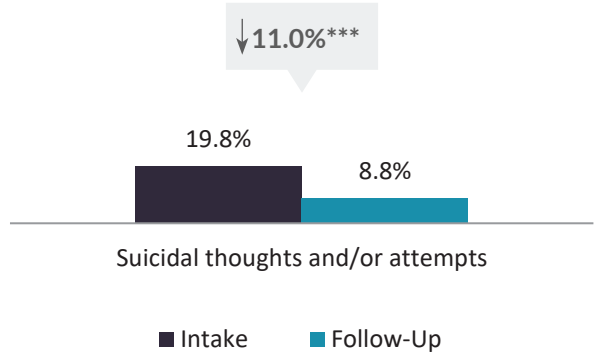


SUICIDAL THOUGHTS AND/OR ATTEMPTS

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, 19.8% of clients reported thoughts of suicide or attempted suicide and 8.8% of clients reported thoughts of suicide or attempted suicide in the 12 months before follow-up. There was an 11.0% decrease from intake to follow-up in the number of clients reporting suicidal thoughts and attempts (see Figure 4.11).

The percent of clients reporting suicidal thoughts and/or attempts decreased 11% at follow-up

FIGURE 4.11. CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 833)[66]

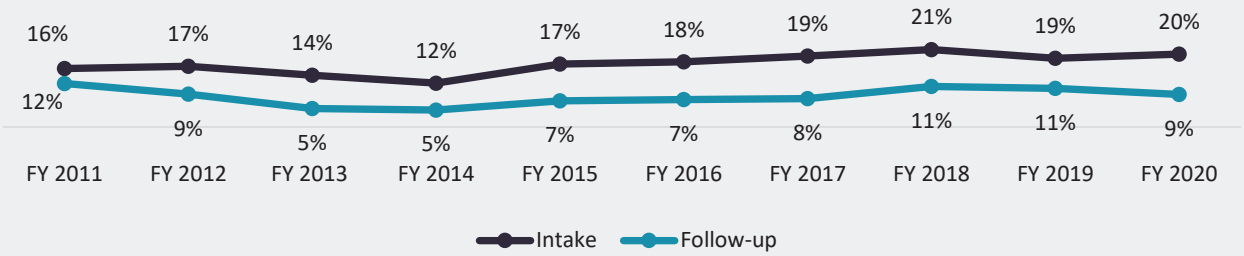


***p < .001.

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 4.12. TRENDS IN THE NUMBER OF CLIENTS REPORTING SUICIDAL THOUGHTS AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP, FY 2011-2020

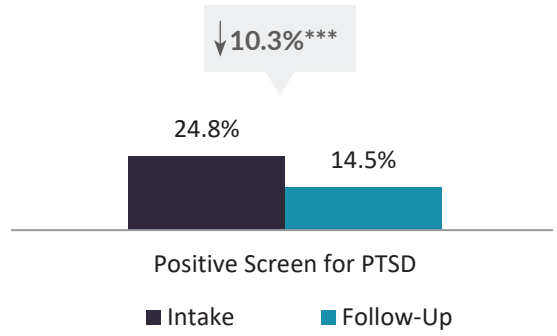


[66] Six individuals had missing data for suicidal thoughts and/or attempts at follow-up.

POSTTRAUMATIC STRESS DISORDER SYMPTOMS

Included in the intake and follow-up surveys were four items from the PTSD checklist about how bothered they had been about the symptoms in the prior 12 months.[67] At intake, 24.8% screened positive for PTSD, and 14.5% screened positive for PTSD at follow-up (see Figure 4.13).[68]

FIGURE 4.13. CLIENTS WHO SCREENED POSITIVE FOR PTSD AT INTAKE AND PAST-12-MONTHS AT FOLLOW-UP (n = 823)[69]

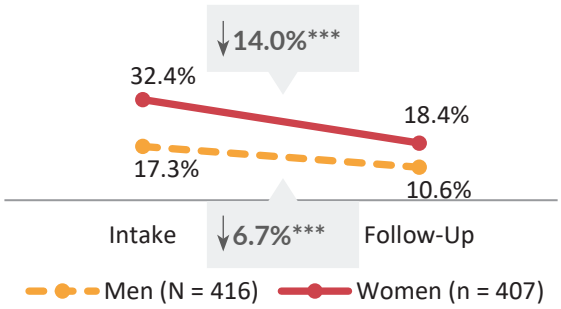


***p < .001.

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 4.14). The percent of women and men who had a positive screen for PTSD decreased significantly by 14.0% and 6.7% respectively.

FIGURE 4.14. GENDER DIFFERENCES IN PERCENT OF CLIENTS WITH A POSITIVE SCREEN FOR PTSD AT INTAKE AND FOLLOW-UP[a]



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

[67] 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.

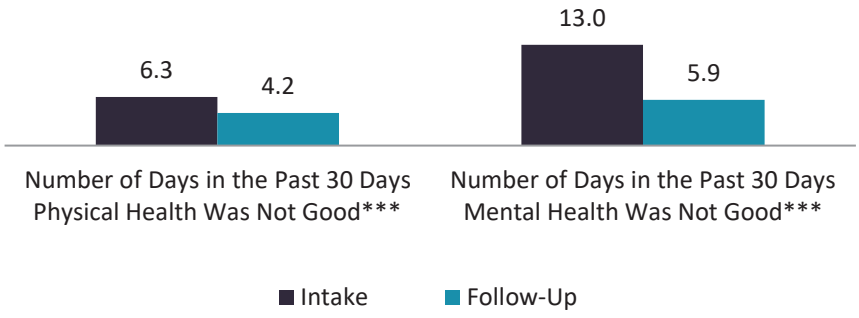
[68] In previous years' reports PTSD symptom questions were asked only of individuals who reported any lifetime victimization. For the data included in this report, the PTSD symptom questions were asked of all clients.

[69] Sixteen individuals had a missing value on items about PTSD symptoms in the 12 months before follow-up.

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 4.15). There was a significant decrease from intake to follow-up in the number of days clients reported their physical health was not good (6.3 vs. 4.2). The number of days clients' mental health was not good also decreased significantly from 13.0 at intake to 5.9 at follow-up.

FIGURE 4.15. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 835)[70]

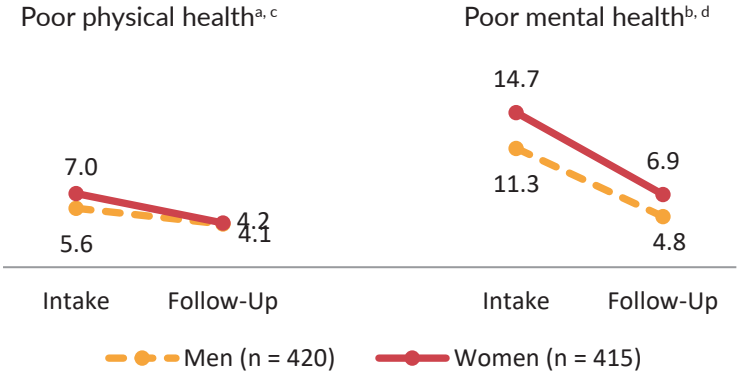


***p < .001.

GENDER DIFFERENCES IN PERCEPTIONS OF PHYSICAL HEALTH AND MENTAL HEALTH

The average number of days women reported their physical health was not good in the past 30 days at intake compared to men. Women's reported average 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 from intake to follow-up in the reported number of days their physical health and mental health were not good.

FIGURE 4.16. GENDER DIFFERENCES IN NUMBER OF DAYS IN THE PAST 30 DAYS PHYSICAL HEALTH AND MENTAL HEALTH WAS NOT GOOD[a,b]



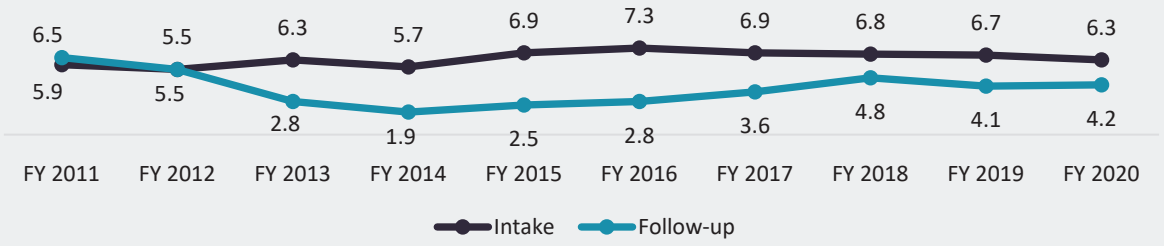
a—Statistical difference by gender at intake (p < .05).
b—Statistical difference by gender at intake (p < .001) and at follow-up (p < .001).
c – Significant decrease from intake to follow-up for men (p < .01) and women (p < .001).
d—Significant decrease from intake to follow-up for men and women (p 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

[70] Four clients had missing data for the physical health question at follow-up. Six 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 6.3 in FY 2020. 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 (4.8) it has been since FY 2012, with a decrease to 4.2 in FY 2020.

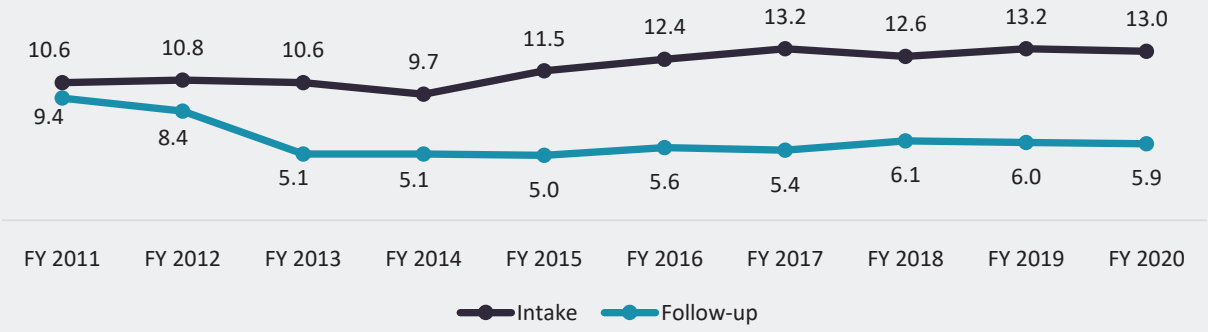
FIGURE 4.17. TRENDS IN SELF-REPORTED AVERAGE NUMBER OF DAYS OF POOR PHYSICAL HEALTH AT INTAKE AND FOLLOW-UP, REPORTS FY 2011-FY 2020



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. In FY 2020, individuals reported an average 5.9 days their mental health was not good in the 30 days before follow-up.

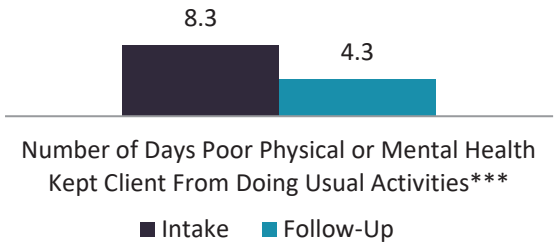
FIGURE 4.18. TRENDS IN SELF-REPORTED AVERAGE NUMBER OF DAYS OF POOR MENTAL HEALTH AT INTAKE AND FOLLOW-UP, FY 2011 – FY 2020



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 8.3 days at intake to 4.3 days at follow-up (see Figure 4.19).

FIGURE 4.19. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 830)[71]

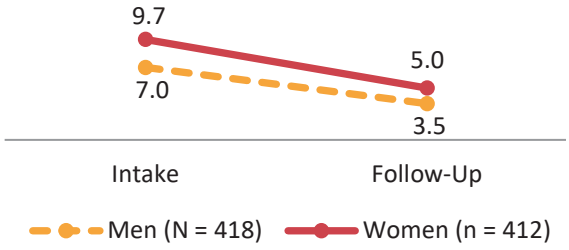


***p < .001.

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 and at follow-up (see Figure 4.20). 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 4.20. GENDER DIFFERENCES IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEPT CLIENT FROM DOING USUAL ACTIVITIES[a,b]



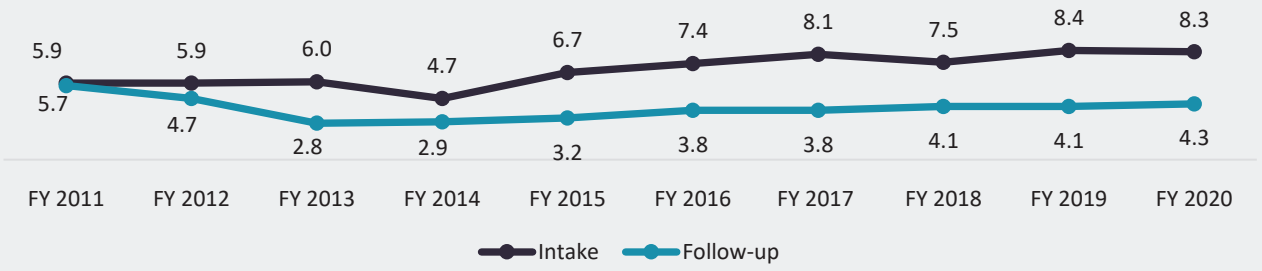
a—Statistical difference by gender at intake (p < .001) and follow-up (p < .01).
b – Significant decrease from intake to follow-up for men and women (p < .001).

[71] Nine 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 2020 (4.3).

FIGURE 4.21. 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 2020

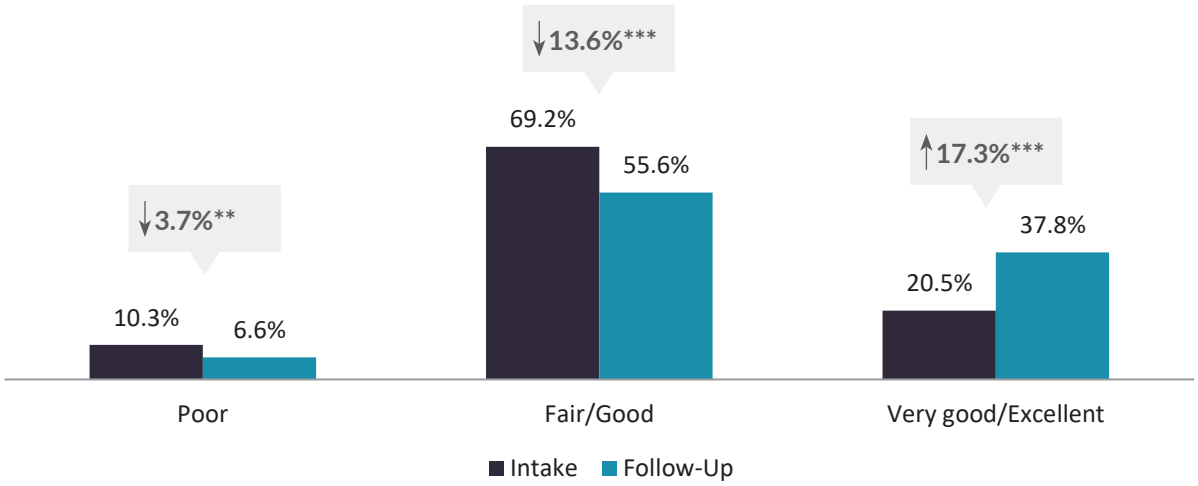


PHYSICAL HEALTH STATUS

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 2.8 at intake and this significantly increased to 3.2 at follow-up (not depicted in figure). Figure 4.22 shows that significantly more clients rated their overall physical health as very good or excellent (37.8%) at follow-up compared to intake (20.5%). Additionally, significantly fewer clients reported their health was poor, or fair/good at follow-up than at intake.

FIGURE 4.22. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 834)[a72]

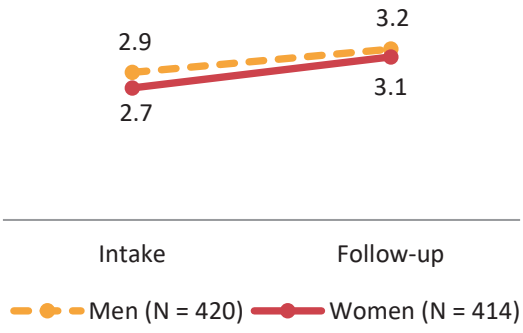


a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
**$p < .01$, ***$p < .001$.

GENDER DIFFERENCES IN OVERALL HEALTH STATUS

At intake, women rated their overall health significantly lower than men rated their health (2.7 vs. 2.9; see Figure 4.23). For both men and women, there was a significant increase in overall health status rating. At follow-up, women (3.1) still rated their overall health significantly lower than men (3.2).

FIGURE 4.23. GENDER DIFFERENCES IN CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP[a,b]



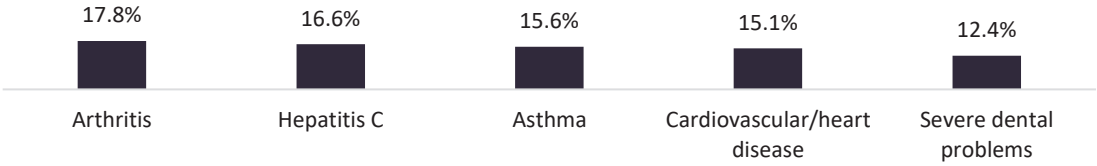
a—Statistical difference by gender at intake ($p < .05$) and follow-up ($p < .05$).
b – Significant increase from intake to follow-up for men and women ($p < .001$).

