Kentucky Opioid Replacement Treatment Outcome Study

2023 Annual Report

Project Acknowledgments

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The 2023 KORTOS report includes data from 16 clients at Kentucky opioid treatment programs (OTPs) who completed both an intake interview between January 1, 2021 and December 31, 2021 and a six-month follow-up interview targeted between July 2021 and June 2022.

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Executive Summary

Opioid treatment programs (OTPs) may play a unique and important role in addressing opioid abuse in Kentucky, where non-medical use of prescription opioids is a continuing health concern.[1], [2] In 2007, Kentucky OTPs began collecting outcome data on opioid treatment programs. The outcome project is conducted in collaboration with the Kentucky Division of Behavioral Health and Narcotic Treatment Authority. The Kentucky Opioid Replacement Treatment Outcome Study (KORTOS) is an evidence-based data collection system designed to examine opioid treatment outcomes over time.

The goal of KORTOS is to examine client satisfaction and client outcomes for several targeted factors including: (1) substance use, (2) mental and physical health, (3) criminal justice involvement, (4) quality of life, (5) education, economic status, and living situation, and (6) recovery supports. This report describes outcomes for 16 clients who: (1) attended one of twelve Kentucky OTPs eligible to participate in the study, (b) completed an intake interview between January 1, 2021 and December 31, 2021, (c) agreed to do the follow-up about 6 months later, and (d) completed a follow-up interview between July 1, 2021 and June 30, 2022. Of those individuals, 62.5% (n=10) were still involved in the treatment clinic at follow-up and 37.5% (n=6) were not involved in the treatment clinic at follow up. In report years 2021 and earlier, clients who were no longer involved in the clinic were not eligible for the follow-up sample. However, beginning in the 2022 report, the state requested that we include these individuals in the eligible follow-up sample.

[1] Substance Abuse and Mental Health Services Administration (SAMHSA). (2015). *2013-2014 National Survey on Drug Use and Health: Model-based prevalence estimates (50 states and the District of Columbia).* Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Mental Health Statistics and Quality.

[2] World Health Organization (2004). *Substitution maintenance therapy in the management of opioid dependence and HIV/AIDS prevention.* Geneva, Switzerland: United Nations Office on Drugs and Crime.

Who Do the Opioid Treatment Programs Serve?

Overall, in CY 2021, 38 clients from 4 of the 12 participating Kentucky OTPs completed the KORTOS intake interview.[3] Information from those intake interviews indicate that clients were an average of 39 years old ranging from 23 to 65 years old. The majority of the sample was male (60.5%), 36.8% were female, and 2.6% were transgender. Less than half (36.8%) were female and 60.5% were male. The majority of clients (63.2%) self-reported they decided get help on their own and 28.9% reported that they were referred to the OTP by a family member, partner, or friend. The majority of clients (73.7%) were unemployed, and among unemployed clients (n = 28), only 21.4% reported they were looking for work.

In the six months before entering treatment, all clients reported illegal drug use, 18.4% reported alcohol use, and 81.6% reported smoking tobacco. About one-quarter of clients (26.3%) reported using only opioids, 71.1% reported using opioids and at least one other class of drugs, and 2.6% of clients reported no opioids use (only other classes of drugs). In the past 30 days at intake, all clients reported illegal drug use, 8.1% reported alcohol use, and 81.1% reported smoking tobacco. 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. Trend outcomes show the age for having their first alcoholic drink at less than 15 years old, first illegal drug use was 17 to 18 years old, and first tobacco use was about 14 years old. Results of

[3] For more information, see: Logan, T., Cole, J., Miller, J., & Scrivner, A. (2020). *Evidence Base for the Kentucky Opioid Program Treatment Outcome Study (KORTOS) Assessment and Methods.* Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

KORTOS drug trends show that although the majority of clients report illicit use of prescription opioids when they entered the program, the percent of clients who reported using heroin and methamphetamine in the 30 days before entering treatment has increased since CY 2011 through 2020.

At intake, clients were asked 17 items about ten types of adverse childhood experiences from the Adverse Childhood Experiences (ACE). Results indicated that 73.7% of clients reported at least one adverse childhood experience.

In the six months before entering the program, 34.2% of clients met study criteria for depression, and 47.4% met study criteria for generalized anxiety. About 5% reported suicidal thoughts or attempts of suicide in the 6 months before entering the program. In addition, 7.9% had post-traumatic stress disorder (PTSD) scores that indicated risk of PTSD. About 57.9% of clients reported chronic pain in the 6 months before entering the program. The majority of clients (60.5%) reported they had at least one of the 15 chronic health problems listed on the intake interview. Trend analysis shows that from CY 2013 to CY 2021 the percent of clients who reported chronic medical problems has increased from just under half of clients to over half of clients.

Change in Targeted Factors from Intake to Follow-up for Clients

Substance Use

When examining client change from past 6 months at intake to the 6-month follow-up period, clients (n = 16) reported significant decreases in illicit drug use. Overall, 87.5% of clients reported illegal use of prescription opioids in the past 6 months at intake, whereas 18.8% of clients reported illegal use of prescription opioids at any point during the 6 months before the follow-up assessment. Half of clients (50.0%) reported past-6-month heroin use at intake and that percent decreased to 18.8% at follow-up. Not only did clients' use of overall opioids decrease significantly, but also their use of non-opioid drugs (such as cannabis, tranquilizers, benzodiazepines, and stimulants) decreased from 93.8% at intake to one-fourth (25.0%) at follow-up. The majority of clients (93.8%) reported experiencing problems with drugs or alcohol (such as craving, withdrawal, wanting to quit and being unable, or worrying about relapse) in the past 30 days at intake compared to 31.3% at follow-up. In addition, the number of clients who reported DSM-5 symptoms that met the criteria for severe substance use disorder (SUD) decreased from 75.0% at intake to 18.8% at follow-up.

Mental and Physical Health

Even though there were decreases in the percent of clients who reported depression and anxiety at follow-up, the decreases were not statistically significant. Trend reports over the past nine years indicate that, overall, the percent of clients who met criteria for depression at intake has fluctuated between 44% and 75%. At follow-up, the percent of clients meeting study criteria for depression was on the rise from 2017 to 2022 before decreasing in 2022. Trends of suicidal ideation or attempts show that the percent of clients reporting suicide ideation in the past 6 months at intake appeared to peak in 2018 before decreasing again. At follow-up, the percent of clients reporting suicide ideation was stable at less than 5% over the past 8 years.

Clients' physical health was better at follow-up. Specifically, clients reported significantly fewer number of days of poor physical (2.9 days compared to 7.6 days at intake) and mental health (5 days compared to 10.0 days at intake) in the past 30 days at follow-up. Clients also reported fewer days at follow-up their physical or mental health kept them for doing their usual activities compared to intake. The majority of clients at intake (87.5%) reported using alcohol, prescription drugs, or illegal drugs to reduce their physical pain. At follow-up, 37.5% of clients reported using alcohol, prescription drugs, or illegal drugs to reduce their physical pain, which was a significant decrease of 50.0%.

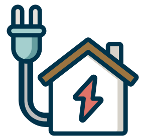
Overall, Kentucky opiate treatment program clients made positive strides in all of the targeted areas

REPORTED ANY ILLEGAL DRUG USE

100% at intake | **38%** at follow-up

AVERAGE DAYS MENTAL HEALTH WAS NOT GOOD*

10.0 at intake | **5.0** at follow-up



REPORTED DIFFICULTY MEETING BASIC LIVING NEEDS

69% at intake | **44%** at follow-up

AVERAGE NUMBER OF RECOVERY SUPPORT PERSONS

4.8 at intake | **7.1** at follow-up

Clients rated their quality of life as significantly higher after they began participating in the program as compared to when they began the program. Trend analyses show that these high ratings for quality of life at follow-up have been consistent over the past nine years.

Criminal Justice Involvement

A minority of KORTOS clients reported criminal justice system involvement in the 6 months before intake and follow-up, with no statistically significant changes this year. Since 2015, a trend report shows that the percent of clients reporting an arrest had been stable with approximately 15-20% of clients reporting an arrest in the past 6 months at intake with a slight increase in 2021 to 24% and decreases in 2022 and 2023. Trend analyses show that the percent of clients who spent at least one night in jail was between 6% and 17% at intake and between 0% and 13% at follow-up.

Economic Status and Living Circumstances

Changes in education, employment, homelessness and living situation were not statistically significant in the small follow-up sample of this year's report. The majority of the followed-up clients were unemployed at intake and at follow-up. Small percentages of clients reported being homeless at some point in the prior 6 months at intake (6.3%) and follow-up (12.5%). Overall, trends show that the percent of clients reporting difficulty meeting basic living needs and health care needs have fluctuated greatly over the past nine years. The past two years with smaller sample sizes have found no significant improvement from intake to follow-up.

Recovery Supports

At intake, 18.8% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days compared to 12.5% of clients at follow-up, which was not a significant change. The average number of people clients said they could count on for recovery support did not change significantly from intake to follow-up. At intake and follow-up, clients were asked what, other than MOUD, they believed would be most useful in helping them quit or stay off drugs/alcohol. The most common responses at intake were family support, counseling, and taking care of children. At follow-up, the most common responses were employment, the need to stay out of jail, support from friends, remembering the past/consequences, and staying busy.

Multidimensional Recovery

Recovery goes beyond relapse or return to occasional drug or alcohol use. The multidimensional recovery measure items from the intake and follow-up surveys to create one measure of recovery.

At intake, none of the clients had all positive dimensions of recovery, whereas at follow-up, almost one-third (31.3%) had all positive dimensions.

Treatment Program Satisfaction

The majority of clients reported that the program started good (75.0%) and 100% who were still involved in the OTP reported the program was currently good for them. In addition, the majority of clients (87.5%) reported that the treatment episode is working pretty well (25.0%) or extremely well (62.5%) for them. Furthermore, the majority of clients (93.8%) indicated they would refer a close friend or family member to their treatment provider.

On a scale from 1 representing the worst possible experience to 10 representing the best possible experience, clients rated their experience an 8.1 with 81.3% of clients giving a highly positive rating of 8 through 10. The majority of clients reported they felt that their expectations and hopes for treatment and recovery were met, the treatment approach and method were a good for them, they felt the program staff cared about them and their treatment progress, they had input into their treatment goals, plans, and how they were progressing over time, staff believed in them and believed that the treatment would work for them, clients fully discussed or talked about everything with their counselor/program staff, clients had a connection with a counselor or staff person during treatment and they worked on and talked about things that were most important to them. Clients reported many positive aspects of their participation in the program including reduced substance use, the quality of the treatment, improved mental health and their feelings about themselves, improved relationships with others, and improved financial situation.

Areas of concern

Several findings suggest opportunities to provide or target additional support for clients. First, 31.3% of KORTOS clients reported using illegal drugs in the 6 months before follow-up. The most commonly reported type of drug used in the 6 months before follow-up was not opioid, but drugs other than opioids (such as cannabis, methamphetamine, etc.). Additionally, 18.8% of clients still met criteria for 6 or more DSM-5 severity of substance use symptoms which classifies them has having a severe substance use disorder. Rates of smoking tobacco were high for clients at intake (81.3%) and follow-up (68.8%).

Changes in mental health problems from intake to follow-up were not statistically significant. In addition, half of clients reported using alcohol, prescription drugs, or illegal drugs to reduce stress, anxiety, worry, sadness, or fear in the past 6 months at follow-up. Also, while the number of clients reporting chronic pain was lower at follow-up, but not significantly, clients with chronic pain at follow-up reported 25.9 average days of chronic pain out of the past 30 at follow-up.

Three-fourths of clients were unemployed at follow-up. Further, at follow-up 43.8% of clients reported having difficulty meeting basic living needs and 31.3% still reported difficulty meeting health care needs in the past 6 months. Trends in economic difficulties show that the number of clients who reported they had difficulty meeting basic living needs and/or health care needs has increased at follow-up since 2017.

KORTOS clients reported barriers or negative aspects to the MOUD treatment in the OTPs. More than half of clients reported transportation problems and one-fourth reported the hardship of time away from work, their household, and other responsibilities as a negative aspect of their program involvement.

It is important to keep in mind that this year, the follow-up sample size is very small and should be considered when interpreting the findings. To increase the statistical power to detect change in this small sample size, the alpha for statistical tests was increased to $p < .10$, instead of $p < .05$.

The 2023 KORTOS evaluation indicates that opioid treatment programs in Kentucky have been successful in facilitating positive changes in clients' lives in a variety of ways, including decreased substance use, decreased mental health symptoms, improved quality of life, and improved health status. This report also suggests there are a number of things clients continue to struggle with 6 months into their program participation.

Introduction and Overview

While prescription opioids are instrumental to reducing pain, misuse can lead to serious negative consequences such as addiction or even overdose. Non-medical use of prescription opioids is a continuing health concern in Kentucky where 5.3% of adults report nonmedical use of prescription opioids in 2021.[4] In 2020, Kentucky health care providers dispensed 68.2 prescriptions for opioids per 100 people compared to the United States which was 42.3 prescriptions per 100: the state with the fifth highest rate.[5] In addition, compared to the United States which had a rate of 14.6 opioid-involved overdose deaths, there were 23.4 overdose deaths involving opioids per 100,000 people in Kentucky.[6] Further, from September 2019 to September 2020, the number of Kentuckians who died from drug overdose increased 50% compared to the previous 12 months while there was a 28.8% increase nationwide,[7] and there was a continued increase in 2021; the number of drug overdose deaths in Kentucky increased 14.5% from 2020 to 2021. Among the drugs found in toxicology reports in Kentucky drug overdose cases in 2021, opioids were involved in 90% of overdose deaths, and fentanyl was involved in more than 70% of those cases.[8] Opioid-related emergency department visits increased by 62.9% from January 2017 through June 2021 in Kentucky.[9]

One of the key methods for treating persons addicted to opioids is through medication for opioid use disorder (MOUD) primarily with methadone or buprenorphine-naloxone (bup-nx). One of three priority areas of the United States Health and Human Services' (HHS) launched initiative in 2015 to reduce prescription opioid- and heroin-related overdose, death, and dependence is to expand the use of MOUD.[10] These federally regulated opioid treatment programs (OTPs) provide evidence-based, clinically monitored, MOUD with methadone or bup-nx.[11] Research evidence supports the effectiveness of methadone maintenance and bup-nx maintenance in retaining clients in treatment and reducing opioid use as well as reducing overdose deaths.[12, 13] The single day counts of persons receiving methadone in substance use treatment in Kentucky rose from 2015 to 2019, and the number of persons receiving buprenorphine in substance use treatment also increased from 2015 to 2019.[14] In 2019, more individuals were receiving

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[4] https://www.americashealthrankings.org/explore/annual/measure/drug_use/population/drug_use_presc_opioids/state/KY

[5] Center for Disease Control and Prevention. U.S. Opioid Prescribing Rate Maps. Retrieved on September 22, 2022 from https://www.cdc.gov/drugoverdose/rxrate-maps/state2020.html.

[6] NIDA. 2020, April 3. *Kentucky: Opioid-Involved Deaths and Related Harms.* Retrieved from https://www.drugabuse.gov/drug-topics/opioids/opioid-summaries-by-state/kentucky-opioid-involved-deaths-related-harms on April 19, 2021.

[7] Ahmad FB, Rossen LM, Sutton P. (2021). *Provisional drug overdose death counts.* National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm#data-tables on April 19, 2021.

[8] Kentucky Office of Drug Control Policy. *2021 Overdose Fatality Report*. https://odcp.ky.gov/Reports/2021%20Overdose%20Fatality%20Report%20%28final%29.pdf

[9] Kentucky Substance Use Research & Enforcement. (2021, December). *Six major overdose-related substances in Kentucky, January 1, 2017-June 30, 2021.* K-SURE Brief (No. 16). Retrieved on September 23, 2022 from https://kiprc.uky.edu/sites/default/files/2022-01/K.SURE%20Product%2016%2C%202021-final.pdf.

[10] Office of the Assistant Secretary for Planning and Evaluation. (2015, March 26). *Opioid abuse in the U.S. and HHS actions to address opioid-drug related overdoses and deaths.* Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.

[11] Mattick, R., Breen, C., Kimber, J., & Davoli, M. (2009). Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. *Cochrane Database System Review*, Jul 8 (3).

[12] Kakko, J. Svanborg, K. D., Kreek, M J., & Heilig, M. (2003). 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: A randomised, placebo-controlled trial. *Lancet, 361*, 662-668.

[13] Mattick, R., Kimber, J., Breen, C., & Davoli, M. (2008). Methadone maintenance therapy versus placebo or methadone maintenance for opioid dependence. *Cochrane Database of Systematic Reviews, 2*. CD002207.

[14] Substance Abuse and Mental Health Services Administration. (2020). *Behavioral health barometer: Kentucky, Volume 6: Indicators as measured though the 2019 National Survey on Drug Use and Health and the National Survey on Substance Abuse Treatment Services.* HHS Publication No. SMA-20-Baro-19-KY. Rockville, MD: Substance Abuse and Mental Health Services Administration.

buprenorphine than were receiving methadone in MAT.

In 2007, Kentucky OTPs began collecting state-specific outcome data on medication for opioid use disorder (MOUD). The outcome evaluation project is conducted in collaboration with the Kentucky Division of Behavioral Health, which is part of the Department of Behavioral Health, Developmental, and Intellectual Disabilities (DBHDID). The Kentucky Opioid Replacement Treatment Outcome Study (KORTOS) is conducted by the Behavioral Health Outcome Study team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) and is an important part of the DBHDID Division of Behavioral Health's performance-based measurement of treatment outcomes in Kentucky's communities. The KORTOS project collects data from clients receiving MOUD with methadone or bup-nx at licensed OTPs because they follow clinical monitoring protocols; thus, this report does not include data from all programs in Kentucky or independent physicians who prescribe bup-nx outside of an OTP. In calendar year 2021, only four Kentucky licensed OTPs submitted data for KORTOS.[15]

In previous years, clients who were no longer involved in the clinic were not included in the eligible follow-up sample. However, beginning this report year, the decision was made to include these individuals in the eligible follow-up sample. In this report's follow-up sample (n = 16), six individuals were no longer involved in MOUD at the OTP where they completed the intake interview at the time of follow-up.[16] This report describes outcomes for 16 adults who participated in a Kentucky OTP, completed an intake interview and then a follow-up telephone interview about 6 - 7 months (an average of 211 days) after the intake interview was completed.

Results are reported within ten main sections for the overall sample.[17]

Section 1. Overview and Description of KORTOS Clients. This section describes KORTOS including a description of clients who were involved in Kentucky's participating licensed OTPs in calendar year 2021 and who had completed an intake (n = 38) as well as clients who completed a 6-month follow-up interview (n = 16).

Section 2. Substance Use. This section examines change in substance use (any illegal drugs, alcohol, and tobacco) for 6-month and 30-day periods at intake and follow-up. Specific classes of illegal drugs examined include misuse of prescription opioids, non-prescribed methadone, non-prescribed bup-nx, heroin, and other illegal drugs. In addition, self-reported severity of alcohol and drug use based on the DSM-5 criteria for severity of substance use disorder (SUD) and the Addiction Severity Index (ASI) alcohol and drug use composite scores are compared at intake and follow-up. Further, this section also examines change in problems experienced with alcohol/drug use, readiness for treatment, and history of MOUD.

Section 3. Mental and Physical Health. This section examines changes in mental health, physical health status, and quality of life from intake to follow-up. Specifically, this section examines: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicidal ideation and attempts, (5) posttraumatic stress disorder, (6) general health status, (7) perceptions of physical and mental health, (8)

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[15] In CY 2021, 4 of 12 OTPs submitted intake surveys for clients: Behavioral Health Group-Paintsville, Center for Behavioral Health -Louisville, Pikeville Treatment Center, and Western Kentucky Medical.

[16] Of the six clients who were no longer involved in the treatment clinic at follow-up reasons for not being involved include: problems with the clinic (n = 2), transportation problems (n = 1), too many requirements from the clinic or doctor to stay on MOUD (n = 1), no particular issues (n = 1), and other reason (n = 1).

[17] In previous annual reports, comparisons by gender were analyzed for all outcomes and presented when statistically significant differences were found. Because of the small sample size in this year's report, gender comparisons were not analyzed.

chronic pain, (9) health insurance, and (10) quality of life. The mental and physical health questions on the KORTOS intake and follow-up interviews were self-report measures.

Section 4. Criminal Justice System Involvement. This section describes change in client involvement with the criminal justice system during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest, (2) the number of times arrested, among clients with any arrests, (3) any incarceration, (4) the number of nights incarcerated, among clients with any incarceration, and (5) criminal justice supervision status.

Section 5. Interpersonal Victimization and Personal Safety. This section describes change in clients experiences of interpersonal victimization and their personal safety during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) interpersonal victimization, and (2) personal safety.

Section 6. Education, Economic Status, and Living Circumstances. This section examines changes in education, economic status, and living circumstances from intake to follow-up including: (1) highest level of education completed, (2) the number of months clients were employed full-time or part-time in the past 6 months, (3) current employment status, (4) hourly wage, (5) homelessness, (6) living situation, and (7) economic hardship (i.e., difficulty meeting living and health care needs for financial reasons).

Section 7. Recovery Supports. This section focuses on four main changes in recovery supports: (1) mutual help recovery group meeting attendance, (2) the number of people the client said they could count on for recovery support, (3) what will be most useful to the client in staying off drugs/alcohol, and (4) clients' perceptions of their chances of staying off drugs/alcohol.

Section 8. Multidimensional Recovery. This section examines multidimensional recovery that takes into account severity of substance use disorder, employment, homelessness, criminal justice system involvement, suicide ideation, overall health, recovery support, and quality of life. Change in recovery status from intake to follow-up is presented. Furthermore, a multivariate analysis was conducted to examine the intake indicators of recovery status and their association with having all eight dimensions of recovery at follow-up.

Section 9. Client Satisfaction with the Opioid Treatment Programs. The items measured in this report include: (1) client involvement in the program, (2) if the client would refer someone else to the program, (3) client ratings of program experiences, and (4) positive and negative aspects of program participation.

Section 10. Conclusion and Implications. This section summarizes the highlights from the evaluation results and suggests implications from these findings for the state.

It is important to keep in mind that this year, the follow-up sample size is small and should be considered when interpreting the findings. To increase the statistical power to detect change in this small sample size, the alpha for statistical tests was increased to $p < .10$, instead of $p < .05$.

Section 1. KORTOS Client Characteristics

This section briefly describes the Kentucky Opioid Replacement Treatment Outcome Study (KORTOS) including how clients are selected into the outcome evaluation. In addition, this section describes characteristics of clients who participated in federally licensed Kentucky opioid treatment programs in calendar year 2021 and who had completed an intake assessment (n = 38), including clients who also completed a 6-month follow-up interview (n = 16), of which 62.5% (n = 10) were still involved in a MAT program at follow up and 37.5% (n = 6) were not.

KORTOS includes a face-to-face interview with program staff at the beginning of a new episode of MOUD. The interview is an evidence-based assessment[18] that asks about targeted factors such as substance use, mental health, involvement in the criminal justice system, quality of life, health status, and economic and living circumstances prior to entering treatment (submitted to UK CDAR from January 1, 2021 to December 31, 2021). In 2021, 38 adults completed an intake interview[19] that was submitted by one of 4 Kentucky licensed OTPs to UK CDAR.[20] The following section describes characteristics for all clients from those programs with a completed and submitted intake assessment.

Description of KORTOS Clients at Treatment Intake

Demographics

Table 1.1 shows that over half of clients were male (60.5%) and most were White (94.7%). Clients were, on average, 42.3 years old, with the youngest client being 23 and the oldest being 65 years old. Overall, 52.6% were married or cohabiting, 21.1% of clients had never been married (and were not cohabiting), 21.1% were separated or divorced, and 5.3% were widowed. Less than half of clients (44.7%) reported they had at least one child under the age of 18 who was living with them in the 6 months before they entered the program. The majority of clients (63.3%) indicated they lived in a non-metropolitan community, 30.0% lived in a nonmetropolitan community, and only 6.7% were from a very rural community.

[18] Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2020). *Evidence Base for the Kentucky Opioid Replacement Treatment Outcome Study (KORTOS) Assessment and Methods.* Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

[19] 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.

[20] In CY 2021, 4 of 12 OTPs submitted intake surveys for clients: Behavioral Health Group-Paintsville, Center for Behavioral Health -Louisville, Pikeville Treatment Center, and Western Kentucky Medical.

TABLE 1.1. DEMOGRAPHICS FOR ALL KORTOS CLIENTS AT INTAKE (N = 38)

Age[21]	42.3 years *(Min. = 23, Max. = 65)*
Gender	
Male	60.5%
Female	36.8%
Transgender	2.6%
Race	
White/Caucasian	94.7%
Black/African American	0%
Other or multiracial	5.3%
Marital status	
Never married	21.1%
Separated or divorced	21.1%
Married or cohabiting	52.6%
Widowed	5.3%
Have children under the age of 18 who live with them	44.7%
Type of community[22]	(n = 30)[23]
Metropolitan	30.0%
Nonmetropolitan	63.3%
Very rural	6.7%

Education

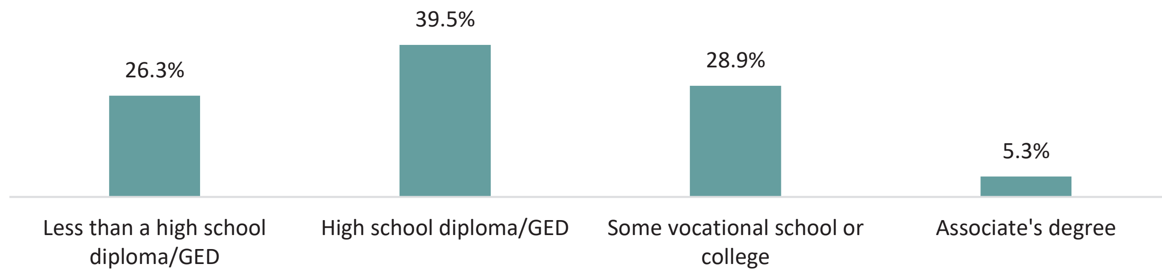
About one-fourth (26.3%) of clients had less than a high school diploma or GED at intake (see Figure 1.1). About 39.5% of the sample had a high school diploma or GED and 28.9% of clients had completed some vocational/technical school or college. Only a minority of clients had completed an associate's degree (5.3%).

[21] Two clients had incorrect birthdates and, therefore, age could not be determined.

[22] Two clients either did not indicate a county of residence or lived in another state.

[23] Eight individuals were not included in this statistic: 4 individuals lived outside of Kentucky, so we did not classify their residence and 2 additional clients did not indicate a county of residence.

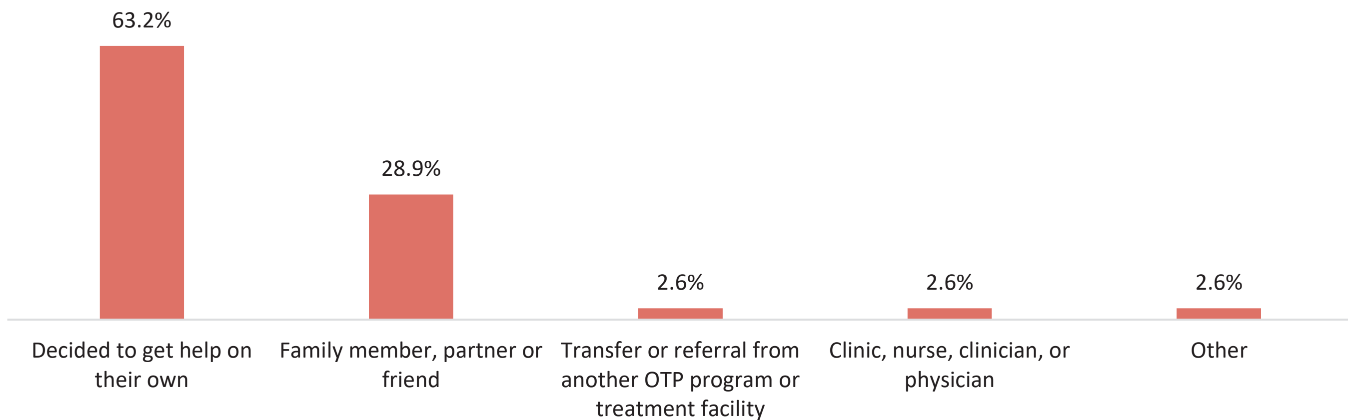
FIGURE 1.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 38)



Self-reported Referral Source

Figure 1.2 shows the self-reported treatment referral source for all KORTOS clients. Less than two-thirds of clients (63.2%) decided to get help on their own and 28.9% of clients reported they were referred by a family member, partner or friend. Small percentages were referred by a health care (2.6%), transferred from another OTP (2.6%), and referred by another source (2.6%). Furthermore, only one person (2.6%) reported being ordered to received MAT at the OTP by the court or other state agency.

FIGURE 1.2 SELF-REPORTED REFERRAL SOURCE FOR ALL KORTOS CLIENTS AT INTAKE (N = 38)



Employment

Over half of clients (52.6%) reported they had not worked in the past 6 months, 13.2% had worked 1 to 3 months, and 34.2% had worked 4 or more months (not depicted in figure). In the 30 days before entering

the program, almost three-fourths of clients (73.7%) reported being unemployed, 21.1% reported they were employed full-time, and 5.3% were employed part-time or had occasional or seasonal employment (see Figure 1.3). Among those who reported being employed full or part-time at intake (n = 10)[24], the median hourly wage was $15.00.

