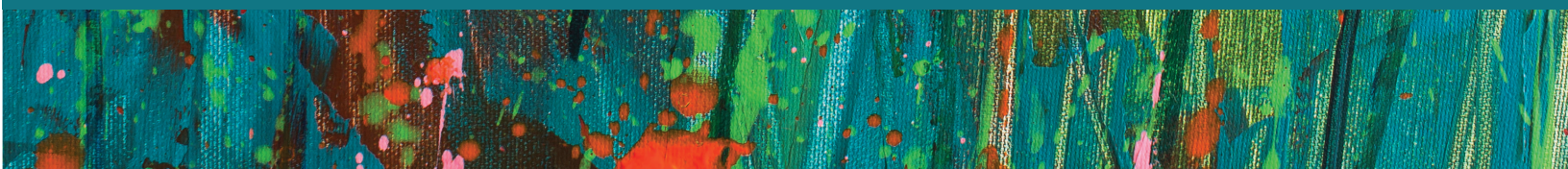
KENTUCKY OPIOID REPLACEMENT TREATMENT PROGRAM OUTCOME STUDY

2019 ANNUAL REPORT



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The 2019 KORTOS report includes data from 625 clients at Kentucky opioid treatment programs (OTPs) who completed both an intake interview between January 1, 2017 and December 31, 2017 and outcome data for 243 clients who completed a 6-month follow-up interview between July 2017 and June 2018.

Suggested citation: Logan, TK, Scrivner, A., Cole, J. & Miller, J. (2019). *Kentucky Opioid Replacement Treatment Program Outcome Study 2019 Annual Report.* Lexington, KY: University of Kentucky, Center on Drug & Alcohol Research.

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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 a statewide 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 health, physical health, and stress, (3) criminal justice involvement, (4) quality of life, (5) education, economic status, and living situation, and (6) recovery supports. This report describes outcomes for 243 clients who attended one of twelve Kentucky OTPs, completed an intake interview between January 1, 2017 and December 31, 2017, agreed to do the follow-up about 6 months later, completed a follow-up interview between July 1, 2017 and June 30, 2018, and were still engaged in an OTP (a follow-up rate of 76.9%).

Who Do the Opioid Treatment Programs Serve?

Overall, in CY 2017, 625 clients from 12 participating Kentucky OTPs completed the KORTOS intake interview.[3] Information from those intakes indicate that clients were an average of 37 years old ranging from 19 to 74 years old. More than half (52.2%) were male and 47.5% were female. Over half of clients (55.2%) self-reported they decided onto get help on their own and 35.2% reported that they were referred to the OTP by a family member, partner, or friend. Over half (51.2%) were unemployed and of those clients, 42.8% reported they were looking for work.

In the six months before entering treatment, 97.0% of clients reported illegal drug use, 22.0% reported alcohol use, and 85.1% reported smoking tobacco. Almost one-quarter of clients reported using only opioids, 70.8% reported using opioids and at least on other class of drugs, and 2.4% of clients reported no opioids use (only other classes of drugs). In the past 30 days at intake, 96.4% of clients reported illegal drug use, 13.5% reported alcohol use, and 84.4% 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 was around 13 years old, first illegal drug use was at about 17 years old, and first tobacco use was between 13 and 14 years old. Results of KORTOS drug trends show that although the majority of clients report illicit use of prescription

[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.

[3] For more information, see: Logan, T., Cole, J., Miller, J., & Scrivner, A. (2016). *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.

opioids when they entered the program, the percent of clients who reported using heroin in the 30 days before entering treatment has increased from CY 2011 to CY 2017.

At intake, clients were asked ten items regarding adverse childhood experiences from the Adverse Childhood Experiences Study (ACE). Results indicated that over three-quarters of clients (77.5%) reported at least one adverse childhood experience. Significantly more men than women reported experiencing no ACE, whereas significantly more women than men reported experiencing 7 – 9 types of ACE. Specifically, 41.4% of women reported emotional maltreatment, 32.0% reported physical maltreatment, and 42.4% reported emotional neglect. Over one-quarter (28.6%) of women reported physical neglect and 30.3% of women reported sexual abuse before the age of 18.
In the six months before entering the program, 57.4% of clients met study criteria for depression, and 62.9% met study criteria for generalized anxiety. About 12% reported suicidal thoughts or attempts in the 6 months before entering the program. In addition, among clients who reported any crime or interpersonal victimization in their lifetime or in the 6 months before treatment entry, 17.4% had post-traumatic stress disorder (PTSD) scores that indicated risk of PTSD.

"The counselor was really wonderful and helped me through the process, I tried using methadone on my own before, but counselor really helped. I needed the counseling."

KORTOS FOLLOW-UP CLIENT

Change in Targeted Factors from Intake to Follow-up

SUBSTANCE USE

When examining client change from the time before intake and the 6-month follow-up period, clients report significant decreases in illicit drug use (97.1% to 49.0% respectively). Overall, 61.9% of clients reported illegal use of prescription opioids in the past 6 months at intake, whereas 15.1% of clients reported illegal use of prescription opioids at follow-up. Almost three-quarters of clients (71.3%) reported past-6-month heroin use at intake and that percent decreased to 20.8% at follow-up. Use of non-prescribed methadone and buprenorphine-naloxone (bup-nx) also decreased significantly. Not only did clients' past-6-month use of opioids decrease significantly from intake to follow-up, but their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, stimulants) decreased as well. In addition, ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) decreased from 95.5% at intake to 14.9% at follow-up. The majority of clients (92.7%) reported experiencing problems with drugs or alcohol (such as craving, withdrawal, wanting to quite and being unable, or worrying about relapse) at intake compared to 30.3% at follow-up.

MENTAL HEALTH, PHYSICAL HEALTH, AND STRESS

There were also improvements in clients' overall past-6-month mental health. Almost two-thirds of clients (62.6%) met study criteria for depression compared to 20.2% of clients at follow-up. Trend reports indicate that there has been a decrease in clients who met study criteria for past-6-month depression at intake and follow-up for this year's report compared to last year's report. Over two-thirds of clients (68.3%) met study criteria for generalized anxiety at intake compared to 21.8% at follow-up.
In addition, there was a

decrease in clients who met study criteria for comorbid depression and generalized anxiety from intake (53.5%) to follow-up (10.3%). Further, 13.2% of clients reported suicidal ideation or attempts at intake compared to 4.5% at follow-up. Trends, however, show that in this report year, fewer clients reported suicidal ideation and attempts at intake compared to previous years.

Further, stress and physical health were better for clients at follow-up. Specifically, clients reported significantly reduced stress-related health consequences, number of days of poor physical and mental health, and number of days their physical or mental health problems limited their daily activities at follow-up when compared to intake. Significantly fewer clients reported they had experienced chronic pain in the 6 months before follow-up and reports of chronic pain at follow-up are lower this year compared to last year's report.

CRIMINAL JUSTICE INVOLVEMENT

A minority of KORTOS clients reported criminal justice system involvement. In the 6 months before the intake was completed, 18.1% of clients reported being arrested compared to only 6.6% at follow-up. Further, 17.4% of clients reported being incarcerated in the 6 months before treatment and 7.5% of clients reported being incarcerated in the past 6 months at follow-up. Compared to previous years, the percent of clients reporting an arrest at intake this year decreased slightly, but the percent of clients reporting an arrest at follow-up increased slightly. Trend analyses show that the percent of clients who spent at least one night in jail were consistent over the past 4 years at both intake and follow-up.

QUALITY OF AND SATISFACTION WITH LIFE

Clients rated their quality of life and their satisfaction with their lives as significantly higher after participating in the program. Trend analyses show that these high quality of life and satisfaction with life ratings at follow-up have been consistent over the past 4 years.

ECONOMIC STATUS AND LIVING CIRCUMSTANCES

KORTOS clients showed improvements in economic and living circumstances from intake to follow-up. The percent of clients reporting their highest level of education was attending/completing vocational school, college, or graduate school increased from 41.0% at intake to 63.5% at follow-up. The average number of months clients reported working in the past 6 months increased significantly from 2.6 months at intake to 3.2 months at follow-up. Furthermore, 44.3% of clients reported being currently employed full time at follow-up compared to 30.2% at intake. In addition, the percent of clients who considered themselves homeless in the past 6 months decreased significantly from 15.7% at intake to 8.3% at follow-up. At intake, 46.1% of clients reported having difficulty meeting basic living needs (e.g., food, shelter, utilities, and telephone) for financial reasons in the past 6 months. At follow-up, this number decreased to 32.8%. Trend reports from the past four reports indicate that while the number of clients reporting difficulty meeting basic living needs has decreased slightly at intake, it remained steady at follow-up this year. The number of clients who reported they had difficulty obtaining health care (e.g., doctor visits, dental visits, and prescription medications) for financial

"Everyone understood what I was going through. It felt nice that people took the time to talk to support you."

KORTOS FOLLOW-UP CLIENT

reasons decreased from 29.0% at intake to 13.3% at follow-up. Overall, the percent of clients reporting difficulty meeting basic health care needs at follow-up has decreased since 2015.

RECOVERY SUPPORTS

At intake, 16.3% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days compared to 45.4% of clients at follow-up. Of those clients who attended meetings at intake (n = 39), 64.1% of clients also attended meetings in the 30 days before follow-up. In addition, of those who did not attend mutual health recovery group meetings at intake (n = 201), 41.8% attended at least one meeting in the past 30 days at follow-up. The average number of people clients said they could count on for recovery support increased significantly from intake to follow-up.

GLOBAL FUNCTIONING

An index of global functioning 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 was computed for clients at intake and follow-up. Almost all clients had worse functioning at intake while 45.5% had worse functioning at follow-up. In addition, in a multivariate analysis, controlling for the other factors, clients who were not employed as their usual employment at intake, clients who were homeless at any point in the 6 months before entering the program, and clients who had been arrested and/or incarcerated in the 6 months before entering the program had significantly greater odds of having worse functioning at follow-up.

TREATMENT PROGRAM SATISFACTION

Program clients reported high levels of satisfaction with their program experience. Specifically, the majority of clients reported that they were encouraged to talk about and decide their program goals, that it did not take long to get into services and that the services were available at times that were convenient for the client. About 84% of clients reported that even if given other choices, they would go to the same treatment program again if they needed to. In addition, clients reported many positive aspects of their participation in the program including reduced substance use, improved financial situation, improved mental health and their

2019 Report Highlights

REPORTED ANY ILLEGAL DRUG USE

97% at intake | **49%** at follow-up

MET STUDY CRITERIA FOR DEPRESSION

63% at intake | **20%** at follow-up

CURRENTLY EMPLOYED FULL-TIME

30% at intake | **44%** at follow-up

REPORTED ANY OF THE FUNCTIONING DIFFICULTIES

98% at intake | **46%** at follow-up

feelings about themselves, and improved relationships with others.

AREAS OF CONCERN

Several findings suggest opportunities to provide or target additional support for clients. First, almost half of KORTOS clients reported using illegal drugs in the 6 months before follow-up. Continued drug use during medication assisted treatment has been associated with early program termination[4, 5] and longer treatment retention has been associated with more positive outcomes.[6, 7]. Additionally, smoking was very high for clients at intake (85.0%) and remained high at follow-up (85.4%). Smoking has been associated with increased mental health symptoms and physical health problems. Further, while the percent of participants reporting having difficulty meeting basic needs for financial reasons decreased from intake to follow-up, 32.8% of clients still reported having difficulty meeting basic living needs at follow-up. Similarly, while the percent of clients reporting full-time employment increased significantly, 42.6% were unemployed at follow-up.

There were several gender differences in targeted factors. Significantly more men reported alcohol intoxication and binge drinking at intake and using smokeless tobacco at intake and follow-up.

Women reported a higher average number of days of poor mental health at intake and follow-up compared to men. Women also reported a significantly higher average number of days poor physical or mental health limited their activities at intake. Further, women had significantly higher average scores on the stress-related health consequences scale at intake compared to men. Significantly more women reported being a victim of sexual assault at both intake and follow-up compared to men. In addition, significantly more women reported being abused by a dating or intimate partner in the past 6 months at intake.

In the past 6 months at both intake and follow-up, men reported working a greater average number of months (3.2 and 3.7, respectively) compared to women (2.1 and 2.8, respectively). Fewer women reported being employed full-time or part-time at least one month in the past 6 months at both intake and follow-up compared to men—a trend which has been consistent over the past 5 years.

Among individuals who were currently employed, men had a significantly higher median hourly wage than women at both intake and follow-up. At intake, employed women made only $0.78 for every dollar employed men made and at follow-up, the gap in median hourly wages was still present, with employed women making only $0.79 for every dollar employed men made.

The 2019 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, decreased involvement with the criminal justice system, improved quality of life, improved health status, decreased economic hardship, and more support for recovery.

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[4] 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.

[5] 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.

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

[7] 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.

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 4.1% of individuals 18 years and older report nonmedical use of pain relievers.[2] Since 1999, the rate of deaths from drug overdose involving opioids has increased to 6 times higher in 2017.[8] Heroin and prescription opioids were the primary drug class involved in drug overdose deaths.[9] In 2017, 47,600 drug overdose deaths out of 70,237 that occurred in the U.S. involved an opioid.[10] Specifically, in 2017, overdose deaths related to opioid use were higher in Kentucky (27.9 deaths per 100,000) compared to the rest of the nation (14.6 deaths per 100,000).[11]

One of the key methods for treating persons addicted to opioids is through medication assisted therapy (or treatment, MAT) 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 medication-assisted therapy.[12] These federally regulated opioid treatment programs (OTPs) provide evidence-based, clinically monitored, medication-assisted therapy with methadone or bup-nx.[9] 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.[13, 14, 15] The number of persons receiving methadone in substance use treatment in Kentucky rose from 2009 to 2012, but decreased in 2013 while the number of persons receiving bup-nx multiplied by 5 from 2011 to 2013.[16]

In 2007, Kentucky OTPs began collecting state-specific outcome data on medication-assisted therapy. 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

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[8] https://www.cdc.gov/drugoverdose/epidemic/index.html

[9] Slavova, S., Akers,D., & Rock, P. (2016). *Kentucky Resident Drug Overdose Deaths, 2015*. Lexington, KY: Kentucky Injury Prevention and Research Center.

[10] https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates.

[11] https://www.drugabuse.gov/opioid-summaries-by-state/kentucky-opioid-summary

[12] Office of the Assistant Secretary for Planning and Evaluation. (2015, March 26). O*pioid 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.

[13] 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).

[14] 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.

[15] Mattick, R. P., 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.

[16] Substance Abuse and Mental Health Services Administration. (2015). Mental health barometer: Kentucky, 2014. HHS Publication No. SMA-15-4895KY. Rockville, MD: Substance Abuse and Mental Health Services Administration.

of treatment outcomes in Kentucky's communities. The KORTOS project collects data from clients receiving medication-assisted treatment 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 2017, twelve Kentucky licensed OTPs submitted data for KORTOS.[17]

In this annual report, data are included for 625 clients who completed an intake and 243 clients from Kentucky OTPs who completed an intake interview between January 1, 2017 and December 31, 2017, agreed to do the follow-up, were still engaged in an OTP about 6 months after intake, and who completed a follow-up interview between July 1, 2017 and June 30, 2018.

Results are reported within eleven main sections for the overall sample and separately by gender where there were significant differences.

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 2017 and who had completed an intake (n = 625) as well as clients who completed a 6-month follow-up interview (n = 243).

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 medication-assisted treatment history.

Section 3. Multivariate Analysis of Relapse. This section focuses on a multivariate analysis examining factors related to relapse in the 2019 KORTOS follow-up sample.

Section 4. Mental Health, Physical Health, and Stress. This section examines changes in self-reported mental health, physical health, and stress from intake to follow-up. Specifically, this section examines: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicide ideation and attempts, (5) general health status, (6) perceptions of physical and mental health, (7) chronic pain, (8) health insurance, (9) stress related health consequences, and (10) victimization experiences.

Section 5. 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,

[17] In 2017, 12 OTPs submitted intake surveys for clients: Behavioral Health Group, Bluegrass.org/Narcotics Addiction Program, Center for Behavioral Health –Elizabethtown, Center for Behavioral Health -Frankfort, Center for Behavioral Health -Louisville, M.O.R.E. Center, Northern Kentucky Medical Clinic, Paducah Professional Associates, Perry County Treatment Services, Pikeville Treatment Center, Ultimate Treatment Center, and Western Kentucky Medical.

and (5) criminal justice supervision status.

Section 6. Quality of Life. This section describes change in quality of life ratings from intake to follow-up including: (1) quality of life ratings and (2) satisfaction with life.

Section 7. 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 8. Change in 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 9. Client Global Functioning. This section describes an index of global functioning 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 functioning from intake to follow-up is presented. Furthermore, a multivariate analysis was conducted to examine the intake indicators of global functioning and their association with worse global functioning at follow-up.

Section 10. Client Satisfaction with the Opioid Treatment Programs. This section describes: (1) overall client satisfaction with the program, (2) clients' ratings of program experiences, and (3) positive and negative aspects of program participation.

Section 11. Conclusion and Implications. This section summarizes the highlights from the evaluation results and suggests implications from these findings for the state.

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 2017 and who had completed an intake assessment (n = 625), including clients who also completed a 6-month follow-up interview (n = 243).

KORTOS includes a face-to-face interview with program staff at the beginning of a new medication-assisted treatment episode. 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, 2017 to December 31, 2017). In 2017, 625 adults completed an intake interview[19] that was submitted by one of 12 Kentucky licensed OTPs to UK CDAR.[20] The first section below 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 (52.2%) and most were White (96.5%). Clients were, on average, 37 years old, with the youngest client being 19 and the oldest being 74 years old. Overall, 57.6% were married or cohabiting, 22.1% of clients had never been married (and were not cohabiting), 18.7% were separated or divorced, and 1.6% were widowed. Close to 41% of clients 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 (78.4%) indicated they lived in a metropolitan community, 16.7% lived in a non-metropolitan community, and 4.8% were from a very rural community.

[18] Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2016). *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 2017, 12 OTPs submitted intake surveys for clients: Behavioral Health Group, Bluegrass.org/Narcotics Addiction Program, Center for Behavioral Health –Elizabethtown, Center for Behavioral Health -Frankfort, Center for Behavioral Health -Louisville, M.O.R.E. Center, Northern Kentucky Medical Clinic, Paducah Professional Associates, Perry County Treatment Services, Pikeville Treatment Center, Ultimate Treatment Center, and Western Kentucky Medical.

TABLE 1.1. DEMOGRAPHICS FOR ALL KORTOS CLIENTS AT INTAKE (N = 625)[21, 22]

Age	36.9 years (Min. = 19, Max. = 74)
Gender	
Male	52.2%
Female	47.5%
Transgender	0.3%
Race	
White/Caucasian	96.5%
Black/African American	1.0%
Other or multiracial	2.6%
Marital status	
Never married	22.1%
Separated or divorced	18.7%
Married or cohabiting	57.6%
Widowed	1.6%
Have children under the age of 18 who live with them	40.5%
Type of community	
Metro	78.4%
Non-metro	16.7%
Very rural	4.8%

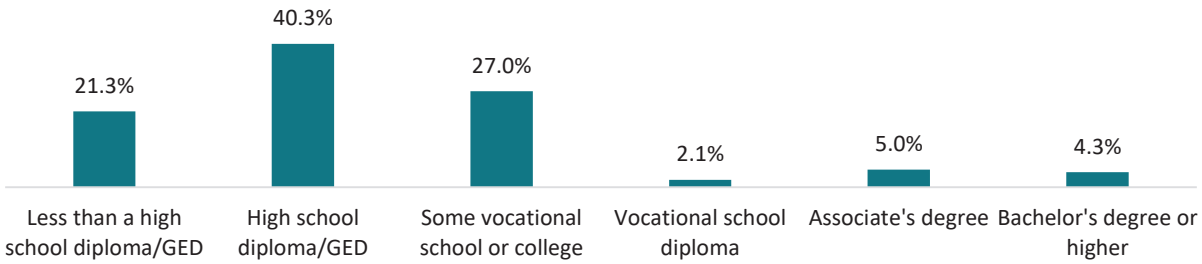
EDUCATION

Around 21% of clients had less than a high school diploma or GED at intake (see Figure 1.1). A little over 40% of the sample had a high school diploma or GED and 27.0% of clients had completed some vocational/technical school or college. Only a minority of clients had completed vocational/technical school (2.1%), an associate's degree (5.0%), or a bachelor's degree or higher (4.3%).

[21] 11 clients had incorrect birthdates and, therefore, age could not be determined.

[22] 171 clients either did not indicate a county of residence or lived in another state.

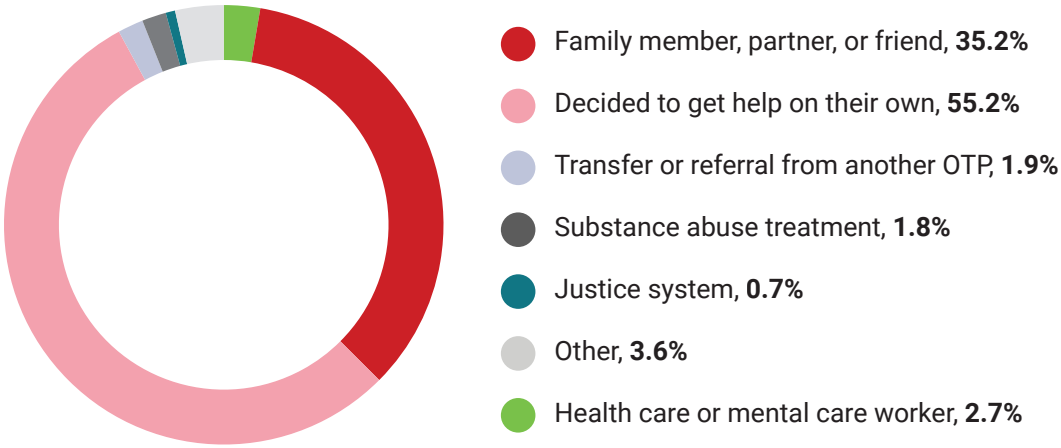
FIGURE 1.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 625)



SELF-REPORTED REFERRAL SOURCE

Figure 1.2 shows the self-reported treatment referral source for all KORTOS clients. More than one-third of clients (35.2%) reported they were referred by a family member, partner or friend and 55.2% decided to get help on their own. A small percentage of clients (2.7%) were referred by a health care or mental health care worker, 1.9% were transferred or referred by another OTP, 1.8% were referred by a substance abuse treatment facility, and 3.6% were referred by other sources.

FIGURE 1.2 SELF-REPORTED REFERRAL SOURCE FOR ALL KORTOS CLIENTS AT INTAKE (N = 625)



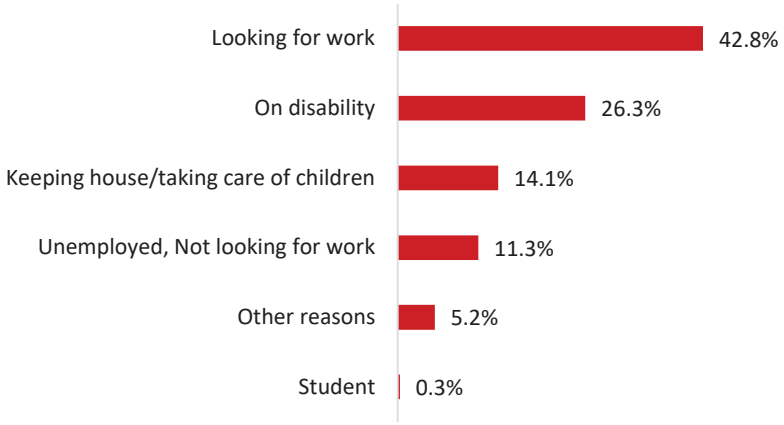
EMPLOYMENT

More than 2 in 5 clients (43.5%) reported they had not worked in the past 6 months, 14.1% had worked 1 to 3 months, and 42.4% had worked 4 or more months (not depicted in figure). Over half of clients (51.2%) reported being unemployed, 35.2% reported they were currently employed full-time, and 13.6% 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 = 281), the median hourly wage was $12.00.

FIGURE 1.3. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 625)

Figure 1.4 shows that of the individuals who were currently unemployed at intake (n = 320), over 40% stated they were looking for work, 26.3% were on disability, 14.1% were keeping the house or taking care of children full-time at home, 11.3% were unemployed and not looking for work, 0.3% were students, and the remaining 5.2% gave other reasons for not being employed (e.g., on furlough or temporarily laid off, retired, or in a controlled environment).

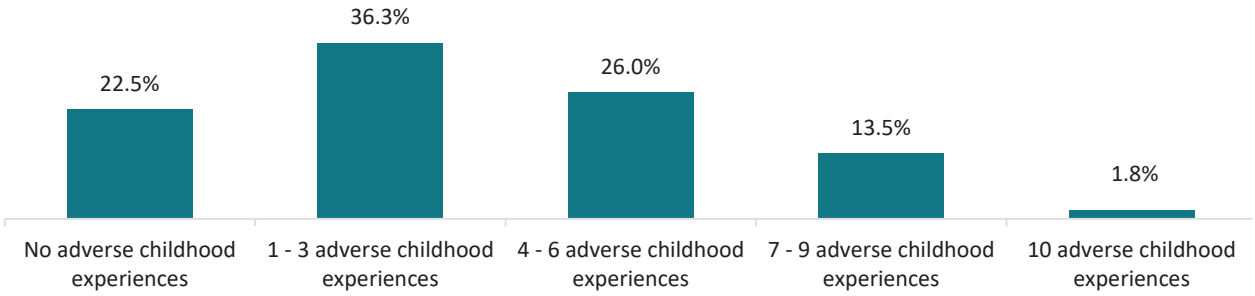
FIGURE 1.4. OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 320)



ADVERSE CHILDHOOD EXPERIENCES AND VICTIMIZATION

At intake, clients were asked ten items regarding adverse childhood experiences from the Adverse Childhood Experiences Study (ACE).[23, 24, 25] 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 5 types of household dysfunction before the age of 18. Figure 1.5 shows that 22.5% reported they did not experience any of the ACE included in the assessment. Over one-third (36.3%) reported experiencing 1 to 3 ACE, 26.0% reported experiencing 4 – 6 ACE, and 13.5% reported experiencing 7 – 9 ACE. Only 1.8% 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 = 623)[26]



[23] 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.

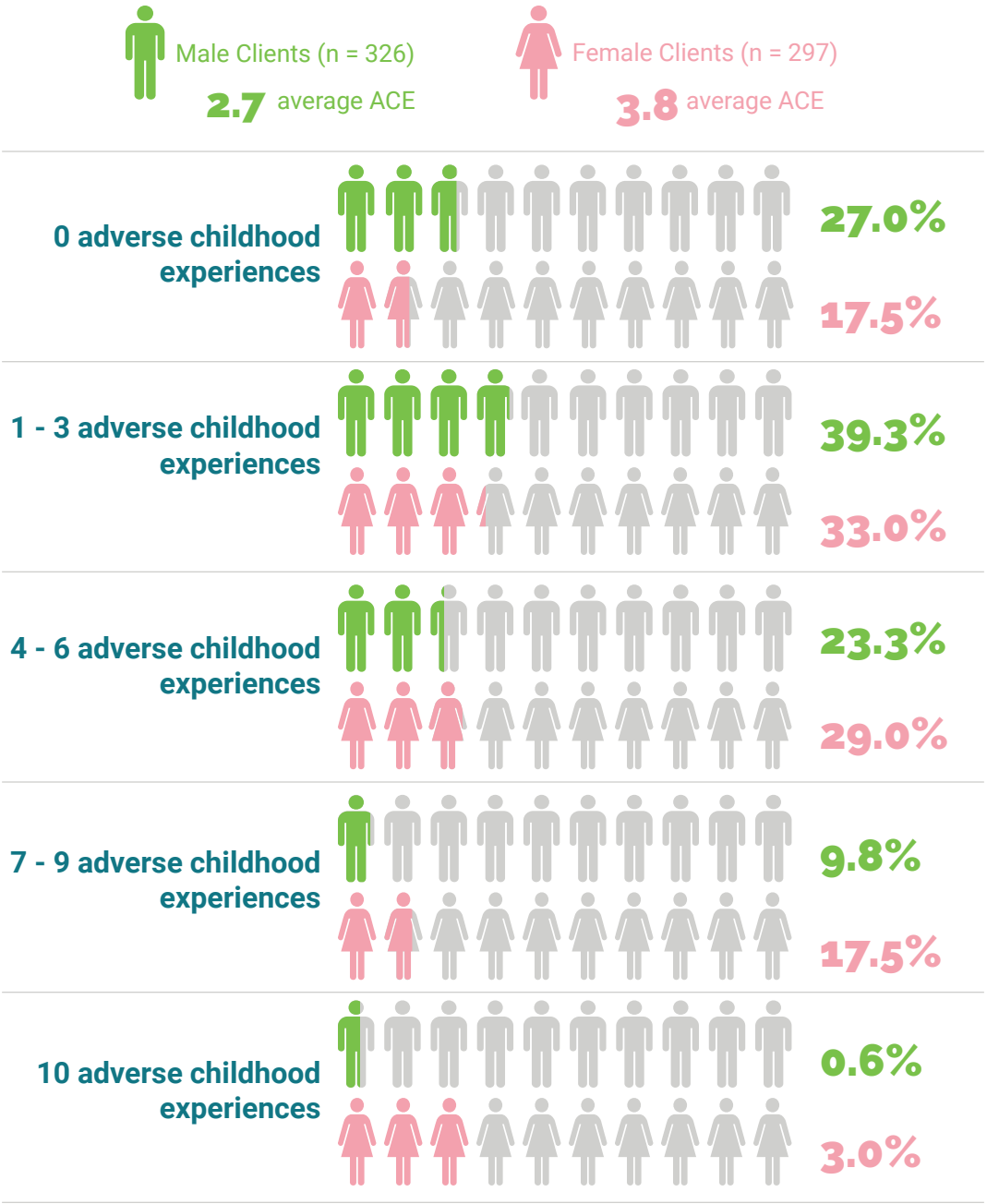
[24] Centers for Disease Control and Prevention. (2014). *Prevalence of individual adverse childhood experiences*. Atlanta, GA: National Center for Injury Prevention and Control, Division of Violence Prevention. http://www.cdc.gov/violenceprevention/acestudy/prevalence.html.

[25] 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).

[26] Because this section compares men and women, transgender clients were not included in this analysis.

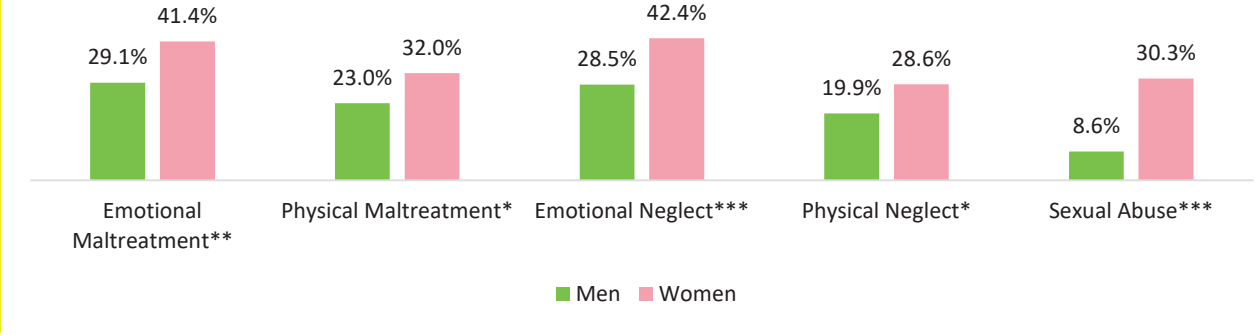
There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.6). Significantly more men than women reported experiencing no ACE, whereas significantly more women than men reported experiencing 7 – 9 types of ACE.

FIGURE 1.6. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER (N = 625)



About 41% of women reported they had experienced emotional maltreatment in their childhood, compared to 29.1% of men (see Figure 1.7). Around one-third of women and 23.0% of men reported physical maltreatment. Significantly more women than men also reported emotional neglect (42.4% vs. 28.5%), physical neglect (28.6% vs. 19.9%), and sexual abuse (30.3% vs. 8.6%) in their childhood.

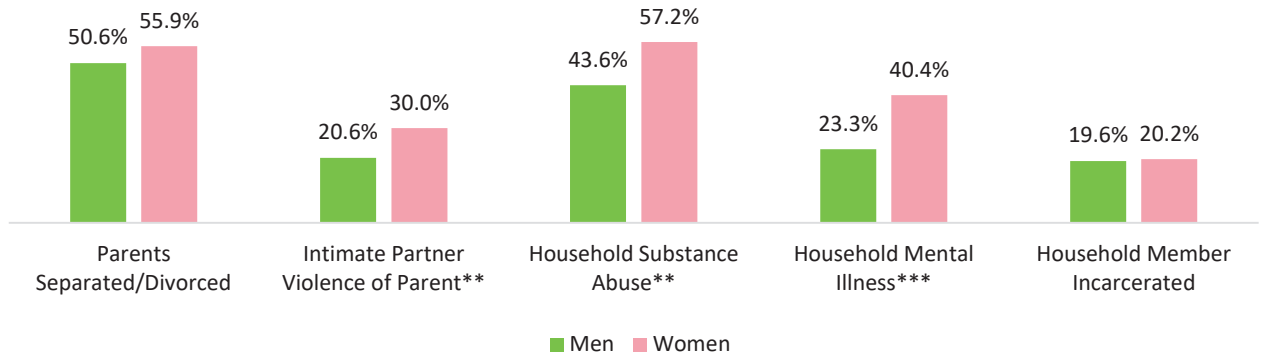
FIGURE 1.7. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD BY GENDER (N = 623)



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

Most clients reported their parents were divorced or lived separately and about 1 in 5 individuals reported a household member had been incarcerated (see Figure 1.8). Significantly more women than men reported they had witnessed intimate partner violence of a parent, had a household member with a substance abuse problem, and a household member with a mental illness or had committed suicide.

