

Kentucky Opioid Replacement Treatment Program Outcome Study

2020 ANNUAL REPORT



Project Acknowledgments

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The 2020 KORTOS report includes data from 114 clients at Kentucky opioid treatment programs (OTPs) who completed both an intake interview between January 1, 2018 and December 31, 2018 and a six-month follow-up interview targeted between July 2018 and June 2019.

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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 and physical health, (3) criminal justice involvement, (4) quality of life, (5) education, economic

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.

status, and living situation, and (6) recovery supports. This report describes outcomes for 114 clients who attended one of twelve Kentucky OTPs eligible to participate in the study, completed an intake interview between January 1, 2018 and December 31, 2018, agreed to do the follow-up about 6 months later, completed a follow-up interview between July 1, 2018 and June 30, 2019, and were still engaged in an OTP at the time of the follow-up.

Who Do the Opioid Treatment Programs Serve?

Overall, in CY 2018, 384 clients from 9 of the 12 participating Kentucky OTPs completed the KORTOS intake interview.³ Information from those intakes indicate that clients were an average of 38 years old ranging from 18 to 63 years old. More than half (54.4%) were male and 45.6% were female. About half of clients (50.5%) self-reported they decided get help on their own and 32.6% reported that they were referred to the OTP

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.

by a family member, partner, or friend. Almost half (49.0%) were unemployed, and of those clients 30.3% reported they were looking for work.

In the six months before entering treatment, 96.1% of clients reported illegal drug use, 19.1% reported alcohol use, and 83.0% reported smoking tobacco. Almost one-quarter of clients reported using only opioids, 72.0% reported using opioids and at least one other class of drugs, and 1.8% of clients reported no opioids use (only other classes of drugs). In the past 30 days at intake, 95.5% of clients reported illegal drug use, 12.0% reported alcohol use, and 80.5% 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

“There needs to be more of these places available to people. Amazing program! The methadone program was the only way for me to get straight and move forward with my life.”

KORTOS FOLLOW-UP CLIENT

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

At intake, clients were asked ten items regarding adverse childhood experiences from the Adverse Childhood Experiences Study (ACE). Results indicated that the majority of clients (81.2%) reported at least one adverse childhood experience. Significantly more men than women reported experiencing none or 1 to 3 ACE, whereas significantly more women than men reported experiencing 4 or more types of ACE. Specifically, significantly more women than men reported emotional neglect (37.1% vs. 25.8%) and sexual abuse (38.3% vs. 10.5%) before the age of 18. In terms of interpersonal victimization experiences, significantly more women reported being stalked by someone who scared them, being sexually assaulted/raped, and being abused by a dating or intimate partner in their lifetime as well as in the 6 months before entering treatment.

In the six months before entering the program, 68.2% of clients met study criteria for depression, and 75.5% met study criteria for generalized anxiety. About 16% reported suicidal thoughts or attempts of suicide in the 6 months before entering the program. In addition, 18.6% had post-traumatic stress disorder (PTSD) scores that indicated risk of PTSD.⁴ About 49% of clients reported chronic pain in the 6 months before entering the program. Almost two-thirds of clients (65.4%) reported they had at least one of the 15 chronic health problems listed on the intake interview. Trend analysis shows that from CY 2013 to CY 2018 the percent of clients who reported chronic medical problems has increased from just under half of clients to almost two-thirds of clients.

Change in Targeted Factors from Intake to Follow-Up

Substance Use

When examining client change from past 6 months at intake to the 6-month follow-up period, clients report significant decreases in illicit drug use. Overall, 72.8% of clients reported illegal use of prescription opioids in the past 6 months at intake, whereas 10.5% of clients reported

illegal use of prescription opioids at follow-up. Two-thirds of clients reported past-6-month heroin use at intake and that percent decreased to 13.2% at follow-up. Use of non-prescribed methadone and buprenorphine-naloxone (bup-nx) also decreased significantly. Not only did clients' use of overall opioids decrease significantly, but also their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, and stimulants) decreased from almost three-quarters to over one-quarter. The majority of clients (90.9%) reported experiencing problems with drugs or alcohol (such as craving, withdrawal, wanting to quit and being unable, or worrying about relapse) at intake compared to 25.5% at follow-up. In addition, the number of clients who reported an ASI drug composite score that met the cutoff for severe substance use disorder (SUD) decreased from 96.2% at intake to 11.5% at follow-up.

Mental And Physical Health

There were also improvements in clients' overall past-6-month mental health. Almost three-quarters of clients (71.1%) met study criteria for depression at intake compared to 28.1% of clients at follow-up. Trend reports over the past 6 years indicate that, overall, the percent of clients meeting

⁴ Among clients who were asked about PTSD symptoms.

study criteria for depression has remained steady with two-thirds to three-quarters of clients meeting study criteria at intake. At follow-up, the percent of clients meeting study criteria for depression has been on the rise from 2015 to 2020. Over three-quarters of clients (78.1%) met study criteria for generalized anxiety at intake compared to 35.1% at follow-up. In addition, there was a decrease in clients who met study criteria for comorbid depression and generalized anxiety from intake (64.9%) to follow-up (20.2%). Further, 18.4% of clients reported suicidal ideation or attempts at intake compared to 3.5% at follow-up. Trends of suicidal ideation or attempts show that the percent of clients reporting suicide ideation appeared to peak in 2018 before decreasing again. At follow-up, the percent of clients reporting suicide ideation was stable over the past 6 years.

Further, physical health was better for clients at follow-up. Specifically, clients reported significantly fewer number of days of poor physical and mental health at follow-up when compared to intake. Significantly fewer clients reported they had experienced chronic pain in the 6 months before follow-up.

Criminal Justice Involvement

A minority of KORTOS clients reported criminal justice system involvement. In the 6 months before the intake, 16.7% of clients reported being arrested compared to only 7.0% at follow-up. Further, 12.3% of clients reported being incarcerated in the 6 months before treatment and 7.9% of clients reported being incarcerated in the past 6 months at follow-up. Over the past 6 years, the percent of clients reporting an arrest had been stable with approximately 15-20% of

clients reporting an arrest in the past 6 months at intake. Trend analyses show that the percent of clients who spent at least one night in jail were consistent over the past 6 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 they began participating in the program. Trend analyses show that these high ratings for quality of life and satisfaction with life at follow-up have been consistent over the past 6 years. In addition, clients rated their functioning and well-being on areas such as personal, interpersonal, social, and overall well-being as significantly higher at follow-up compared to intake.

Economic Status and Living Circumstances

Overall, opioid treatment program clients made significant strides in all of the targeted areas



REPORTED PRESCRIPTION OPIOID MISUSE***

73%
at intake | **11%**
at follow-up



MET STUDY CRITERIA FOR COMORBID DEPRESSION AND ANXIETY***

65%
at intake | **20%**
at follow-up



CURRENTLY EMPLOYED FULL-TIME**

34%
at intake | **47%**
at follow-up



AVERAGE QUALITY OF LIFE RATINGS***

3.9
at intake | **7.9**
at follow-up

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 39.8% at intake to 67.0% 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 3.3 months at follow-up. Furthermore, 47.4% of clients reported being currently employed full-time at follow-up compared to 34.2% at intake. The percent of clients who considered themselves homeless in the past 6 months decreased significantly from 24.6% at intake to 8.8% at follow-up. At intake, 54.0% 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 35.4%. Trend reports over 6 years at intake indicate that the number of clients reporting difficulty meeting basic living needs appears to have decreased slightly before increasing slightly again this report year. The number of clients who reported they had difficulty obtaining health care (e.g., doctor visits, dental visits, and prescription medications) for financial

reasons decreased significantly from 34.5% at intake to 23.9% at follow-up. Overall, the percent of clients reporting difficulty meeting basic health care needs appears to have slowly decreased over the past 6 years at intake, but has increased at follow-up from 2017 to 2020.

Recovery Supports

At intake, 22.8% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days compared to 53.5% of clients at follow-up. Of those clients who attended meetings at intake ($n = 26$), 84.6% 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 ($n = 88$), 44.3% 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.

Treatment Program Satisfaction

Program clients reported high levels of satisfaction with their program experience. Specifically, the majority of clients reported that when they told their counselor or program staff personal things,

they felt listened to and that the treatment approach and method was a good fit for them. In addition, clients felt that their expectations and hopes for treatment and recovery were met and that they felt they had input into their treatment goals, plans, and progress. Clients reported many positive aspects of their participation in the program including reduced substance use, improved relationships with others, improved financial situation, and improved mental health and their feelings about themselves. Overall, the majority of clients (93.8%) reported that the treatment episode is working pretty well or extremely well for them. Almost all clients (94.7%) indicated they would refer a close friend or family member to their treatment provider.

Areas Of Concern

Several findings suggest opportunities to provide or target additional support for clients. First, around 37% 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^{5,6} and longer treatment retention has been associated with more positive outcomes.^{7,8} Additionally, smoking was very high for clients at intake (82.5%) and remained high at follow-up (78.9%). 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, 35.4% 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, 43.0% were unemployed at follow-up. There were several gender differences in targeted factors. Significantly more men reported prescription

opioid misuse in the 6 months before intake and follow-up. Significantly more men than women also reported using non-prescribed bup-nx in the past 30 days at intake. Alcohol use was also reported by significantly more men in the 6 months before entering treatment. Further, significantly more men met criteria for severe SUD at intake compared to women.

Significantly more women met study criteria for generalized anxiety and comorbid depression and generalized anxiety at intake compared to men. Women reported a higher average number of days of poor mental health at intake compared to men. In addition, significantly more women reported being insured by Medicaid and significantly more men than women reported having no health insurance at both intake and follow-up.

In the past 6 months at both intake and follow-up, men reported working a greater average number of months (3.6 and 4.3, respectively) compared to women (1.7 and 2.3, 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 6 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 \$0.63 for every dollar employed men made and at follow-up, the gap in median hourly wages was still present, with employed women making only \$0.67 for every dollar employed men made.

The 2020 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. This report also suggests there are a number of things clients continue to struggle with 6 months into their program participation.

⁵ 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.

⁶ 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.

⁷ 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.

⁸ 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 4.3% of individuals 12 years and older report nonmedical use of pain relievers.⁹ Since 1999, the rate of deaths from drug overdose involving opioids has increased to 6 times higher in 2017.¹⁰ Heroin and prescription opioids were the primary drug class involved in drug overdose deaths.¹¹ In 2017, 47,600 drug overdose deaths out of 70,237 that occurred in the U.S. involved an opioid.¹² 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).¹³

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.¹⁴ These federally regulated opioid treatment programs (OTPs) provide evidence-based, clinically monitored, medication-assisted therapy with methadone or bup-nx.¹⁵ 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.^{15,16,17} 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 2013.¹⁸

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

⁹ Lipari, R., Van Horn, S., Hughes, A., & Williams, M. (2017). *State and Substate Estimates of Nonmedical Use of Prescription Pain Relievers*. The CBHSQ Report: July 13, 2017. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD.

¹⁰ <https://www.cdc.gov/drugoverdose/epidemic/index.html>

¹¹ Slavova, S., Akers,D., & Rock, P. (2016). *Kentucky Resident Drug Overdose Deaths, 2015*. Lexington, KY: Kentucky Injury Prevention and Research Center.

¹² <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>.

¹³ <https://www.drugabuse.gov/opioid-summaries-by-state/kentucky-opioid-summary>

¹⁴ Office of the Assistant Secretary for Planning and Evaluation. (2015, March 26). *Opioid abuse in the U.S. and HHS actions to address opioid-drug related overdoses and deaths*. Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.

¹⁵ 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).

¹⁶ Kakk, 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.

¹⁷ 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. CDO02207.

¹⁸ 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.

DBHID Division of Behavioral Health's performance-based measurement 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 2018, nine Kentucky licensed OTPs submitted data for KORTOS.¹⁹

In this annual report, data are included for 384 clients who completed an intake and 114 clients from Kentucky OTPs who completed an intake interview between January 1, 2018 and December 31, 2018, 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, 2018 and June 30, 2019.

Results are reported within nine 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 2018 and who had completed an intake ($n = 384$) as well as clients who completed a 6-month follow-up interview and were still involved in the opiate treatment program ($n = 114$).

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. Mental and Physical Health. 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, (6) interpersonal victimization experiences, (7) general health status, (8) chronic pain, and (9) health insurance. The mental and physical health questions on the KORTOS intake and follow-up interviews were self-report measures.

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

¹⁹ In 2018, 9 OTPs submitted intake surveys for clients: Bluegrass.org/Narcotics Addiction Program, Center for Behavioral Health -Elizabethtown, Center for Behavioral Health -Frankfort, Center for Behavioral Health -Louisville, Northern Kentucky Medical Clinic, Paducah Professional Associates, Perry County Treatment Services, Pikeville Treatment Center, and Ultimate Treatment Center.

Section 5. 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) client functioning and well-being.

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

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

Section 8. Client Satisfaction with the Opioid Treatment Programs. The items measured in this report include: (1) client involvement in the program and manner in which the client left, (2) if the client would refer someone else to the program, (3) client ratings of program experiences, and (4) positive and negative aspects of program participation.

Section 9. 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 2018 and who had completed an intake assessment ($n = 384$), including clients who also completed a 6-month follow-up interview ($n = 114$).

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 assessment²⁰ 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, 2018 to December 31, 2018). In 2018, 384 adults completed an intake interview²¹ that was submitted by one of 9 Kentucky licensed OTPs to UK CDAR.²² The 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 (54.4%) and most were White (94.5%). Clients were, on average, 38 years old, with the youngest client being 18 and the oldest being 63 years old. Overall, 56.8% were married or cohabiting, 21.4% of clients had never been married, 18.8% were separated or divorced, and 3.1% were widowed. Close to 40% 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 (81.2%) indicated they lived in a metropolitan community, 15.4% lived in a non-metropolitan community, and 3.4% were from a very rural community.

"I think it fits me perfectly because it keeps me from using, and lets me do daily things. I'm able to get over my addiction."

KORTOS FOLLOW-UP CLIENT

²⁰ 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.

²¹ 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.

²² In CY 2018, 9 OTPs submitted intake surveys for clients: Bluegrass.org/Narcotics Addiction Program, Center for Behavioral Health -Elizabethtown, Center for Behavioral Health -Frankfort, Center for Behavioral Health -Louisville, Northern Kentucky Medical Clinic, Paducah Professional Associates, Perry County Treatment Services, Pikeville Treatment Center, and Ultimate Treatment Center.

TABLE 1.1. DEMOGRAPHICS FOR ALL KORTOS CLIENTS AT INTAKE (N = 384)^{23,24}

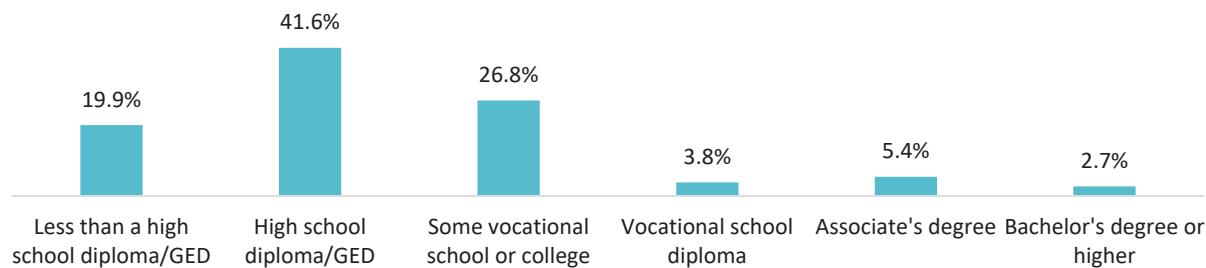
Age	37.8 years (Min. = 18, Max. = 63)
Gender	
Male.....	54.4%
Female	45.6%
Race	
White/Caucasian.....	94.5%
Black/African American.....	2.1%
Other or multiracial.....	3.4%
Marital status	
Never married.....	21.4%
Separated or divorced.....	18.8%
Married or cohabiting.....	56.8%
Widowed.....	3.1%
Have children under the age of 18 who live with them	39.7%
Type of community	
Metro	81.2%
Non-metro	15.4%
Very rural.....	3.4%

Education

Almost 20% 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 26.8% of clients had completed some vocational/technical school or college. Only a minority of clients had completed vocational/technical school (3.8%), an associate's degree (5.4%), or a bachelor's degree or higher (2.7%).

²³ 7 clients had incorrect birthdates and, therefore, age could not be determined.