FIGURE 1.3. EMPLOYMENT STATUS IN THE PAST 30 DAYS AT INTAKE (N = 38)

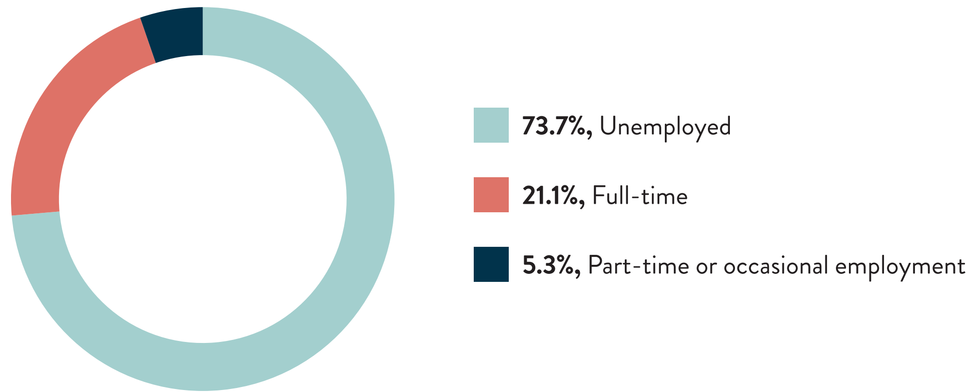
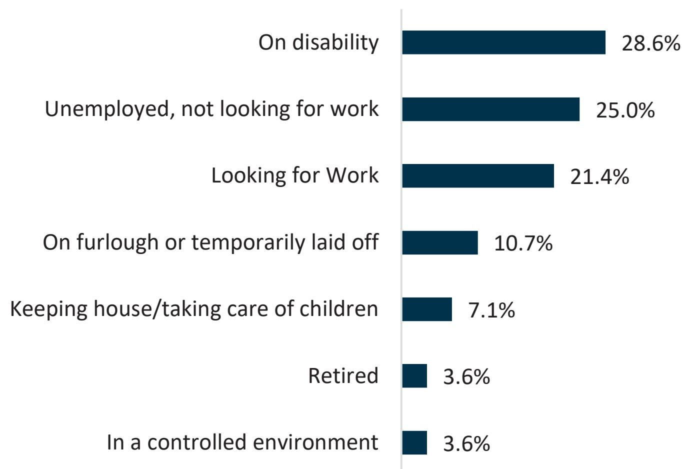


Figure 1.4 shows that of the individuals who were currently unemployed at intake (n = 28), 21.4% stated they were looking for work, 28.6% were on disability, 25.0% were unemployed and not looking for work, 10.7% were on furlough from their job or temporarily laid off, 7.1% were keeping the house or taking care of children full-time at home, 3.6% were retired, 3.6% were in a controlled environment).

FIGURE 1.4. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 28)



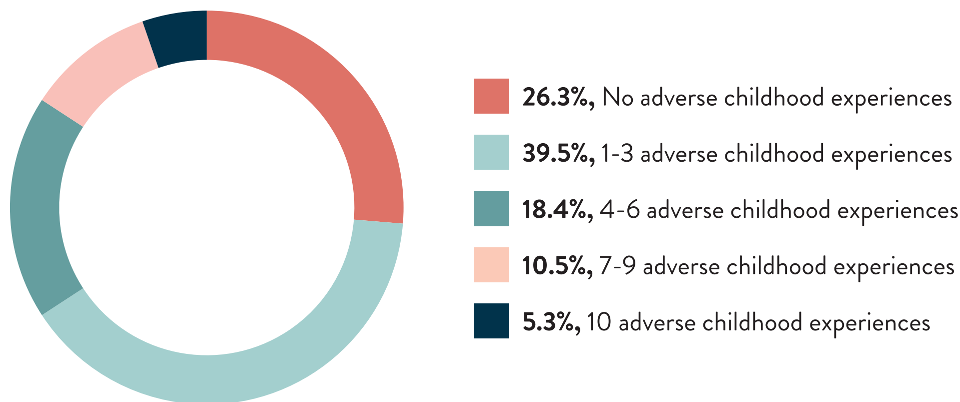
[24] One employed individual did not report hourly wage.

Adverse Childhood Experiences and Victimization

Adverse Childhood Experiences

At intake, clients were asked 17 items about ten types of adverse childhood experiences from the Adverse Childhood Experiences (ACE).[25, 26, 27] In addition to providing the percent of clients who reported each of the ten 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 clients answered affirmatively were added to create a score equivalent to the ACE score. A score of 0 means the client 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 client reported all five forms of child maltreatment and neglect, and all five types of household dysfunction before the age of 18. Figure 1.5 shows that 26.3% reported they did not experience any of the ACE included in the assessment, 39.5% of clients reported experiencing 1 to 3 ACE, 18.4% reported experiencing 4 – 6 ACE, and 10.5% reported experiencing 7 – 9 ACE. Only 5.3% of clients reported experiencing all 10 types of adverse childhood experiences.

FIGURE 1.5. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES REPORTED AT BASELINE (N =38)



Interpersonal Victimization

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 in their lifetime and in the 6 months before entering the OTP. The results for lifetime experiences of interpersonal victimization are presented in Figure 1.6. The most frequently reported type of interpersonal victimization was physical assault/attack, followed by direct or indirect threats with a gun, and being robbed/mugged.

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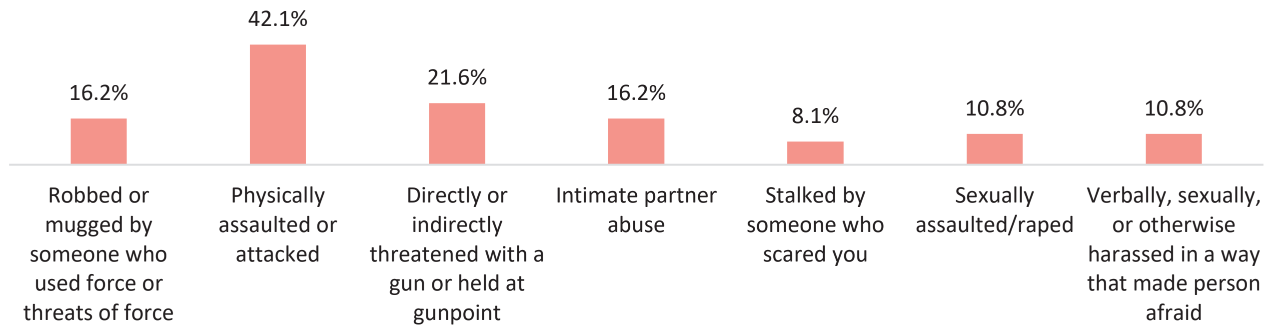
[25] Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: *The Adverse Childhood Experiences (ACE) Study. American Journal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

[26] 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.

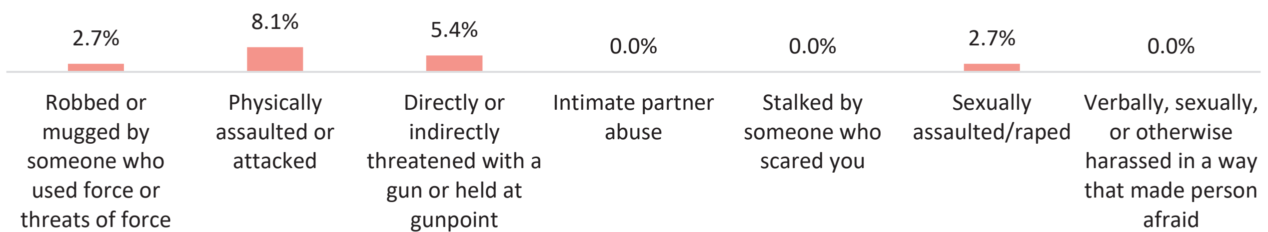
[27] The intake assessment asked about 10 major categories of adverse childhood experiences: (a) three types of abuse (e.g., emotional maltreatment, physical maltreatment, and sexual abuse), (b) two types of neglect (e.g., emotional neglect, physical neglect), and (c) fives types of family risks (e.g., 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 1.6. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION (n = 38)



Lower percentages of clients reported interpersonal victimization experiences in the 6 months before entering treatment in the OTPs (see Figure 1.7).

FIGURE 1.7. PAST-6-MONTH INTERPERSONAL VICTIMIZATION (n = 38)

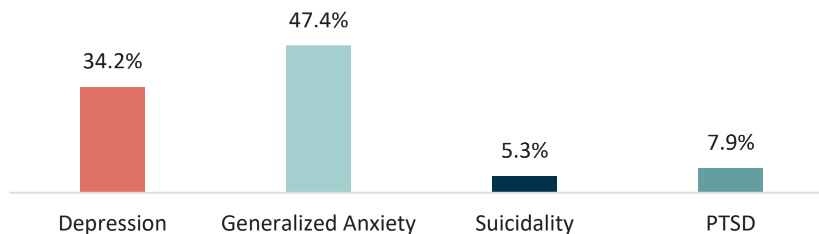


Mental Health

At intake, 34.2% of KORTOS clients met study criteria for depression in the past 6 months (see Figure 1.8). Additionally, 47.4% of clients met study criteria for generalized anxiety at intake. 5.3% clients reported suicidal thoughts or attempts in the 6 months before entering the program and 7.9% of clients had PTSD scores that indicated a risk of PTSD.[28]

[28] Price, M., Szafranski, D. D., van Stolk-Cooke, K., & Gros, D. F. (2016). Investigation of abbreviated 4 and 8 item versions of the PTSD Checklist 5. *Psychiatry Research*, *239*, 124-130.

FIGURE 1.8. DEPRESSION, GENERALIZED ANXIETY, SUICIDALITY, AND POST TRAUMATIC STRESS DISORDER IN THE PAST 6 MONTHS AT INTAKE (N = 38)



Physical Health

At intake, clients reported an average of 9.6 days of poor physical health in the past 30 days and an average of 9.4 days of poor mental health in the past 30 days (see Table 1.2). Clients reported an average of 8.3 days out of the 30 days that poor physical and/or mental health kept them from their regular daily activities. About 57.9% of clients reported chronic pain in the 6 months before entering the program. Over half of clients (60.5%) reported they had at least one of the 16 chronic health problems listed on the intake interview. Of those clients (n = 23), the most common medical problems were cardiovascular disease, arthritis, asthma and Hepatitis C.

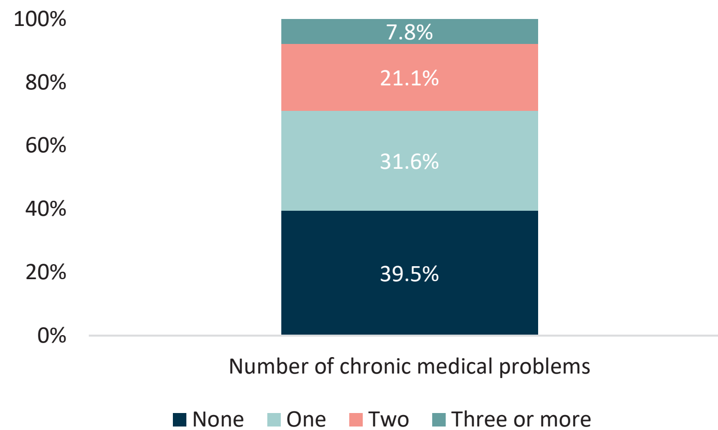
The most common insurance provider reported at intake was Medicaid (71.1%; see Table 1.2). Eighteen percent of clients did not have any insurance. Small percentages of clients had insurance through an employer, including through a spouse, partner, or self-employment (2.6%) and Medicare (7.9%).

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KORTOS CLIENTS AT INTAKE (N = 38)

Average number of poor health days in past 30 days	9.6
Average number of poor mental health days in past 30 days	9.4
Average number of days poor physical or mental health limited activities	8.3
Chronic pain	57.9%
At least one chronic medical problem	60.5%
Cardiovascular disease	34.8%
Arthritis	34.8%
Asthma	30.4%
Hepatitis C	26.1%
Medical insurance	
No insurance	18.4%
Medicaid	71.1%
Through employer (including spouse's employer, parents' employer, and self-employed)	2.6%
Medicare	7.9%
VA/Champus/Tricare	0.0%
Through Health Exchange	0.0%

Figure 1.9 shows the percent of clients who reported having different numbers of chronic medical problems at intake. Over two-fifths (39.5%) of clients reported no problems, and less than one-third (31.6%) reported one chronic medical problem. About 21.1% reported two chronic medical problems and 7.8% reported having three or more chronic medical problems.

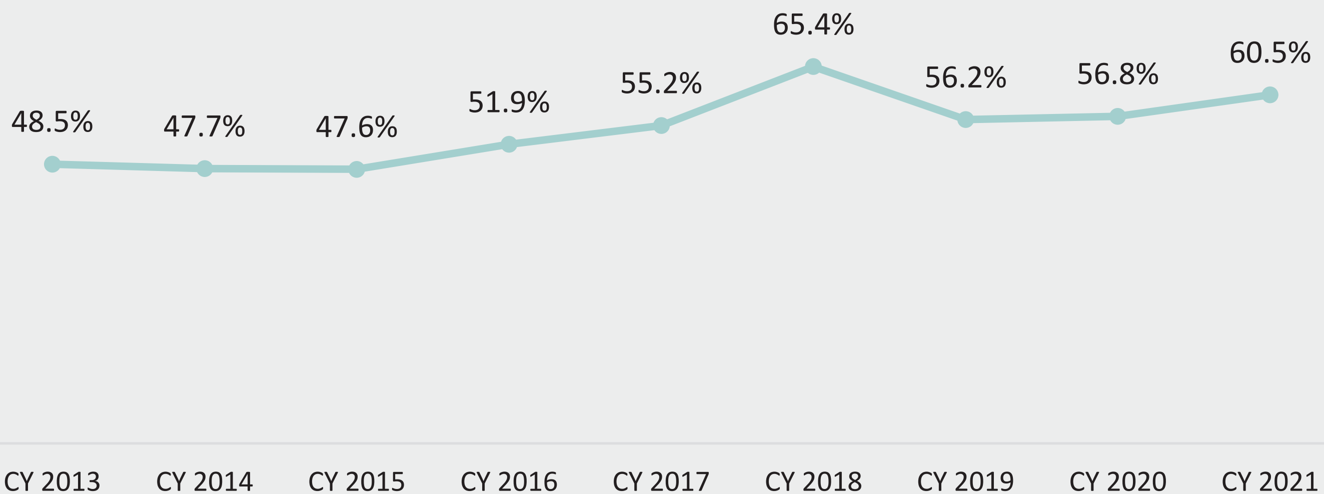
FIGURE 1.9. NUMBER OF CHRONIC MEDICAL PROBLEMS AT INTAKE FOR TOTAL SAMPLE (N = 38)



Trend Alert: Chronic Medical Problems at Intake

At intake, clients were asked if, in their lifetime, they have been told by a doctor they had any of the chronic medical problems listed (e.g., diabetes, arthritis, asthma, heart disease, cancer, hepatitis B or C, cirrhosis of the liver). The percent of clients reporting at least one chronic health problem in their lifetime remained steady from CY 2013 (48.5%) to CY 2016 (51.9%) and increased to 65.4% in CY 2018. In CY 2021, 60.5% of clients reporting at least one chronic health problem.

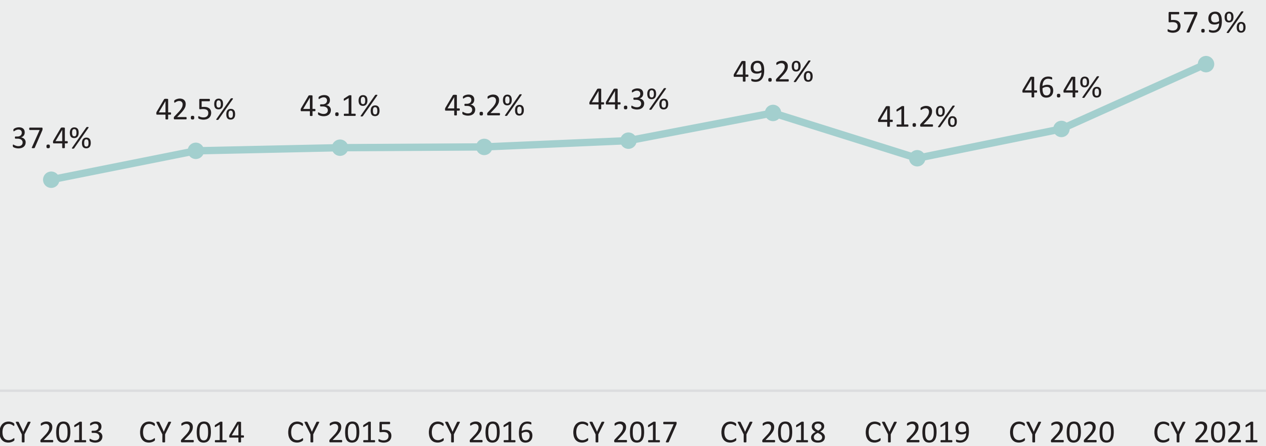
FIGURE 1.10. TRENDS IN CHRONIC MEDICAL PROBLEMS AT INTAKE



Trend Alert: Chronic Pain at Intake

The percent of clients who reported chronic pain at intake has increased slowly, but minimally, over time. In CY 2013 37.4% of clients reported experiencing chronic pain and in CY 2021 57.9% reported experiencing chronic pain.

FIGURE 1.11. TRENDS IN CHRONIC PAIN AT INTAKE



Substance Use

All of the KORTOS clients who completed an intake interview reported using illegal drugs and the majority reported smoking tobacco (81.6%) while 18.4% reported using alcohol in the 6 months before intake (see Figure 1.12). The drug classes reported by the greatest number of clients were non-prescribed use of prescription opioids (89.5%), cannabis (52.6%), heroin (47.4%), and amphetamines (36.8%; not represented in a figure).

Similarly, 100% reported using illegal drugs, 81.1% reported smoking tobacco, and 8.1% reported using alcohol in the 30 days before entering treatment.

FIGURE 1.12 ALCOHOL, DRUG, AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE TREATMENT[29]

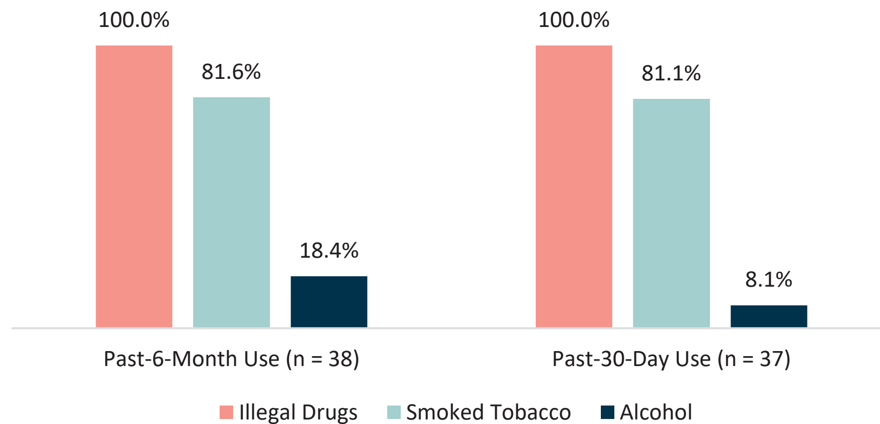


Figure 1.13 presents the percentage distribution of individuals who used alcohol and/or illegal drugs in the 6 months before entering the program. Among the individuals who were not incarcerated all 180 days before entering the program, none reported no alcohol or drug use, none reported alcohol use only, 78.8% reported illegal drug use only, and 21.2% reported both alcohol and illegal drug use.

FIGURE 1.13. PAST-6-MONTH ALCOHOL AND ILLEGAL DRUG USE AT INTAKE FOR THOSE NOT INCARCERATED ALL 180 DAYS BEFORE ENTERING THE PROGRAM (N = 33)[30]

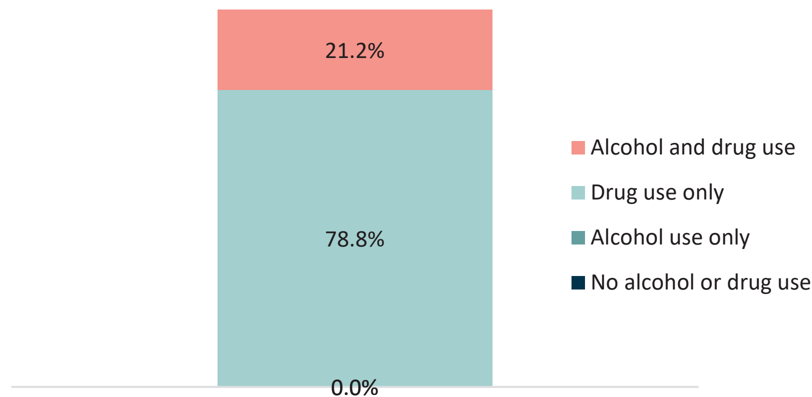


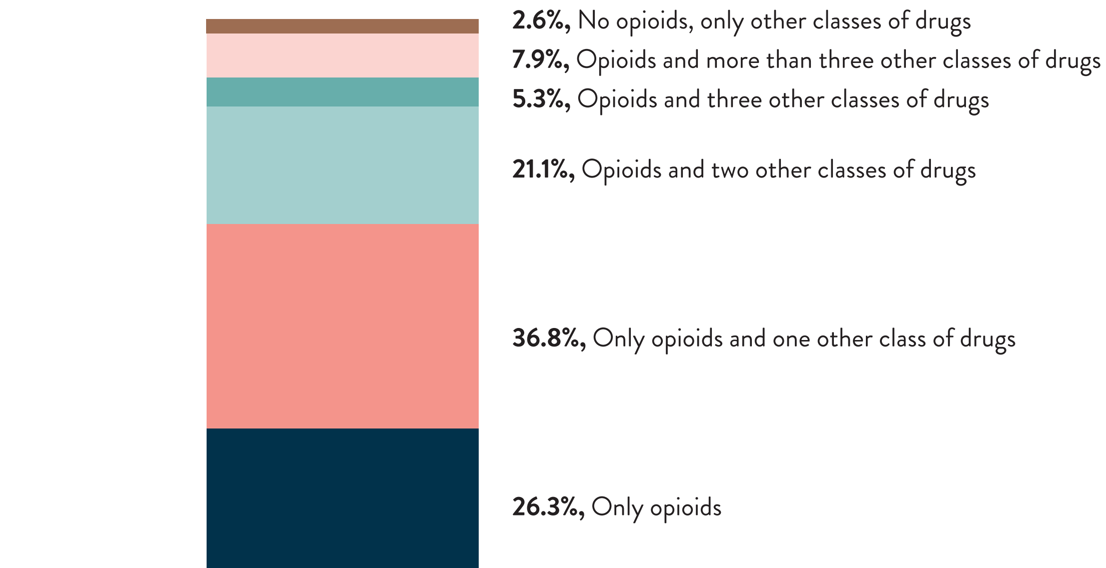
Figure 1.14 presents the distribution of clients who reported using no drugs, alcohol only, only opioids (including prescription opioids, bup-nx, methadone, heroin) and other drug classes from the following: marijuana, CNS depressants (such as benzodiazepines, sedatives, tranquilizers, barbiturates), stimulants (including amphetamines and cocaine), and other classes such as hallucinogens, synthetic marijuana, and inhalants. KORTOS clients who were not incarcerated all 180 days before entering the program are

[29] Because being in a controlled environment reduces opportunities for substance use, only clients who were not incarcerated for the entire time period were included in the substance use analysis; therefore, none of the clients were excluded from the past-6-month substance use but 1 client was excluded from past-30-day use.

[30] Five individuals had missing data for alcohol use in the 6 months before entering the program, thus, they could not be classified for this variable and are excluded from this graph.

predominately polysubstance users. About one-fourth of clients reported only using opioids (26.3%) while 71.1% reported using opioids and at least one other class of drug and 2.6% reported no use of opioids.

FIGURE 1.14. PAST-6-MONTH POLYSUBSTANCE USE AT INTAKE FOR THOSE NOT INCARCERATED ALL 180 DAYS BEFORE ENTERING THE PROGRAM (N = 38)



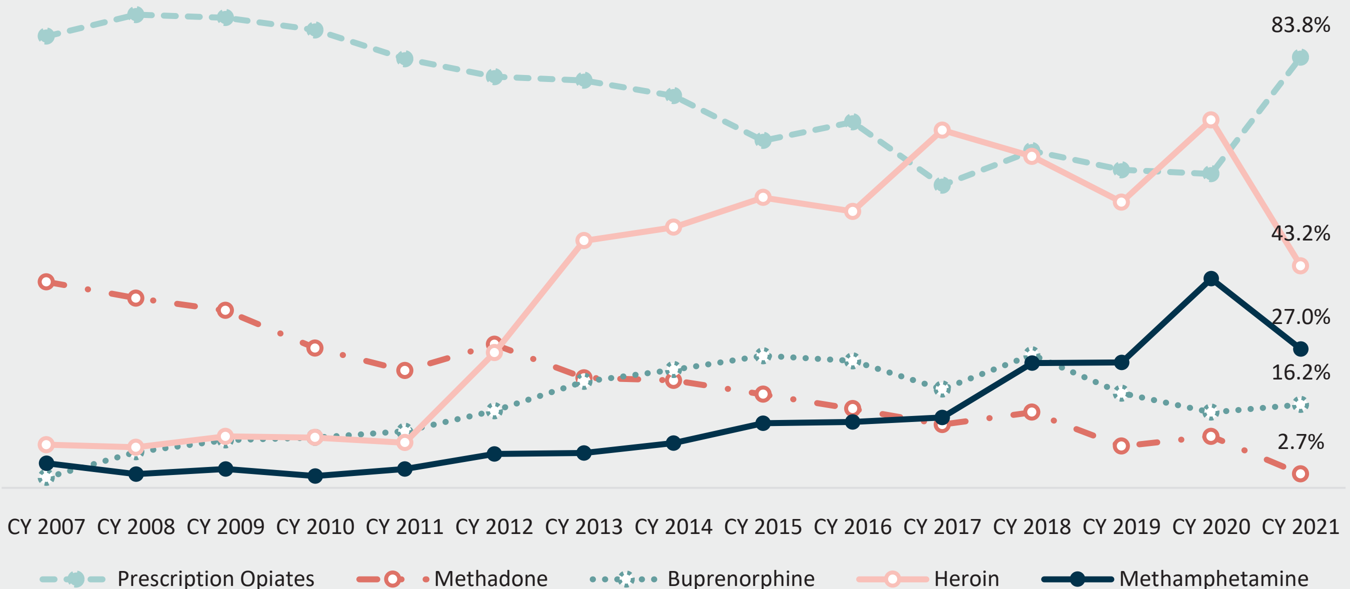
Trend Report in Specific Past-30-Day Drug Use

When looking at trends over time for all clients with completed intake interviews, the percent of clients using prescription opioids in the past 30 days peaked in CY 2008 and steadily dropped until CY 2017 (58.9%). The percent of clients who reported using non-prescribed methadone before entering treatment showed a decline from CY 2007 to 2011 and again from CY 2012 to 2021. The percent of clients who reported using bup-nx slowly increased from CY 2007 through 2015, dropped slightly in CY 2016 and 2017 before increasing again in CY 2018. In CY 2021, the percent of clients who reported using bup-nx decreased further to 16.2%.

The most notable change in substance use among KORTOS clients, however, is for heroin. Small percentages of KORTOS clients reported using heroin from CY 2007 through 2011. Then, the percent tripled from 8.8% in CY 2011 to 26.3% and then nearly doubled from 26.3% in CY 2012 to 48.1% in CY 2013. The percent of KORTOS clients reporting heroin use at intake in CY 2014 increased again to 50.7% and further still to 56.5% in CY 2015 to a high of 71.6% in CY 2020.

The use of methamphetamine among clients has gradually been increasing since CY 2008. In CY 2018 and CY 2019, about one-quarter of clients were using methamphetamine when they entered the program, which was in increase from CY 2017. In CY 2020 there was a sharp increase in methamphetamine use to 40.7%, but in CY 2021 the percent was lower (27.0%). These trends are very similar when examining only those clients who were followed-up (see Appendix D).[31]

FIGURE 1.15. PERCENT OF ALL CLIENTS WITH A COMPLETED INTAKE INTERVIEW REPORTING NON-PRESCRIBED USE OF PRESCRIPTION OPIOIDS, METHADONE, BUP-NX, HEROIN, AND METHAMPHETAMINE IN THE 30 DAYS BEFORE ENTERING TREATMENT AT THE OTP (N = 9,494)[32]



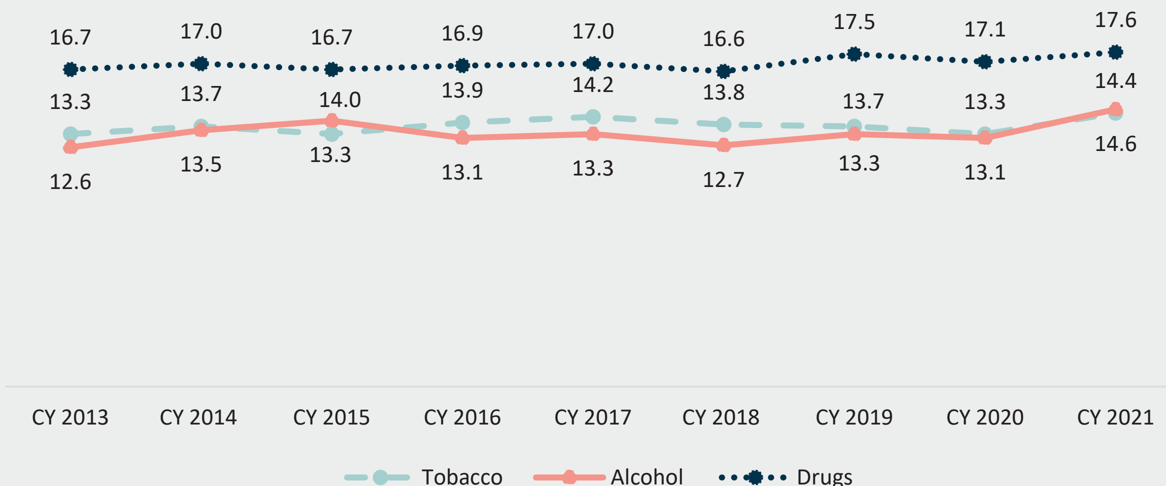
[31] Due to the proximity of the trend lines, only the most recent year's data is labeled.

[32] One client who reported being in a controlled environment all 30 days before entering treatment were not included in this analysis.

Trends in Age of First Use

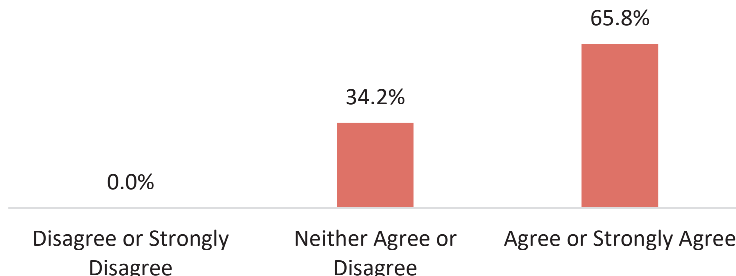
Clients were asked, at intake, how old they were when they first began to use illegal drugs, when they had their first alcoholic drink (more than just a sip), and when they began smoking cigarettes regularly (see Figure 1.19). The age at which KORTOS clients reported initiating drug use was steady for the past 9 years, around 17 to 18 years old. Clients generally reported having their first alcoholic drink in their early teens (around 13 years old). The age of first regular smoking tobacco use was steady for the past 9 years, typically between 13 and 14 years old.

FIGURE 1.16. AGE OF FIRST USE REPORTED AT INTAKE



At intake, clients were asked how important it was to them to help others who have had substance use problems. The majority of clients (65.8%) reported they agreed or strongly agreed that it is important while 34.2% neither agreed nor disagreed (see Figure 1.17).