FIGURE 1.8. HOUSEHOLD RISKS IN CHILDHOOD BY GENDER (n = 623)

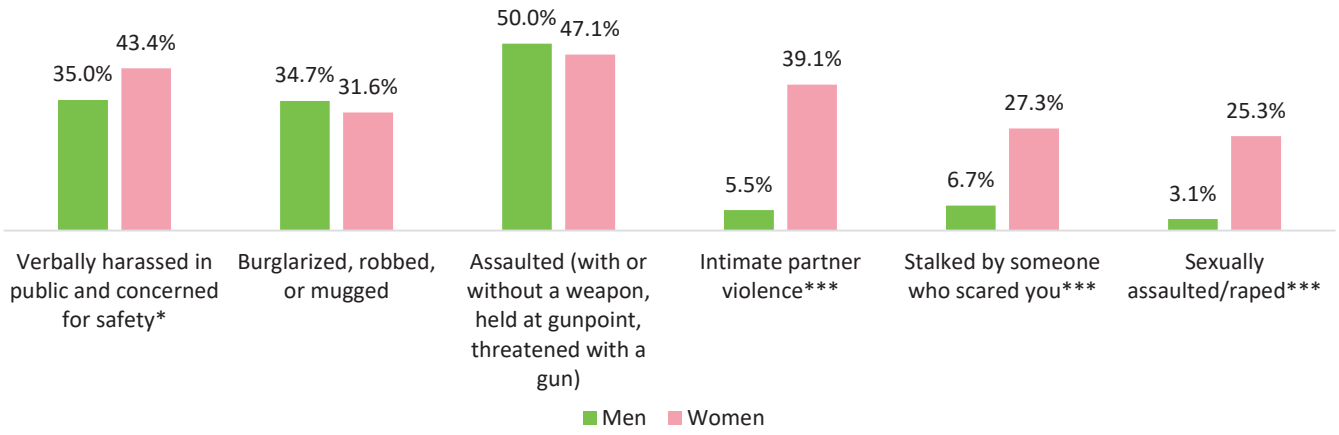


**p < .01, ***p < .001.

VICTIMIZATION EXPERIENCES

Clients were also asked about victimization experiences (including when they may have been the victim of a crime, harmed by someone else, or felt unsafe) they had experienced in their lifetime and in the 6 months before entering the treatment program. The results of the most commonly reported experiences are presented by gender in Figure 1.9. Similar percentages of men and women reported ever being the victims of home burglary, robbery, or mugging, and assault (other than IPV). Compared to men, significantly higher percentages of women reported ever being verbally harassed in public and concerned for their safety, intimate partner violence (including controlling behavior), stalked by someone who scared them, and sexually assaulted or raped.

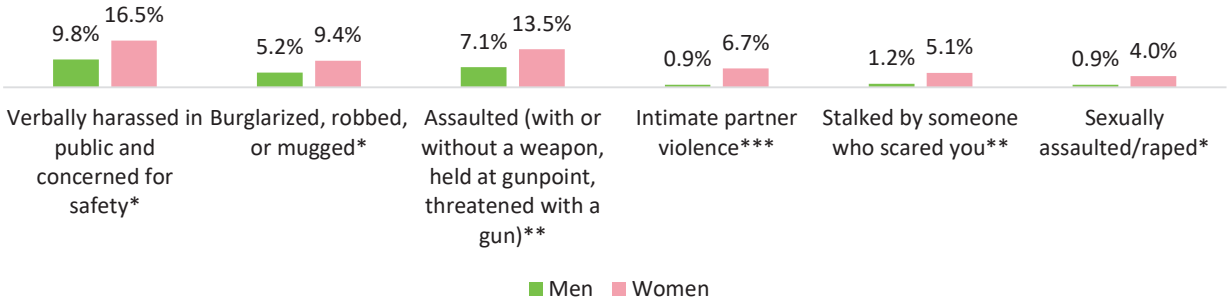
FIGURE 1.9. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 623)



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

Smaller percentages of clients reported experiencing crime and interpersonal victimization in the 6 months before entering programs (see Figure 1.10). However, the pattern of gender differences was similar to lifetime prevalence percentages. Significantly higher percentages of women than men reported having been verbally harassed in public and concerned for their safety, a victim of a home burglary, robbery, or mugging, assault (other than IPV), intimate partner violence (including controlling behavior), stalked by someone who scared them, and sexually assaulted or raped.

FIGURE 1.10. PAST-6-MONTH CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 623)



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

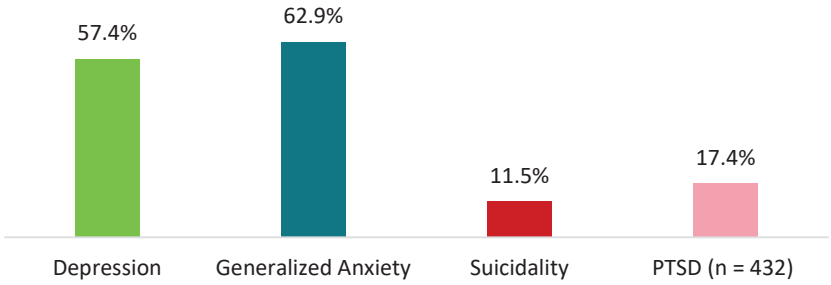
MENTAL HEALTH

At intake, 57.4% of KORTOS clients met study criteria for depression in the past 6 months (see Figure 1.11). Additionally, 62.9% of clients met study criteria for generalized anxiety at intake. Almost 12% of clients reported suicidal thoughts or attempts in the 6 months before entering the program. Among the individuals who completed an intake interview after the PTSD items were added and who reported any crime or interpersonal victimization (n = 432)[27], 17.4% had PTSD scores that indicated a risk of PTSD.[28]

[27] Individuals who reported no to all victimization questions were not asked the PTSD symptom items; thus, 432 individuals had PTSD scores at intake. A score of 10 or higher is indicative of clinically significant PTSD symptomatology.

[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 1.11. DEPRESSION, GENERALIZED ANXIETY, SUICIDALITY, AND POST TRAUMATIC STRESS DISORDER IN THE PAST 6 MONTHS AT INTAKE (N = 625)



PHYSICAL HEALTH

At intake, clients reported an average of 11.2 days of poor physical health in the past 30 days and an average of 14.4 days of poor mental health in the past 30 days (see table 1.2). About 44% of clients reported chronic pain in the 6 months before entering the program. The majority of clients (55.2%) reported they had at least one of the 15 chronic health problems listed on the intake interview. The most common medical problems were hepatitis C, arthritis, cardiovascular disease, and asthma.

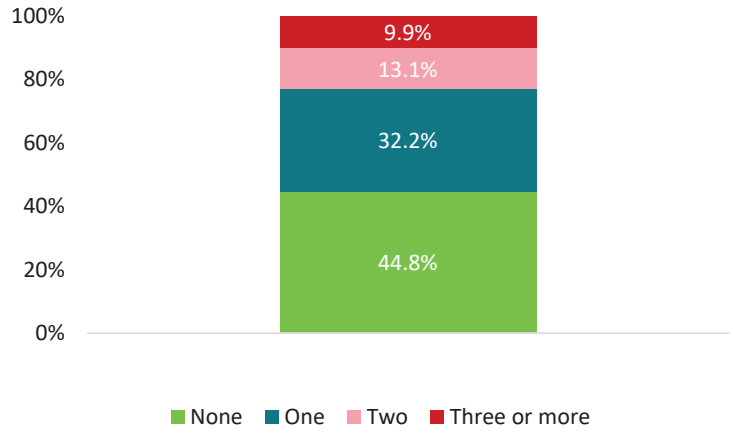
The most common insurance provider reported at intake was Medicaid (59.5%; see Table 1.2). Two in ten clients did not have any insurance. Small percentages of clients had insurance through an employer, including through a spouse, partner, or self-employment, Medicare, Tricare/Champus, and through the Health Exchange.

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KORTOS CLIENTS AT INTAKE (N = 625)

Average number of poor health days in past 30 days	11.2
Average number of poor mental health days in past 30 days	14.4
Average number of days poor physical or mental health limited activities	11.1
Chronic pain	44.3%
At least one chronic medical problem	55.2%
Hepatitis C	51.3%
Arthritis	24.6%
Cardiovascular/heart disease	19.4%
Asthma	14.5%
Medical insurance	
No insurance	20.3%
Medicaid	59.5%
Through employer (including spouse's employer, parents' employer, and self-employed)	9.3%
Medicare	7.4%
VA/Champus/Tricare	2.1%
Through health exchange	1.1%

Figure 1.12 shows the percent of clients who reported having different numbers of chronic medical problems at intake. A little less than half reported no problems, and almost one-third reported one chronic medical problem. About 13% reported two chronic medication problems and one in 10 reported having three or more chronic medical problems.

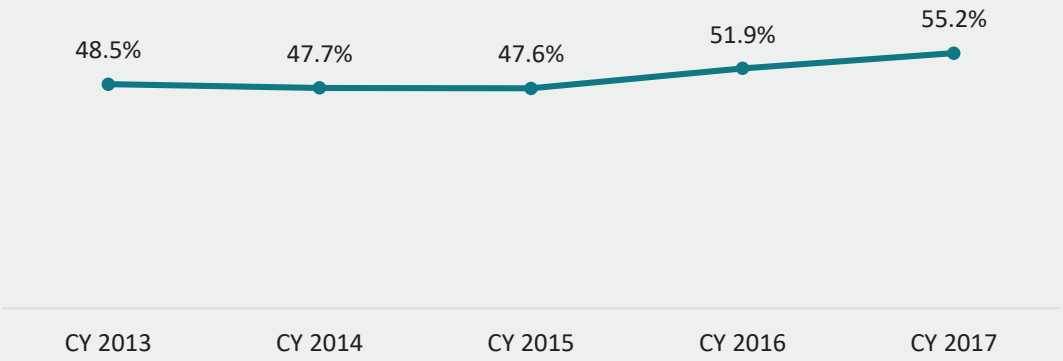
FIGURE 1.12. NUMBER OF CHRONIC MEDICAL PROBLEMS AT INTAKE FOR TOTAL SAMPLE (N = 625)



Trend Alert: Chronic Medical Problems at Intake

At intake, clients were asked if, in their lifetime, they have been told by a doctor they have 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 (49%) to CY 2016 (52%) and has increased slightly in CY 2017 to 55.2%.

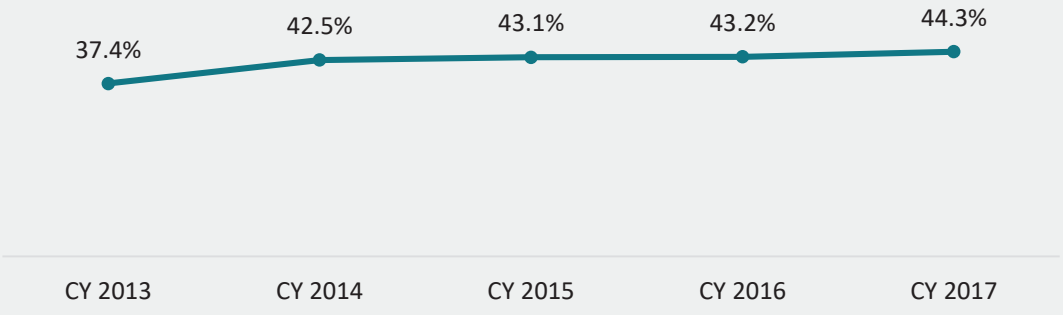
FIGURE 1.13. TRENDS IN CHRONIC MEDICAL PROBLEMS AT INTAKE



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 2017 44.3% reported experiencing chronic pain.

FIGURE 1.14. TRENDS IN CHRONIC PAIN AT INTAKE



SUBSTANCE USE

The majority of KORTOS clients who completed an intake interview reported using any illegal drugs (97.0%) and smoking tobacco (85.1%) while almost one-quarter of clients (22.0%) reported using alcohol in the 6 months before intake (see Figure 1.15). The drug classes reported by the greatest number of clients were prescription opioids/opiates[29] (63.2%), heroin (70.6%), marijuana (53.0%), and tranquilizers (32.6%; not represented in a figure). Similarly, 96.4% reported using illegal drugs, 84.4% reported smoking tobacco, and 13.5% reported using alcohol in the 30 days before entering treatment.

FIGURE 1.15 ALCOHOL, DRUG, AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE TREATMENT[30]

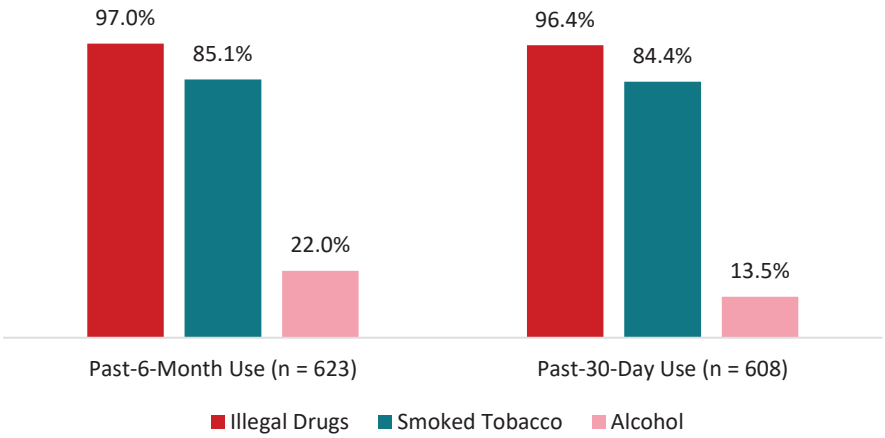


Figure 1.16 presents the percentage distribution of individuals who used alcohol and/or illegal drugs in the 6 months before entering the program. Among the individuals who were not incarcerated all 180 days before entering the program, only 2.6% reported no alcohol or drug use, 0.5% reported alcohol use only, 75.4% reported illegal drug use only, and 21.5% reported both alcohol and illegal drug use.

"[The program] saved my life. Staff made me feel welcome and cared for."

KORTOS FOLLOW-UP CLIENT

[29] For brevity's sake, the class of substances including prescription opiates and opioids will be referred to as opioids.

[30] 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, 2 clients were excluded from the past-6-month substance use and 17 clients were excluded from the past-30-day use.

FIGURE 1.16. PAST-6-MONTH ALCOHOL AND ILLEGAL DRUG USE AT INTAKE FOR THOSE NOT INCARCERATED ALL 180 DAYS BEFORE ENTERING THE PROGRAM (N = 623)

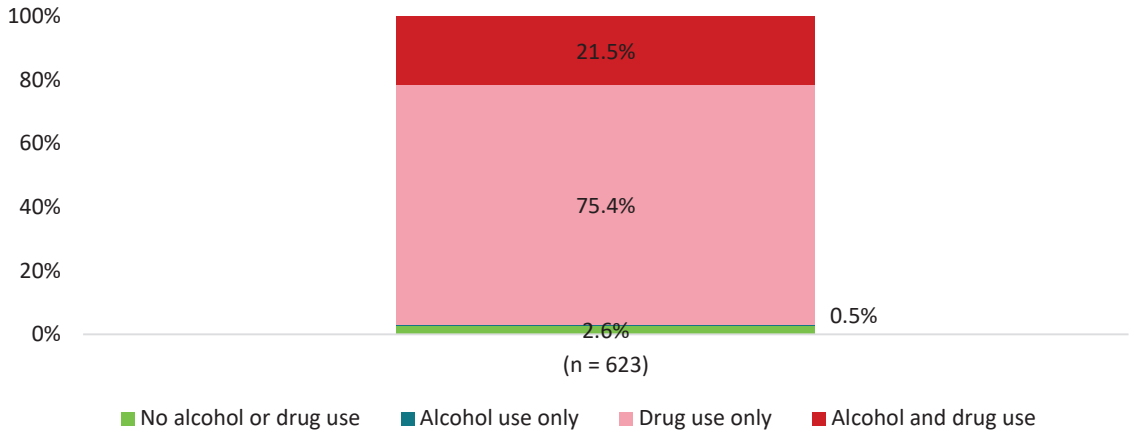
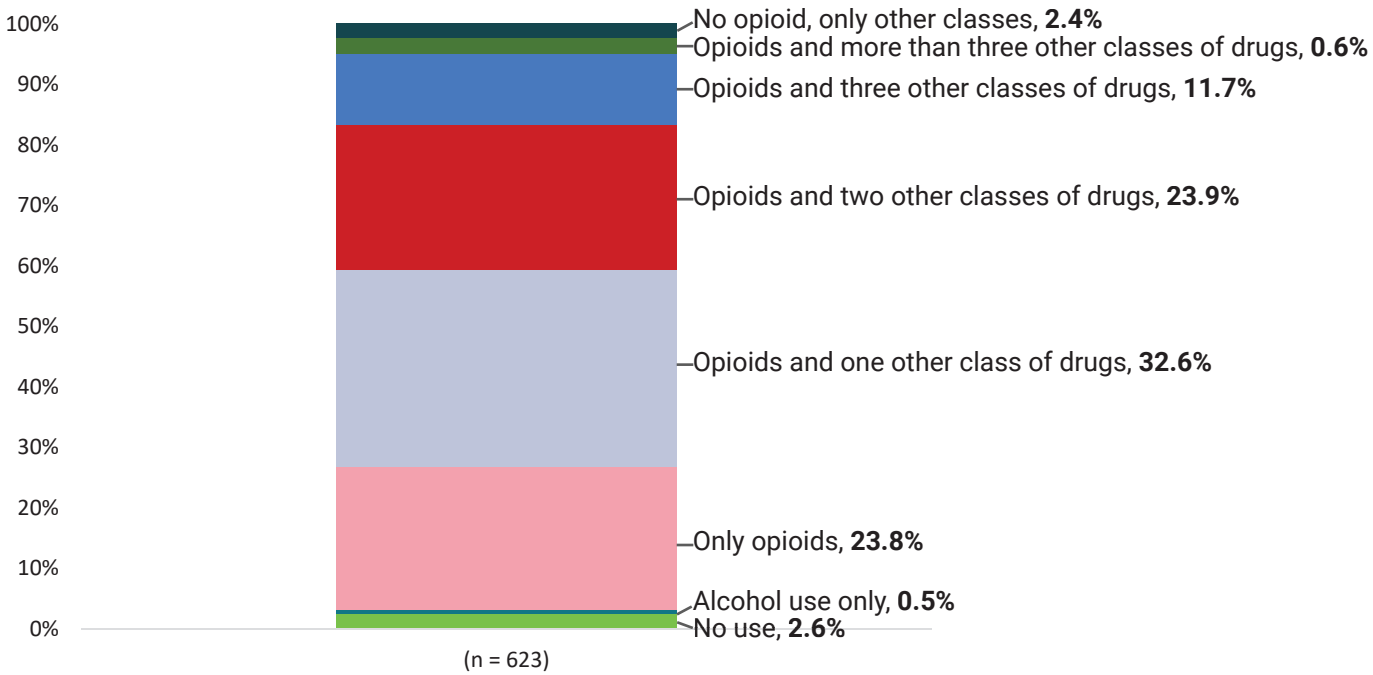


Figure 1.17 presents the percentages of clients who reported using no drugs, alcohol only, and then various numbers of drug classes from the following: marijuana, opioids (including prescription opioids, bup-nx, methadone), heroin, CNS depressants (such as benzodiazepines, sedatives, barbiturates), stimulants (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 predominately polysubstance users. Less than one-quarter reported only using opioids (23.8%) while 70.8% reported using opioids and at least one other class of drug.

FIGURE 1.17. PAST-6-MONTH POLYSUBSTANCE USE AT INTAKE FOR THOSE NOT INCARCERATED ALL 180 DAYS BEFORE ENTERING THE PROGRAM (N = 623)

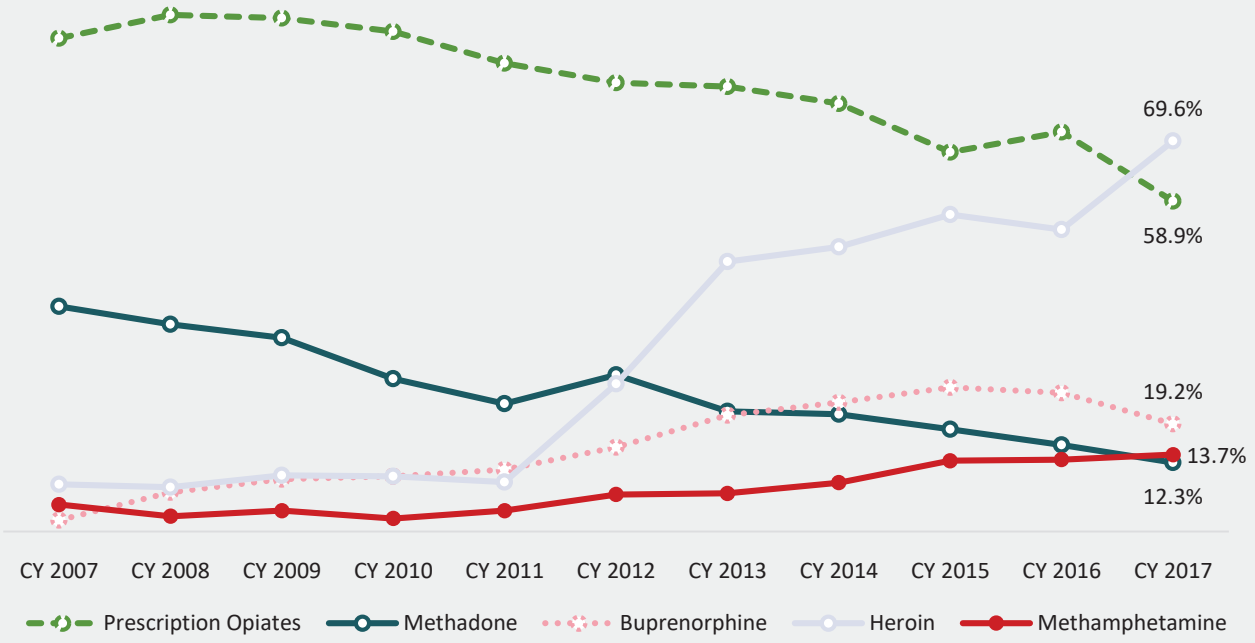


Trend Report in Specific Past-30-Day Drug Use

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 calendar year 2008 and has steadily dropped. The percent of clients who reported using non-prescribed methadone before entering treatment showed a decline from calendar year 2007 to 2011 and again from 2012 to 2017. The percent of clients who reported using bup-nx slowly increased from 2007 through 2015 and then dropped slightly in 2016 and 2017.

The most notable change in substance use among KORTOS clients, however, is for heroin. Small percentages of KORTOS clients reported using heroin from 2007 through 2011. Then in 2012, the percent tripled from 8.8% in 2011 to 26.3% and then nearly doubled from 26.3% in 2012 to 48.1% in 2013. The percent of KORTOS clients reporting heroin use at intake in 2014 increased again to 50.7% and further still to 56.5% in 2015. The percent of KORTOS clients reporting heroin use at intake in 2017 increased further to 69.6%. In addition, methamphetamine has gradually been increasing since 2008. These trends are very similar when examining only those clients who were followed-up (see Appendix D).[31]

Figure 1.18. 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 = 8,668)[32, 33]



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

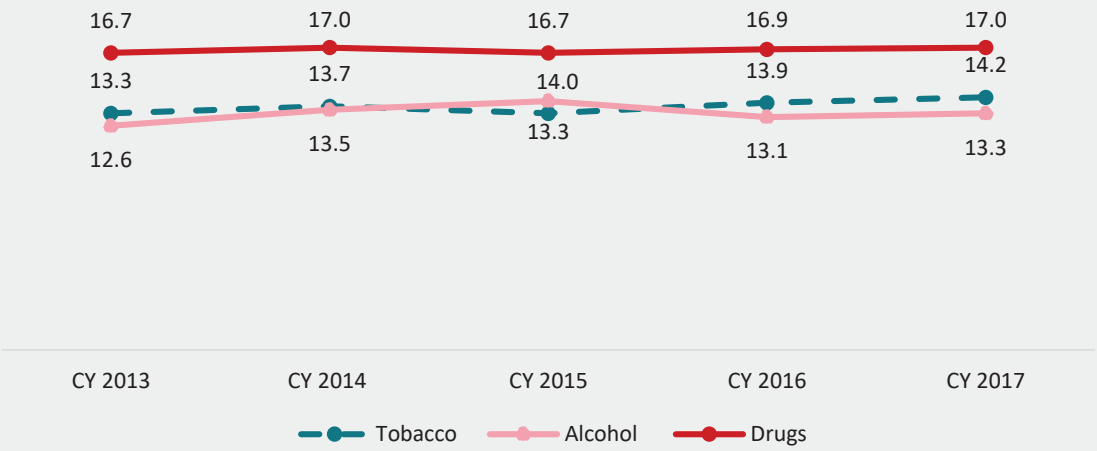
[32] Clients who reported being in a controlled environment all 30 days before entering treatment were not included in this analysis.

[33] Two clients in CY 2015 had missing data for past-30-day heroin use at intake.

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 5 years (close to age 17). Clients generally reported having their first alcohol drink in their early teens (around 13 years old). The age of first regular smoking tobacco use was very similar to the age of alcoholic drink but has increased since CY 2015.

FIGURE 1.19. AGE OF FIRST USE REPORTED AT INTAKE



CRIMINAL JUSTICE INVOLVEMENT

Fifteen percent of clients reported being arrested at least once and 15.2% reported being incarcerated at least one night in the 6 months before entering treatment (see Figure 1.20). Among those who were arrested (n = 94), they were arrested an average of 1.5 times. Among those who were incarcerated (n = 95), they were incarcerated an average of 31.1 nights (not depicted in the figure). In addition, 9.6% of clients reported being under supervision by the criminal justice system.

FIGURE 1.20. CRIMINAL JUSTICE INVOLVEMENT 6 MONTHS BEFORE TREATMENT AT INTAKE (N = 625)

KORTOS Follow-up Sample

Follow-up interviews are targeted to be conducted with a selected sample of KORTOS clients about 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.[34]

Of the 625 clients who completed an intake interview, 419 agreed to be contacted for the follow-up interview (67.0% agreement rate).[35] A total of 362 provided the minimum amount of contact information at the end of the intake interview and were selected into the follow-up sample, and of these, 316 met eligibility criteria for the follow-up interview about 6 months later. In order to be eligible for the follow-up study, clients had to still be in an OTP at the time of the follow-up interview and not in a controlled environment.[36] Of these 316 eligible clients, UK CDAR interviewers completed follow-up assessments with 243 clients (76.9% follow-up rate).

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 FY2017, only 3 clients refused follow-up participation and there was a high follow-up rate (76.9%). This means that only roughly 23% of individuals included in the sample to be followed up were not successfully contacted within the targeted eligibility time period.[37]

This report describes outcomes for 243 adults who participated in a Kentucky OTP and who completed an intake interview and a follow-up telephone interview about 5-6 months (average of 172.2 days) after the intake interview was completed. Detailed information about the methods and follow-up efforts can be found in Appendices A and B.

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[34] 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.

[35] From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one address), and then selecting those clients by intake month.

[36] Of the 362 clients selected into the follow-up sample, 24 were no longer at the OTP, 14 were incarcerated, 3 had died, 2 were in residential treatment, and 3 were ineligible for other reasons at the time of follow-up.

[37] 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.

Of the 243 adults who completed a 6-month follow-up interview, 56.4% were female. Most follow-up clients were White (96.3%), 0.8% were African American and 2.9% were Hispanic, American Indian, or multiracial. They were an average of 37.9 years old. Around 19% of clients had never been married at intake, 18.9% were separated or divorced, 59.6% were married or cohabiting, and 2.1% were widowed. About 38% of follow-up clients had at least one child under age 18 who was living with them. The majority of clients (83.3%) indicated they lived in a metropolitan community, 12.8% lived in a non-metropolitan community, and 3.9% were from a very rural community.

TABLE 1.3. DEMOGRAPHICS FOR KORTOS FOLLOW-UP CLIENTS AT INTAKE (N = 243)[38, 39]

Age	37.9 years (range of 19 - 74)
Gender	
Male	43.6%
Female	56.4%
Race	
White/Caucasian	96.3%
Black/African American	0.8%
Other or multiracial	2.9%
Marital status	
Never married	19.3%
Separated or divorced	18.9%
Married or cohabiting	59.6%
Widowed	2.1%
Have children under the age of 18 who live with them	37.9%
Type of community	
Metro	83.3%
Non-metro	12.8%
Very rural	3.9%

When those with a follow-up interview were compared with those who did not have a follow-up interview on a variety of intake variables, there were some significant differences for demographics, substance use, mental health, and physical health.

More clients who completed a follow-up were female and significantly older. More clients who were followed up reported living in someone else's home or apartment whereas more clients who were not followed up reported living in an institutional facility, hotel, or on the streets. More clients who were not followed up reported smokeless tobacco use in the 6 months before entering treatment. More of the clients who completed a follow-up interview met study

[38] One client had an incorrect birthdate and, therefore, age could not be determined.

[39] 63 clients either did not indicate a county of residence or lived in another state.

criteria for depression, generalized anxiety, a chronic medical problem, and chronic pain when compared to clients who were not followed up.[40]

TABLE 1.4. FOLLOWED-UP VERSUS NOT FOLLOWED-UP

	Followed up	
	No (n = 382)	Yes (n = 243)
Demographic	Younger and more male	Older and more female
Socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs)	More lived in an institutional facility, hotel, or on the street	More lived in someone else's home or apartment
Substance use, severity of alcohol and drug use	More clients reported smokeless tobacco use	
Health (e.g., overall health status, chronic medical problems, chronic pain)		More had chronic pain and chronic medical problems
Mental health (e.g., depression, generalized anxiety, suicidality)		More met study criteria for depression and generalized anxiety
Criminal justice involvement (e.g., arrested, incarcerated)	No differences	
Treatment history	No differences	

[40] See Appendix C for detailed comparisons of clients who completed a follow-up interview (n = 243) and clients who did not complete a follow-up interview (n = 382).

SECTION 2.

Substance Use

This section describes change in illegal drug, alcohol, and tobacco use from intake to follow-up. 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 self-reported severity of alcohol and drug use, problems experienced with substance use in the past 30 days, readiness for treatment, and medication-assisted treatment. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

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 = 240)[41] 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 = 235) is presented.[42]

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

[41] One individual was incarcerated all 180 days before entering treatment, and at follow-up, 1 individual refused to answer and 1 person had missing data for nights incarcerated and, therefore, these 3 individuals are not included in past-6-month analysis.

[42] Six individuals at intake and 1 individual at follow-up were in a controlled environment all 30 days before intake or before follow-up and were not included in past-30-day analysis. In addition, one client had missing data for this question.

(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 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 = 221), alcohol (n = 32), and those with both alcohol and illegal drug use among clients who used drugs and/or alcohol (n = 226). The ASI composite score assesses self-reported addiction severity even among those reporting no substance use in the past 30 days. The alcohol and drug composite scores are computed from items about 30-day alcohol (or drug) use and the number of days individuals used multiple drugs in a day, as well as the impact of substance use on the individual's life, such as money spent on alcohol, number of days individuals had alcohol (or drug) problems, how troubled or bothered individuals were by their alcohol (or drug) problems, and how important treatment was to them.

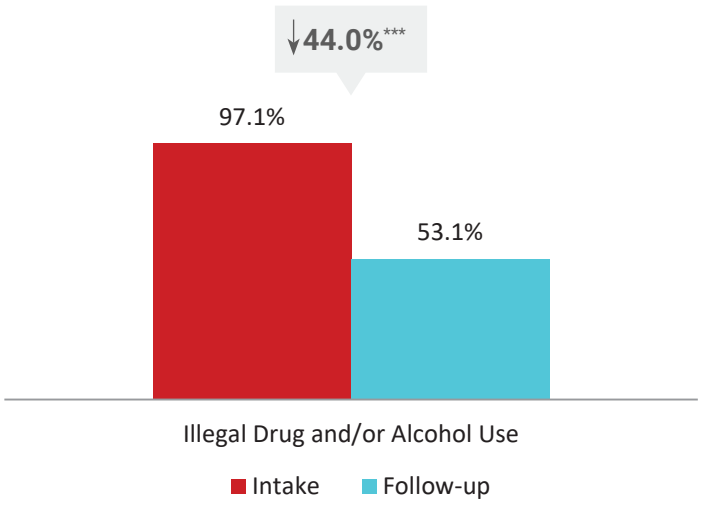
In addition, this section examines the number of days clients experienced alcohol/drug problems in the past 30 days, how troubled or bothered clients were by alcohol/drug problems in the past 30 days, and how important is treatment for these alcohol/drug problems at intake and follow-up. Client are also asked at intake the number of times in their lifetime they have received services for substance use.

Alcohol and/or Drug Use

PAST-6-MONTH ALCOHOL AND/OR DRUG USE

The majority of clients (97.1%) reported using alcohol and/or illegal drugs in the 6 months before entering the program, which decreased to 53.1% at follow-up. This was a 44.0% significant decrease in the percent of clients reporting use of alcohol and/or illegal drugs (see Figure 2.1).

FIGURE 2.1. PAST 6-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 239)[43]



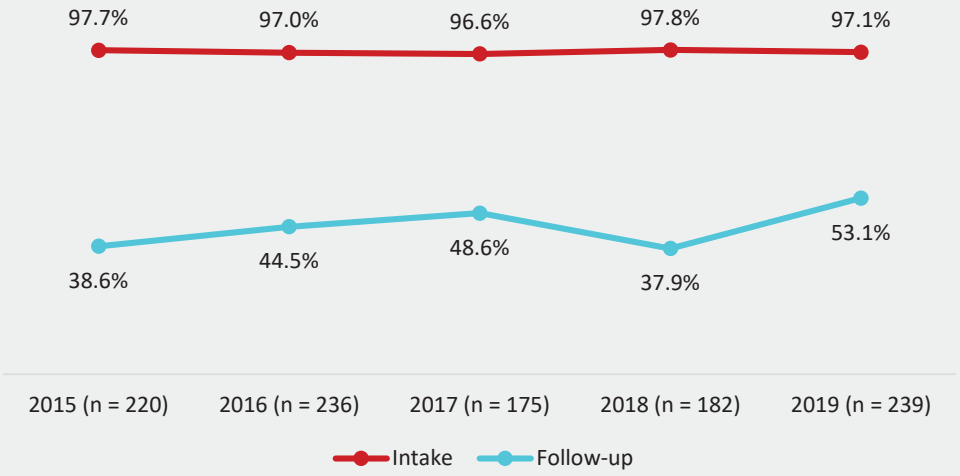
***p < .001.

[43] One case had missing data for overall drug use at intake.

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%). 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 compared to 37.9% in 2018.