CHRONIC MEDICAL PROBLEMS

Over half of clients (58.8%) 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 (63.7% vs. 53.9%; not depicted in a figure). The most common medical problems clients reported by clients were arthritis (17.8%), hepatitis C (16.6%), asthma (15.6%), heart disease (15.1%), and severe dental problems (12.4%; see Figure 4.24).

[72] Five clients had missing data for overall health status at follow-up.

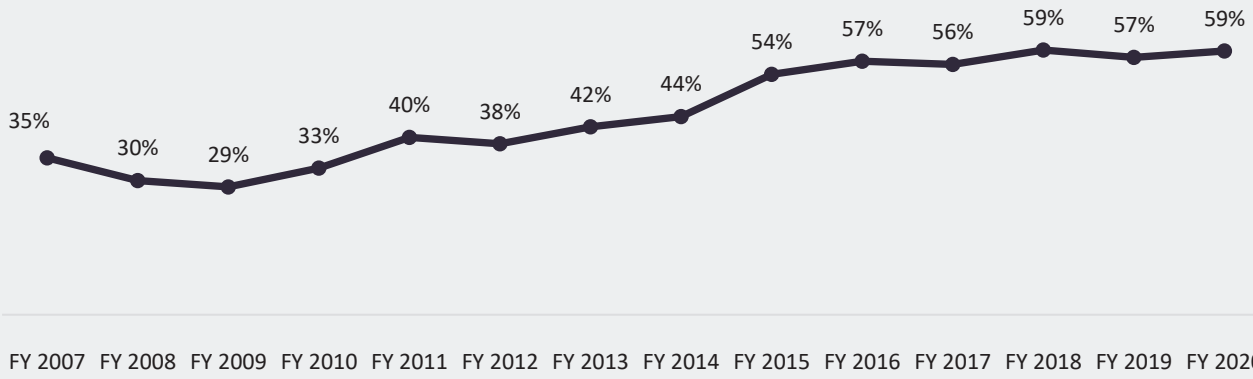
FIGURE 4.24. CHRONIC MEDICAL PROBLEMS REPORTED AT INTAKE (N = 839)



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 2020.

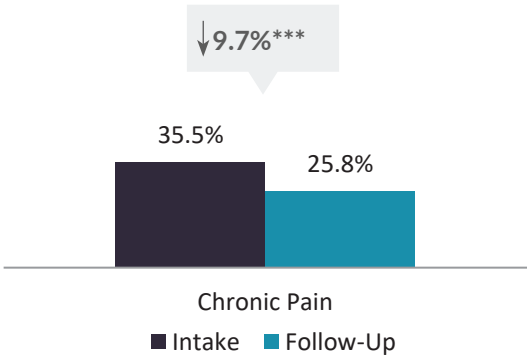
FIGURE 4.25. TRENDS IN THE CLIENTS REPORTING A LIFETIME CHRONIC MEDICAL PROBLEM AT INTAKE, FY 2007-2020



CHRONIC PAIN

More than one-third of clients reported they had chronic pain at intake (see Figure 4.26). There was a significant decrease from intake to follow-up.

FIGURE 4.26. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 836)

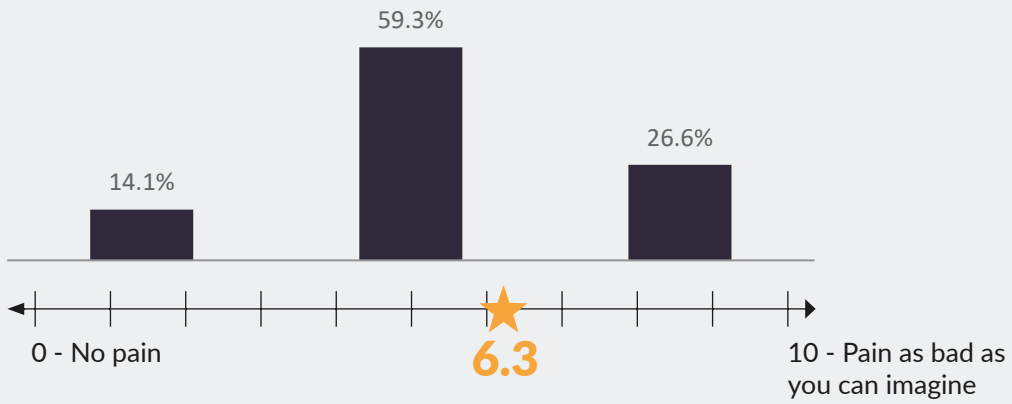


***p < .001.

Taking a Closer Look at Chronic Pain

At intake, 35.5% (n = 297) 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 25.2 (ranging from less than one year old to age 63). In the 30 days before entering treatment, clients experienced chronic pain, on average, 25.5 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 intensity of 6.3 with 26.6% of clients giving their pain the highest ratings of 8, 9, and 10 (see Figure 4.27).

FIGURE 4.27. INTENSITY RATING OF CHRONIC PAIN AT INTAKE (n = 297)



Prescription Opioid Misuse and Chronic Pain

Of those who misused prescription opioids at intake (n = 276),[73] 46.0% reported chronic pain in the 12 months before entering substance abuse treatment and 28.3% experienced chronic pain at follow-up, which was a significant decrease of 17.7%.

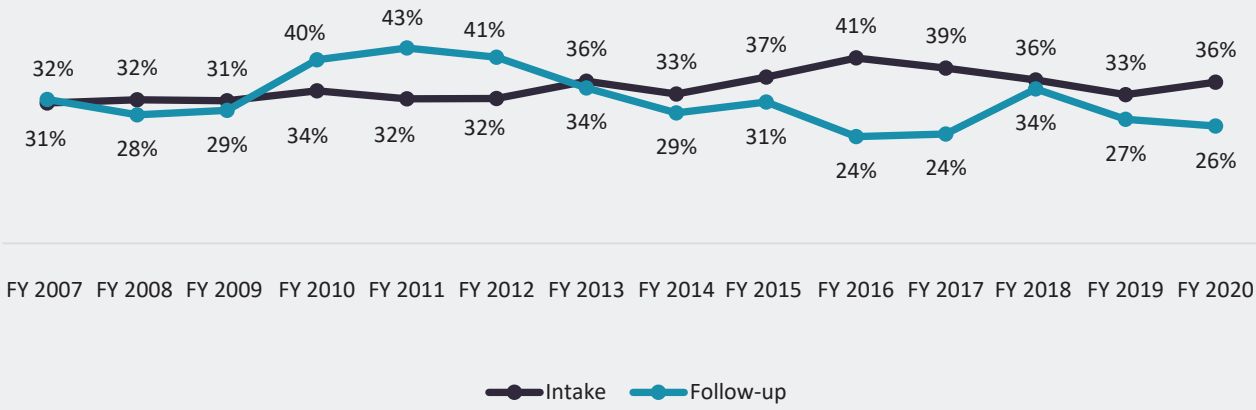
Additionally, of the individuals who reported misusing prescription opioids and experiencing chronic pain at intake (n = 127), 44.1% (n = 56) reported chronic pain in the past 12 months at follow-up and 16.5% (n = 21) reported past-12-month misuse of prescription opioids.

[73] A total of 277 individuals reported using prescription opioids in the 12 months before intake; however, one of these individuals had missing data for chronic pain at follow-up.

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 (26%) was lower than the percent at intake (36%).

FIGURE 4.28. TRENDS IN THE NUMBER OF CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP, FY 2007-FY 2020

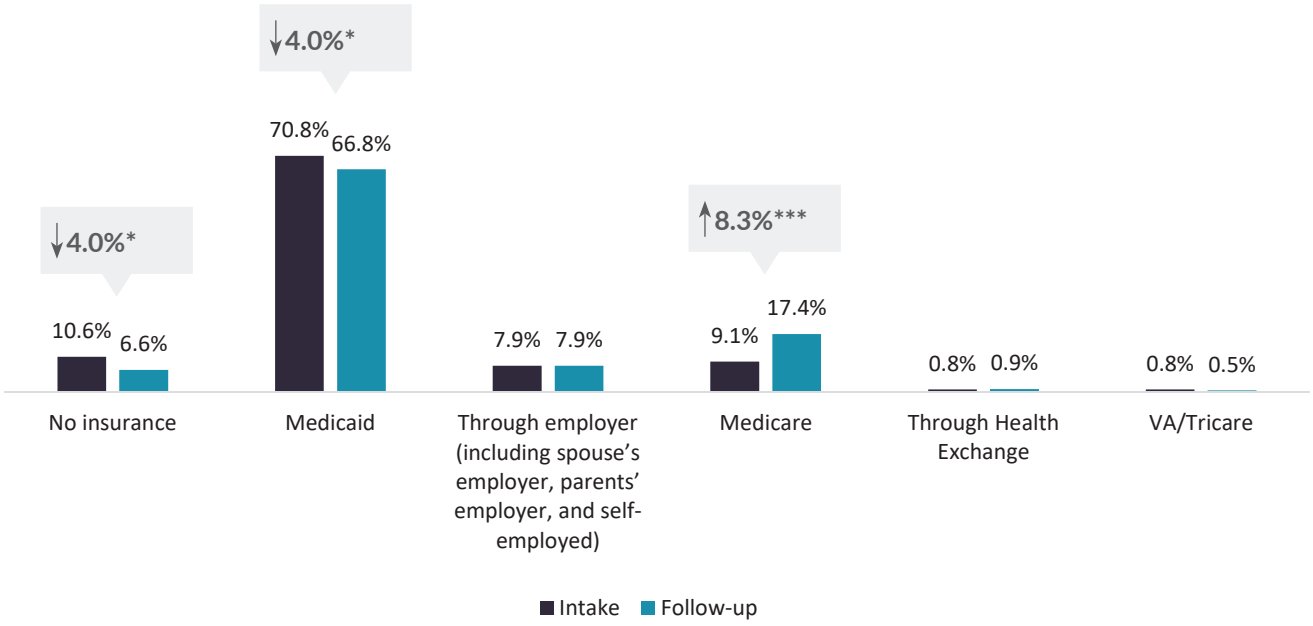


HEALTH INSURANCE

At intake, the majority of KTOS clients reported they had health insurance through Medicaid (70.8%; see Figure 4.29). A small percentage did not have any insurance (10.6%). Small numbers of clients had insurance through an employer, including through a spouse, parent, or self-employment (7.9%), through Medicare (9.1%), and through Health Exchange (0.8%). At follow-up, the number of clients reporting they had no insurance and the number reporting they had Medicaid decreased significantly and the number reporting they had Medicare increased significantly.

> *The people that worked there went the extra mile. I had doctors that were very helpful. They gave me tools to survive in the real world.*
>
> - KTOS FOLLOW-UP CLIENT

FIGURE 4.29. HEALTH INSURANCE FOR KTOS CLIENTS AT INTAKE AND FOLLOW-UP (N = 789)[74]



a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .01$).
*$p < .05$, **$p < .01$, ***$p < .001$.

A closer look at insurance

Of those clients who were employed full-time at intake (n = 206),[75] only 13.6% had insurance through their employer. At follow-up, of those clients employed full-time (n = 343),[76] only 12.8% had insurance through their employer.

GENDER DIFFERENCES IN MEDICAL INSURANCE

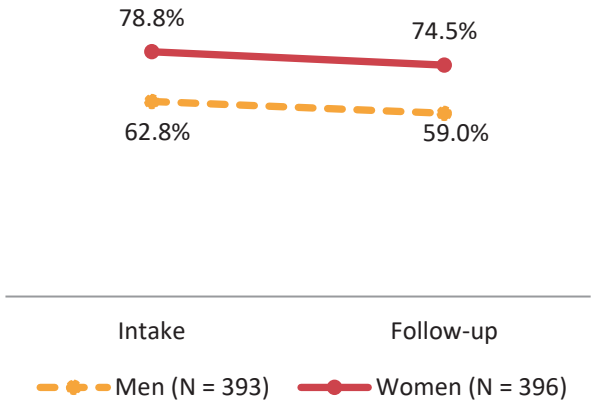
Significantly more women reported being insured by Medicaid at both intake and follow-up compared to men (see Figure 4.30). There was no significant change from intake to follow-up for either women or men.

[74] At intake, 22 individuals had responses that fit under "other" and could not be classified. At follow-up, 22 clients had missing data for insurance at follow-up, and 7 individuals had responses that fit under "other" and could not be classified. The missing responses are not included in this analysis.

[75] A total of 212 individuals reported they were employed at intake, however, six individuals had missing values for the type of medical insurance at intake.

[76] Of the 361 clients employed full-time at follow-up, 14 had missing information for insurance at follow-up and 4 mentioned an insurance carrier that could not be classified into one of the categories.

FIGURE 4.30. GENDER DIFFERENCES IN CLIENTS REPORTING HAVING MEDICAID INSURANCE AT INTAKE AND FOLLOW-UP[a]



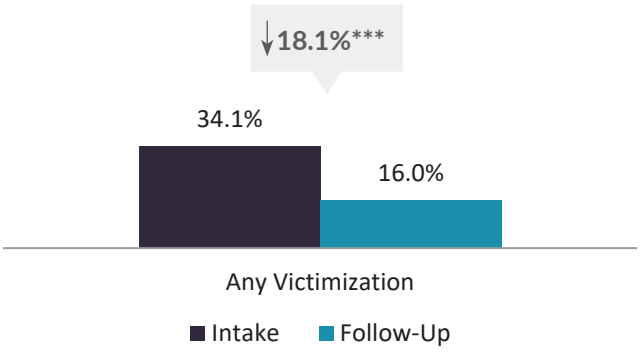
a—Statistical difference by gender at intake and follow-up ($p < .001$).

INTERPERSONAL VICTIMIZATION

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

About 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 4.31).

FIGURE 4.31. INTERPERSONAL VICTIMIZATION IN THE PAST 12 MONTHS AT INTAKE AND FOLLOW-UP (N = 839)

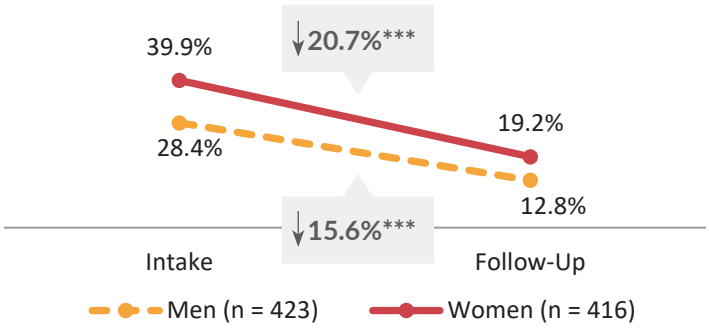


***$p < .001$.

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 4.32). The percent of women and men who reported experiencing any victimization decreased significantly from intake to follow-up by 20.7% and 15.6% respectively.

FIGURE 4.32. GENDER DIFFERENCES IN INTERPERSONAL VICTIMIZATION IN THE PAST 12 MONTHS



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

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.

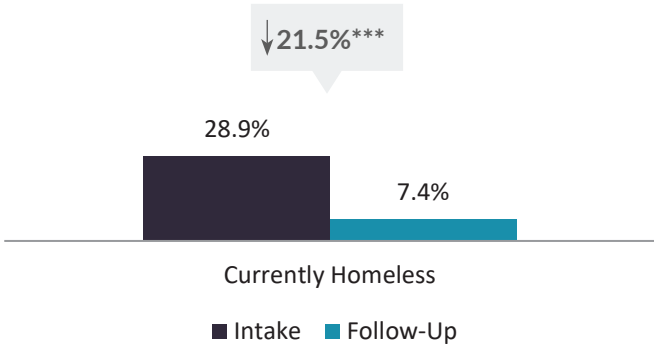
LIVING SITUATION

HOMELESSNESS

More than 1 in 4 clients (28.9%) reported at treatment intake they were currently homeless and at follow-up 7.4% of clients reported they were currently homeless – a significant decrease of 21.5% (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 = 838)[77]

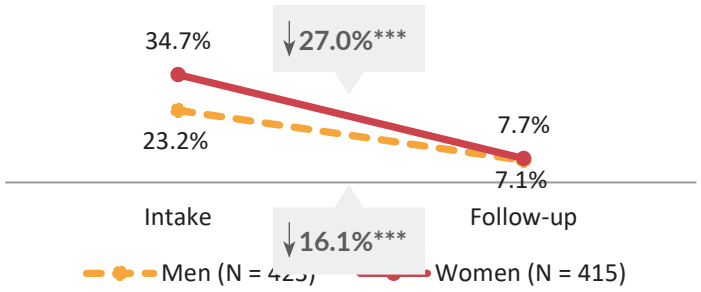


***p < .001.

GENDER DIFFERENCES IN HOMELESSNESS

Significantly more women reported being homeless at intake and follow-up when compared to men (see Figure 5.2).[78] The percent of women and men reporting homelessness at follow-up decreased significantly 27.0% and 16.1%, respectively).