FIGURE 1.17. CLIENTS REPORTING THE IMPORTANCE OF HELPING OTHERS WHO HAVE A SUBSTANCE USE PROBLEM (N = 38)



Criminal Justice Involvement

A minority of KORTOS clients (13.2%) reported being arrested at least once and 2.6% reported being incarcerated at least one night in the 6 months before entering treatment (see Figure 1.18). Among those who were arrested (n = 5), they were arrested an average of 1.4 times. In addition, 10.5% of clients reported being under supervision by the criminal justice system.

FIGURE 1.18. CRIMINAL JUSTICE INVOLVEMENT 6 MONTHS BEFORE TREATMENT AT INTAKE (N = 38)

KORTOS Follow-up Sample

Follow-up interviews are conducted with a selected sample of KORTOS clients targeted for 6 months after the intake interview is completed. At the completion of the intake interview, program staff inform individuals about the KORTOS follow-up study and ask if they are interested in participating. Clients who agree to participate are asked to provide contact information. 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. All eligible individuals are then selected by the month in which they completed intake interviews.[33]

Of the 38 clients who completed an intake interview, 22 agreed to be contacted for the follow-up interview (57.9% agreement rate). Of these clients, one provided the minimum amount of contact information at the end of the intake interview, had intake interviews that were submitted to UK CDAR within 30 days of completion, and were selected into the follow-up sample. Of the 20 clients included in the follow-up sample, none of the clients was ineligible for participating in the follow-up interview. Of these 20 eligible clients, UK CDAR interviewers completed follow-up assessments with 16 clients (80.0% follow-up rate). This means that roughly 20.0% of eligible individuals included in the sample to be followed up were not successfully contacted within the targeted eligibility period.[34]

[33] If a person has more than one intake interview in a given year, the interview with the earliest date will be selected into the follow-up sample.

[34] 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.

Follow-up procedures for the outcome study use several best practices. First, the follow-up assessments are conducted independently from the treatment programs by UK CDAR staff. Second, UK CDAR has over 20 years of extensive experience following up study participants and staff are highly trained, supervised, and monitored. Third, the confidentiality of clients is protected through specific study procedures, UK human subjects' protections, and through a federal certificate of confidentiality. Clients are provided with full information about their rights as a research subject and the protections for confidentiality provided by the study. Clients must consent to the study twice: once at the completion of the intake interview and once when on the phone for the follow-up interview.

In previous years, clients who were no longer involved in the clinic were not included in the eligible follow-up sample. However, beginning in the 2021 report year, the decision was made to include these individuals in the eligible follow-up sample, but to analyze them separately in the 2021 Report. However, for this year's report, because there are only 16 completed follow-up surveys, the individuals who were still involved in the clinic at follow-up (n = 10) and are combined with the individuals who were no longer still involved with the clinic at follow-up (n = 6).[35, 36] This report describes outcomes for 16 adults who completed an intake interview and then a follow-up telephone interview about 5-6 months (an average of 198 days) after the intake interview was completed. Detailed information about the methods and follow-up efforts can be found in Appendices A and B.

Of the 16 adults who completed a 6-month follow-up interview, 37.5% were female. The vast majority of follow-up clients were White (93.8%) and an average of 43.4 years old and between the ages of 23 and 65. One-fourth of clients (25.0%) had never been married at intake, 12.5% were separated or divorced, 56.3% were married or cohabiting, and 6.3% were widowed. About 38% of follow-up clients had at least one child under age 18 who was living with them and 33.3% indicated they lived in a metropolitan community, 50.0% lived in a non-metropolitan community, and 16.7% in a rural community. Table 1.3 presents the demographics of the follow-up sample separately for clients who were still involved in the clinic at follow-up and clients who were not involved in the clinic at follow-up.

[35] Of the 6 clients who were no longer involved in the treatment clinic at follow-up reasons for not being involved include: getting too the clinic or doctor to receive the medication (n = 1), too many requirements from clinic or doctor to say on MAT (n = 1), problems with the clinic (n = 2), no particular issues (n = 1), and no reason was given (n = 1).

[36] See Appendix E for the complete comparison of clients who were still involved in the clinic at follow-up and clients who were not.

TABLE 1.3. DEMOGRAPHICS FOR KORTOS FOLLOW-UP CLIENTS AT INTAKE (N = 16)

	Clients still in the clinic at follow-up (n = 10)	Clients not in the clinic at follow-up (n = 6)
Age	41.8 years (range of 32 - 58)	45.8 years (range 23 – 65)
Gender		
Male	50.0%	83.3%
Female	50.0%	16.7%
Race		
White/Caucasian	90.0%	100%
Black/African American	0.0%	0.0%
Other race or multiracial	10%	0.0%
Marital status		
Never married	40.0%	0.0%
Separated or divorced	0.0%	33.3%
Married or cohabiting	50.0%	66.7%
Widowed	10.0%	0.0%
Have children under the age of 18 who live with them	40.0%	33.3%
Type of community[37]		
Metropolitan	25.0%	50.0%
Non-metropolitan	50.0%	50.0%
Very rural	25.0%	0.0%

When clients who completed a follow-up interview were compared with those who did not have a follow-up interview on a variety of intake variables, there were only a few significant differences for substance use variables and no significant differences in demographics, socioeconomic, physical health, mental health, and criminal justice system involvement. More clients who completed a follow-up reported using vaporized nicotine and fewer individuals who were followed up reported using other illicit drugs (such as synthetic drugs, hallucinogens, inhalants) and smokeless tobacco in the 6 months before entering the OTP.[38]

[37] One client was missing data for type of community at intake.

[38] See Appendix C for detailed comparisons of clients who completed a follow-up interview and were included in the follow-up analysis (n = 16) and clients who did not complete a follow-up interview or were not included in the follow-up analysis (n = 22).

TABLE 1.4. FOLLOWED-UP VERSUS NOT FOLLOWED-UP

	Followed up	
	No (n = 22)	Yes (n = 16)
Demographic	No differences	
Socio-economic status indicators *(e.g., education, employment, living situation, inability to meet basic needs)*	No differences	
Substance use, severity of alcohol and drug use	• More reported use of other illicit drugs • More used smokeless tobacco	• More used vaporized nicotine
Treatment history	No differences	
Health *(e.g., overall health status, chronic medical problems, chronic pain)*	No differences	
Mental health *(e.g., depression, generalized anxiety, suicidality, PTSD)*	No differences	
Criminal justice involvement *(e.g., arrested, incarcerated)*	No differences	

Section 2. Substance Use

This section describes change in illegal drug, alcohol, and tobacco use from intake to follow-up (n = 16). Past-6-month substance use is examined as well as past-30-day substance use for clients who were not in a controlled environment all 30 days before entering treatment or the follow-up interview. In addition, this section includes problems experienced with substance use in the past 30 days, readiness for treatment, self-reported severity of alcohol and drug use, and medication for opioid use disorder. Results for each targeted factor are presented for the overall sample.[39]

Changes in illegal drug, alcohol, and tobacco use before entering the program and during the 6-month follow-up period are presented in this section. In addition to examining the overall use of illegal drugs, several specific categories of illegal drugs were examined including: (a) prescription opioid misuse (including opioids such as morphine, Percocet, Oxycontin, Lortab), (b) non-prescribed methadone, (c) non-prescribed buprenorphine-naloxone (bup-nx), (d) heroin, and (e) non-opioid drugs other than those mentioned above (including marijuana, cocaine, amphetamines, tranquilizers, hallucinogens, inhalants, and barbiturates). Analysis is presented in detail for KORTOS study participants who were not in a controlled environment for the entire period of 6 months and/or 30 days before entering treatment. Changes in substance use from intake to follow-up are presented in 4 main subsections and organized by type of substance use:

1. **Change in past-6-month substance use from intake to follow-up.** Comparison of any illegal drugs, prescription opioid misuse, non-prescribed methadone, non-prescribed bup-nx, heroin, other non-opioid drugs, alcohol, and tobacco use in the 6 months before the client entered the program and use of these substances during the 6-month follow-up period (n = 16) are presented.

2. **Average number of months clients used substances at intake and follow-up.** For those who used any illegal drugs, alcohol, or tobacco, the average number of months of use before program entry and during the follow-up period are reported.

3. **Change in 30-day substance use from intake to follow-up.** Comparison of any illegal drugs, prescription opioid misuse, non-prescribed methadone, non-prescribed bup-nx, heroin, other non-opioid drugs, alcohol, and tobacco use in the 30 days before the client entered the program and during the follow-up period (n = 16) is presented.[40] In addition, this section examines the number of days clients experienced alcohol/drug problems in the past 30 days, how troubled or bothered clients were by alcohol/drug problems in the past 30 days, and how important treatment is for these alcohol/drug problems at intake and follow-up.

4. **Change in self-reported severity of alcohol and drug use 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 the 11 criteria included in the DSM-5 for diagnosing substance use disorder in the past 6 months. Under DSM-5, anyone meeting any two of the 11 criteria during the same 6-month period would receive a diagnosis of substance use disorder (SUD) as long as their symptoms were causing clinically significant impairments in functioning. The severity of the substance use disorder (i.e., none, mild, moderate, or severe) in this report is based on the number of criteria met. The percent of individuals in each of the

[39] Gender differences were not examined in this annual report because the statistical tests are inappropriate to run on such a small sample size.

[40] None of the individuals were in a controlled environment all 30 days before intake or before follow-up; therefore, all clients were included in the analysis.

four categories at intake and follow-up is presented.

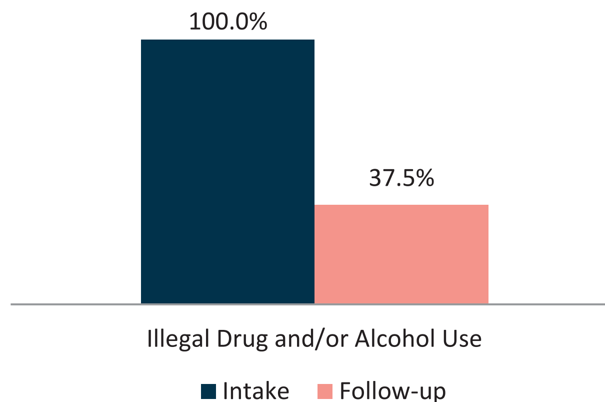
The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs (n = 14). The ASI composite score assesses self-reported addiction severity even among those reporting no substance use in the past 30 days. The drug composite score is computed from items about 30-day 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 number of days individuals had drug problems, how troubled or bothered individuals were by their drug problems, and how important treatment was to them.

Alcohol and/or Drug Use

Past-6-month Alcohol and/or Drug Use

All clients reported using alcohol and/or illegal drugs in the 6 months before entering the program, which decreased to 37.5% at follow-up (see Figure 2.1).

FIGURE 2.1. PAST 6-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 16)

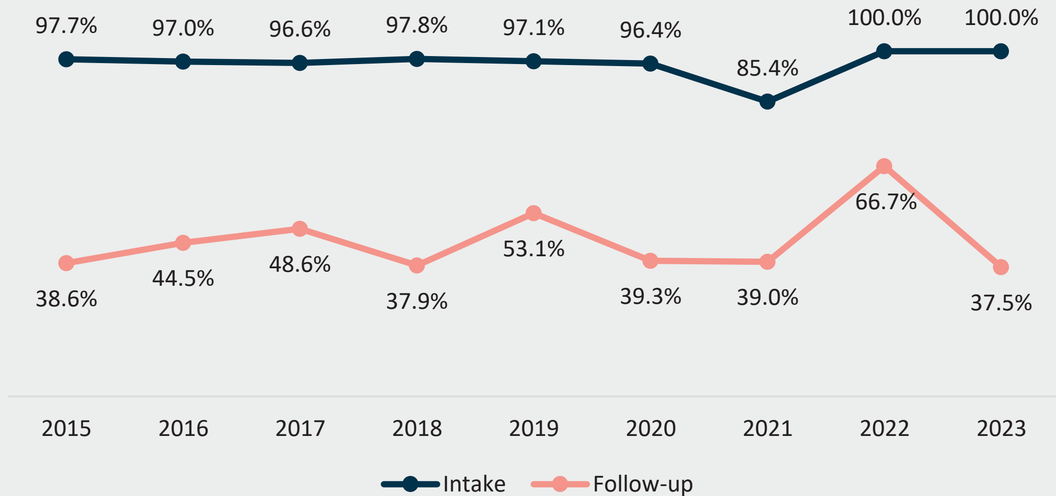


a – No measures of association could be computed for alcohol and/or illegal drug use because the value at intake was 0.

Trends in Any Alcohol and/or Drug Use

The percent of KORTOS clients reporting alcohol and/or drug use in the 6 months before treatment was consistently high (about 97%) until 2021 when it briefly decreased to 85.4%. At follow-up, from 2015 – 2018, less than half of clients reported any alcohol and/or drug use. In 2019, 53.1% of clients reported alcohol and/or drug use. In 2022, the number of clients reporting any alcohol and/or drug use at follow-up increased to 66.7%, then decreased to 37.5% in the 2023 Report.

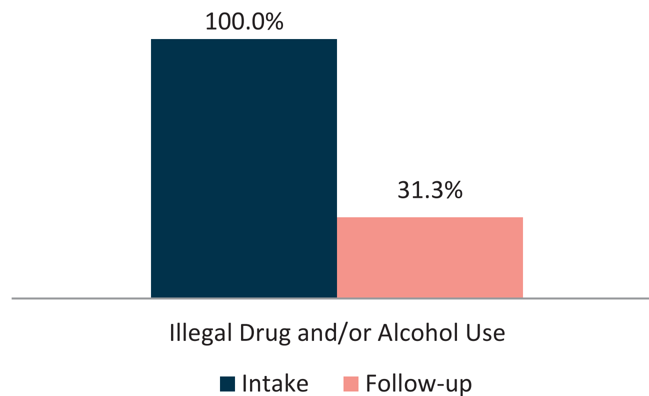
FIGURE 2.2. TRENDS IN ANY ALCOHOL AND/OR ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023[41, 42]



Past-30-day Alcohol and/or Drug Use

All clients reported using alcohol and/or illegal drugs in the 30 days before entering the program, which decreased to 31.3% at follow-up (see Figure 2.3).

FIGURE 2.3. PAST 30-DAY ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 16)



a – No measures of association could be computed for alcohol and/or illegal drug use because the value at intake was 0.

[41] For each trend report presented, the years correspond to years in which the annual reports were published. In addition, all trend analyses present only annual report data at intake and follow-up and do not include between-year statistical analysis.

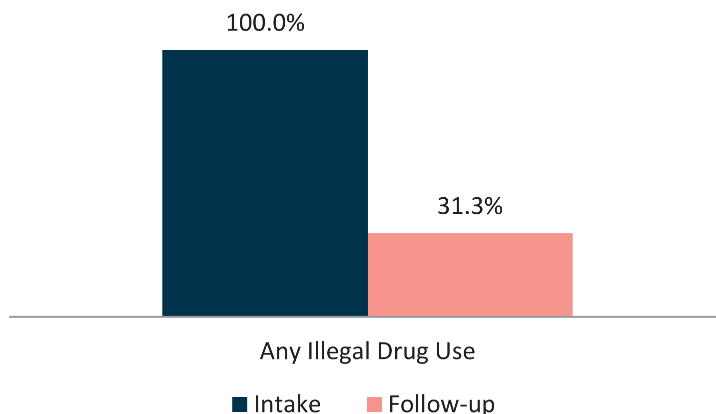
[42] In 2015, 3 cases had missing data for drug use at intake.

Any Illegal Drugs

Past-6-month Any Illegal Drug Use

All clients reported using illegal drugs in the 6 months before entering the program, which decreased to 31.3% at follow-up (see Figure 2.4).

FIGURE 2.4. PAST-6-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP (N = 16)

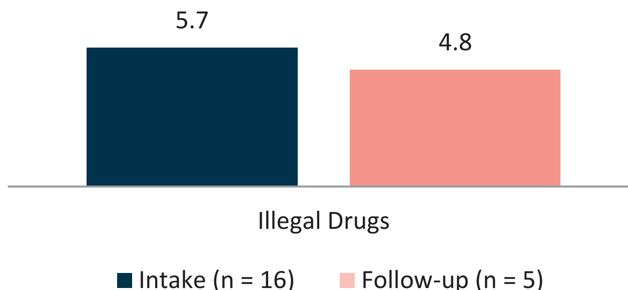


a – No measures of association could be computed for illegal drug use because the value at intake was 0.

Average Number of Months Used Any Illegal Drugs

Clients who reported any illegal drug use at intake (n = 16) reported an average maximum of 5.7 months of use. Among clients who reported any illegal drug use in the 6 months before follow-up (n = 5), the maximum number of months they reported using any drug was, on average, 4.8 months (see Figure 2.5).

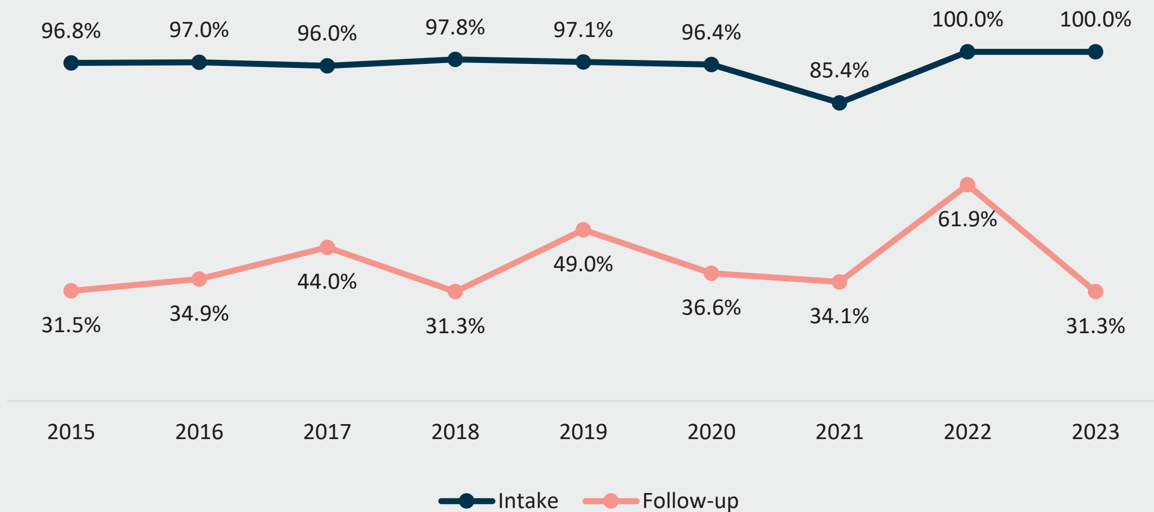
FIGURE 2.5. AVERAGE NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS



Trends in Past-6-month Illegal Drug Use

The percent of KORTOS clients reporting any illegal drug use in the 6 months before treatment was consistently high (about 97%) until 2021 when it decreased to 85.4%. The percent of clients who reported any illegal drug use at follow-up increased from 31.5% in 2015 to 49.0% in 2019. In 2021, the percent of clients reporting any illegal drug use at follow-up decreased to 34.1%, but increased to 61.9% report year 2022, which corresponds to intake in 2020, the beginning of the pandemic. In the 2023 report follow-up sample, only 31.3% of clients reported using illegal drugs in the 6 months before follow-up.

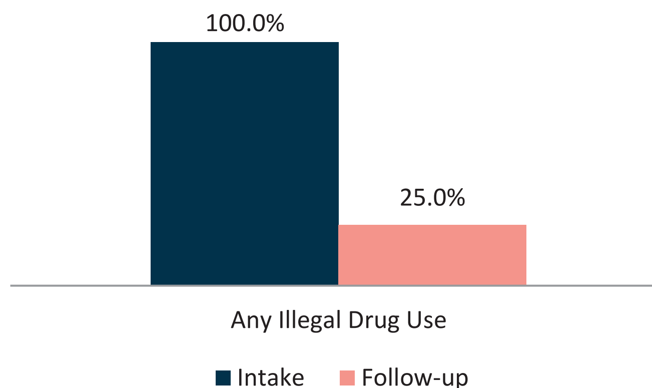
FIGURE 2.6. TRENDS IN ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023



Past-30-day Any Illegal Drug Use

At intake, all clients reported any illegal drug use in the 30 days before entering the program and at follow-up, 25% of clients reported any illegal drug use in the past 30 days.

FIGURE 2.7. PAST-30-DAY USE OF ANY ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 16)



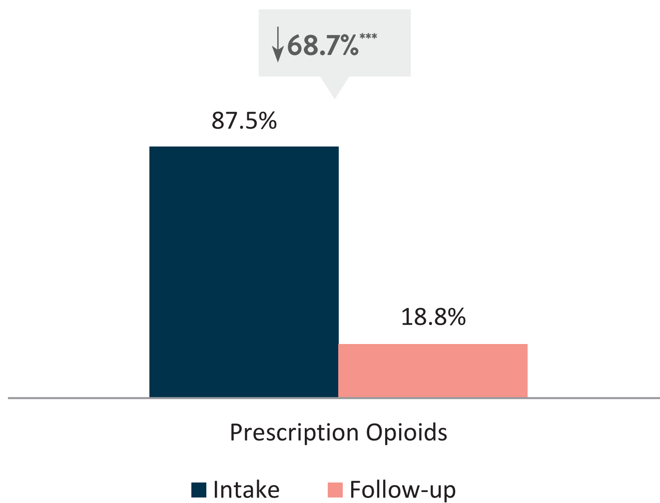
a – No measures of association could be computed for illegal drug use because the value at intake was 0.

Prescription Opioid Misuse

Past-6-month Prescription Opioid Misuse

The vast majority of clients (87.5%) reported misusing prescription opioids (such as morphine, Percocet, Oxycontin, Lortab) in the 6 months before treatment entry. At follow-up, 18.8% of clients reported misusing prescription opioids (see Figure 2.8). This means there was a 68.7% significant decrease in the percent of clients reporting prescription opioid misuse.

FIGURE 2.8. PAST-6-MONTH PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 16)

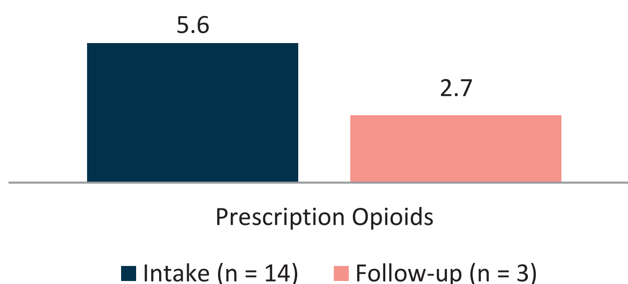


***$p < .01$.

Average Number of Months Misused Prescription Opioids

Figure 2.9 shows the average number of months prescription opioid users reported misusing prescription opioids at intake and during the 6-month follow-up. Among the clients who reported misusing prescription opioids before entering the program (n = 14), clients reported using prescription opioids an average of 5.6 of the 6 months. Only three clients reported misusing opioids at follow-up and used 2.7 of the 6 months before follow-up.

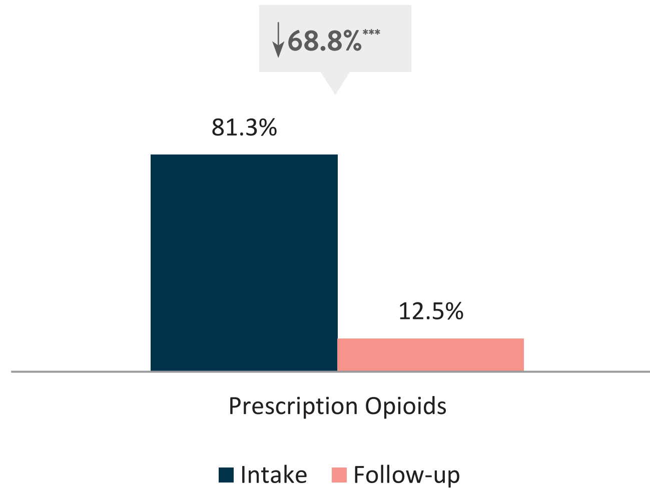
FIGURE 2.9. AVERAGE NUMBER OF MONTHS CLIENTS USED PRESCRIPTION OPIOIDS



Past-30-day Prescription Opioid Misuse

At intake, 81.3% of clients reported past-30-day misuse of prescription opioids and at follow-up, 12.5% of clients reported misuse of prescription opioids (see Figure 2.10). This reflects a significant decrease of 68.8% in the percent of clients reporting misuse of prescription opioids in the past 30 days.

FIGURE 2.10. PAST-30-DAY PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 16)



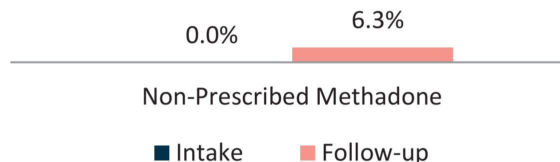
***$p < .01$.

Non-prescribed Use of Methadone

Past-6-month Non-prescribed Use of Methadone

None of the clients reported using non-prescribed methadone in the 6 months before intake (see Figure 2.11). At follow-up, 6.3% of the clients (n = 1) reported non-prescribed use of methadone.

FIGURE 2.11. PAST-6-MONTH NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 16)[a]

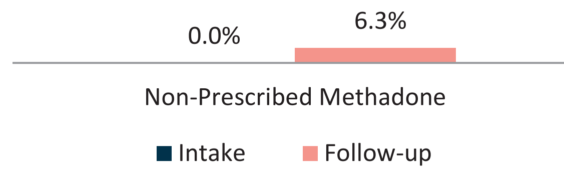


a – No measures of association could be computed for methadone use because the value at intake was 0.

Past-30-day Non-prescribed Use of Methadone

None of the clients reported using non-prescribed methadone in the 30 days before entering the program (see Figure 2.12). At follow-up, 6.3% of the clients (n = 1) reported past-30-day use of non-prescribed methadone.

FIGURE 2.12. PAST-30-DAY NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 16)



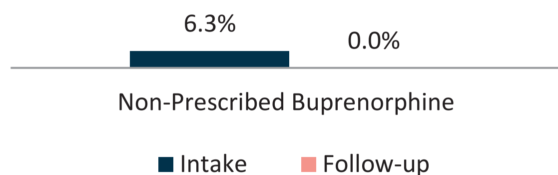
a – No measures of association could be computed for methadone use because the value at intake was 0.

Non-prescribed Use of Bup-nx

Past-6-month Non-prescribed Use of Bup-nx

Figure 2.13 shows that 6.3% of clients reported using non-prescribed bup-nx in the 6 months before intake. At follow-up, none of the clients reported using non-prescribed bup-nx.

FIGURE 2.13. PAST-6-MONTH NON-PRESCRIBED USE OF BUP-NX AT INTAKE AND FOLLOW-UP (N = 16)

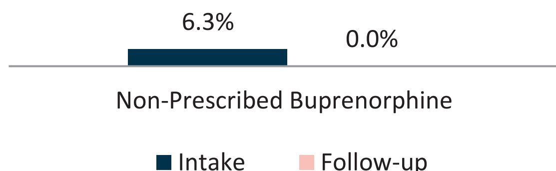


a – No measures of association could be computed for non-prescribed buprenorphine because the value at follow-up was 0.

Past-30-day Non-prescribed Use of Bup-nx

About 6.3% of clients reported using non-prescribed bup-nx in the 30 days before entering the program (see Figure 2.14). At follow-up, none of the clients reported past-30-day use of non-prescribed bup-nx.

FIGURE 2.14. PAST-30-DAY NON-PRESCRIBED BUP-NX USE AT INTAKE AND FOLLOW-UP (N = 16)



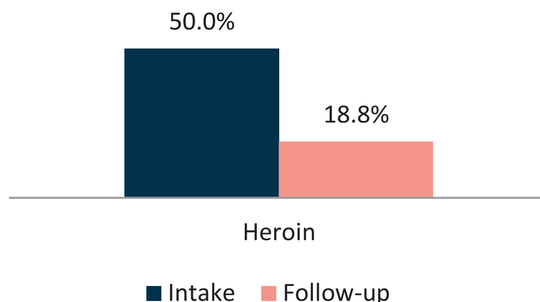
a – No measures of association could be computed for non-prescribed buprenorphine because the value at follow-up was 0.

Heroin

Past-6-month Heroin Use

One half of clients reported using heroin in the 6 months before entering treatment, which decreased to 18.8% at follow-up (see Figure 2.15).

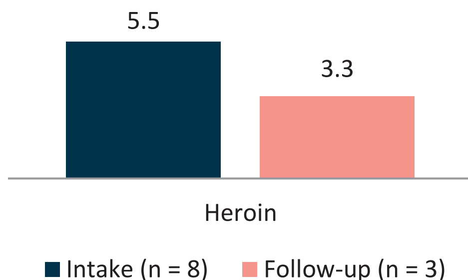
FIGURE 2.15. PAST-6-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 16)



Average Number of Months Used Heroin

Among the clients who reported using heroin in the 6 months before entering treatment (n = 8), they reported using heroin, on average, 5.5 months (see Figure 2.16). Among clients who reported using heroin in the 6 months before follow-up (n = 3), they reported using, on average, 3.3 months.

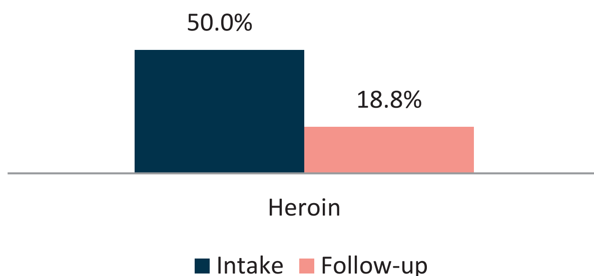
FIGURE 2.16. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



Past-30-day Heroin Use

One half of clients reported using heroin in the 30 days before intake. At follow-up, 18.8% reported using heroin in the past 30 days (see Figure 2.17).