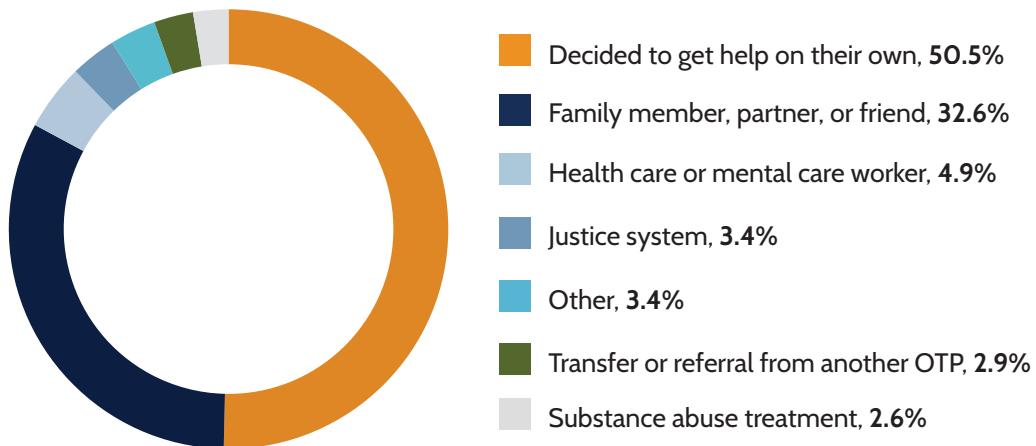
²⁴ 65 clients either did not indicate a county of residence or lived in another state.

FIGURE 1.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 373)²⁵

Self-Reported Referral Source

Figure 1.2 shows the self-reported treatment referral source for all KORTOS clients. Close to half of clients decided to get help on their own and 32.6% of clients reported they were referred by a family member, partner or friend. A small percentage of clients (4.9%) were referred by a health care or mental health care worker, 3.4% were referred by the justice system, 3.4% were referred by other sources, 2.9% were transferred or referred by another OTP, and 2.6% were referred by a substance abuse treatment facility.

FIGURE 1.2 SELF-REPORTED REFERRAL SOURCE FOR ALL KORTOS CLIENTS AT INTAKE (N = 384)



Employment

More than 2 in 5 clients (42.2%) reported they had not worked in the past 6 months, 8.9% had worked 1 to 3 months, and 49.0% had worked 4 or more months (not depicted in figure). Almost half of clients (49.0%) reported being unemployed, 40.4% reported they were currently employed full-time, and 10.7% 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 = 196), the median hourly wage was \$12.00.

²⁵ Eleven clients were not included because of data inconsistencies.

FIGURE 1.3. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 384)

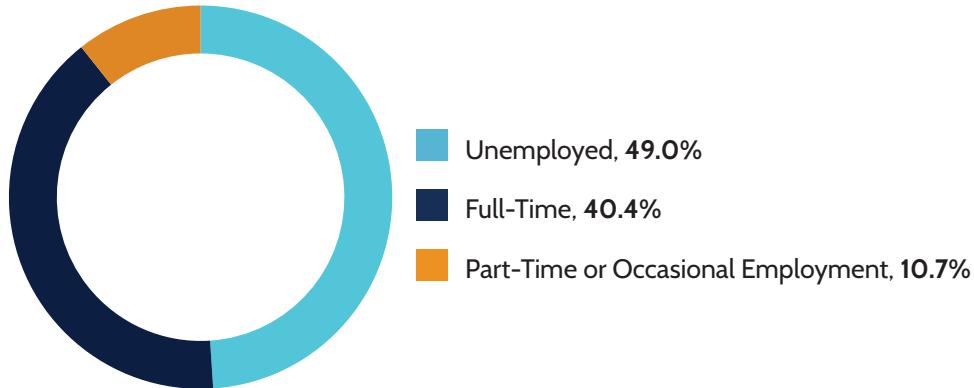
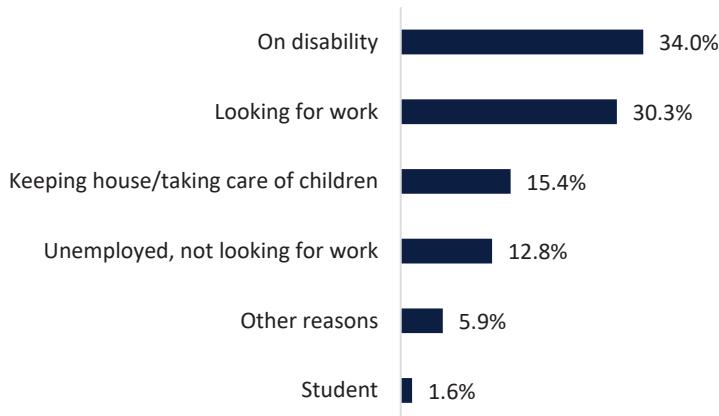


Figure 1.4 shows that of the individuals who were currently unemployed at intake (n = 188), 34.0% were on disability, 30.3% stated they were looking for work, 15.4% were keeping the house or taking care of children full-time at home, 12.8% were unemployed and not looking for work, 1.6% were students, and the remaining 5.9% 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 = 188)



Adverse Childhood Experiences and Victimization

At intake, clients were asked ten items regarding adverse childhood experiences from the Adverse Childhood Experiences Study (ACE).^{26,27,28} In addition to providing the percent of clients who

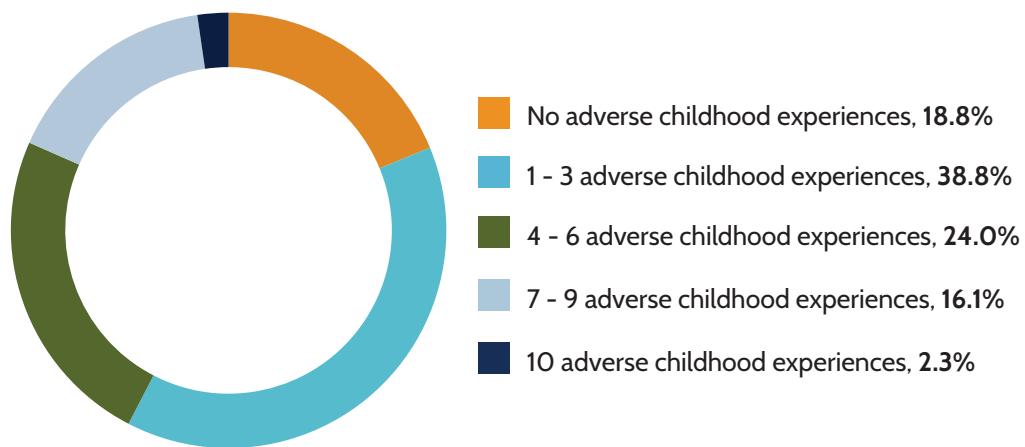
²⁶ Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245-258.

²⁷ 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>.

²⁸ The intake assessment asked about 10 major categories of adverse childhood experiences: (a) three types of abuse (e.g., emotional maltreatment, physical maltreatment, and sexual abuse), (b) two types of neglect (e.g., emotional neglect, physical neglect), and (c) five types of family risks (e.g., witnessing partner violence victimization of parent, household member who was an alcoholic or drug user, a household member who was incarcerated, a household member who was diagnosed with a mental disorder or had committed suicide, and parents who were divorced/separated).

reported each of the ten types of adverse childhood experiences before the age of 18 years old captured in ACE, the number of types of experiences was computed such that items clients answered affirmatively were added to create a score equivalent to the ACE score. A score of 0 means the client answered “No” to the five abuse and neglect items and the five household dysfunction items in the intake interview. A score of 10 means the client reported all five forms of child maltreatment and neglect, and all five types of household dysfunction before the age of 18. Figure 1.5 shows that 18.8% reported they did not experience any of the ACE included in the assessment. Over one-third (38.8%) reported experiencing 1 to 3 ACE, 24.0% reported experiencing 4 – 6 ACE, and 16.1% reported experiencing 7 – 9 ACE. Only 2.3% of clients reported experiencing all 10 types of adverse childhood experiences.

FIGURE 1.5. NUMBER OF TYPES OF ADVERSE CHILDHOOD EXPERIENCES REPORTED AT BASELINE (N = 384)

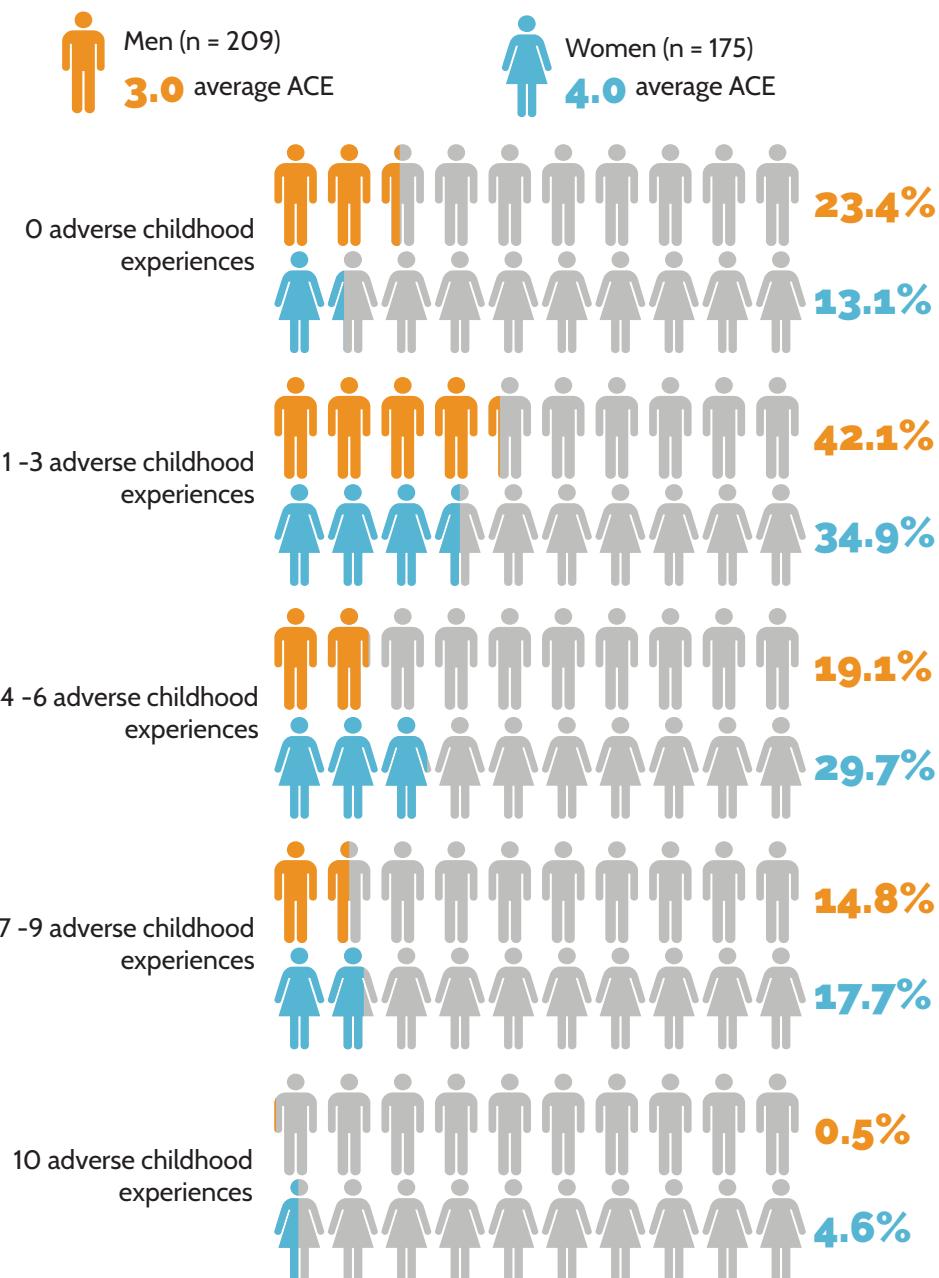


There was a significant difference in the proportion of men and women classified by number of types of ACE (see Figure 1.6). More men than women reported experiencing none or 1 to 3 of the ACE while more women reported 4 or more ACE.

“They’re really nice, they didn’t treat me like I was an ex-drug user. [They were] very respectful.”

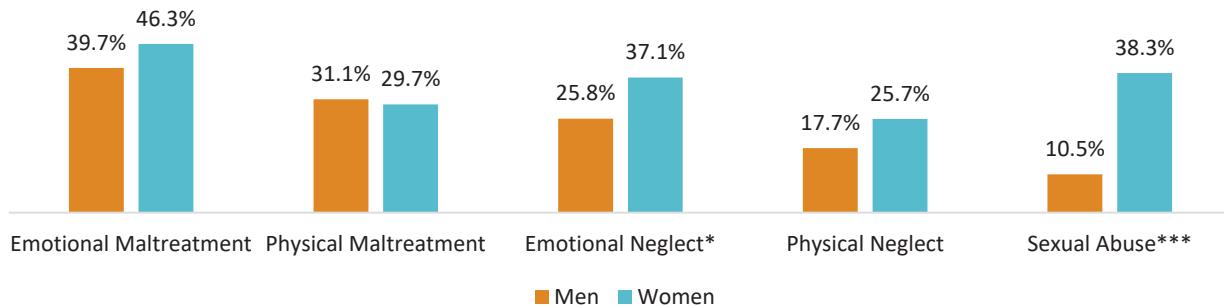
KORTOS FOLLOW-UP CLIENT

FIGURE 1.6. THE NUMBER OF CATEGORIES OF ADVERSE CHILDHOOD EXPERIENCES BY GENDER***

*** $p < .001$.

About 46% of women reported they had experienced emotional maltreatment in their childhood, compared to 39.7% of men which was not significantly different (see Figure 1.7). Close to one-third of women and men reported physical maltreatment and a little over one-quarter of women and 17.7% of men reported experiencing physical neglect. Significantly more women than men reported emotional neglect (37.1% vs. 25.8%), and sexual abuse (38.3% vs. 10.5%) before the age of 18.

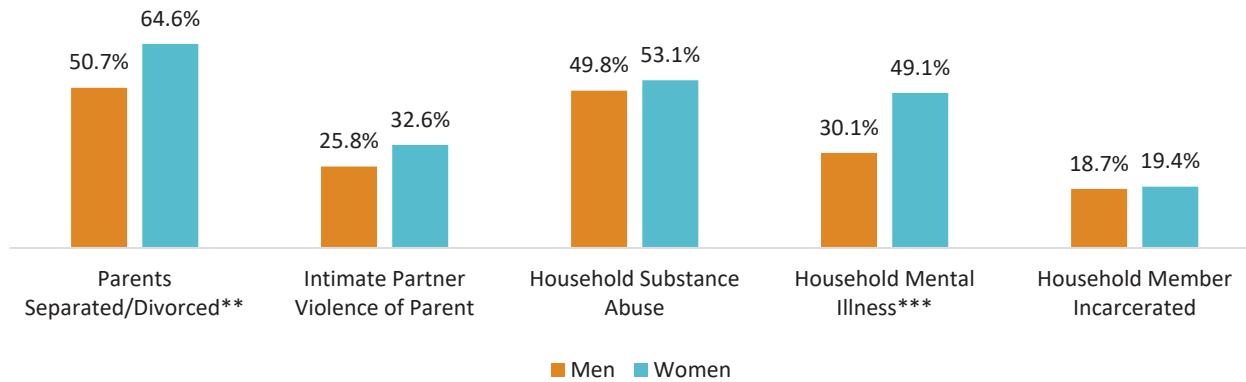
FIGURE 1.7. MALTREATMENT AND ABUSE EXPERIENCES IN CHILDHOOD BY GENDER (n = 384)



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

Over one-quarter of men and 32.6% of women reported they had witnessed the intimate partner violence of their mother or stepmother (see Figure 1.8). Around half of both men and women reported they lived with someone who was a problem drinker or alcoholic or used street drugs. Almost 1 in 5 individuals reported a household member had been incarcerated. Significantly more women reported their parents were divorced or lived separately. Significantly more women than men also reported they had a household member with a mental illness or who had committed suicide.

FIGURE 1.8. HOUSEHOLD RISKS IN CHILDHOOD BY GENDER (n = 384)

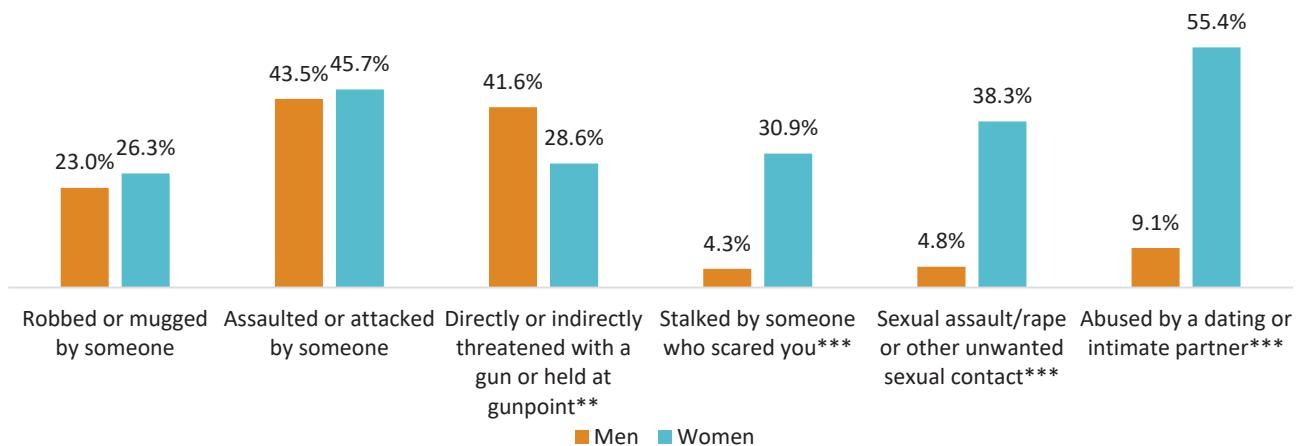


p < .01, *p < .001.