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



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

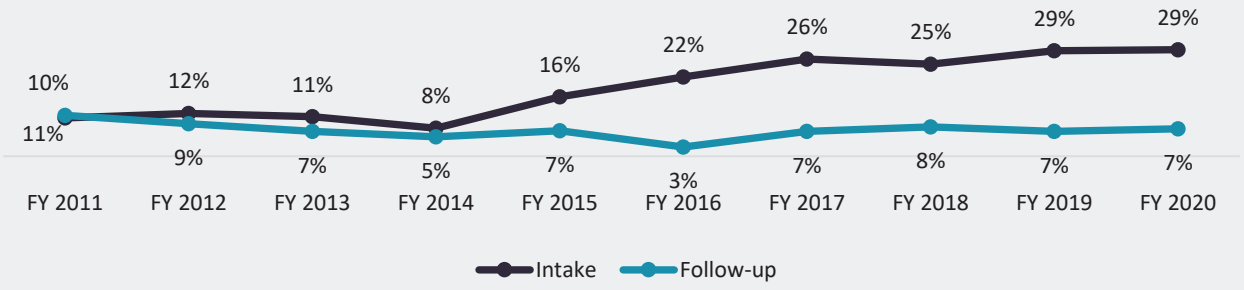
[77] One individual had missing data for homelessness at follow-up.

[78] One individual 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 and FY 2020 (29%). The percent of individuals who reported homelessness at follow-up has remained consistent over the nine years, with the exception of FY 2011 and FY 2016.

FIGURE 5.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING HOMELESSNESS AT INTAKE AND FOLLOW-UP, FY 2011-FY 2020

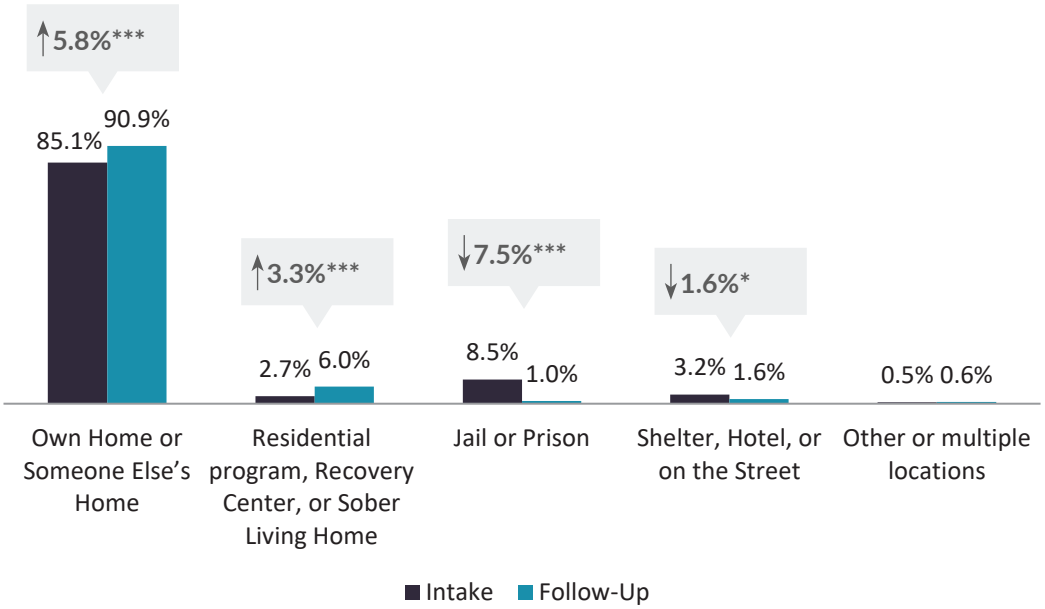


USUAL LIVING SITUATION

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 (85.1%) and follow-up (90.9%). 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 6.0% 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: 8.5% vs. 1.0%. 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.

FIGURE 5.4. USUAL LIVING SITUATION AT INTAKE AND FOLLOW-UP (N = 838)[79]

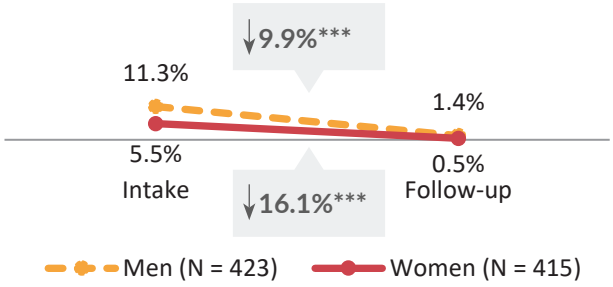


a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
*$p < .05$, ***$p < .001$.

GENDER DIFFERENCES IN USUAL LIVING SITUATION

Significantly more men reported their usual living situation at intake was in jail or prison when compared to women (see Figure 5.5).[80] The percent of women and men reporting their usual living situation was in jail or prison decreased significantly from intake to follow-up).

FIGURE 5.5. GENDER DIFFERENCES IN CLIENTS USUAL LIVING SITUATION BEING JAIL OR PRISON AT INTAKE AND FOLLOW-UP[a]



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

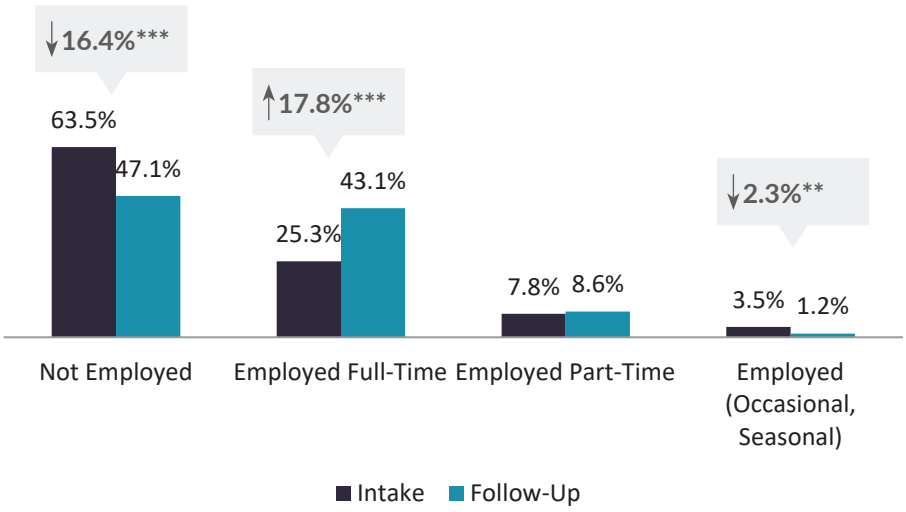
[79] One individual had missing data for living situation at follow-up.
[80] One individual had missing data for homelessness at follow-up.

EMPLOYMENT

CURRENT EMPLOYMENT STATUS

There were significant changes in current employment status from intake to follow-up (see Figure 5.6).[81] The majority of clients reported they were not employed when they entered treatment, while less than half of clients (47.1%) reported they were unemployed at follow-up. This represents a 16.4% significant decrease in the number of clients who were currently unemployed. The percent of clients who were employed full-time increased significantly by 17.8% from intake to follow-up (25.3% vs. 43.1%), and the percent with occasional/seasonal work decreased significantly at follow-up.

FIGURE 5.6. CHANGE IN CURRENT EMPLOYMENT STATUS (N = 838)[a]



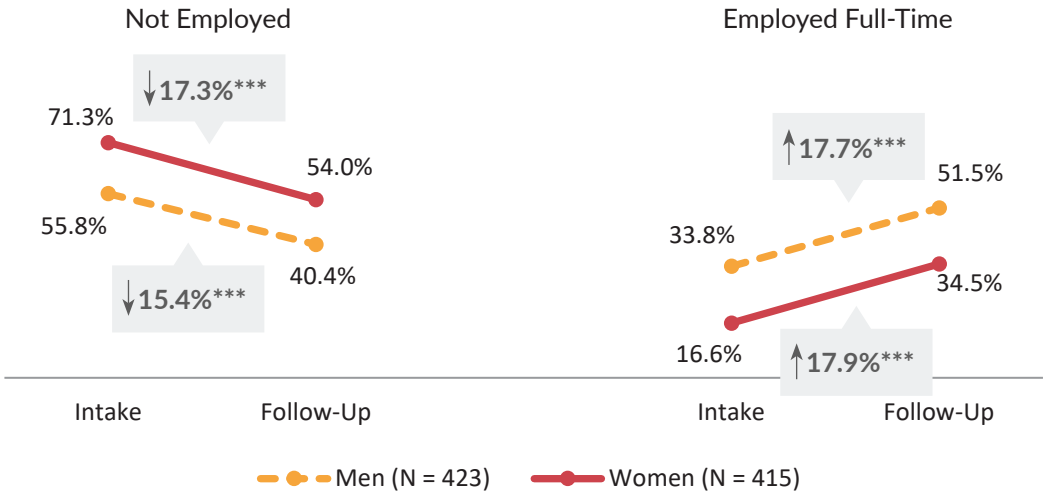
a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
**$p < .01$, ***$p < .001$.

GENDER DIFFERENCES IN CURRENT EMPLOYMENT STATUS

Significantly more women reported at intake and follow-up that they were currently unemployed compared to men: 71.3% vs. 55.8% at intake and 54.0% vs. 40.4% at follow-up. The percent of clients who were currently unemployed decreased significantly for both women and men (see Figure 5.7). 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 (33.8% vs. 16.6%) and at follow-up (51.5% vs. 34.5%). Both genders, however, had significant increases in full-time employment from intake to follow-up (17.9% for women and 17.7% for men).

[81] One case had missing data for current employment at follow-up.

FIGURE 5.7. GENDER DIFFERENCES IN EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UPa



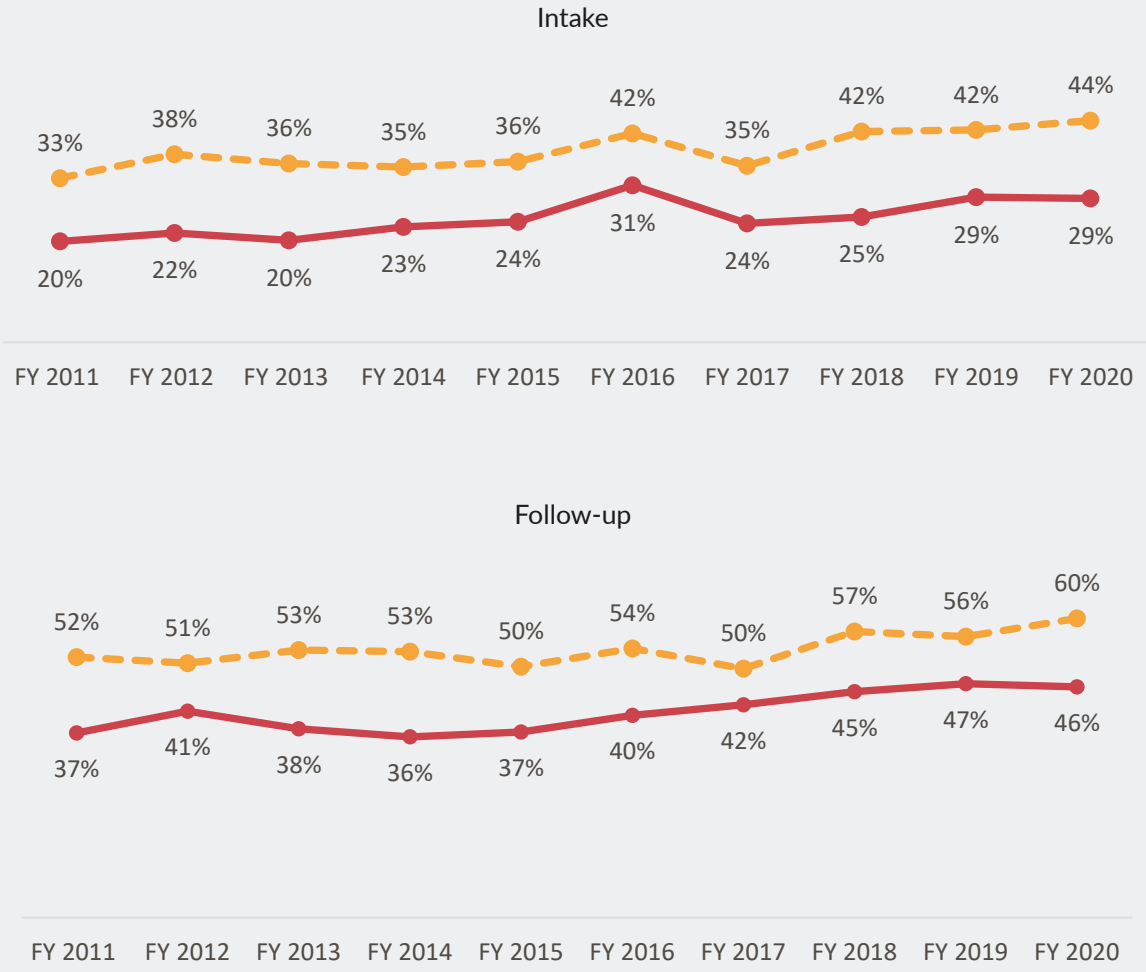
a – Significant difference by gender at intake and follow-up ($p < .01$).
***$p < .001$.

> *Everyone tried to help and didn't judge in any way. Very supportive. Looked at the next day as a new day, not get down on myself.*
>
> - KTOS FOLLOW-UP CLIENT

Trends in Employment

Over the ten years from FY 2011 through FY 2020, one-fifth to less than one-third of women reported being employed (part- or full-time) compared to as much as 44% of men in FY 2020 and 42% of men in FY 2016, 2018, and 2019. At follow-up, about half or over half of men reported being employed in across the ten 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.

FIGURE 5.8. TRENDS IN GENDER DIFFERENCES IN CLIENTS EMPLOYED AT INTAKE AND FOLLOW-UP, FY 2011-FY 2020

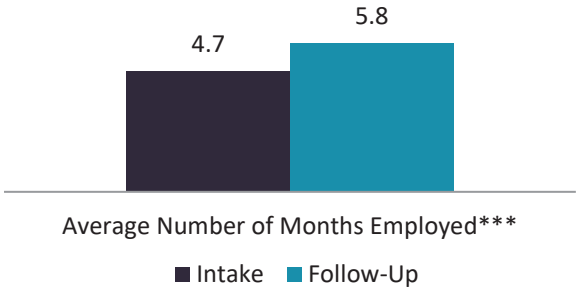


AVERAGE NUMBER OF MONTHS EMPLOYED

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 5.9, clients reported working significantly more months at follow-up (5.8) than at intake (4.7).

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

FIGURE 5.9. AVERAGE NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP (N = 833)[82]

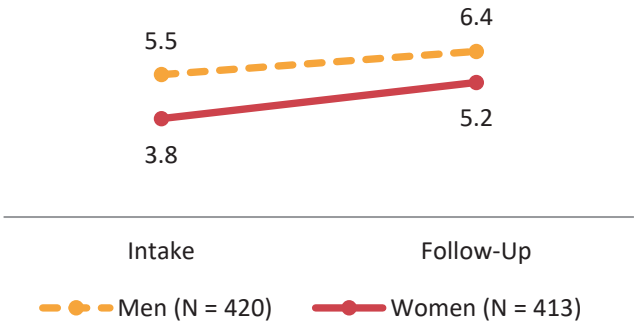


***p < .001.

GENDER DIFFERENCES IN THE NUMBER OF MONTHS EMPLOYED

Men reported working significantly more months at both periods compared to women (intake, 5.5 vs. 3.8 and follow-up, 6.4 vs. 5.2). The average number of months both men and women worked increased significantly from intake to follow-up (see Figure 5.10).

FIGURE 5.10. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP[a,b]



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

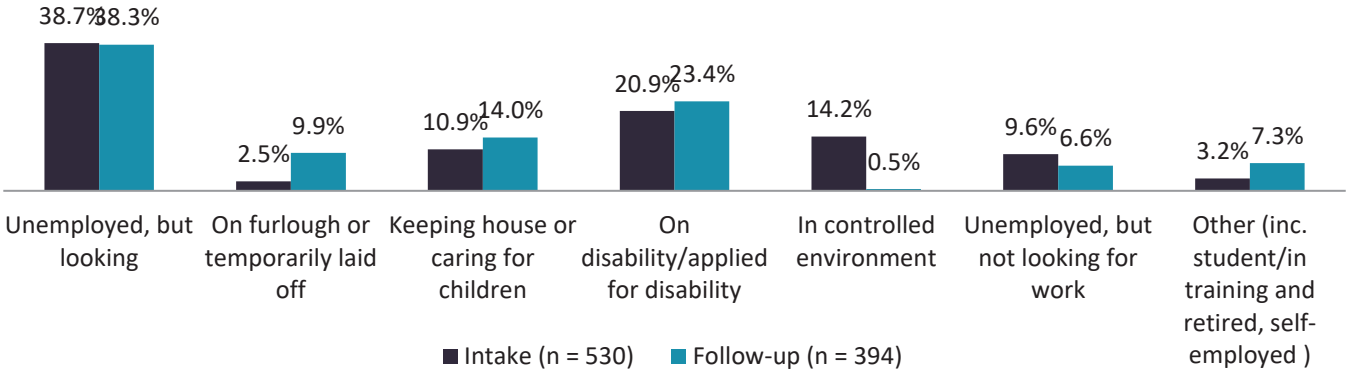
Among individuals who were not employed at each point, clients were asked why they were not currently employed. At intake (n = 530),[83] 38.7% of clients reported they were unemployed, but looking for work, and 20.9% were on disability or had applied for disability (see Figure 5.11). Among clients who were not employed at follow-up (n = 394),[84] 38.3% were unemployed, but looking for work and 23.4% reported they were on disability or had applied for disability.