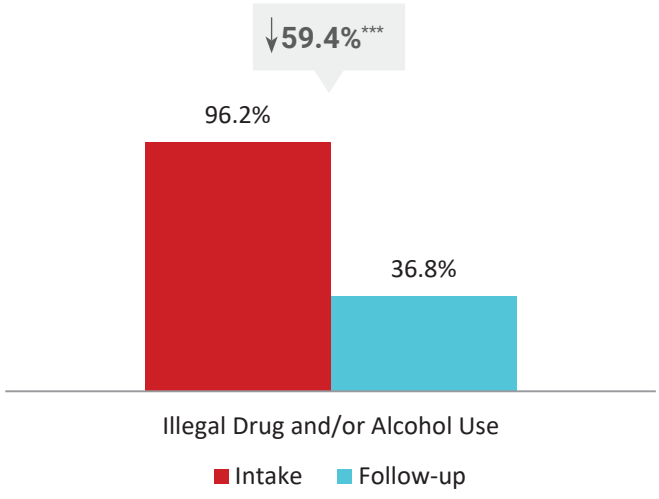
FIGURE 2.2. TRENDS IN ANY ALCOHOL AND/OR ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2018[44]



PAST-30-DAY ALCOHOL AND/OR DRUG USE

The majority of clients (96.2%) reported using alcohol and/or illegal drugs in the 30 days before entering the program, which decreased to 36.8% at follow-up. This was a 59.4% significant decrease (see Figure 2.3).

FIGURE 2.3. PAST 30-DAY ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 234)



***p < .001.

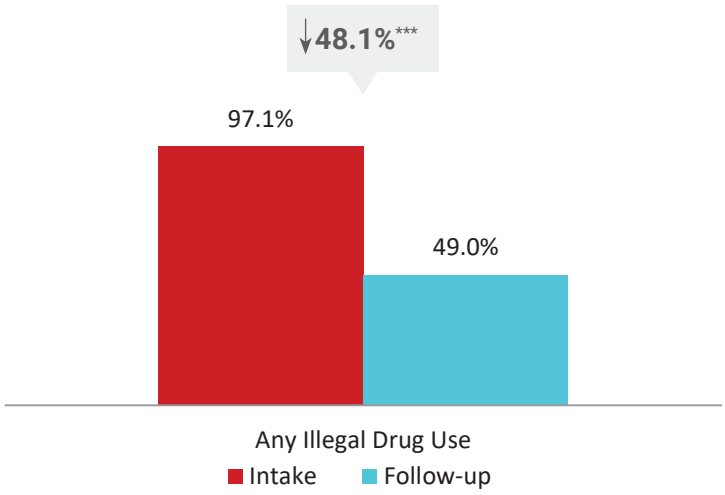
[44] In 2015, 3 cases had missing data for drug use at intake.

Any Illegal Drugs

PAST-6-MONTH ANY ILLEGAL DRUG USE

Almost all clients (97.1%) reported using illegal drugs in the 6 months before entering the program, which decreased to 49.0% at follow-up. This was a 48.1% significant decrease in the percent of clients reporting use of any illegal drugs (see Figure 2.4).

FIGURE 2.4. PAST-6-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP (N = 239)[45]

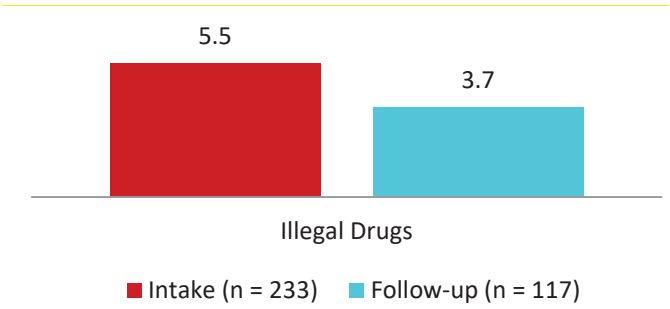


***p < .001.

AVERAGE NUMBER OF MONTHS USED ANY ILLEGAL DRUGS

Clients who reported any illegal drug use at intake (n = 233) reported an average maximum of 5.5 months of use. Among clients who reported any illegal drug use in the 6 months before follow-up (n = 117), the maximum number of months they reported using any drug was, on average, 3.7 months (see Figure 2.5).

FIGURE 2.5. AVERAGE NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS

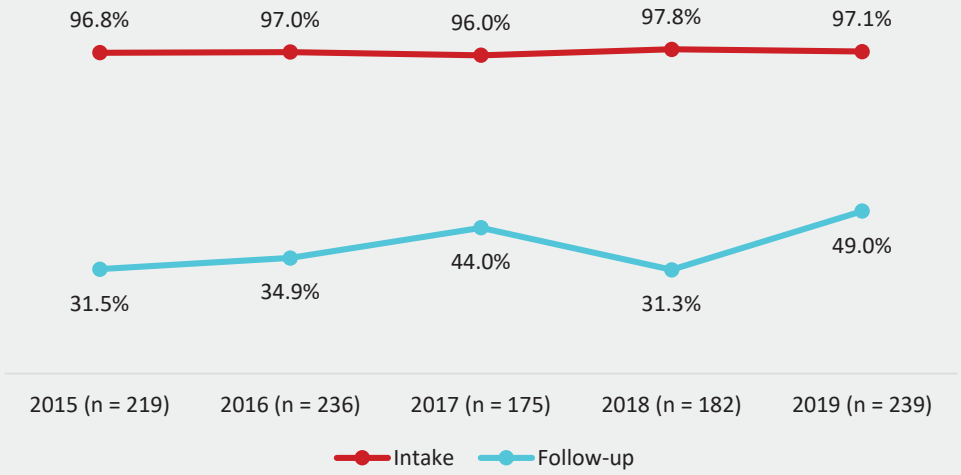


[45] One case had missing data for overall drug use at intake.

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%). The percent of clients who reported any illegal drug use at follow-up increased from 31.5% in 2015 to 44.0% in 2017. While the number of clients reporting illegal drug use in 2018 at follow-up decreased compared to the previous years, it increased to 49.0% in 2019.

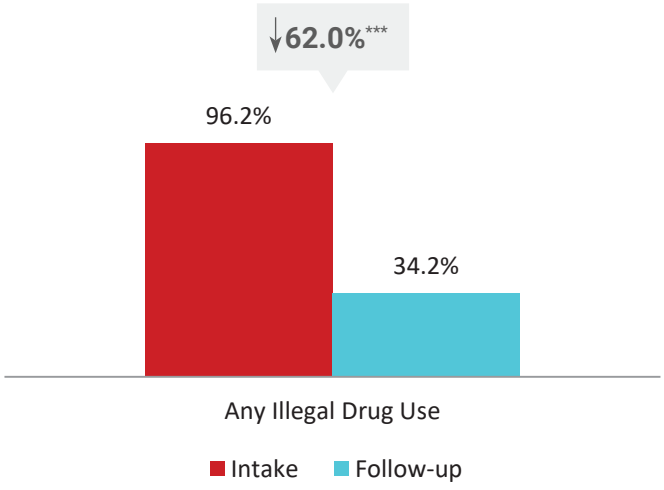
FIGURE 2.6. TRENDS IN ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019



PAST-30-DAY ANY ILLEGAL DRUG USE

There was a significant 62.0% decrease in past-30-day illegal drug use (see Figure 2.7). At intake, 96.2% of clients reported any illegal drug use in the 30 days before entering the program and at follow-up, 34.2% 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 = 234)



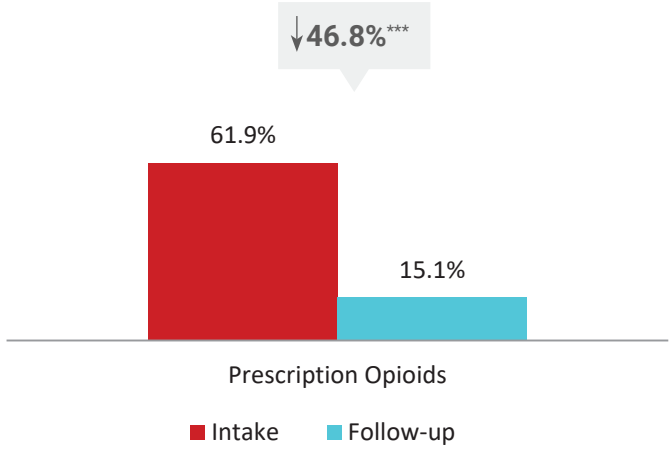
***p < .001.

Prescription Opioid Misuse

PAST-6-MONTH PRESCRIPTION OPIOID MISUSE

About 62% of clients reported misusing prescription opioids (such as morphine, Percocet, Oxycontin, Lortab) in the 6 months before treatment entry. At follow-up, 15.1% of clients reported misusing prescription opioids (see Figure 2.8). This means there was a 46.8% 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 = 239)[46]

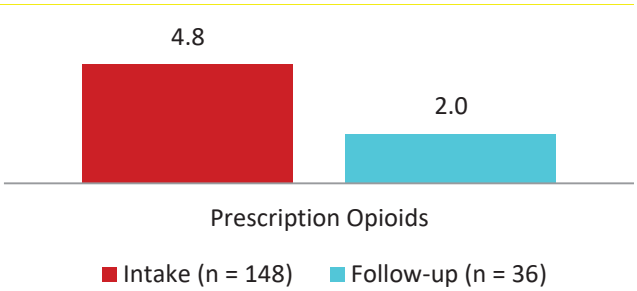


***p < .001.

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 = 148), clients reported using prescription opioids an average of 4.8 of the 6 months. Among clients who reported misusing opioids at follow-up (n = 36), clients reported using an average of 2.0 of the 6 months before follow-up.

FIGURE 2.9. AVERAGE NUMBER OF MONTHS CLIENTS USED PRESCRIPTION OPIOIDS

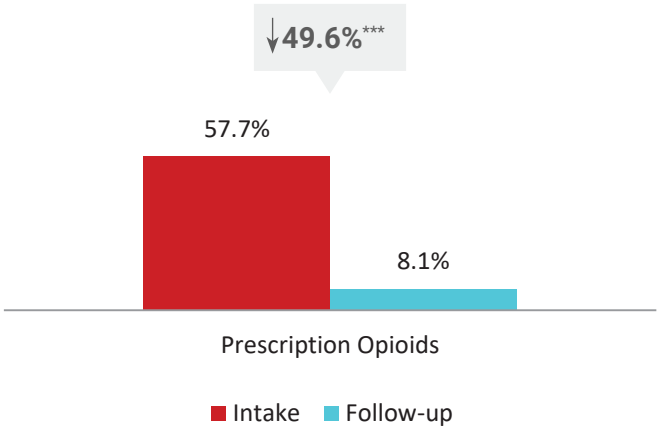


[46] One client was missing data on opioids at follow-up.

PAST-30-DAY PRESCRIPTION OPIOID MISUSE

At intake, 57.7% of clients reported misuse of prescription opioids and at follow-up, 8.1% of clients reported misuse of prescription opioids (see Figure 2.10). This reflects a significant decrease of 49.6% in the percent of clients reporting misuse of prescription opioids.

FIGURE 2.10. PAST-30-DAY PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 234)



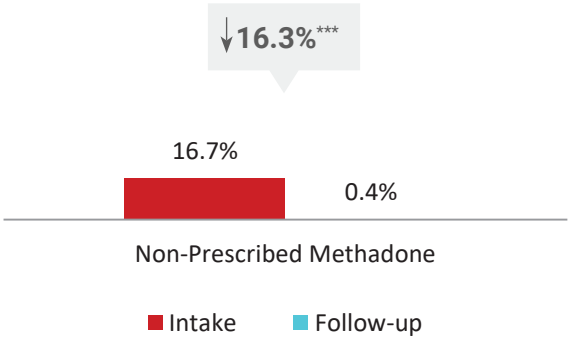
***p < .001.

Non-prescribed Use of Methadone

PAST-6-MONTH NON-PRESCRIBED USE OF METHADONE

About 17% of clients reported using non-prescribed methadone in the 6 months before intake (see Figure 2.11). At follow-up, only 0.4% of clients reported non-prescribed use of methadone. This was a 16.3% significant decrease in the percent of clients reporting non-prescribed use of methadone.

FIGURE 2.11. PAST-6-MONTH NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 240)

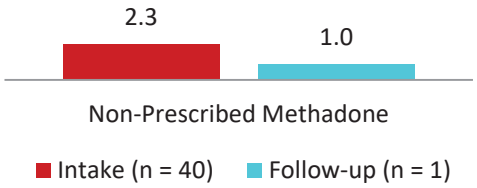


***p < .001.

AVERAGE NUMBER OF MONTHS USED NON-PRESCRIBED METHADONE

Among the clients who reported non-prescribed use of methadone in the 6 months before entering the program (n = 40), they reported using, on average, 2.3 months (see Figure 2.12). Among clients who reported non-prescribed use of methadone in the 6 months before follow-up (n = 1), the client reported using an average of 1 out of 6 months.

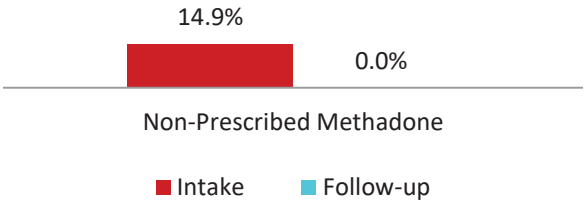
FIGURE 2.12. AVERAGE NUMBER OF MONTHS CLIENTS USED NON-PRESCRIBED METHADONE



PAST-30-DAY NON-PRESCRIBED USE OF METHADONE

About 15% of clients reported using non-prescribed methadone in the 30 days before entering the program (see Figure 2.13). At follow-up, none of the clients reported past-30-day use of non-prescribed methadone.

FIGURE 2.13. PAST-30-DAY NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 235)[a]



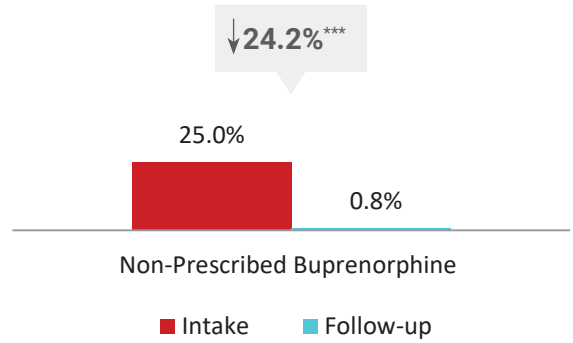
a – No measures of association could be computed for non-prescribed methadone because the value at follow-up was 0.

Non-prescribed Use of Bup-nx

PAST-6-MONTH NON-PRESCRIBED USE OF BUP-NX

Figure 2.14 shows that less than one-quarter of clients reported using non-prescribed bup-nx in the 6 months before intake. At follow-up, only 0.8% of clients reported using non-prescribed bup-nx – a significant decrease of 24.2%.

FIGURE 2.14. PAST-6-MONTH NON-PRESCRIBED USE OF BUP-NX AT INTAKE AND FOLLOW-UP (N = 240)

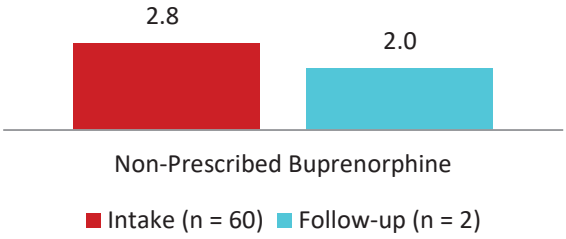


***p < .001.

AVERAGE NUMBER OF MONTHS USED NON-PRESCRIBED BUP-NX

Among the clients who reported non-prescribed use of bup-nx in the 6 months before entering the program (n = 60), they used non-prescribed bup-nx, on average, 2.8 months (see Figure 2.15). At follow-up, those who reported non-prescribed bup-nx use (n = 2), reported using, on average, 2.0 months out of the past 6.

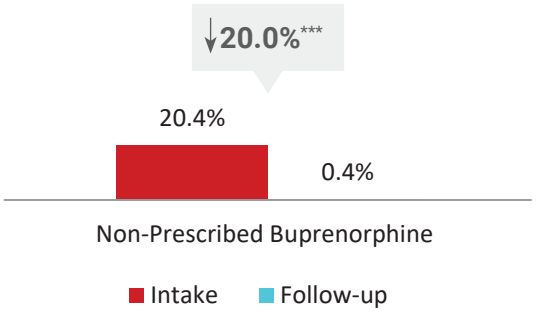
FIGURE 2.15. AVERAGE NUMBER OF MONTHS CLIENTS USED NON-PRESCRIBED BUP-NX



PAST-30-DAY NON-PRESCRIBED USE OF BUP-NX

Less than one-quarter of clients (20.4%) reported using non-prescribed bup-nx in the 30 days before entering the program (see Figure 2.16). At follow-up, 0.4% of clients reported past-30-day use of non-prescribed bup-nx (a significant decrease of 20.0%).

FIGURE 2.16. PAST-30-DAY NON-PRESCRIBED BUP-NX USE AT INTAKE AND FOLLOW-UP (N = 235)



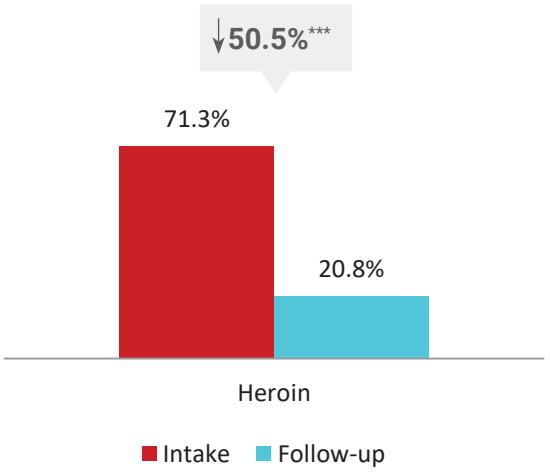
***p < .001.

Heroin

PAST-6-MONTH HEROIN USE

About 71% of clients reported using heroin in the 6 months before entering treatment, which significantly decreased 50.5% to 20.8% at follow-up (see Figure 2.17).

FIGURE 2.17. PAST-6-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 240)

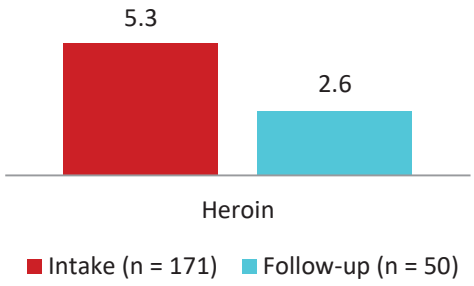


***p < .001.

AVERAGE NUMBER OF MONTHS USED HEROIN

Among the clients who reported using heroin in the 6 months before entering treatment (n = 171), they reported using heroin, on average, 5.3 months (see Figure 2.18). Among clients who reported using heroin in the 6 months before follow-up (n = 50), they reported using, on average, 2.6 months.

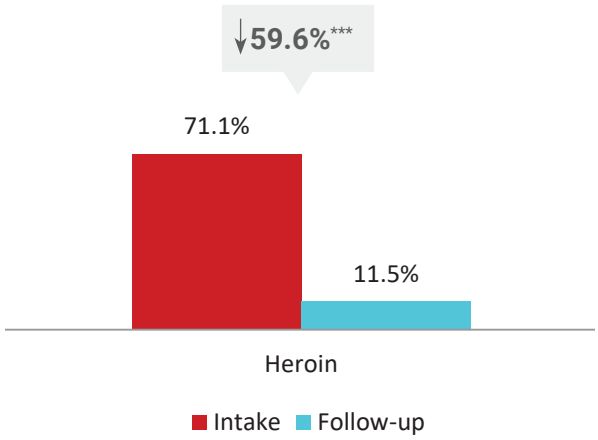
FIGURE 2.18. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



PAST-30-DAY HEROIN USE

About 71% of clients reported using heroin in the 30 days before intake. At follow-up, 11.5% reported using heroin in the past 30 days, a significant decrease of 59.6% (see Figure 2.19).

FIGURE 2.19. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 235)



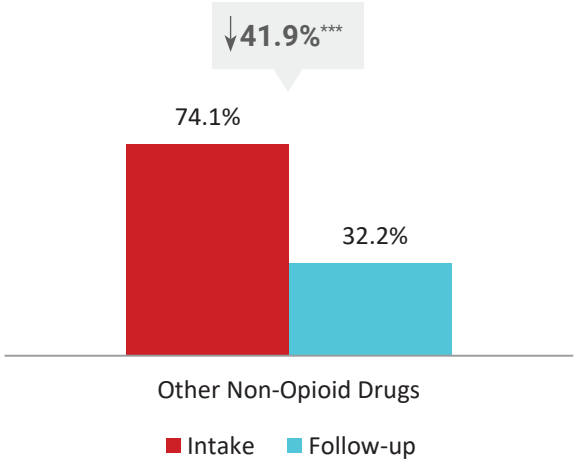
***p < .001.

Non-opioid Drug Use

PAST-6-MONTH USE OF NON-OPIOID DRUGS

Almost three-quarters of clients (74.1%) 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 2.20). Drugs in this category include marijuana, cocaine, amphetamines, tranquilizers, 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 32.2% at follow-up (a significant decrease of 41.9%).

FIGURE 2.20. PAST-6-MONTH NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 239)[47]



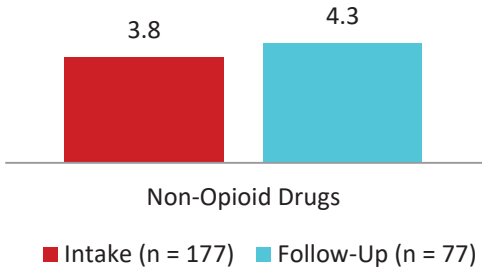
***p < .001.

[47] One client was missing data for a non-opioid drug.

AVERAGE NUMBER OF MONTHS USED NON-OPIOID DRUGS

Figure 2.21 shows the maximum number of months clients that used non-opioid drugs reported using these illegal drugs (e.g., marijuana, cocaine, amphetamine, tranquilizers, barbiturates, inhalants, hallucinogens, synthetic drugs).[48] Among the clients who reported using non-opioid drugs at intake (n = 177), the maximum number of months clients reported using any of these drugs was an average of 3.8 months. Among clients who reported using non-opioid drugs at follow-up (n = 77), the maximum average number of months clients reported using any of these drugs was 4.3 months.

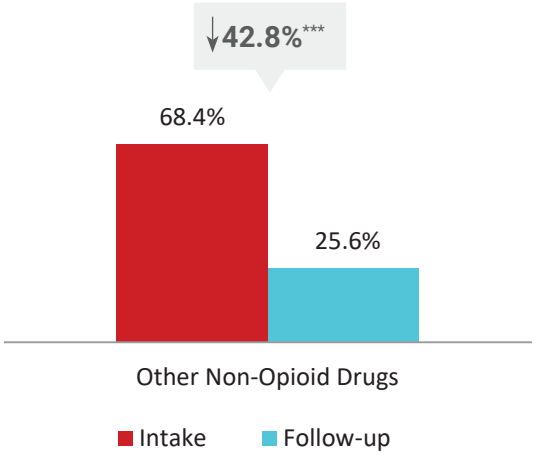
FIGURE 2.21. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS USED NON-OPIOID DRUGS



PAST-30-DAY USE OF NON-OPIOID DRUGS

About 68% of clients reported using non-opioid drugs in the 30 days before intake (see Figure 2.22). At follow-up, 25.6% of clients reported non-opioid drug use, which is a 42.8% significant decrease.

FIGURE 2.22. PAST-30-DAY NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 234)[49]



***p < .001.

[48] 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.

[49] One client was missing data for a non-opioid drug.

Injection Drug Use

At intake, 61.7% of clients reported having ever injected any drug. Of those clients (n = 150), 18.7% reported having ever used a Needle Exchange Program in Kentucky. Programs reported were in Jefferson County/Louisville (n = 15), Fayette County (n = 4), Hamilton County (n = 4), Boyd County (n = 2) and Montgomery County (n = 1). At follow-up, 11.9% of clients reported injecting drugs in the past 6 months.[50] Of those clients (n = 28), 14.3% reported having used a Needle Exchange Program in Kentucky, which were in Jefferson County and Fayette County.

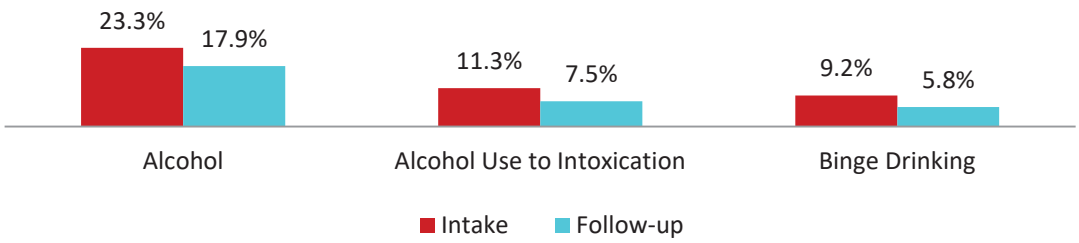
Alcohol Use

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.[51]

PAST-6-MONTH ALCOHOL USE

Less than one-quarter of clients (23.3%) reported using alcohol in the 6 months before entering treatment while 17.9% of clients reported alcohol use in the 6 months before follow-up (see Figure 2.23). About 11% of clients reported using alcohol to intoxication and 9.2% of clients reported binge drinking at intake. There were no significant decreases in those percentages by follow-up.

FIGURE 2.23. PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 240)



"Very knowledgeable and helpful. It gave me tools to stay sober and get life together."

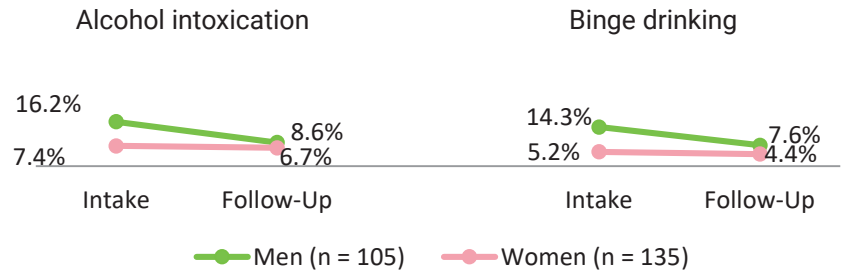
KORTOS FOLLOW-UP CLIENT

[50] At follow-up, 7 clients were missing information on injecting drugs.

[51] 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.

At intake, significantly more men reported both alcohol intoxication and binge drinking in the 6 months before entering treatment.

FIGURE 2.24. GENDER DIFFERENCES IN CLIENTS REPORTING PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP[a]

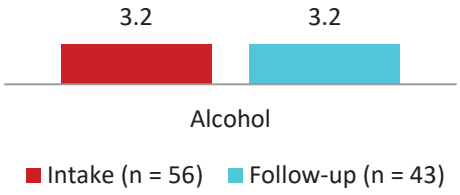


a—Significant difference by gender at intake ($p < .05$).

AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2.25 shows the average number of months alcohol users reported using alcohol at intake and follow-up. Among the clients who reported using alcohol in the 6 months before entering treatment (n = 56), they reported using alcohol, on average, 3.2 months. Among clients who reported using alcohol in the 6 months before follow-up (n = 43), they also reported using an average number of 3.2 months.

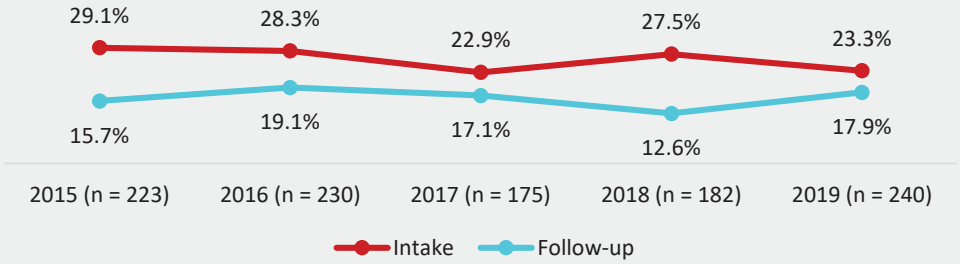
FIGURE 2.25. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE



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 percent of clients reporting alcohol use decreased to 22.9% in 2017, but increased to 27.5% at intake in 2018. In 2019, the percent of clients reporting alcohol use decreased again to 23.3%. At follow-up, the percent of clients who reported alcohol use increased to 19.1% in 2016, but decreased to 12.6% by 2018. The percent of clients reporting alcohol use at follow-up increased to 17.9% in 2019.

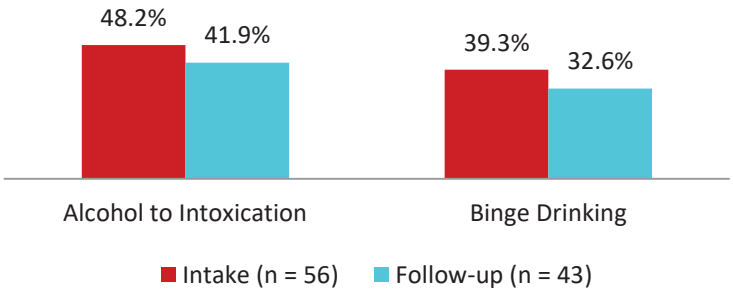
FIGURE 2.26. TRENDS IN ALCOHOL USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019[52]



PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL

Of the clients who used alcohol in the 6 months before entering treatment (n = 56), 48.2% used alcohol to intoxication and 39.3% reported binge drinking (see Figure 2.27). Of the clients who used alcohol in the 6 months before follow-up (n = 43), 41.9% reported alcohol use to intoxication and 32.6% reported binge drinking.

FIGURE 2.27. PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT

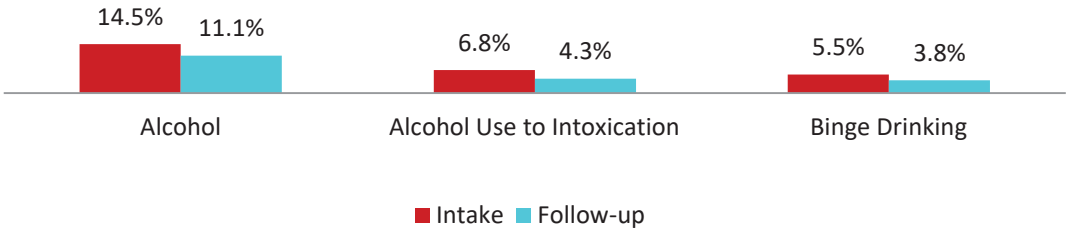


PAST-30-DAY ALCOHOL USE

A small percentage of individuals reported using alcohol, alcohol use to intoxication, and binge drinking in the 30 days before intake and follow-up. There were no significant decreases from intake to follow-up (see Figure 2.28).

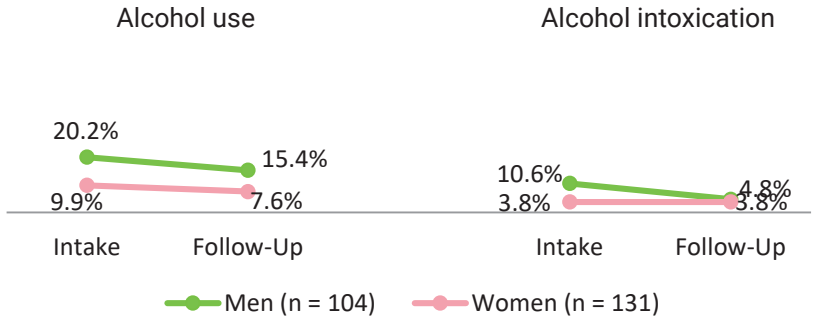
[52] In 2015, 5 cases had missing data for alcohol use at intake.

FIGURE 2.28. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 235)



Significantly more men reported alcohol use in the 30 days before entering treatment compared to women (20.2% vs. 9.9%, respectively). In addition, more men reported using alcohol to intoxication in the 30 days before intake compared to women.

FIGURE 2.29. GENDER DIFFERENCES IN CLIENTS REPORTING PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP[a]



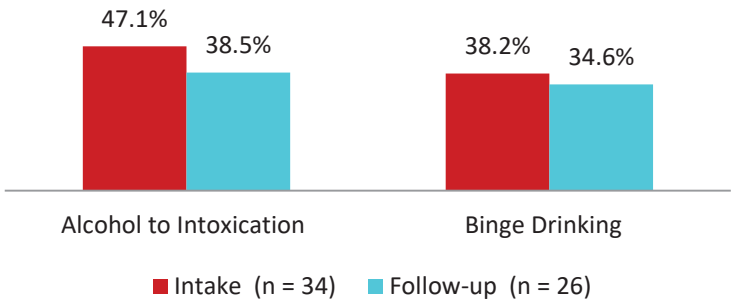
a—Significant difference by gender at intake ($p < .05$).

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

Of the 34 clients who used alcohol in the 30 days before intake, 47.1% used alcohol to intoxication and 38.2% binge drank in that time frame (see Figure 2.30).

Of the 26 clients who reported using alcohol in the 30 days before follow-up, 38.5% reported using alcohol to intoxication and 34.6% reported binge drinking.

FIGURE 2.30. PAST-30-DAY ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Self-reported 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.[53, 54] However, the DSM-5 eliminates the distinction between substance abuse and dependence, substituting severity ranking instead. In addition, the DSM-5 no longer includes the criterion about legal problems arising from substance use but adds a new criterion about craving and compulsion to use.[55] 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.

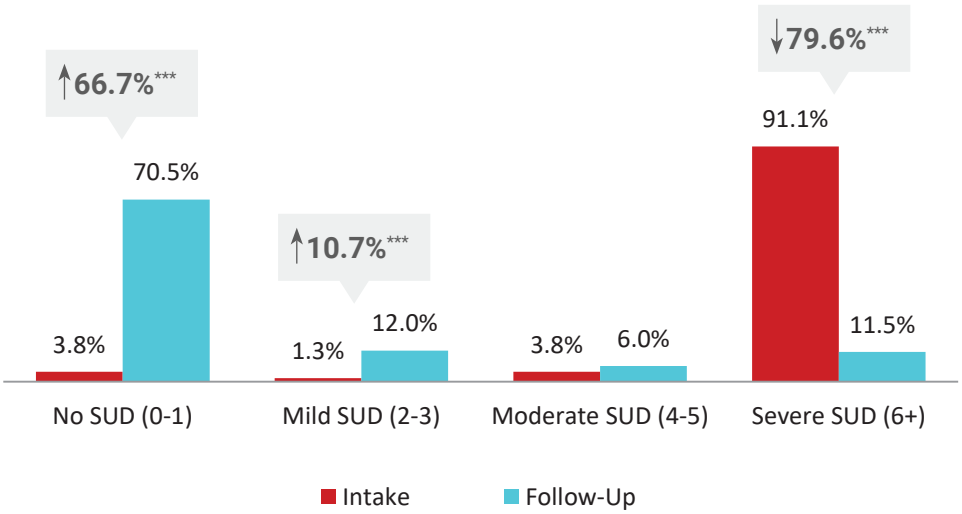
Change in the severity of SUD in the prior 6 months was examined for clients at intake and follow-up. Figure 2.31 displays the change in the percent of individuals in each SUD severity classification, based on self-reported criteria in the preceding 6 months. At intake, 3.8% met criteria for no substance use disorder (meaning they reported 0 or 1 DSM-5 criteria for SUD), while at follow-up, 70.5% of clients met criteria for no SUD, a significant increase of 66.7%. At the other extreme of the continuum, the vast majority of clients (91.1%) met criteria for severe SUD at intake, while at follow-up, only 11.5% met criteria for severe SUD, a significant decrease of 79.6%.