Victimization Experiences

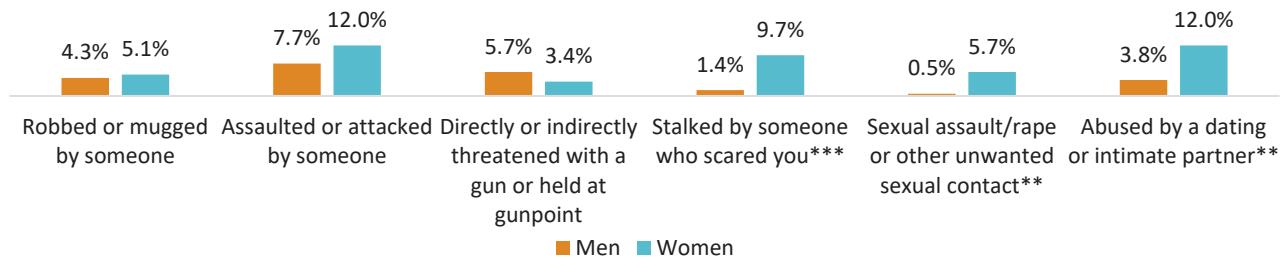
Clients were also asked about victimization experiences (including when they may have been the victim of a crime, harmed by someone else, or felt unsafe) they had experienced in their lifetime and in the 6 months before entering the treatment program. The results of the most commonly reported experiences 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 more women reported ever being stalked by someone who scared them, sexually assaulted or raped, and abused by a dating or intimate partner. Significantly more men reported having ever been directly or indirectly threatened with a gun or held at gunpoint.

FIGURE 1.9. LIFETIME CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 384)



Smaller percentages of clients reported experiencing crime and interpersonal victimization in the 6 months before entering programs than in their lifetime (see Figure 1.10). However, the pattern of gender differences was similar to lifetime prevalence percentages. Significantly more women than men reported having been stalked by someone who scared them, sexually assaulted or raped, and a victim of intimate partner violence (including controlling behavior).

FIGURE 1.10. PAST-6-MONTH CRIME AND INTERPERSONAL VICTIMIZATION BY GENDER (n = 384)



p < .01, *p < .001.

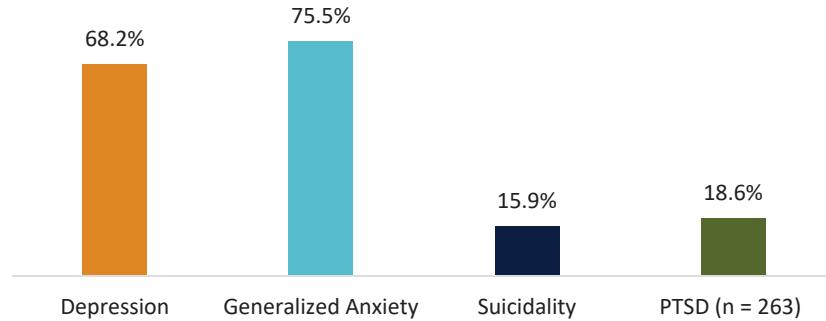
Mental Health

At intake, 68.2% of KORTOS clients met study criteria for depression in the past 6 months (see Figure 1.11). Additionally, 75.5% of clients met study criteria for generalized anxiety at intake. Almost 16% 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 asked of all clients (n = 263),²⁹ 18.6% had PTSD scores that indicated a risk of PTSD.³⁰

²⁹ In earlier versions of the instrument, individuals who reported no to all victimization questions were not asked the PTSD symptom items; thus, 263 individuals had PTSD scores at intake. A score of 10 or higher is indicative of clinically significant PTSD symptomatology.

³⁰ 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 = 384)



Physical Health

At intake, clients reported an average of 12.9 days of poor physical health in the past 30 days and an average of 16.9 days of poor mental health in the past 30 days (see Table 1.2). About 49% of clients reported chronic pain in the 6 months before entering the program. Almost two-thirds of clients (65.4%) 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, severe dental problems, arthritis, and cardiovascular disease.

The most common insurance provider reported at intake was Medicaid (60.7%; see Table 1.2). About 15% of 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.

“A friend referred me there and I’ve tried a lot of other ways and it hadn’t worked so I gave it a try. It’s the only thing that’s worked.”

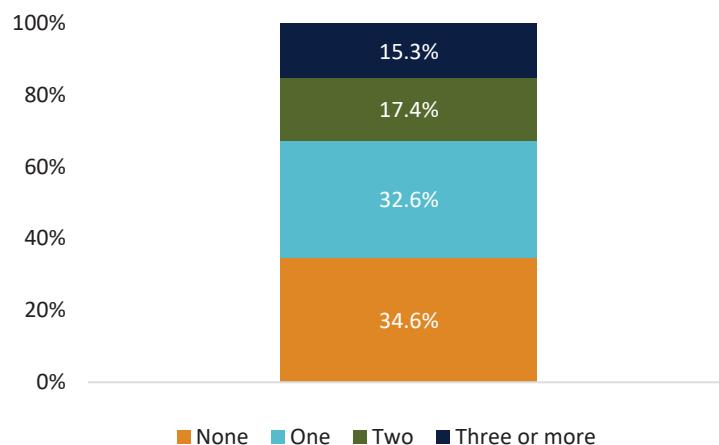
KORTOS FOLLOW-UP CLIENT

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL KORTOS CLIENTS AT INTAKE (N = 384)

Average number of poor health days in past 30 days	12.9
Average number of poor mental health days in past 30 days.....	16.9
Average number of days poor physical or mental health limited activities....	12.6
Chronic pain.....	49.2%
At least one chronic medical problem	65.4%
Hepatitis C.....	51.0%
Severe dental problems	28.3%
Arthritis	27.9%
Cardiovascular/heart disease	20.7%
Medical insurance	
No insurance.....	15.4%
Medicaid.....	60.7%
Through employer (including spouse's employer, parents' employer, and self-employed).....	11.2%
Medicare.....	9.6%
VA/Champus/Tricare	0.8%
Through Health Exchange	0.3%

Figure 1.12 shows the percent of clients who reported having different numbers of chronic medical problems at intake. More than one-third reported no problems, and almost one-third reported one chronic medical problem. About 17% reported two chronic medical problems and 15.3% reported having three or more chronic medical problems.

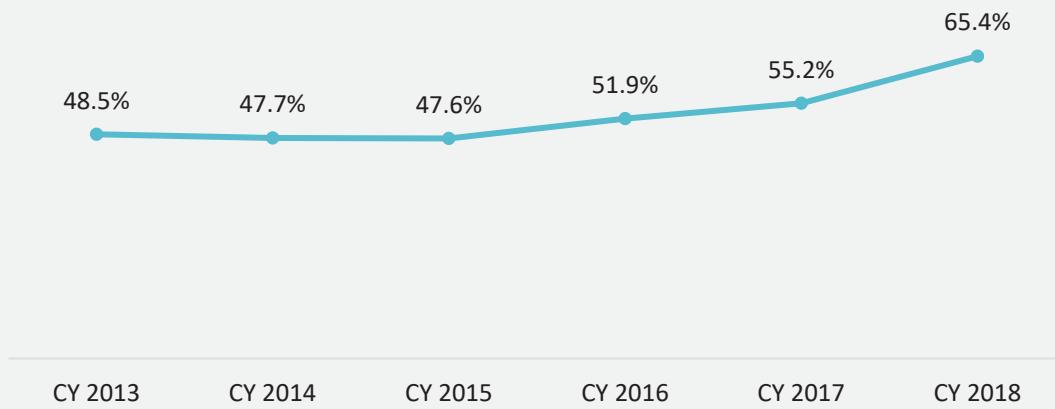
FIGURE 1.12. NUMBER OF CHRONIC MEDICAL PROBLEMS AT INTAKE FOR TOTAL SAMPLE (N = 384)



Trend in 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 (48.5%) to CY 2016 (51.9%) and has increased to 65.4% in CY 2018.

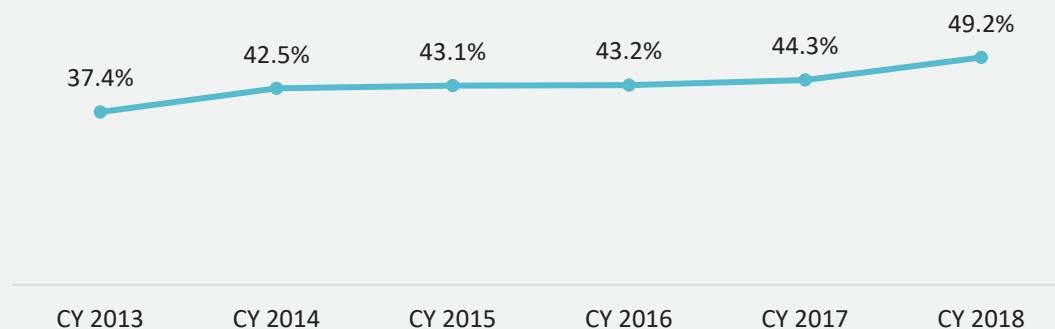
FIGURE 1.13. TRENDS IN CHRONIC MEDICAL PROBLEMS AT INTAKE



Trends in Chronic Pain at Intake

The number 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 2018 49.2% 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 (96.1%) and smoking tobacco (83.0%) while almost one-fifth of clients (19.1%) 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/opiates³¹ (70.4%), heroin (66.5%), marijuana (48.2%), and tranquilizers (30.6%; not represented in a figure).

Similarly, 95.5% reported using illegal drugs, 80.5% reported smoking tobacco, and 12.0% reported using alcohol in the 30 days before entering treatment.

FIGURE 1.15 ALCOHOL, DRUG, AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE TREATMENT³²

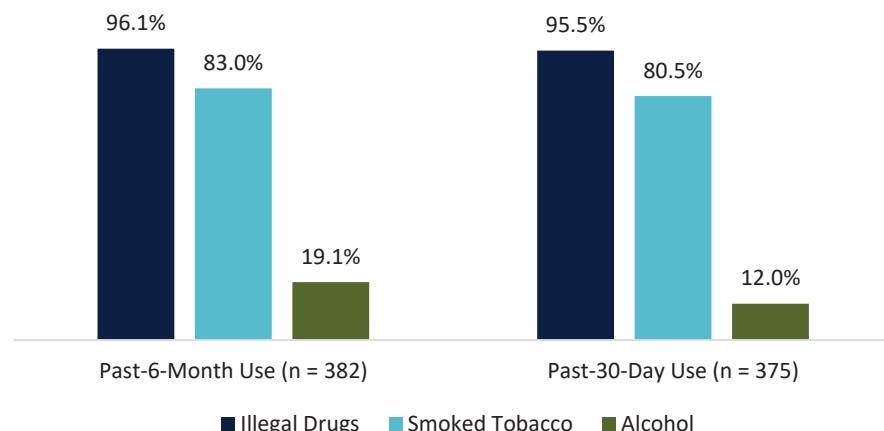


Figure 1.16 presents the percentage distribution of individuals who used alcohol and/or illegal drugs in the 6 months before entering the program. Among the individuals who were not incarcerated all 180 days before entering the program, only 3.9% reported no alcohol or drug use, none reported alcohol use only, 77.0% reported illegal drug use only, and 19.1% reported both alcohol and illegal drug use.

³¹ For brevity's sake, the class of substances including prescription opiates and opioids will be referred to as opioids.

³² 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 9 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 = 382)

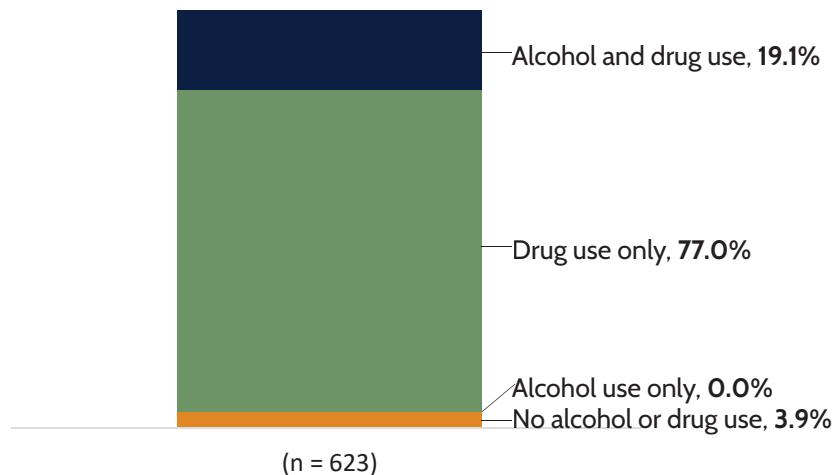
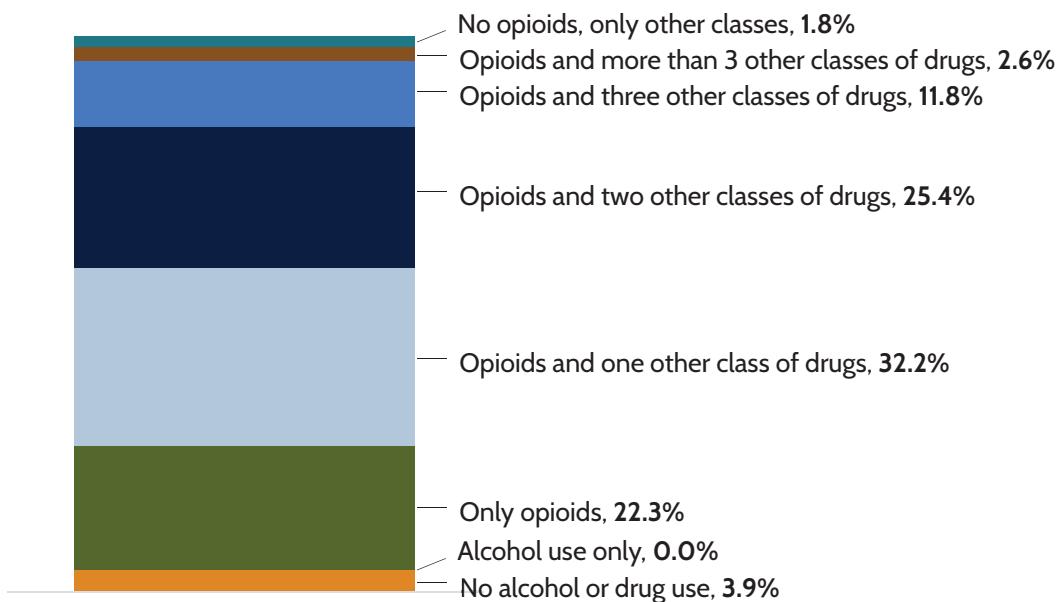


Figure 1.17 presents the distribution of clients who reported using no drugs, alcohol only, and then various numbers of drug classes from the following: marijuana, opioids (including prescription opioids, bup-nx, methadone), heroin, CNS depressants (such as benzodiazepines, sedatives, barbiturates), 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 (22.3%) while 72.0% 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 = 382)

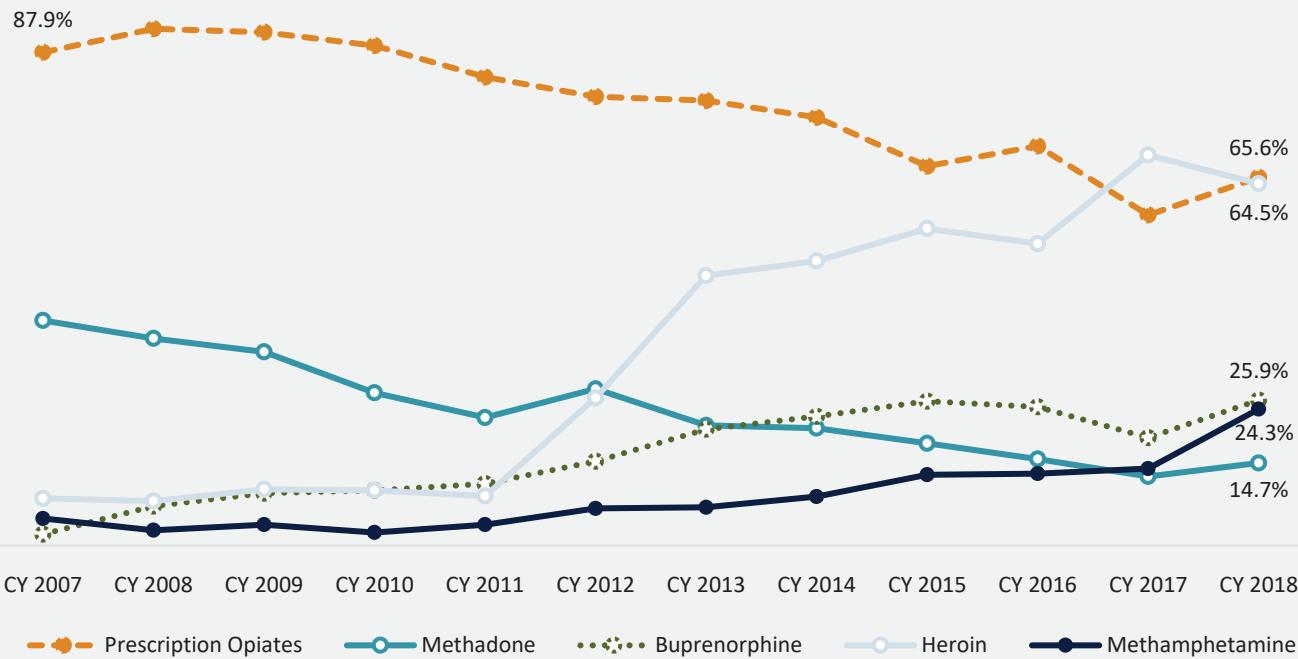


Trend Report in Specific Past-30-Day Drug Use

When looking at trends over time for all clients with completed intake interviews, the percent of clients using prescription opioids in the past 30 days peaked in CY 2008 and steadily dropped until CY 2018 where it increased to 65.6%. The percent of clients who reported using non-prescribed methadone before entering treatment showed a decline from CY 2007 to 2011 and again from CY 2012 to 2017 until increasing slightly in CY 2018. The percent of clients who reported using bup-nx slowly increased from CY 2007 through 2015 and then dropped slightly in CY 2016 and 2017 before increasing again in CY 2018.