[82] Six individuals had missing data for number of months employed.

[83] A total of 532 clients reported they were unemployed at intake, however, two individuals had missing values for reason for unemployment.

[84] A total of 395 clients reported they were unemployed at follow-up, however, one individual had a missing value for reason for unemployment.

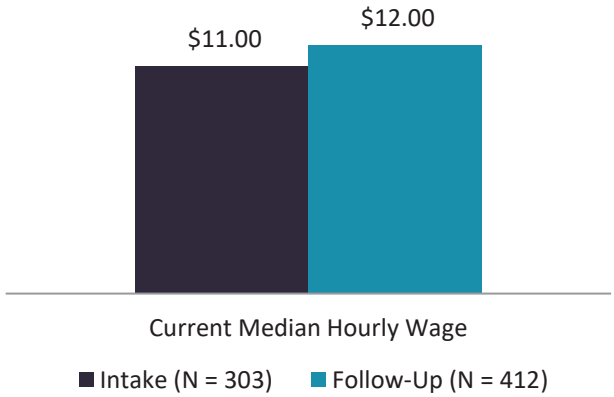
FIGURE 5.11. REASONS FOR UNEMPLOYMENT STATUS AT EACH POINT



HOURLY WAGE

Among clients who were currently employed at intake (n = 303),[85] the median hourly wage was $11.00. Among clients who were employed at follow-up (n = 412),[86] the median hourly wage was $12.00 (see Figure 5.12).

FIGURE 5.12. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO WORKED



GENDER DIFFERENCES IN HOURLY WAGE

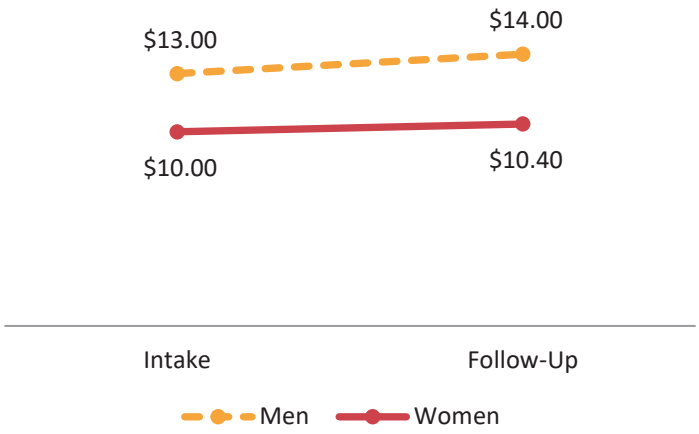
Among clients who were employed at each period, men had significantly higher hourly wages than women (see Figure 5.13). At intake, employed women made $0.77 for every dollar employed men made in this sample. At follow-up, employed women made $0.74 for every dollar employed men made.

At follow-up, employed women made only $0.74 for every $1 men made

[85] Of the 306 individuals who reported being currently employed full-time, part-time, or seasonally at intake, one individual had missing data on hourly wage.

[86] Of the 443 individuals who reported being currently employed full-time, part-time, or seasonally at follow-up, 31 individuals had missing data on hourly wage because they did not know the answer, or they declined to answer.

FIGURE 5.13. GENDER DIFFERENCES IN CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP



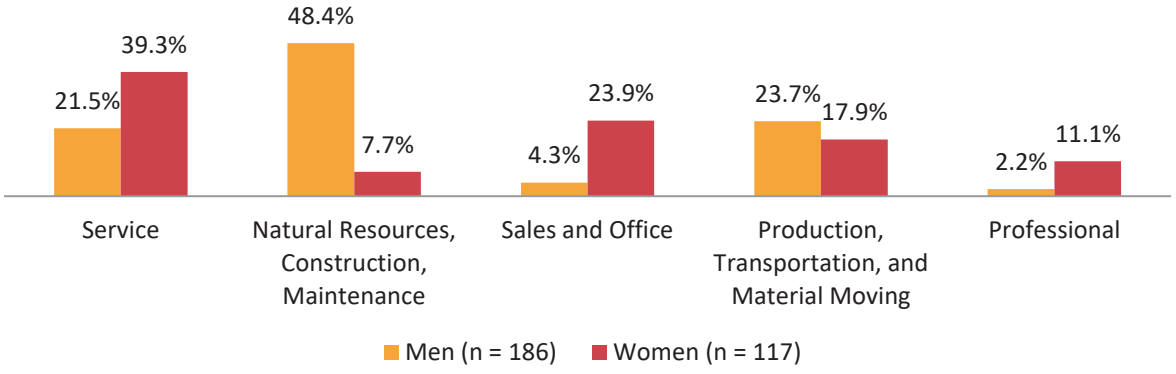
a—Significant difference in median hourly wage at intake and follow-up by gender, tested with Mann-Whitney U test ($p < .001$).

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.[87] At intake, the occupation type the highest percentage of women had was the service sector (39.3%), whereas only 21.5% of employed men had a service sector job (see Figure 5.14a). In addition, nearly half of employed men (48.4%) 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 (7.7%). These patterns were also found at follow-up; 57.4% of women had a service sector job, whereas only 20.2% of employed men had a service sector job (see Figure 5.14b).

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

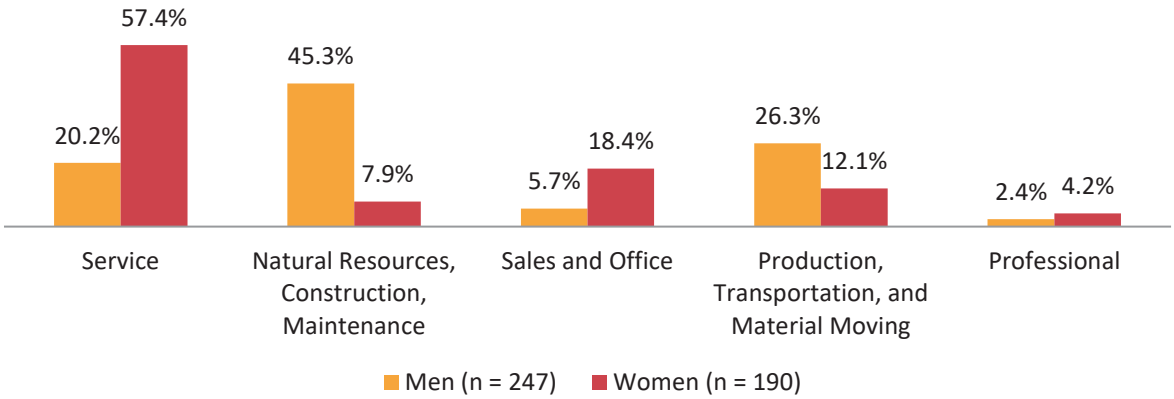
FIGURE 5.14a. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT INTAKE (N = 303)***



***p < .001.

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

FIGURE 5.14b. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 437)***

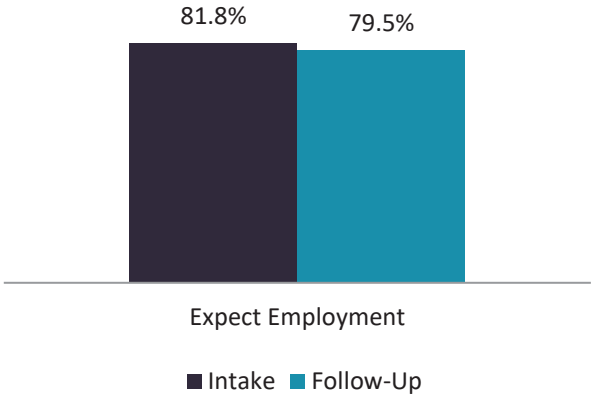


***p < .001.

EXPECTED EMPLOYMENT

Clients are asked if they expect to be employed in the next 12 months at intake and follow-up. At intake, 81.8% reported they expected to be employed, and at follow-up, 79.5% reported they expected to be employed in the next 12 months (see Figure 5.15).

FIGURE 5.15. CLIENTS WHO EXPECT TO BE EMPLOYED IN THE FUTURE AT INTAKE AND FOLLOW-UP (N = 833)[88]

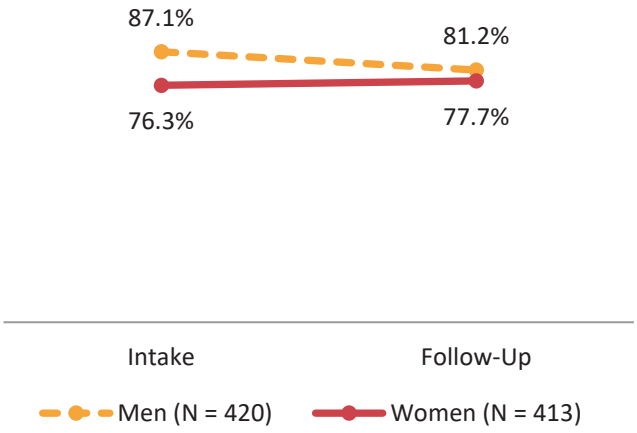


GENDER DIFFERENCES IN EXPECTING TO BE EMPLOYED

Significantly more men reported at intake that they expected to be employed in the next 12 months. There was no significant change from intake to follow-up in the percent of men and women who expected to be employed in the next 12 months (see Figure 5.16).

[88] Six clients had missing data for expecting employment in the next 12 months at follow-up.

FIGURE 5.16. GENDER DIFFERENCES IN EXPECTING TO BE EMPLOYED IN THE NEXT 12 MONTHS AT INTAKE AND FOLLOW-UP[a]



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

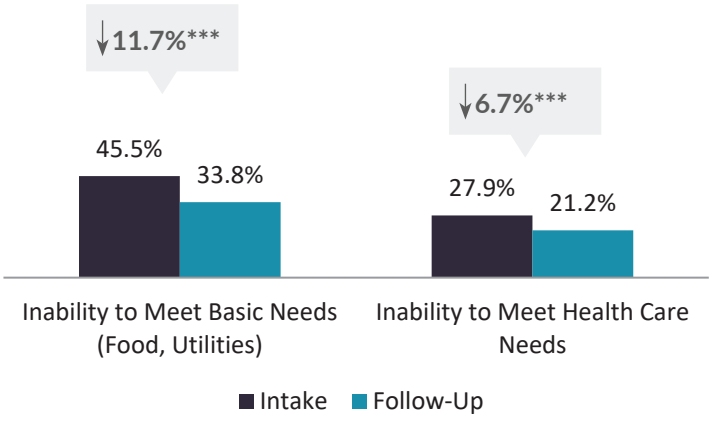
ECONOMIC HARDSHIP

Economic hardship, rather than a measure of income, may be a better indicator of the actual day-to-day stressors clients face. Therefore, the intake and follow-up surveys included several questions about clients' ability to meet expenses for basic needs and food insecurity.[89] Clients were asked eight items, five of which asked about inability to meet basic living needs such as food, shelter, utilities, and telephone, and three items asked about inability to receive medical care for financial reasons. The total number of basic needs individuals reported they had difficulty meeting were summed at intake and follow-up. Individuals reported significantly fewer needs they had difficulty meeting at follow-up (1.1) compared to intake (1.7; not depicted in figure).

A little less than one half of clients (45.5%) reported at intake that they had difficulty meeting basic living needs such as food, shelter, or utilities (see Figure 5.17). A little more than one-fourth of clients (27.9%) 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 living needs decreased significantly by 11.7% 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.

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

FIGURE 5.17. DIFFICULTY IN MEETING BASIC AND HEALTH CARE NEEDS FOR FINANCIAL REASONS (N = 819)[90]



***p < .001.

GENDER DIFFERENCES IN ECONOMIC HARDSHIP

There were significant gender differences in clients' inability to meet basic living needs and health care needs at intake and follow-up (see Figure 5.18). At intake, women reported significantly more basic needs they had difficulty meeting (2.1) compared to men (1.4; not depicted in figure). At follow-up, women reported significantly more basic needs they had difficulty meeting (1.3) compared to men (0.9).

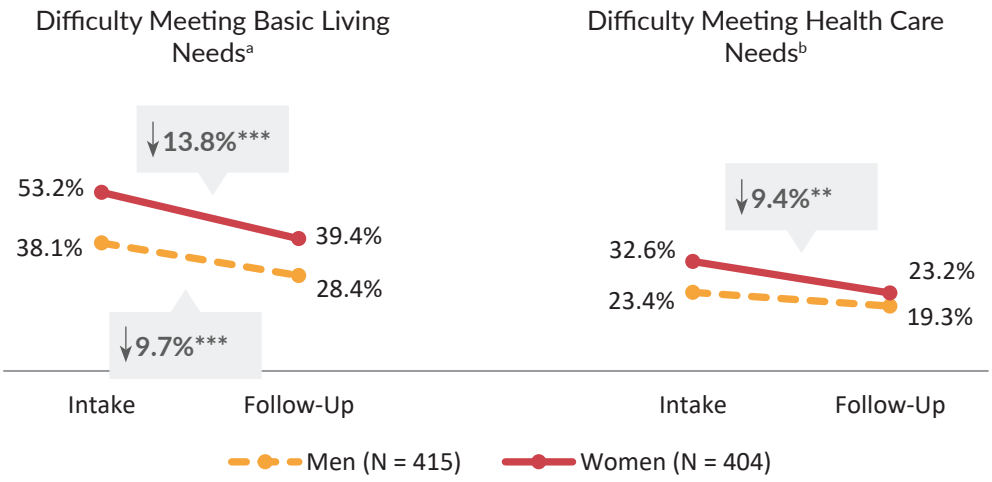
Compared to men, more women reported having difficulty meeting their basic living needs (e.g., housing, utilities, telephone, and food) at intake and follow-up. About half of women (53.2%) reported difficulty meeting basic living needs at intake compared to 39.4% of men. There was a significant decrease in the percent of women and men who reported having difficulty meeting basic living needs at follow-up.

Nearly one-third of women (32.6%) reported difficulty meeting health care needs at intake compared to 23.4% of men. The percent of women who reported difficulty meeting health care needs decreased significantly from intake to follow-up, and there was no significant difference by gender at follow-up.

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

[90] Twenty individuals had missing data for basic living needs and health care needs items at follow-up.

FIGURE 5.18. GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS



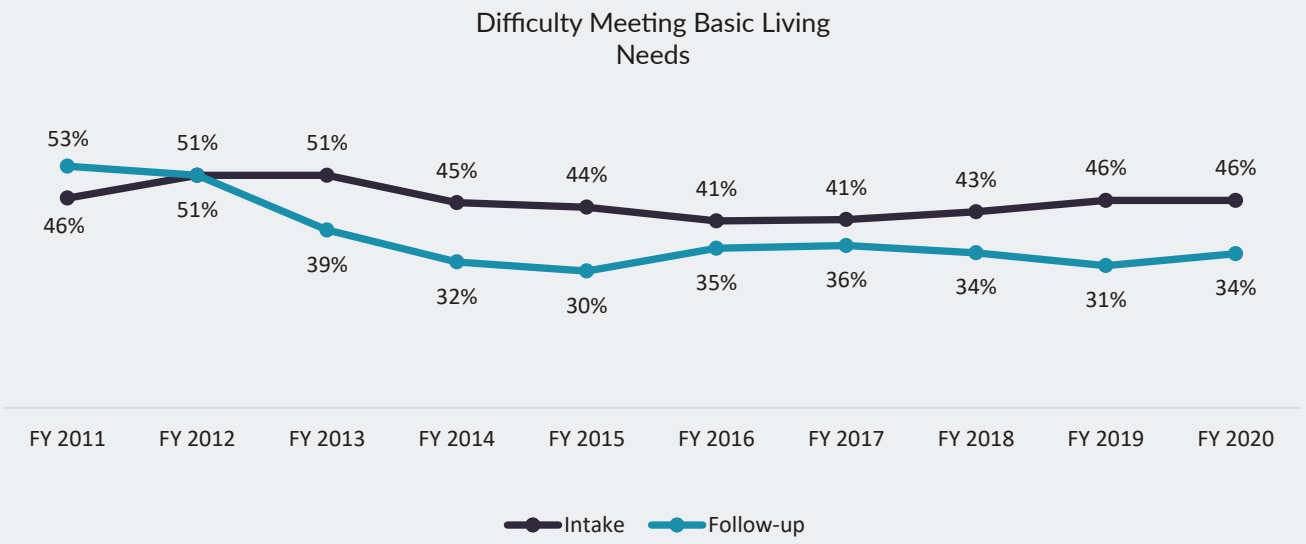
a—Significant difference by gender at intake ($p < .001$) and follow-up ($p < .001$).
b – Significant difference by gender at intake ($p < .01$).
**$p < .01$, ***$p < .001$.