[53] 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.

[54] 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.

[55] 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.

FIGURE 2.31. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 235)[a]



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

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

ASI Alcohol and Drug Composite Scores and Substance Dependence

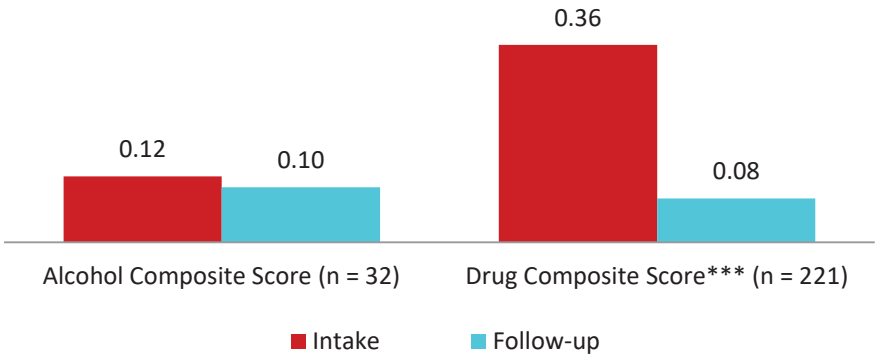
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI alcohol and drug use composite scores and DSM-IV substance dependence diagnosis. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity with regard to identifying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

Figure 2.32 displays the change in average composite scores from intake to follow-up. The average for the alcohol composite score was 0.12 at intake and 0.10 at follow-up. The average for the drug composite score decreased significantly from 0.36 to 0.08.

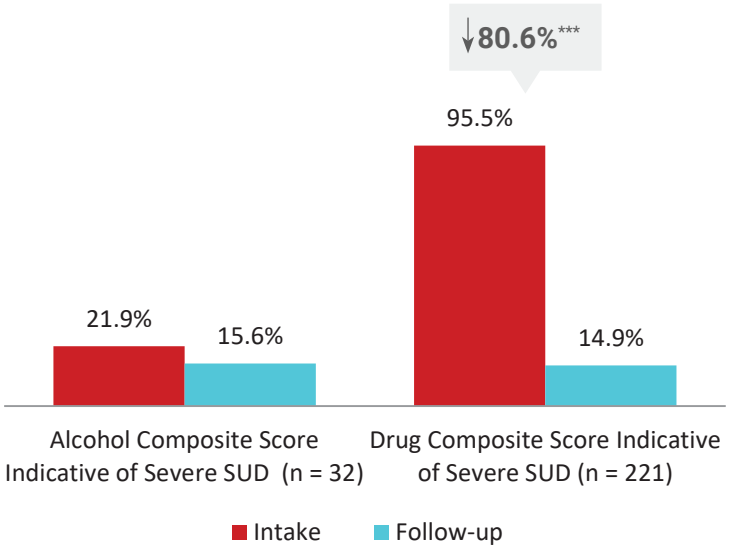
FIGURE 2.32. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES OF THOSE WHO USED SUBSTANCES AT INTAKE AND/OR FOLLOW-UP



***p < .001.

About 22% of clients met the cutoff for severe substance use disorder for alcohol at intake and 15.6% of clients met the cutoff for severe substance use disorder at follow-up (see Figure 2.33). ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) significantly decreased from 95.5% at intake to 14.9% at follow-up.

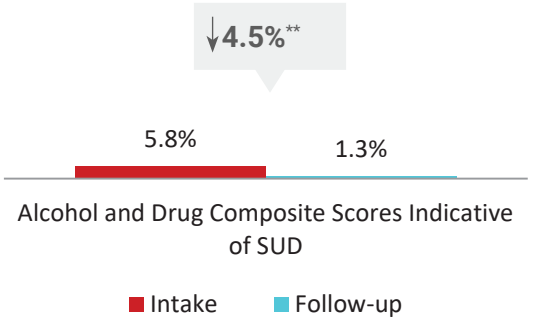
FIGURE 2.33. OF THOSE WHO USED SUBSTANCES, INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



***p < .001.

Among the individuals who were not in a controlled environment all 30 days before entering the program and who reported using alcohol and/or drugs at intake and/or follow-up, 5.8% of clients had alcohol and drug composite scores that met the cutoff for severe SUD at intake (see Figure 2.34). That percent decreased significantly to 1.3% at follow-up.

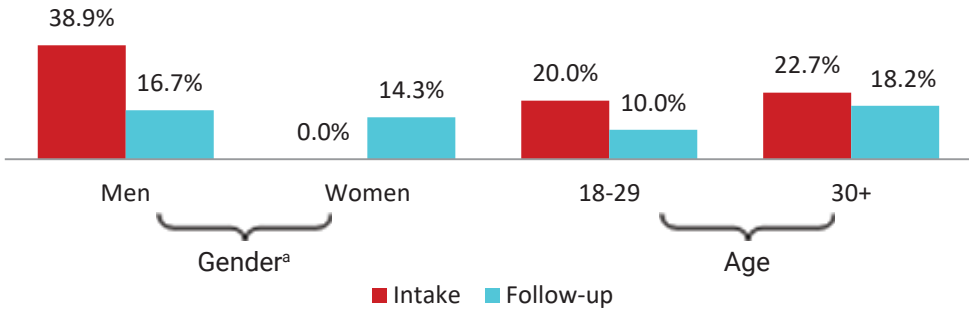
FIGURE 2.34. OF THOSE WHO USED SUBSTANCES, CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR BOTH ALCOHOL AND DRUG SEVERE SUBSTANCE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 226)



**p < .01.

The data were examined to determine whether clients who had alcohol composite scores indicative of severe SUD at intake and follow-up differed by gender and age (see Figure 2.35). Significantly more men reported alcohol composite scores that met the cutoff for severe SUD at intake compared to women. There were no differences between age groups at intake or follow-up.

FIGURE 2.35. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 32)[56]

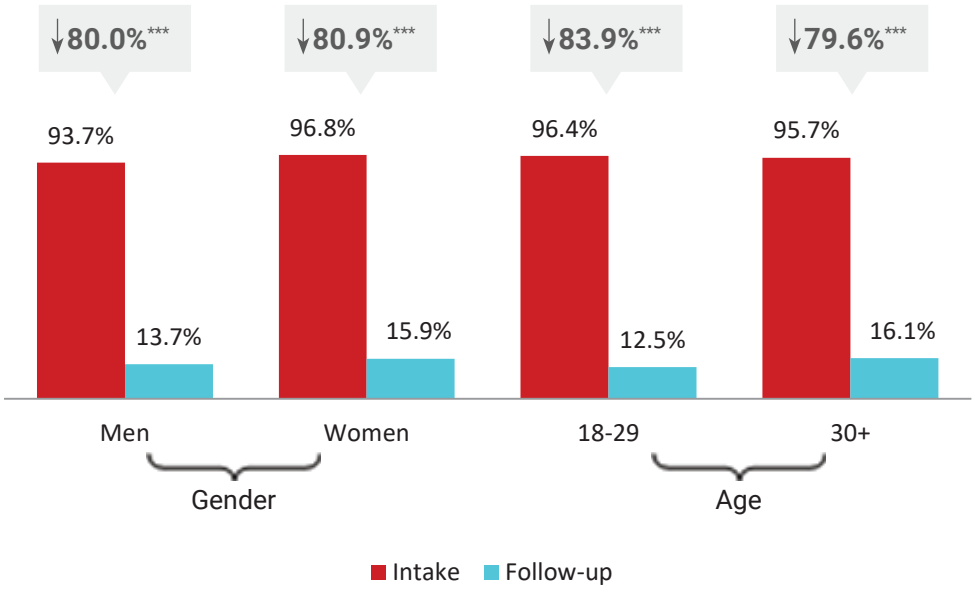


a—Significant difference by gender at intake (p < .01).

Analyses were also conducted to determine if clients who had a drug composite score indicative of severe SUD at intake and follow-up differed by gender or age (see Figure 2.36). There was no significant difference between men and women or between the age groups.

[56] Race/ethnicity was not included in the analysis because there was only 1 client who was considered non-white or multi-racial among alcohol-using clients.

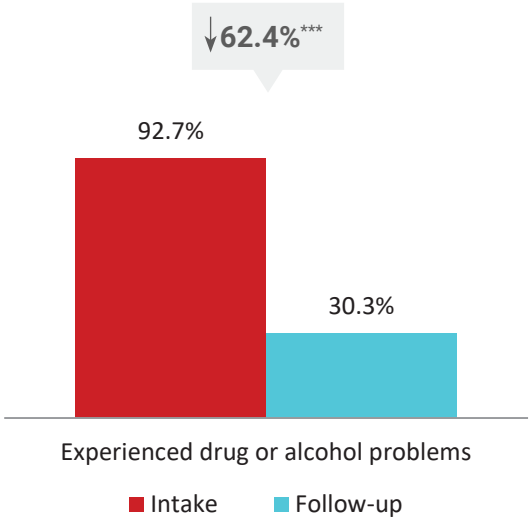
FIGURE 2.36. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 217)[57, 58]



Problems Experienced with Substance Use in the Past 30 Days

In the past 30 days at intake, 92.7% 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 2.37). In the past 30 days at follow-up, 30.3% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 62.4%).

FIGURE 2.37. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 234)



***p < .001.

[57] Race/ethnicity was not included in the analysis because there were only 9 clients who was considered non-white or multi-racial among drug-using clients.

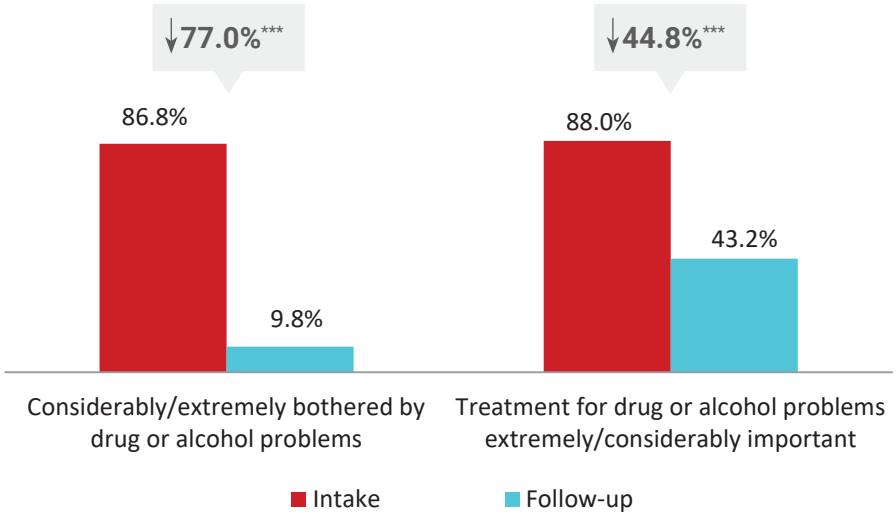
[58] Four clients were missing information for age.

Readiness for Substance Abuse Treatment

Figure 2.38 shows that 86.8% of clients reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the past 30 days at intake. In the past 30 days at follow-up, 9.8% of clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems (a significant decrease of 77.0%).

The figure below also shows that 88.0% of clients in the past 30 days at intake and 43.2% of clients in the past 30 days at follow-up reported that treatment for drug or alcohol problems was considerably or extremely important (a significant decrease of 44.8%).

FIGURE 2.38. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 234)[59]



***p < .001.

Substance Abuse Treatment History

LIFETIME SUBSTANCE ABUSE TREATMENT

Prior to the current admission, clients reported at intake that they had received services for substance abuse (including detox, drug court, and recovery programs) an average of 2.4 times in their lifetime.

MEDICATION-ASSISTED TREATMENT AT INTAKE[60]

In the 6 months before entering treatment, only 26.6% of clients reported they had received medication from a clinic or doctor's office to help with their substance abuse. Of those clients (n = 37), clients reported using the medication prescribed to them for an average of 2.5

[59] One client was missing information on treatment readiness at follow-up.

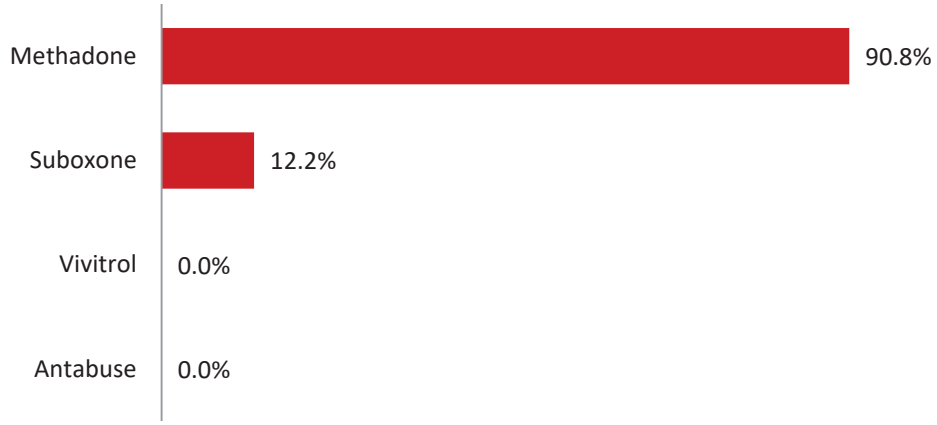
[60] MAT questions were added to the instrument April 2017, therefore, only 139 clients had the opportunity to answer the questions.

months in the past 6 months before this treatment entry. In addition, clients reported using the medication prescribed for an average of 10.1 days in the past 30 days.

MEDICATION ASSISTED TREATMENT AT FOLLOW-UP

The majority of clients, who were not incarcerated all 180 days before treatment entry or in the past 6 months at follow-up, (90.8%) reported that they received methadone in the past 6 months at follow-up. About 12% of clients reported receiving Suboxone and none received Vivitrol or Antabuse (Figure 2.39).

FIGURE 2.39. PERCENT OF CLIENTS REPORTING MEDICATIONS RECEIVED IN THE PAST 6 MONTHS (N = 238)[61]



At follow-up, clients reported using the medication prescribed to them for an average of 5.8 months in the past 6 months. In addition, clients reported using the medication prescribed for an average of 26.8 days in the past 30 days. In the past 6 months at follow-up, the majority of clients (93.6%) reported, they had not participated in any medication-assisted treatment program other than the one they've been most recently involved with. Overall, at follow-up, 92.9% of clients reported that they think their use of medication-assisted treatment helped treat their drug problem, 2.9% reported it had no effect on their drug problem, and 4.2% reported medication-assisted treatment made their drug problems worse.

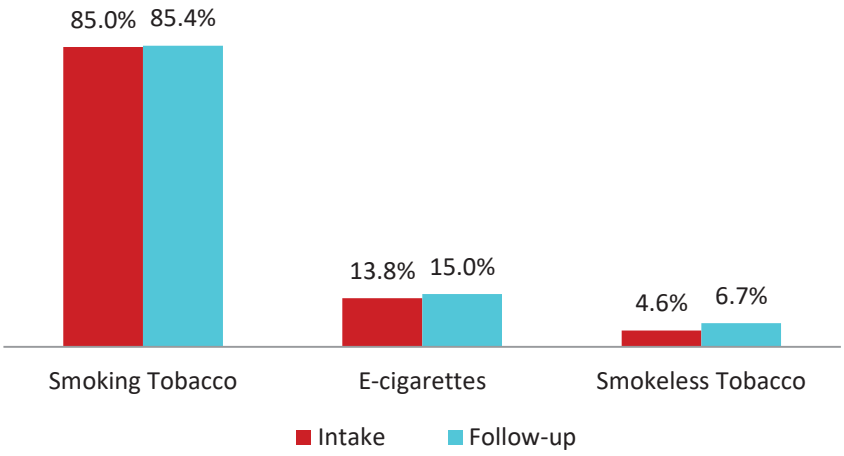
Tobacco Use

PAST-6-MONTH SMOKING, E-CIGARETTES, AND SMOKELESS TOBACCO USE

There was no significant change in either smoking or smokeless tobacco use from intake to follow-up (see Figure 2.40). Most clients reported smoking tobacco in the 6 months before entering the program (85.0%) and in the 6 months before follow-up (85.4%). About 14% 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 15.0% of clients reported the use of e-cigarettes at follow-up. Around 5% of clients at intake and 6.7% of clients at follow-up reported using smokeless tobacco in the past 6 months.

[61] Questions medication received in the past 6 months were missing for 2 clients at follow-up.

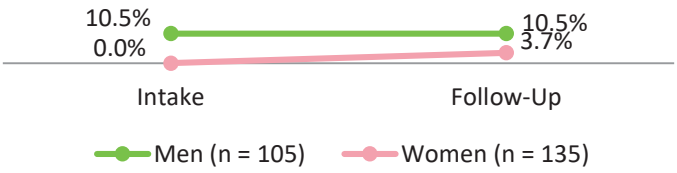
FIGURE 2.40. PAST-6-MONTH SMOKING TOBACCO, E-CIGARETTE, AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (n = 240)



GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO USE

Even though only a small percentage of clients reported using smokeless tobacco at intake and follow-up, there was a significant difference by gender at both intake and follow-up. At intake, all of the clients who reported using smokeless tobacco were men (see Figure 2.41).

FIGURE 2.41. GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP[a]

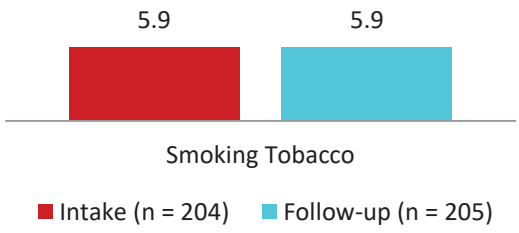


a—Significant difference by gender at intake ($p < .001$) and follow-up ($p < .05$).

AVERAGE NUMBER OF MONTHS OF SMOKING TOBACCO

Figure 2.42 shows that among clients who reported smoking tobacco in the 6 months before entering treatment (n = 204), they reported smoking tobacco, on average, 5.9 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 (5.9 months; n = 205).

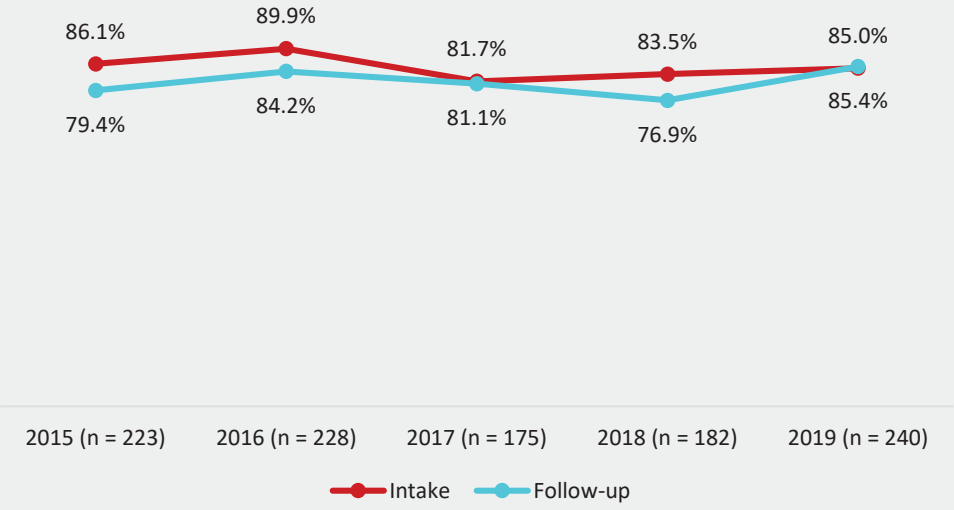
FIGURE 2.42. AVERAGE NUMBER OF MONTHS OF SMOKING TOBACCO USE



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 was in report year 2018 when 83.5% of clients reported smoking tobacco at intake and 76.9% of clients reported smoking tobacco at follow-up.

FIGURE 2.43. TRENDS IN SMOKING TOBACCO USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019[62]

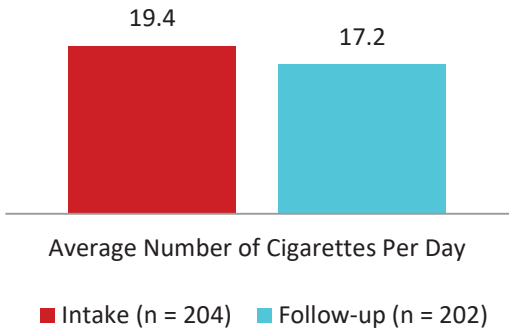


AVERAGE NUMBER OF CIGARETTES SMOKED

The average number of cigarettes clients reported smoking decreased slightly from intake to follow-up (see Figure 2.44). Of those who smoked tobacco at intake, clients reported smoking an average of 19.4 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 17.2 cigarettes per day.

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

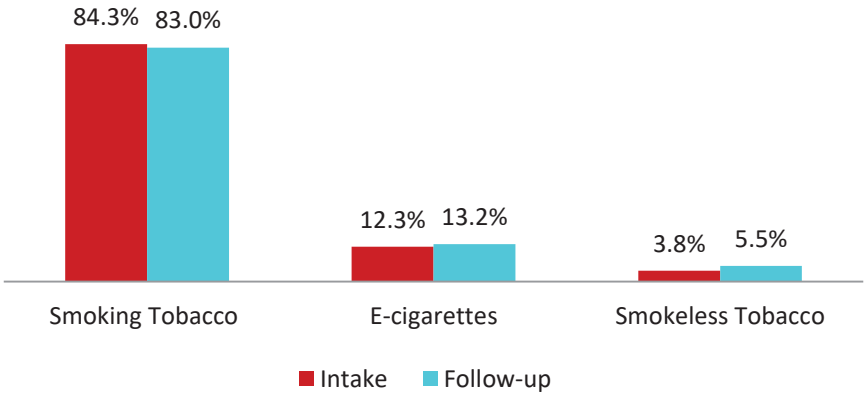
FIGURE 2.44. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO[63]



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 2.45).

FIGURE 2.45. PAST-30-DAY SMOKING, E-CIGARETTE AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (n = 235)



GENDER DIFFERENCES IN PAST-30-DAY SMOKELESS TOBACCO USE

Only a small percentage of clients reported using smokeless tobacco in the past 30 days, however, there was a significant difference by gender at intake, with more men using smokeless tobacco (see Figure 2.46).

[63] Three clients were missing information on the number of cigarettes smoked at follow-up.

FIGURE 2.46. GENDER DIFFERENCES IN PAST-30-DAY SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP[a]

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

"The counselor was really wonderful and helped me through the process, I tried using methadone on my own before, but counselor really helped. I needed the counseling."

KORTOS FOLLOW-UP CLIENT

SECTION 3:

Bivariate and Multivariate Analysis of Relapse

This section focuses on bivariate and multivariate analysis examining factors related to relapse in the 2019 KORTOS follow-up sample.

Among clients who were not incarcerated all 180 days before treatment and in the past 6 months at follow-up, KORTOS clients who reported any illicit drug use in the 6 months before follow-up (n = 117) were compared to clients who did not report any illicit drug use in the 6 months before follow-up (n = 122) in bivariate analysis. Logistic regression models were used to examine the association between targeted factors and illicit drug use at follow-up, controlling for other factors.

In comparing clients who did and clients who did not report illicit drug use at follow-up on targeted factors used in the regression models, none of the factors measured at intake were significantly associated with relapse in the follow-up period (Table 3.1).

TABLE 3.1. BIVARIATE ANALYSIS OF TARGETED FACTORS AT INTAKE COMPARING CLIENTS WHO RELAPSED AND CLIENTS WHO DID NOT AT FOLLOW-UP

	Did not use any illicit drug at follow-up (n = 122)	Reported illicit drug use at follow-up (n = 117)
Age	38.1	37.9
Male	45.1%	42.7%
Maximum number of months client used illicit drugs in the 6 months before entering treatment	5.2	5.5
Chances of getting off and staying off drugs moderately to very good	82.8%	72.6%
Met criteria for depression in the past 6 months at intake	63.9%	61.5%
Met criteria for generalized anxiety in the past 6 months at intake	70.5%	66.7%
Average number of adverse childhood experiences at intake	3.4	3.3
Homeless at intake	14.8%	16.2%
Employed at least one month in the past 6 months at intake	53.3%	54.7%
Arrested in the past 6 months at intake	18.9%	17.9%
Incarcerated in the past 6 months at intake	14.8%	19.7%
Average quality of life rating at intake	4.0	3.7
Average satisfaction with life rating at intake	9.8	9.4

Each targeted factor in Table 3.1 was entered in the logistic regression as predictor variables and any drug use in the past 12 months at follow-up was entered as the dependent variable. Results of the multivariate analysis show that none of the predictor variables at intake were significantly associated with drug use at follow-up (i.e., relapse).

SECTION 4:

Mental and Physical Health, Stress, and Victimization

This section examines changes in mental health and physical health status 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) personal safety, (5) general health status, (6) chronic pain, (7) health insurance, (8) stress-related health consequences, (9) using substances to manage stress, and (10) victimization experiences. The mental and physical health, stress, and victimization 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?"

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

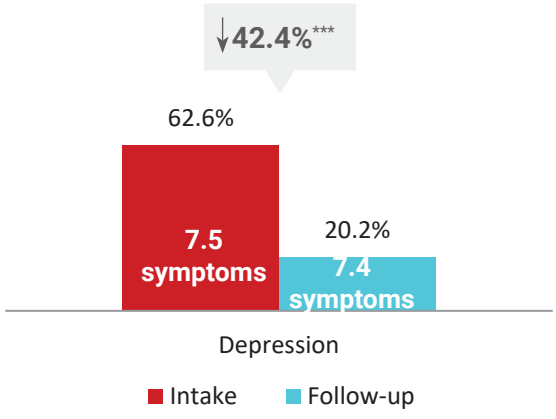
STUDY CRITERIA FOR DEPRESSION

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

Close to two-thirds of clients (62.6%) met study criteria for depression in the 6 months before they entered treatment (see Figure 4.1). At follow-up, 20.2% met study criteria for depression—a significant decrease of 42.4%.

Of those who met study criteria at intake (n = 152), they had an average of 7.5 symptoms out of 9. At follow-up, among those who met study criteria for depression (n = 49), clients reported an average of 7.4 symptoms out of 9.

FIGURE 4.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 243)

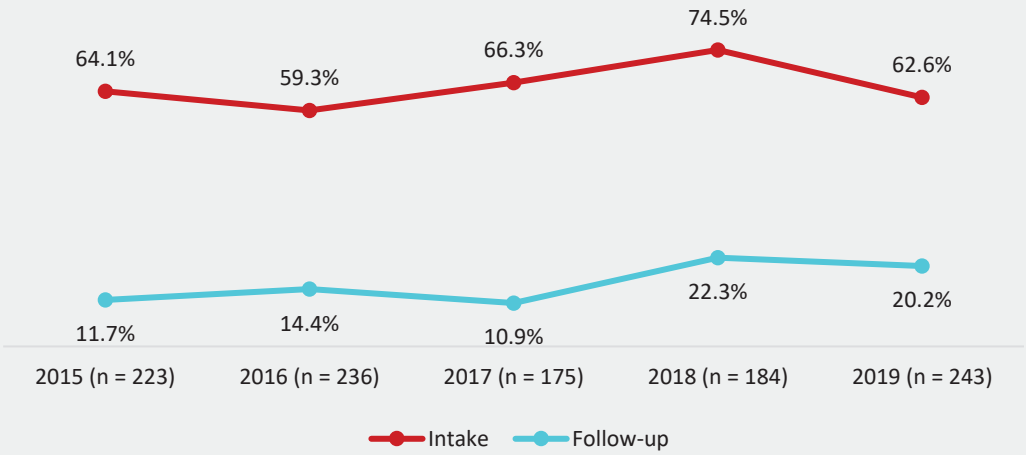


***p < .001.

Trends in Past-6-month Depression

The percent of clients who met criteria for depression at intake increased from report year 2016 (59.3%) to 2018 (74.5%), but decreased in 2019 (62.6%). The percent of clients who met criteria for depression at follow-up has increased since 2017 (10.9%) to 22.3% in 2018 and 20.2% in 2019.

FIGURE 4.2. TRENDS IN THE PERCENT OF CLIENTS WHO MET STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019



Generalized 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).

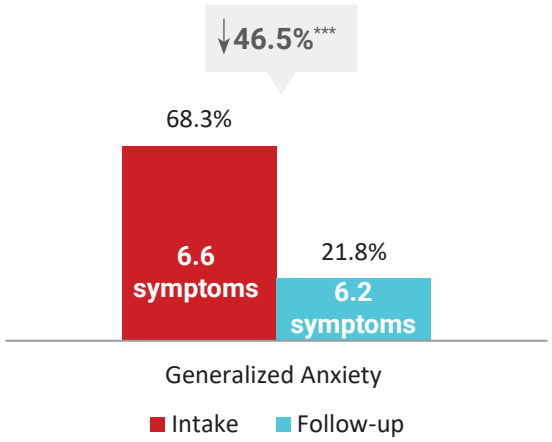
In the 6 months before entering treatment, 68.3% of clients reported symptoms that met study criteria for generalized anxiety and 21.8% reported symptoms at follow-up – a significant decrease of 46.5% (see Figure 4.3).

STUDY CRITERIA FOR GENERALIZED ANXIETY

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

Of those who met study criteria for anxiety at intake (n = 166), they had an average of 6.6 symptoms out of 7. At follow-up, among those who met study criteria for anxiety (n = 53), clients reported an average of 6.2 symptoms out of 7.

FIGURE 4.3. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 243)

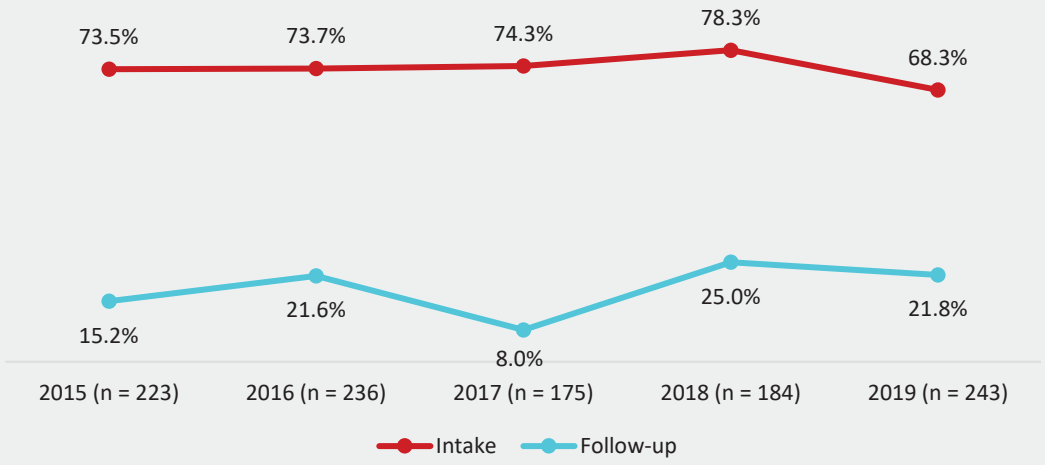


***p < .001.

Trends in Past-6-month Generalized Anxiety

The percent of clients who met criteria for generalized anxiety at intake has remained consistent over the previous 4 years (around three-quarters each year). In 2019, however, the percent of clients who met criteria for generalized anxiety at intake decreased to 68.3%. The percent of clients who met criteria for generalized anxiety at follow-up has fluctuated over time. About 15% of clients in 2015 and 21.6% of clients in 2016 met criteria for generalized anxiety at follow-up. In 2017, only 8.0% of clients met criteria for generalized anxiety at follow-up compared to 25.0% of clients in 2018. About 22% of clients met study criteria for generalized anxiety in 2019.

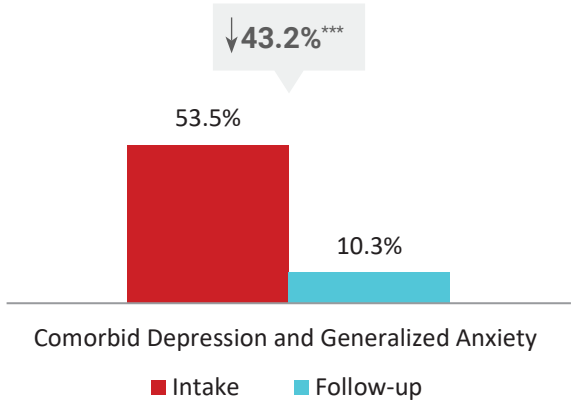
FIGURE 4.4. TRENDS IN THE PERCENT OF CLIENTS WHO MET STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019



Comorbid Depression and Anxiety Symptoms

Figure 4.5 shows that at intake, 53.5% of clients met study criteria for both depression and generalized anxiety. There was a significant decrease of 43.2% to 10.3% at follow-up.

FIGURE 4.5. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 243)

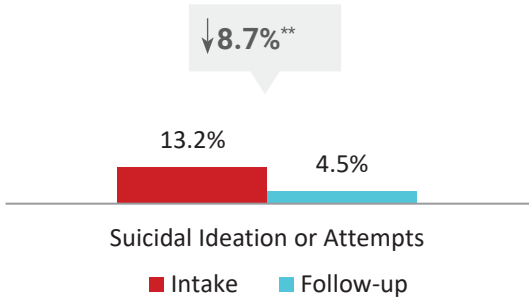


***p < .001.

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. There was a significant 8.7% decrease in the percent of clients reporting suicidal ideation or attempts from intake (13.2%) to follow-up (4.5%; see Figure 4.6).