The most notable change in substance use among KORTOS clients, however, is for heroin. Small percentages of KORTOS clients reported using heroin from CY 2007 through 2011. Then, the percent tripled from 8.8% in CY 2011 to 26.3% and then nearly doubled from 26.3% in CY 2012 to 48.1% in CY 2013. The percent of KORTOS clients reporting heroin use at intake in CY 2014 increased again to 50.7% and further still to 56.5% in CY 2015. The number of KORTOS clients reporting heroin use at intake in CY 2017 increased further to 69.6%. In addition, the use of methamphetamine among clients has gradually been increasing since CY 2008. In CY 2018, one-quarter of clients were using methamphetamine when they entered the program which was an increase from CY 2017. These trends are very similar when examining only those clients who were followed-up (see Appendix D).³³

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 = 9,043)^{34,35}



³³ Due to the proximity of the trend lines, only the most recent year's data is labeled.

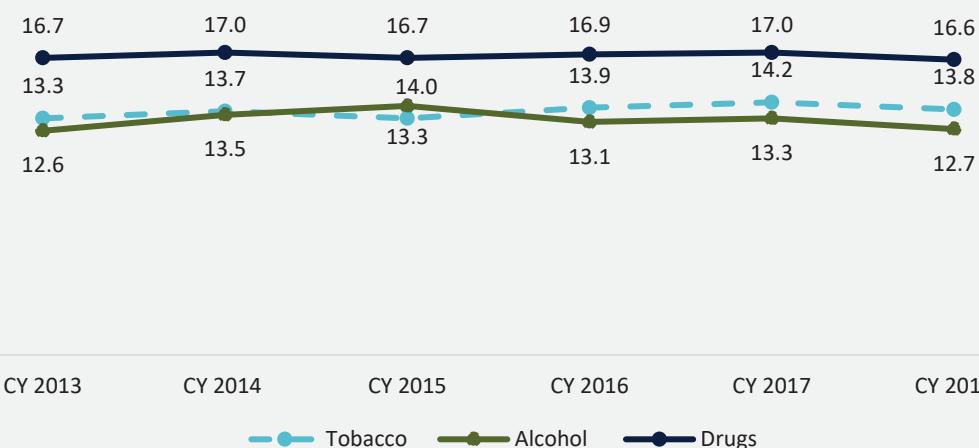
³⁴ Clients who reported being in a controlled environment all 30 days before entering treatment were not included in this analysis.

³⁵ 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 alcoholic 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 slightly 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 15.4% reported being incarcerated at least one night in the 6 months before entering treatment (see Figure 1.20). Among those who were arrested ($n = 57$), they were arrested an average of 1.6 times. Among those who were incarcerated ($n = 59$), they were incarcerated an average of 23.3 nights (not depicted in the figure). In addition, 13.3% of clients reported being under supervision by the criminal justice system.

FIGURE 1.20. CRIMINAL JUSTICE INVOLVEMENT 6 MONTHS BEFORE TREATMENT AT INTAKE (N = 384)³⁶



³⁶ One client was missing responses for arrests and jail time in the past 6 months.

KORTOS Follow-Up Sample

Follow-up interviews are conducted with a selected sample of KORTOS clients targeted for 6 months after the intake interview is completed. At the completion of the intake interview, program staff inform individuals about the KORTOS follow-up study and ask if they are interested in participating. Clients who agree to participate are asked to provide contact information. All individuals who agree to be contacted by UK CDAR for the follow-up interview and have given at least one mailing address and one phone number, or two phone numbers if they do not have a mailing address in their locator information, are eligible for the follow-up component of the study. All eligible individuals are then selected by the month in which they completed intake interviews.³⁷

Of the 384 clients who completed an intake interview, 210 agreed to be contacted for the follow-up interview (54.7% agreement rate). Of these clients, a total of 198 provided the minimum amount of contact information at the end of the intake interview, had intake interviews that were submitted to UK CDAR within 30 days of completion, and were selected into the follow-up sample. Of the 198 clients included in the follow-up sample, 22 were ineligible for participating in the follow-up interview,³⁸ which left 176 clients who met eligibility criteria for the follow-up interview about 6 months later. Of these 176 eligible clients, UK CDAR interviewers completed follow-up assessments with 123 clients (69.9% follow-up rate). This means that only roughly 30% of individuals included in the sample to be followed up were not successfully contacted within the targeted eligibility time period.³⁹ Prior to December 2018, clients who were no longer involved in the OTP were not eligible for follow-up. In December 2018, however, the decision was made to include clients who were no longer in the OTP in the follow-up sample. Because this change was made in the middle of the fiscal year of follow-ups, for this annual report year, clients who are no longer in OTP, but had already completed a follow-up, will not be included in the follow-up analysis ($n = 9$).⁴⁰ As a result, the follow-up sample size for analysis was 114.

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.

This report describes outcomes for 114 adults who participated in a Kentucky OTP and who completed an intake interview and a follow-up telephone interview about 5-6 months (an average of 201 days) after the intake interview was completed. Detailed information about the methods and follow-up efforts can be found in Appendices A and B.

³⁷ 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.

³⁸ 12 were no longer at the OTP, 9 were incarcerated, and 1 had died at the time of follow-up, see Table AA.2.

³⁹ 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.

⁴⁰ The 9 clients who completed a follow-up but were not included in the analysis were still counted in the follow-up rate.

Of the 114 adults who completed a 6-month follow-up interview, 51.8% were female. Most follow-up clients were White (93.9%), 3.5% were African American, and 2.6% were Hispanic, American Indian, or multiracial. They were an average of 36.8 years old. Around 21% of clients had never been married at intake, 24.6% were separated or divorced, 50.9% were married or cohabiting, and 3.5% were widowed. About 40% of follow-up clients had at least one child under age 18 who was living with them. The majority of clients (82.9%) indicated they lived in a metropolitan community, 15.2% lived in a non-metropolitan community, and 1.9% were from a very rural community.

TABLE 1.3. DEMOGRAPHICS FOR KORTOS FOLLOW-UP CLIENTS AT INTAKE (N = 114)^{41,42}

Age	36.8 years (range of 18 - 58)
Gender	
Male.....	48.2%
Female	51.8%
Race	
White/Caucasian.....	93.9%
Black/African American.....	3.5%
Other or multiracial.....	2.6%
Marital status	
Never married.....	21.1%
Separated or divorced	24.6%
Married or cohabiting.....	50.9%
Widowed.....	3.5%
Have children under the age of 18 who live with them	39.5%
Type of community	
Metro	82.9%
Non-metro.....	15.2%
Very rural.....	1.9%

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 a few significant differences for substance use, physical health, and criminal justice involvement.

More clients who completed a follow-up reported non-prescribed use of methadone in the past 6 months at intake. More clients who were followed up also reported they had been told by a doctor that they had cardiovascular disease. In addition, clients who were followed up and reported having

⁴¹ Two clients had an incorrect birthdate and, therefore, age could not be determined.

⁴² Nine clients either did not indicate a county of residence or lived in another state.

been arrested in 6 months before treatment entry reported significantly more arrests.⁴³

TABLE 1.4. FOLLOWED-UP VERSUS NOT FOLLOWED-UP

	Followed up	
	No (n = 270)	Yes (n = 114)
Demographic.....		No differences
Socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs)....		No differences
Substance use, severity of alcohol and drug use		More reported past-6-month non-prescribed methadone use
Treatment history.....		No differences
Health (e.g., overall health status, chronic medical problems, chronic pain)		More reported they had been told by a doctor that they had cardiovascular disease
Mental health (e.g., depression, generalized anxiety, suicidality).....		No differences
Criminal justice involvement (e.g., arrested, incarcerated)		Of those who were arrested in the past 6 months, they reported more arrests

⁴³ See Appendix C for detailed comparisons of clients who completed a follow-up interview and were included in the follow-up analysis (n = 114) and clients who did not complete a follow-up interview or were not included in the follow-up analysis (n = 270).

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 problems experienced with substance use in the past 30 days, readiness for treatment, self-reported severity of alcohol and drug use, 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 ($n = 114$) 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 ($n = 111$) is presented.⁴⁴ In addition, this section examines the number of days clients experienced alcohol/drug problems in the past 30 days, how troubled or bothered clients were by alcohol/drug problems in the past 30 days, and how important treatment is for these alcohol/drug problems at intake and follow-up.
4. **Change in self-reported severity of alcohol and drug use from intake to follow-up.** There are two indices of substance use severity presented in this report. One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met the 11 criteria included in the DSM-5 for diagnosing substance use disorder in the past 6 months. Under DSM-5, anyone meeting any two of the 11 criteria during the same 6-month

⁴⁴ Three 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.

period would receive a diagnosis of substance use disorder (SUD) as long as their symptoms were causing clinically significant impairments in functioning. The severity of the substance use disorder (i.e., none, mild, moderate, or severe) in this report is based on the number of criteria met. The percent of individuals in each of the four categories at intake and follow-up is presented.

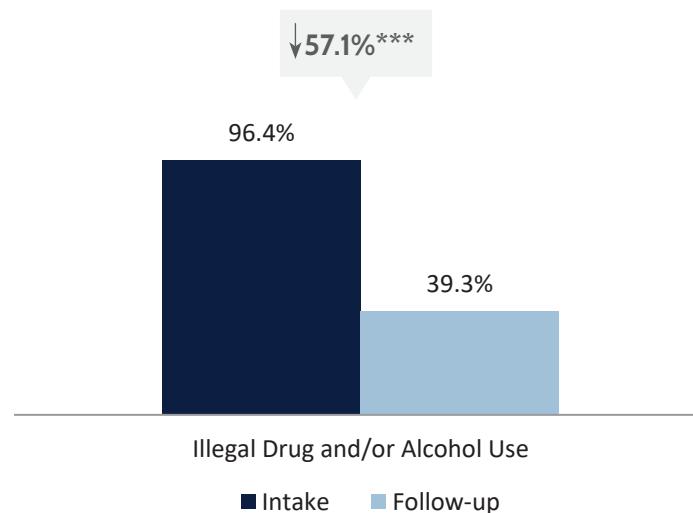
The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs ($n = 104$), alcohol ($n = 15$), and those with both alcohol and illegal drug use among clients who used drugs and/or alcohol ($n = 107$). The ASI composite score assesses self-reported addiction severity 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.

Alcohol and/or Drug Use

Past-6-Month Alcohol and/or Drug Use

The majority of clients (96.4%) reported using alcohol and/or illegal drugs in the 6 months before entering the program, which decreased to 39.3% at follow-up. This was a 57.1% 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 = 112)⁴⁵

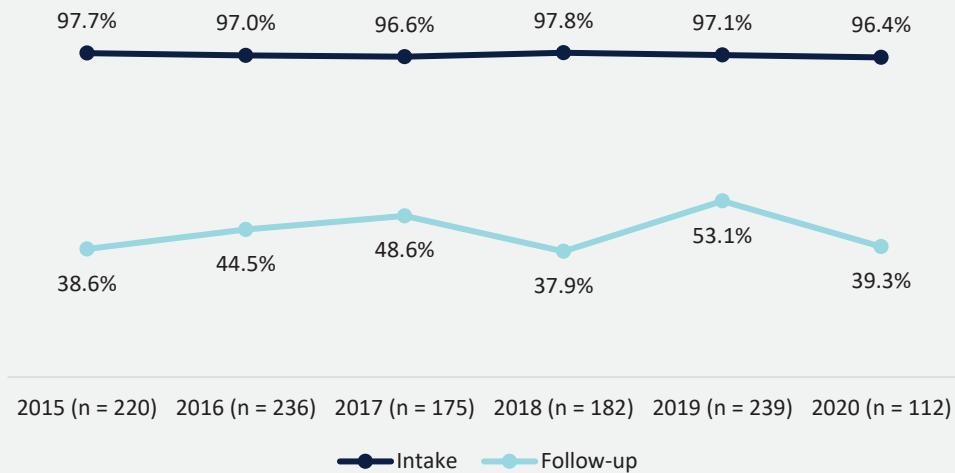


⁴⁵ Two cases had missing data for overall drug use at follow-up.

Trends in Any Alcohol and/or Drug Use

The number 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. In 2020, that percent decreased to 39.3%.

FIGURE 2.2. TRENDS IN ANY ALCOHOL AND/OR ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020^{46,47}



Past-30-Day Alcohol and/or Drug Use

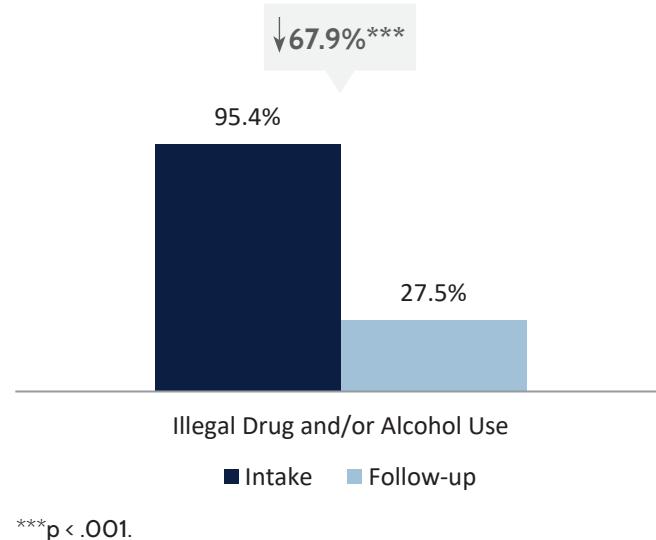
The majority of clients (95.4%) reported using alcohol and/or illegal drugs in the 30 days before entering the program, which decreased to 27.5% at follow-up. This was a 67.9% significant decrease (see Figure 2.3).

"I tried everything to try and stay clean before and this and it's the only thing that's worked."

KORTOS FOLLOW-UP CLIENT

⁴⁶ For each trend report presented, the years correspond to years in which the annual reports were published. In addition, all trend analyses present only annual report data at intake and follow-up and do not include between-year statistical analysis.

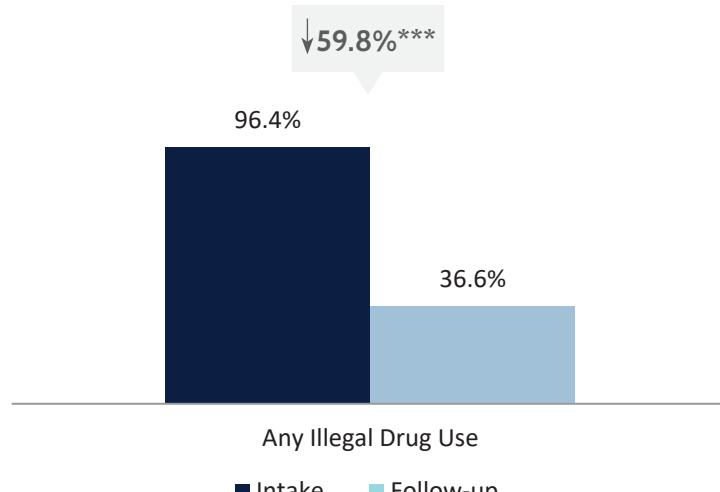
⁴⁷ In 2015, 3 cases had missing data for drug use at intake.