FIGURE 2.17. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 16)

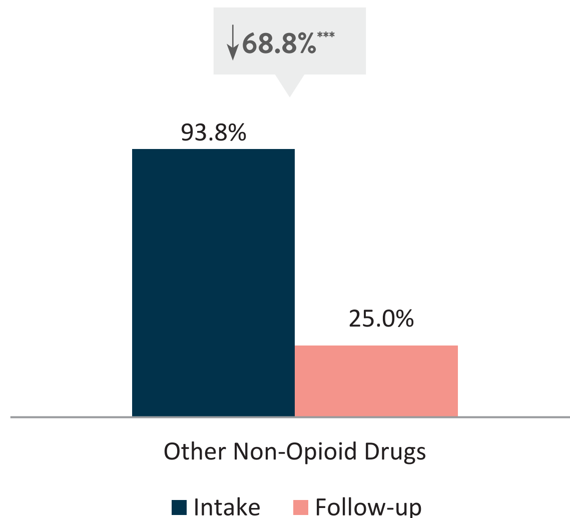


Non-opioid Drug Use

Past-6-month Use of Non-opioid Drugs

The majority of clients (93.8%) used illegal drugs other than prescription opioids, non-prescribed methadone, non-prescribed bup-nx, or heroin in the 6 months before entering the program (see Figure 2.18). Drugs in this category include cannabis/marijuana, cocaine, amphetamines, tranquilizers/benzodiazepines/sedatives, hallucinogens, inhalants, barbiturates, and synthetic drugs like synthetic marijuana or bath salts. The percent of clients who reported use of non-opioid drugs decreased to 25% at follow-up (a significant decrease of 68.8%).

FIGURE 2.18. PAST-6-MONTH NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 16)

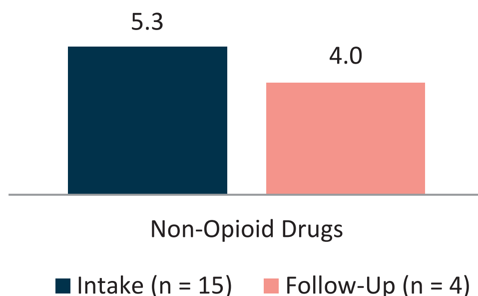


***$p < .01$.

Average Number of Months Used Non-opioid Drugs

Figure 2.19 shows the maximum number of months clients that used non-opioid drugs reported using these illegal drugs (e.g., cannabis/marijuana, cocaine, amphetamine, tranquilizers, barbiturates, inhalants, hallucinogens, synthetic drugs).[43] Among the clients who reported using non-opioid drugs at intake (n = 15), the maximum number of months clients reported using any of these drugs was an average of 5.3 months. Among clients who reported using non-opioid drugs at follow-up (n = 4), the maximum average number of months clients reported using any of these drugs was 4 months.

FIGURE 2.19. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS USED NON-OPIOID DRUGS

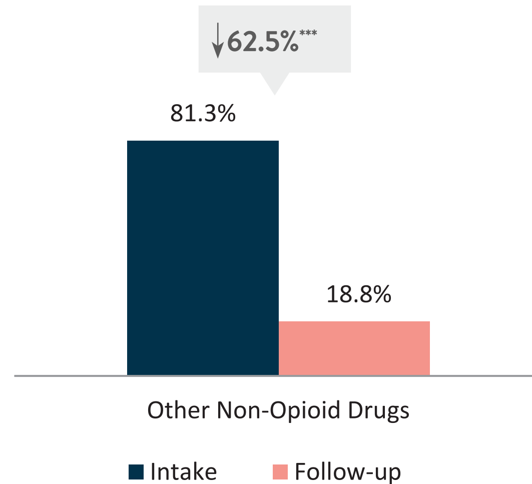


Past-30-day Use of Non-opioid Drugs

About 81.3% of clients reported using non-opioid drugs in the 30 days before intake (see Figure 2.20). At follow-up, 18.8% of clients reported non-opioid drug use, which is a 62.5% significant decrease.

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

FIGURE 2.20. PAST-30-DAY NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 16)



***$p < .01$.

Injection Drug Use

At intake, 62.5% of clients reported having ever injected any drug in their lifetime. Of those clients (n = 10), 20% reported having ever used a Needle Exchange Program in Kentucky. At follow-up, no clients reported injecting drugs in the past 6 months.

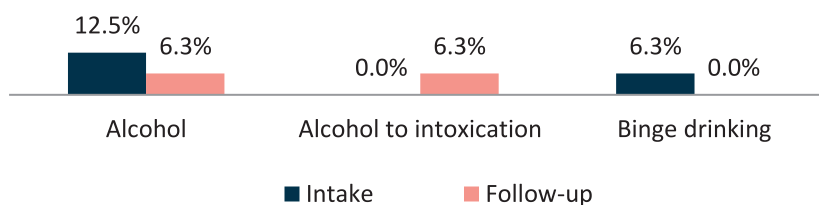
Alcohol Use

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 the client was female) alcoholic drinks in a period of about 2 hours.[44]

Past-6-month Alcohol Use

Almost 13% of clients reported using alcohol in the 6 months before entering treatment while 6.3% of clients reported alcohol use in the 6 months before follow-up (see Figure 2.21). No clients reported using alcohol to intoxication and only one reported binge drinking in the past 6 months at intake. None of the clients reported binge drinking at follow-up and 6.3% reported using alcohol to the point of intoxication.

FIGURE 2.21. PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 16)

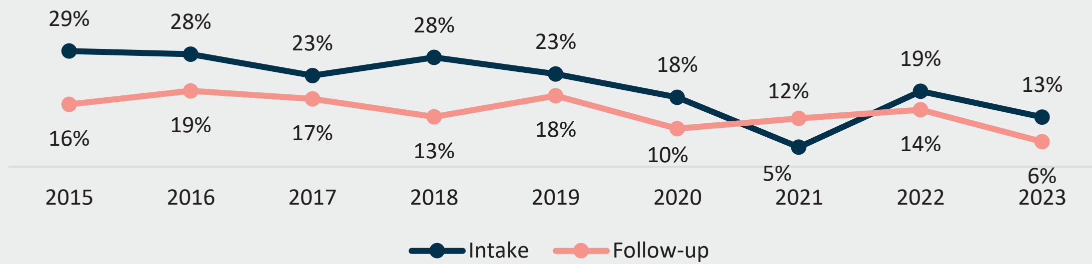


[44] National Institute on Alcohol Abuse and Alcoholism. (2004, Winter). NIAAA council approves definition of binge drinking. *NIAAA Newsletter, Winter 2004* (3). Rockville, MD: Department of Health and Human Services, National Institutes of Health, national Institute on Alcohol Abuse and Alcoholism.

Trends in Past-6-month Alcohol Use

Less than one-third of clients reported any alcohol use in the 6 months before entering treatment. The highest percent of KORTOS followed-up clients reporting alcohol use in the 6 months before entering the program was 29% in the 2015 Report and the smallest percent was 5% in 2021. At follow-up, the highest percent of clients reporting alcohol use in the 6 months before follow-up was 19% in 2016, with the lowest percent in 2023 (6%).

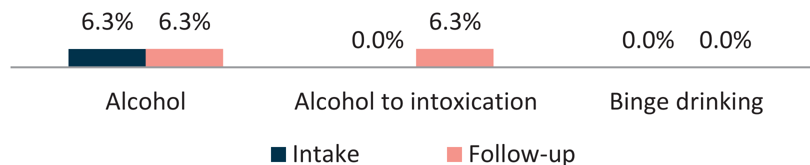
FIGURE 2.22. TRENDS IN ALCOHOL USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023[45]



Past-30-day Alcohol Use

A small minority of clients (6.3%) reported using alcohol use in the 30 days before intake and follow-up (see Figure 2.23). None of the clients reported binge drinking or alcohol to intoxication in the 30 days before intake. Only one client (6.3%) reported drinking alcohol to intoxication and none reported binge drinking at follow-up.

FIGURE 2.23. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 16)

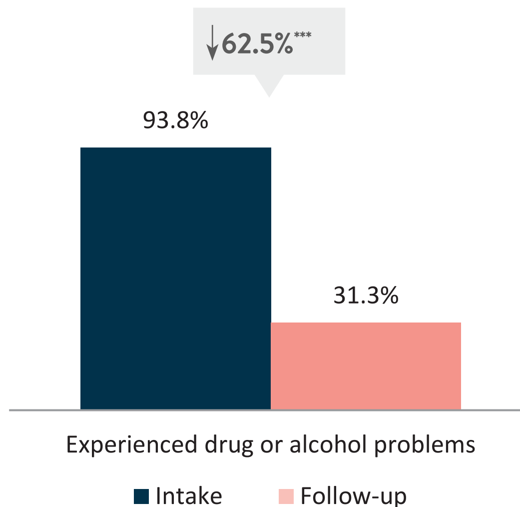


[45] In 2015, 5 cases had missing data for alcohol use at intake.

Problems Experienced with Substance Use in the Past 30 Days

In the past 30 days at intake, 93.8% 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 2.24). In the past 30 days at follow-up, 31.3% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 62.5%).

FIGURE 2.24. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 16)



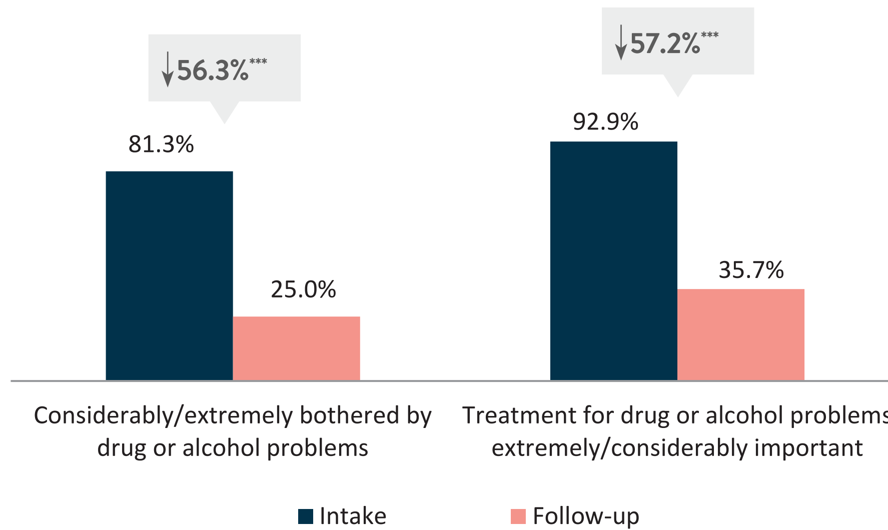
***p < .01.

Readiness for Substance Abuse Treatment

Figure 2.25 shows that 81.3% 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, 25.0% of clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems (a significant decrease of 56.3%).

The figure below also shows that 92.9% of clients in the past 30 days at intake and 35.7% of clients in the past 30 days at follow-up reported that treatment for drug or alcohol problems was considerably or extremely important.

FIGURE 2.25. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 16)



***p < .01.

Substances That Client Had the Most Trouble with

Of the clients who reported any drug or alcohol use in the past 6 months at intake (n = 16), 81.3% reported that prescription opiates were the most problematic substance for them followed by cannabis (62.5%), heroin (56.3%) and stimulants (18.8%; not depicted in a figure).

Of the clients who reported any drug or alcohol use in the past 6 months at follow-up (n = 6), 66.7% reported prescription opioids, 50.0% reported heroin, and (16.7%) reported cannabis/marijuana, and 16.7% reported amphetamines.

Self-reported Severity of Alcohol and Drug Use

DSM-5 Criteria for Substance Use Disorder, Past 6 Months

One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met the 11 criteria included in the DSM-5 for diagnosing substance use disorder (SUD) in the past 6 months. The DSM-5 diagnostic criteria for substance use disorders included in the KORTOS intake and follow-up interviews are similar to the criteria for DSM-IV, which has evidence of excellent test-retest reliability and validity.[46], [47] 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

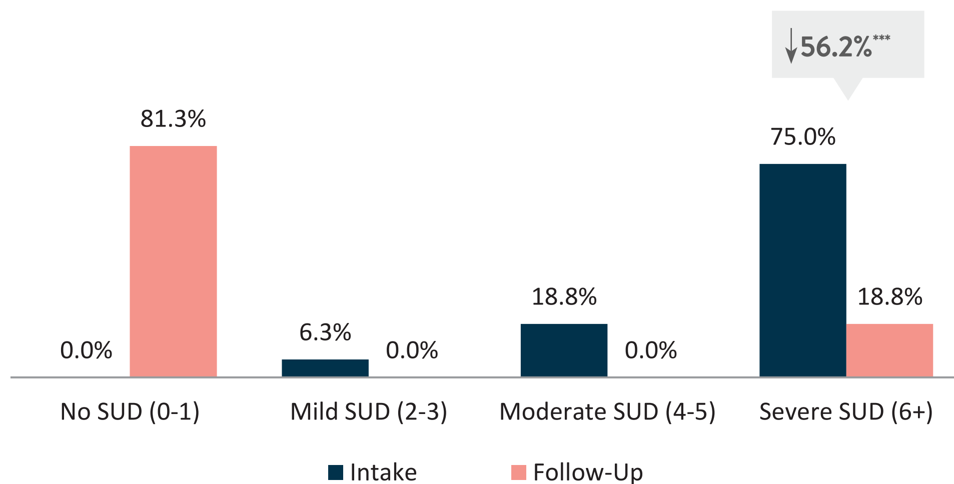
[46] Hasin, D., & Paykin, A. (1999). Alcohol dependence and abuse diagnoses: Concurrent validity in a nationally representative sample. *Alcoholism: Clinical and Experimental Research, 23*(1), 144-150.

[47] Hasin, D., Trautman, K., Miele, G., Samet, S., Smith, M., & Endicott, J. (1996). Psychiatric Research Interview for Substance and Mental Disorders (PRISM): Reliability for substance abusers. *American Journal of Psychiatry, 153*(9), 1195-1201.

use.[48] Under DSM-5, anyone meeting any two of the 11 criteria during the same 6-month period for either alcohol or drugs would receive a diagnosis of substance use disorder as long as their symptoms were causing clinically significant impairments in functioning. The severity of the substance use disorder (i.e., none, mild, moderate, or severe) in this report is based on the number of criteria met. Clients who report 2 or 3 DSM-5 symptoms are considered to have a mild substance use disorder, 4 or 5 symptoms is considered a moderate substance use disorder, and 6 or more symptoms is considered severe.

Change in the severity of SUD in the prior 6 months was examined for clients at intake and follow-up. Figure 2.26 displays the change in the percent of individuals in each SUD severity classification, based on self-reported criteria in the preceding 6 months. At intake, none of the clients met criteria for no substance use disorder (meaning they reported 0 or 1 DSM-5 criteria for SUD), while at follow-up, 81.3% of clients met criteria for no SUD. At the other extreme of the continuum, three-fourths of clients (75.0%) met criteria for severe SUD at intake, while at follow-up, only 18.8% met criteria for severe SUD, a significant decrease of 56.2%.

FIGURE 2.26. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 16)



Stuart-Maxwell chi-squared statistically significant ($p < .001$).

[48] Malone, M., & Hoffmann, N. (2016). A comparison of DSM-IV versus DSM-5 substance use disorder diagnoses in adolescent populations. *Journal of Child & Adolescent Substance Abuse, 25*(5), 399-408.

Addiction Severity Index Criteria for Substance Use Disorder, Past 30 Days

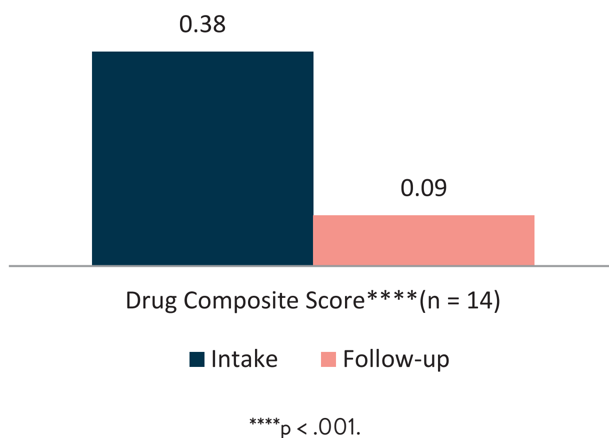
Another way to examine overall change in degree of severity of substance use is to calculate the Addiction Severity Index (ASI) composite scores for alcohol and drug use. These composite scores are computed based on self-reported severity of past 30-day alcohol and drug use, taking into consideration 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 drug use was examined for clients who were not in a controlled environment all 30 days before entering treatment. Clients who reported abstaining from drugs at both intake and follow-up were not included in the analysis of change in drug composite score.

Figure 2.27 displays the change in past 30-day average drug composite score from intake to follow-up; the average decreased from 0.38 to 0.09.

FIGURE 2.27. AVERAGE ASI DRUG COMPOSITE SCORES OF THOSE WHO USED DRUGS AT INTAKE AND/OR FOLLOW-UP[49]



****$p < .001$.

[49] Because so few clients reported using alcohol at either intake or follow-up (n = 2), the analysis for change from intake to follow-up could not be conducted. Therefore, it is not presented in this year's report.

ASI Alcohol and Drug Composite Scores and Substance Dependence

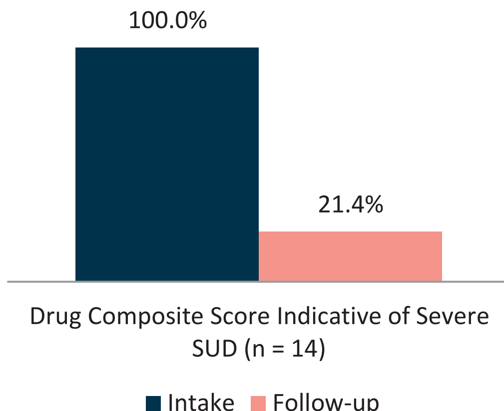
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI alcohol and drug use composite scores and DSM-IV substance dependence diagnosis. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity with regard to identifying DSM-IV substance dependence diagnosis: .17 for alcohol composite score and .16 for drug composite score. These composite score cutoffs can be used to estimate the number of individuals who are likely to meet criteria for active alcohol or drug dependence and to show reductions in self-reported severity of substance use. In previous years we have used the ASI composite scores to estimate the number and percentage of clients who met a threshold for alcohol and drug dependence. However, recent changes in the diagnostics for substance abuse call into question the distinction between dependence and abuse. Thus, ASI composite scores that met the threshold can be considered indicative of severe substance use disorder to be compatible with current thinking about substance use disorders in the DSM-V (American Psychiatric Association, 2013), where we would have previously referred to them as meeting the threshold for dependence. Change from intake to follow-up in the severity rating has 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.

ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) decreased from 100% at intake to 21.4% at follow-up (see Figure 2.28).

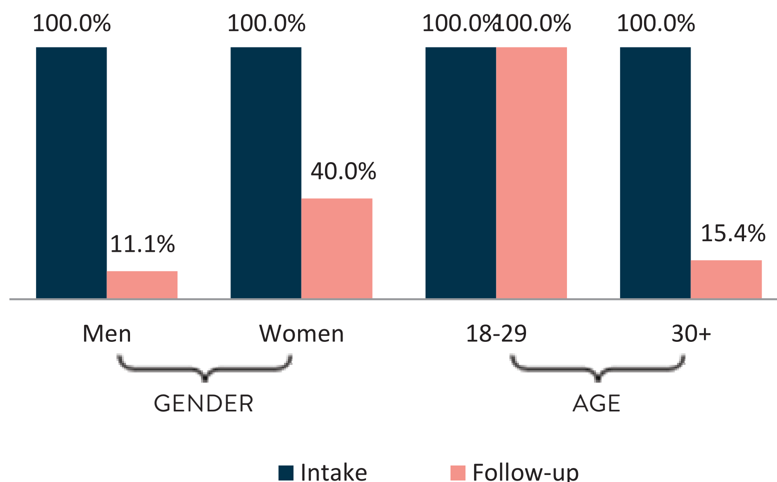
FIGURE 2.28. OF THOSE WHO USED DRUGS, INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP



a – No measures of association could be computed for drug composite score because the value at intake was 0.

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 or age (see Figure 2.29).[50] There were no significant gender or age group differences from intake to follow-up for clients who had a drug composite score indicative of severe SUD.

FIGURE 2.29. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 14)



[50] Only one client reported a race other than White, therefore, drug composite scores were not compared by race.

Substance Abuse Treatment History

Lifetime Substance Abuse Treatment

Prior to the current admission, 87.5% of clients reported at intake that they had received services for substance abuse (including detox, drug court, and recovery programs). Overall, clients reported receiving services or substance abuse an average of 1.4 times in their lifetime.

Overdose History

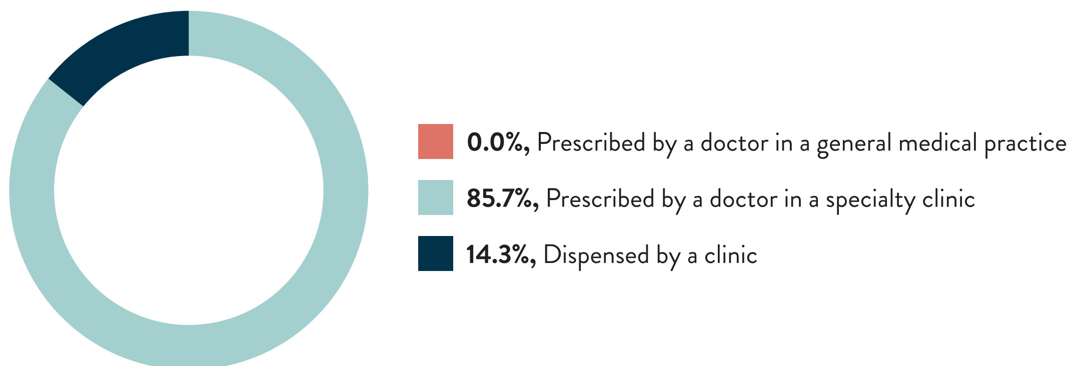
A minority of clients (18.8%, n = 3) reported that they have overdosed on drugs (and required interventions by someone to recover) in their lifetime (an average of 1.3 times, among the clients who reported they had overdosed on drugs). No clients reported having an overdose in the 6 months before intake or follow-up.

Medication for Opioid Use Disorder

Medication for Opioid Use Disorder at Intake

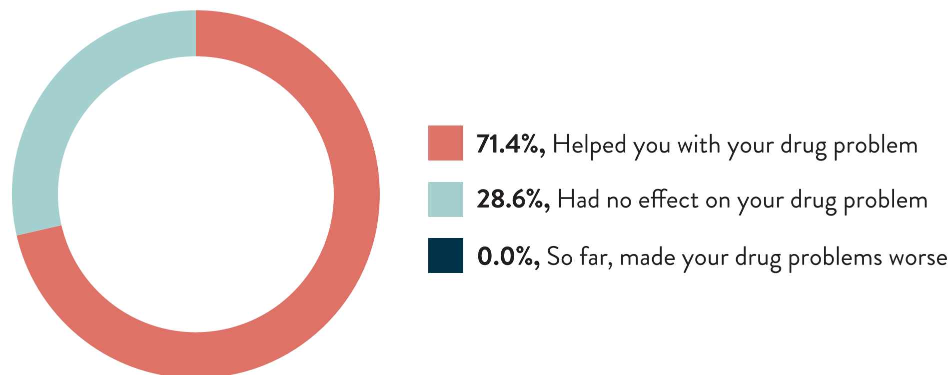
At intake, 43.8% of clients reported they had ever received medication from a clinic or doctor's office to help with their substance abuse (before the current MOUD). Of these clients (n =7), 85.7% were prescribed the medication by a doctor in a specialty clinic and 14.3% reported that they received in from a clinic (Figure 2.30). They also reported using the prescribed medication for .8 months in the 6 months before they began involvement at the OTP and 5.6 days in the past 30 days at intake.

FIGURE 2.30. CLIENTS REPORTING WHERE MEDICATION WAS RECEIVED (N=7)



The majority of clients (71.4%) reported that they think their prior MOUD helped treat their drug problem, 28.6% reported it had no effect on their drug problem, and none reported MOUD made their drug problems worse (Figure 2.31).

FIGURE 2.31. CLIENTS REPORTING HOW MUCH THEY BELIEVE THE MEDICATION HELPED THEIR OPIOID USE PROBLEMS



Medication for Opioid Use Disorder at Follow-up

The majority of clients (93.8%) who were not incarcerated all 180 days before treatment entry or in the past 6 months at follow-up, reported that they received methadone in the past 6 months at follow-up. About 6% of clients reported receiving Suboxone, and none of the clients received Vivitrol.

At follow-up, clients reported using the medication prescribed to them for an average of 5.2 months in the past 6 months. In addition, clients reported using the medication prescribed for an average of 23.4 days in the past 30 days. In the past 6 months at follow-up, the majority of clients (75.0%) reported they had not participated in any program involving MOUD other than the one with which they have been most recently involved.

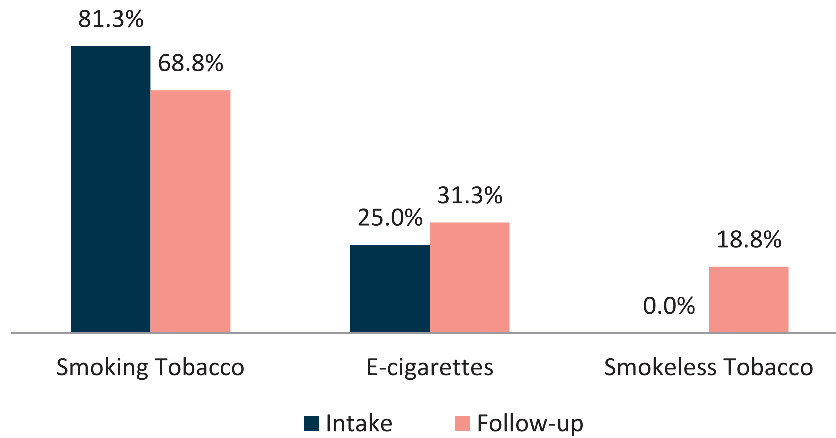
Overall, at follow-up, all clients (100%) reported that they think their use of MOUD helped treat their drug problem.

Tobacco Use

Past-6-month Smoking, E-cigarettes, and Smokeless Tobacco Use

There was no significant change in either smoking, e-cigarettes, or smokeless tobacco use from intake to follow-up (see Figure 2.32). Most clients reported smoking tobacco in the 6 months before entering the program (81.3%) and in the 6 months before follow-up (68.8%). A quarter of clients reported the use of e-cigarettes (e.g., battery-powered nicotine delivery devices that vaporize a liquid mixture consisting of propylene glycol, glycerin, flavorings, nicotine, and other chemicals) at intake and 31.3% at follow-up. No clients reported using smokeless tobacco at intake and 18.8% of the clients at follow-up reported using smokeless tobacco in the past 6 months.

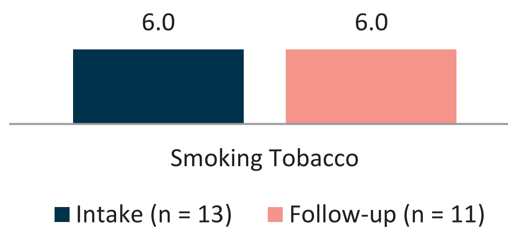
FIGURE 2.32. PAST-6-MONTH SMOKING TOBACCO, E-CIGARETTE, AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (n = 16)



Average Number of Months of Smoking Tobacco

Figure 2.33 shows that among clients who reported smoking tobacco in the 6 months before entering treatment (n = 13), they reported smoking tobacco, on average, 6.0 months. In the 6 months before follow-up, there was no change in the average number of months clients reported smoking tobacco among clients who reported smoking tobacco (6.0 months; n = 11).

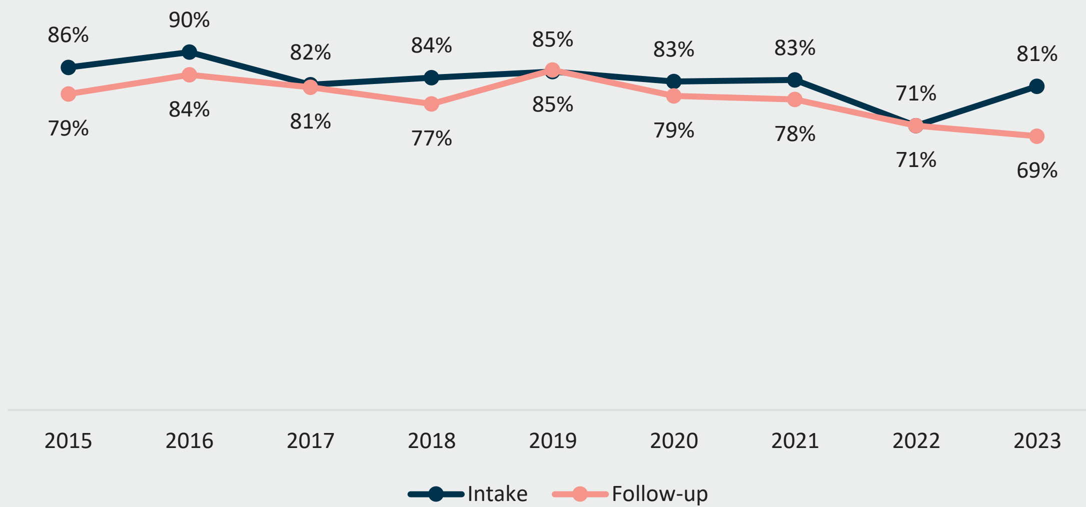
FIGURE 2.33. AVERAGE NUMBER OF MONTHS OF SMOKING TOBACCO USE



Trends in Past-6-month Smoking Tobacco Use

The majority of KORTOS clients at intake and follow-up reported smoking tobacco. The only significant change in the use of smoking tobacco from intake to follow-up was in report year 2018 when 84% of clients reported smoking tobacco at intake and 77% of clients reported smoking tobacco at follow-up.

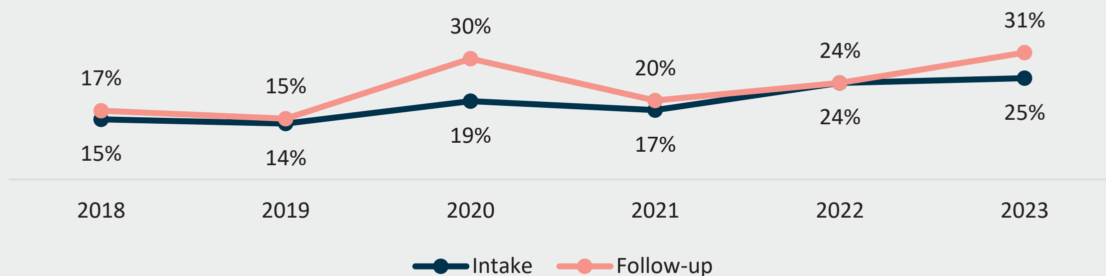
FIGURE 2.34. TRENDS IN SMOKING TOBACCO USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023[51]



Trends in Past-6-month E-cigarette Use

Each year slightly more clients have reported e-cigarette use at follow-up compared to intake. The percent of clients reporting e-cigarette use at follow-up increased from 15% in the 2019 report to 30% in the 2020 report. In 2022, however, the percent of clients reporting e-cigarette use at intake and follow-up was 24%. The highest percent of clients reporting e-cigarette use at intake and follow-up was in the 2023 report (31% and 25%, respectively).