FIGURE 4.6. CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 243)

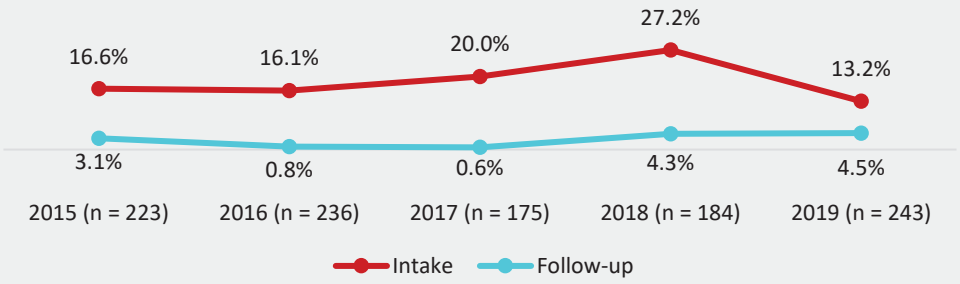


**p < .01.

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. At follow-up, the percent of clients reporting suicidal ideation and attempts increased from 0.6% in 2017 to 4.5% in 2019.

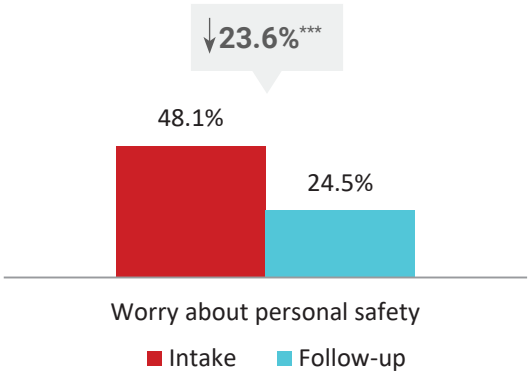
FIGURE 4.7. TRENDS IN THE PERCENT OF CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019



Worry About Personal Safety

At intake, 48.1% of clients reported they were worried about their personal safety. Specifically, 7.5% of clients were worried about personal safety a great deal. At follow-up, one-quarter of clients were worried about their personal safety (a significant decrease of 23.6%). Only 2.9% of clients reported they were worried about personal safety a great deal at follow-up.

FIGURE 4.8. CLIENTS WHO WORRIED ABOUT PERSONAL SAFETY AT INTAKE AND FOLLOW-UP (N = 241)[64]



**p < .01.

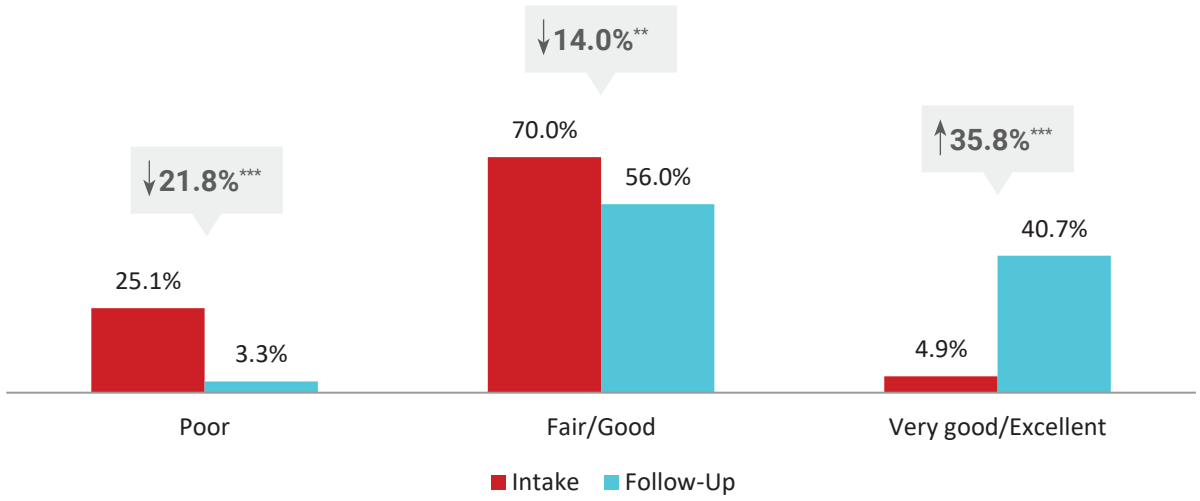
[64] Two clients were missing data on their worry about personal safety at follow-up.

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 2.1 at intake and this significantly increased to 3.3 at follow-up (not depicted in figure). Figure 4.9 shows that significantly more clients rated their overall physical health as very good or excellent (40.7%) at follow-up when compared to intake (4.9%).

FIGURE 4.9. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 243)[a]

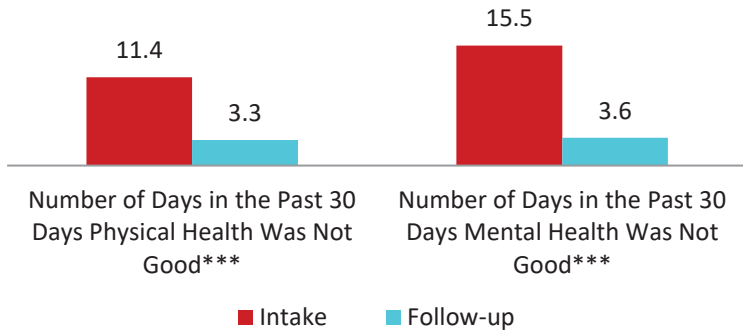


a – Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
**p< .01, ***p < .001.

PERCEPTIONS OF PHYSICAL AND MENTAL HEALTH

Clients were asked how many days in the past 30 days their physical and mental health were poor at intake and follow-up (see Figure 4.10). The number of days clients reported their physical health was poor decreased significantly from an average of 11.4 days to 3.3 days. The number of days clients' mental health was poor also decreased significantly from intake (15.5) to follow-up (3.6).

FIGURE 4.10. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 242)[65]

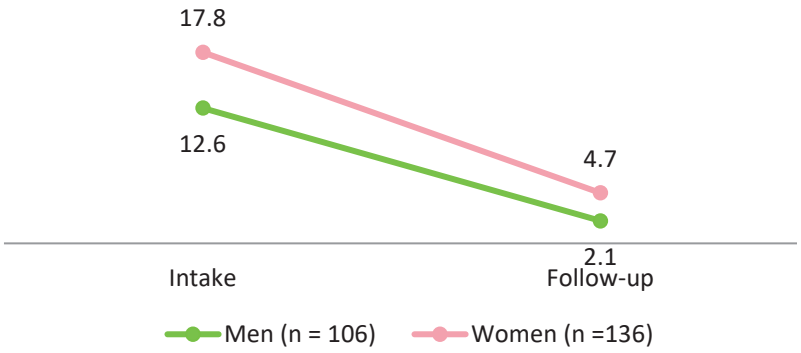


***p < .001.

GENDER DIFFERENCES IN PERCEPTIONS OF MENTAL HEALTH

When compared to men (12.6), women reported a significantly higher average number of days their mental health was poor at intake (17.8; see Figure 4.11). At follow-up, women still reported a significantly higher average number of days their mental health was poor (4.7) compared to men (2.1).

FIGURE 4.11. GENDER DIFFERENCES IN PERCEPTIONS OF MENTAL HEALTH AT INTAKE AND FOLLOW-UP[a,b]



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

"They changed my life completely for the better, great therapist, very supportive staff."

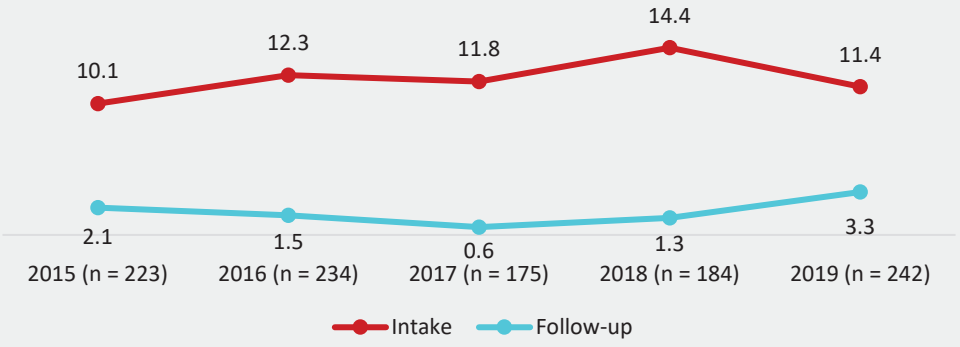
KORTOS FOLLOW-UP CLIENT

[65] One client had missing information for the number of physical and mental health days at follow-up.

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 increased from 10.1 days in 2015 to 14.4 days in 2018. In 2019, however, the average number of days clients reported their physical health was poor decreased to 11.4. 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 has increased in 2019 to 3.3 days.

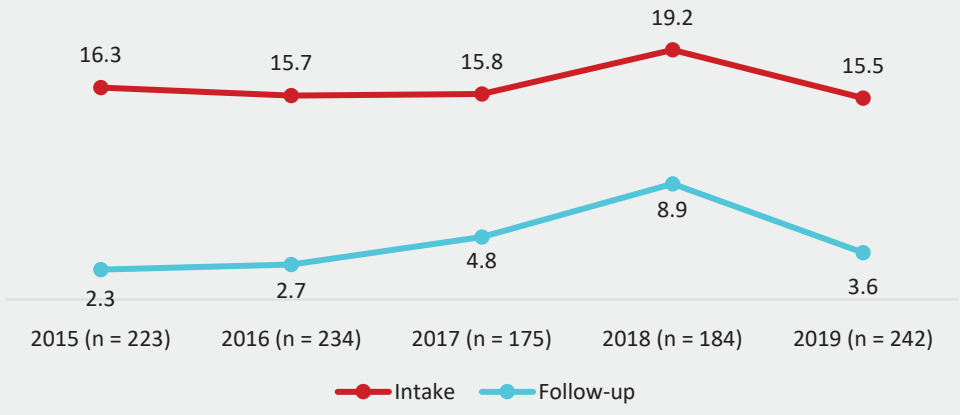
FIGURE 4.12. TRENDS IN PERCEPTIONS OF PHYSICAL HEALTH AT INTAKE AND FOLLOW, REPORTS 2015-2019



Trends in Perceptions of Poor Mental Health

The average number of days clients reported their mental health was not good in the past 30 days has increased at both intake and follow-up in the past few years. At intake in 2017, clients reported an average of 15.8 days their mental health was not good and in 2018, clients reported an average of 19.2 days. This number has decreased in 2019 with clients reporting an average of 15.5 days their mental health was not good before intake. 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 8.9 days in 2018. In 2019, however, the number of days clients reported their mental health was not good decreased at follow-up.

FIGURE 4.13. TRENDS IN PERCEPTIONS OF MENTAL HEALTH AT INTAKE AND FOLLOW, REPORTS 2015-2019[66]

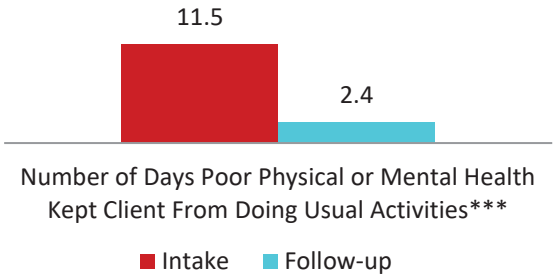


[66] In 2015, 3 cases had missing data for perceptions of mental health at intake and in 2019 one client had missing data.

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 11.5 days at intake to 2.4 days at follow-up (see Figure 4.14).

FIGURE 4.14. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 238)[67]

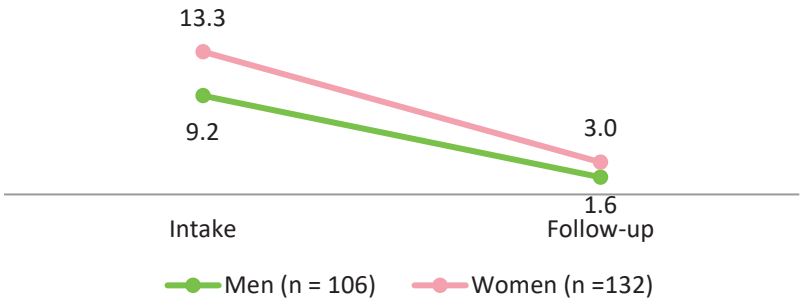


***p < .001.

GENDER DIFFERENCES IN PERCEPTIONS OF POOR PHYSICAL OR MENTAL HEALTH LIMITING ACTIVITIES

When compared to men (9.2), women reported a significantly higher average number of days poor physical or mental health limited their activities at intake (13.3; see Figure 4.15).

FIGURE 4.15. GENDER DIFFERENCES IN PERCEPTIONS OF POOR PHYSICAL OR MENTAL HEALTH LIMITING ACTIVITIES AT INTAKE AND FOLLOW-UP[a,b]



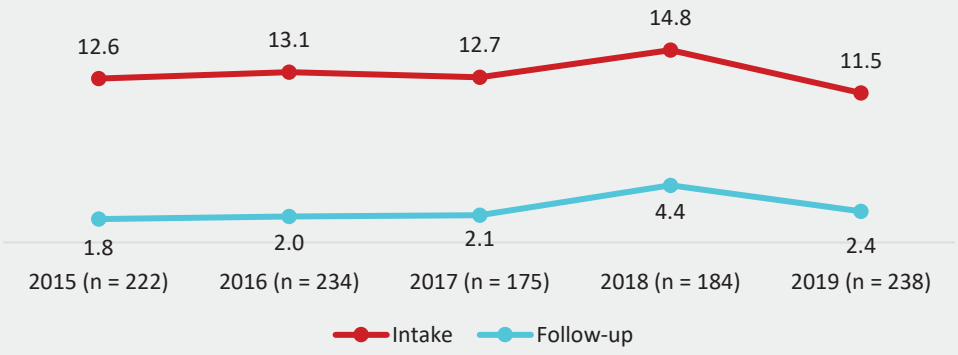
a—Statistical difference by gender at intake (p < .01).
b – Significant decrease from intake to follow-up for men and women as measured by paired T-Test, p < .001.

[67] Five clients had missing data for the number of days poor physical or mental health kept the client from doing usual activities.

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

Between 2015 and 2018, the average number of days in the past 30 days clients reported their poor physical or mental health kept them from doing their usual activities gradually increased at both intake and follow-up. In 2019, however, the average number of days in the past 30 days clients reported their poor physical or mental health kept them from doing their usual activities decreased to 11.5 at intake and 2.4 at follow-up.

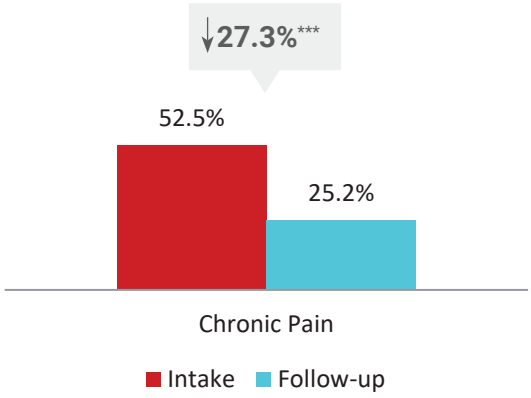
FIGURE 4.16. TRENDS IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEEP CLIENT FROM DOING USUAL ACTIVITIES AT INTAKE AND FOLLOW, REPORTS 2015-2019[68]



Chronic Pain

The percent of clients who reported chronic pain that was persistent and lasted at least 3 months decreased significantly from intake to follow-up by about 27% (see Figure 4.17). At intake, 52.5% of clients reported chronic pain and that percent dropped to 25.2% by follow-up.

FIGURE 4.17. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 242)[69]



***p < .001.

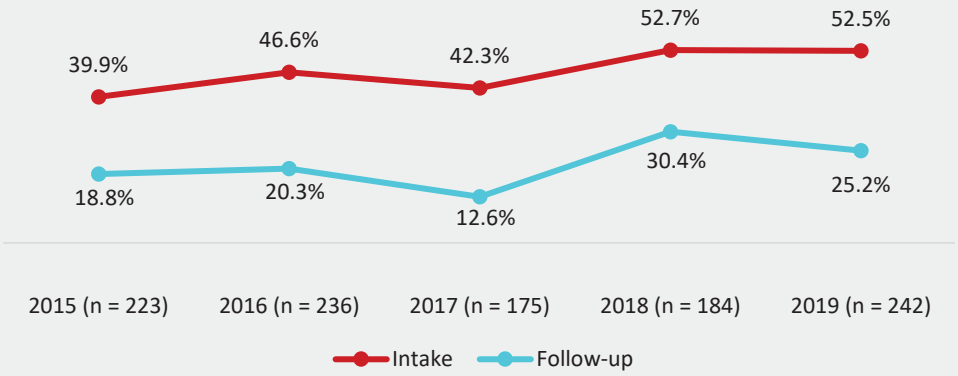
[68] In 2015, one case had a missing value and in 2019 5 cases had a missing value for this item at follow-up.

[69] One client was missing information on chronic pain at follow-up.

Trends in Chronic Pain

The percent of clients who reported chronic pain fluctuated over time at intake and follow-up. In the 2015 report, 39.9% of clients reported chronic pain compared to 46.6% in 2016. In 2017, the percent of clients reporting chronic pain decreased slightly to 42.3% and then increased to 52.7% in 2018 and remained stable in 2019 (52.5%). At follow-up, 18.8% of clients reported chronic pain in 2015 and 20.3% of clients reported chronic pain in 2016. The percent of clients reporting chronic pain at follow-up decreased to 12.6% in 2017, but more than doubled in 2018 with 30.4% of clients reporting chronic pain. In 2019, the percent of clients reporting chronic pain at follow-up decreased to 25.2%.

FIGURE 4.18. TRENDS IN THE PERCENT OF CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019[70]



Of those who were not incarcerated all 180 days before entering the program or in the 6 months before follow-up and misused prescription opioids at intake (n = 148), 62.2% reported chronic pain in the 6 months before entering the program and 29.1% experienced chronic pain at follow-up, which was a significant decrease of 33.1%.

Additionally, of those clients who were not incarcerated all 180 days before entering the program or at follow-up, reported misusing prescription opioids, and experienced chronic pain at intake (n = 92), 40.2% (n = 37) reported chronic pain in the past 6 months at follow-up and 20.7% (n = 19) reported past-6-month misuse of prescription opioids.

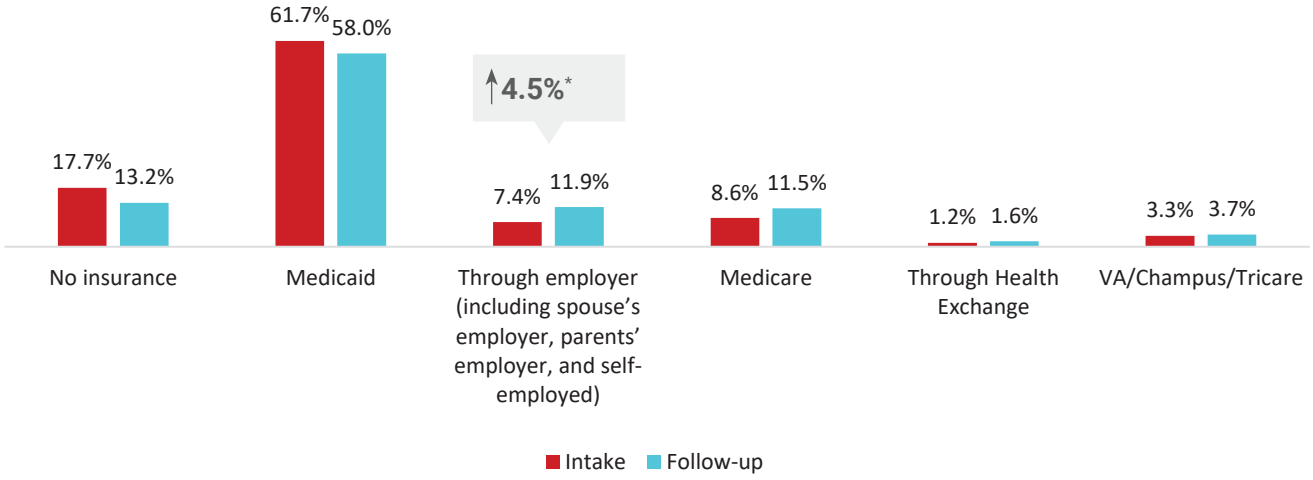
Health Insurance

At intake, the majority of KORTOS clients reported they had health insurance through Medicaid (61.7%; see Figure 4.19). Almost 18% did not have any insurance. Small percentages of clients had insurance through an employer, including through a spouse, parent, or self-employment (7.4%), through Medicare (8.6%), through Health Exchange (1.2%), and through VA/Champus/Tricare (3.3%). At follow-up, the percent of clients reporting they had no insurance decreased

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

slightly (but not significantly) as did the percent of clients reporting they had Medicaid. The percent of clients who reported they had insurance through an employer increased significantly to 11.9% at follow-up.

FIGURE 4.19 HEALTH INSURANCE FOR KORTOS CLIENTS AT INTAKE AND FOLLOW-UP (N = 243)



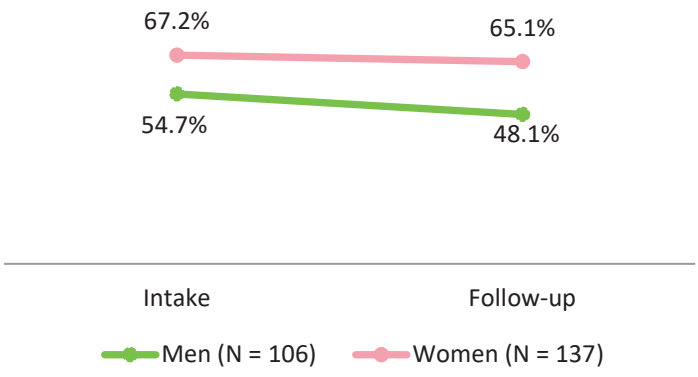
*p < .05.

Of those clients who were employed full-time at intake (n = 73), only 15.1% had insurance through an employer (including a spouse's or parent's employer). At follow-up, of those clients employed full-time (n = 104), only 22.1% had insurance through an employer.

GENDER DIFFERENCES IN MEDICAL INSURANCE

Significantly more women reported being insured by Medicaid at both intake and follow-up compared to men (see Figure 4.20).

FIGURE 4.20. GENDER DIFFERENCES IN CLIENTS REPORTING HAVING MEDICAID INSURANCE AT INTAKE AND FOLLOW-UP[a]

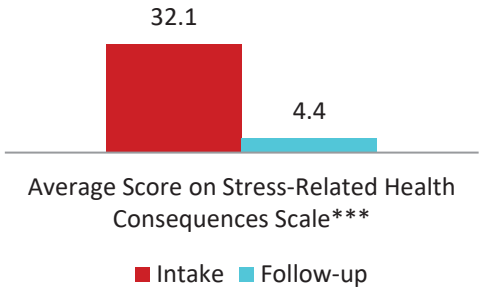


a—Statistical difference by gender at intake (p < .05) and follow-up (p < .01).

Stress-related Health Consequences

Clients were asked about physiological symptoms often associated with higher stress with questions from the Stress-Related Health Consequences Scale. The scale contains 12 symptoms and clients indicated how often they experienced those symptoms in the past 7 days (e.g., experienced unexplained aches and pains, slept poorly, experienced an increased heart rate). Higher scores on the scale indicate higher stress and greater physiological indicators of stress. The minimum score is 0 and the maximum score is 60. For the overall sample, scores decreased significantly from 32.1 at intake to 4.4 at follow-up (see Figure 4.21).

FIGURE 4.21. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP (N = 204)[71]

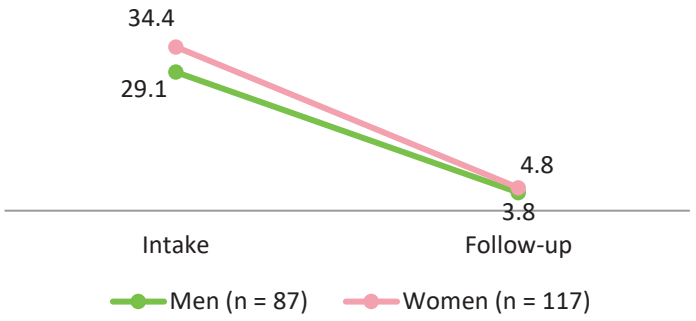


***p < .001.

GENDER DIFFERENCES IN STRESS-RELATED HEALTH CONSEQUENCES

Women had significantly higher average scores on the stress-related health consequences scale at intake compared to men.

FIGURE 4.22. GENDER DIFFERENCES IN AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP[a,b]



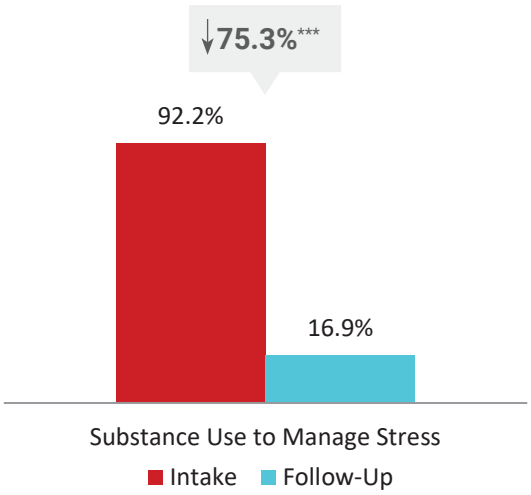
a—Statistical difference by gender at intake (p < .05).
b – Significant decrease from intake to follow-up for men and women as measured by paired T-Test, p < .001.

[71] This measure was removed from the instrument; therefore, not all clients had the opportunity to answer.

Using Substances to Manage Stress

Clients were also asked if they used alcohol, prescription drugs, or illegal drugs in the past 7 days to reduce or manage stress at intake and follow-up. Figure 4.23 shows that 92.2% of clients reported they used at least one type of substance to reduce or manage their stress in the 7 days before entering treatment. At follow-up, that percent significantly decreased to 16.9%.

FIGURE 4.23. CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE STRESS AT INTAKE AND FOLLOW-UP (N = 243)



***p < .001.

Of clients who met study criteria for depression and/or generalized anxiety at follow-up (n = 77), 29.9% reported using alcohol, prescription drugs, or illegal drugs at follow-up to reduce anxiety, worry, or fear.

"They are very good people. They care about you and work with you. It feels like home."

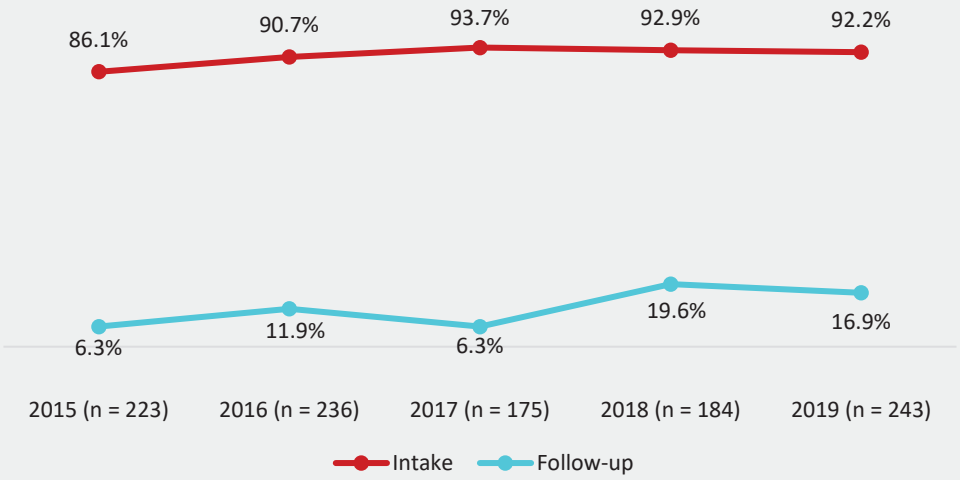
KORTOS FOLLOW-UP CLIENT

Trends in Substance Use to Reduce or Manage Stress

Clients are asked at both intake and follow up if they have used alcohol, prescription drugs, or illegal drugs to reduce any stress, anxiety, worry, or fear in the past 7 days. In the past 5 years, the percent of clients who have reported using substance to manage stress has ranged from a low of 86.1% to a high of 93.7%.

At follow-up, the percent of clients who reported using substances to reduce or manage stress fluctuated. In 2015 and 2017, only 6.3% of clients reported using substances to reduce or manage stress. About 12% of clients in 2016 and 19.6% of clients in 2018 reported using substances to reduce or manage stress. In 2019, the percent of clients who reported using substances to reduce or manage stress at follow-up decreased slightly to 16.9%.

FIGURE 4.24. TRENDS IN THE PERCENT OF CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE THEIR STRESS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019

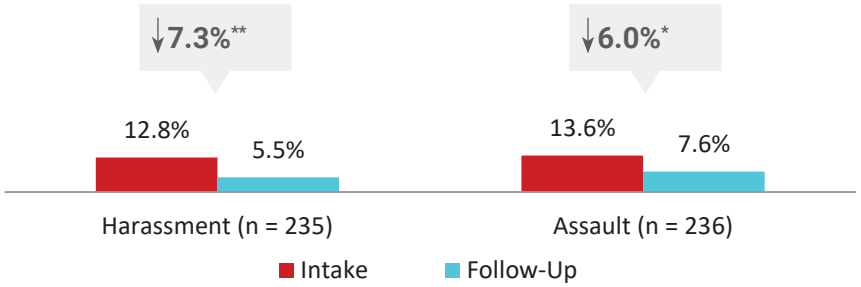


Victimization Experiences

In addition to items about adverse childhood experiences, clients were asked about several types of interpersonal victimization in the 6 months before entering programs and in the 6 months before follow-up (see Figure 4.25). These items were included in the intake and follow-up surveys, beginning in October 2016. Because relatively small percentages of clients reported each type of victimization experience in the 12-month periods, several related items were collapsed into two different categories: (1) any harassment (e.g., verbally harassed on the street or in public, harassed on the road, and sexually harassed on the street), and (2) any assault (e.g., robbed or mugged by force, assaulted with or without a weapon), threatened with a gun, intimate partner violence, stalking).

The percent of clients who reported experiencing any harassment and any assault in the past 12 months decreased significantly from intake to follow-up.

FIGURE 4.25. PAST-6-MONTH CRIME AND INTERPERSONAL VICTIMIZATION



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

SECTION 5.

Criminal Justice System Involvement

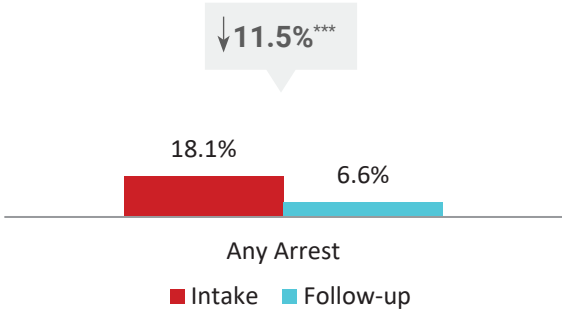
This section describes change in client involvement with the criminal justice system during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest, (2) the number of times arrested, among clients with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

Arrests

ANY ARRESTS IN THE PAST 6 MONTHS

About 18% of clients reported any arrests in the 6 months before entering treatment and 6.6% of clients reported any arrests in the 6 months before follow-up (a significant decrease of 11.5%; see Figure 5.1).

FIGURE 5.1. PAST-6 MONTH ARRESTS AT INTAKE AND FOLLOW-UP (N = 241)[72]



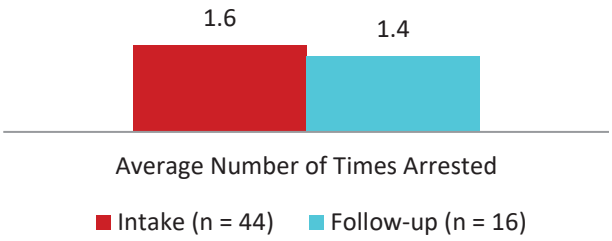
***p < .001.

AVERAGE NUMBER OF ARRESTS

Among clients who reported at least one arrest in the 6 months before entering the program (n = 44), the average number of times they were arrested was 1.6 (see Figure 5.2). Among clients who reported at least one arrest in the 6 months before follow-up (n = 16), the average number of times they were arrested was 1.4.

[72] 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.

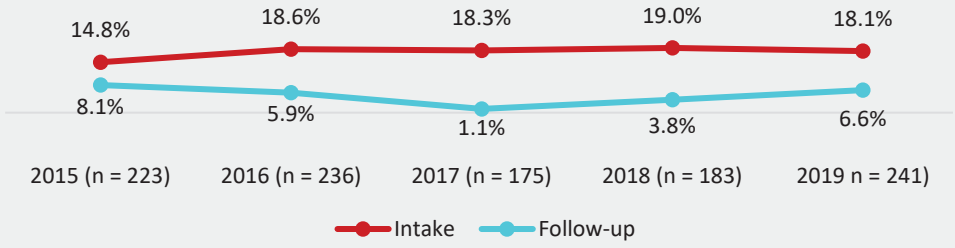
FIGURE 5.2. AVERAGE NUMBER OF TIMES ARRESTED AT INTAKE AND FOLLOW-UP, AMONG CLIENTS ARRESTED DURING EACH PERIOD



Trends in Past-6-month Arrests

While the percent of clients reporting an arrest in the past 6 months at intake has increased slightly overall in the past 5 years, the percent of clients reporting an arrest in the past 6 months at follow-up has decreased slightly (see Figure 5.3).

FIGURE 5.3. TRENDS IN THE PERCENT OF CLIENTS REPORTING ANY ARRESTS IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019[73]



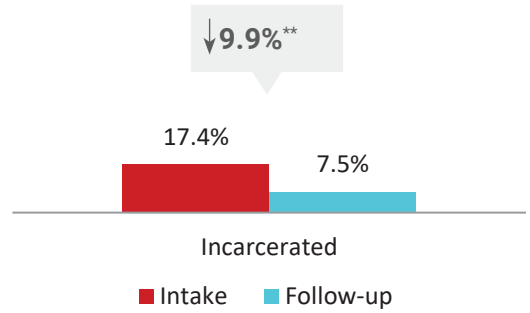
Incarceration

INCARCERATION IN THE PAST 6 MONTHS

About 17% of clients reported they had spent at least one night in jail or prison at intake. At follow-up, only 7.5% of clients reported they had spent at least one night in jail or prison in the past 6 months. The percent of clients reporting any incarceration decreased significantly by 9.9% (see Figure 5.4).