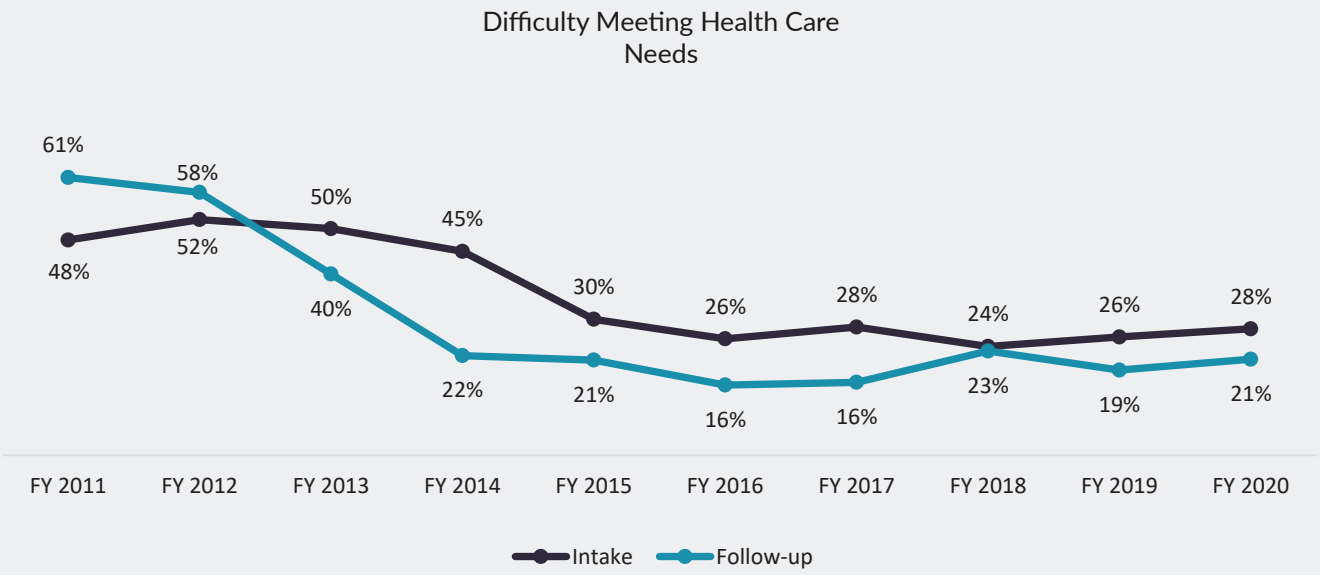
> *I have been to other therapies and they didn't do it for me. But this therapist really helped me out and understood.*
>
> - KTOS FOLLOW-UP CLIENT

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. In FY 2019 and FY 2020 the percent has been around 20%.

FIGURE 5.19. TRENDS IN THE NUMBER OF CLIENTS REPORTING ECONOMIC DIFFICULTY IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2011-FY 2020





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

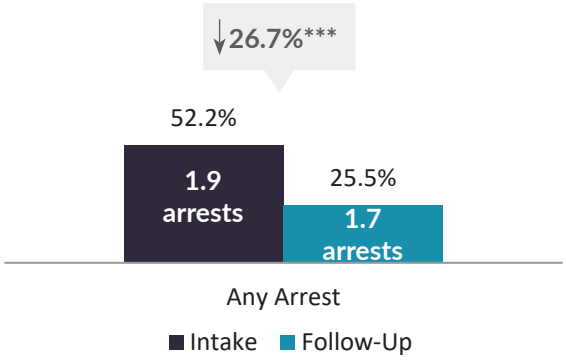
ARRESTED IN THE PAST 12 MONTHS

Clients were asked about their arrests in the 12 months before they entered treatment (at intake) and the past 12 months (at follow-up). About half of clients (52.2%) reported at least one arrest in the 12 months before entering treatment (see Figure 6.1). At follow-up, about one-fourth (25.5%) reported at least one arrest in the past 12 months, which was a significant 26.7% decrease from intake.

Among those clients who reported at least one arrest in the 12 months before intake (n = 436), clients were arrested an average of 1.9 times. Among those clients who reported at least one arrest in the 12 months before follow-up (n = 213), the average number of arrests was 1.7.

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

FIGURE 6.1. CLIENTS REPORTING ARRESTS AT INTAKE AND FOLLOW-UP (N = 836)[91]



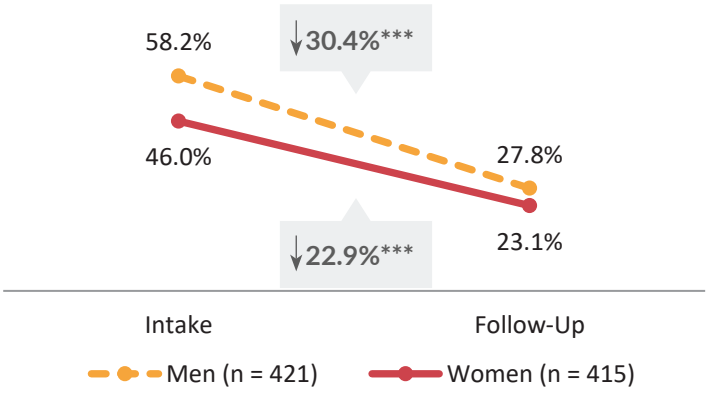
***p < .001.

GENDER DIFFERENCES IN ARRESTS

There were significant decreases from intake to follow-up in the percent of men and women who reported being arrested in the previous 12 months. At intake, significantly more men reported they had been arrested when compared to women (see Figure 6.2). However, at follow-up, there was no significant difference by gender.

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

FIGURE 6.2. GENDER DIFFERENCES IN ARRESTS IN THE PAST 12 MONTHS

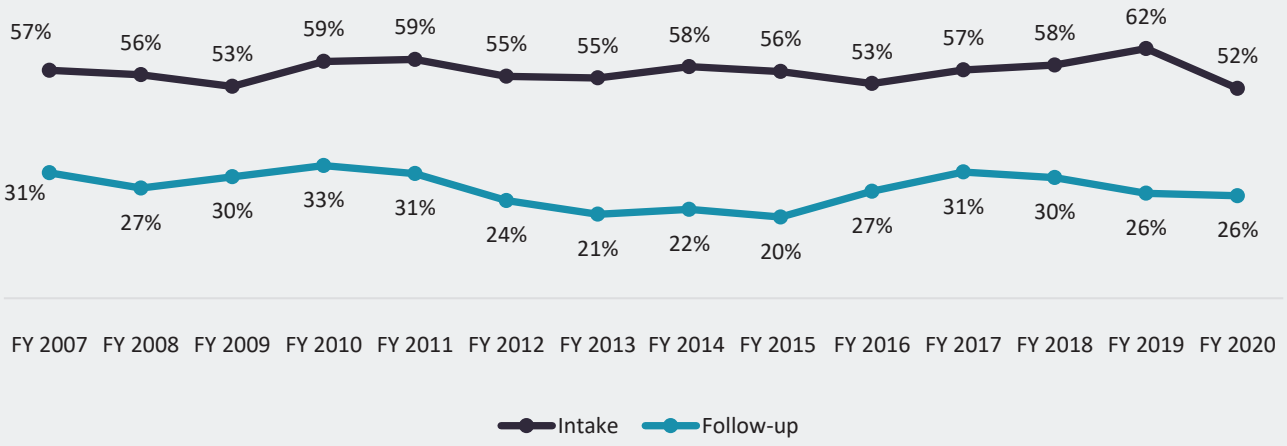


a—Statistical difference by gender at intake ($p < .001$).
***$p < .001$.

Trends in Past-12-month Arrests

Over the past 14 years the percent of clients reporting an arrest in the past 12 months at intake has ranged from a low of 52% in FY 2020 to a high of 62% in FY 2019. At follow-up, since FY 2007, between one-fifth to nearly one-third of clients reported an arrest, which were significant decreases from intake.

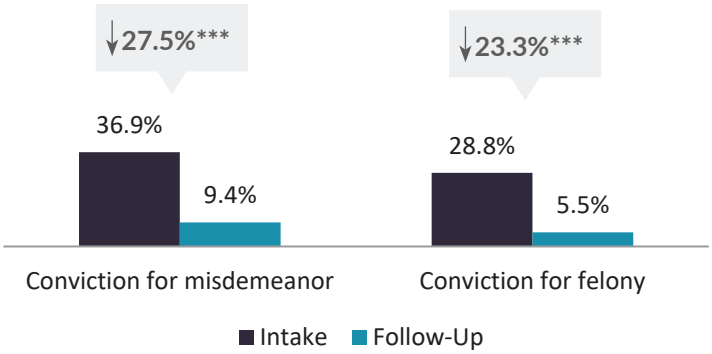
FIGURE 6.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING AN ARREST IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2020



CONVICTIONS

More than one-third of individuals (36.9%) reported they had at least one conviction for a misdemeanor in the 12 months before entering treatment (see Figure 6.4). The percent of individuals with a conviction for a misdemeanor in the 12 months before follow-up was significantly lower at 9.4%. Nearly 3 in 10 clients (28.8%) reported at least one felony conviction in the 12 months before intake. That percent decreased significantly to 5.5% in the 12 months before follow-up.

FIGURE 6.4. CONVICTIONS FOR MISDEMEANOR AND FELONY OFFENSES (N = 834) [92]

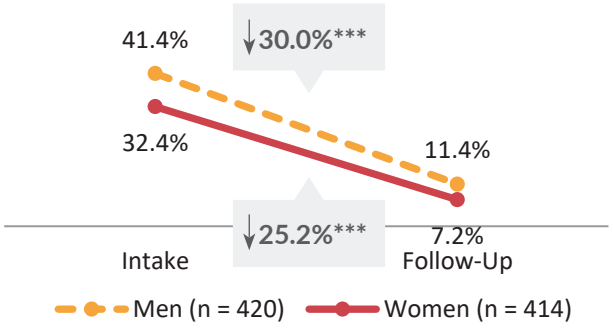


***p < .001.

GENDER DIFFERENCES IN CONVICTIONS FOR MISDEMEANOR 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 convictions for felony offenses by gender (see Figure 6.5). However, at follow-up, significantly more women reported they had received a convictions for a felony offense in the past 12 months when compared to men.

FIGURE 6.5. GENDER DIFFERENCES IN CONVICTIONS FOR MISDEMEANOR OFFENSES IN THE PAST 12 MONTHS



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

INCARCERATION

INCARCERATED IN THE PAST 12 MONTHS

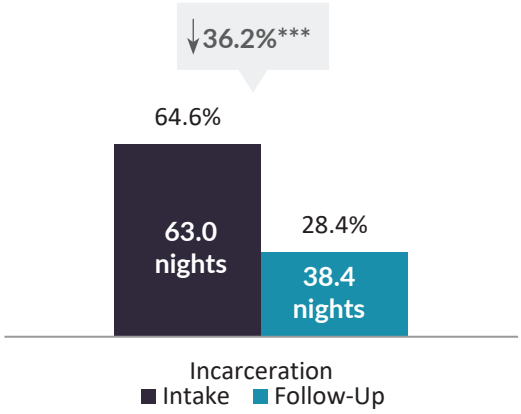
The majority of clients (64.6%) reported spending at least one night in jail or prison in the 12 months prior to entering treatment (see Figure 6.6). At follow-up, 28.4% of clients reported spending at least one day incarcerated in the past 12 months--a significant decrease of 36.2%.

The number of clients who spent at least one night incarcerated decreased by 36%

[92] Five cases had missing data on convictions for misdemeanor and felony offenses at follow-up.

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 = 238, 38.4 nights) when compared to intake (n = 541, 63.0 nights).

FIGURE 6.6. CLIENTS REPORTING BEING INCARCERATED AT INTAKE AND FOLLOW-UP (N = 837)[93]

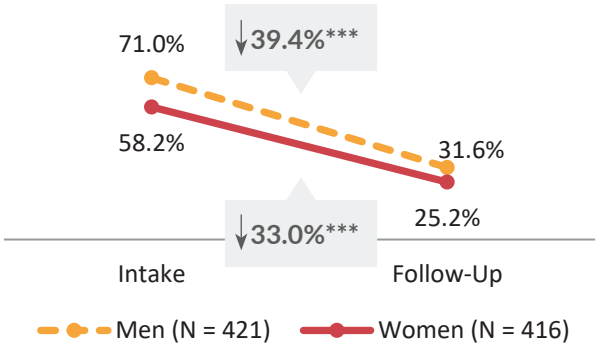


***p < .001.

GENDER DIFFERENCES IN INCARCERATION

Significantly more men reported being incarcerated at least one night in the 12 months before entering treatment and follow-up when compared to women (see Figure 6.7). There was a significant decrease in the percent of men and women who reported incarceration from intake to follow-up.

FIGURE 6.7. GENDER DIFFERENCES IN ANY INCARCERATION AT INTAKE AND FOLLOW-UP[a]



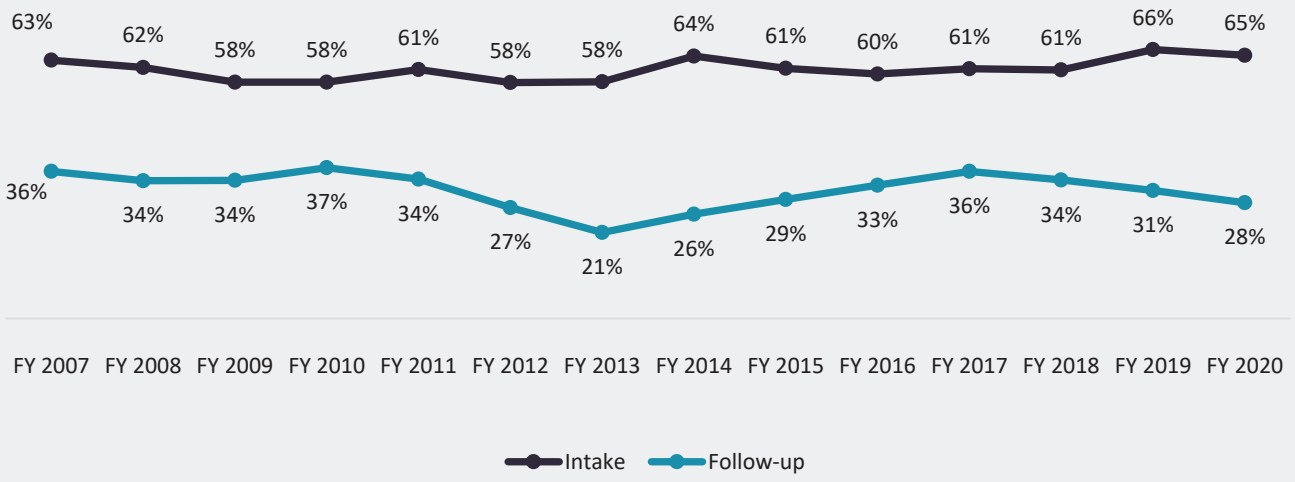
a—Significant difference by gender at intake (p < .001) and at follow-up (p < .05).
***p < .001.

[93] 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 14 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. The decreases from intake to follow-up were significantly different each years.

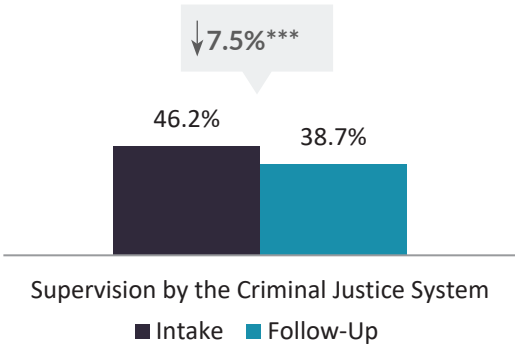
FIGURE 6.8. TRENDS IN THE PERCENT OF CLIENTS REPORTING BEING INCARCERATED IN THE PAST-12-MONTHS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2020



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 (46.2%) to follow-up (38.7%; see Figure 6.9).

FIGURE 6.9. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 839)

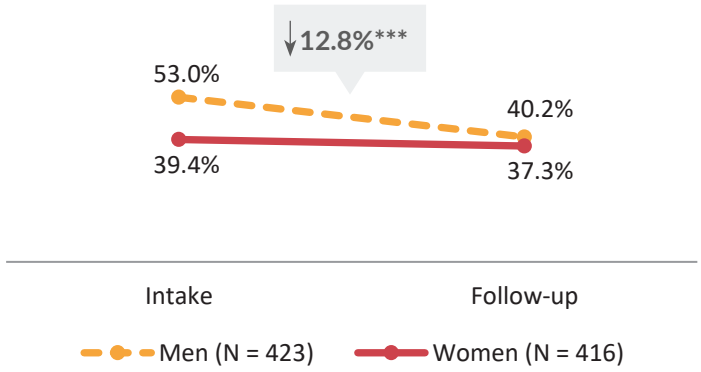


***p < .001.

GENDER DIFFERENCES IN CRIMINAL JUSTICE SUPERVISION

Significantly more men (53.0%) than women (40.2%) reported being under supervision by the criminal justice system in the 12 months before entering treatment (see Figure 6.10). The percent of men reporting supervision decreased significantly from intake to follow-up. At follow-up, there was no gender difference in those self-reporting criminal justice supervision.