FIGURE 2.35. TRENDS IN E-CIGARETTE USE AT INTAKE AND FOLLOW-UP, REPORTS 2018-2023[52]



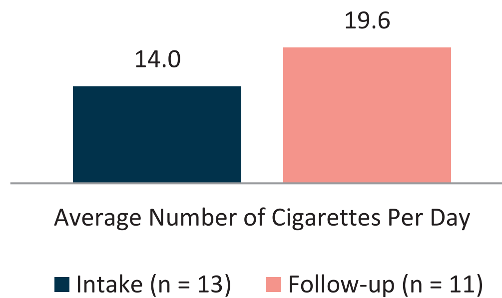
[51] In 2015, 5 cases had missing data for smoking tobacco use at intake.

[52] E-cigarette use, specifically, was not included in the instrument until the 2018 report.

Average Number of Cigarettes Smoked

The average number of cigarettes clients reported smoking daily increased slightly from intake to follow-up (see Figure 2.36). Of those who smoked tobacco at intake (n = 13), clients reported smoking an average of 14.0 cigarettes per day. At follow-up, among clients who reported smoking tobacco (n = 11), they reported smoking an average of 19.6 cigarettes per day.

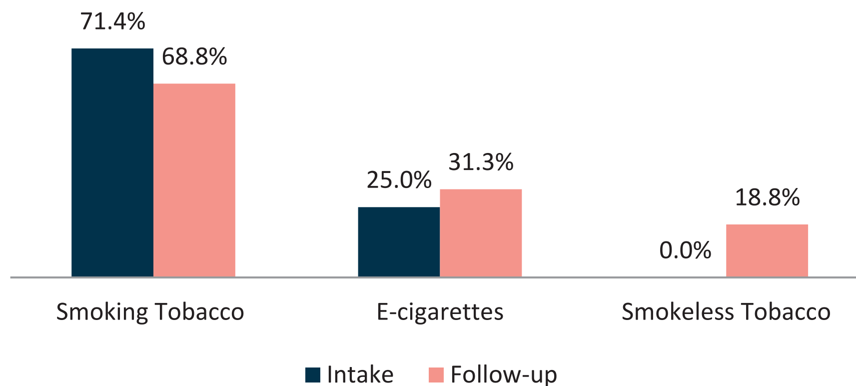
FIGURE 2.36. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO



Past-30-day Use Smoking, E-cigarette, and Smokeless Tobacco Use

The percent of clients who reported any smoking or smokeless tobacco use, or e-cigarette use in the past 30 days did not change significantly from intake to follow-up (see Figure 2.37).

FIGURE 2.37. PAST-30-DAY SMOKING, E-CIGARETTE AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (n = 16)



Section 3: Mental and Physical Health

This section examines changes in mental health, physical health status, and quality of life from intake to follow-up. Specifically, this section examines: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicidal ideation and attempts, (5) posttraumatic stress disorder, (6) general health status, (7) perceptions of physical and mental health, (8) chronic pain, (9) health insurance, and (10) quality of life. The mental and physical health questions on the KORTOS intake and follow-up interviews were self-report measures.

Depression Symptoms

To assess depression, participants were first 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

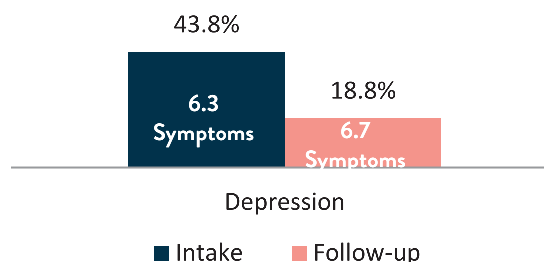
To meet study criteria for depression, clients had to say "yes" to at least one of the two screening questions and at least 4 of the other 7 symptoms. Thus, minimum score to meet study criteria: 5 out of 9.

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).

Less than half of clients met study criteria for depression in the 6 months before they entered treatment (see Figure 3.1). At follow-up, 18.8% met study criteria for depression.

Of those who met study criteria at intake (n = 7), they had an average of 6.3 symptoms out of 9. At follow-up, among those who met study criteria for depression (n = 3), clients reported an average of 6.7 symptoms out of 9.

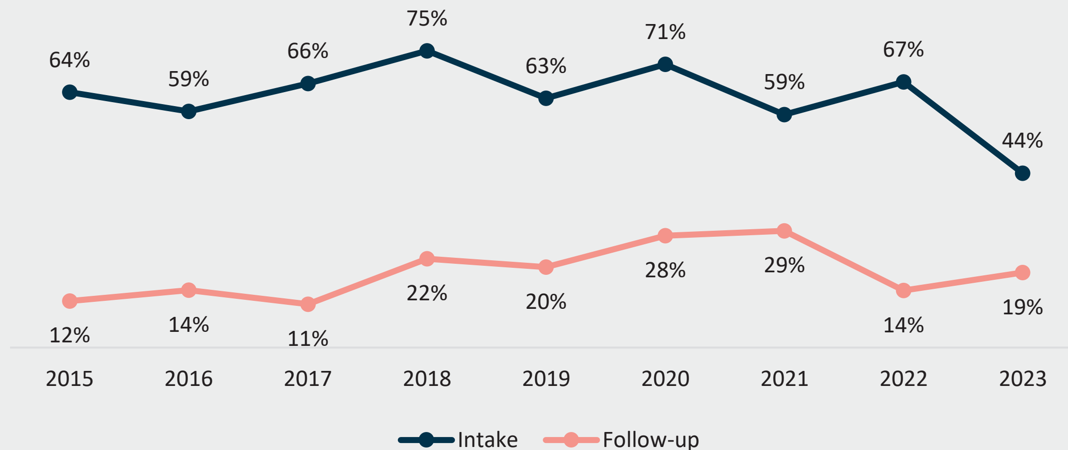
FIGURE 3.1. MEETING STUDY CRITERIA FOR PAST-6-MONTH DEPRESSION AT INTAKE AND FOLLOW-UP (N = 16)



Trends in Past-6-month Depression

The percent of clients who met criteria for depression at intake has fluctuated over the past 9 years between 44% and 75%. The percent of clients who met criteria for depression at follow-up was on the rise from 2017 (11%) to 29% in 2021 before decreasing to 14% in 2022.

FIGURE 3.2. TRENDS IN THE NUMBER OF CLIENTS WHO MET STUDY CRITERIA FOR PAST-6-MONTH DEPRESSION AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023



Anxiety Symptoms

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

"In the 6 months before you entered this program, did you worry excessively or were you anxious about multiple things on more days than not for all 6 months (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).

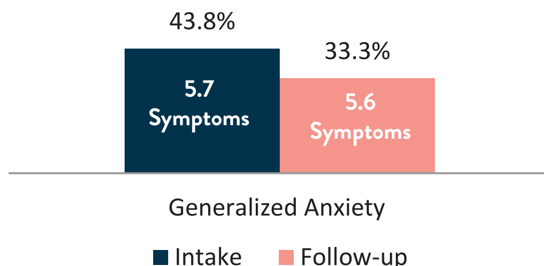
In the 6 months before entering treatment, 43.8% of clients reported symptoms that met study criteria for generalized anxiety and 33.3% reported symptoms at follow-up (see Figure 3.3).

Study Criteria for Generalized Anxiety

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

Of those who met study criteria for anxiety at intake (n = 7), they had an average of 5.7 symptoms out of 7. At follow-up, among those who met study criteria for anxiety (n = 5), clients reported an average of 5.6 symptoms out of 7.

FIGURE 3.3. CLIENTS MEETING STUDY CRITERIA FOR PAST-6-MONTH GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 16)

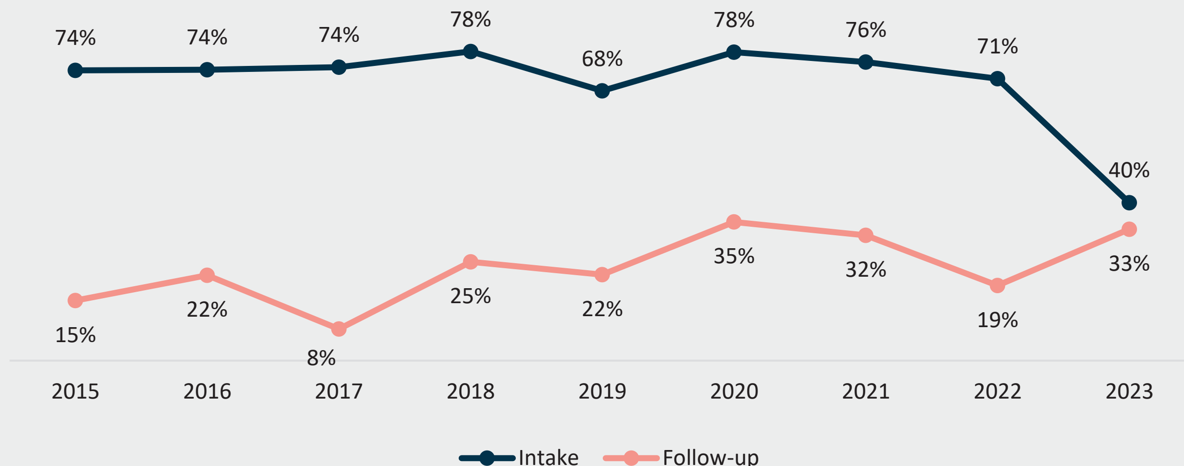


Trends in Past-6-month Generalized Anxiety

The percent of clients who met criteria for generalized anxiety at intake remained consistent from 2015 to 2018 (around three-quarters each year) and then again from 2020 to 2022. In the small follow-up sample of KORTOS clients in the 2023 report, the percent of clients meeting study criteria for generalized anxiety was lower than in other years (40%)

The percent of clients who met criteria for generalized anxiety at follow-up has fluctuated over time, with the highest percentage in the 2020 report and the lowest in the 2017 report. The second highest percentage was in this year's report (2023).

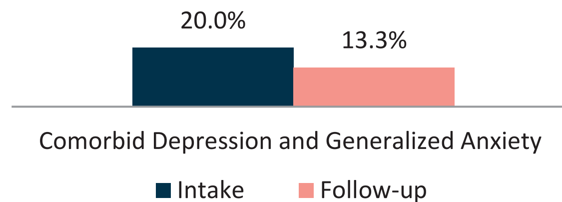
FIGURE 3.4. TRENDS IN THE NUMBER OF CLIENTS WHO MET STUDY CRITERIA FOR PAST-6-MONTH GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023



Comorbid Depression and Anxiety Symptoms

Figure 3.5 shows that at intake, 20.0% of clients met study criteria for both depression and generalized anxiety and 13.3% at follow-up.

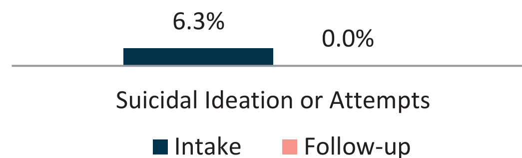
FIGURE 3.5. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 15)



Suicidal Ideation and/or Attempts

Suicidal ideation and attempts were measured with self-reported questions about thoughts of suicide and actual attempts to commit suicide in the past 6 months. About 6% of clients reported suicidal ideation or attempts at intake and none of the clients reporting suicide ideation and/or attempts at follow-up (see Figure 3.6).

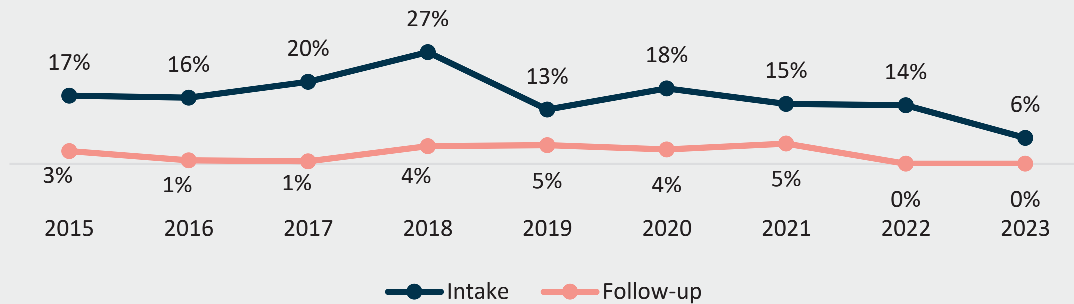
FIGURE 3.6. CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 16)



Trends in Past-6-month Suicide Ideation and/or Attempts

The percent of clients who reported suicidal ideation and attempts at intake increased between 2015 and 2018 from 16.6% to 27.2%. In 2019, however, 13.2% of clients reported suicidal ideation and attempts at intake, but increased in 2020 before decreasing again in 2021, 2022, and 2023. At follow-up, the percent of clients reporting suicidal ideation and attempts has been a high of 5% in 2019 and 2021 reports and a low of 0% in the 2022 and 2023 reports.

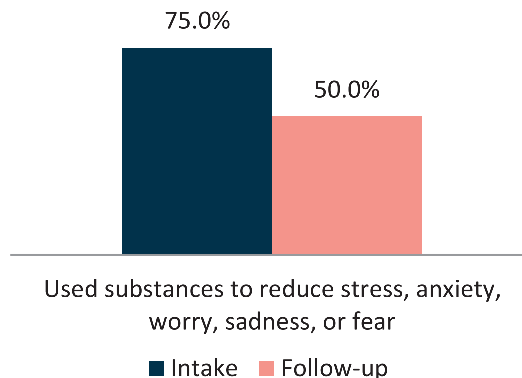
FIGURE 3.7. TRENDS IN THE NUMBER OF CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023



Self-medication for Mental Health Symptoms

The majority of clients at intake (75.0%) reported using alcohol, prescription drugs, or illegal drugs to reduce stress, anxiety, worry, sadness, or fear. At follow-up, 50.0% of clients reported using alcohol, prescription drugs, or illegal drugs to reduce stress, anxiety, worry, sadness, or fear.

FIGURE 3.8. CLIENTS WHO REPORTED THEY USED ALCOHOL, PRESCRIPTION DRUGS, OR ILLEGAL DRUG USE TO REDUCE STRESS, ANXIETY, WORRY, SADNESS, OR FEAR AT INTAKE AND FOLLOW-UP (N = 16)

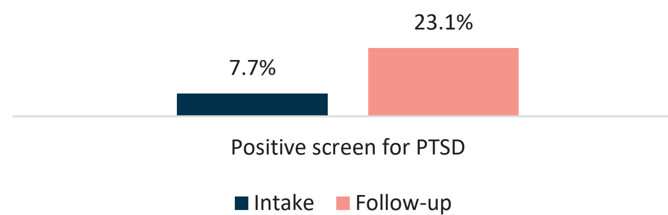


Post-traumatic Stress Disorder

Clients were asked to answer the four-item PTSD checklist about how bothered they had been about the symptoms in the prior 6 months.[53]

At intake, 7.7% of clients screened positive for PTSD symptoms at intake and 23.1% of clients screen positive for PTSD symptoms at follow-up (see Figure 3.9).[54]

FIGURE 3.9. CLIENTS WHO SCREENED POSITIVE FOR POST-TRAUMATIC STRESS DISORDER SYMPTOMS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (n = 13)



General Health Status

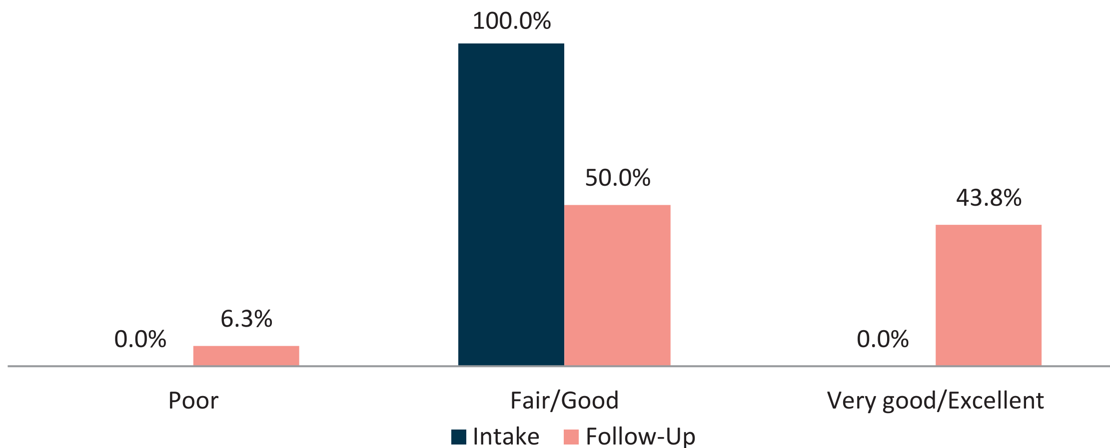
Overall Health

At both intake and follow-up, clients were asked to rate their overall health in the past 6 months from 1 = poor to 5 = excellent. Clients rated their health, on average, as 2.6 at intake and 3.1 at follow-up (not depicted in figure). Figure 3.10 shows that only 23.8% of clients rated their overall physical health as very good or excellent and 42.9% did at follow-up.

[53] 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.

[54] Three clients had missing data for PTSD scores at follow-up.

FIGURE 3.10. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 16)a

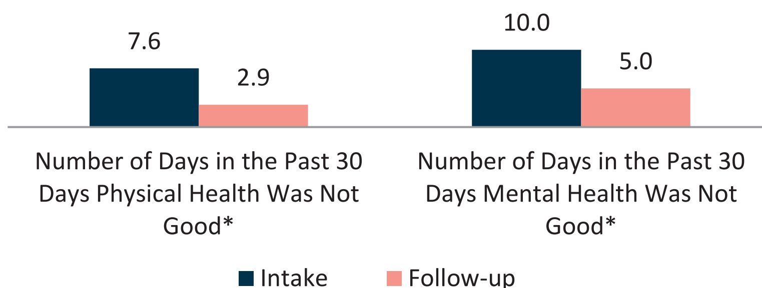


a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .05$).

Perceptions of Physical and Mental Health

Clients were asked how many days in the past 30 days their physical and mental health were not good at intake and follow-up (see Figure 3.11). The number of days clients reported their physical health was not good decreased from an average of 7.6 days to 2.9 days. The number of days clients' mental health was not good also decreased from intake (10.0) to follow-up (5.0).

FIGURE 3.11. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 16)

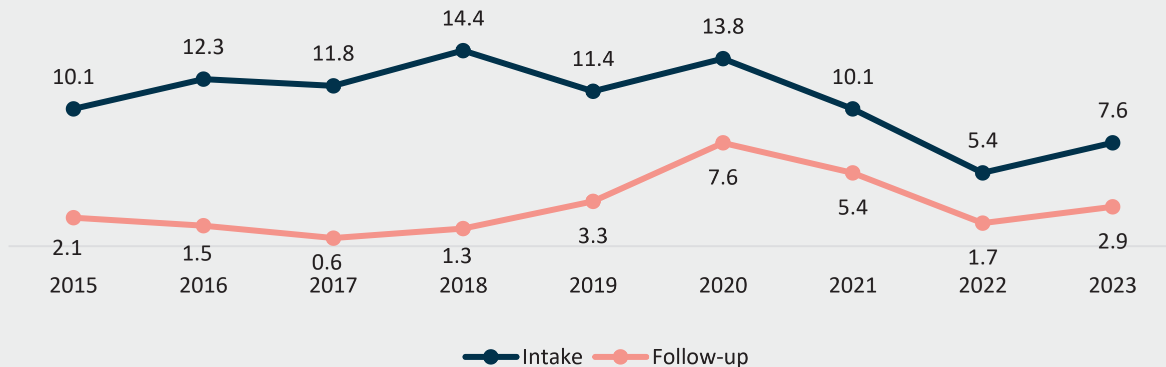


*$p < .10$

Trends in Perceptions of Poor Physical Health

The average number of days clients reported their physical health was poor in the past 30 days at intake has fluctuated over the past 9 years, from 5.4 days to 14.4 days. The average number of days clients reported their physical health was poor in the past 30 days at follow-up decreased from 2.1 days in 2015 to 1.3 days in 2018, but increased in 2020 to 7.6 days before decreasing slightly to 1.7 days in 2022.

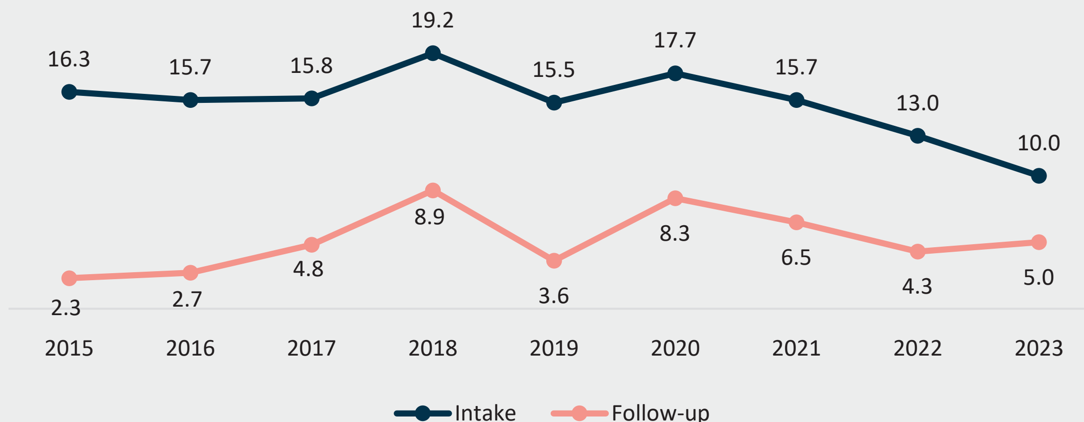
FIGURE 3.12. TRENDS IN PERCEPTIONS OF PHYSICAL HEALTH AT INTAKE AND FOLLOW, REPORTS 2015-2023



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 at intake has fluctuated from a low of 10.0 in 2023 to a high of 19.2 in 2018. The average number of days clients reported their mental health was poor in the past 30 days at follow-up has increased from 2.3 days in 2015 to a high of 8.9 days in 2018. In 2019, however, the number of days clients reported their mental health was not good decreased at follow-up, but increased to 8.3 days in 2020. In 2023, the average number of days clients reported their mental health was poor in the past 30 days at follow-up was 5.0 out of the past 30.

FIGURE 3.13. TRENDS IN PERCEPTIONS OF MENTAL HEALTH AT INTAKE AND FOLLOW, REPORTS 2015-2023[55]

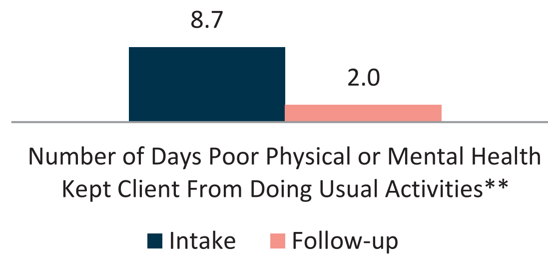


[55] In 2015, 3 cases had missing data for perceptions of mental health at intake, 2019 had one client with missing data, and 2020 had one client with missing data.

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 8.7 days at intake to 2.0 days at follow-up (see Figure 3.14).

FIGURE 3.14. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 15)[56]

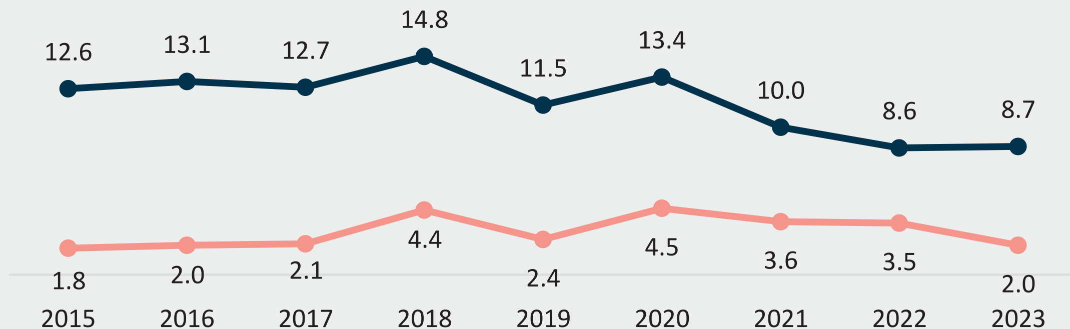


**p < .05.

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 at intake clients reported their poor physical or mental health kept them from doing their usual activities has decreased from a high of 14.8 in 2018 to a low of 8.6 in 2022. The average number of days in the past 30 days at follow-up clients reported their poor physical or mental health kept them from doing their usual activities was a low of 1.8 in 2015 to a high of 4.5 in 2020. Nonetheless, the average number of days poor physical or mental health kept clients from doing their usual activities decreased significantly from intake to follow-up each report year.

FIGURE 3.15. TRENDS IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEEP CLIENT FROM DOING USUAL ACTIVITIES AT INTAKE AND FOLLOW, REPORTS 2015-2023[57]



[56] One client had a missing value for number of days poor physical or mental health limited usual activities at follow-up.

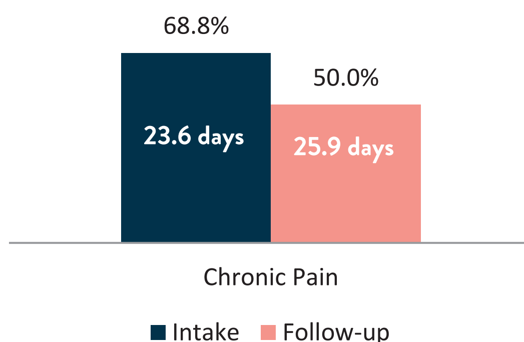
[57] In 2015, one case had a missing value, in 2019 five cases had a missing value, and in 2020 two cases had a missing value for this item at follow-up.

Chronic Pain

At intake, 68.8% of clients reported chronic pain and that percent dropped to 50.0% by follow-up. Of those clients who reported chronic pain at intake (n = 11), clients reported that the pain started around the age of 28.1 (see Figure 3.16). In addition, clients reported experiencing chronic pain for 23.6 days of the 30 days before entering the program. On a scale of 0 (no pain) to 10 (pain as bad as you can image), clients reported an average of 7.6 intensity in the 30 days before entering the program (not shown in the figure).

Among the clients who reported chronic pain at follow-up (n = 8), they reported experiencing chronic pain for 25.9 days of the past 30 days. On a scale of 0 (no pain) to 10 (pain as bad as you can imagine), clients reported an average of 7.0 intensity in the past 30 days (not shown in the figure).

FIGURE 3.16. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 16)

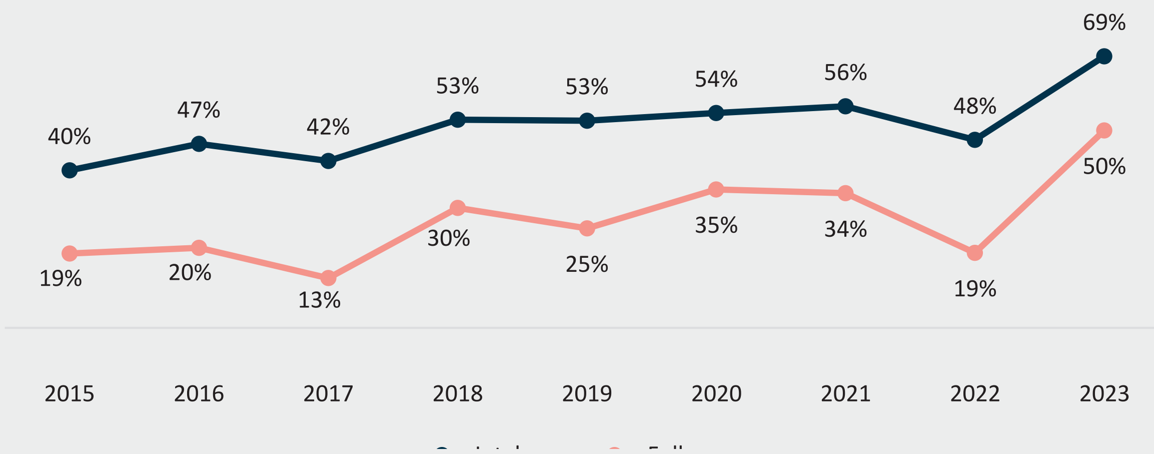


Trends in Chronic Pain

Overall, the percent of clients who reported chronic pain has increased over time at intake, from 40% in the 2015 report to 69% in the 2022 report, with some fluctuations of increases and decreases.

At follow-up, each year, the percent of clients reporting chronic pain was lower than at intake, with the pattern of year-to-year changes following, for the most part, the pattern of year-to-year change at intake.

FIGURE 3.17. TRENDS IN THE NUMBER OF CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023[58]

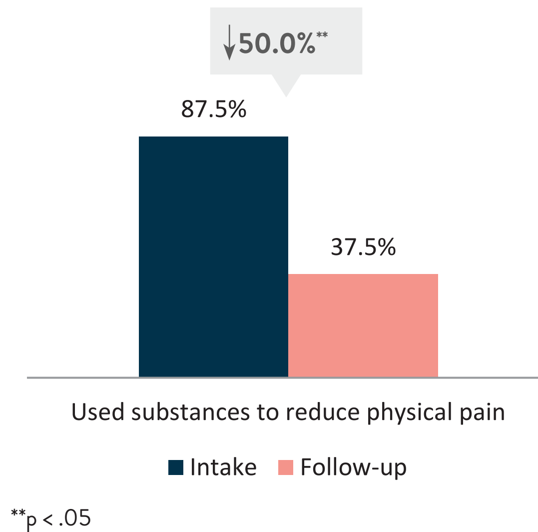


Self-medication for Physical Pain

The majority of clients at intake (87.5%) reported using alcohol, prescription drugs, or illegal drugs to reduce their physical pain. At follow-up, 50.0% of clients reported using alcohol, prescription drugs, or illegal drugs to reduce their physical pain, which was a significant decrease.

[58] In 2018, one client was missing information on chronic pain at follow-up.

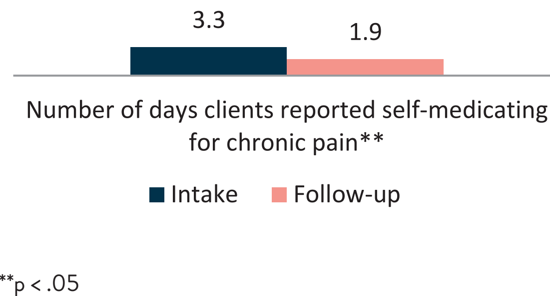
FIGURE 3.18. CLIENTS WHO REPORTED THEY USED ALCOHOL, PRESCRIPTION DRUGS, OR ILLEGAL DRUG USE TO REDUCE PHYSICAL PAIN AT INTAKE AND FOLLOW-UP IN THE PAST 30 DAYS (N = 16)



**p < .05

At intake, the average number of days that clients reported self-medicating chronic pain was 3.3. At follow-up, this decreased significantly to 1.9 (p<.05).