FIGURE 2.3. PAST 30-DAY ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 109)⁴⁸

Any Illegal Drugs

Past-6-Month Any Illegal Drug Use

Almost all clients (96.4%) reported using illegal drugs in the 6 months before entering the program, which decreased to 36.6% at follow-up. This was a 59.8% 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 = 112)⁴⁹

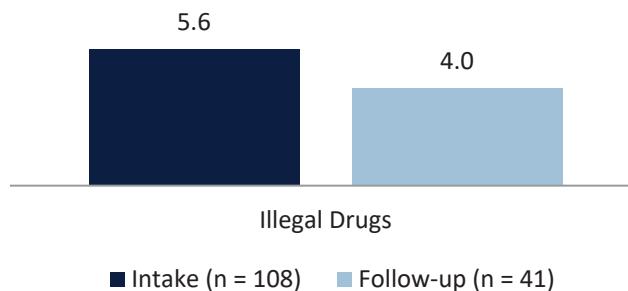
⁴⁸ Two clients were missing data for past-30-day alcohol and/or drug use at follow-up.

⁴⁹ Two cases had missing data for overall drug use at follow-up.

Average Number of Months Used Any Illegal Drugs

Clients who reported any illegal drug use at intake ($n = 108$) reported an average maximum of 5.6 months of use. Among clients who reported any illegal drug use in the 6 months before follow-up ($n = 41$), the maximum number of months they reported using any drug was, on average, 4.0 months (see Figure 2.5).

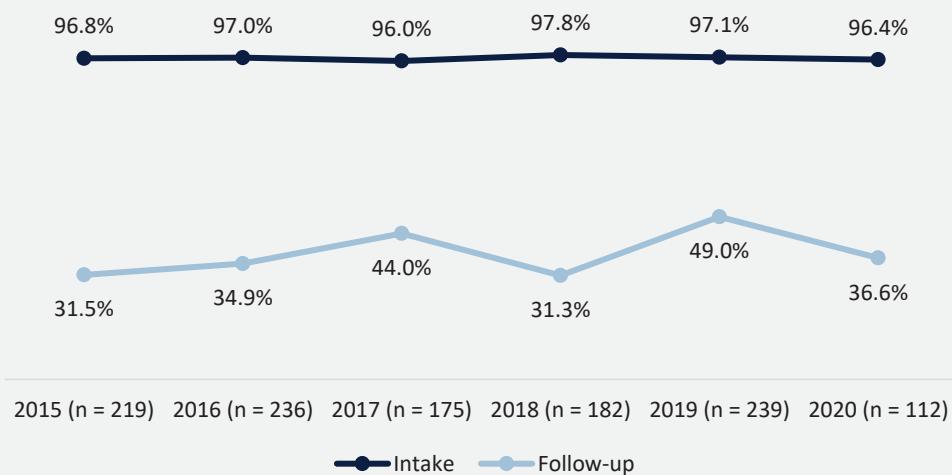
FIGURE 2.5. AVERAGE NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS



Trends in Past-6-month Illegal Drug Use

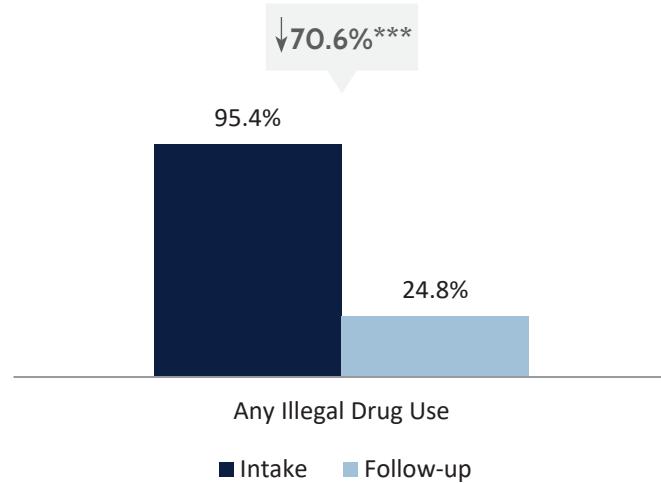
The percent of KORTOS clients reporting any illegal drug use in the 6 months before treatment was consistently high (about 97%). The percent of clients who reported any illegal drug use at follow-up increased from 31.5% in 2015 to 49.0% in 2019. In 2020, the percent of clients reporting any illegal drug use at follow-up decreased to 36.6%.

FIGURE 2.6. TRENDS IN ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020



Past-30-Day Any Illegal Drug Use

There was a significant 70.6% decrease in past-30-day illegal drug use (see Figure 2.7). At intake, 95.4% of clients reported any illegal drug use in the 30 days before entering the program and at follow-up, 24.8% 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 = 109)⁵⁰

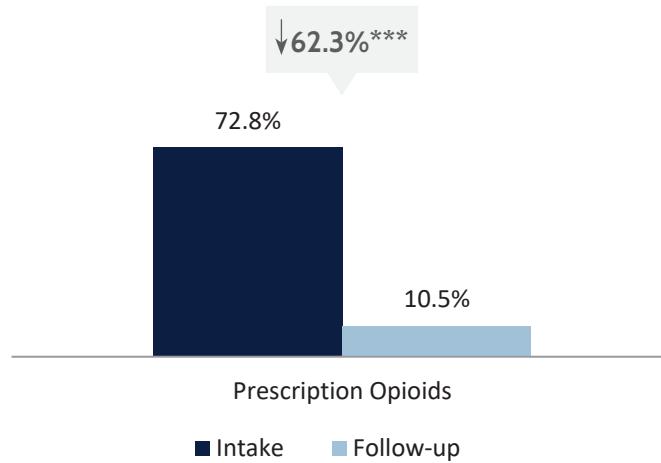
*** $p < .001$.

Prescription Opioid Misuse

Past-6-Month Prescription Opioid Misuse

Less than three-quarters of clients (72.8%) reported misusing prescription opioids (such as morphine, Percocet, Oxycontin, Lortab) in the 6 months before treatment entry. At follow-up, 10.5% of clients reported misusing prescription opioids (see Figure 2.8). This means there was a 62.3% 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 = 114)



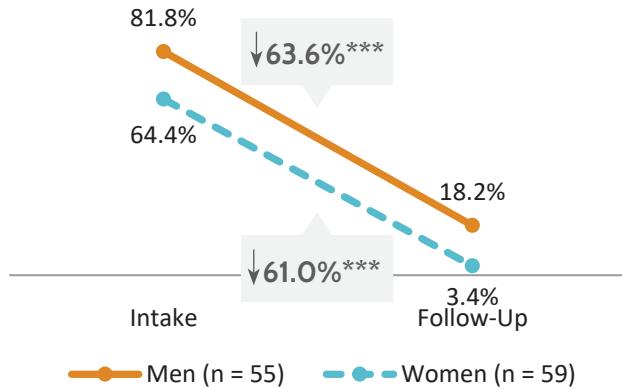
*** $p < .001$.

⁵⁰ Two clients were missing data for illegal drug use in the past 30 days at follow-up.

GENDER DIFFERENCES IN PAST-6-MONTH PRESCRIPTION OPIOID MISUSE

Significantly more men than women reported prescription opioid misuse in the 6 months before intake, 81.8% vs. 64.4%. The percent of men and women who reported prescription opioid misuse significantly decreased from intake to follow-up, but significantly more men than women reported prescription opioid misuse at follow-up (see Figure 2.9).

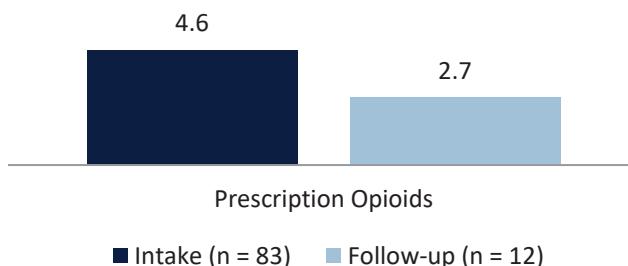
FIGURE 2.9. GENDER DIFFERENCES IN PAST-6-MONTH PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP^a



AVERAGE NUMBER OF MONTHS MISUSED PRESCRIPTION OPIOIDS

Figure 2.10 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 ($n = 83$), clients reported using prescription opioids an average of 4.6 of the 6 months. Among clients who reported misusing opioids at follow-up ($n = 12$), clients reported using an average of 2.7 of the 6 months before follow-up.

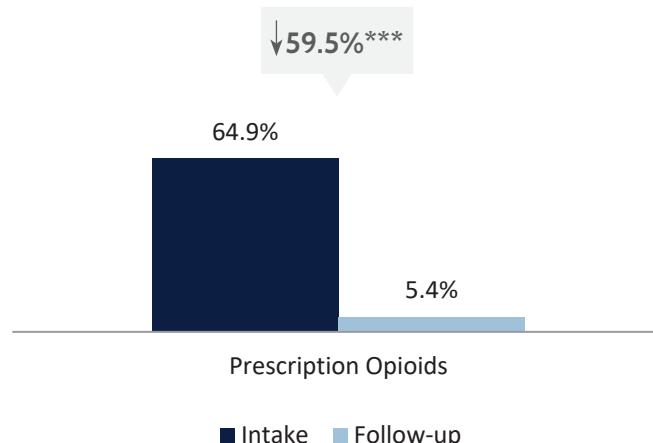
FIGURE 2.10. AVERAGE NUMBER OF MONTHS CLIENTS USED PRESCRIPTION OPIOIDS



Past-30-Day Prescription Opioid Misuse

At intake, 64.9% of clients reported past-30-day misuse of prescription opioids and at follow-up, 5.4% of clients reported misuse of prescription opioids (see Figure 2.11). This reflects a significant decrease of 59.5% in the percent of clients reporting misuse of prescription opioids.

FIGURE 2.11. PAST-30-DAY PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 111)

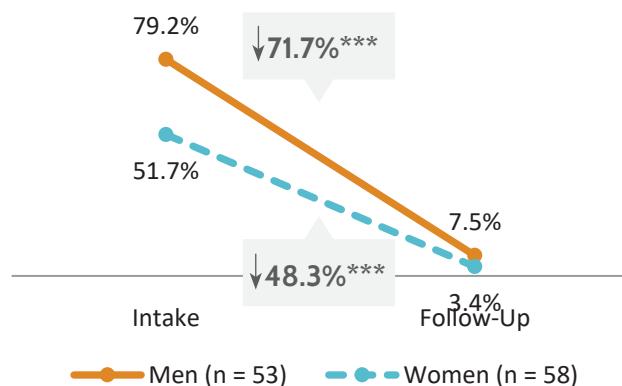


***p < .001.

GENDER DIFFERENCES IN PAST-30-DAY PRESCRIPTION OPIOID MISUSE

Significantly more men than women reported prescription opioid misuse in the past 30 days at intake, 79.2% vs. 51.7%. The percent of men and women who reported prescription opioid misuse significantly decreased from intake to follow-up (see Figure 2.12).

FIGURE 2.12. GENDER DIFFERENCES IN PAST-30-DAY PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP^a



^a-Significant difference by gender at intake; p < .01.

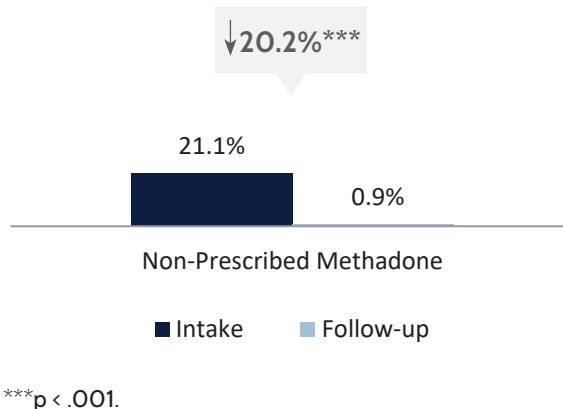
***p < .001.

Non-Prescribed Use of Methadone

Past-6-Month Non-Prescribed Use of Methadone

About 21% of clients reported using non-prescribed methadone in the 6 months before intake (see Figure 2.13). At follow-up, only 0.9% of clients (one client) reported non-prescribed use of methadone. This was a 20.2% significant decrease in the percent of clients reporting non-prescribed use of methadone.

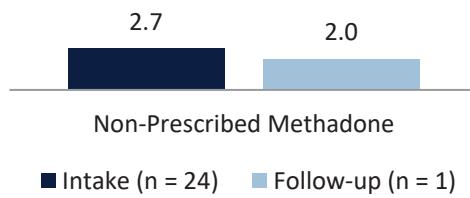
FIGURE 2.13. PAST-6-MONTH NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 114)



AVERAGE NUMBER OF MONTHS USED NON-PRESCRIBED METHADONE

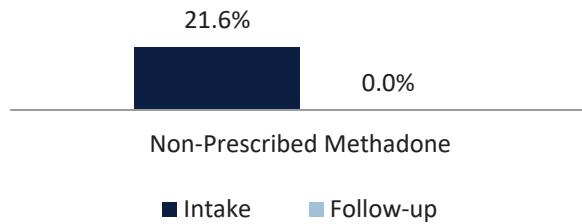
Among the clients who reported non-prescribed use of methadone in the 6 months before entering the program (n = 24), they reported using, on average, 2.7 months (see Figure 2.14). The one client who reported using non-prescribed methadone at follow-up, reported using in 2 months.

FIGURE 2.14. AVERAGE NUMBER OF MONTHS CLIENTS USED NON-PRESCRIBED METHADONE



Past-30-Day Non-Prescribed Use of Methadone

Less than one-quarter of clients (21.6%) reported using non-prescribed methadone in the 30 days before entering the program (see Figure 2.15). At follow-up, none of the clients reported past-30-day use of non-prescribed methadone.

FIGURE 2.15. PAST-30-DAY NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 111)^a

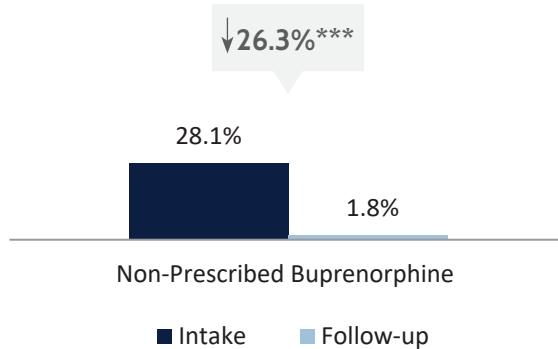
a - No measures of association could be computed for non-prescribed methadone because the value at follow-up was 0.

Non-Prescribed Use of Bup-Nx

Past-6-Month Non-Prescribed Use of Bup-Nx

Figure 2.16 shows that over than one-quarter of clients (28.1%) reported using non-prescribed bup-nx in the 6 months before intake. At follow-up, only 1.8% of clients reported using non-prescribed bup-nx – a significant decrease of 26.3%.

FIGURE 2.16. PAST-6-MONTH NON-PRESCRIBED USE OF BUP-NX AT INTAKE AND FOLLOW-UP (N = 114)

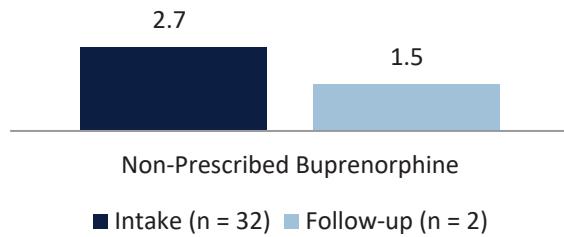


*** $p < .001$.

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 = 32), they used non-prescribed bup-nx, on average, 2.7 months (see Figure 2.17). At follow-up, those who reported non-prescribed bup-nx use (n = 2), reported using, on average, 1.5 months out of the past 6.

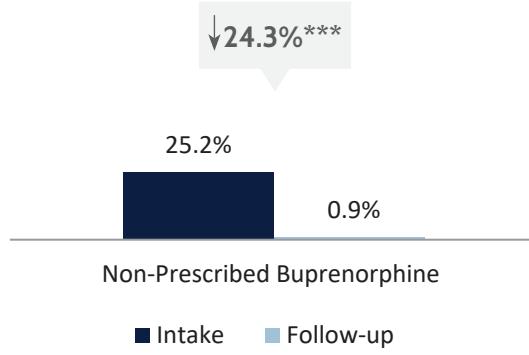
FIGURE 2.17. AVERAGE NUMBER OF MONTHS CLIENTS USED NON-PRESCRIBED BUP-NX



Past-30-Day Non-Prescribed Use of Bup-Nx

About one-quarter of clients (25.2%) reported using non-prescribed bup-nx in the 30 days before entering the program (see Figure 2.18). At follow-up, 0.9% of clients reported past-30-day use of non-prescribed bup-nx (a significant decrease of 24.3%).

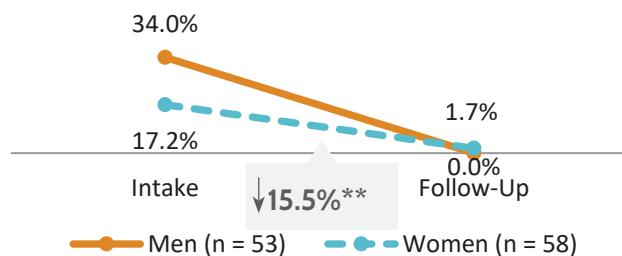
FIGURE 2.18. PAST-30-DAY NON-PRESCRIBED BUP-NX USE AT INTAKE AND FOLLOW-UP (N = 111)



***p < .001.

GENDER DIFFERENCES IN PAST-30-DAY NON-PRESCRIBED USE OF BUP-NX

Significantly more men than women reported using non-prescribed bup-nx in the past 30 days at intake, 34.0% vs. 17.2%. The percent of women who reported using non-prescribed bup-nx significantly decreased from intake to follow-up (see Figure 2.19).