FIGURE 6.10. GENDER DIFFERENCES IN CLIENTS REPORTING CRIMINAL JUSTICE SUPERVISION[a]



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

SECTION 7. QUALITY OF LIFE

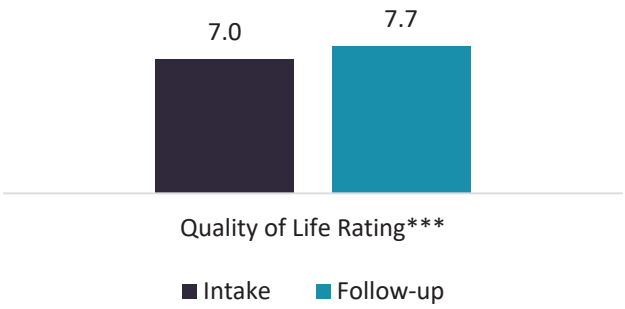
This section describes change in client quality of life and well-being during the 12-month period before entering treatment and the 12-month period before the follow-up interview. Specifically, results include changes in: (1) quality of life rating. Results for each targeted factor are presented for 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 7.7 at follow-up.

Average rating of quality of life significantly increased from 7.0 at intake to 7.7 at follow-up

FIGURE 7.1. RATING OF QUALITY OF LIFE AT INTAKE AND FOLLOW-UP (N = 832)[94]



***p < .001.

> *It was the way the people there ran it, they were there for the right reasons, not just for a paycheck.*
>
> - KTOS FOLLOW-UP CLIENT

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

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.

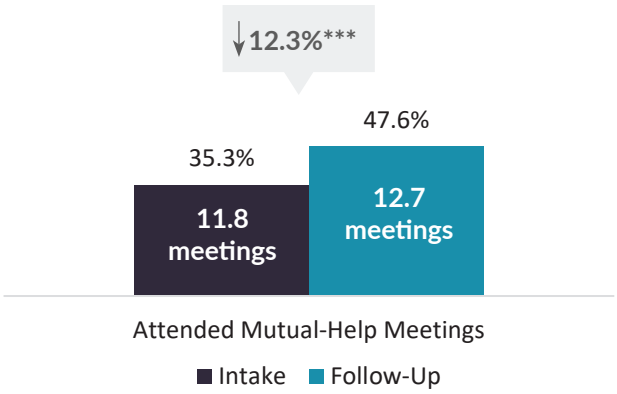
MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE

At intake, more than one-third (35.3%) 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 12.3%, with 47.6% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days.

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

Among individuals who attended self-help meetings at intake (n = 295), they reported attending an average of 11.8 meetings in the past 30 days. Those who attended self-help meetings at follow-up (n = 398) reported an average of 12.7 meetings attended in the past 30 days.

FIGURE 8.1. MUTUAL HELP RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N = 836)[95]



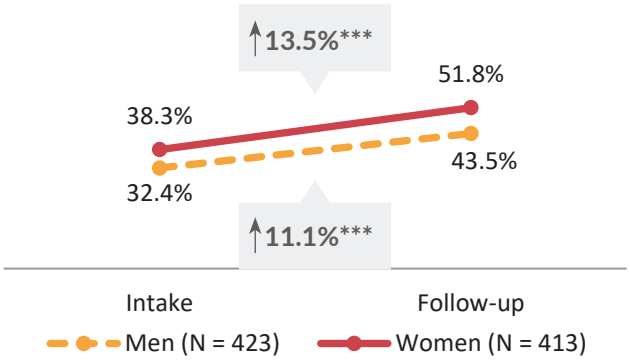
***p < .001.

GENDER DIFFERENCES IN MUTUAL HELP RECOVERY GROUP ATTENDANCE

There was no gender difference in the percent of individuals who had attended mutual help recovery group meetings at intake. Significantly more women than men reported they had attended mutual help recovery group meetings in 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.

[95] Three individuals 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[a]



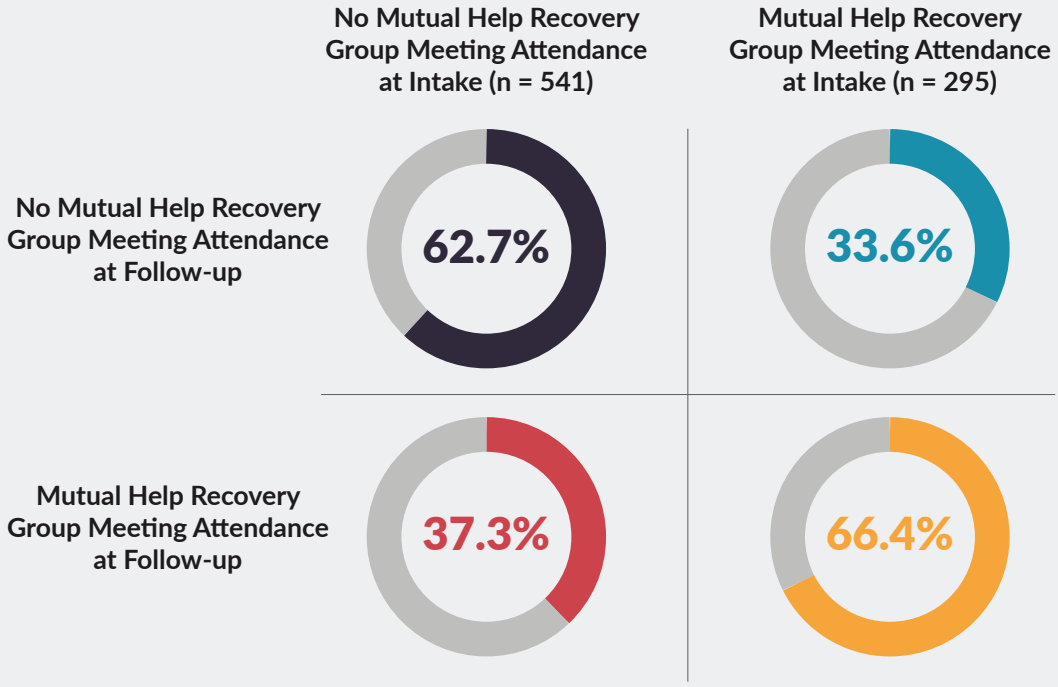
a— Significant difference by gender at follow-up ($p < .05$).
***$p < .001$.

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 (35.3%; n = 295). Among clients who reported attending mutual help recovery group meetings at intake, 66.4% also attended mutual help recovery group meetings at follow-up (see Figure 8.3).

Alternatively, 37.3% of those who did not report attending mutual help recovery group meetings in the 30 days before entering treatment attended meetings at follow-up.

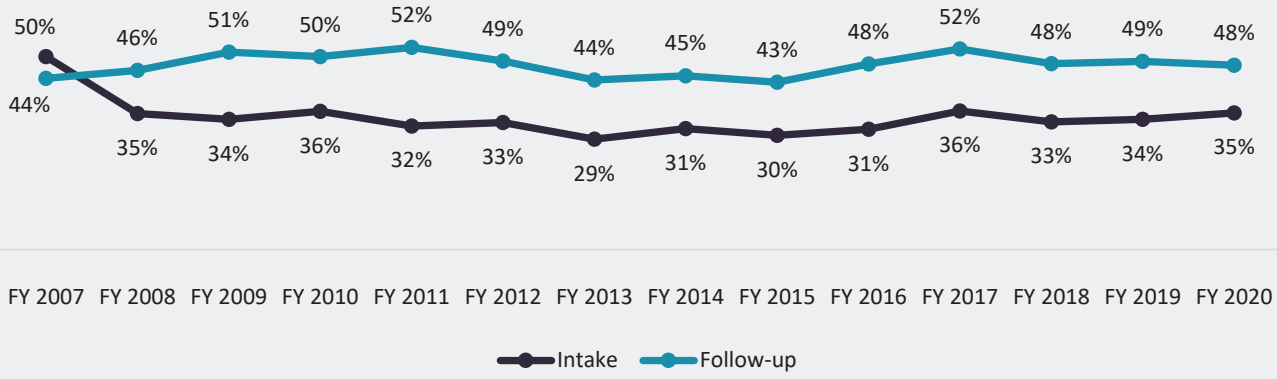
FIGURE 8.3. MUTUAL HELP RECOVERY GROUP MEETING ATTENDANCE AT INTAKE AND FOLLOW-UP BASED ON MEETING ATTENDANCE AT INTAKE



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 2020.

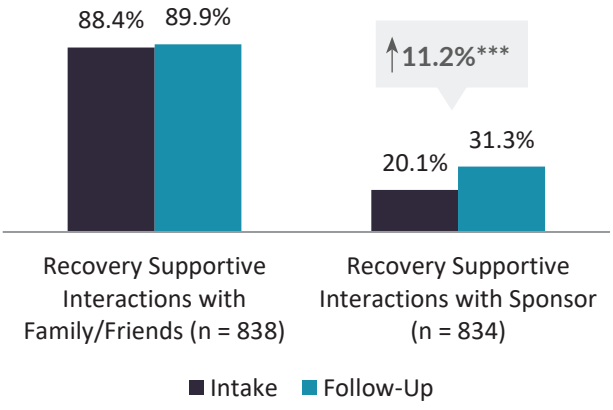
FIGURE 8.4. TRENDS IN THE PERCENT OF CLIENTS REPORTING PAST-30-DAY MUTUAL HELP RECOVERY GROUP MEETINGS AT INTAKE AND FOLLOW-UP, FY 2007-FY 2020



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, with no significant change over time (see Figure 8.5). One in five clients reported being in contact with an AA/NA or other self-help group sponsor at intake. That number increased significantly to 31.3% at follow-up.

FIGURE 8.5. RECOVERY SUPPORTIVE INTERACTIONS IN THE PAST 30 DAYS[96]



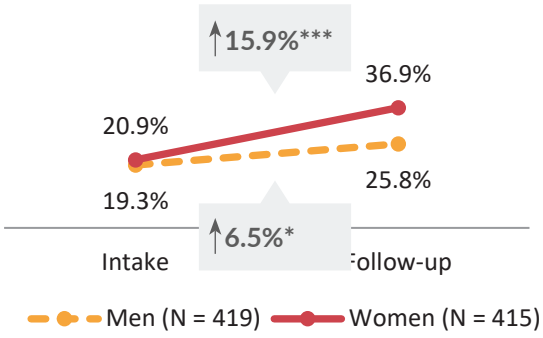
***p < .001.

[96] Data on family/friends recovery supportive interactions was missing at follow-up for one individual and data on sponsor recovery supportive interactions was missing at follow-up 5 individuals.

GENDER DIFFERENCE IN CONTACT WITH A SPONSOR

Significantly more women reported having contact with a sponsor at follow-up when compared to men (see Figure 8.6). The percent of men and women who reported having contact with a sponsor increased significantly from intake to follow-up.

FIGURE 8.6. GENDER DIFFERENCES IN CONTACT WITH A SPONSOR[a]



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

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 6.2 people at intake to 9.5 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 = 833)***[97]

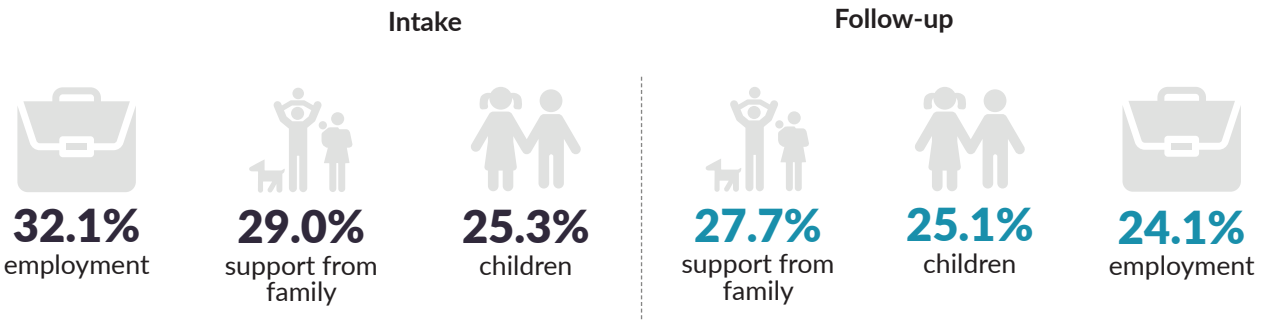
***$p < .001$.

WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS/ALCOHOL

At intake and follow-up, clients were asked what they believed would be most useful in helping them quit or stay off drugs/alcohol. Rather than conduct analysis on change in responses from intake to follow-up, the top responses that were reported by clients are presented for descriptive purposes in Figure 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 support from family, caring for children or dependents, and employment.

[97] Data on the number of people the client could count on for recovery support at follow-up was missing for 6 cases.

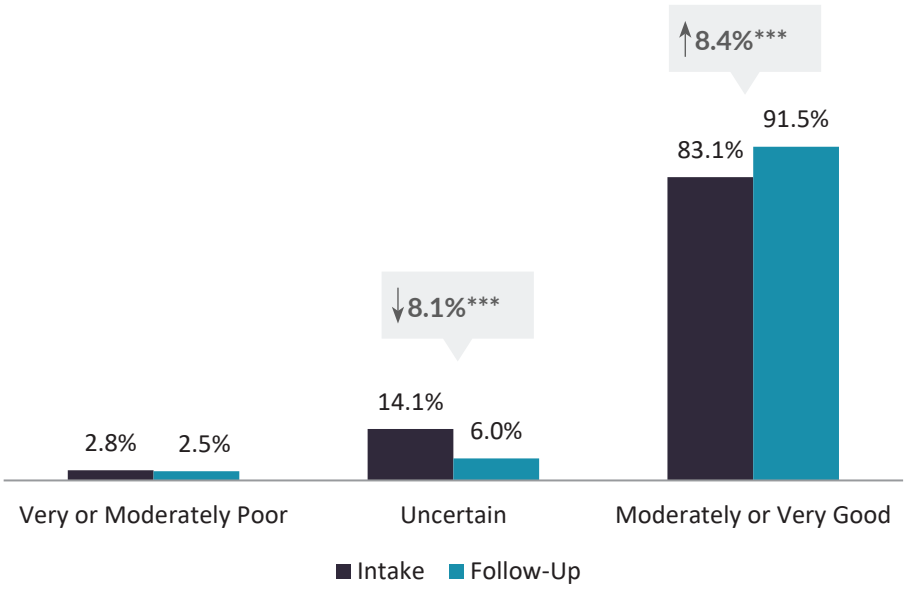
FIGURE 8.8. TOP CATEGORIES CLIENTS REPORTED THAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 835)[98]



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, 83.1% of clients believed they had a moderately or very good chance of staying off drugs/alcohol at intake with a significant increase of 8.4% at follow-up (91.5%; see Figure 8.9).[99]

FIGURE 8.9. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 834)[a]



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

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

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

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).[100] 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.[101] 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.

TABLE 9.1. COMPONENTS OF MULTIDIMENSIONAL RECOVERY STATUS

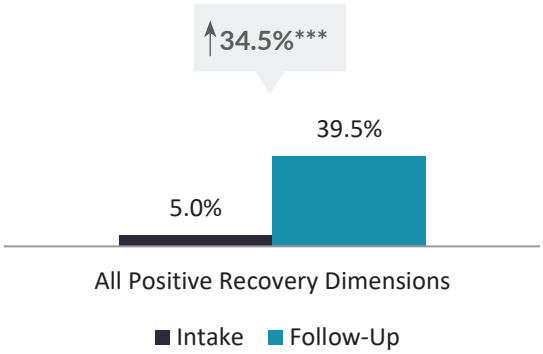
INDICATOR	POSITIVE RECOVERY DIMENSIONS	NEGATIVE RECOVERY DIMENSIONS
Substance use disorder (SUD) symptoms	No substance use disorder (SUD)	Mild, moderate or severe substance use disorder (SUD)
Employment	Employed at least part-time or in school	Unemployed (not on disability, not going to school, not a 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 (5.0%) was classified as having all eight dimensions of recovery (see Figure 9.1). At follow-up, there was a significant increase of 34.5% so that about two-fifths of the sample had all positive dimensions of recovery.

[100] 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.

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

FIGURE 9.1. MULTIDIMENSIONAL RECOVERY AT INTAKE AND FOLLOW-UP (N = 826)[102]



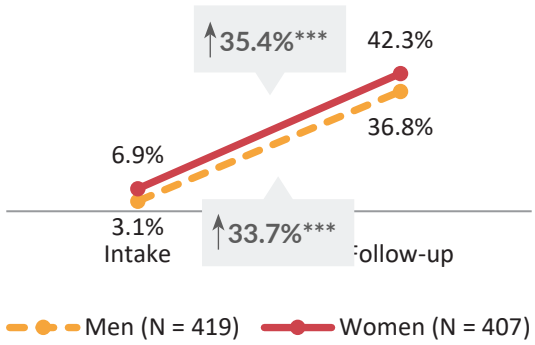
***p < .001.