FIGURE 3.18. AVERAGE NUMBER OF DAYS CLIENTS REPORTED THEY USED ALCOHOL, PRESCRIPTION DRUGS, OR ILLEGAL DRUG USE TO REDUCE PHYSICAL PAIN AT INTAKE AND FOLLOW-UP IN THE PAST 30 DAYS (N = 16)

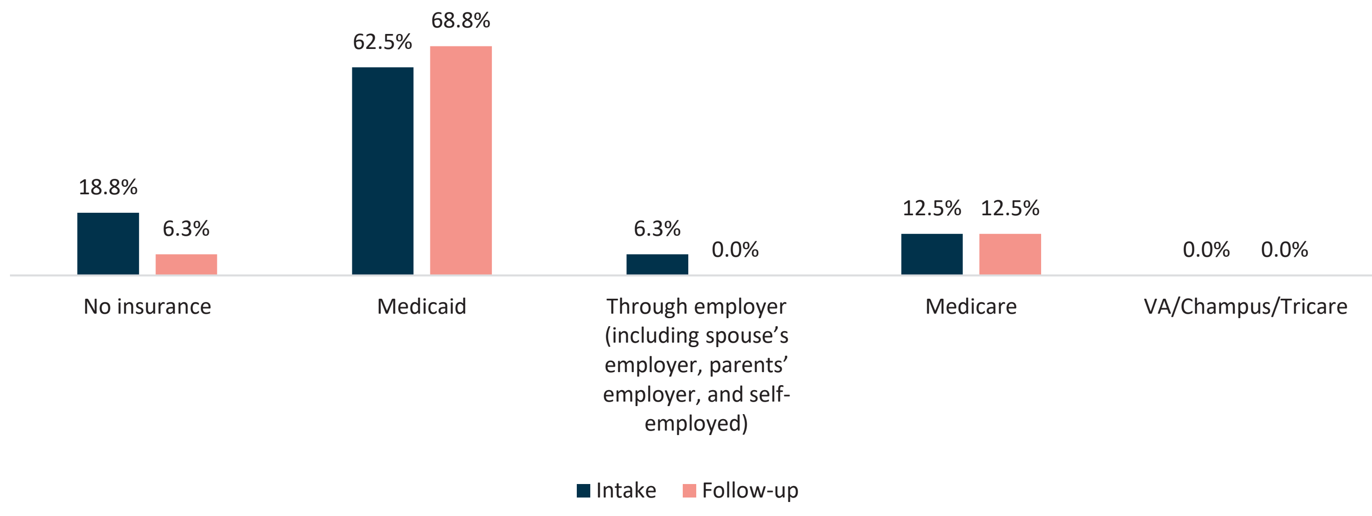


**p < .05

Health Insurance

The majority of KORTOS clients reported they had health insurance through Medicaid at intake (62.5%) and follow-up (68.8%; see Figure 3.20). About 1 in 5 clients (18.8%) at intake and 6.3% of clients at follow-up did not have any insurance. At intake, 12.5% of clients had Medicare, and 6.3% reported having insurance through their partner or employer. At follow-up, 12.5% of clients had Medicare. No clients reported having insurance through the VA, Champus, or Tricare and 12.5% provided a carrier without specifying the mechanism through which they obtained the insurance so these responses could not be classified into one of the existing categories.

FIGURE 3.20. HEALTH INSURANCE FOR KORTOS CLIENTS AT INTAKE AND FOLLOW-UP (N = 16)

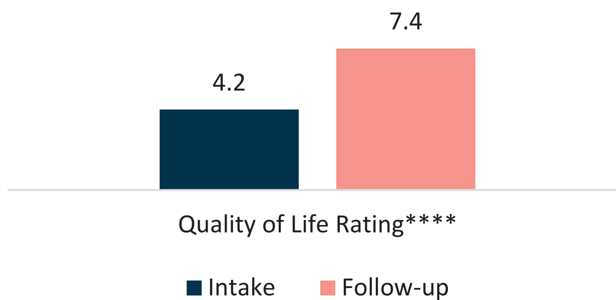


Of those clients who were employed full-time at intake (n = 3), 33.3% had insurance through Medicaid. The remaining 66.7% had no health insurance. At follow-up, of those clients employed full-time (n = 3), 66.7% had insurance through Medicaid and 33.3% (n = 1) had no health insurance.

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'. KORTOS clients rated their quality of life as a 4.2 at intake (see Figure 3.21). The average quality of life rating significantly increased to 7.4 at follow-up.

FIGURE 3.21. PERCEPTION OF QUALITY OF LIFE AT INTAKE AND FOLLOW-UP (N = 16)



Intake Follow-up

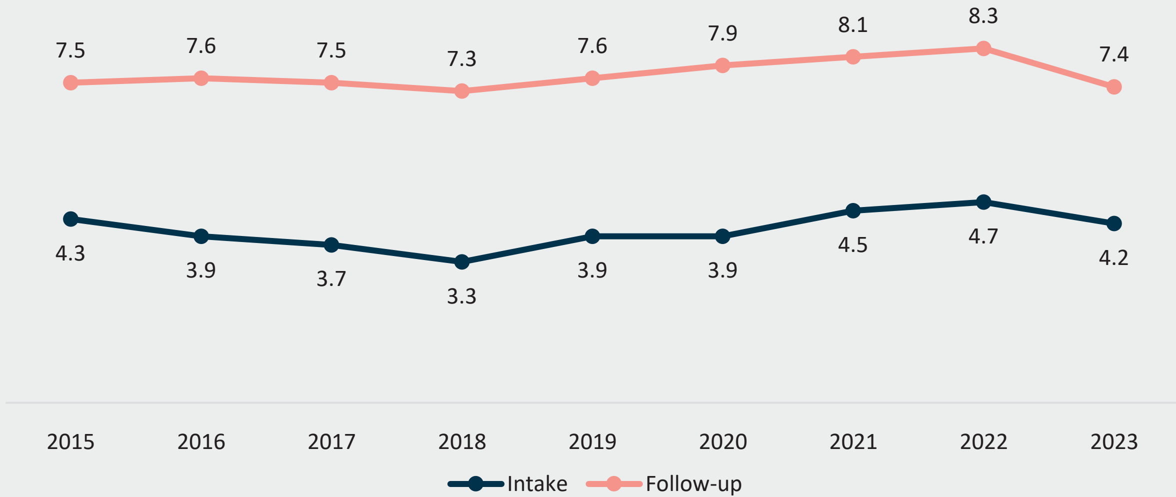
1, worst imaginable; 5, good and bad parts are equal; 10, best imaginable

****$p < .001$.

Trends in Quality of Life Rating

Clients were asked to rank their overall quality of life on a scale from 1 (worst imaginable) to 10 (best imaginable) at both intake and follow-up. At intake, KORTOS clients have rated their quality of life, on average, between a low of 3.3 and a high of 4.7. At follow-up, that rating has significantly increased to an average between a low of 7.3 and a high of 8.3 (see Figure 3.22).

FIGURE 3.22. TRENDS IN QUALITY OF LIFE RATING AT INTAKE AND FOLLOW, REPORTS 2015-2023



Section 4. Criminal Justice System Involvement

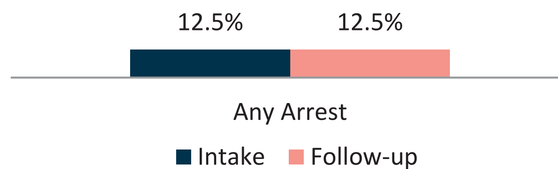
This section describes change in client involvement with the criminal justice system during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest, (2) any incarceration, and (3) criminal justice supervision status.

Arrests

Any Arrests in the Past 6 Months

There was no change in percentage of clients who were arrested at intake (12.5%) and follow-up (12.5%).

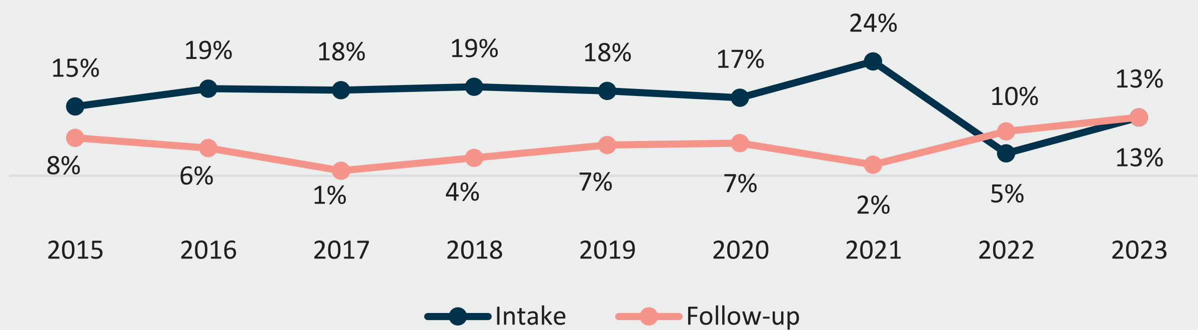
FIGURE 4.1. PAST-6 MONTH ARRESTS AT INTAKE AND FOLLOW-UP (N = 16)



Trends in Past-6-month Arrests

While the percent of clients reporting an arrest in the past 6 months at intake was stable overall in the report years 2015 through 2020, the percent of clients reporting an arrest in the past 6 months at intake increased to 24.4% in 2021 and then decreased to even lower percentages in 2022 and 2023 report years. At follow-up, the percent of clients reporting arrest remained low over from 2015 until 2023 when it was the same percentage as at intake (see Figure 4.2).

FIGURE 4.2. TRENDS IN THE NUMBER OF CLIENTS REPORTING ANY ARRESTS IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023[59, 60]



[59] In 2019, one client declined to answer criminal justice system involvement questions at follow-up and one client was missing data on criminal justice questions at follow-up.

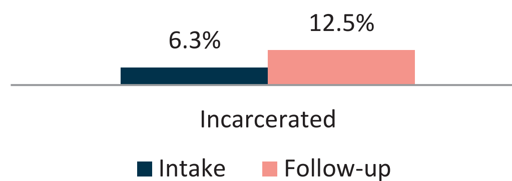
[60] The small sample size in report years 2022 and 2023 may be affecting the number of clients reporting an arrest.

Incarceration

Incarceration in the Past 6 Months

About 6% of clients reported they had spent at least one night in jail or prison at intake. At follow-up, 12.5% of clients reported they had spent at least one night in jail or prison in the past 6 months (see Figure 4.3).

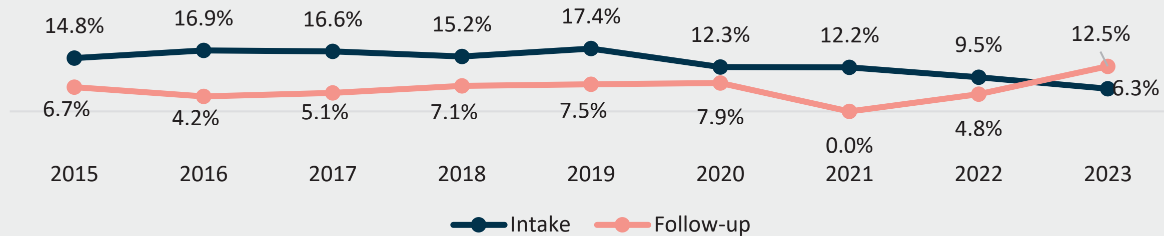
FIGURE 4.3. CLIENTS REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP (N = 16)



Trends in Past-6-month Incarceration

The percent of clients reporting spending at least one night in jail or prison has been relatively steady since 2015 with less than 2 in 10 clients reporting an incarceration at intake. At follow-up, relatively few clients reported being incarcerated in the past 6 months and in 2021, none of the clients reported being incarcerated (see Figure 4.4).

FIGURE 4.4. TRENDS IN THE NUMBER OF CLIENTS REPORTING ANY INCARCERATION IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023[61]

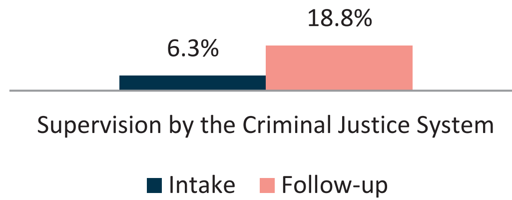


[61] In 2019, one client refused to answer criminal justice system involvement questions at follow-up and one client was missing data on criminal justice questions at follow-up.

Criminal Justice System Supervision

A minority of clients at intake (6.3%) and at follow-up (18.8%) self-reported they were under criminal justice system supervision (e.g., probation or parole; see Figure 4.5).

FIGURE 4.5. CLIENTS REPORTING CRIMINAL JUSTICE SYSTEM SUPERVISION AT INTAKE AND FOLLOW-UP (N = 16)



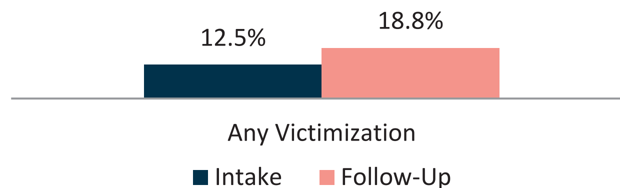
Section 5. Interpersonal Victimization and Safety

This section describes change in client involvement with interpersonal victimization and worry about safety during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) any interpersonal victimization, and (2), worry about personal safety.

Interpersonal Victimization Experiences

Clients were asked about several types of interpersonal victimization[62] (including when they may have been the victim of a crime, harmed by someone else, or felt unsafe) in the 6 months before entering programs and in the 6 months before follow-up (see Figure 5.1). Because relatively small percentages of clients reported each specific type of victimization experience in the 6-month periods, the items were collapsed. The percent of clients who reported experiencing any victimization in the past 6 months was 12.5% at intake and 18.8% at follow-up.

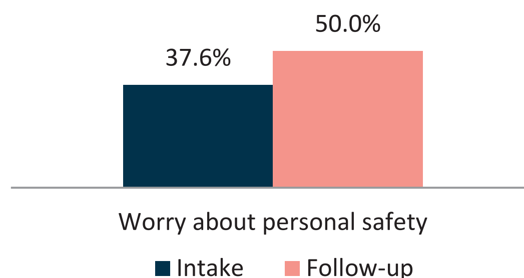
FIGURE 5.1. CLIENTS REPORTING PAST-6-MONTH CRIME AND INTERPERSONAL VICTIMIZATION (N = 16)



Worry About Personal Safety

At intake, 37.6% of clients reported they were worried about their personal safety. At follow-up, 50.0% of clients were worried about their personal safety (which was not a significant decrease).

FIGURE 5.2. CLIENTS WHO WORRIED ABOUT PERSONAL SAFETY AT INTAKE AND FOLLOW-UP (N = 16)



[62] Victimization includes being robbed or mugged by force, assaulted with or without a weapon, threatened with a gun, intimate partner violence, stalking, sexually harassed or assaulted.

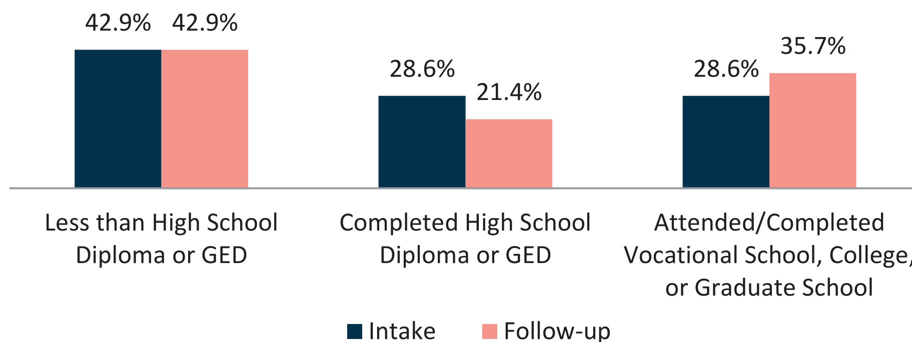
Section 6. Education, Economic Status, and Living Circumstances

This section examines changes in education, economic status, and living circumstances from intake to follow-up including: (1) highest level of education completed, (2) the number of months clients were employed full-time or part-time in the past 6 months, (3) current employment status, (4) hourly wage, (5) homelessness, (6) living situation, and (7) economic hardship (i.e., difficulty meeting living and health care needs for financial reasons).

Education

At intake, the average number of years of education was 12.2 years and at follow-up client reported 12.4 years, where 12 = High school diploma or GED (not depicted in a figure). Another way to examine change in education is to examine change in the percent of clients who reported different levels of education. There was not a significant change in the percent of clients who reported attending or completing vocational school, college, or graduate school from intake to follow-up (see Figure 6.1).

FIGURE 6.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE AND FOLLOW-UP (n = 14)[a63]



a – Significance tested with the Stuart-Maxwell Test of Overall Marginal Homogeneity.

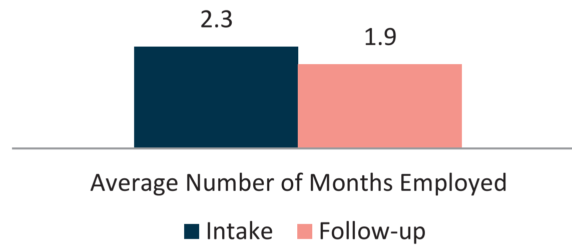
Employment

Average Number of Months Employed in the Past 6 Months

At both intake and follow-up, clients were asked to report the number of months in the past 6 months they were employed at least part-time. Figure 6.2 shows there was not a significant change in the average number of months clients reported they were employed from intake (2.3) to follow-up (1.9).

[63] Two clients had missing data for education level at follow-up because of data inconsistencies compared to intake.

FIGURE 6.2. AVERAGE NUMBER OF MONTHS EMPLOYED IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 16)

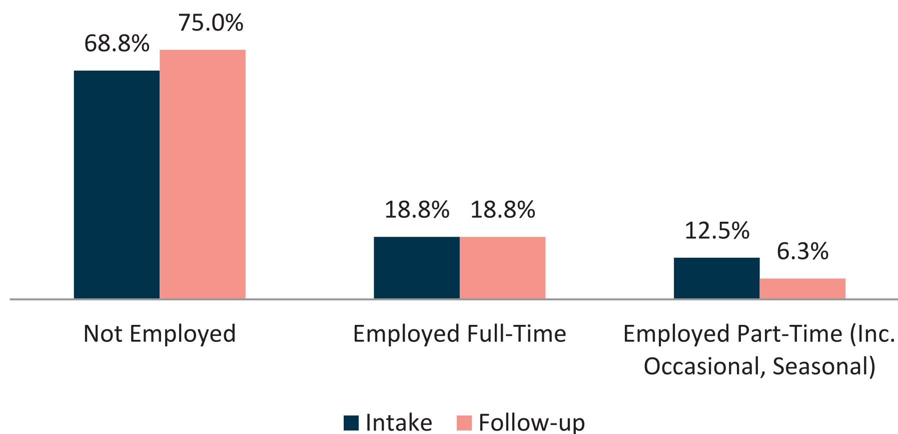


The majority of clients at intake (62.5%) and follow-up (62.5%) reported that they expected to be employed in the next 6 months (not depicted in a figure).

Current Employment Status

At intake, 68.8% of clients were not employed (see Figure 6.3) in the 30 days before they entered the program and at follow-up, the percent of clients who were not employed was 75.0%. Additionally, the percent of clients who were employed full-time remained the same (18.8%).

FIGURE 6.3. CURRENT EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP (N = 16)

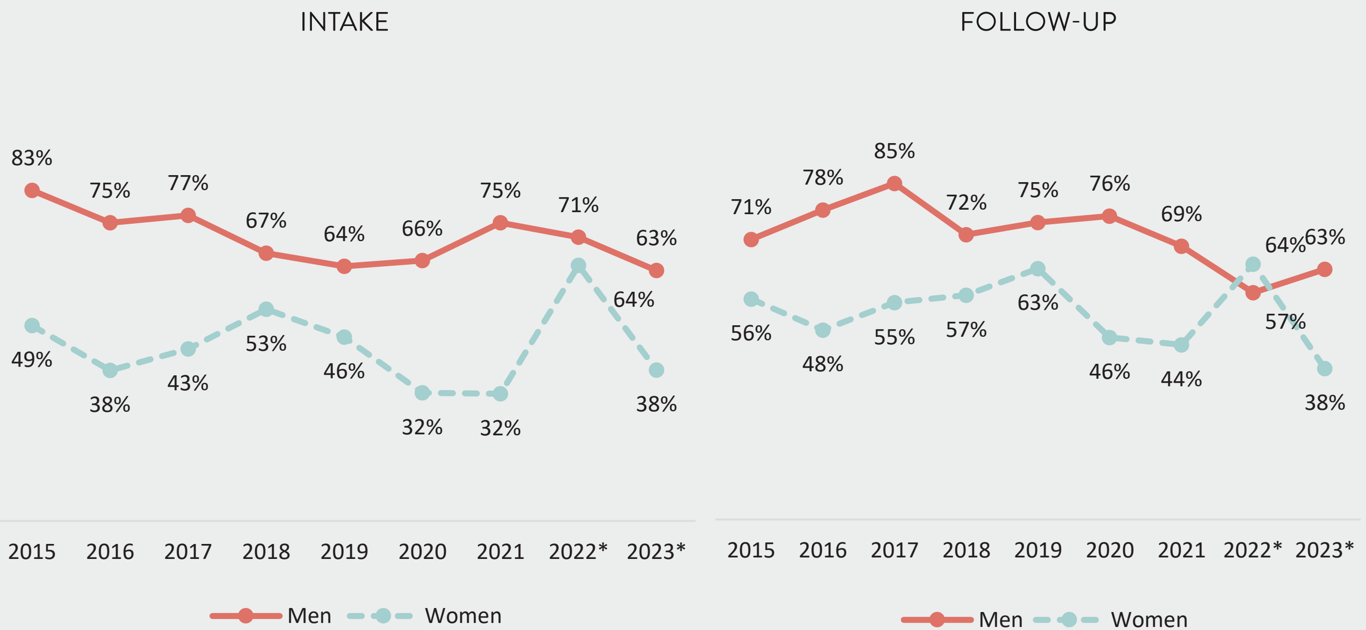


Trends in Employment by Gender

For the eight years from 2015 to 2022 reports, significantly fewer women reported being employed (full- or part-time) at least one month in the past 6 months at intake compared to men. In the 2016 report year, only 37.9% of women were employed at least one month in the past 6 months at intake while 75.0% of men reported employment. In 2018, however, the gap narrowed with 67.4% of men reporting employment compared to 53.3% of women. Less than half of women in the 2019 sample reported being employed at intake compared to 64.1% of men and in 2020 and 2021 the gap between men and women reporting employment widened further. In this 2023 report, because of the small sample size, the gender difference was not statistically significant.

By follow-up, around half of women reported they were employed full-time or part-time at least one month in the past 6 months but significantly more men reported employment during that same time frame. Since 2016, the percent of women who reported being employed at least one month at follow-up increased until the 2023 report, which has the smallest sample size of the annual reports. In 2020, however, less than half of female clients reported being employed at follow-up compared to over three-quarters of men. In 2021, the gap between men and women for employment at follow-up decreased slightly compared to 2020. For the first time, in 2022, the percent of women who reported being employed at follow-up was higher than the percent of men, but was lower again in 2023.

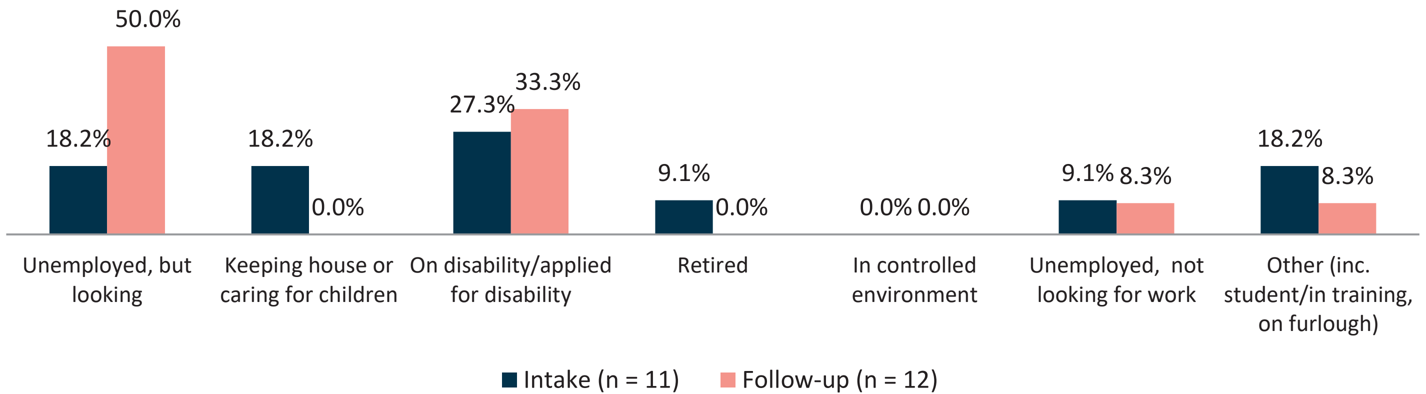
FIGURE 6.4. TRENDS IN GENDER DIFFERENCES IN CLIENTS EMPLOYED AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP[64]



[64] The small sample sizes in report years 2022 and 2023 may be affecting the number of clients who reported being employed at least one month.

Clients who were unemployed at each period were asked why they were not currently employed (see Figure 6.5). At intake (n =11), 27.3% were on disability, 18.2% were unemployed, but were looking for a job, 18.2% of clients reported they were temporarily laid-off, 18.2% were caring for children/home full-time, and 9.1% were retired, and 9.1% were not looking for work. Among the clients who were not employed at follow-up (n = 12), 50.0% reported that they were unemployed, but looking for work, 33.3% were on disability, 8.3% were students, and 8.3% were unemployed and not looking for work.

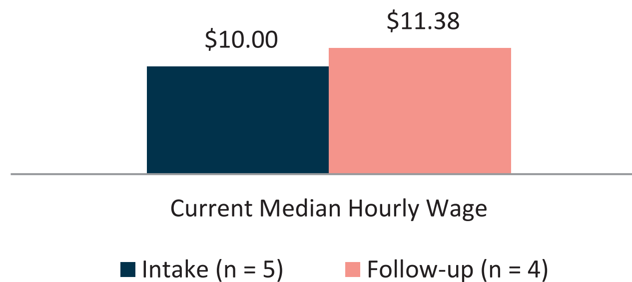
FIGURE 6.5. REASONS FOR UNEMPLOYMENT STATUS AT EACH POINT



Hourly Wage

Among the clients who were employed at intake (n = 5), the median hourly wage was $10. Among the clients who were employed at follow-up and who reported their hourly wage (n = 4), the median hourly wage was $11.38 (see Figure 6.6).

FIGURE 6.6. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG EMPLOYED CLIENTS

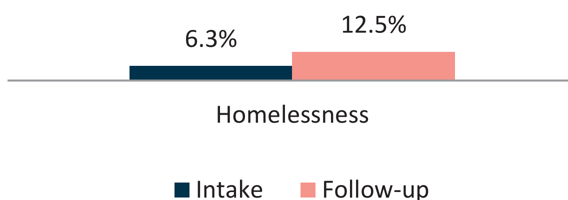


Living Circumstances

Homelessness

At intake, 6.3% of clients reported being homeless in the previous 6 months (see Figure 6.7). At follow-up, 12.5% reported being homeless.

FIGURE 6.7. CLIENTS REPORTING HOMELESSNESS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 16)

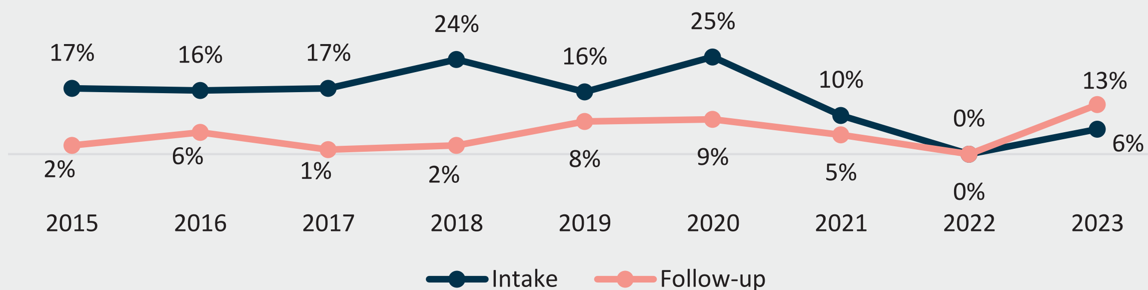


Trends in Past-6-month Homelessness

From 2015 to 2017, the percent of clients reporting that they considered themselves homeless in the past 6 months at intake remained steady at around 16% of clients. In 2018, the percent of clients who considered themselves homeless at intake increased slightly to 24%, but decreased again in 2019 to 15.7%. In 2020, the percent of clients reporting that they considered themselves homeless increased again to 24.6%, but decreased to 9.8% in 2021. None of the clients considered themselves homeless at intake in 2022.

At follow-up each year, very few clients reported that they considered themselves homeless. In both 2015 and 2018, only 2% of clients considered themselves homeless in the past 6 months at follow-up. The percent of clients who considered themselves homeless at follow-up increased to 8% in 2019. In 2021, however, the percent of clients who considered themselves homeless at follow-up decreased to 4.9% and decreased further to 0% in 2022.

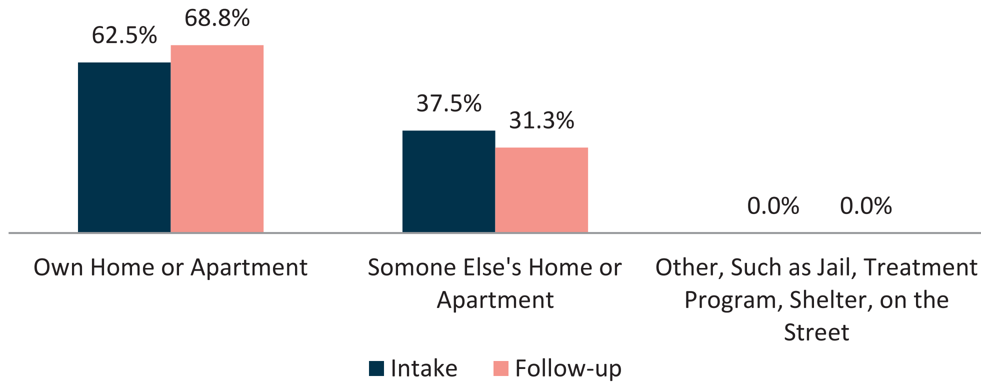
FIGURE 6.8. TRENDS IN THE NUMBER OF CLIENTS REPORTING HOMELESSNESS IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023



Living Situation in the Past 6 Months

Figure 6.9 shows that 62.5% of clients in the past 6 months at intake and 68.8% of clients at follow-up reported they were living in their own home or apartment, which was not a significant increase. Over one-third of clients at intake (37.5%) and 31.3% of clients at follow-up reported living in someone else's home or apartment. None of the clients at intake or follow-up lived in another situation such as jail, a treatment program, shelter, or on the street.