[73] 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.

FIGURE 5.4. CLIENTS REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP (N = 241)

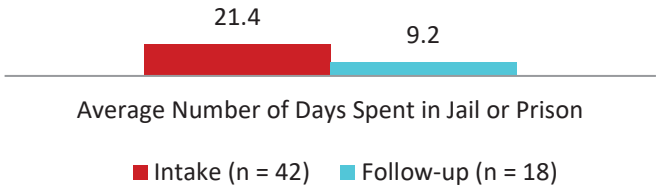


**p < .01.

AVERAGE NUMBER OF DAYS SPENT INCARCERATED, AMONG CLIENTS WHO REPORTED INCARCERATION

Figure 5.5 shows that among clients who reported incarceration, the average number of days incarcerated was 21.4 at intake (n = 42) and 9.2 at follow-up (n = 18).

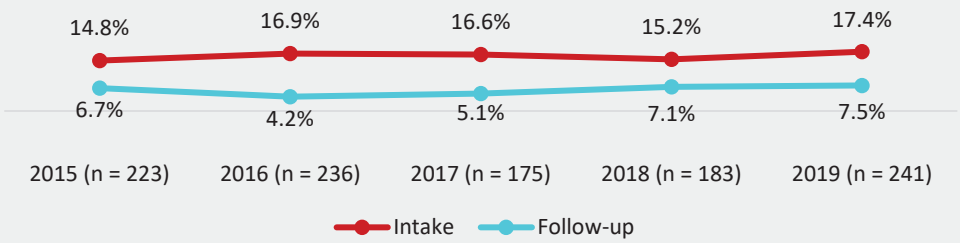
FIGURE 5.5. AVERAGE NUMBER OF DAYS INCARCERATED, FOR CLIENTS WHO WERE INCARCERATED AT EACH PERIOD



Trends in Past-6-month Incarceration

The percent of clients reporting spending at least one night in jail or prison has been relatively steady over the past 5 years 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 (see Figure 5.6).

FIGURE 5.6. TRENDS IN THE PERCENT OF CLIENTS REPORTING ANY INCARCERATION IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019[74]

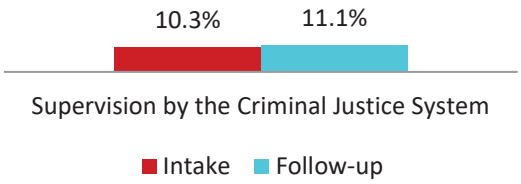


[74] In 2019, one client refused to answer criminal justice system involvement questions at follow-up and one client was missing data on criminal justice questions at follow-up.

Criminal Justice System Supervision

The number of clients who self-reported they were under criminal justice system supervision (e.g., probation or parole) did not change significantly from 10.3% at intake to 11.1% at follow-up (see Figure 5.7).

FIGURE 5.7. CLIENTS REPORTING CRIMINAL JUSTICE SYSTEM SUPERVISION AT INTAKE AND FOLLOW-UP (N = 243)



SECTION 6.

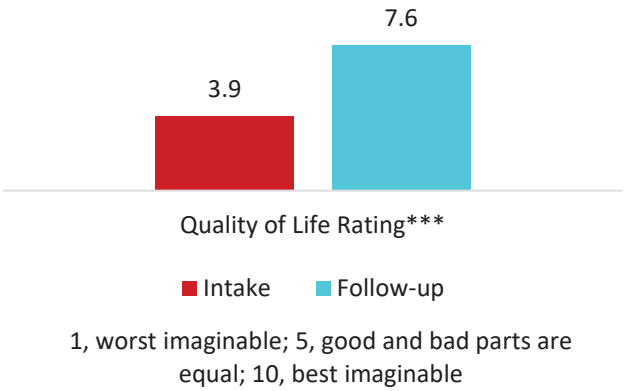
Quality of Life

This section describes change in client quality of life and satisfaction with life during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) quality of life rating and (2) satisfaction with life rating.

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 3.9 at intake (see Figure 6.1). The average quality of life rating significantly increased to 7.6 at follow-up.

FIGURE 6.1. PERCEPTION OF QUALITY OF LIFE AT INTAKE AND FOLLOW-UP (N = 243)



***p < .001.

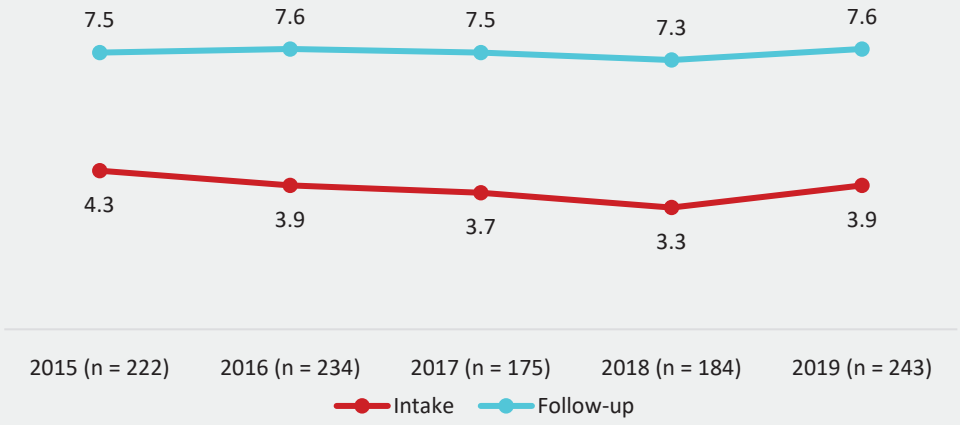
"They don't treat you like a number, they treat you very well and know your name and treat you like a person."

KORTOS FOLLOW-UP CLIENT

Trends in Quality of Life Rating

Clients are 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 consistently rated their quality of life, on average, close to 4. At follow-up, that rating has significantly increased to an average of about a 7.5 (see Figure 6.2).

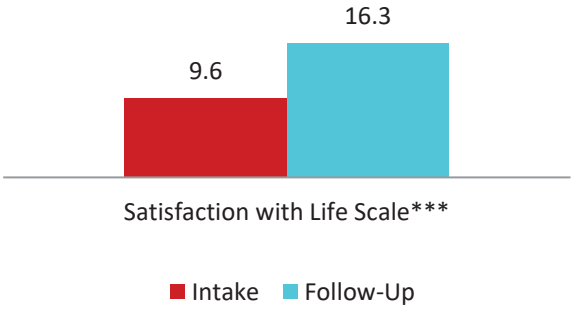
FIGURE 6.2. TRENDS IN QUALITY OF LIFE RATING AT INTAKE AND FOLLOW, REPORTS 2015-2019



Satisfaction with Life Rating

At both time frames, clients were presented with five statements and asked to respond how much they agreed or disagreed with each statement, using a scale with 1 representing "Strongly disagree" and 5 representing "Strongly agree".[75] Each statement is a positively worded aspect of high satisfaction with one's life. One statement, for example, is "In most ways my life is close to my ideal." The values assigned to each response are added to create a life satisfaction score. The lowest possible score is 5 and the highest possible score is 25. Lower scores indicate lower satisfaction and higher scores represent higher satisfaction. Figure 6.3 shows that clients' scores on the satisfaction with life scale increased significantly from intake (9.6) to follow-up (16.3).

FIGURE 6.3. SATISFACTION WITH LIFE AT INTAKE AND FOLLOW-UP (N = 204)[76]



***p < .001.

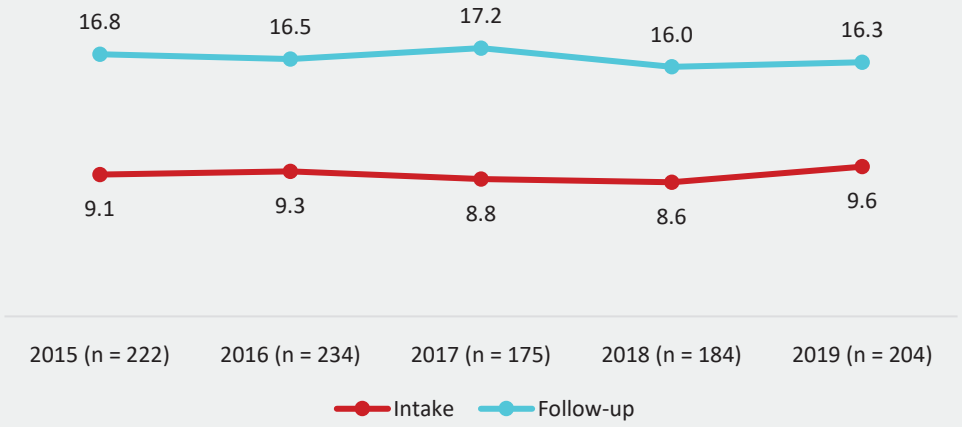
[75] Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. Journal of Personality Assessment, 49, 71-75.

[76] This measure was removed from the instrument; therefore, not all clients had the opportunity to answer.

Trends in Satisfaction with Life Rating

Average ratings of clients' satisfaction with their lives have remained steady at both intake (about a 9) and at follow-up (about a 17).

FIGURE 6.4. TRENDS IN QUALITY OF LIFE RATING AT INTAKE AND FOLLOW, REPORTS 2015-2019



SECTION 7.

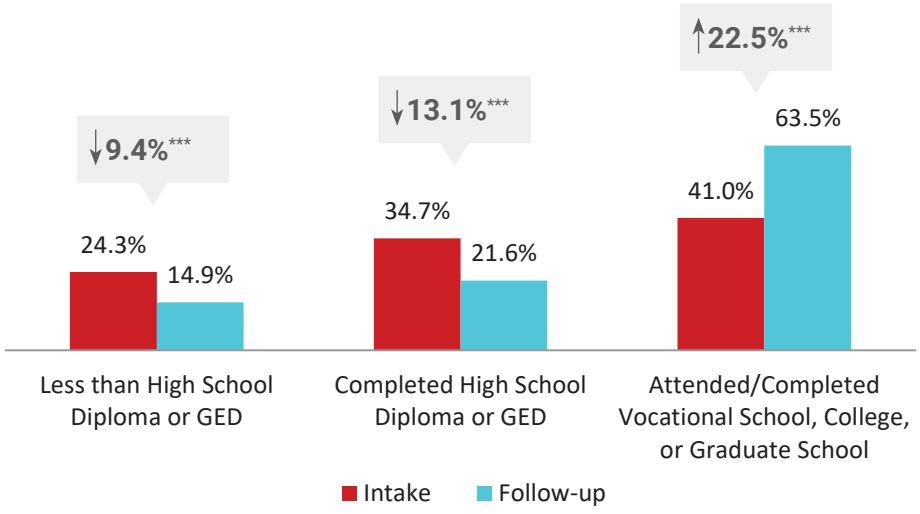
Education, Economic Status, and Living Circumstances

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, (3) the percent of clients who worked full-time or part-time, (4) hourly wage, (5) homelessness, (6) living situation, and (7) economic hardship.

Education

The average highest level of education increased significantly from intake (12.8) to follow-up (13.2), where 12 = High school diploma or GED (not depicted in a figure). Another way to examine change in the percent of clients who reported different levels of education. There was a significant increase in the percent of clients who reported attending or completing vocational school, college, or graduate school from intake to follow-up (see Figure 7.1).

FIGURE 7.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE AND FOLLOW-UP (n = 222)[77]



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

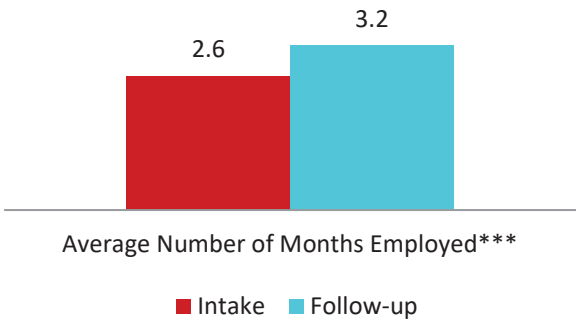
[77] 18 cases had missing values for education because of inconsistencies in data from intake to follow-up. In addition, 3 clients were missing data at follow-up.

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 7.2 shows there was a significant increase over time in the average number of months clients reported they were employed from intake (2.6) to follow-up (3.2).

FIGURE 7.2. AVERAGE NUMBER OF MONTHS EMPLOYED IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 239)[78]

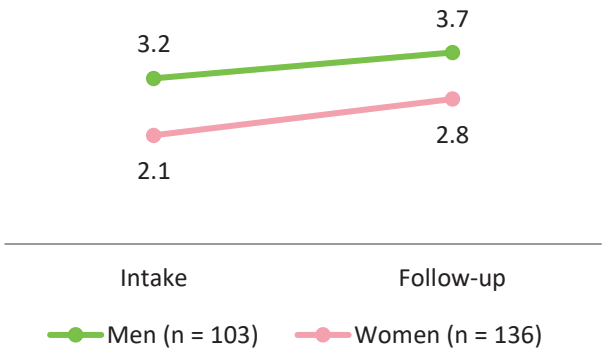


***p < .001.

GENDER DIFFERENCES IN THE NUMBER OF MONTHS EMPLOYED

Men reported working significantly more months at both periods compared to women (intake, 3.2 vs. 2.1 and follow-up, 3.7 vs. 2.8). There was a significant increase in the number of months employed from intake to follow-up for both men and women (see Figure 7.3).

FIGURE 7.3. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP[a, b]



a—Significant difference in number of months worked at intake (p < .01) and follow-up (p < .05) by gender.
b – Significant increase for men (p < .05) and women (p < .01) from intake to follow-up.

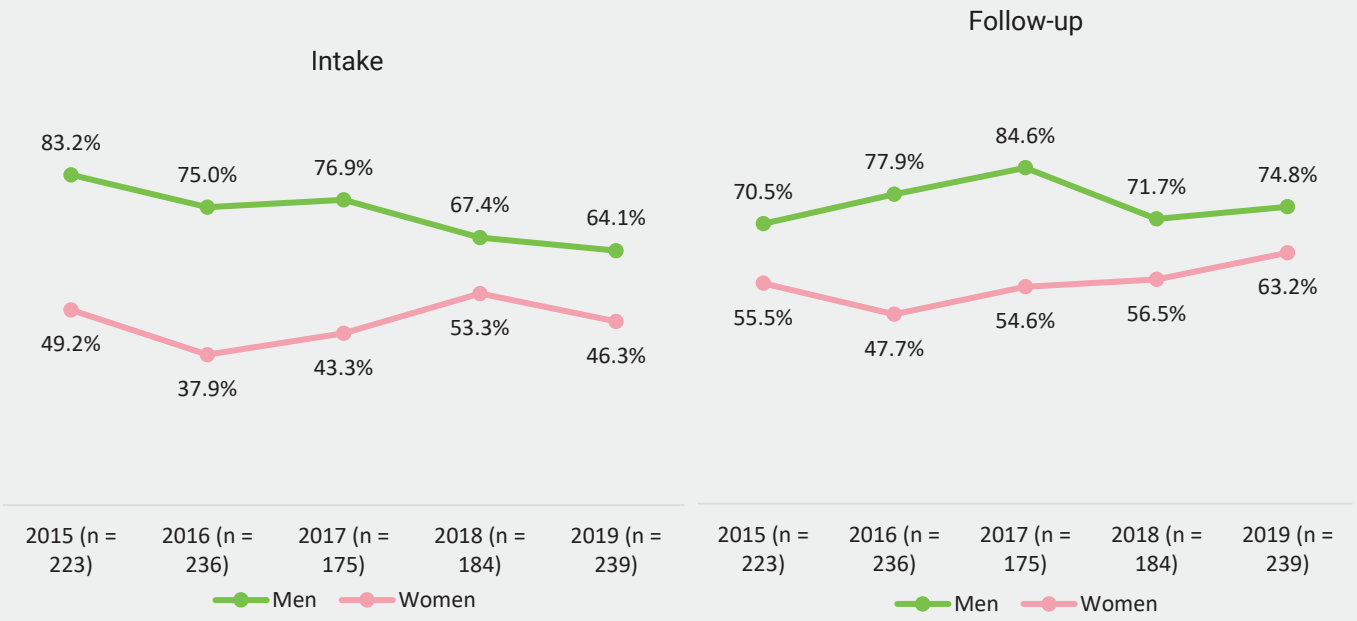
[78] Two clients refused to answer the number of months employed in the past 6 months and data was missing for 2 clients at follow-up.

Trends in Employment by Gender

For the past 5 years, 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.

By follow-up, on average, 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 has increased. In 2019, almost two-thirds of women reported being employed at least one month at follow-up.

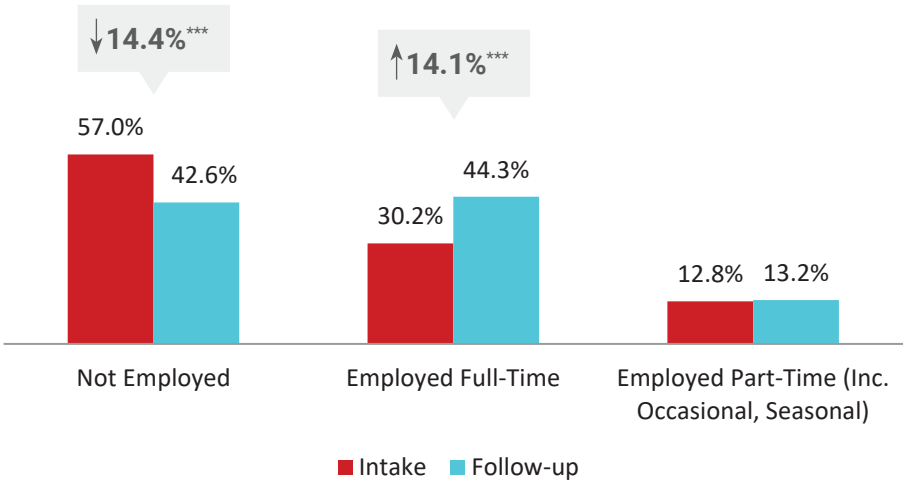
FIGURE 7.4. TRENDS IN GENDER DIFFERENCES IN CLIENTS EMPLOYED AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP



CURRENT EMPLOYMENT STATUS

At intake, 57.0% of clients were not employed (see Figure 7.5) in the 30 days before they entered the program and at follow-up, the percent of clients who were not employed was 42.6%. Additionally, the percent of clients who were employed full-time significantly increased 14.1%, from 30.2% at intake to 44.3% at follow-up.

FIGURE 7.5. CURRENT EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP (N = 235)[79a]

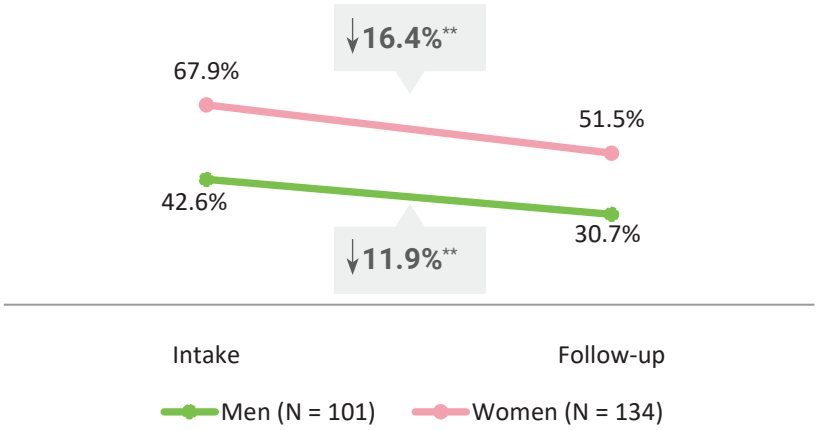


a – Significance tested with the Stuart-Maxwell Test of Overall Marginal Homogeneity ($p < .001$)
*** $p < .001$.

GENDER DIFFERENCES IN CURRENT EMPLOYMENT STATUS

At both intake and follow-up, significantly more women were currently unemployed compared to men.

FIGURE 7.6. GENDER DIFFERENCES IN BEING CURRENTLY UNEMPLOYED AT INTAKE AND FOLLOW-UP[a]

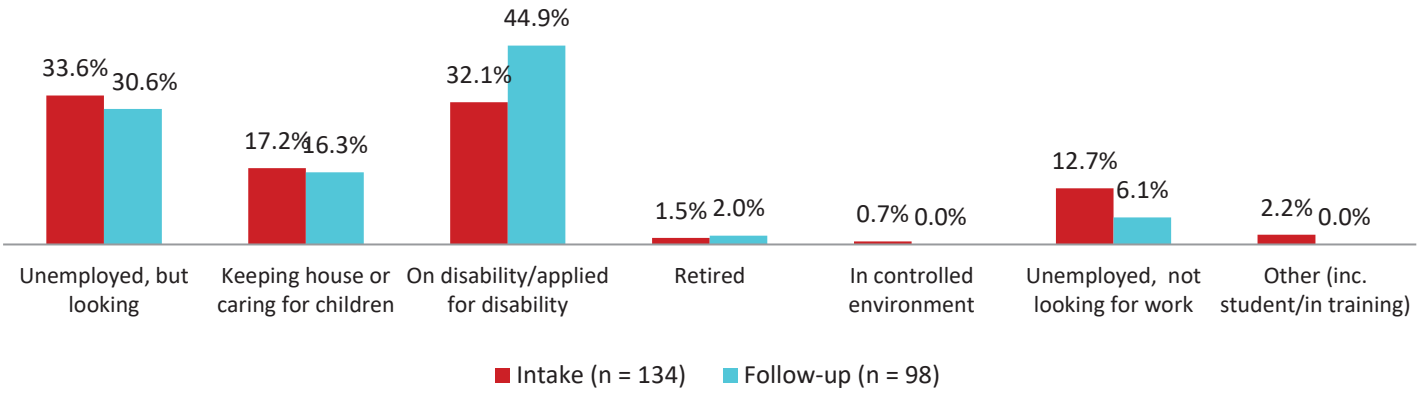


a—Significant gender difference at intake ($p < .001$) and follow-up ($p < .01$).
**$p < .01$.

Of those not employed at each point, clients were asked why they were not currently employed. At intake (n = 134), 33.6% of clients reported they were unemployed, but looking for work, 12.7% were unemployed, but were not looking for a job, and 32.1% were also on disability or had applied for disability. Of clients not employed at follow-up (n = 98), 30.6% were unemployed, but looking for work and 44.9% reported they were on disability or had applied for disability.

[79] Current employment status was missing for 6 clients and 2 clients refused to answer the question at follow-up.

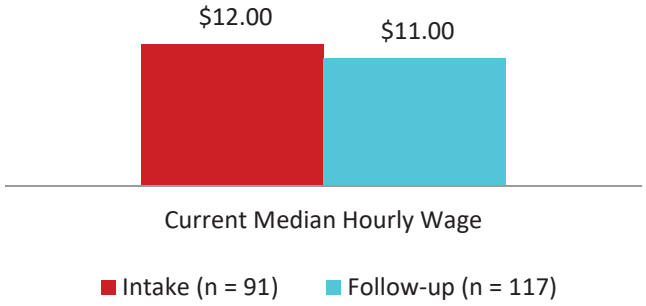
FIGURE 7.7. REASONS FOR UNEMPLOYMENT STATUS AT EACH POINT



HOURLY WAGE

Of those clients who were employed at intake (n = 91), the median hourly wage was $12.00. Of those employed at follow-up and who reported their hourly wage (n = 117)[80], the median hourly wage was $11.00 (see Figure 7.8).

FIGURE 7.8. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG EMPLOYED CLIENTS

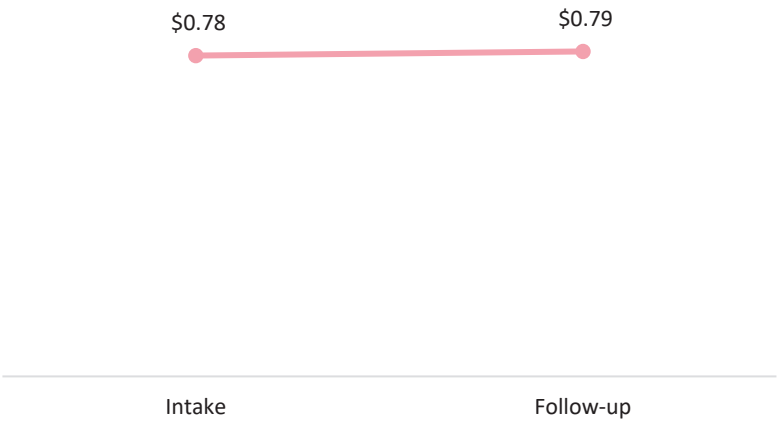


GENDER DIFFERENCES IN HOURLY WAGE

Among employed clients, there was a significant difference in median hourly wage between men and women at intake; employed women made $0.78 for every $1 men made ($12.84 for men and $10.00 for women). At follow-up, employed men again reported a significantly higher hourly wage than employed women ($12.63 vs. $10.00; see Figure 7.9).

[80] While 135 clients were employed at follow-up (2 clients refused to answer and data was missing for 6 clients at follow-up), 5 clients refused to report their hourly wage, one client was missing data, and 12 clients didn't know their hourly wage at follow-up.

FIGURE 7.9. MEDIAN HOURLY WAGE EMPLOYED WOMEN MAKE FOR EVERY DOLLAR EMPLOYED MEN MAKE AT INTAKE AND FOLLOW-UP



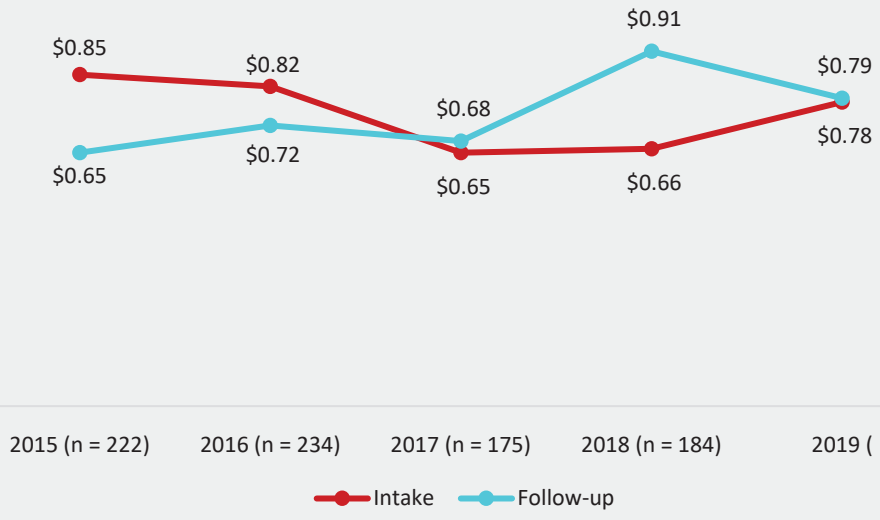
a—Significant difference in median hourly wage at intake and follow-up ($p < .001$).

Trends in the Gender Wage Gap

For the past five fiscal years, among employed individuals who reported their hourly wage, there was a gender wage gap at intake and follow-up: men had higher median hourly wages compared to women.

In both 2015 and 2016 at intake, employed women only made more than $0.80 to each dollar men made, however, that decreased at follow-up ($0.65 and $0.72 for every $1 men made). In 2017, women were still being paid significantly less than men, but the gap between what women were paid at intake ($0.65 for every dollar men made) and follow-up ($0.68 for every dollar men made) narrowed. In 2018 women reported a much higher hourly wage at follow-up compared to intake ($0.91). In 2019, the gap narrowed again, with women only making $0.78 and $0.79 for every $1 men made.

FIGURE 7.10. TRENDS IN THE GENDER WAGE GAP AT INTAKE AND FOLLOW, REPORTS 2015-2019[81]

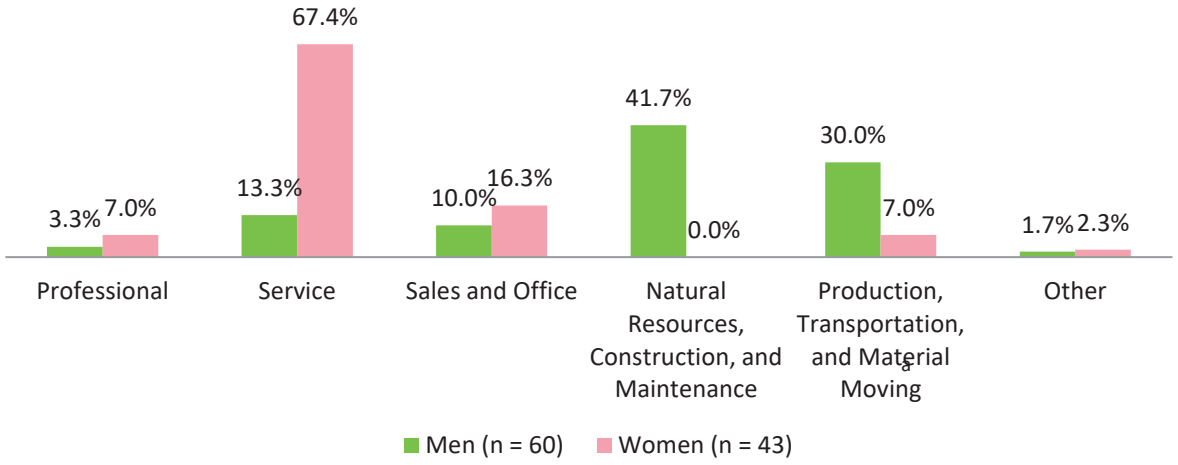


[81] In 2018, 19 men had missing values for their hourly wage, the median was lower for men which made the women's appear higher compared to previous years.

GENDER DIFFERENCES IN OCCUPATION TYPE

At least part of the reason for the marked difference in hourly wages between men and women is due to the significant difference in occupation type by gender for employed clients.[82] At intake, 67.4% of employed women reported having a service job (e.g., waiter/waitress, child care, housekeeping, hair stylist, etc.) while only 13.3% of employed men reported having a service job (see Figure 7.11a). Significantly more men reported working natural resources, construction, and maintenance jobs (e.g., mining, logging, farming, mechanic, heating/air conditioning tech, etc.) than women (41.7% vs. 0.0%), which tend to be higher paying than service jobs.

FIGURE 7.11a. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT INTAKE[a]

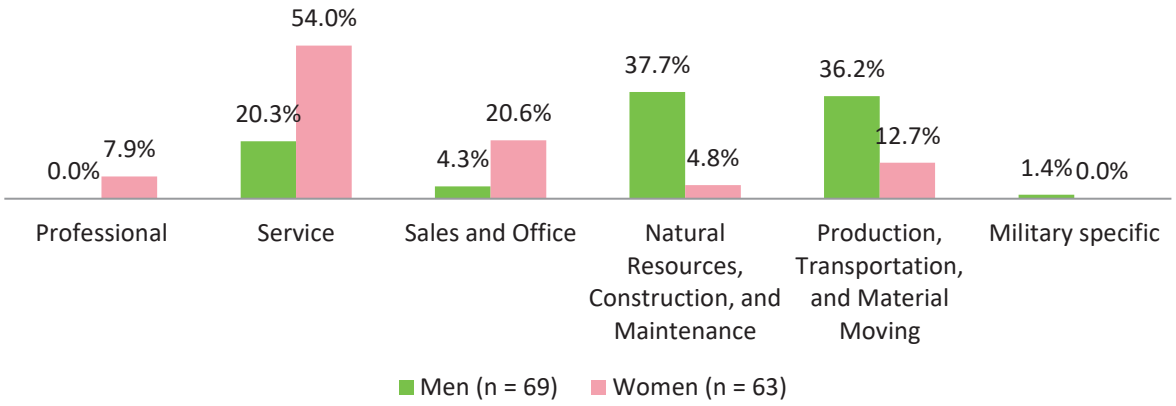


a – Significant difference by gender, $p < .001$.

At follow-up, the difference in occupation type was similar. Over half of employed women (54.0%) reported having a service job whereas 20.3% of employed men had a service job (see Figure 7.11b). About 21% of women had sales and office jobs (e.g., administrative support, cashier, retail sales, telemarketer, bank teller, etc.) while only 4.3% of employed men reported working similar jobs. Similar to intake, more employed men reported having a natural resources, construction, or maintenance job compared to women (37.7% vs. 4.8%). Production, transportation, and material moving jobs (e.g., factory production line, power plant, bus driver, welder, sanitation worker, etc.) were reported by over one-third of employed men (36.2%) and only 12.7% of employed women.

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

FIGURE 7.11B. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 106)[a]



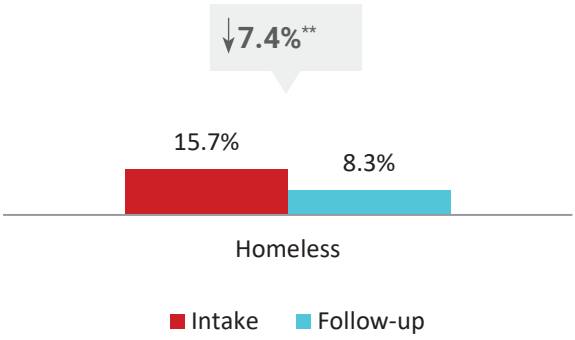
a – Significant difference by gender, $p < .001$.

Living Circumstances

HOMELESSNESS

Almost 16% of clients reported at treatment intake they were homeless at some point in the past 6 months. At follow-up, 8.3% of clients reported they had been homeless at some point in the past 6 months which was a significant decrease of 7.4% (see Figure 7.12).

FIGURE 7.12. CLIENTS REPORTING HOMELESSNESS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 242)[83]



**p < .01.

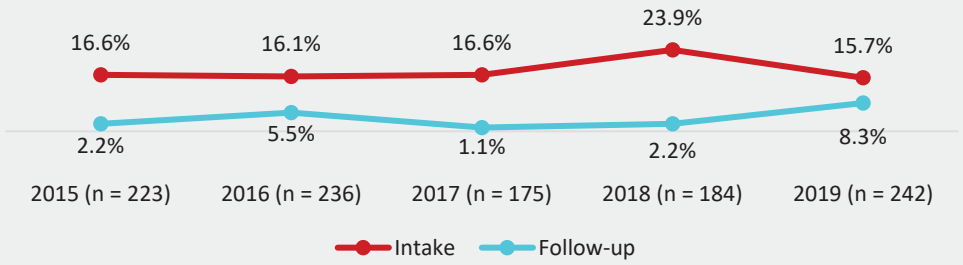
[83] One client was missing data on homelessness at follow-up.