FIGURE 2.19. GENDER DIFFERENCES IN PAST-30-DAY NON-PRESCRIBED BUP-NX USE AT INTAKE AND FOLLOW-UP^{a,b}

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

b - No measures of association could be computed for non-prescribed bup-nx because the value at follow-up was 0 for men.

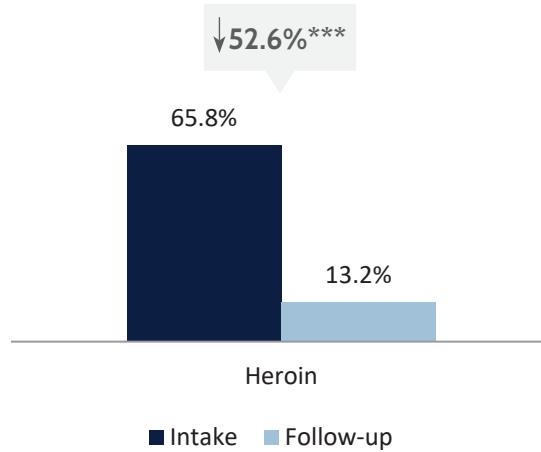
**p < .01.

Heroin

Past-6-Month Heroin Use

About two-thirds of clients reported using heroin in the 6 months before entering treatment, which significantly decreased 52.6% to 13.2% at follow-up (see Figure 2.20).

FIGURE 2.20. PAST-6-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 114)

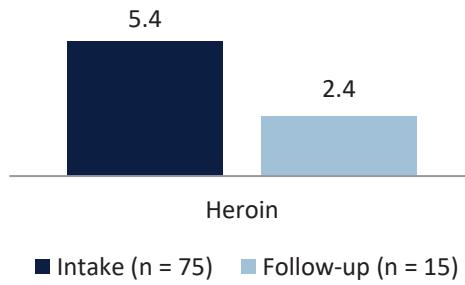


*** $p < .001$.

AVERAGE NUMBER OF MONTHS USED HEROIN

Among the clients who reported using heroin in the 6 months before entering treatment (n = 75), they reported using heroin, on average, 5.4 months (see Figure 2.21). Among clients who reported using heroin in the 6 months before follow-up (n = 15), they reported using, on average, 2.4 months.

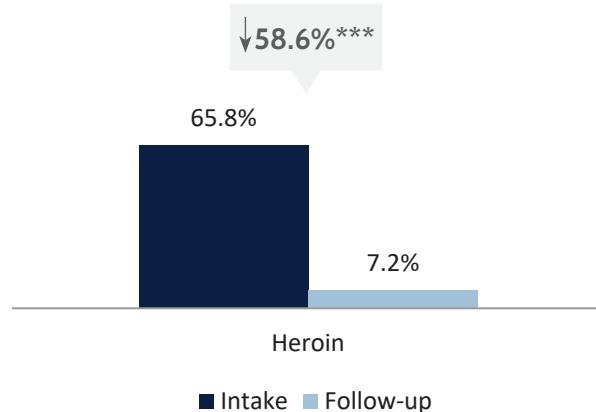
FIGURE 2.21. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN



Past-30-Day Heroin Use

About two-thirds of clients reported using heroin in the 30 days before intake. At follow-up, 7.2% reported using heroin in the past 30 days, a significant decrease of 58.6% (see Figure 2.23).

FIGURE 2.22. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 111)

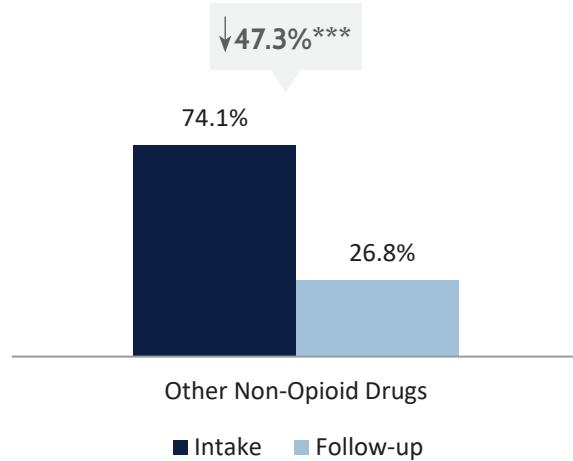


*** $p < .001$.

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 2.23). 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 26.8% at follow-up (a significant decrease of 47.3%).

FIGURE 2.23. PAST-6-MONTH NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 112)⁵¹

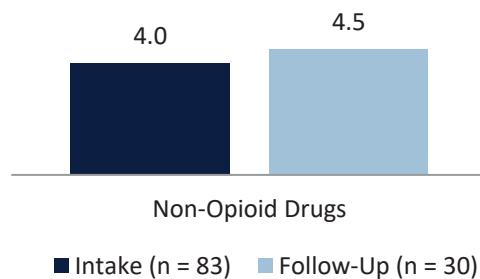
*** $p < .001$.

⁵¹ Two clients were missing data for at least one of the non-opioid drugs at follow-up.

AVERAGE NUMBER OF MONTHS USED NON-OPIOID DRUGS

Figure 2.24 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).⁵² Among the clients who reported using non-opioid drugs at intake ($n = 83$), the maximum number of months clients reported using any of these drugs was an average of 4.0 months. Among clients who reported using non-opioid drugs at follow-up ($n = 30$), the maximum average number of months clients reported using any of these drugs was 4.5 months.

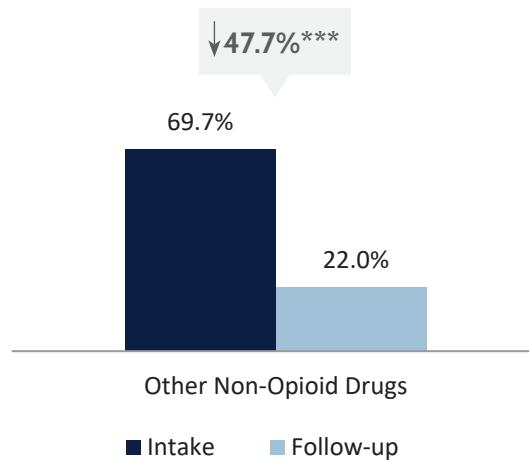
FIGURE 2.24. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS USED NON-OPIOID DRUGS



Past-30-Day Use of Non-Opioid Drugs

About 70% of clients reported using non-opioid drugs in the 30 days before intake (see Figure 2.25). At follow-up, 22.0% of clients reported non-opioid drug use, which is a 47.7% significant decrease.

FIGURE 2.25. PAST-30-DAY NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 109)⁵³



*** $p < .001$.

⁵² 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.

⁵³ Two clients were missing data for at least one of the non-opioid drugs at follow-up.

Injection Drug Use

At intake, 56.1% of clients reported having ever injected any drug. Of those clients ($n = 64$), 28.1% reported having ever used a Needle Exchange Program in Kentucky. Programs reported were in Jefferson County/Louisville ($n = 11$), Fayette County ($n = 4$), Hart County ($n = 1$), Boyd County ($n = 1$) and Madison County ($n = 1$). At follow-up, 10.5% of clients reported injecting drugs in the past 6 months. Of those clients ($n = 12$), 50.0% reported having used a Needle Exchange Program in Kentucky, which were in Jefferson County, Fayette County, and Boyd County.

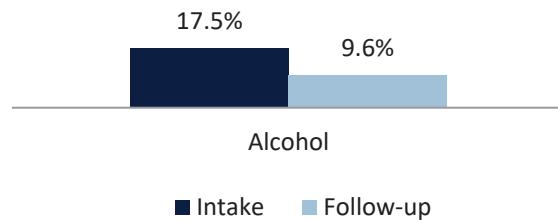
Alcohol Use

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.⁵⁴

Past-6-Month Alcohol Use

Almost 18% of clients reported using alcohol in the 6 months before entering treatment while 9.6% of clients reported alcohol use in the 6 months before follow-up (see Figure 2.26).

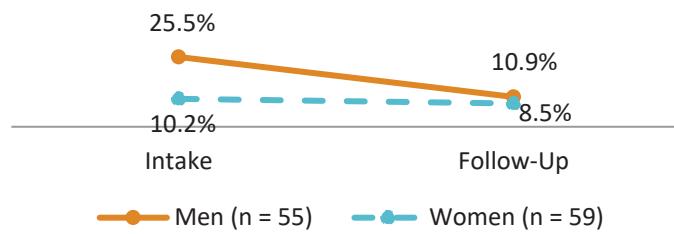
FIGURE 2.26. PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 114)



GENDER DIFFERENCES IN PAST-6-MONTH ALCOHOL USE

At intake, significantly more men reported alcohol use in the 6 months before entering treatment.

FIGURE 2.27. GENDER DIFFERENCES IN PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP^a



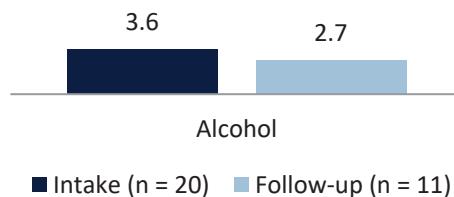
^a-Significant difference by gender at intake ($p < .05$).

⁵⁴ National Institute on Alcohol Abuse and Alcoholism. (2004, Winter). NIAAA council approves definition of binge drinking. *NIAAA Newsletter, Winter 2004* (3). Rockville, MD: Department of Health and Human Services, National Institutes of Health, national Institute on Alcohol Abuse and Alcoholism.

AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2.28 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 ($n = 20$), they reported using alcohol, on average, 3.6 months. Among clients who reported using alcohol in the 6 months before follow-up ($n = 11$), they reported using an average number of 2.7 months.

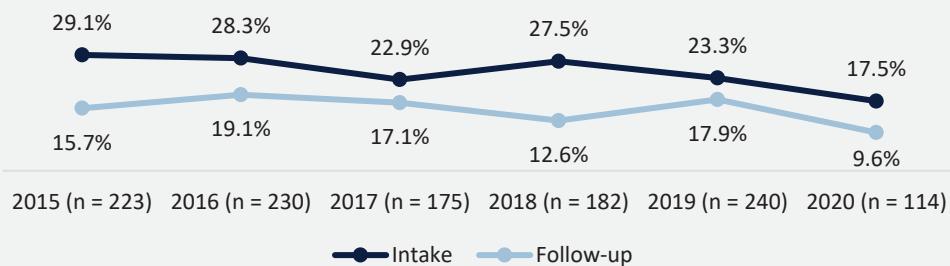
FIGURE 2.28. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE



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 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 remained relatively stable from 2015 to 2019. In 2020, the percent of clients reporting past-6-month alcohol use at intake or at follow-up decreased compared to 2019.

FIGURE 2.29. TRENDS IN ALCOHOL USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020⁵⁵

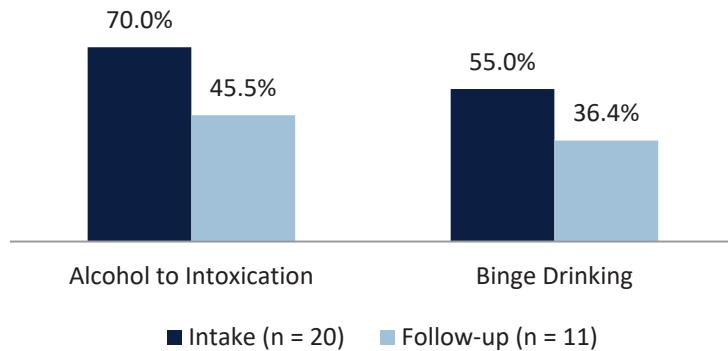


⁵⁵ In 2015, 5 cases had missing data for alcohol use at intake.

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 ($n = 20$), 70.0% used alcohol to intoxication and 55.0% reported binge drinking (see Figure 2.30). Of the clients who used alcohol in the 6 months before follow-up ($n = 11$), 45.5% reported alcohol use to intoxication and 36.4% reported binge drinking.

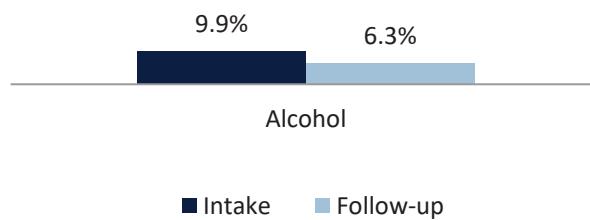
FIGURE 2.30. PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Past-30-Day Alcohol Use

About 10% of clients reported using alcohol use in the 30 days before intake and 6.3% of clients reported alcohol use in the 30 days before follow-up (see Figure 2.31).

FIGURE 2.31. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 111)

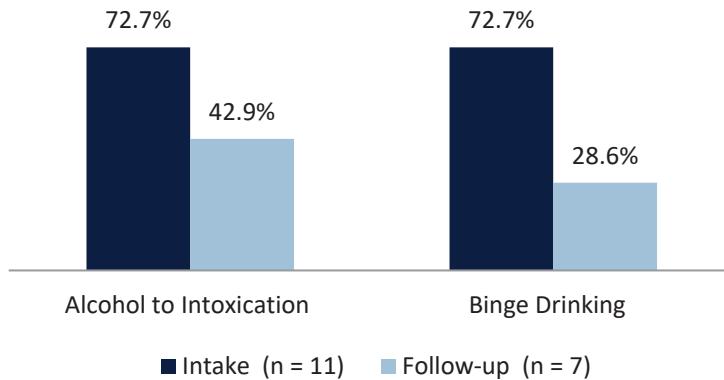


PAST-30-DAY ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL

Of the 11 clients who used alcohol in the 30 days before intake, 72.7% used alcohol to intoxication and reported binge drinking in that time frame (see Figure 2.32).

Of the 7 clients who reported using alcohol in the 30 days before follow-up, 42.9% reported using alcohol to intoxication and 28.6% reported binge drinking.

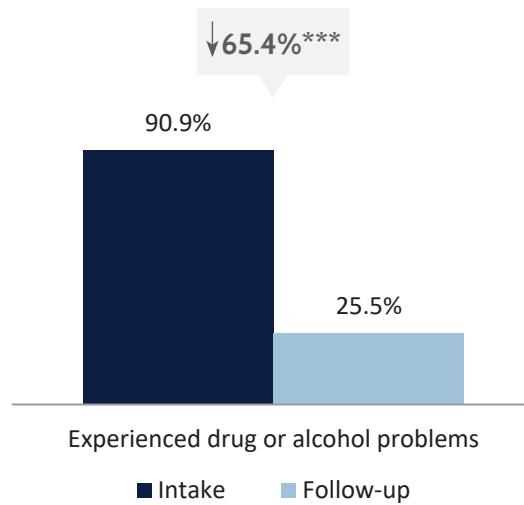
FIGURE 2.32. PAST-30-DAY ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



Problems Experienced With Substance Use In The Past 30 Days

In the past 30 days at intake, 90.9% 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 2.33). In the past 30 days at follow-up, 25.5% of clients reported experiencing problems with drugs or alcohol (a significant decrease of 65.4%).

FIGURE 2.33. CLIENTS EXPERIENCING PROBLEMS WITH ILLEGAL DRUGS OR ALCOHOL AT INTAKE AND FOLLOW-UP (N = 110)⁵⁶



*** $p < .001$.

Readiness for Substance Abuse Treatment

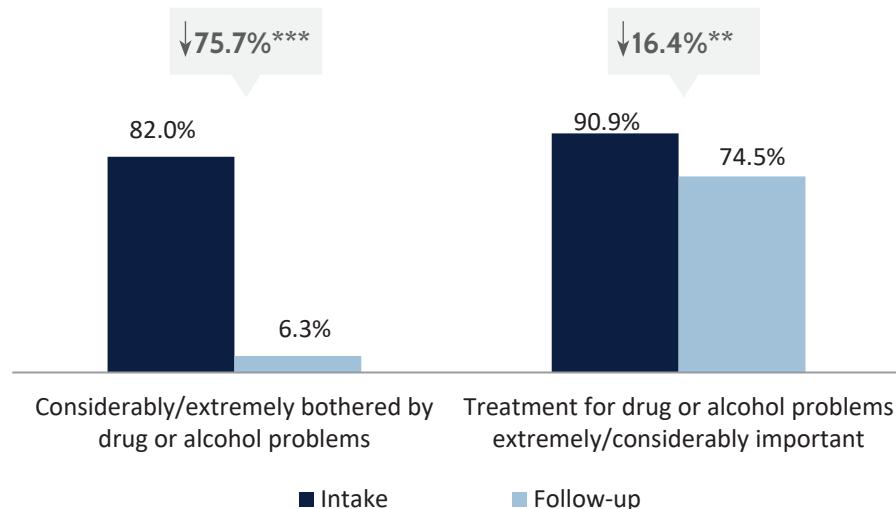
Figure 2.34 shows that 82.0% of clients reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the past 30 days at intake. In the past 30 days at follow-up, 6.3% of clients reported that they were considerably or extremely troubled or bothered by drug or

⁵⁶ One client was missing data for problems experienced with drugs and alcohol at follow-up.

alcohol problems (a significant decrease of 75.7%).