GENDER DIFFERENCE IN MULTIDIMENSIONAL RECOVERY

Even though only a small percentage of clients reported having all eight positive dimensions of recovery at intake, significantly more women reported having all positive dimensions of recovery at intake when compared to men (see Figure 9.2). The percent of women and men who reported having all positive dimensions of recovery increased significantly from intake to follow-up.

Significantly more women than men reported having all positive dimensions of recovery at intake

FIGURE 9.2. GENDER DIFFERENCE IN MULTIDIMENSIONAL RECOVERY[a]



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

[102] Thirteen 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. Additional numbers of cases had missing values for some of the variables used to compute the multidimensional recovery at follow-up, but because they had at least one negative dimension, they could be classified as not having all eight positive dimensions of recovery at follow-up.

TABLE 9.2. PERCENT OF CLIENTS WITH SPECIFIC POSITIVE DIMENSIONS OF RECOVERY AT INTAKE AND AT FOLLOW-UP (n = 826)

Factor	Intake Yes	Follow-Up Yes
Met DSM-5 criteria for no SUD in the past 12 months	22.2%	77.3%
Usual employment was employed full-time or part-time in the past 12 months (or retired, on disability, a student, or caregiver)	79.2%	79.7%
Reported no homelessness	71.2%	92.5%
Reported not being arrested and/or incarcerated in the past 12 months	32.3%	67.4%
Reported no thoughts of suicide or attempted suicide in the 12 months	80.1%	91.1%
Self-rating of overall health was fair, good, very good, or excellent	89.6%	93.3%
Reported having someone they could count on for recovery support	92.9%	96.4%
Reported a quality of life rating in the mid or higher range (rating of 5 or higher)	86.3%	93.7%

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. None of the intake predictor variables were statistically significantly associated with having all the positive dimensions of recovery at follow-up.

TABLE 9.3. MULTIVARIATE ASSOCIATIONS HAVING ALL POSITIVE DIMENSIONS OF RECOVERY AT FOLLOW-UP

Factor	B	Wald	Odds Ratio	95% CI	
				Lower	Upper
Met DSM-5 criteria for no SUD in the 12 months before entering the program	.197	1.240	1.218	.861	1.722
Usual employment was employed (or retired, on disability, a student, or caregiver) in the 12 months before entering the program	.119	.418	1.126	.786	1.614
No homelessness in the 12 months before entering the program	.045	.071	1.046	.752	1.455
Not arrested or incarcerated in the 12 months before entering the program	.289	3.450	1.336	.984	1.813
Reported no thoughts of suicide or attempted suicide in the 12 months before entering the program	.368	3.551	1.445	.985	2.120
Self-rating of overall health at intake was fair, good, very good, or excellent	-.318	1.708	.728	.452	1.172
Reported have at least one person he/she could count on for recovery support before entering the program	-.257	.856	.773	.449	1.333
Reported a mid to higher quality of life before entering the program	.140	.393	1.150	.742	1.782

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

SECTION 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

The majority of clients (64.0%) reported at follow-up that they had completed the program they attended or that the program agreed they were ready to leave, 21.8% did not complete the program, and 14.3% 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 5.1. Individuals who reported they were still in the treatment program reported they had been involved in the program an average of 11.9 months. In contrast, individuals who had completed the program reported being in the program an average of 4.2 months and those who did not complete the program reported an average of 4.0 months.

Women reported a higher average number of months they were in treatment compared to men (5.7 vs. 4.6, $t(809) = -3.114$, $p < .001$).

FIGURE 10.1. CLIENTS WHO REPORTED HOW THE TREATMENT PROGRAM ENDED FOR THEM (N = 777)[103]

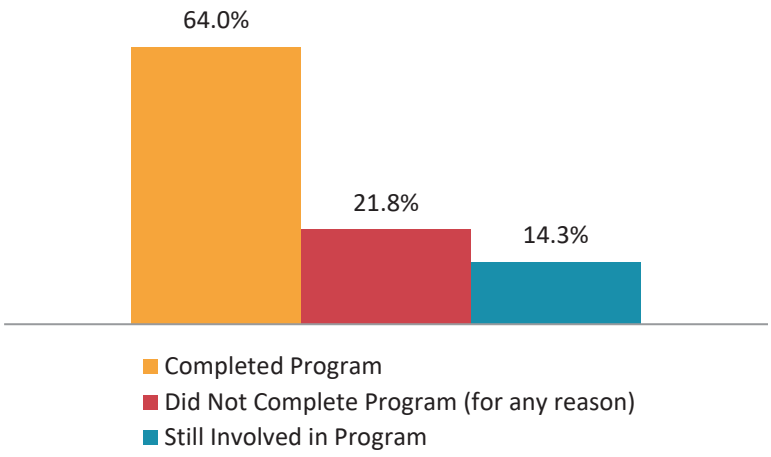
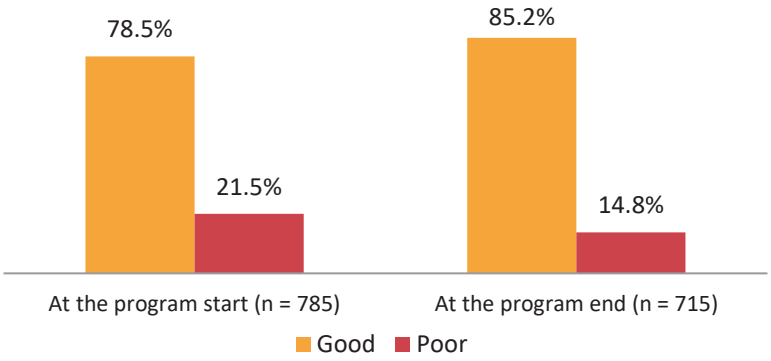


Figure 10.2 shows the percent of clients who reported the program started poor or good and ended poor or good. The majority of clients reported that the program started good (78.5%) and ended good (85.2%).

[103] Sixty-two individuals had missing data or responses that could not be classified into a category for this variable.

FIGURE 10.2. PERCENT OF CLIENTS WHO REPORTED AT FOLLOW-UP THE TREATMENT STARTED AND ENDED POOR OR GOOD[104]



Overall, the majority of clients (80.1%) reported that the treatment episode was working/ worked pretty well or extremely well for them, 13.4% said the program worked somewhat well for them, and 6.5% said the program did not work for them at all.

One-fifth (20.3%) reported they had been in other treatment programs since they left this treatment episode. Of those clients (n = 165),[105] they reported they had been involved in an average of 1.4 (Min. = 1, Max. = 20) other treatment programs or episodes.

RECOMMEND OTHERS TO THE PROGRAM

The majority of clients (89.2%) 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 = 719),[106] 36.2% 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 (72.4%) gave a high positive rating between 8 and 10 of their satisfaction with the treatment program (not in a table).[107] The average rating was 8.0. Women gave significantly higher ratings compared to men (8.4 vs. 7.7).

Figure 10.3 shows that KTOS clients were satisfied with the overall program services. About

[104] Twenty individuals had missing data for program rating at the start of treatment and 18 had missing data for program rating at the end of treatment. Additionally, 106 clients reported they were still in the program at follow-up and therefore did not rate the program at the end.

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

[106] Eleven 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.

[107] Eighteen 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.

4 in 5 individuals (80.8%) 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 (80.6%), and clients also said that when they told their counselor or program staff personal things, they felt listened to and heard by them (78.8%). About more than three-fourths of clients agreed that their expectations and hopes for treatment and recovery were met (77.5%), they had input into their treatment goals, plans, and how they were progressing over time (76.3%), they had a connection with their counselor or staff person (75.5%), and they worked on the things that were most important to them in treatment (75.3%). The majority reported that the treatment approach and method was a good fit for them (72.1%), and the length of the program was just right (69.6%). The majority of clients said they fully discussed or talked about everything they wanted to with their counselor or program staff.

FIGURE 10.3. RATINGS OF 8, 9, or 10 OF SPECIFIC TREATMENT PROGRAM EXPERIENCES (N = 469)[108]

[108] For the treatment satisfaction items, 363 individuals were not asked these questions because for a period of 2020 the treatment satisfaction questions were dropped from the follow-up interview to ask questions about the COVID-19 pandemic. An additional 7 -9 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 clients begin 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[109] and a separate study of the societal costs of excessive alcohol consumption in the U.S. in 2006.[110] 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.[111, 112] 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 years (2010 for alcohol use and 2011

[109] 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.

[110] 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.

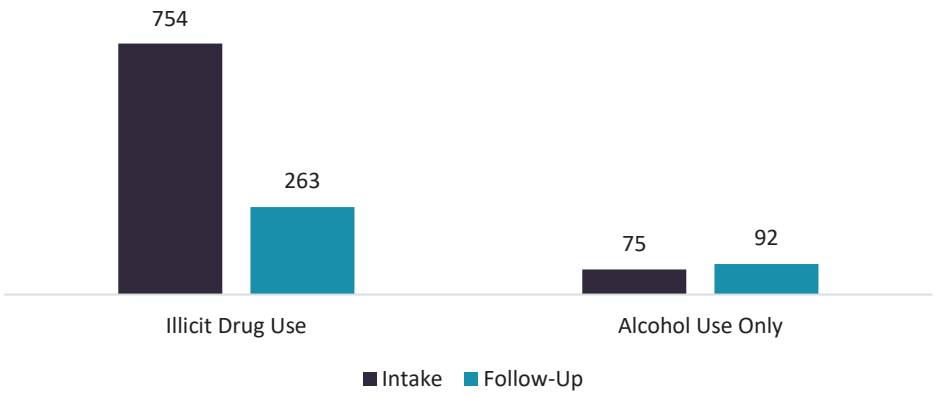
[111] Sacks, J.J., Gonzales, K.R., Bouchery, E.E., Tomedi, L.E., & Brewer, R.D. (2015). 2010 national and state costs of excessive alcohol consumption. *American Journal of Preventive Medicine*, *49*(5), e73-e79.

[112] National Drug Intelligence Center. (2011). The Economic Impact of Illicit Drug Use on American Society. Washington, DC: United States Department of Justice.

for drug use).[113] 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 2020 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 $16,508 in 2020 dollars and the estimate of the cost per person of drug abuse is $34,931 in 2020 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.[114] 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, 754 clients reported using illicit drugs and an additional 75 clients reported using alcohol only. At follow-up, 263 clients reported using illicit drugs and 92 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 = 883)



When the estimated cost per individual drug user was applied to the 754 individuals who were active drug users at intake, the annual estimated cost to society for the KTOS sample who

[113] 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

[114] One individual had a missing value for illicit drug use in the 12 months before follow-up and this case was excluded from the cost savings analysis.

used illegal drugs before entry into the recovery center was $26,337,974. When the average annual cost per individual alcohol abuser was applied to the 75 clients who reported using alcohol only at intake, the estimated annual cost to Kentucky in 2020 was $1,238,100. 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 $27,576,074. By follow-up, the estimated cost of the 263 individuals who reported illicit drug use was $9,186,853 and the estimated cost of the 92 individuals who reported using alcohol was $1,518,736, for a total of $10,705,589. Thus, as shown in Figure 11.2, after participation in publicly-funded substance abuse treatment, the estimated gross cost to Kentucky taxpayers for these 883 clients was reduced by $16,870,485.

FIGURE 11.2. COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N=883)

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 were 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,[115, 116] 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 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

[115] Department of Medicaid Services. Behavioral Health and Substance Abuse Services Inpatient (facility) Fee Schedule (Rev 06/2016). Retrieved from http://chfs.ky.gov/NR/rdonlyres/5F888306-0400-4FC1-91D1-530BC7A554CD/0/BHandSUFeeSchduleIPFrev612016r1.pdf.

[116] 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.

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 $4,224 (in 2020 dollars). The average cost of $4,224 was multiplied by 883, 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 $3,729,792.

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: $16,870,485/$3,729,792, which equals $4.52 (see Table 11.1). In other words, for every dollar spent on publicly-funded substance abuse treatment in FY 2020, there was an estimated savings of $4.52 in costs to Kentucky taxpayers associated with alcohol and drug addiction.

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

	USED ALCOHOL AND/OR ILLICIT DRUGS IN THE 12-MONTH PERIOD	
	INTAKE	FOLLOW-UP
Drug use		
Number of clients	754	263
Alcohol use		
Number of clients	75	92
Total cost to society of drug and alcohol use	$27,576,074	$10,705,589
Gross cost difference from intake to follow-up	$16,870,485	
Estimate of cost of treatment *(based on average cost per client in 2012 – 2015)*	$3,729,792	
Off-set as net cost/benefit ratio	$16,870,485/$3,729,792	
Return on $1.00 Investment	$4.52	

SECTION 12. CONCLUSIONS AND IMPLICATIONS

The KTOS 2022 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 2020 (N = 4,575). In addition, outcomes are presented for 839 clients who completed a follow-up telephone interview about 12 months later which was a 60.6% follow up rate for those selected into the statewide sample.

Overall, of the clients with intake interviews (N = 4,575), over half were male (56.9%) and 42.9% were female, with ages 18 to 74 (average age 36.0 years old). Most were White (90.9%), had children under the age of 18 (59.4%), and 82.0% had experienced at least one adverse childhood experience. The majority of clients (62.4%) were unemployed at intake. About 53% had been arrested and 64.4% 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 (64.0%) and self-referred (17.4%) to treatment. The majority of adults who completed an intake interview reported using illegal drugs (77.4%), alcohol (43.5%), and smoking tobacco (82.0%) in the 12 months before intake. On average, clients reported being about 16.7 years old when they first began using drugs, 14.9 years old when they had their first alcoholic drink (other than a sip) and 16.2 years old when they began smoking tobacco.

Past-9-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 a high of 50% in FY 2020.

Of the 839 adults who completed a 12-month follow-up interview in FY 2021 for this report, 49.6% of the sample was female, and 50.4% was male. The majority of follow-up clients (90.8%) were White. Clients in the follow-up sample were an average of 35.2 years old at the time of the intake interview and less than half (44.6%) 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. However, there were a couple significant differences between the followed-up vs. not followed-up clients that showed followed up clients were better off in a couple ways compared to clients who were not followed up; specifically followed-up clients had higher levels of education and more months of employment.

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 (59.7%) to follow-up (15.0%). 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 14 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. The percent for the follow-up sample in the current year's report was 31%.

Analysis of specific past-12-month drug use indicates more than half of clients (58.3%) reported using marijuana at intake, whereas 21.8% 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, 81.1% of them reported using methamphetamine. Significantly fewer individuals reported stimulant use at follow-up (11.5%) than at intake (54.7%). A little more than two-fifths of clients (42.1%) reported using opioids (other than heroin) at intake, whereas 7.9% of clients reported opioid misuse at follow-up. One-fifth of followed-up clients (20.0%) reported using CNS depressants in the 12 months before intake, with a significant decrease to 2.9% at follow-up.

About half of clients reported using alcohol in the 12 months before intake, with a 27.5% decrease at follow-up. There were similar percent decreases in the use of alcohol to intoxication (26.7%) and binge drinking (24.8%). 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. In FY 2020, the percent increased slightly to 52%.

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. 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 symptoms that met study criteria for depression and 40% of clients reported symptoms that met study criteria for generalized anxiety. In FY 2020, 54% of clients reported depression and 55% reported generalized 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. More than one-third of clients (34.1%) reported they had experienced any interpersonal victimization in the 12 months before intake. By follow-up, significantly fewer clients (16.0%) 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 13.0 days), whereas at follow-up, the average number of days was 5.9. 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 (7.4%) than in the 12 months before entering treatment (28.9%). About 43% of clients reported being employed full-time at follow-up compared to 25.3% at intake. Furthermore, the average number of months clients reported working in the past 12 months increased from 4.7months at intake to 5.8 months at follow-up. At follow-up, fewer clients reported having economic hardship in terms of difficulty meeting basic living needs (such as food, shelter, and utilities).

CRIMINAL JUSTICE SYSTEM INVOLVEMENT

Individuals' involvement with the criminal justice system decreased from the 12 months before treatment intake to the 12 months before follow-up. Over half of individuals (52.2%) reported an arrest at intake, which decreased significantly to 25.5% at follow-up. A trend report shows that the percent of clients reporting an arrest in the past 12 months has remained fluctuated between 52% and 62% at intake (with a high of 62% in FY 2019 and a low of 52% in FY 2020). Percentages at follow-up have fluctuated between a low of 20% in FY 2015 and a high of 33% in FY 2010.

In this year's sample, 36.9% of individuals reported they had a conviction for a misdemeanor in the 12 months before intake, and at follow-up, only 9.4% reported a conviction for a misdemeanor. About 29% of individuals reported a conviction for a felony in the 12 months before entering treatment, whereas at follow-up, only 5.5% of individuals had a conviction for a felony. The majority of clients (64.6%) reported being incarcerated at least one night in the past 12 months at intake compared to 28.4% 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). The percentages 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

Clients rated their quality of life as significantly higher, on average, after participating in

substance abuse treatment.