FIGURE 6.9. TYPE OF TYPICAL LIVING SITUATION IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 16)



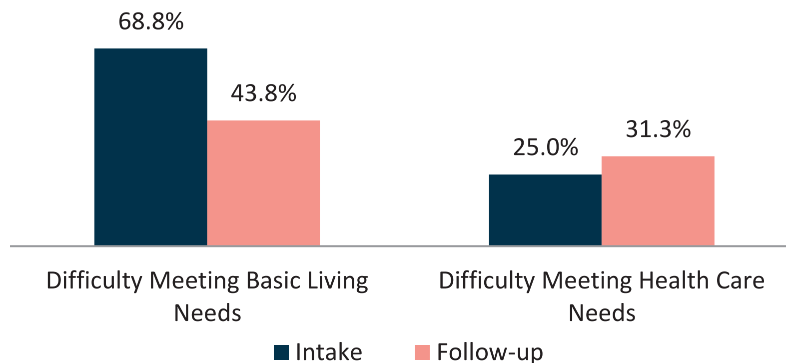
Economic Hardship

A minority of clients at intake (12.5%) and follow-up (18.8%) reported they were currently receiving SSI or SSDI benefits (not presented in a figure).

Clients were also asked eight items, five of which asked about the clients' difficulty meeting basic living needs such as food, shelter, utilities, and telephone, while three items asked about the clients' difficulty obtaining health care for financial reasons.

The majority of clients (68.8%) reported difficulty meeting basic living needs (e.g., shelter, utilities, phone, food) at intake and 43.8% at follow-up, which was not a significant decrease (see Figure 6.10). At intake, the number of clients having trouble meeting health care needs was 25.0%. At follow-up, 31.3% of clients reported issues meeting healthcare needs, which was also not a significant change.

FIGURE 6.10. DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 16)



Trends in Difficulty Meeting Living and Health Care Needs for Financial Reasons

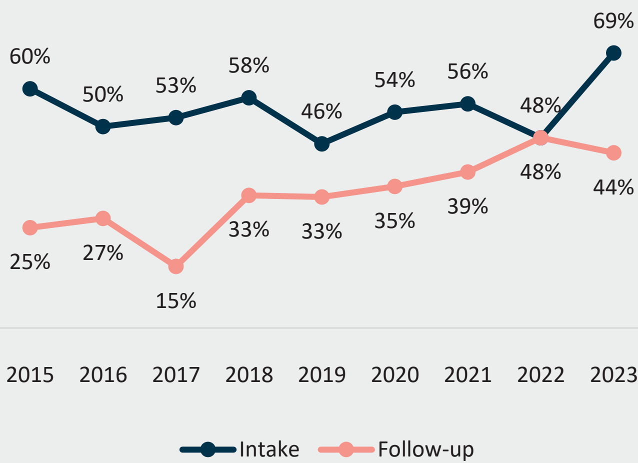
For the first eight years in the trend reports, there was a significant decrease in the percent of KORTOS clients who reported they had difficulty meeting basic living needs and/or health care needs in the past 6 months from intake to follow-up.

In general, half of clients reported having difficulty meeting basic living needs (e.g., shelter, utilities, phone, food) at intake. In 2019, 46% of clients reported having difficulty which increased to 54% in 2020 and again in 2021 to 56%. At follow-up, overall, trends show that the percent of clients who have reported having difficulty meeting basic living needs is increasing over time. In 2018, the percent of clients who reported having difficulty meeting basic living needs increased to 48% in 2021 from 15% in 2017.

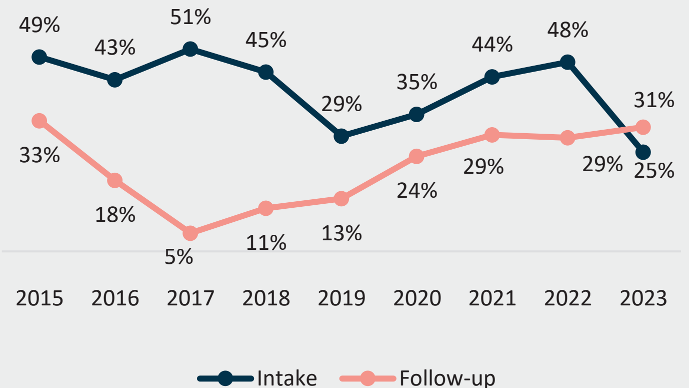
From 2015 to 2017, the percent of clients reporting difficulty meeting basic health care needs (i.e., doctor visits, dental visits, and prescription medications) at follow-up decreased; however, beginning in 2018, the percent of clients reporting difficulty meeting basic needs has increased. Whereas less than 5% of clients reported difficulty meeting basic health care needs in 2017, 29% of clients reported difficulty meeting basic health care needs in 2021 and 31% in 2023.

FIGURE 6.11. TRENDS IN THE PERCENT OF CLIENTS REPORTING ECONOMIC DIFFICULTY IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2023

Difficulty Meeting Basic Living Needs



Difficulty Meeting Basic Health Care Needs



Section 7. Recovery Supports

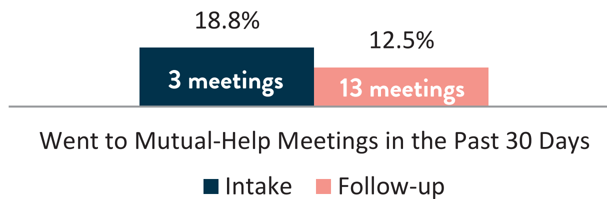
This section focuses on four main changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) the number of people the client said they could count on for recovery support, (3) what will be most useful to the client in staying off drugs/alcohol, and (4) clients'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

Mutual Help Recovery Group Meeting Attendance

At intake, 18.8% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (see Figure 6.1). At follow-up, 12.5% of clients reported they had gone to mutual help recovery group meetings, which was not a significant change.

Among clients who had attended mutual help recovery group meetings at intake (n = 3), they reported attending an average of 3 meetings. Among clients who attended mutual help recovery group meetings at follow-up (n = 2), they reported attending an average of 13 meetings.

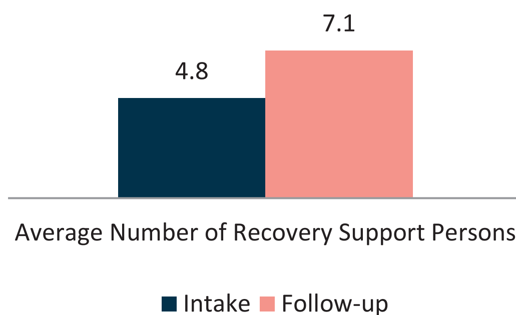
FIGURE 7.1. CLIENTS REPORTING MUTUAL HEALTH RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N = 16)



Number of People Client Can Count on for Recovery Support

The average number of people clients reported they could count on for recovery support increased from intake (4.8) to follow-up (7.1; see Figure 7.2), which was not a significant increase.

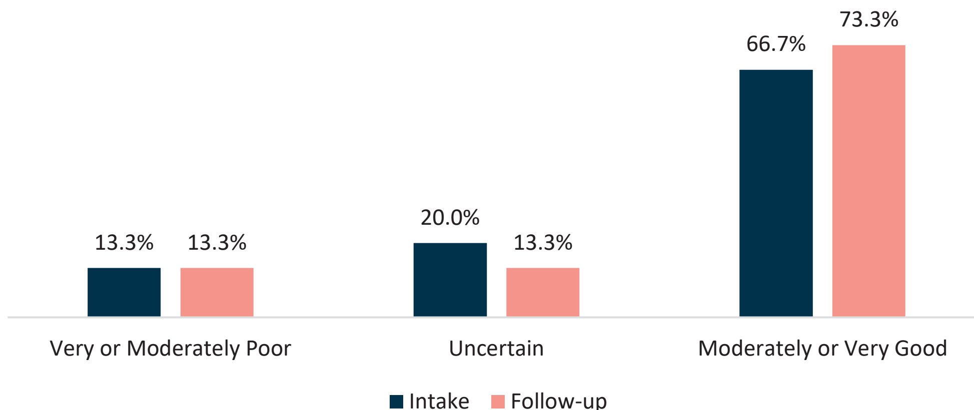
FIGURE 7.2. AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 16)



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 3.6 at intake and a 4.0 at follow-up. Overall, 66.7% of clients at intake and 73.3% of clients at follow-up believed they had moderately or very good chances of staying off drugs/alcohol, which was not a significant increase (see Figure 7.3).

FIGURE 7.3. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 15)[65]

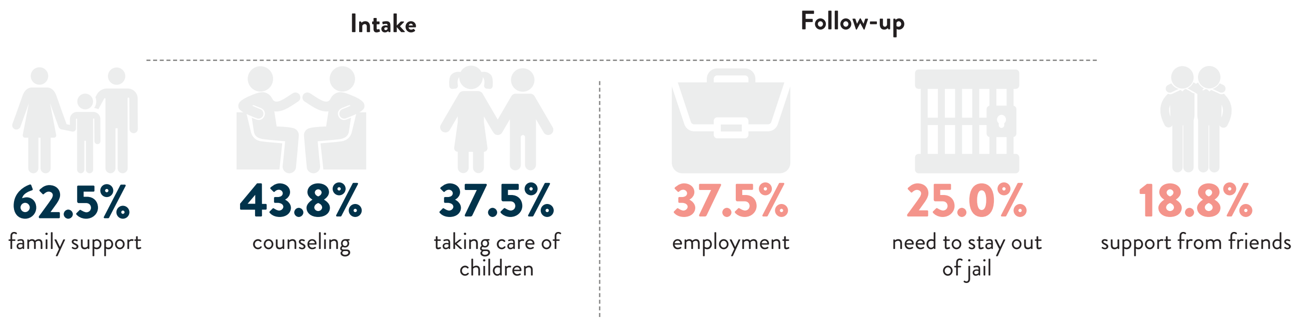


Stuart-Maxwell test was conducted to examine the change from intake to follow-up.

What Will Be Most Useful in Staying Off Drugs/alcohol

At intake and follow-up, clients were asked what, other than MOUD, 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 categories during each time period are presented for descriptive purposes in Figure 7.4. At intake, the most common responses at intake were family support, counseling, taking care of children, support from a partner, and self-talk/determination. At follow-up, the most common responses were employment, the need to stay out of jail, employment, support from friends, remembering the past/ consequences, and staying busy.

FIGURE 7.4. CLIENTS REPORTING WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL (N = 16)



[65] One client had missing information for chances of staying off drugs and alcohol at follow-up.

Section 8. Multidimensional Recovery

This section examines multidimensional recovery that takes into account severity of substance use disorder, employment, homelessness, criminal justice system involvement, suicide ideation, overall health, recovery support, and quality of life. Change in recovery status from intake to follow-up is presented. Furthermore, a multivariate analysis was conducted to examine the intake indicators of recovery status and their association with having all positive dimensions of recovery at follow-up. Furthermore, a multivariate analysis was conducted to examine the intake indicators of recovery status and their association with having all eight dimensions of recovery 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).[66] 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.[67] 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 create one index that can be used to classify individuals who all positive dimensions of recovery.

TABLE 8.1. MULTIDIMENSIONAL RECOVERY

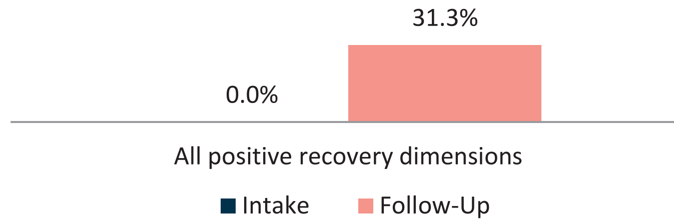
INDICATOR	POSITIVE RECOVERY DIMENSIONS	NEGATIVE RECOVERY DIMENSIONS
Substance use	No or mild substance use disorder (SUD)	Mild, moderate, or severe substance use disorder (SUD)
Employment	Employed at least part-time or in school	Unemployed (not on disability, not going to school, not a caregiver)
Homelessness	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, none of the clients were classified as having all positive dimensions of recovery when entering treatment (see Figure 8.1). At follow-up, 31.3% of clients were classified as having all positive dimensions of recovery at follow-up.

[66] 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.

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

FIGURE 8.1. MULTIDIMENSIONAL RECOVERY AT INTAKE AND FOLLOW-UP (N = 16)[a]



a- No measure of association could be computed for the cross tabulation because there was a value of 0 for the multidimensional recovery variable at intake.

Table 8.2 presents the frequency of clients who reported each of the specific components of the multidimensional recovery measure at intake and follow-up. At intake, the factors with the lowest percent of individuals indicated were no substance use disorder, a higher quality of life, having employment full-time and part-time. At follow-up, the factors with the lowest percent of individuals reporting the positive dimensions of recovery were no substance use disorder, and having employment full-time and part-time.

TABLE 8.2. PERCENT OF CLIENTS WITH SPECIFIC POSITIVE DIMENSIONS OF RECOVERY AT INTAKE AND FOLLOW-UP (N = 16)

Factor	**Intake Yes**	**Follow-up Yes**
Met DSM-5 criteria for no SUD in the past 6 months	0.0%	81.3%
Usual employment was employed full-time or part-time in the past 6 months (or unemployed because a student, home caregiver, on disability)	81.3%	56.3%
Reported no homelessness (or living in recovery center at follow-up)	93.8%	87.5%
Reported not being arrested and/or incarcerated in the past 6 months	93.8%	100%
Reported no thoughts of suicide or attempted suicide in the past 6 months	93.8%	100.%
Self-rating of overall health at follow-up was fair, good, very good, or excellent	100%	93.8%
Reported having someone they could count on for recovery support	93.8%	93.8%
Reported a quality-of-life rating in the mid or higher range (rating of 5 or higher)	50.0%	93.8%

Section 9. Client Satisfaction with Opioid Treatment Programs

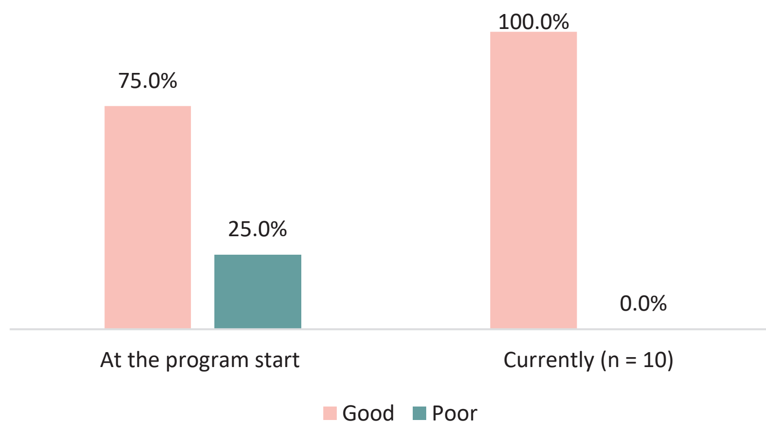
At the beginning of the follow-up interview, clients were asked to give their opinions and feedback regarding their program experience. The items measured in this report include: (1) client involvement in the program, (2) if the client would refer someone else to the program, (3) client ratings of program experiences, and (4) positive and negative aspects of program participation.

Client Involvement in the Program

Clients reported having been involved in the treatment program an average of 8.7 months at follow-up (range of 3 to 24 months).[68]

Figure 9.1 shows the percent of clients who reported the program started poor or good and ended poor or good. The majority of clients reported that the program started good (75.0%) and 100% of clients who were still involved in the program reported it was currently good.[69]

FIGURE 9.1. PERCENT OF CLIENTS WHO REPORTED AT FOLLOW-UP THE TREATMENT STARTED AND IS CURRENTLY POOR OR GOOD (N =16)



The majority of followed-up clients reported that the treatment episode is working extremely well for them (62.5%) or pretty well (25.0%) and only 12.5% stated the program worked somewhat for them.

Recommendation to the Program

The majority of clients (93.8%) 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 = 15), 73.3% reported they would warn their friend or family member about certain things or tell them who to work with or who to avoid.

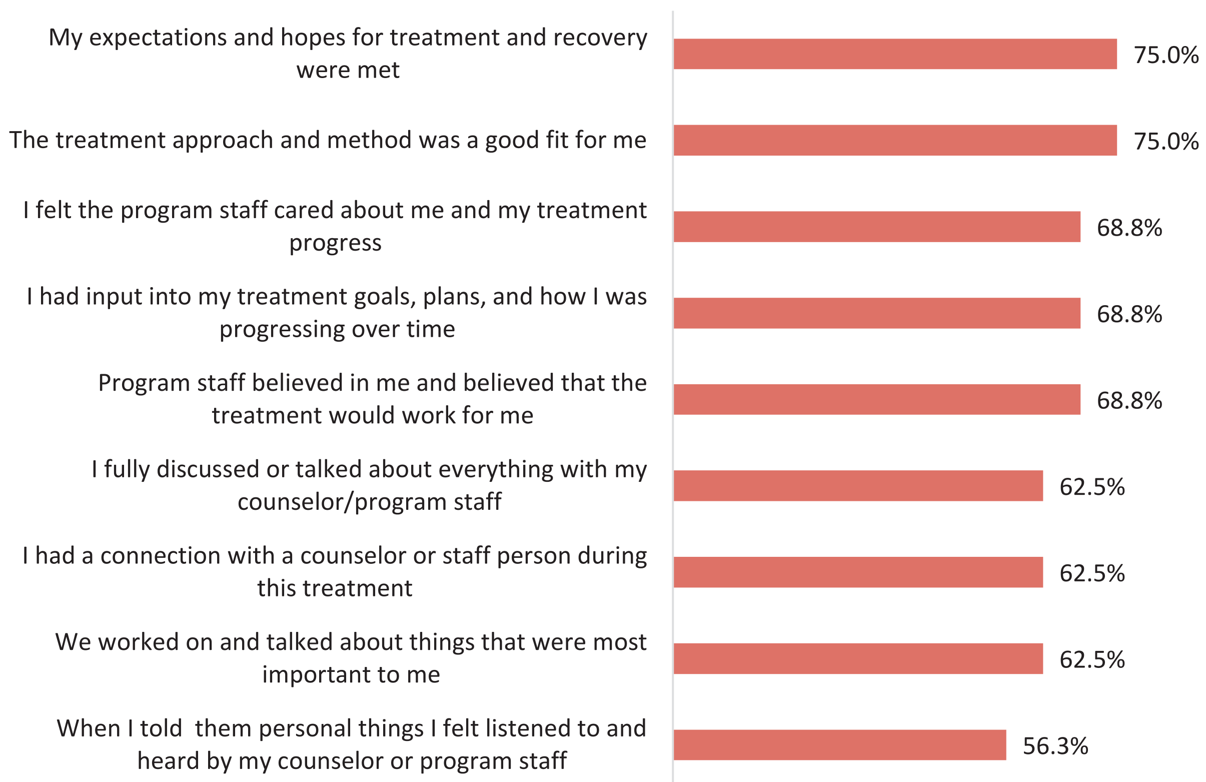
[68] Two clients did not know how long they were involved in the treatment program at follow-up.

[69] Six clients reported being no longer involved in the program.

Client Ratings of Program Experiences

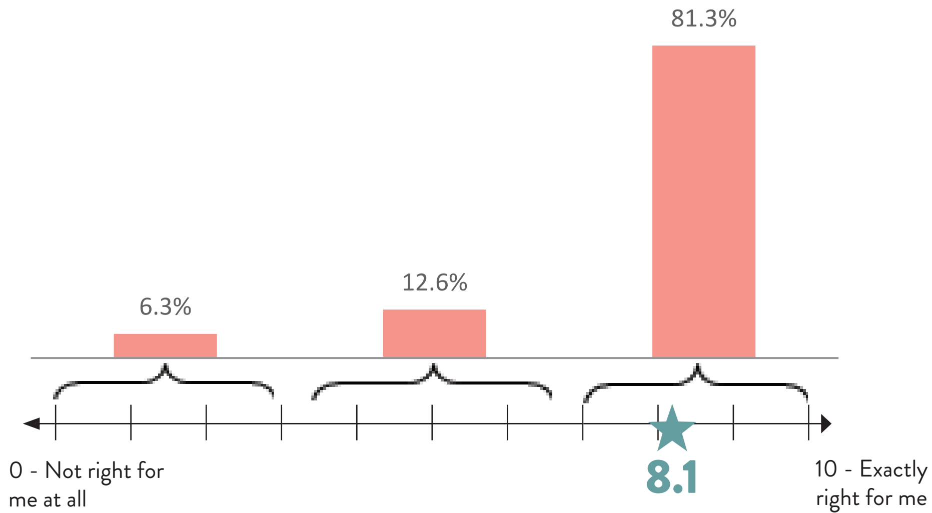
Clients were asked to report their perceptions of how the treatment program worked for them. The statements presented in Figure 9.2 had separate response options, with ratings ranging from 0 to 10. The higher values corresponded to the more positive responses and the lower values corresponded to the negative responses. For example, for the statement, "My expectations and hopes for treatment and recovery were met" the anchors were 0 "Not at all met" and 10 "Perfectly met." Even the negatively worded items had anchors in which the higher values represented the more positive side of the continuum. For example, for the statement, "There were things I did not talk about or that I did not fully discuss with my counselor/ program staff" the response option 0 corresponds to "I did not discuss lots of things, I held things back," and 10 corresponds to "I discussed everything, I held back nothing." Clients who rated each statement from 8 to 10 are shown in the figure below.

FIGURE 9.2. RATINGS OF PROGRAM TREATMENT EXPERIENCE (N = 16)



Clients rated their overall program experience, on average, as 8.1 (see Figure 9.3). Overall, 81.3% gave a rating between 8 and 10 and 37.5% of clients gave the highest possible rating, 10.

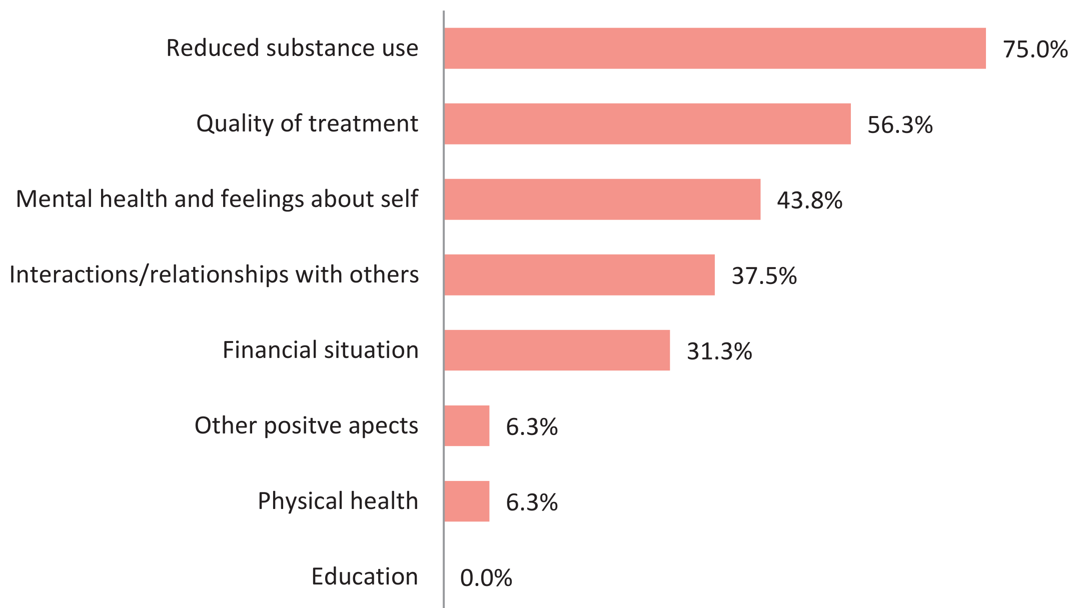
FIGURE 9.3. RATING OF EXPERIENCE AT THE PROGRAM (n = 16)



Positive and Negative Aspects of Program

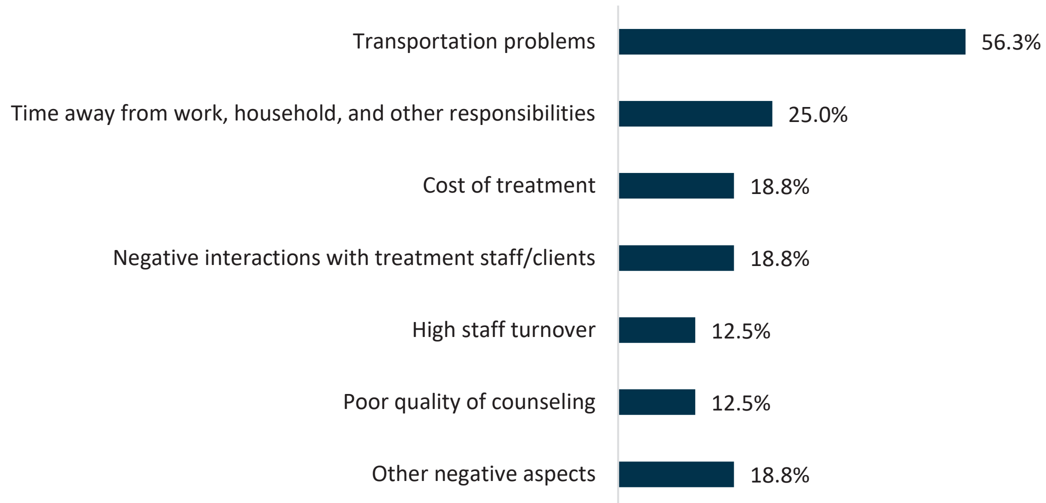
Clients were asked to identify the three most positive aspects of their participation in the program (Figure 9.4). Three-quarters of clients (75%) reported that reduction in substance use was a positive outcome, 56.3% of clients reported that the quality of treatment was a positive aspect. Close to 44% of clients reported that improvements in mental health were a positive aspect of the treatment. Almost 38% percent of clients reported that improved relationships were positive aspects, 31.3% improvements in their financial situation, and 6.3% reported improvements in physical health.

FIGURE 9.4. PERCENT OF CLIENTS REPORTING POSITIVE ASPECTS OF THE PROGRAM (N = 16)



Aspects of treatment that clients identified as problematic or needing improvement are displayed in Figure 9.5. The negative aspects of the program suggest barriers that clients must overcome to participate in the program. Specifically, transportation problems (56.3%), time away from work, household, or other responsibilities (25.0%), cost of the treatment (18.8%), negative interactions with staff/other clients (18.8%), high staff turnover (12.5%), and quality of counseling (e.g., not enough counseling; 12.5%).

FIGURE 9.5. PERCENT OF CLIENTS REPORTING NEGATIVE ASPECTS OF THE PROGRAM (N = 16)



Section 10. Conclusion and Implications

The KORTOS 2023 Annual Follow-Up Report describes characteristics of 38 clients who participated in opioid treatment programs during calendar year 2021 and completed intake interviews. In addition, outcomes are presented for 16 clients who completed a follow-up telephone interview 6 months after the intake interview.

Who Do the Opioid Treatment Programs Serve?

Because of the decrease in the number of OTPs that are participating in KORTOS, it is difficult to determine who the OTPs serve. Nonetheless, of the clients with intake interviews (n = 38), they were an average of 39 years old ranging from 23 to 65 years old. Just over one-third (36.8%) were female and 60.5% were male. The majority of clients (63.2%) self-reported they decided get help on their own and 28.9% reported that they were referred to the OTP by a family member, partner, or friend. The majority (73.7%) were unemployed, and of those unemployed clients, 21.4% reported they were looking for work.

Almost three-quarters of KORTOS clients (73.7%) reported at least one adverse childhood experience before the age of 18. Specifically, about 39.5% reported 1-3 childhood experiences and 18.4% reported 4-6 childhood experiences, 10.5%, 7 – 9 experiences, and 5.3% reported all 10 experiences. In terms of interpersonal victimization experiences since age 18, the most frequently reported experiences were having ever been physically assaulted/attacked (42.1%), and having been threatened with a gun or held at gunpoint (21.6%), abused by an intimate partner (16.2%), and having been robbed/mugged (16.2%).

In the six months before entering the program, 34.2% of clients met study criteria for depression, and 47.4% met study criteria for generalized anxiety. About 5% reported suicidal thoughts or attempts of suicide in the 6 months before entering the program. In addition, 7.9% had post-traumatic stress disorder (PTSD) scores that indicated risk of PTSD. About 58% of clients reported chronic pain in the 6 months before entering the program. The majority of clients (60.5%) reported they had at least one of the 15 chronic health problems listed on the intake interview. Trend analysis shows that from CY 2013 to CY 2021 the percent of clients who reported chronic medical problems has increased from just under half of clients to over half of clients.

Among the clients who were not incarcerated all 180 days before entering the program (n = 37), all clients reported using illegal drugs (100%), and four-fifths reported smoking tobacco (81.1%) while only 8.1% of clients reported using alcohol in the 6 months before intake. About one-fourth of clients reported only using opioids (26.3%) while 71.1% reported using opioids and at least one other class of drug.

Involvement with the criminal justice system was not commonly reported by KORTOS clients as they entered OTPs. A minority of KORTOS clients (13.2%) reported being arrested at least once and 2.6% reported being incarcerated at least one night in the 6 months before entering treatment. In addition, 10.5% of clients reported being under supervision by the criminal justice system.

Areas of Success

The 2023 evaluation findings indicated that Kentucky opioid treatment programs have been successful in facilitating substantial positive changes in clients' lives. Results for those who were included in the followed-up analysis (n = 16) show that clients made substantial improvements from intake to follow-up in the primary component (substance use), including significant reductions in illegal drug use, and severity of substance use disorder and a significant increase in quality of life. Improvements were also found in one supplemental area:

health status.