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 a little over 16% of clients. In 2018, the percent of clients who considered themselves homeless at intake increased to 23.9%, but decreased again in 2019 to 15.7%.

At follow-up each year, very few clients reported that they considered themselves homeless. In both 2015 and 2018, only 2.2% 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 8.3% in 2019.

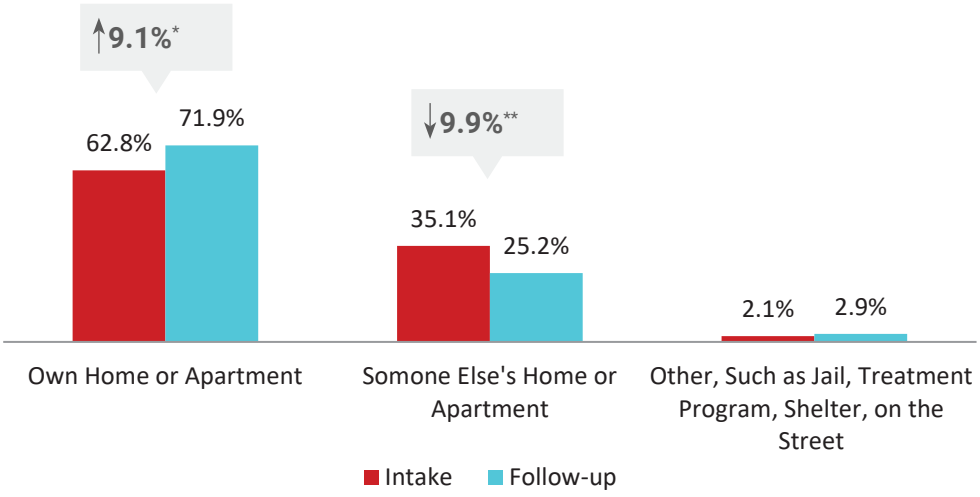
FIGURE 7.13. TRENDS IN THE PERCENT OF CLIENTS REPORTING HOMELESSNESS IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019



LIVING SITUATION IN THE PAST 6 MONTHS

Figure 7.14 shows that about 63% of clients reported they were living in their own home or apartment in the past 6 months at intake and 71.9% reported they were living in their own home or apartment at follow-up (a significant increase of 9.1%). The percent of clients who lived in someone else's home or apartment significantly decreased 9.9%, from 35.1% at intake to 25.2% at follow-up.

FIGURE 7.14. TYPE OF TYPICAL RESIDENCE IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 242)[84a]



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

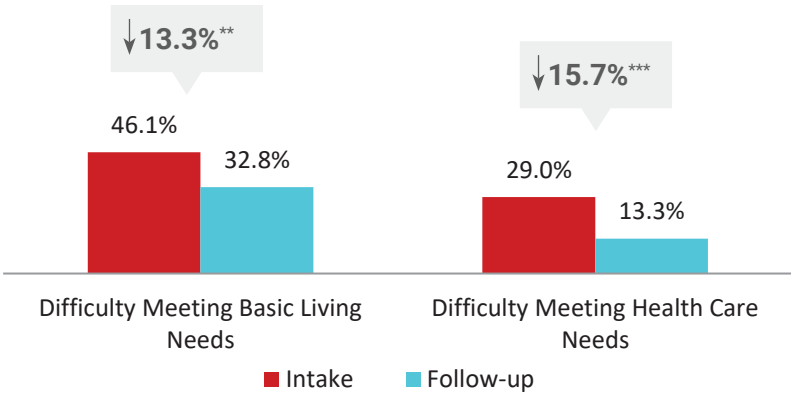
[84] One client was missing data on living situation at follow-up.

Economic Hardship

Clients were 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 percent of clients reporting difficulty meeting basic living needs (e.g., shelter, utilities, phone, food) significantly decreased by 13.3% from 46.1% to 32.8% (see Figure 7.15). The percent of clients who reported difficulty meeting health care needs (e.g., doctor visits, dental visits, and prescription medications) for financial reasons decreased by 15.7% from 29.0% at intake to 13.3% at follow-up.

FIGURE 7.15. DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS AT INTAKE AND FOLLOW-UP (N = 241)[85]

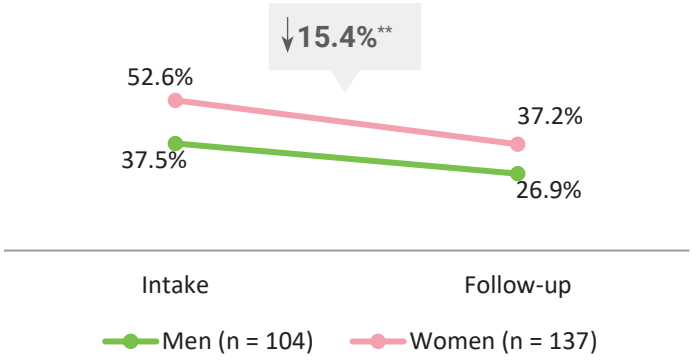


**p < .01, ***p < .001.

GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS

At intake, significantly more women reported having difficulty meeting basic living needs for financial reasons (52.6%) compared to men 37.5%; see Figure 7.16). The percent of women reporting having difficulty meeting basic living needs for financial reasons decreased significantly at follow-up.

FIGURE 7.16. GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS AT INTAKE AND FOLLOW-UP[a]



a – Significant difference by gender at intake (p < .05).
**p < .01.

[85] Two clients were missing data on difficulty meeting living and health care needs for financial reasons at follow-up.

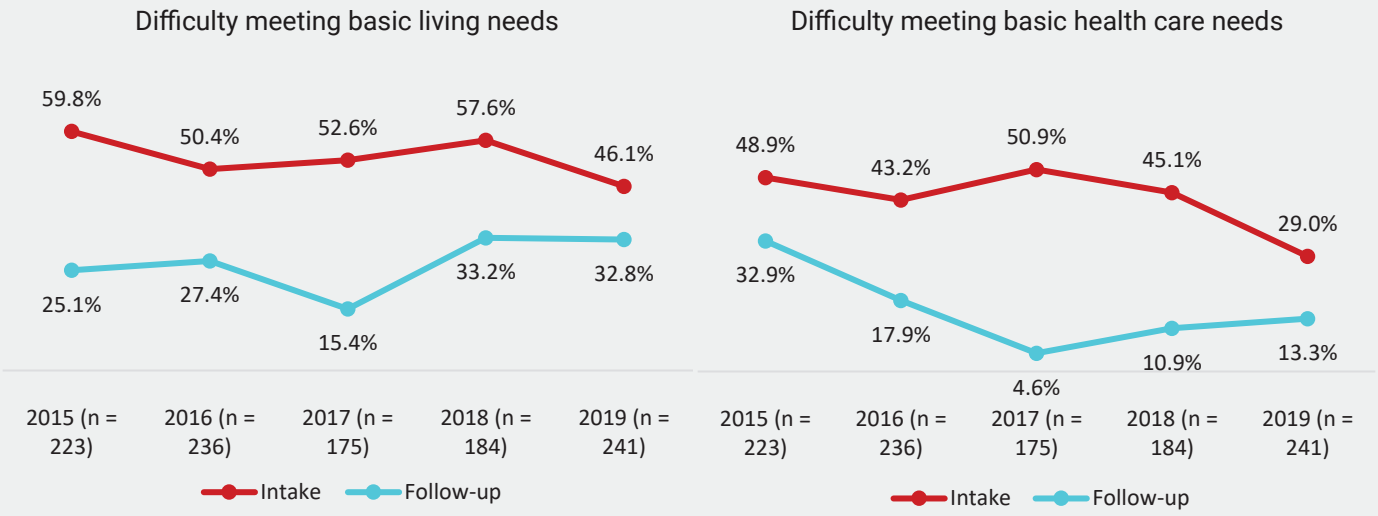
Trends in Difficulty Meeting Living and Health Care Needs for Financial Reasons

For each of the past 5 years, there has been a significant decrease in the percent of KORTOS clients who reported they had difficulty meeting basic living needs and health care needs in the past 6 months from intake to follow-up.

In general, well over half of clients reported having difficulty meeting basic living needs (e.g., shelter, utilities, phone, food) at intake. In 2019, 46.1% of clients reported having difficulty. At follow-up, an average of 25% of clients reported having difficulty meeting basic living needs. In 2018, the percent of clients who reported having difficulty meeting basic living needs increased to 33.2% from 15.2% in 2017 and remained similar in 2019.

Prior to 2019, close to half of clients, at intake, reported having difficulty meeting basic health care needs (i.e., doctor visits, dental visits, and prescription medications) each year while in 2019, only 29.0% of clients reported having difficulty meeting basic health care needs. From 2015 to 2017, the percent of clients reporting difficulty meeting basic health care needs decreased; however, beginning in 2018, the percent of clients reporting difficulty meeting basic needs has increased at follow-up.

FIGURE 7.17. TRENDS IN THE PERCENT OF CLIENTS REPORTING ECONOMIC DIFFICULTY IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2019



"Everyone understood what I was going through. It felt nice that people took the time to talk to support you."

KORTOS FOLLOW-UP CLIENT

SECTION 8.

Recovery Supports

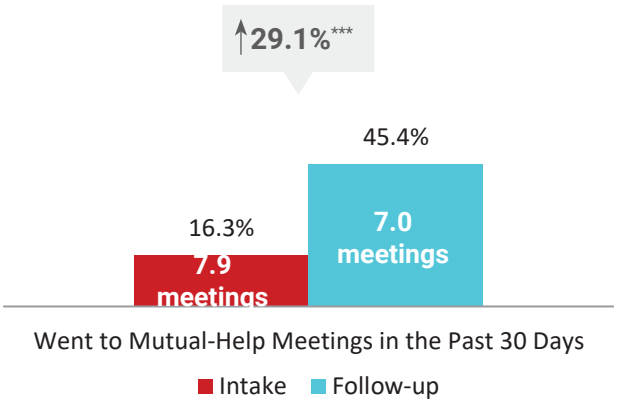
This section focuses on four main changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) the number of people the client said they could count on for recovery support, (3) what will be most useful to the client in staying off drugs/alcohol, and (4) clients'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

Mutual Help Recovery Group Meeting Attendance

At intake, only 16.3% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (See Figure 8.1). At follow-up, there was a significant increase of 29.1%, with 45.4% of clients reporting they had gone to mutual help recovery group meetings.

Among clients who had attended mutual help recovery group meetings at intake (n = 39), they reported attending an average of 7.9 meetings. Among clients who attended mutual help recovery group meetings at follow-up (n = 109), they reported attending an average of 7.0 meetings.

FIGURE 8.1. CLIENTS REPORTING MUTUAL HEALTH RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N = 240)[86]



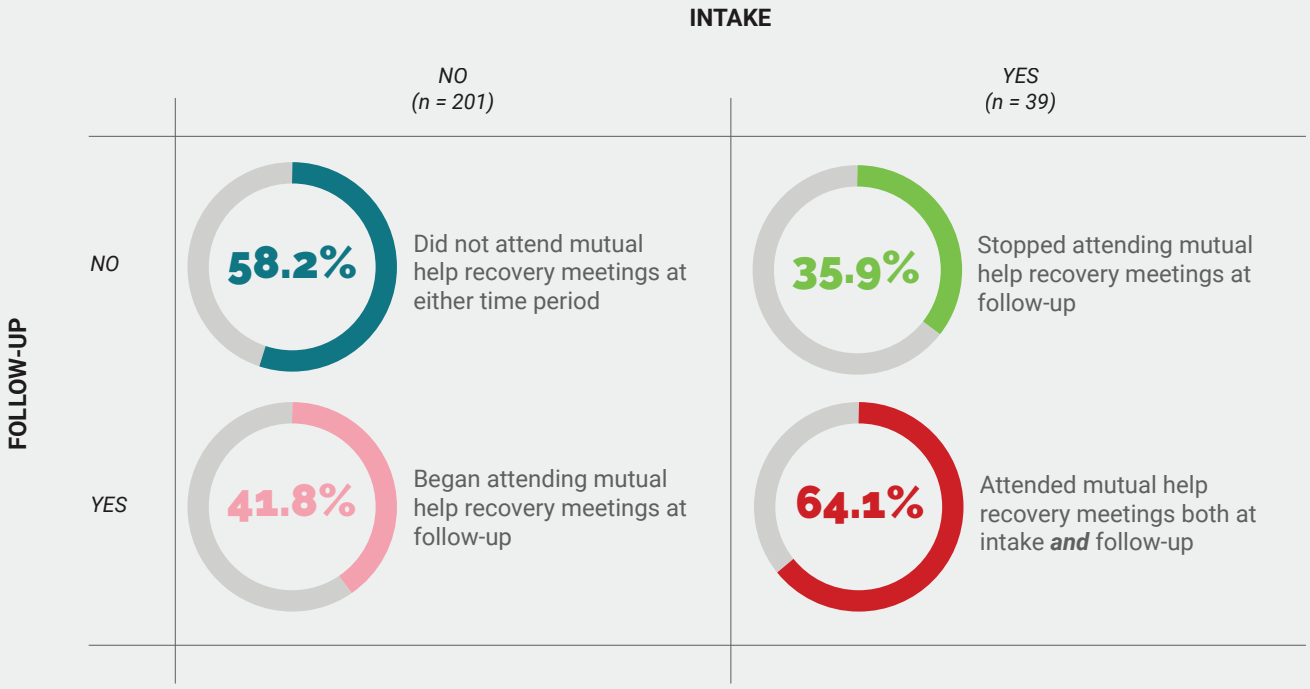
***p < .001.

[86] One client had missing data for mutual help recovery group meeting attendance and two clients refused to answer the question.

Taking a Closer Look at Recovery Support

About 16% of clients reported attending mutual help recovery group meetings in the 30 days before entering treatment (n = 39). Of those clients, 64.1% of clients also attended meetings in the 30 days before follow-up. In addition, of those who did not attend mutual help recovery group meetings at intake (n = 201), 41.8% did attend at least one meeting in the past 30 days at follow-up.

FIGURE 8.2. A CLOSER LOOK AT THE PERCENT OF CLIENTS WHO ATTENDED MUTUAL HELP RECOVERY GROUP MEETINGS AT INTAKE AND/OR FOLLOW-UP



Number of People Client Can Count on for Recovery Support

The average number of people clients reported they could count on for recovery support significantly increased by from intake (4.2) to follow-up (6.4; see Figure 8.3).

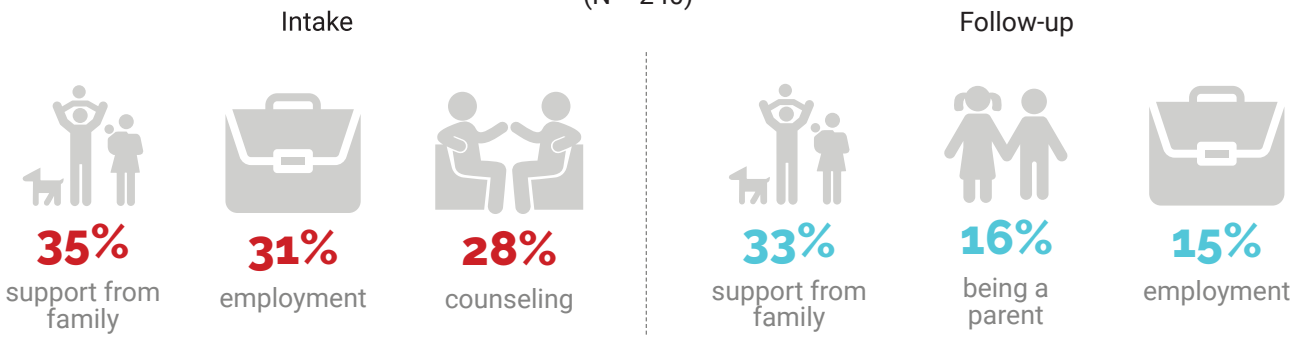
FIGURE 8.3. AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N=236)[87]

[87] Five clients had missing data at follow-up for number of people they could count on for recovery support and two clients refused to answer the question.

What Will Be Most Useful in Staying Off Drugs/Alcohol

At intake and follow-up, clients were asked what, other than medication-assisted treatment, 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 8.4. The most common responses at intake were support from family, employment, and counseling. At follow-up, the most common responses were similar: support from family, being a parent, and employment.

FIGURE 8.4. CLIENTS REPORTING WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL (N = 240)[88]

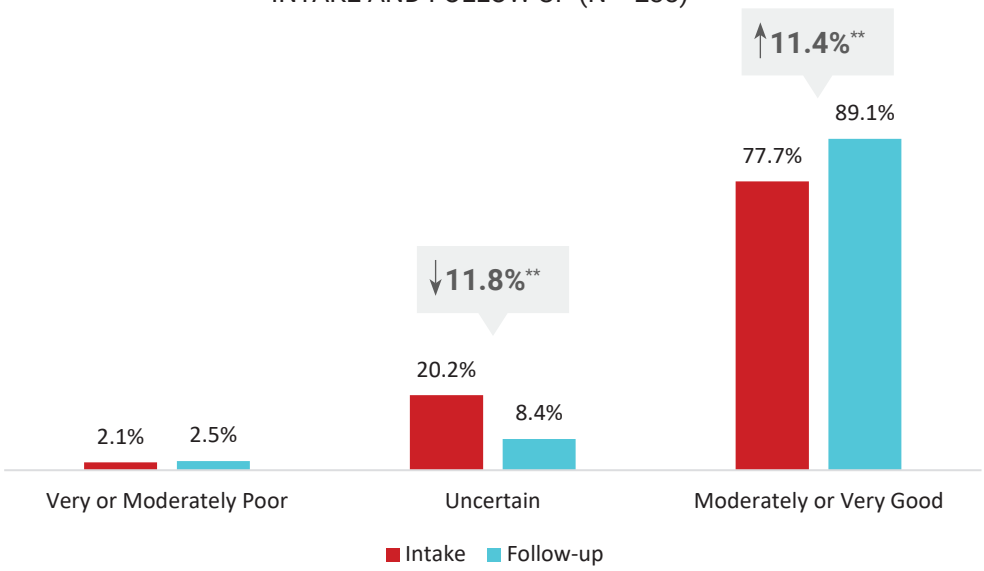


Chances of Staying Off Drugs/Alcohol

Clients were asked, based upon their situation, how good they believed their chances were of getting off and staying off drugs/alcohol using a scale from 1 (Very poor) to 5 (Very good). Clients rated their chances of getting off and staying off drugs/alcohol as a 4.2 at intake and a 4.5 at follow-up, which was a significant increase (not depicted in figure). Overall, 77.7% of clients believed they had moderately or very good chances of staying off drugs/alcohol at intake with a significant increase of 11.4% at follow-up (89.1%; see Figure 8.5).

[88] Three clients were missing data for these questions.

FIGURE 8.5. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 238)[a89]

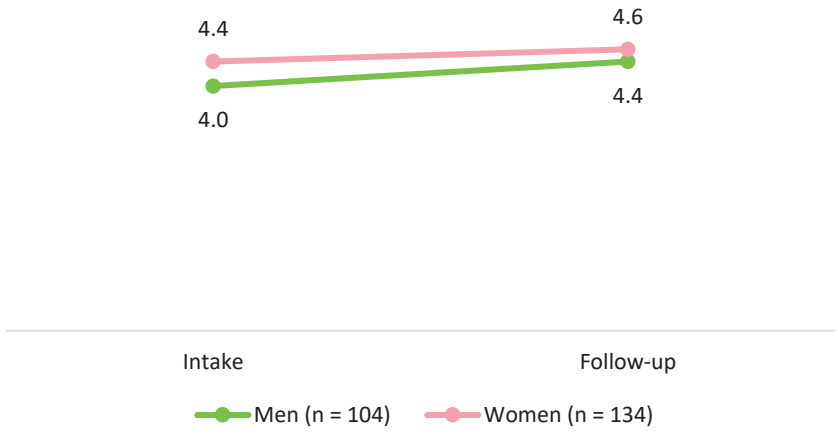


a – Significance tested with the Stuart-Maxwell Test of Overall Marginal Homogeneity (p < .01)
**p<.01.

GENDER DIFFERENCES IN CHANCES OF STAYING OFF ALCOHOL/DRUGS

At intake, women rated their chances of getting off drugs/alcohol higher than men (4.4 vs. 4.0, respectively). At follow-up, the average rating women and men reported for their chances of getting off drugs/alcohol increased significantly (see Figure 8.6)

FIGURE 8.6. GENDER DIFFERENCES IN CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP[a,b]



a—Significant difference at intake (p < .01).
b- Significant change for men (p < .001) and women (p < .05) from intake to follow-up.

[89] Three clients refused to answer the question on what would be most useful in staying off drugs/alcohol at follow-up and two clients were missing data.

SECTION 9.

Client Global Functioning

This section describes an index of global functioning 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 functioning from intake to follow-up is presented. Furthermore, a multivariate analysis was conducted to examine the intake indicators of global functioning and their association with worse global functioning at follow-up.

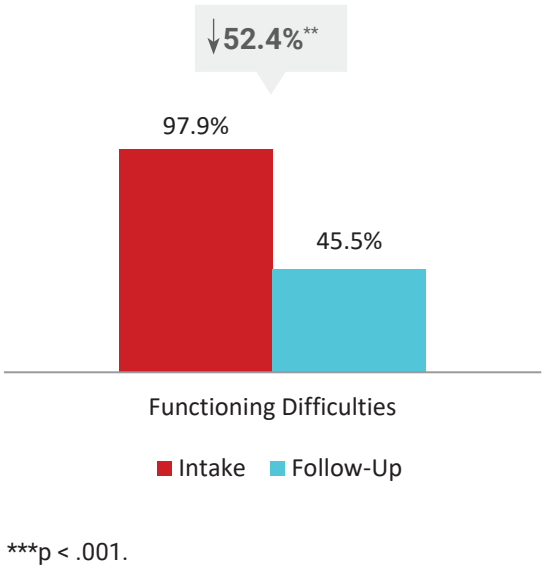
The index of global functioning is based on individuals' reports of substance use, employment, homelessness, criminal justice system involvement, suicide ideation, self-rating of overall health, recovery supports, and rating of quality of life. Table 9.1 describes the factors that compose the index. This index is used to better capture overall recovery functioning at follow-up. The presence of any of the functioning difficulties means an individual is classified as having functioning difficulties.

TABLE 9.1. ALTERNATE INDEX OF GLOBAL FUNCTIONING

Indicator	Better Functioning	Functioning Difficulties
Substance use	No or mild substance use disorder (SUD)	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, almost all clients (97.9%) were classified as having functioning difficulties (see Figure 9.1). At follow-up, 45.5% had functioning difficulties—a significant decrease of 52.4%.

FIGURE 9.1. FUNCTIONING DIFFICULTIES AT INTAKE AND FOLLOW-UP (N = 242)[90]



***p < .001.

Table 9.2 presents the frequency of clients who reported each indicator of worse functioning at follow-up. Individuals in the Yes column in Table 9.2 were classified as having worse functioning at follow-up. The factors with the highest percent of clients answering "yes" to those indicators were no employment as their usual employment in the 6 months before follow-up and met DSM-5 criteria for moderate of severe SUD in the 6 months before follow-up.

TABLE 9.2. PERCENT OF CLIENTS WITH INDICATORS OF WORSE FUNCTIONING AT FOLLOW-UP (n = 242)[91]

Factor	No	Yes
Met DSM-5 criteria for moderate or severe SUD in the 6 months before follow-up	62.7%	37.3%
Usual employment was unemployed (not on disability, not going to school, not a caregiver) in the 6 months before follow-up	58.5%	41.5%
Homeless at any point in the 6 months before follow-up	81.7%	18.3%
Arrested and/or incarcerated in the 6 months before follow-up	80.0%	20.0%
Had thoughts of suicide or attempted suicide in the 6 months before follow-up	90.0%	10.0%
Self-rating of overall health at follow-up was poor	92.7%	7.3%
Reported having no one he/she could count on for recovery support at follow-up	94.5%	5.5%
Low-level quality of life at follow-up	91.8%	8.2%

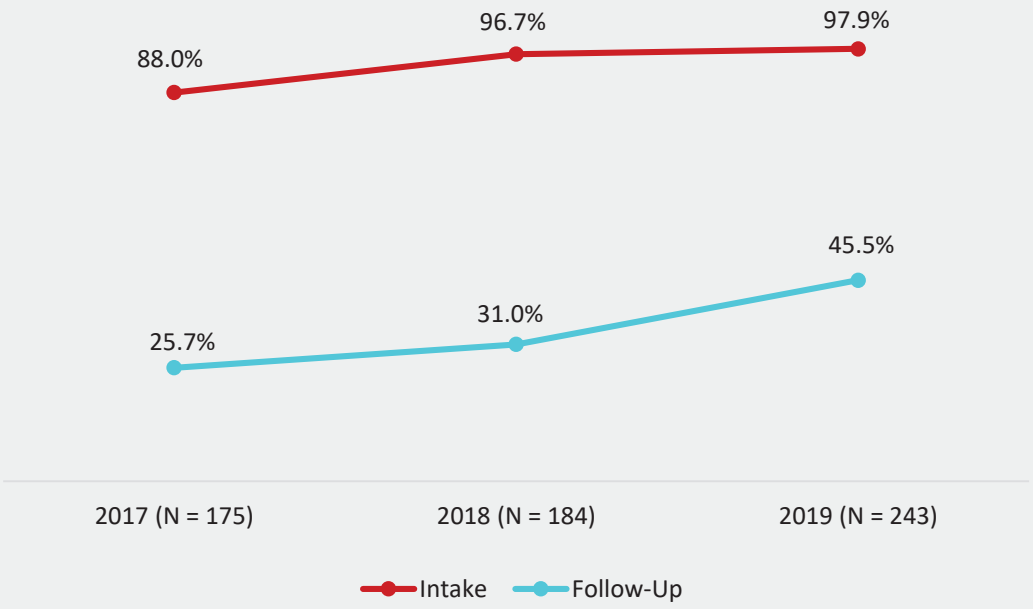
[90] Once client had missing data for at least one of the variables that was used to compute the index of global functioning at follow-up.

[91] One client had missing data for DSM-5 criteria, 4 clients had missing data for employment, and one client had missing data for homelessness at follow-up.

Trend Alert: Global Functioning Difficulties

Beginning in 2017 all of the measures that comprise the components of the global functioning index were included in the intake and follow-up surveys. There has been a significant decrease from intake to follow-up each year in the percent of clients who reported they had global functioning difficulties in the past 6 months. All or almost all individuals reported global functioning difficulties at intake. The percent of clients who had global functioning difficulties has increased at follow-up from 2017 (25.7%) to 2019 (45.5%).

FIGURE 9.2. TRENDS IN GLOBAL FUNCTION DIFFICULTIES, REPORTS 2017-2019



To better understand which factors at entry to the program are associated with worse functioning at follow-up, each element that defined the global index of functioning at intake was entered as a predictor variable in a logistic regression model. Worse functioning at follow-up is the criterion (i.e., dependent) variable. Three of the eight criterion variables were statistically significantly associated with worse functioning at follow-up (see Table 9.3). Specifically, controlling for the other factors, individuals who were not employed as their usual employment, clients who were homeless at any point in the 6 months before entering treatment, and clients who were arrested and/or incarcerated in the 6 months before entering treatment had significantly greater odds of having worse functioning at follow-up.

TABLE 9.3. MULTIVARIATE ASSOCIATIONS WITH WORSE FUNCTIONING AT FOLLOW-UP

Factor	B	Wald	Odds ratio	95% CI	
				Lower	Upper
Met DSM-5 criteria for moderate or severe SUD in the 6 months before entering the program	.816	1.526	2.261	.620	8.253
Usual employment was unemployed (not on disability, not going to school, not a caregiver) in the 6 months before entering the program	.843	5.797	2.323*	1.170	4.612
Homeless at any point in the 6 months before entering the program	1.268	8.254	3.553**	1.496	8.437
Arrested and/or incarcerated in the 6 months before entering the program	.791	5.459	2.206*	1.136	4.284
Had thoughts of suicide or attempted suicide in the 6 months before entering the program	-.151	.117	.860	.362	2.041
Self-rating of overall health at intake was poor	.063	.036	1.066	.555	2.044
Reported having no one he/she could count on for recovery support before entering the program	.469	.850	1.599	.590	4.335
Reported a lower quality of life before entering the program	-.477	2.623	.621	.349	1.105

*p<.05, **p<.01.
Note: Categorical variables were coded in the following ways: Met DSM-5 criteria for SUD (0=no or mild SUD, 1 = moderate or severe SUD), Usual employment was not employed (0=no, 1=yes), homeless (0 = no, 1 = yes), arrested or incarcerated (= no, 1 = yes), had thoughts of suicide or attempts (0 = no, 1 = yes), self-rating of overall health was poor (0 = no, 1 = yes), had no one the client could count on for recovery support (0=no, 1=yes), poor quality of life (0 = rating of 5 - 10, 1 = rating of 0 – 4).

SECTION 10.

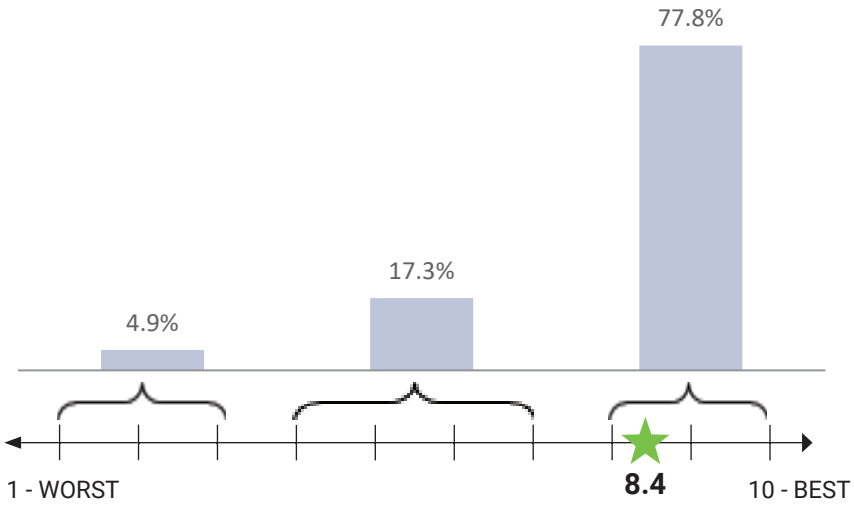
Client Satisfaction with Opioid Treatment Programs

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) overall client satisfaction with the program, (2) clients' ratings of program experiences, and (3) positive and negative aspects of program participation.

Overall Client Satisfaction

At the beginning of the follow-up interview, clients were asked to rate their experience at the program on a scale from 1 representing the worst possible experience to 10 representing the best possible experience. The average rating given by clients in the follow-up sample was 8.4, with 77.8% of clients giving a highly positive rating of 8 through 10 (see Figure 10.1).

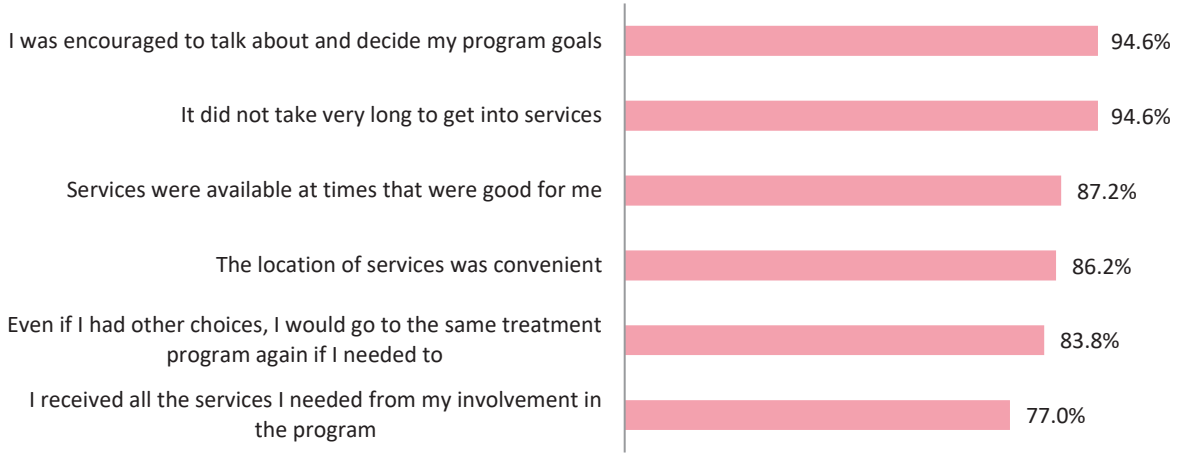
FIGURE 10.1. RATING OF EXPERIENCE AT THE PROGRAM (n = 243)



Client Ratings of Program Experiences

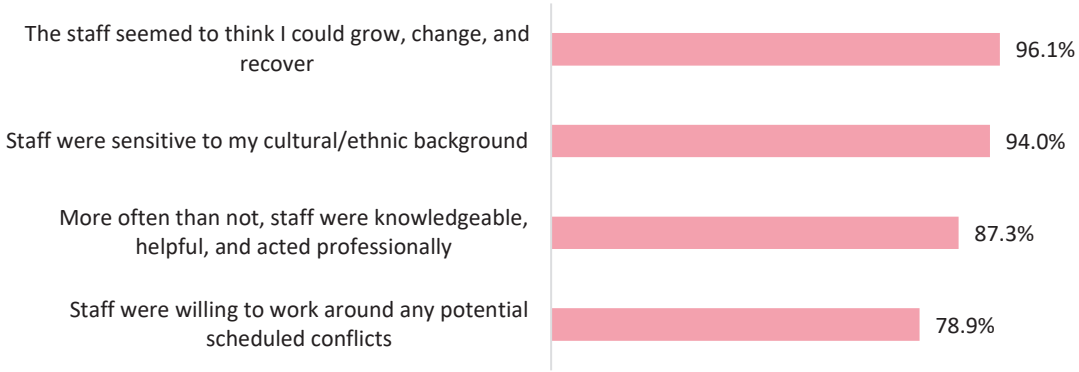
Figure 10.2 shows that KORTOS clients were satisfied with the overall program services. In fact, almost all the clients reported that they were encouraged to talk about and decide their program goals, it didn't take very long to get into services, and the available times of the services was convenient. About 86% agreed that the location of the services was convenient and 83.8% of clients agreed that, even if they had other choices, they would go to the same treatment program again if they needed to. Seventy-seven percent reported they received all the services they needed from involvement in the program.