RECOVERY SUPPORTS

Compared to intake (35.3%), significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up (47.6%). Also, at follow-up, clients reported having significantly more people they could count on for recovery support: 9.5 vs. 6.2. Significantly more individuals reported they had recovery supportive interactions with a sponsor at follow-up than at intake. About 92% 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 support from their families, parenting children, and employment would be most useful in staying off drugs/alcohol at follow-up.

MULTIDIMENSIONAL RECOVERY STATUS

Consistent with the framework that recovery is a multidimensional construct, encompassing multiple dimensions of individuals' lives and functioning, items from the intake and follow-up surveys were combined to measure change in multiple key dimensions of individuals' lives. At intake, as expected, a small percent of the followed-up sample (5.0%) was classified as having all eight dimensions of recovery. At follow-up, there was a significant increase of 34.5% so that more than one-third of the sample (39.5%) had all dimensions of recovery.

PROGRAM SATISFACTION AND ENGAGEMENT

Client ratings of the treatment services they received were high (an average of 8.0 out of 10, with 10 representing the best possible experience). Almost three-fourths of individuals (72.4%) gave a high positive rating of 8 to 10. Nearly 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, 80.1% 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 9 years, the percent of

clients reporting methamphetamine use has increased from 6% in FY 2012 to 50% in FY 2020. Furthermore, the percent of clients who reported at intake that they had ever injected drugs in their lifetime was 37.0% for the follow-up sample. The percent of clients reporting at intake that they had ever injected any drug had 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 less than one-third of KTOS clients reported using illegal drugs, nearly one-fourth of clients reported using alcohol, and 15.0% met criteria for severe SUD in the 12 months before follow-up.

SMOKING

Smoking rates remained very high for KTOS clients with 77.8% reporting smoking tobacco 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 (29.3%) 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.[117] 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.[118]

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.[119] Individuals with co-occurring substance use and mental health disorders often have medication noncompliance, relapse, homelessness, and suicidal behavior.[120] 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, 14.5% 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 5.9 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 six years' reports.

---

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

[118] 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.

[119] https://www.samhsa.gov/treatment#co-occurring.

[120] 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.

CHRONIC PAIN

At follow-up, about 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[121] and substance use disorders.[122] Self-medication can be problematic in substance abuse treatment program participants who report chronic pain.[123] Of those KTOS clients who reported misusing prescription opioids and experiencing chronic pain at intake (n = 127), 44.1% (n = 56) reported chronic pain in the past 12 months at follow-up and 16.5% (n = 21) 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.[124] 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, 33.8% of clients still reported having difficulty meeting basic living needs and 21.2% 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, 47% of clients remained unemployed at follow-up. The resulting financial strain from these economic factors could lead to increased substance use to alleviate the stress.[125] 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 (39.5% vs. 5.0%), the majority of individuals (61.5%) were still classified as not having all eight positive dimensions of recovery.

GENDER DIFFERENCES ON TARGETED FACTORS

Similar to previous years' reports, there were several gender differences in targeted factors

---

[121] 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.

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

[123] 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.

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

[125] 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.

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. Men reported more alcohol use, smokeless tobacco use and criminal justice system involvement compared to women.

Significantly more women reported using illegal drugs in the 12 months before intake. Significantly more women than men reported using opioids and stimulants in the past 12 months at intake. Significantly more women than men reported using stimulants in the 12 months before entering treatment and CNS depressants and opioids in the 30 days before entering treatment. Significantly more women than men reported smoking tobacco at intake and vaporized nicotine at 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 in the 12 months before intake as well as using alcohol, alcohol to intoxication, and binge drinking in the 30 days before follow-up.

More women than men reported mental health symptoms at intake and follow-up including depression, generalized anxiety, comorbid depression and anxiety, 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 and follow-up. Significantly more women reported they had experienced any interpersonal victimization than men at intake and follow-up. Research shows that women with co-occurring mental health and substance use disorders have poorer treatment outcomes and high rates of program dropout. Men and women have been shown to use different coping styles and thus may benefit from separate groups to plan recovery support.

Women's housing situation, employment, and economic hardship were worse than men's situations. First, significantly more women reported homelessness at intake when compared to men. Second, more women also reported 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 $0.77 for every dollar employed men made at intake and $0.74 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 follow-up, more than half of employed women had a service sector job, whereas more than 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. At intake, significantly more men expected to be employed in the next 12 months than women.

Overall, a higher percentage of men reported being involved with the criminal justice system in the 12 months before entering treatment compared to women. Specifically, more men reported they had been arrested as well as under supervision by the criminal justice system at intake, as

well as incarcerated and having convictions for misdemeanors at intake and follow-up.

STUDY LIMITATIONS

The study findings must be considered within the context of the study's limitations. First, because there is no appropriate group of substance-using individuals who would like to receive substance abuse treatment but do not receive it to compare with the KTOS individuals who participate in treatment, one cannot attribute all changes from intake to follow-up to substance abuse treatment. Second, because not all clients agree to participate in the 12-month follow-up survey, it is unclear how generalizable the findings are to the entire client population that completes an intake survey. Analysis comparing those individuals who completed a follow-up survey with those who did not complete a follow-up survey (for any reason, for example, they did not agree to be in the follow-up study, they were not randomly selected into the follow-up sample, or they were not successfully contacted for the follow-up survey) found some significant differences between the two groups (gender, difficulty meeting basic needs, 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.[126, 127, 128, 129] Earlier studies found that the context of the interview influences reliability.[130] 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

[126] 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.

[127] 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.

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

[129] 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.

[130] 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.

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 2022 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, 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.

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. 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 4,575 clients who completed an intake survey, 1,875 (41.0%) agreed to be contacted for the follow-up study. From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one address), and 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 = 1,592).

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 1,592 clients included in the follow-up sample, 208 were ineligible for participating in the follow-up survey for a variety of reasons (e.g., incarcerated, in residential treatment, deceased), which left 1,384 clients eligible for follow-up. Of these clients, 839 completed a follow-up survey (see Table AA.1). Thus, the follow-up rate was 60.6%. The remaining clients either (1) refused (3.1%) to complete the follow-up survey, or (2) were never successfully contacted, or if contacted they never completed the follow-up survey (36.3%).

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 1,592)

	Number of Records	Percent
Ineligible for follow-up survey	208	13.1%
	Number of cases eligible for follow-up (N = 1,384)	
Completed follow-up surveys	839	
Follow-up rate ((the number of completed surveys/ the number of eligible cases)*100)		60.6%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	502	
Expired rate ((the number of expired cases/eligible cases)*100)		36.3%
Refusal	43	
Refusal rate (the number of refusal cases/eligible cases)*100)		3.1%
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		68.5%

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 208 cases that were ineligible for follow-up, the majority (72.6%) were ineligible because they were incarcerated during the follow-up period. In other words, of the 1,592 individuals selected into the sample to be followed up, 9.5% were ineligible for participation at the time of follow-up because they were incarcerated. Among the 208 individuals who were ineligible at the time of follow-up, 19.2% were in residential treatment at the time of follow-up, 1.4% were hospitalized, and 6.7% were deceased (or presumed deceased by the police, n = 1).

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 208)

	Number	Percent
Incarcerated	151	72.6%
In residential treatment	40	19.2%
Deceased	14	6.7%
Hospitalized	3	1.4%

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 (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 female clients completed a follow-up survey than 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 = 3,736	YES n = 839
Age	36.2 years[a]	35.2 years
Gender**		
Male	58.4%	50.4%
Female	41.4%	49.6%
Transgender	0.1%	0.0%
Race[b]		
White	90.9%	90.8%
African American	5.3%	5.7%
Other or Multiracial	3.7%	3.5%
Marital Status		
Never married	29.8%	28.0%
Married or cohabiting	41.7%	44.6%
Separated or divorced	26.5%	25.4%
Widowed	2.0%	2.0%

a—One person had a missing value for age.
b—Three individuals had missing values for race.
**p < .001.

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). The second most frequently reported usual living situation was in jail or prison. 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. There was no statistically significant difference in living situation by follow-up status.

At the time of entering treatment, more than one-fourth of clients who were followed up and those who were not followed up reported they were currently homeless. 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 = 3,736	YES n = 839
Usual Living Arrangement in the 12 Months Before Entering the Program[a]		
Own or someone else's home or apartment	80.6%	85.1%
Residential treatment, Recovery Center, sober living home, personal care home, hospital, school or work dormitory	3.4%	2.7%
Jail or prison	11.4%	8.5%
Shelter, hotel/motel, or on the street	4.2%	3.2%
Other or multiple situations above	0.4%	0.5%
Considers Self to Be Currently Homeless	26.4%	28.8%
Why the individual considers himself/herself to be homeless[b]	(n = 987)	(n = 242)
Staying temporarily with friends or family	49.9%	57.3%
Staying on the street or living in car	36.7%	31.5%
Staying in a shelter	8.1%	7.9%
Staying in a hotel or motel	1.4%	0.8%
Incarcerated and does not have a place to stay after release	1.0%	1.2%
Staying in residential treatment, recovery center, or hospital	1.3%	0.4%
Multiple options selected (such as all of the above)	1.3%	0.8%
Other reason	0.2%	0.0%

a—Two individuals had missing values for usual living situation.
b—Twelve individuals had missing values for why they considered themselves to be homeless.

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 = 3,736	YES n = 839
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)**	38.1%	45.9%
Had difficulty obtaining needed health care for financial reasons (e.g., doctor visit, dental care, or fill prescription)**	22.4%	28.5%

**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 = 3,736	YES n = 839
Highest Level of Education Completed**		
Less than GED or high school diploma	26.4%	21.3%
GED or high school diploma	44.6%	40.4%
Some vocational school to graduate school	28.9%	38.3%

**p < .001.

Significantly more individuals who did not complete a follow-up survey reported they worked 0 months in the 12 months before entering treatment when compared to individuals who completed a follow-up survey (see Table AB.5). About 20% of clients in both groups reported working 1 to 5 months. Significantly more clients who completed a follow-up survey reported they had worked 6 or more months in the past 12 months than clients who did not complete a follow-up survey. Of the clients who reported working at least one month either part-time or full-time in the 12 months before entering treatment, the average number of months worked was 7.3, regardless of follow-up status.

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

	FOLLOWED UP	
	NO n = 3,736	YES n = 839
Employment*		
Percent of clients who reported working for:		
0 months	41.6%	36.1%
1 to 5 months	20.9%	21.3%
6 months or more	37.5%	42.6%
Among those who were employed:	n = 2,180	n = 536
Average # of months employed in the past 12 months	7.3 months	7.3 months

*p < .01.

CRIMINAL JUSTICE SYSTEM INVOLVEMENT

Just under one half of clients reported being under supervision by the criminal justice system, with no difference by follow-up status (see Table AB.6).

Over half of clients reported they had been arrested in the 12 months before entering treatment, with no difference by follow-up status. Of the clients who reported they were arrested, clients who did not complete a follow-up reported an average of 2.0 arrests and followed-up clients reported an average of 1.9 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 80.3 days for clients who were not followed up and 63.3 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 = 3,736	YES n = 839
Currently under supervision by the criminal justice system	49.9%	46.2%
Arrested for any charge in the 12 months before entering treatment	53.5%	52.2%
Of those with an arrest,	n = 1,997	n = 438
Average number of arrests	2.0	1.9
Incarcerated at least one day	64.3%	64.7%
Of those incarcerated	(n = 2,404)	(n = 543)
Average number of days incarcerated in the past 12 months**	80.3	63.3

**p <. 001.

PHYSICAL HEALTH

Physical health measures were included in the intake survey (see Table AB.7). Clients rated their overall health as 2.9 (for clients who did not complete a follow-up) and as 2.8 (for clients who completed a follow-up), with no statistically significant difference. Clients' self-reported average number of days their physical health was not good did not differ by follow-up status. Significantly more clients who completed a follow-up survey reported they had experienced chronic pain in the last 3 months when compared to clients who did not complete a follow-up survey.

Clients were asked at intake if a doctor had ever told them they had any of the 12 chronic medical problems listed (e.g., asthma, arthritis, cardiovascular disease, diabetes, chronic obstructive pulmonary disease [COPD], tuberculosis, severe dental disease, cancer, Hepatitis B, Hepatitis C, HIV, and other sexually transmitted diseases). Significantly more clients who were followed up reported they had been told by a doctor that they had at least one of the chronic medical problems compared to clients who were not followed up (58.8% vs. 51.5%).

TABLE AB.7. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 3,736	YES n = 839
Average rating of overall health *[1 = Poor, 5 = Excellent]*	2.9	2.8
Average number of days physical health was not good in the past 30 days	7.7	6.5
Chronic pain (lasting at least 3 months)**	29.1%	35.5%
Ever told by a doctor that client had one of the 12 chronic medical problems listed**	51.5%	58.8%

**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: 53.8% vs. 44.4%.

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: 55.2% vs. 43.4%.

Two questions were included in the intake survey that asked about thoughts of suicide and attempted suicide in the 12 months before clients entered treatment. Significantly more clients who were followed-up reported suicidality compared to those who were not followed-up.

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

	FOLLOWED UP	
	NO n = 3,736	YES n = 839
Depression**	44.4%	53.8%
Generalized Anxiety Disorder**	43.4%	55.2%
Suicidality (e.g., thoughts of suicide or suicide attempts)**	14.8%	19.8%

**p < .001.

SUBSTANCE USE

Use of illegal drugs in the 12 months before entering treatment is presented by follow-up status in Table AB.9. Significantly more clients in the follow up sample reported using marijuana, stimulants, heroin, and illicit use of prescription opioids, buprenorphine-nalaxone, 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, cocaine, and heroin.

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

	FOLLOWED UP	
	NO n = 3,682	YES n = 828
Any illegal drug**	74.4%	90.9%
Marijuana**	49.3%	58.5%
Stimulants**	48.3%	54.7%
Prescription opioids (illegal use)**	24.7%	33.5%
Non-prescribed buprenorphine-naloxone (bup-nx)*	17.0%	21.6%
Tranquilizers, sedatives, benzodiazepines*	14.6%	18.8%
Cocaine	12.7%	15.6%
Heroin**	10.7%	15.6%
Synthetic Drugs (synthetic marijuana, bath salts)	6.9%	8.7%
Non-prescribed methadone	2.7%	3.4%
Hallucinogens	4.9%	7.0%
Barbiturates	2.1%	2.8%
Inhalants	1.7%	1.2%

*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 only 41.7% 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 = 3,682	YES n = 828
Alcohol**	44.4%	53.8%
Alcohol to intoxication**	43.4%	55.2%
Binge drank alcohol (i.e., drank 5 or more (4 for women) drinks in 2 hours**	14.8%	19.8%

**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-followed-up clients reported they had smoked tobacco products in the 12 months before entering treatment (see Table AB.11). 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 = 3,682	YES n = 828
Smoked tobacco*	81.3%	85.3%
Vaporized nicotine**	28.5%	34.2%
Used smokeless tobacco	15.9%	15.6%

*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, 35.2% of those not followed-up and 45.8% 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 as well as 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 (.13 vs. .09). Among clients who were not in a controlled environment all 30 days before entering the program, the average score for the drug severity composite score was 0.11 for clients who did not complete a follow-up interview and 0.14 for followed up clients, which was also significantly different (see Table AB.12).

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

	Not in a controlled environment all 30 days before entering treatment	
	FOLLOWED UP	
	NO n = 3,306	YES n = 719
Percent of clients with ASI composite score equal to or greater than cutoff score for …		
Severe alcohol or drug use disorder**	35.2%	45.8%
Severe alcohol use disorder*	16.4%	21.3%
Severe drug use disorder**	24.9%	33.5%
Average composite score for alcohol use[a]**	.09	.13
Average composite score for drug use[b]**	.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 < .01, **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, there was no significant difference in the average number of treatment episodes by follow-up status.

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

	FOLLOWED UP	
	NO n = 3,736	YES n = 839
Ever been in substance abuse treatment in lifetime.....	57.5%	61.0%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 2,147)	(n = 512)
Average number of times in treatment.....	2.8	3.2

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 chronic pain and a chronic medical problem compared to clients who were not in the follow-up sample. Third, significantly more clients in the follow-up sample reported depression, generalized anxiety, and suicidality in the 12 months before treatment. Because individuals who did not report any alcohol or drug use in the 12 months before entering treatment, were excluded from the follow-up sample, followed-up clients had higher percentages for many drug classes and alcohol use. Specifically, significantly more clients in the follow up sample reported using marijuana, stimulants, heroin, and illicit use of prescription opioids, buprenorphine-nalaxone, tranquilizers/sedatives/benzodiazepines compared to those who did not complete a follow-up. Significantly more followed-up clients reported using alcohol, alcohol use to intoxication, binge drinking, smoking tobacco, and using vaporized tobacco compared to clients who were not followed up. Along the same lines, 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. Some of the significant differences by follow-up status suggest that followed up clients had higher levels of education and more months of employment when compared to clients who did not complete a follow-up survey.