Substance Use

Among clients who were not incarcerated all 180 days before entering the program or follow-up, there was a decrease in clients reporting past-6-month alcohol or illegal drug use with 100% of clients reporting any illegal drug use at intake compared to 31.3% at follow-up. The majority of clients (87.5%) reported misusing prescription opioids (such as morphine, Percocet, Oxycontin, Lortab) in the past 6 months at intake, whereas 18.8% of clients reported prescription opioid misuse in the past 6 months at follow-up—a significant decrease. Half of followed-up clients (50.0%) also reported heroin use in the past 6 months at intake and that percent significantly decreased to 18.8% in the past 6 months at follow-up. The percentage of clients using non-prescribed methadone and bup-nx were low before intake and follow-up. Not only did clients' use of overall opioids decrease significantly, but also their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, and stimulants) decreased from 93.8% in the past 6 months at intake to 25.0% in the past 6 months at follow-up. In addition, while the majority of KORTOS clients entered the OTP with symptoms that met DSM-5 criteria for a severe drug use disorder, the percent was significantly lower at follow-up (75.0% vs. 18.8%).

Medication for Opioid Use Disorder (MOUD)

At intake, a minority of KORTOS clients reported they had ever received medication from a clinic or doctor's office to help with their substance abuse (before their current MOUD). Of these clients (n =7), 85.7% were prescribed the medication by a doctor in a specialty clinic, 14.3% reported it was dispensed in a clinic, and none were prescribed the medication by a doctor in a general medical practice. The majority of clients (71.4%) reported that they think their use of MOUD helped treat their drug problem.

The majority of clients, who were not incarcerated all 180 days before treatment entry or in the past 6 months at follow-up, (93.8%) reported that they received methadone in the past 6 months at follow-up. About 6% of clients reported receiving Suboxone, and none of the clients received Vivitrol. All of the clients reported that they think their use of MOUD helped treat their drug problem.

Physical Health and Quality of Life

Clients' physical health was also better at follow-up. Clients rated their health, on average, as 2.6 at intake and this significantly increased to 3.1 at follow-up. In addition, no clients rated their overall health as very good or excellent at intake, while the percent increased at follow-up to 43.8%. Also, the average number of days clients reported their physical health was not good decreased significantly from an average of 7.6 days to 2.9 days. The number of days clients' mental health was not good also decreased significantly from intake (10.0) to follow-up (5.0). Clients reported significantly fewer days their poor physical or mental health kept them from doing their usual activities at intake (8.7 days) to follow-up (2.0 days). The percent of clients who reported who reported using alcohol, prescription drugs, or illegal drugs to reduce their physical pain decreased significantly from 87.5% at intake to 37.5% at follow-up.

On a scale from 1 to 10, clients rated their quality of life as significantly higher after participating in the program (7.4 at follow-up compared to 4.2 at intake).

Multidimensional Recovery

Recovery goes beyond relapse or return to occasional drug or alcohol use. The multidimensional recovery measure items from the intake and follow-up surveys to create one measure of recovery. At intake, none of the clients had all positive dimensions of recovery, whereas at follow-up, 31.3% had all positive dimensions.

Satisfaction with Opioid Treatment Program

The majority of clients reported that the program started good (75.0%) and 100% of clients who were still involved in the program reported it was currently good. In addition, 87.5% of clients reported that the treatment episode was working pretty well or extremely well for them. Furthermore, the majority of clients (93.8%) indicated they would refer a close friend or family member to their treatment provider.

On a scale from 1 representing the worst possible experience to 10 representing the best possible experience, clients rated their experience an 8.1 with 81.3% of clients giving a highly positive rating of 8 through 10. In addition, the majority of clients reported that their expectations and hopes for treatment and recovery were met, the treatment approach and method were a good fit for them, they felt the program staff cared about them and their treatment progress, they had input into their treatment goals, plans, and progress, program staff believed in them and believed the treatment would work for them, they fully discussed everything with the counselor/program staff, they felt they had a connection with a counselor or staff person, and they worked on and talked about things that were most important to the client. Further, clients reported many positive aspects of their participation in the program including reduced substance use, the quality of the treatment, improved mental health and their feelings about themselves, improved relationships with others, and improved financial situation.

Areas of Concern

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

Illegal Drug Use

When looking at trends over time in past-30-day use at intake, results show that while prescription opioid decreased gradually over the 14 years from 2007 to 2020 and non-prescribed methadone use has decreased over the past 15 years, heroin use sharply increased beginning in CY 2012 to a high of 72% in CY 2020. Compared to heroin and prescription opioids, methamphetamine use is relatively low; however, use has increased in the past couple of years from 14% in CY 2017 to 41% in CY 2020.

Also, almost one-third of KORTOS clients (31.3%) reported using illegal drugs in the 6 months before follow-up. While this year's follow-up sample size is small and may be affecting the results, 25.0% of clients reported using drugs other than opioids at follow-up, with 18.8% reporting heroin, and 12.5% reporting non-prescribed use of prescription opioids in the 6 months before follow-up. White et al. found that screening positive for just one non-prescribed drug doubled a client's dropout rate and screening for multiple drugs quadrupled it. In addition, continued drug use during medication-assisted treatment has been associated

with early program termination[70, 71] and longer treatment retention has been associated with more positive outcomes.[72, 73]

In addition, although the percent of clients who met DSM-5 criteria for severe SUD decreased at follow-up, 18.8% still met criteria for severe substance use disorder for drug use and 21.4% of clients still had ASI drug composite scores that met the cut-off for severe substance use disorder. While the percent of clients who reported substance use decreased from intake to follow-up, 31.3% of clients still reported experiencing problems associated with drugs and alcohol including cravings, withdrawal, wanting to quit but being unable, or worrying about relapse at follow-up. One-fourth of followed-up clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems at follow-up.

Smoking Rates

Rates tobacco smoking were high for clients at intake (81.3%) and remained high at follow-up (68.8%). Tobacco use is associated with increased mortality, and smoking cessation has been associated with lower alcohol and drug relapse.[74] Smoking has been associated with increased mental health symptoms and physical health problems.[75, 76] There is a commonly held belief that individuals should not attempt to quit smoking while in substance abuse treatment, because smoking cessation can endanger their sobriety. This belief has been refuted by recent empirical research studies.[77] Voluntary smoking cessation during substance abuse treatment has been associated with lower relapse.

In addition, 31.3% of clients reported the use of e-cigarettes at follow-up. In fact, trend analysis shows that the percent of clients reporting e-cigarette use has generally increased over time at follow-up, from 17% in the 2018 report to 31% in the 2023 report. While e-cigarettes are widely believed to be a mechanism for smoking cessation and/or a less dangerous alternative to conventional cigarettes, they also carry their own health risks. Although e-cigarettes contain lower levels of carcinogens compared to regular tobacco cigarettes,[78] the e-cigarette still contains potent cancer-causing toxins as well as chemicals that can trigger

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[70] Davstad, I., Stenbacka, M., Leifman, A., Beck, O., Kormaz, S., & Romelsjö, A. (2007) Patterns of illicit drug use and retention in a methadone program: A longitudinal study. *Journal of Opioid Maintenance 3*(1), 27–34.

[71] White, W., Campbell, M., Spencer, R., Hoffman, H., Crissman, B., & DuPont, R. (2014). Patterns of abstinence or continued drug use among methadone maintenance patients and their relation to treatment retention. *Journal of Psychoactive Drugs, 46*(2), 114-122.

[72] Hubbard, R., Craddock, S., & Anderson, J. (2003). Overview of 5-year follow-up outcomes in the drug abuse treatment outcome studies (DATOS). *Journal of Substance Abuse Treatment, 25*, 125-134.

[73] Gibson, A., Degenhardt, L., Mattick, R., Ali, R., White, J., & O'Brien, S. (2008). Exposure to opioid maintenance treatment reduces long-term mortality. *Addiction, 103*, 462-468.

[74] 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.

[75] Patton, G., Coffey, C., Carlin, J., Sawyer, S., & Wakefield, M. (2006). The course of early smoking: A population-based cohort study over three years. *Addiction, 93*, 1251-1260.

[76] Kalman, D., Morissette, S., & George, T. (2005). Co-morbidity of smoking in patients with psychiatric and substance use disorders. *American Journal of Addictions, 14*(2), 106-123.

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

[78] Goniewicz ML, Knysak J, Gawron M, Kosmider L, Sobczak A, et al. (2014). Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tobacco Control, 23*(2), 133–39.

cardiovascular and lung disease,[79, 80] and gene mutation.[81]

Mental and Physical Health

This is the first annual report in which significant improvements were not found in clients' mental health. The low statistical power resulting from the small sample size may be the primary reason for this finding of a lack of significant improvement in mental health.

Economic Status and Living Circumstances

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.[82] While the percent of clients who reported having difficulty meeting needs for financial reasons decreased at follow-up, more than two-fifths of clients (43.8%) at follow-up still reported having difficulty meeting basic living needs and 31.3% still reported difficulty meeting health care needs in the past 6 months. Also concerning is that three-fourths of the sample was unemployed at follow-up. Trends in economic difficulties show that the number of clients who reported they had difficulty meeting basic living needs and/or health care needs has increased at follow-up since 2017. The resulting financial strain from these economic factors could lead to increased substance use to alleviate the stress.[83] 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.

Study Limitations

The study findings must be considered within the context of the study's limitations. First, for this report year compared to previous years, a considerably smaller number of clients completed a follow-up and an intake because of the COVID-19 pandemic as well as fewer OTPs participating in the outcome evaluation, KORTOS. A smaller number of clients at intake means that there is a smaller pool of eligible follow-up sample clients to pull from. In addition to fewer clients completing an intake assessment, the percent of intake clients not agreeing to be contacted for follow-up has increased. In 2022, 62.0% of the intake sample did not agree to be contacted compared to only 33.0% in 2019.

[79] Drummond, M. B., & Upson, D. (2014). Electronic cigarettes. Potential harms and benefits. *Annals of the American Thoracic Society, 11*(2), 236-242.

[80] Glantz, S. A., & Bareham, D. W. (2018). E-cigarettes: use, effects on smoking, risks, and policy implications. *Annual Review Of Public Health, 39*, 215-235.

[81] Canistro, D., Vivarelli, F., Cirillo, S., Marquillas, C. B., Buschini, A., Lazzaretti, M., et al. (2017). E-cigarettes induce toxicological effects that can raise the cancer risk. *Scientific reports, 7*(1), 1-9.

[82] https://www.samhsa.gov/brss-tacs/recovery-support-tools-resources

[83] 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.

TABLE C.1. NUMBER AND PERCENT OF CLIENTS NOT CONSENTING TO FOLLOW-UP FOR EACH REPORT YEAR

Report year	Intake sample size	Clients NOT consenting to follow-up
2018	514	247 (48.1%)
2019	625	206 (33.0%)
2020	384	174 (45.3%)
2021	233	145 (62.2%)
2022	192	119 (62.0%)
2023	38	16 (42.1%)

In recent years, program intake data collection at the OTPs has decreased, which limits the number of clients the follow-up research team can target for follow-up data collection. Decreasing numbers of participants in KORTOS reduces the generalizability of the outcome findings and the statistical power to detect the effects of the program on outcomes. Increasing efforts to conduct the intake surveys with OTP clients will net more data, more robust and meaningful findings, which help to support the mission of the programs.

Second, because there is no appropriate group of opioid dependent individuals who would like treatment but do not receive it to compare with the KORTOS individuals who participate in treatment, all changes from intake to follow-up cannot be attributed to MOUD.

Third, data included in this report was self-reported by clients. There is reason to question the validity and reliability of self-reported data, particularly with regard to sensitive topics, such as illegal behavior and stigmatizing issues such as mental health and substance use. However, some research has supported findings about the reliability and accuracy of individuals' reports of their substance use.[84, 85, 86] For example, in many studies that have compared agreement between self-report and urinalysis the concordance or agreement is acceptable to high.[87, 88, 89] 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.[90, 91, 92] In other studies, higher percentages of underreporting have been found.[93]

[84] 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.

[85] 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.

[86] 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.

[87] 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.

[88] 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.

[89] 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.

[90] 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.

[91] 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.

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

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

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.[94] 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, sensitivity of the analytic method used.[95] Therefore, 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 opioid replacement treatment program; (b) the follow-up responses are confidential and are reported at a group level, meaning no individual responses are linked to participants' identity; (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; (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.

Conclusion

The 2023 KORTOS evaluation indicates that opioid treatment programs in Kentucky have been successful in facilitating positive changes in clients' lives in a variety of ways, including decreased substance use and decreased severity of substance use. Results also show that clients appreciate and value their experiences in treatment programs and have an improved quality of life after beginning participation in treatment.

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

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

Appendix A. Methods

The KORTOS intake and follow-up interview instruments are modeled after the Kentucky Treatment Outcome Study (KTOS) assessment and are based on theory and research about substance use-related comorbidities relevant to substance use among clients in opioid treatment programs. The assessment's four core components (e.g., substance use, mental health, criminal justice involvement, and quality of life) and three supplemental components (e.g., health status, economic status and living circumstances, and recovery supports) have demonstrated validity and reliability[96] and have been developed in collaboration with key stakeholders to consider the context of Kentucky opioid treatment programs.

KORTOS intake interviews were conducted by a clinician or staff person at the OTP using a web-based interview tool, in which identifying data were encrypted and submitted to the master database on the UK CDAR secure server. At the end of the intake interview, clinicians explained the follow-up study to clients and gave them the opportunity to volunteer to participate. Clients who were interested gave electronic consent to be contacted by UK CDAR BHOS staff members about 6 months later. Follow-up interviews were conducted via telephone using a questionnaire with items and questions similar to the questions in the intake interview.

The target month for the follow-up interview was 6 months after the intake interview was completed. In other words, if a client completed an intake interview in December 2020, the target month for the follow-up interview was June 2021. The window for completing a follow-up interview with an individual selected into the follow-up sample began one month before the target month and spanned until two months after. Therefore, if the target month for a follow-up was June 2021, interviewers began working to locate and contact the individual in May and could work the file until the end of August.

Of the 38 clients who completed an intake interview in 2021, 22 (57.9%) agreed to be contacted for the follow-up study. From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one mailing address) and whose intakes were submitted to CDAR less than 30 days after the intake was completed, which left a sample of 20 clients. Of these clients, 16 completed a follow-up interview (see Table AA.1); thus, the follow-up rate was 80.0%.

The remaining clients were never successfully contacted, or if contacted they never completed the follow-up interview (n = 4, or 20.0% of the cases eligible for follow-up). The only cases not considered accounted for are those individuals who are classified as expired.

[96] Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2020). *Evidence Base for the Kentucky Opioid Replacement Treatment Outcome Study (KORTOS) Assessment and Methods*. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 20)

	Number of Records	Percent
Ineligible for follow-up interview	0	0.0%
	Number of cases eligible for follow-up (n = 20)	
Completed follow-up interviews	16	
Follow-up rate is calculated by dividing the number of completed interviews by the number of eligible cases and multiplying by 100		80.0%
Expired cases (i.e., never contacted, did not complete the interview during the follow-up period)	4	
Expired rate ((the number of expired cases/eligible cases)*100)		20.0%
Refusal	0	
Refusal rate ((the number of refusal cases/eligible cases)*100)		0.0%
Cases accounted for (i.e., records ineligible for follow-up + completed interviews + refusals)	16	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		80.0%

Appendix B provides detailed information on the locating efforts for the 2015 KORTOS follow-up sample.

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

Appendix B. Locating Efforts for the 2015 KORTOS Follow-up Study

Project interviewers documented their efforts (e.g., mailings, phone calls, Internet searches, etc.) to locate each participant included in the sample of individuals to be followed up from July 2013 to June 2014 (n = 350), which is the follow-up period corresponding to the KORTOS 2015 report. All the locator files were examined and used to extract information about the efforts project interviewers made to locate and contact participants as well as the type of contact information provided by participants in the original locator information when the intake interview data was submitted to UK CDAR. A subsample of records was randomly selected and independently examined to check that the procedures for extracting data were reliable and valid. The extraction sheets were compared between the two raters for interrater reliability, which was high (96.1%). The following information is based on the data collected during this review of locator files.

For all 350 records, a total of 2,182 phone calls were made to client phone numbers and 773 calls to contact persons' phone numbers. As Table AB.1 shows, project interviewers made an average of about 6.2 calls to client phone numbers and 2.4 calls to contact persons' phone numbers. Fewer than 40% of clients called in at any point and only 4.3% called-in to complete the interview after receiving the initial mailing without project interviewers putting additional effort into contacting the clients. That means 95.7% of clients took considerable effort to try to locate, contact, and complete follow-up interviews.

A total of 649 mailings were sent to client addresses and 26 mailings were sent to contact persons, an average of 1.9 mailings to clients and 0.1 mailings to contact persons. The research team received returned mail for 12.3% of clients that received mailings to client addresses and 1.4% of clients that received mailings to contact addresses.

In cases where the client contact information was incorrect (i.e., mail was returned, phone number was disconnected), online public directory databases were used to try to verify that we had correct or updated information for the client. Because it had been six months since they provided contact information, we would like to be sure we are not calling or sending mailings to someone other than the client. Therefore, verifying the correct contact information is a critical interim step in the follow-up process to protect confidentiality. For 92.3% of the clients, the interviewers used public searches/directories to verify contact information. If the client information could not be verified, interviewers also used social media and more detailed public directory databases to find updated contact information (52.9%). In cases where very little contact information was given or clients were not successfully located in the ways listed above, more in-depth searching methods were used (28.9%). As a last resort, in the few cases where the client was not successfully located in any of the ways described above, interviewers worked to reach client contacts provided by them at intake (6.7%).

KORTOS 2015 Quality of Data and Locator Efforts

For the 2015 follow-up study, 350 participants were included in the sample of individuals to be followed up from July 2013 to June 2014. Efforts to locate and contact these participants were examined.

Of these clients, 223 completed a follow-up survey for a follow-up rate of 82.6%.

PHONE CALLS

2,955

ESTIMATED TOTAL CALLS

6.2 An estimated total of 2,182 calls were made to client phone numbers, an average of 6.2 per client.

2.4 An estimated total of 773 calls were made to contact phone numbers, an average of 2.4 per client.

84% 5 out of 6 clients had at least one unique contact phone number.

MAILINGS

675

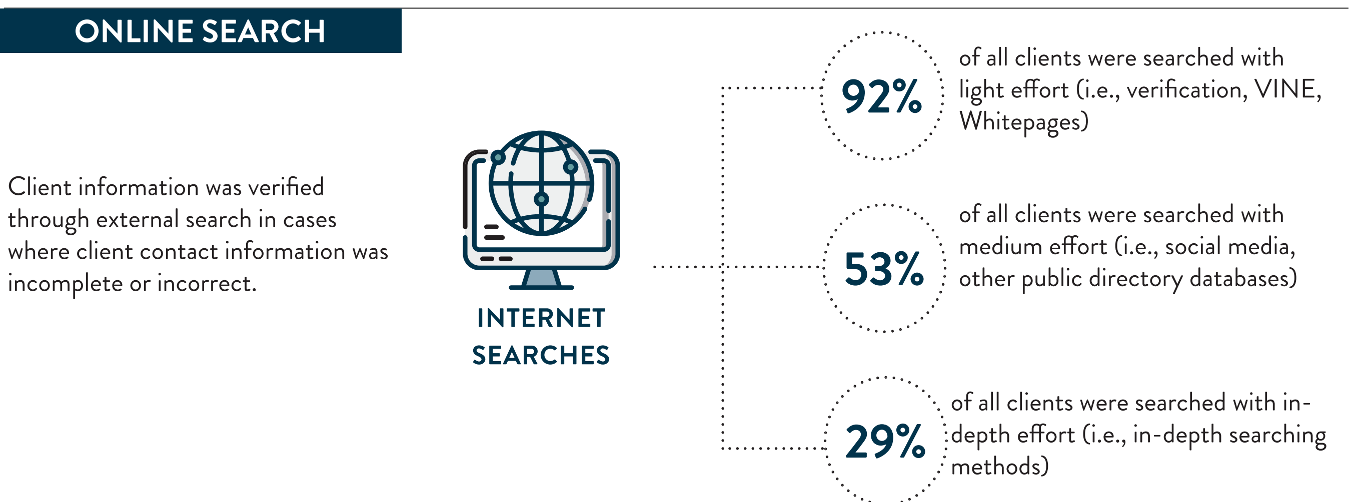
ESTIMATED TOTAL MAILINGS

1.9 An estimated total of 649 mailings were sent to a client address, an average of 1.9 per client.

0.1 An estimated total of 26 mailings were sent to contact addresses, an average of 0.1 per client.

29% Almost 30% of clients had at least one complete, unique contact address.

ONLINE SEARCH



Appendix C. Client Characteristics at Intake for Those Who Completed a Follow-up Interview 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 interview, not selected into the follow-up sample, ineligible for follow-up, not successfully located for the follow-up).

Demographics

There were no significant differences between clients who did and did not complete a follow-up on demographics (see Table AC.1).

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

	FOLLOWED UP	
	NO n = 22	YES n = 16
Age	39.5 years	40.7 years
Gender		
Male	59.1%	62.5%
Female	36.4%	37.5%
Transgender	4.5%	0.0%
Race		
White	95.5%	93.8%
African American	0.0%	0.0%
Other or multiracial	4.5%	6.3%
Marital status		
Never married	18.2%	25.0%
Married	40.9%	31.3%
Separated or divorced	27.3%	12.5%
Widowed	4.5%	6.3%
Cohabiting	9.1%	25.0%

Substance Use at Intake

Use of illegal drugs in the 6 months before entering treatment is presented by follow-up status in Table AC.2. The most frequently reported illegal drugs used in the 6 months before entering treatment were prescription opioids/ opioids, heroin, and marijuana. Significantly more individuals who were not followed up reported using other illicit drugs (hallucinogens, inhalants, or synthetic drugs) compared to individuals who completed a follow-up survey.

TABLE AC.2. PERCENT OF CLIENTS REPORTING ILLEGAL DRUG USE IN THE 6 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 22	YES n = 16
Any illegal drug	100%	100%
Prescription opioid/opiate (illegal use)	90.9%	87.5%
Heroin	45.5%	50.0%
Cannabis/marijuana	40.9%	68.8%
CNS depressants	31.8%	18.8%
Cocaine	13.6%	12.5%
Stimulants (amphetamines, methamphetamine, prescription stimulants)	45.5%	25.0%
Non-prescribed bup-nx	22.7%	6.3%
Non-prescribed methadone	13.6%	0%
Other illicit drugs (hallucinogens, inhalants, synthetic drugs)*	18.2%	0.0%

*$p < .01$.

There were no significant differences between clients who were followed up and not followed up for alcohol use (see Table AC.3).

TABLE AC.3. PERCENT OF CLIENTS REPORTING ALCOHOL USE IN THE 6 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 21	YES n = 12[97]
Alcohol	23.8%	16.7%
Alcohol to intoxication	19.0%	0.0%
Binge drank alcohol (i.e., drank 5 or more [4 or more for women] drinks in 2 hours	14.3%	8.3%

In the 6 months before entering the program, the majority of clients reported smoking tobacco products, with no difference between those who completed a follow-up interview and those who did not (see Table AC.4). There was significant difference between the two groups for the use of smokeless tobacco or e-cigarettes.

TABLE AC.4. PERCENTAGE OF CLIENTS REPORTING TOBACCO USE IN THE 6 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 22	YES n = 16
Smoked tobacco	81.8%	81.3%
Smokeless tobacco*	18.2%	0.0%
E-cigarettes*	4.5%	25.0%

[97] Five individuals had missing data for alcohol use at intake.

*p < .10.

Self-reported severity of alcohol and drug use was measured with Addiction Severity Index (ASI) alcohol and drug composite scores. Alcohol and drug composite scores are presented in Table AC.5 for those clients who were not in a controlled environment all 30 days before entering treatment.[98] The highest composite score is 1.0 for each of the two substance categories.

The majority of clients who were not in a controlled environment all 30 days met or surpassed the Addiction Severity Index (ASI) composite score cutoff for alcohol and/or drug severe SUD with no difference by follow-up status. The average score for the drug severity composite score was 0.34 for clients who did not complete a follow-up interview and 0.39 for clients who did complete a follow-up (see Table AC.5).

TABLE AC.5. SUBSTANCE ABUSE AND DEPENDENCE PROBLEMS AT INTAKE

Recent substance use problems among clients who were....	Not in a controlled environment all 30 days before entering treatment	
	FOLLOWED UP	
	NO n = 22	YES n = 16
Percentage of clients with ASI composite score equal to or greater than cutoff score for ...		
Severe alcohol or drug use disorder	90.5%	100%
Severe alcohol use disorder	10.0%	8.3%
Severe drug use disorder	95.0%	100%
Average composite score for alcohol use[a]	.04	.05
Average composite score for drug use[b]	.34	.39

[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.

There were no significant differences between the groups for having ever been in substance abuse treatment (see Table AC.6). Among clients who reported a history of substance abuse treatment, the average number of lifetime treatment episodes was 4.5 for those who did not complete a follow-up and 1.6 for those who did.

TABLE AC.6. HISTORY OF SUBSTANCE ABUSE TREATMENT IN LIFETIME

	FOLLOWED UP	
	NO n = 22	YES n = 16
Ever been in substance abuse treatment in lifetime	63.6%	87.5%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 14)	(n = 14)
Mean number of times in treatment	4.5	1.6

[98] Clients who were in a controlled environment all 30 days before intake were not included in this analysis because being in a controlled environment limits one's access to substances.

Mental Health at Intake

The mental health questions included in the KORTOS intake and follow-up interviews are not clinical measures, but instead are research measures. A total of 9 questions were asked to determine if they met study criteria for depression, including at least one of the two leading questions: (1) "Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?" and (2) "Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?". There was not a significant difference between clients who completed a follow-up interview and clients who did not complete a follow-up interview for the percent of clients who met criteria for depression: 43.8% vs. 27.3% (see Table AC.7).

A total of 7 questions were asked to determine if clients met study criteria for generalized anxiety, including the leading question: "In the 6 months before entering this program, did you worry excessively or were you anxious about multiple things on more days than not for all 6 months (like family, health, finances, school, or work difficulties)?" There was not a significant difference between clients who completed a follow-up interview and clients who did not complete a follow-up interview for the percent of clients who met criteria for generalized anxiety: 43.8% vs. 50.0%.

Two questions were included in the intake interview that asked about thoughts of suicide and attempted suicide in the 6 months before clients entered treatment. There were no significant differences between clients who were followed up and not followed up for thoughts of suicide or suicide attempts.

TABLE AC.7. PERCENT OF CLIENTS REPORTING MENTAL HEALTH PROBLEMS IN THE 6 MONTHS BEFORE ENTERING THE PROGRAM

	FOLLOWED UP	
	NO n = 22	YES n = 16
Depression	27.3%	43.8%
Generalized Anxiety	50.0%	43.8%
Suicidality (e.g., thoughts of suicide or suicide attempts)	4.5%	6.3%
Positive screen for PTSD	4.5%	12.5%

Physical Health at Intake

To give an idea of the physical health of clients when they entered treatment, Table AC.8 presents the percent of clients that reported health problems at intake. There was not a significant difference between clients who completed a follow-up reported experiencing chronic pain (i.e., pain that lasted more than 3 months) at intake compared to clients who were and were not followed up. 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). The most commonly reported chronic medical problems are presented in Table AC.8: Hepatitis C, arthritis, severe dental disease, cardiovascular disease, and asthma.

TABLE AC.8. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 22	YES n = 16
Chronic pain (lasting at least 3 months)	50.0%	68.8%
Ever told by a doctor that client had one of the 12 chronic medical problems listed	63.6%	56.3%
Hepatitis C	18.2%	12.5%
Arthritis	22.7%	18.8%
Severe dental disease	4.5%	6.3%
Cardiovascular disease	27.3%	12.5%
Asthma	18.2%	18.8%

Socioeconomic Indicators

There were no significant differences between the groups on clients' level of education when entering treatment. Around 40.9% of clients who were not followed up and 37.5% of clients who were followed up reported having a GED or high school diploma. Thirty-six percent of clients who did not complete a follow-up and 31.3% of clients who did complete a follow-up attended vocational school or higher.

TABLE AC.9. CLIENTS' HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE

	FOLLOWED UP	
	NO n = 22	YES n = 16
Highest level of education completed		
Less than GED or high school diploma	22.7%	31.3%
GED or high school diploma	40.9%	37.5%
Vocational school to graduate school	36.4%	31.3%

There were no differences between clients who were followed up and not followed up on employment in the 30 days before entering treatment (see Table AC.10).

TABLE AC.10. EMPLOYMENT IN THE 30 DAYS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 22	YES n = 16
Employment		
Not currently employed	77.3%	68.8%
Full-time	22.7%	18.8%
Part-time	0.0%	12.5%

The majority of clients in both groups reported that their usual living arrangement in the 6 months before entering the program was living in their own home or apartment (see Table AC.11). There were no differences between the groups on clients who considered themselves homeless.

TABLE AC.11. LIVING SITUATION OF CLIENTS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 22	YES n = 16
Usual living arrangement in the 6 months before entering the program		
Own home or apartment	63.6%	62.5%
Someone else's home or apartment	31.8%	37.5%
Institutional facility, hotel or on the street	4.5%	0.0%
Homelessness		
Consider themselves to be currently homeless	9.1%	6.3%

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 interview included several questions about clients' ability to meet expenses for basic needs and food insecurity (SIPP). Clients were asked eight items, five of which asked about difficulty meeting basic needs such as food, shelter, utilities, and telephone, and three items asked about difficulty obtaining needed health care for financial reasons.

Table AC.12 shows that there were no significant difference between clients who were followed up and not followed up on difficulty meeting basic living needs such as shelter, utilities, phone, and food. About 69% of clients who were followed up reported difficulty meeting basic needs at intake compared to 45.5% of clients who were not followed up. In addition, there was no difference between clients who were followed up and clients who were not followed up on being unable to receive needed health care for financial reasons (25.0% and 40.9%, respectively).

TABLE AC.12. DIFFICULTY MEETING BASIC NEEDS IN THE 6 MONTHS BEFORE ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 22	YES n = 16
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)	45.5%	68.8%
Had difficulty obtaining needed health care for financial reasons	40.9%	25.0%

Criminal Justice System Involvement at Intake

Close to one in ten clients in both groups were under supervision by the criminal justice system when they entered the program (e.g., probation, parole), with no significant difference by follow-up status (see Table AC.13).

There was no significant difference in the number of clients who were arrested for any charge in the 6 months before entering the program by follow up status (13.6% vs 12.5%).

There was no significant difference between the groups for the number of clients who were incarcerated at least one night in the 6 months before entering the program.

TABLE AC.13. CRIMINAL JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING TREATMENT

	FOLLOWED UP	
	NO n = 22	YES n = 16
Currently under supervision by the criminal justice system	13.6%	6.3%
Arrested for any charge in the 6 months before entering treatment	13.6%	12.5%
Incarcerated in the 6 months before the program	0.0%	6.3%