FIGURE 10.2. SATISFACTION WITH TREATMENT SERVICES (N = 204)[92]



Almost all clients (96.1%) agreed that the staff seemed to think the client could grow, change, and recover and 94.0% agreed treatment staff were sensitive to the clients' cultural/ethnic background. About 87% of clients reported that, more often than not, staff were knowledgeable, helpful, and acted professionally. In addition, 78.9% of clients agreed that the staff were willing to work around any potential scheduled conflicts.

FIGURE 10.3. GENERAL SATISFACTION WITH TREATMENT STAFF (N = 204)



Ninety-six percent reported that they felt safe while in the treatment program and 93.6% agreed that the staff helped them obtain information so they could take charge of managing their drug/alcohol problems. About 93% of clients reported that if they experienced harassment or had safety concerns while in the program that the client would have felt comfortable telling staff about it, and that they felt better about themselves as a result of treatment. About nine in ten (91.1%) agreed they were encouraged to use self-help programs like support groups and 84.8% believed that the staff sufficiently talked to the client about personal safety while in the program (see Figure 10.4).

[92] Thirty-nine individuals were not asked the expanded and reworked program satisfaction questions.

FIGURE 10.4. SATISFACTION WITH PROGRAM ASPECTS ADDRESSING SAFETY AND SUBSTANCE ABUSE TREATMENT (N = 204)

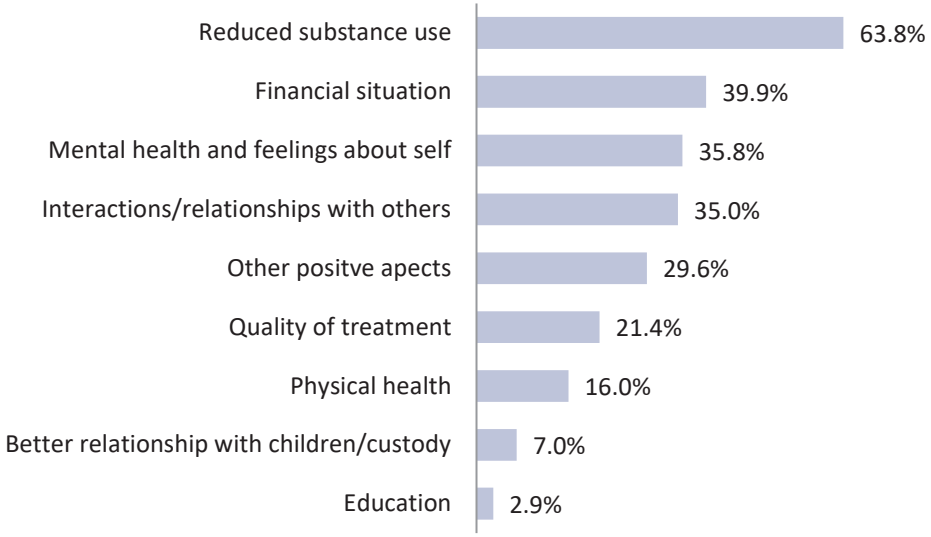
Positive and Negative Aspects of Program

Clients were asked to identify the three most positive aspects of their participation in the program (Figure 10.5). About 64% of clients reported that reduction in substance use was a positive outcome and 39.9% of clients reported changes in their financial situation. Almost 36% stated that improved mental health and feelings about self was a positive aspect. Thirty-five percent said interactions and relationships with others was a positive aspect. Almost 30% reported that other aspects of treatment were positive such has owning a house/car, being a productive member of society, and better control over things. Around 21% said the quality of treatment was a positive aspect. Sixteen percent of clients reported that changes in physical health was a positive aspect. Seven percent of clients reported that having custody of or a better relationship with their children was a positive aspect and 2.9% said education.

"They are like my family. They really care about me and don't judge me when I relapse. Most people there are open about addiction and they back you up on legal troubles."

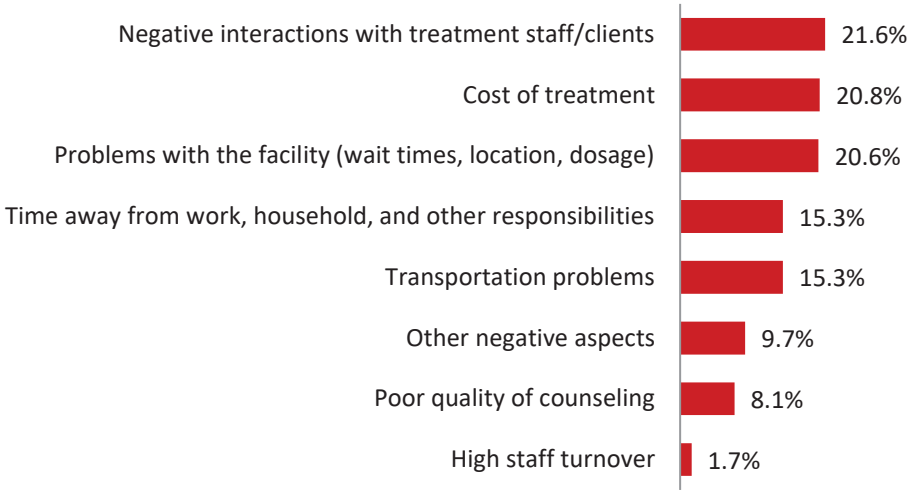
KORTOS FOLLOW-UP CLIENT

FIGURE 10.5. PERCENT OF CLIENTS REPORTING POSITIVE ASPECTS OF THE PROGRAM (N = 243)



Aspects of treatment that clients identified as problematic or needing improvement are displayed in Figure 10.6. The negative aspects of the program suggest barriers that clients must overcome to participate in the program. Specifically, negative interactions with staff or other clients (21.6%), cost of the program (20.8%), problems with the facility such as wait time, location, and how the facility was run (20.6%), time away from work, household, or other responsibilities (15.3%), and transportation problems (15.3%) were most frequently mentioned as negative aspects. Other areas of difficulty included the quality of counseling (e.g., not enough counseling; 8.1%), and high staff turnover (1.7%).

FIGURE 10.6. PERCENT OF CLIENTS REPORTING NEGATIVE ASPECTS OF THE PROGRAM (N = 236)[93]



[93] Questions on negative aspects were missing for 7 clients.

SECTION 11.

Conclusion and Implications

The KORTOS 2019 Annual Follow-Up Report describes characteristics of 625 clients who participated in opioid treatment programs during calendar year 2017 and completed intake interviews. In addition, outcomes are presented for 243 clients who completed a follow-up telephone interview 6 months after the intake interview and were still engaged in the treatment program.

What Do KORTOS Clients Look Like?

Of the clients with intake interviews (n = 625), over half were male and 47.5% were female with ages 19 to 74 (average age 37 years old). Most were White and the majority had at least a high school diploma or GED (78.7%). A little over half (51.2%) were unemployed in the six months before intake and of those clients (n = 320), 42.8% were looking for work. When looking at referral to treatment, the majority of clients did not have formal referrals through community agencies. Over half of clients reported they were self-referred (55.2%), and 35.2% were referred by a family member, partner or friend.

Over three-quarters of KORTOS clients reported at least one adverse childhood experience before the age of 18. About 36% reported 1-3 childhood experiences and 26.0% reported 4-6 childhood experiences. There were gender differences with adverse childhood experiences where women reported significantly more experiences. More specifically, more women reported emotional and physical maltreatment, emotional and physical neglect, and sexual abuse compared to men. Women also reported more household risks in childhood compared to men including witnessing the intimate partner violence of a parent, having a household member with a substance abuse problem, and having a household member with a mental illness. In terms of lifetime victimization experiences, more women reported having been a victim of intimate partner violence, stalked by someone that scared them, and sexually assaulted or raped.

The majority of clients also reported symptoms that met study criteria for mental health problems such as depression (57.4%) and generalized anxiety (62.9%) in the past 6 months. Over half (55.2%) reported having at least one medical problem (51.3% of clients with a medical problem mentioned Hepatitis C). Clients reported an average of 11.2 days of poor health in the past 30 days, 14.4 days of poor mental health, and 11.1 out of 30 days that their poor physical or mental health limited their activities. About 20% of KORTOS clients had no medical insurance and 59.5% had Medicaid.

Among the clients who were not incarcerated all 180 days before entering the program, the majority reported using illegal drugs (97.0%) and smoking tobacco (85.1%) while less than one-quarter of clients reported using alcohol (22.0%) in the 6 months before intake. Less than one-quarter reported only using opioids (23.8%) while 70.8% reported using opioids and at least one other class of drug.

Fifteen percent of clients reported being arrested at least once and 15.2% reported being

incarcerated at least one night in the 6 months before entering treatment. In addition, 9.6% of clients reported being under supervision by the criminal justice system.

Areas of Success

The 2019 evaluation findings indicated that Kentucky opioid treatment programs have been successful in facilitating substantial positive changes in clients' lives. Results for those who were followed-up (n = 243) show that clients made substantial improvements from intake to follow-up in all four core components, including significant reductions in illegal drug and alcohol use, mental health problems, criminal justice system involvement, and a significant increase in quality of life. Improvements were also found for three supplemental areas: health status, economic and living circumstances, and recovery supports.

SUBSTANCE USE

There was a significant decrease in clients reporting past-6-month alcohol or illegal drug use with 97.8% of clients reporting any illegal drug use at intake compared to 53.1% at follow-up. About 62% of clients reported misusing prescription opioids at intake, whereas 15.1% of clients reported prescription opioid misuse at follow-up. Seven out of 10 followed-up clients also reported heroin use at intake and that percent significantly decreased to 20.8% at follow-up. The percent of clients using non-prescribed methadone and bup-nx also decreased significantly. Not only did clients' use of opioids decrease significantly, but also their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, and stimulants) decreased from almost three-quarters to almost one-third. In addition, the percent of clients with ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) decreased from 95.5% at intake to 14.9% at follow-up.

MENTAL HEALTH, PHYSICAL HEALTH, AND STRESS

Clients' mental health also showed significant improvements. At follow-up, half as many clients had symptoms of depression, generalized anxiety, and comorbid depression and anxiety. In addition, the percent of clients reporting suicidal ideation or attempts decreased from 13.2% at intake to 4.5% at follow-up. Trend analysis shows that the percent of clients meeting study criteria for depression, generalized anxiety, and suicidal ideation/attempts at both intake and follow-up have decreased this year compared to previous years.

Stress and physical health were better for clients at follow-up. Clients rated their overall health as significantly better at follow-up compared to intake. In addition, there were significant decreases in the average number of days clients' physical and/or mental health was poor. Clients reported significantly fewer days their poor physical or mental health kept them from doing their usual activities. In fact, the number of days in the past 30 days clients felt their mental health was poor at intake and follow-up was lower this year compared to previous years. The percent of clients who reported chronic pain that was persistent and lasted at least 3 months decreased significantly from intake to follow-up as well. Client's scores on the Stress-Related Health Consequences Scale also decreased significantly at follow-up. At intake, the majority of clients (92.2%) reported they used at least one type of substance to reduce or manage their stress in the 7 days before entering treatment and, at follow-up, that number

decreased to 16.9%.

Clients also had significant decreases in past-6-month crime and interpersonal victimization with significantly fewer clients reporting being verbally harassed in public, burglarized, robbed, or mugged, assaulted, or being a victim of intimate partner abuse at follow-up.

CRIMINAL JUSTICE SYSTEM INVOLVEMENT

A minority of KORTOS clients were involved in the criminal justice system at intake and the percent of clients who reported being arrested or incarcerated was significantly lower at follow-up. Specifically, 18.1% of clients reported having been arrested in the 6 months before entering treatment and, at follow-up, 6.6% of clients reported an arrest in the past 6 months. About 17% of clients reported spending at least one night in jail or prison in the past 6 months at intake compared to 7.5% of clients at follow-up. Past-5-year trend analysis shows that the percent of clients reporting an arrest and clients reporting they spent at least one night in jail have been relatively stable at both intake and follow-up.

QUALITY OF AND SATISFACTION WITH LIFE

Further, clients rated their quality of life as significantly higher after participating in the program. At follow-up, clients' satisfaction with life rating had significantly increased. These high quality of life and satisfaction with life ratings at follow-up have been consistent over the past 5 years.

ECONOMIC STATUS AND LIVING CIRCUMSTANCES

KORTOS clients showed improvements in economic and living circumstances from intake to follow-up. About 44% of clients reported being employed full-time at follow-up compared to 30% at intake. Furthermore, the average number of months clients reported working in the past 6 months increased from 2.6 months at intake to 3.2 months at follow-up. In addition, the percent of clients who considered themselves homeless in the past 6 months decreased significantly from 15.7% at intake to 8.3% follow-up. At follow-up, fewer clients reported having economic hardship in terms of difficulty meeting basic living needs (such as food, shelter, and utilities) and health care needs (i.e., doctor visits, dental visits, and prescription medications) because of financial problems.

RECOVERY SUPPORTS

Compared to intake, significantly more individuals reported they had attended mutual help recovery group meetings in the past 30 days at follow-up. In fact, 41.8% of clients who reported they had not attended mutual help recovery group meetings at intake, reported that they were attending at follow-up. Of the clients who reported they attended these meetings at intake, 64.1% reported they continued to go at follow-up. Also at follow-up, clients reported having significantly more people they could count on for recovery support. Nine in 10 clients stated they thought they had a moderately or very good chance of staying off drugs or alcohol at follow-up.

GLOBAL FUNCTIONING

The index of global functioning measures multiple domains of clients' functioning: substance use, employment, homelessness, criminal justice system involvement, suicide ideation, self-rating of overall health, recovery supports, and rating of quality of life. Nearly all clients had worse functioning at intake, with a significant decrease to 45.5% at follow-up. In addition, in a multivariate analysis, controlling for the other factors, clients who were not employed as their usual employment status at intake, clients who were homeless at any point in the 6 months before entering the program, and clients who had been arrested and/or incarcerated in the 6 months before entering the program had significantly greater odds of having worse functioning at follow-up.

SATISFACTION WITH OPIOID TREATMENT PROGRAM

On a scale from 1 representing the worst possible experience to 10 representing the best possible experience, clients rated their experience an 8.4 with 77.8% of clients giving a highly positive rating of 8 through 10 The majority of clients reported that they were encouraged to talk about and decide their program goals, that it did not take long to get into services, and that the services were available at times that were convenient for them. About 88% of clients reported that even if given other choices, they would go to the same treatment program again if they needed to. In addition, clients reported many positive aspects of their participation in the program including reduced substance use, improved financial situation, improved mental health and their feelings about themselves, and improved relationships with others.

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.

DRUG USE

When looking at trends over time in past-30-day use at intake, results show that while prescription opioid and methadone use has decreased gradually over the past 11 years, heroin use has sharply increased since 2011. Also, almost half of KORTOS clients reported using illegal drugs in the 6 months before follow-up. Of those 117 clients, about 33% reported non-prescribed opioid use (including prescription opioids, methadone, and bup-nx), 42.7% reported heroin use, and 65.8% reported illicit drugs other than prescription opioids or heroin. 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[94, 95] and

[94] 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.

[95] 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.

longer treatment retention has been associated with more positive outcomes.[96, 97] In addition, although the percent of clients who met DSM-5 criteria for severe SUD decreased at follow-up, 11.5% still met criteria for severe SUD. Further, about 15% of clients met the cutoff for severe substance use disorder for drug use. While the percent of clients who reported substance use decreased from intake to follow-up, 30.3% 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. About one in ten clients reported that they were considerably or extremely troubled or bothered by drug or alcohol problems, at follow-up.

SMOKING RATES

Smoking rates were high for clients at intake and remained high at follow-up. Tobacco use is associated with increased mortality, and smoking cessation has been associated with lower alcohol and drug relapse.[98] Smoking has been associated with increased mental health symptoms and physical health problems.[99,100] 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.[101] Voluntary smoking cessation during substance abuse treatment has been associated with lower relapse.

MENTAL AND PHYSICAL HEALTH

While there were significant reductions in clients meeting study criteria for depression and generalized anxiety, almost one-quarter of clients still reported experiencing symptoms of either at follow-up. In addition, of clients who met study criteria for depression and/or generalized anxiety at follow-up (n = 77), 29.9% reported using alcohol, prescription drugs, or illegal drugs at follow-up to reduce anxiety, worry, or fear. In addition, while chronic pain decreased significantly from intake to follow-up, 25% of clients still reported chronic pain at follow-up.

ECONOMIC DIFFICULTIES

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.[102] While the percent of participants reporting having difficulty meeting basic needs for financial

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[96] 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.

[97] 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.

[98] 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.

[99] 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.

[100] 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

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

[102] http://blog.samhsa.gov/2012/03/23/defintion-of-recovery-updated/

reasons decreased at follow-up, 33% of clients at follow-up still reported having difficulty meeting basic living needs. Similarly, while the percent of clients reporting current full-time employment increased significantly, 43% of clients remained unemployed at follow-up. The resulting financial strain from these economic factors could lead to increased substance use to alleviate the stress.[103] 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.

GLOBAL FUNCTIONING INDEX

Even though there were significantly fewer clients who had worse functioning at follow-up when compared to intake, almost half were still classified as having worse functioning. Clients who were not employed as their usual employment, clients who were homeless at any point, and clients who were arrested and/or incarcerated in the 6 months before entering treatment had significantly greater odds of having worse functioning at follow-up.

GENDER DIFFERENCES ON TARGETED FACTORS

There were several gender differences in targeted factors. Significantly more men reported alcohol intoxication and binge drinking at intake and using smokeless tobacco at intake and follow-up.

Women reported a higher average number of days of poor mental health at intake and follow-up compared to men. Women also reported a significantly higher average number of days poor physical or mental health limited their activities at intake. Further, women had significantly higher average scores on the stress-related health consequences scale at intake compared to men. Significantly more women reported being a victim of sexual assault at both intake and follow-up compared to men. In addition, significantly more women reported being abused by a dating or intimate partner in the past 6 months at intake.

In the past 6 months at both intake and follow-up, men reported working a greater average number of months (3.2 and 3.7, respectively) compared to women (2.1 and 2.8, respectively). Fewer women reported being employed full-time or part-time at least one month in the past 6 months at both intake and follow-up compared to men—a trend which has been consistent over the past 5 years. Among individuals who were currently employed, men had a significantly higher median hourly wage than women at both intake and follow-up. At intake, employed women made only $0.78 for every dollar employed men made and at follow-up, the gap in median hourly wages was still present, with employed women making only $0.79 for every dollar employed men made.

Study Limitations

The study findings must be considered within the context of the study's limitations. First,

[103] 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.

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 opioid replacement treatment. Second, because not all clients agree to participate in the 6-month follow-up interview, it is unclear how generalizable the findings are to the entire client population that completes an intake interview. Analysis comparing those individuals who completed a follow-up interview with those who did not complete a follow-up interview for any reason (for example, they did not agree to be in the follow-up study, they were not selected into the follow-up sample, or they were not successfully contacted for the follow-up interview) found a few significant differences between the two groups.

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.[104, 105, 106] For example, in many studies that have compared agreement between self-report and urinalysis the concordance or agreement is acceptable to high.[107, 108, 109] 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.[110, 111, 112] In other studies, higher percentages of underreporting have been found.[113] 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.[114] 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.[115] Therefore,

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[104] 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.

[105] 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.

[106] 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.

[107] 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.

[108] 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.

[109] 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.

[110] 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.

[111] 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.

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

[113] 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.

[114] 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.

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

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 2019 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 severity of substance use, decreased mental health symptoms, decreased economic hardship, and decreased involvement with the criminal justice system. Results also show that clients appreciate and value their experiences in treatment programs, have an improved quality of life, and more support for recovery after participating in treatment. Overall, KORTOS clients had significant improvements in their lives that have been shown to be key factors that facilitate recovery[116]: meeting basic needs, stable living arrangements, having a purpose with daily meaningful activities, and recovery community. However, there were some areas of concern related to drug use, smoking rates, mental health, financial difficulties, and gender differences at follow-up.

[116] http://blog.samhsa.gov/2012/03/23/defintion-of-recovery-updated/

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[117] 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 2017, the target month for the follow-up interview was June 2018. 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 2018, interviewers began working to locate and contact the individual in May and could work the file until the end of August.

Of the 625 clients who completed an intake interview in 2017, 419 (67.0%) agreed to be contacted for the follow-up study. From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one mailing address), and then selecting clients by intake month (n = 362).

Of the 362 clients included in the follow-up sample, 46 were ineligible for participating in the follow-up interview[118], which left 316 clients eligible at the time of the follow-up. Of these clients, 243 completed a follow-up interview (see Table AA.1). Thus, the follow-up rate was 76.9%. The remaining clients were never successfully contacted, or if contacted they never completed the follow-up interview (23.1%).

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[117] Logan, TK, Cole, J., Miller, J., Scrivner, A., & Walker, R. (2016). *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.

[118] 24 were no longer at the OTP, 14 were incarcerated, 3 had died, 2 were in residential treatment, and 3 were ineligible for other reasons at the time of follow-up, see Table AA.2.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 362)

	Number of Records	Percent
Ineligible for follow-up interview	46	12.7%
	Number of cases eligible for follow-up (n = 316)	
Completed follow-up interviews	243	
Follow-up rate is calculated by dividing the number of completed interviews by the number of eligible cases and multiplying by 100		76.9%
Expired cases (i.e., never contacted, did not complete the interview during the follow-up period)	70	
Expired rate ((the number of expired cases/eligible cases)*100)		22.2%
Refusal	3	
Refusal rate ((the number of refusal cases/eligible cases)*100)		1.0%
Cases accounted for (i.e., records ineligible for follow-up + completed interviews + refusals)	292	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		80.7%

Clients were considered ineligible for follow-up if they were living in a controlled environment during the follow-up period or were no longer in an OTP (see Table AA.2). Of the 46 cases that were ineligible for follow-up, the majority (52.2%) were ineligible because they were no longer receiving treatment at an OTP during the follow-up period. Thirty percent of clients were ineligible because they were incarcerated at the time of follow-up and 6.5% of clients were ineligible because they were deceased (4.0%). In addition, 4.3% were ineligible because they were in residential treatment, 4.3% had a health condition that prevented them from completing the interview, and 2.2% did not speak English.

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 46)

	Number	**Percent**	**Percent of 362 clients included in the follow-up sample**
Incarcerated	14	30.4%	3.9%
Residential treatment	2	4.3%	0.6%
Health condition	2	4.3%	0.6%
Death	3	6.5%	0.8%
Does not speak English	1	2.2%	0.3%
No longer in treatment	24	52.2%	6.6%

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

Client information was verified through external search in cases where client contact information was incomplete or incorrect.

INTERNET SEARCHES

92% of all clients were searched with light effort (i.e., verification, VINE, Whitepages)

53% of all clients were searched with medium effort (i.e., social media, other public directory databases)

29% of all clients were searched with in-depth effort (i.e., in-depth searching methods)

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

A greater percent of females completed a follow-up interview compared to clients who did not complete a follow-up (see Table AC.1). Clients who were followed up were also significantly older (37.9 years) compared to clients who were not followed up (36.2 years). There were no other significant differences on demographics between clients who completed a follow-up interview and those who did not.

TABLE AC.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP[119]

	FOLLOWED UP	
	NO n = 382	YES n = 243
Age*	36.2 years	37.9 years
Gender**		
Male	57.6%	43.6%
Female	41.9%	56.4%
Transgender	0.5%	0.0%
Race		
White	96.6%	96.3%
African American	1.0%	0.8%
Other or Multiracial	2.4%	2.9%
Marital status		
Never married	23.8%	19.3%
Married	20.2%	23.0%
Separated or divorced	18.6%	18.9%
Widowed	1.3%	2.1%
Cohabiting	36.1%	36.6%

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

[119] 11 clients had incorrect birthdates and, therefore, age could not be determined.

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 heroin, prescription opioids, and marijuana. There were no significant differences between clients who completed a follow-up and clients who did not complete a follow-up interview for illegal drug use in the 6 months before entering treatment.

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Any illegal drug	96.9%	97.1%
Prescription opioid/opiate (illegal use)	64.4%	61.3%
Heroin	70.2%	71.6%
Marijuana	51.3%	55.6%
CNS depressants	34.3%	33.7%
Cocaine	24.6%	27.2%
Stimulants (amphetamines, methamphetamine, prescription stimulants)	22.3%	18.1%
Non-prescribed bup-nx	21.2%	24.7%
Non-prescribed methadone	12.6%	16.5%
Other illicit drugs (hallucinogens, inhalants, synthetic drugs)	3.1%	6.2%

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 = 382	YES n = 243
Alcohol	21.2%	23.0%
Alcohol to intoxication	10.7%	11.1%
Binge drank alcohol (i.e., drank 5 or more [4 for women] drinks in 2 hours	7.6%	9.1%

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 also no difference between the two groups for the use of e-cigarettes. Significantly more clients who were not followed up, however, reported smokeless tobacco use at intake compared to clients who were followed up (9.4% vs. 4.5%).

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Smoked tobacco	85.1%	85.2%
Smokeless tobacco*	9.4%	4.5%
E-cigarettes	10.5%	14.0%

*p < .05.

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.[120] 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 0.36 for followed up clients, which was not a significant difference (see Table AC.5).

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

	FOLLOWED UP	
	NO n = 371	YES n = 237
Percentage of clients with ASI composite score equal to or greater than cutoff score for		
Severe alcohol or drug use disorder	93.3%	92.8%
Severe alcohol use disorder	6.7%	5.5%
Severe drug use disorder	93.3%	92.8%
Average composite score for alcohol use[a]	.03	.04
Average composite score for drug use[b]	.34	.36

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 3.1 for those who did not complete a follow-up and 3.3 for those that did; however, this was not a statistically significant

[120] 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.

difference.

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Ever been in substance abuse treatment in lifetime	66.0%	72.0%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 252)	(n = 175)
Average number of times in treatment.....	3.1	3.3

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?" Significantly more clients who completed a follow-up interview than clients who did not complete a follow-up interview reported symptoms that met criteria for depression: 62.6% vs. 54.2% (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)?" Significantly more clients who completed a follow-up interview than clients who did not complete a follow-up interview reported symptoms that met criteria for generalized anxiety: 68.3% vs. 59.4%.

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 (see Table AC.7).

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Depression*.....	54.2%	62.6%
Generalized Anxiety*.....	59.4%	68.3%
Suicidality (e.g., thoughts of suicide or suicide attempts).....	10.5%	13.2%

*p < .05.

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. Significantly more clients who were followed up reported experiencing chronic pain (i.e., pain that lasted more than 3 months) at intake (52.7%) compared to clients who were not followed up (39.0%). Clients were asked at intake if a doctor had ever told them they had any of the 12 chronic medical problems listed (e.g., asthma, arthritis, cardiovascular disease, diabetes, chronic obstructive pulmonary disease [COPD], tuberculosis, severe dental disease, cancer, Hepatitis B, Hepatitis C, HIV, and other sexually transmitted diseases). Significantly more clients who were followed up reported they had been told by a doctor that they had at least one of the chronic medical problems compared to clients who were not followed up (63.0% vs. 50.3%). The most commonly reported chronic medical problems are presented in Table AC.8: Hepatitis C, arthritis, cardiovascular disease, severe dental disease, and asthma.

TABLE AC.8. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 382	YES n = 243
Chronic pain (lasting at least 3 months)**	39.0%	52.7%
Ever told by a doctor that client had one of the 12 chronic medical problems listed**	50.3%	63.0%
Hepatitis C*	25.4%	32.9%
Arthritis*	11.3%	17.3%
Cardiovascular disease	10.5%	11.1%
Severe dental disease	9.9%	11.1%
Asthma	6.5%	10.3%

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

Socioeconomic Indicators

There were significant differences between the groups on clients' level of education when entering treatment. About 20% of clients who did not complete a follow up and 23.5% of clients who completed a follow up reported less than a high school diploma or GED at intake. Around 45% of clients who were not followed up and 33.7% of clients who were followed up reported having a GED or high school diploma. Over one-third of those not followed-up and 42.8% of those who completed a follow-up attended vocational school or higher.

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Highest level of education completed*		
Less than GED or high school diploma	19.9%	23.5%
GED or high school diploma	44.5%	33.7%
Vocational school to graduate school	35.6%	42.8%

*p < .05.

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 = 382	YES n = 243
Employment		
Not currently employed	47.1%	57.6%
Full-time	38.5%	30.0%
Part-time	10.5%	8.6%
Occasional	3.9%	3.7%

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); however, there was a significant difference in living arrangements between clients who were followed up and clients who were not followed up. 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 = 382	YES n = 243
Usual living arrangement in the 6 months before entering the program*		
Own home or apartment	64.1%	62.6%
Someone else's home or apartment	29.3%	35.4%
Institutional facility, hotel or on the street	6.5%	2.1%
Homelessness		
Consider themselves to be currently homeless	17.5%	15.6%

*p < .05

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 was 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. In addition, there was no significant difference between clients who were followed up and not followed up for being unable to receive needed health care for financial reasons.

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)	41.9%	45.7%
Had difficulty obtaining needed health care for financial reasons	29.1%	28.8%

Criminal Justice System Involvement at Intake

About 10% of clients who completed a follow up interview and 9.2% of clients who did not complete a follow up interview 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 difference in the percent of clients who were arrested for any charge in the 6 months before entering the program by follow up status (13.1% vs 18.1%). Of those who had been arrested, clients who completed a follow-up interview reported 1.6 arrests and those who did not complete a follow up interview reported 1.4 arrests.

There was no significant difference between the groups for the percent of clients who were incarcerated at least one night in the 6 months before entering the program. Of those who had been incarcerated, there were no significant differences in the average number of nights spent in jail with clients who completed a follow-up interview reporting an average of 21.4 nights and clients who did not complete a follow-up interview reporting an average of 38.8 nights.

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

	FOLLOWED UP	
	NO n = 382	YES n = 243
Currently under supervision by the criminal justice system.....	9.2%	10.3%
Arrested for any charge in the 6 months before entering treatment.....	13.1%	18.1%
Of those arrested	n = 50	n = 44
Average number of arrests.....	1.4	1.6
Incarcerated in the 6 months before the program.....	13.9%	17.3%
Of those incarcerated	n = 53	n = 42
Average number of nights in jail	38.8	21.4

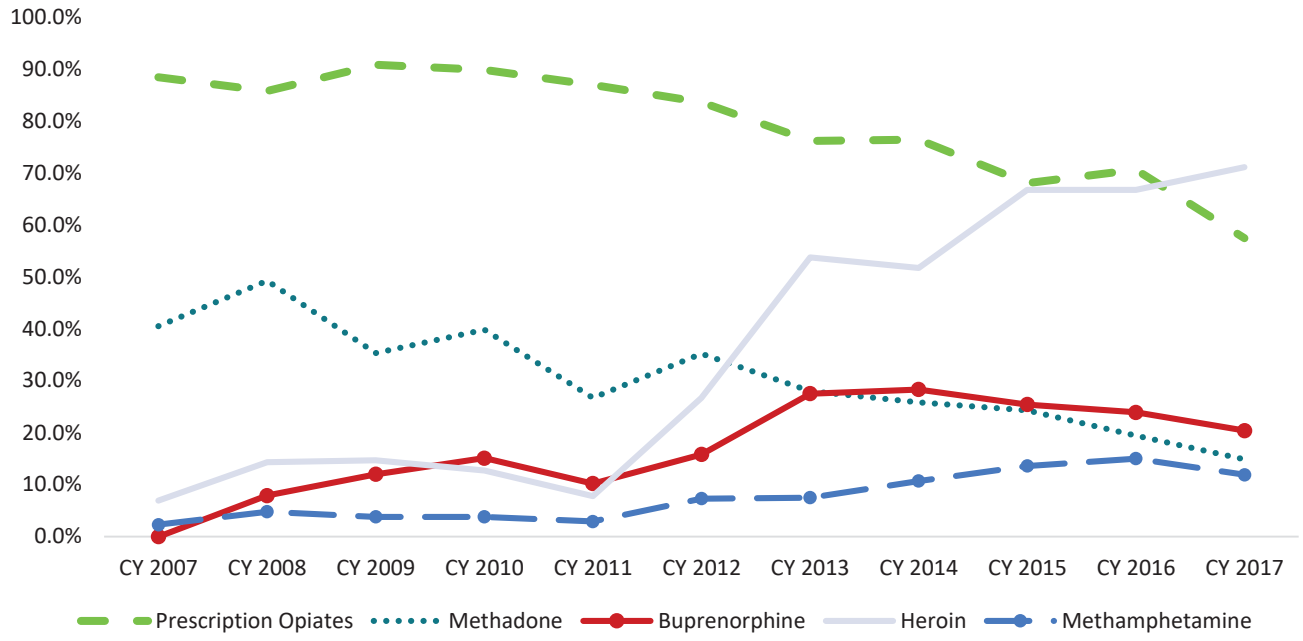
APPENDIX D.

Trends in Prescription Opioid, Methadone, Bup-nx, and Heroin Use Among KORTOS Clients with a Completed Follow-up Interview

Looking at trends over time for all clients with completed follow-up interviews, the percent of clients using prescription opioids peaked in calendar year 2009 and has steadily dropped. Similarly, the percent of clients who reported using non-prescribed methadone in the 30 days before entering treatment has declined since calendar year 2008. The percent of clients who reported using bup-nx slowly increased from 2007 through 2010, dipped slightly in 2011, and then dramatically increased in 2013 and has remained stable since. The use of methamphetamine was relatively steady from CY 2007 to CY2010, but has gradually increased since CY 2011.

The most notable change in substance use among KORTOS clients is for heroin. Small percentages of KORTOS clients reported using heroin in the 30 days before entering treatment from 2007 through 2011. The percentage tripled from 2011 (7.8%) to 2012 (26.7%) and then the percentage doubled from 26.7% in 2012 to 53.7% in 2013. While the percent of clients reporting heroin use decreased slightly in 2014, it remained relatively high. In 2015 the percent increased again with two-thirds of KORTOS clients (66.7%) reporting heroin use in the 30 days before intake and it remained high in 2016. In 2017, the percent of clients reporting heroin use increased again to 70.9%.

FIGURE AD.1. PERCENT OF FOLLOWED-UP CLIENTS REPORTING NON-PRESCRIBED USE OF PRESCRIPTION OPIOIDS, METHADONE, BUP-NX, AND HEROIN IN THE 30 DAYS BEFORE ENTERING TREATMENT (n = 1,994)[121]



[121] Clients who reported being in a controlled environment all 30 days before entering treatment are not included in this analysis.