The figure below also shows that 90.9% of clients in the past 30 days at intake and 74.5% 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 16.4%).

FIGURE 2.34. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP
(N = 111)⁵⁷

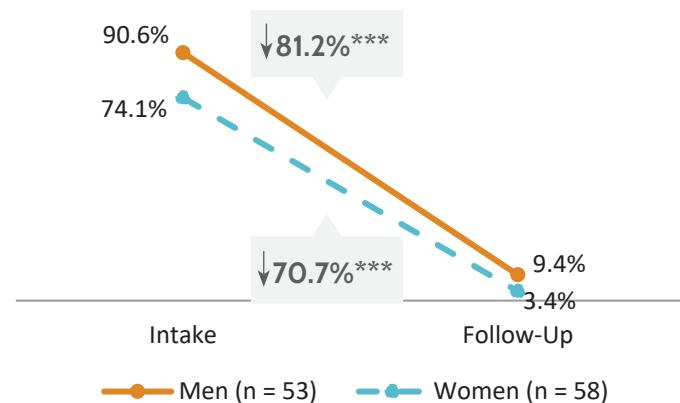


** $p < .01$, *** $p < .001$.

Gender Differences in Considerably/Extremely Bothered by Drug or Alcohol Problems

At intake, significantly more men reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the past 30 days at intake.

FIGURE 2.35. READINESS FOR TREATMENT FOR ILLEGAL DRUG OR ALCOHOL USE AT INTAKE AND FOLLOW-UP^a



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

*** $p < .001$.

⁵⁷ One client was missing data for the importance of treatment for drug or alcohol problems at follow-up.

Self-Reported Severity of Alcohol and Drug Use

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

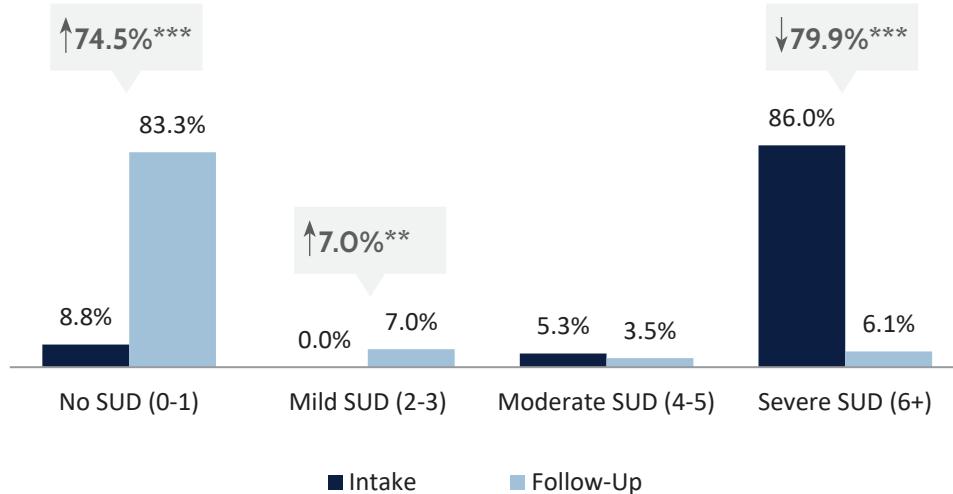
One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met the 11 criteria included in the DSM-5 for diagnosing substance use disorder (SUD) in the past 6 months. The DSM-5 diagnostic criteria for substance use disorders included in 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.^{58,59} However, the DSM-5 eliminates the distinction between substance abuse and dependence, substituting severity ranking instead. In addition, the DSM-5 no longer includes the criterion about legal problems arising from substance use but adds a new criterion about craving and compulsion to use.⁶⁰ 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 2.36 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, 8.8% met criteria for no substance use disorder (meaning they reported 0 or 1 DSM-5 criteria for SUD), while at follow-up, 83.3% of clients met criteria for no SUD, a significant increase of 74.5%. At the other extreme of the continuum, the vast majority of clients (86.0%) met criteria for severe SUD at intake, while at follow-up, only 6.1% met criteria for severe SUD, a significant decrease of 79.9%.

⁵⁸ 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.

⁵⁹ 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.

⁶⁰ 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.

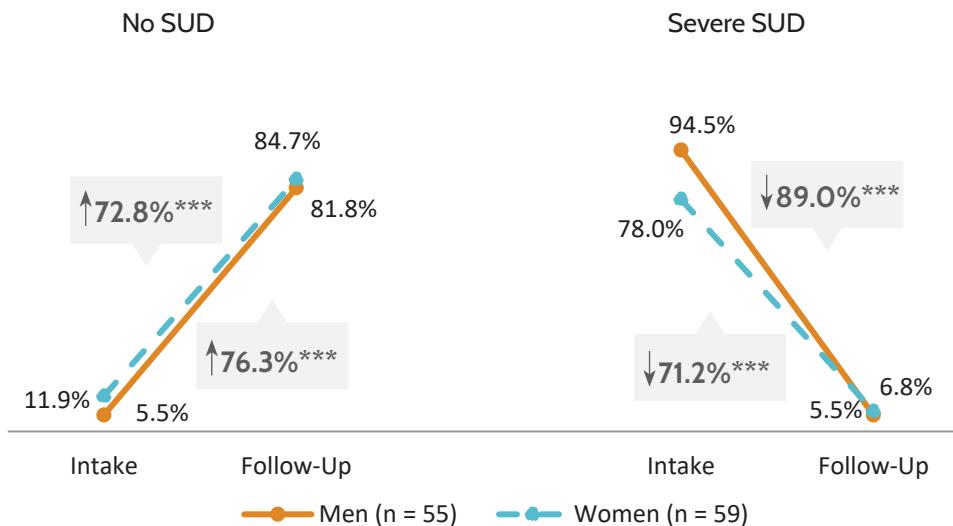
FIGURE 2.36. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 114)^a

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

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

GENDER DIFFERENCES IN SEVERE SUD

At intake, significantly more men met criteria for severe SUD (94.5%) compared to women (78.0%). Significantly fewer men and women met criteria for severe SUD at follow-up.

FIGURE 2.37. GENDER DIFFERENCES IN DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP^a

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

*** $p < .001$.

"It keeps me off the street drugs and out of trouble. They adjust you to the right dosage so you're not craving."

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

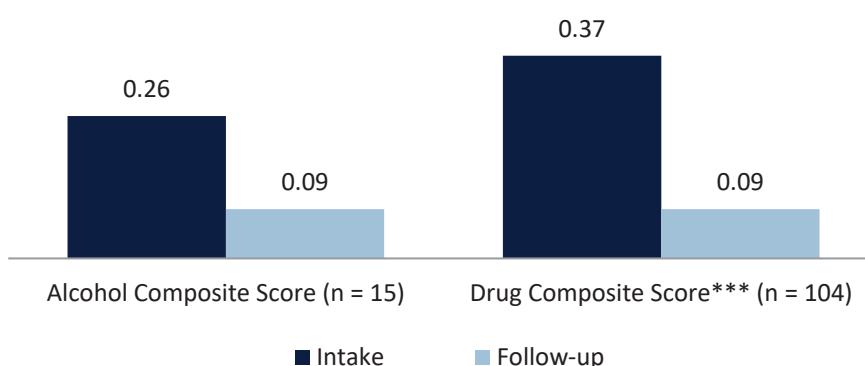
Another way to examine overall change in degree of severity of substance use is to calculate the Addiction Severity Index (ASI) composite scores for alcohol and drug use. These composite scores are computed based on self-reported severity of past 30-day alcohol and drug use, taking into consideration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

Figure 2.38 displays the change in average composite scores from intake to follow-up. The average for the alcohol composite score was 0.26 at intake and 0.09 at follow-up. The average for the drug composite score decreased significantly from 0.37 to 0.09.

FIGURE 2.38. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES OF THOSE WHO USED SUBSTANCES AT INTAKE AND/OR FOLLOW-UP



*** $p < .001$.

ASI Alcohol and Drug Composite Scores and Substance Dependence

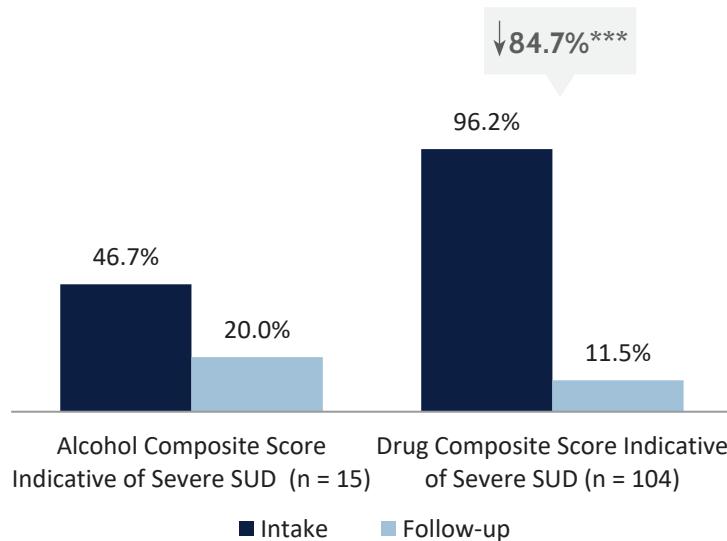
Rikoon et al. (2006) conducted two studies to determine the relationship between the ASI alcohol and drug use composite scores and DSM-IV substance dependence diagnosis. They identified alcohol and drug use composite score cutoffs that had 85% sensitivity and 80% specificity with regard to identifying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

About 47% of clients who reported alcohol use met the cutoff for severe substance use disorder for alcohol at intake and 20.0% of clients met the cutoff for severe substance use disorder at follow-up (see Figure 2.39). ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) significantly decreased from 96.2% at intake to 11.5% at follow-up.

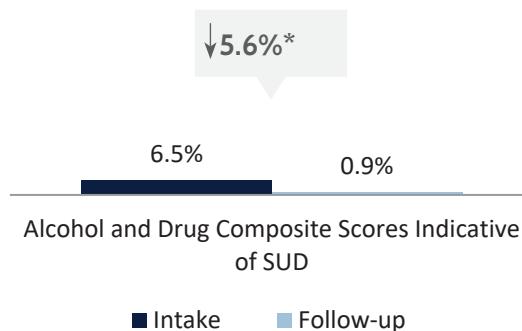
FIGURE 2.39. OF THOSE WHO USED SUBSTANCES, INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



*** $p < .001$.

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, 6.5% of clients had alcohol and drug composite scores that met the cutoff for severe SUD at intake (see Figure 2.40). That percent decreased significantly to 0.9% at follow-up.

FIGURE 2.40. 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 = 107)



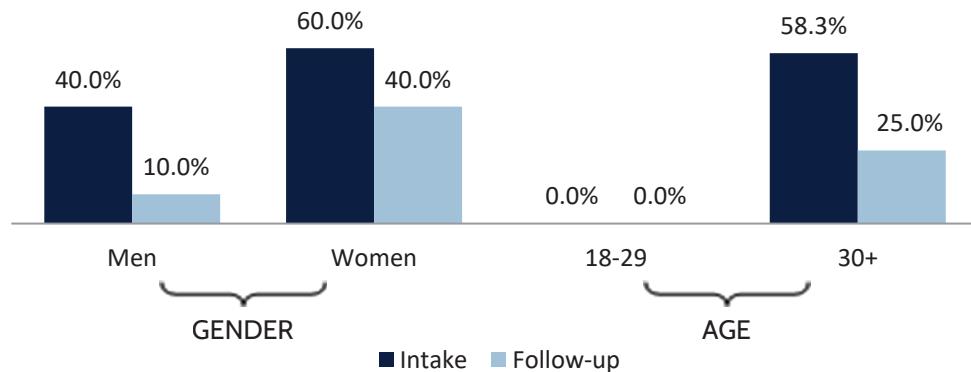
* $p < .05$.

"It's a good program. I went there twice. They help you and support you. They give you second chances."

KORTOS FOLLOW-UP CLIENT

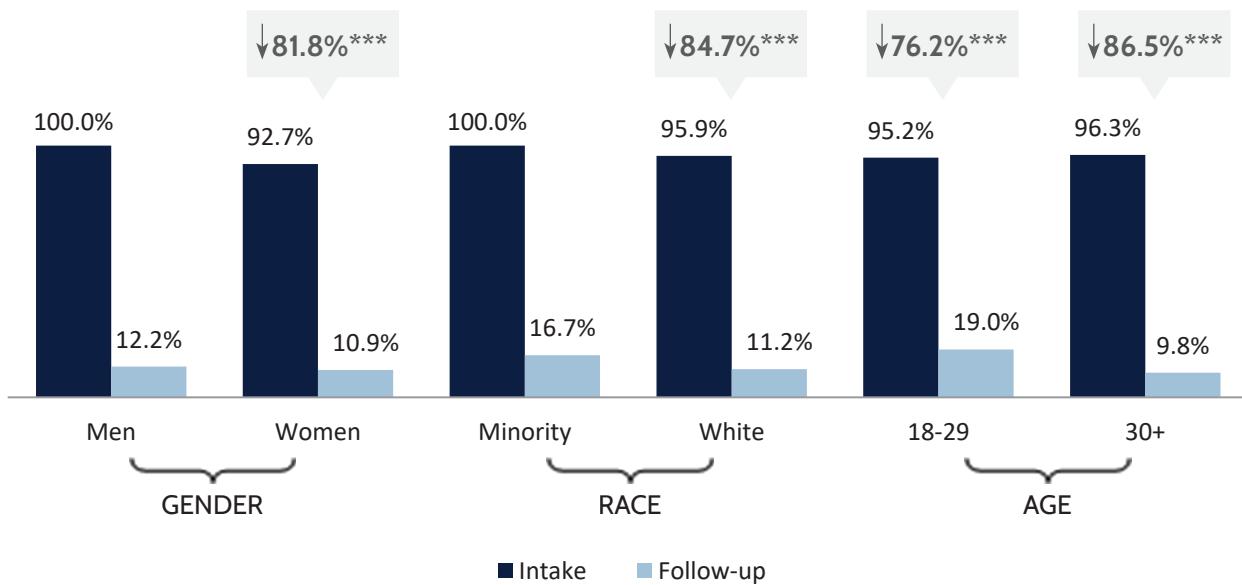
The data were examined to determine whether clients who had alcohol composite scores indicative of severe SUD at intake and follow-up differed by gender and age (see Figure 2.41). There were no gender or age differences among clients who reported alcohol composite scores that met the cutoff for severe SUD at intake or follow-up.

FIGURE 2.41. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 15)⁶¹



Analyses were also conducted to determine if clients who had a drug composite score indicative of severe SUD at intake and follow-up differed by gender, race, or age (see Figure 2.42). There were no significant gender, race, or age group differences from intake to follow-up for clients who had a drug composite score indicative of severe SUD.

FIGURE 2.42. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 104)⁶²



⁶¹ Race/ethnicity was not included in the analysis because there were no clients who were considered non-white or multi-racial among alcohol-using clients.

⁶² One client was missing information for age.

Substance Abuse Treatment History

Lifetime Substance Abuse Treatment

Prior to the current admission, 71.1% of clients reported at intake that they had received services for substance abuse (including detox, drug court, and recovery programs). Overall, clients reported receiving services or substance abuse an average of 2.5 times in their lifetime.

Medicated-Assisted Treatment

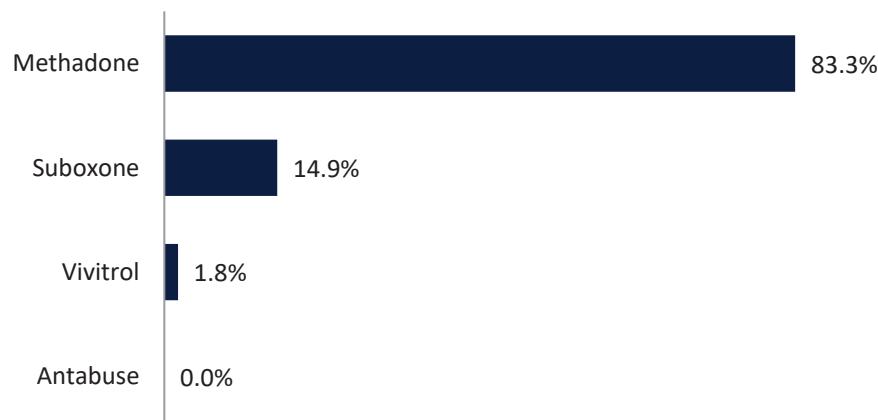
Medication-Assisted Treatment at Intake

In the 6 months before entering treatment, 28.9% of clients who were not incarcerated all 180 days before treatment, reported they had received medication from a clinic or doctor's office to help with their substance abuse. Of those clients ($n = 33$), clients reported using the medication prescribed to them for an average of 3.4 months in the past 6 months before this treatment entry. In addition, clients reported using the medication prescribed for an average of 18.0 days in the past 30 days. The majority of clients (87.9%) reported that they think their use of medication-assisted treatment helped treat their drug problem, 6.1% reported it had no effect on their drug problem, and 6.1% reported medication-assisted treatment made their drug problems worse.

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, (83.3%) reported that they received methadone in the past 6 months at follow-up. About 15% of clients reported receiving Suboxone, 1.8% received Vivitrol, and none received Antabuse (Figure 2.43).

FIGURE 2.43. PERCENT OF CLIENTS REPORTING MEDICATIONS RECEIVED IN THE PAST 6 MONTHS ($N = 114$)



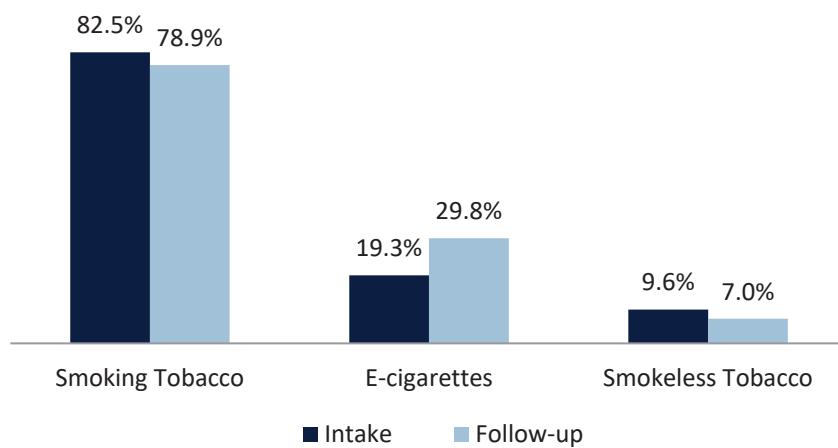
At follow-up, clients reported using the medication prescribed to them for an average of 6.0 months in the past 6 months. In addition, clients reported using the medication prescribed for an average of 29.5 days in the past 30 days. In the past 6 months at follow-up, the majority of clients (89.5%) reported 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, 99.1% of clients reported that they think their use of medication-assisted treatment helped treat their drug problem, and 0.9% 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 2.44). Most clients reported smoking tobacco in the 6 months before entering the program (82.5%) and in the 6 months before follow-up (78.9%). About 19% 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 29.8% of clients reported the use of e-cigarettes at follow-up. Around 10% of clients at intake and 7.0% of clients at follow-up reported using smokeless tobacco in the past 6 months.

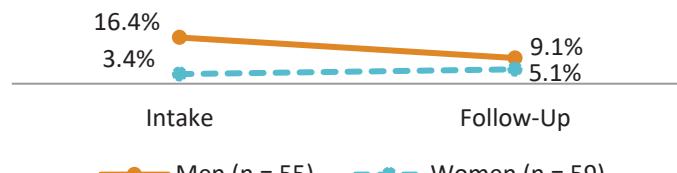
FIGURE 2.44. PAST-6-MONTH SMOKING TOBACCO, E-CIGARETTE, AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (n = 114)



GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO USE

Even though only a relatively small percentage of clients reported using smokeless tobacco at intake and follow-up, there was a significant difference by gender at intake with significantly more men reporting smokeless tobacco use (see Figure 2.45).

FIGURE 2.45. GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP^a

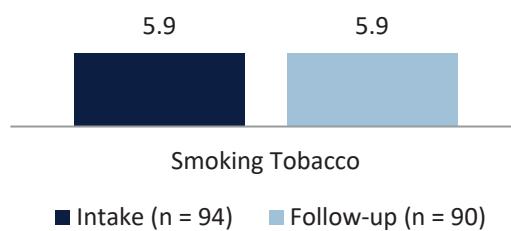


^a—Significant difference by gender at intake ($p < .05$).

AVERAGE NUMBER OF MONTHS OF SMOKING TOBACCO

Figure 2.46 shows that among clients who reported smoking tobacco in the 6 months before entering treatment ($n = 94$), 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; $n = 90$).

FIGURE 2.46. AVERAGE NUMBER OF MONTHS OF SMOKING TOBACCO USE



“I’ve tried other programs and they didn’t work. This one had helped me with trust and family and kept me clean.”

KORTOS FOLLOW-UP CLIENT

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.

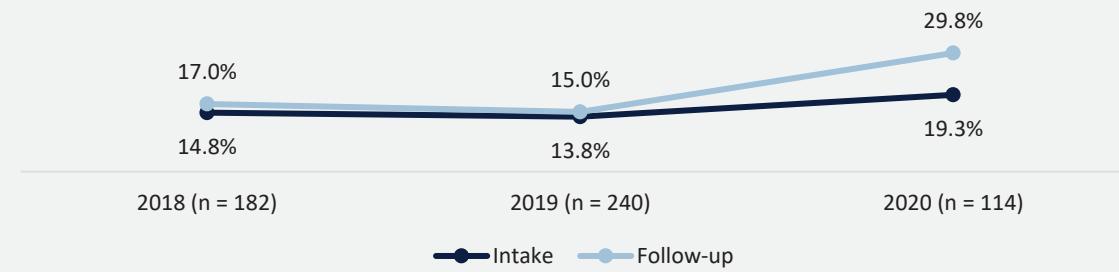
FIGURE 2.47. TRENDS IN SMOKING TOBACCO USE AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020⁶³



Trends in Past-6-month E-cigarette Use

Each year slightly more clients appear to report e-cigarette use at follow-up compared to intake. The percent of clients reporting e-cigarette use at follow-up appeared to increase from 15.0% in the 2019 report to 29.8% in the 2020 report.

FIGURE 2.48 TRENDS IN E-CIGARETTE USE AT INTAKE AND FOLLOW-UP, REPORTS 2018-2020⁶⁴



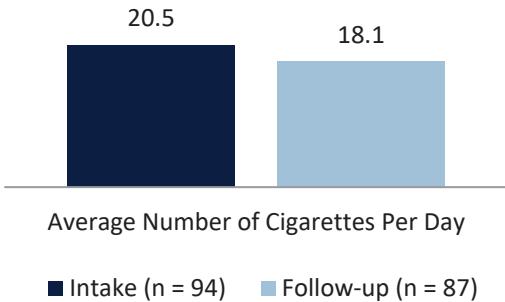
⁶³ In 2015, 5 cases had missing data for smoking tobacco use at intake.

⁶⁴ E-cigarette use, specifically, was not included in the instrument until the 2018 report.

AVERAGE NUMBER OF CIGARETTES SMOKED

The average number of cigarettes clients reported smoking daily decreased slightly from intake to follow-up (see Figure 2.49). Of those who smoked tobacco at intake, clients reported smoking an average of 20.5 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 18.1 cigarettes per day.

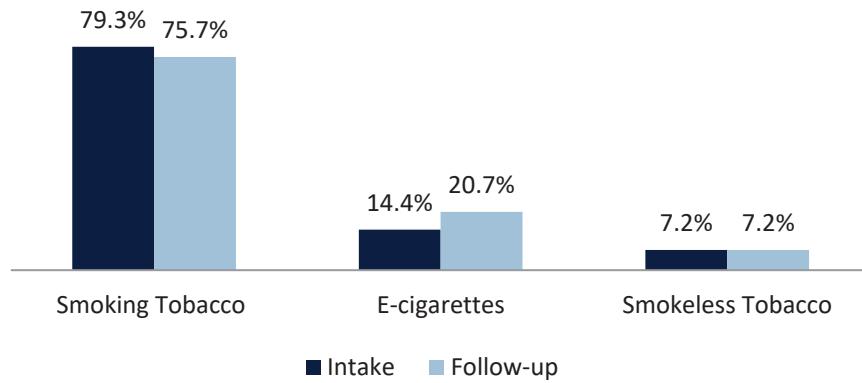
FIGURE 2.49. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO⁶⁵



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 2.50).

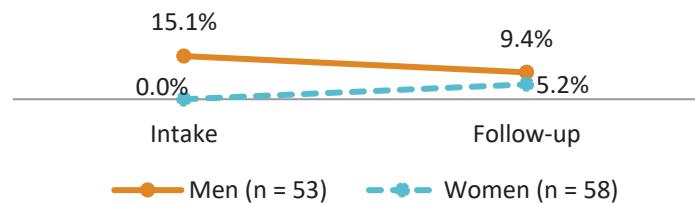
FIGURE 2.50. PAST-30-DAY SMOKING, E-CIGARETTE AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (n = 111)



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 only men using smokeless tobacco (see Figure 2.51).

⁶⁵ Three clients were missing information on the number of cigarettes smoked at follow-up.

FIGURE 2.51. GENDER DIFFERENCES IN PAST-30-DAY SMOKELESS TOBACCO USE FROM INTAKE TO FOLLOW-UP^a

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

Section 3: Mental and Physical Health

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, (6) interpersonal victimization experiences, (7) general health status, (8) chronic pain, and (9) health insurance. The mental and physical health questions on the KORTOS intake and follow-up interviews were self-report measures.

Depression Symptoms

To assess depression, participants were first asked two screening questions:

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?”

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).

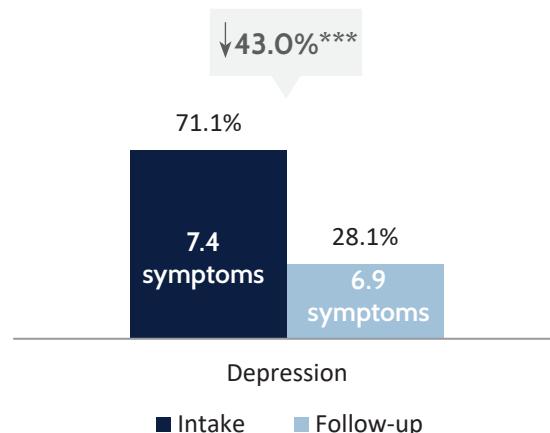
Close to three-quarters of clients (71.1%) met study criteria for depression in the 6 months before they entered treatment (see Figure 3.1). At follow-up, 28.1% met study criteria for depression—a significant decrease of 43.0%.

Of those who met study criteria at intake ($n = 81$), they had an average of 7.4 symptoms out of 9. At follow-up, among those who met study criteria for depression ($n = 32$), clients reported an average of 6.9 symptoms out of 9.

Study Criteria for Depression

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

FIGURE 3.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 114)

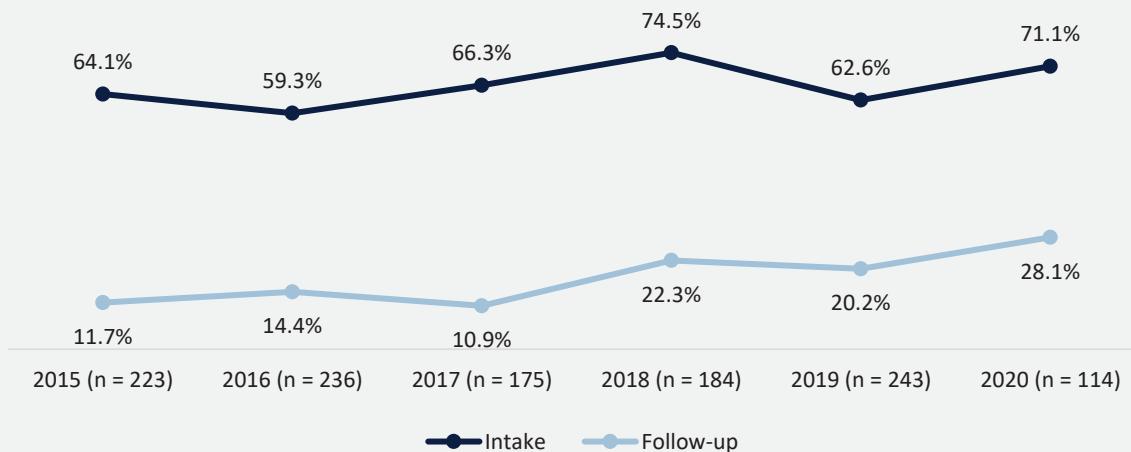


*** $p < .001$.

Trends in Past-6-month Depression

The percent of clients who met criteria for depression at intake appeared to increase from report year 2016 (59.3%) to 2018 (74.5%), but briefly decreased in 2019 (62.6%). The percent of clients who met criteria for depression at follow-up has been on the rise since 2017 (10.9%) to 28.1% in 2020.

FIGURE 3.2. TRENDS IN THE NUMBER OF CLIENTS WHO MET STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020



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).

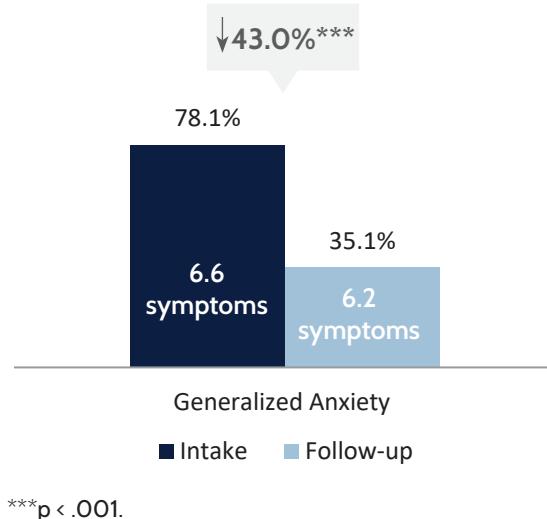
In the 6 months before entering treatment, 78.1% of clients reported symptoms that met study criteria for generalized anxiety and 35.1% reported symptoms at follow-up – a significant decrease of 43.0% (see Figure 3.3).

Study Criteria for Generalized Anxiety

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

Of those who met study criteria for anxiety at intake (n = 89), they had an average of 6.6 symptoms out of 7. At follow-up, among those who met study criteria for anxiety (n = 40), clients reported an average of 6.2 symptoms out of 7.

FIGURE 3.3. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 114)

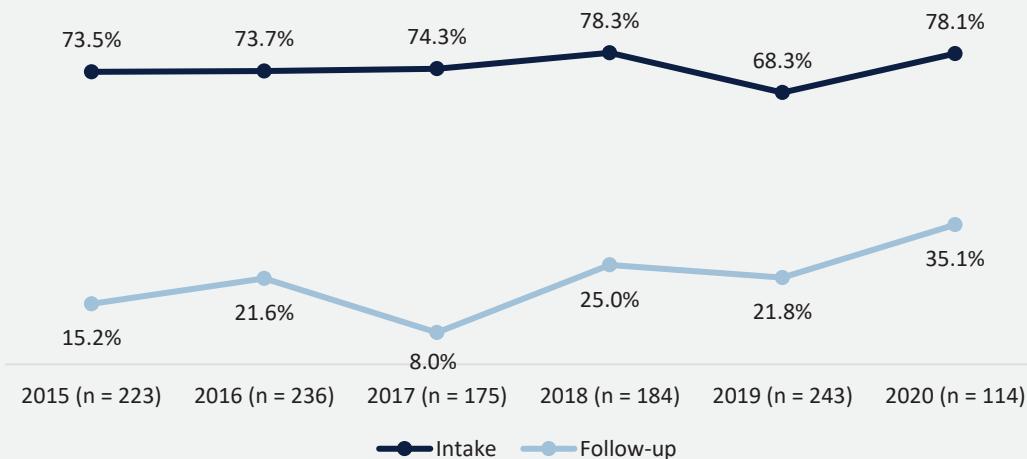


Trends in Past-6-month Generalized Anxiety

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% before increasing again to 78.1% in 2020.

The percent of clients who met criteria for generalized anxiety at follow-up has fluctuated over time, but appears to have increased overall. 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. In 2020, the percent of clients who met criteria for generalized anxiety increased again.

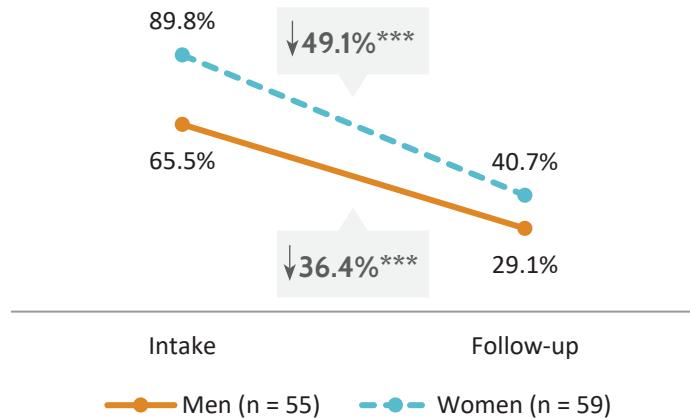
FIGURE 3.4. TRENDS IN THE NUMBER OF CLIENTS WHO MET STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020



Gender Differences in Clients Meeting Study Criteria for Generalized Anxiety

Significantly more women met study criteria for generalized anxiety at intake compared to men. At intake, 89.8% of women met study criteria compared to 65.5% of men (see Figure 3.5). The number of both women and men who met criteria for generalized anxiety decreased significantly at follow-up.

FIGURE 3.5. GENDER DIFFERENCES IN MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP^a



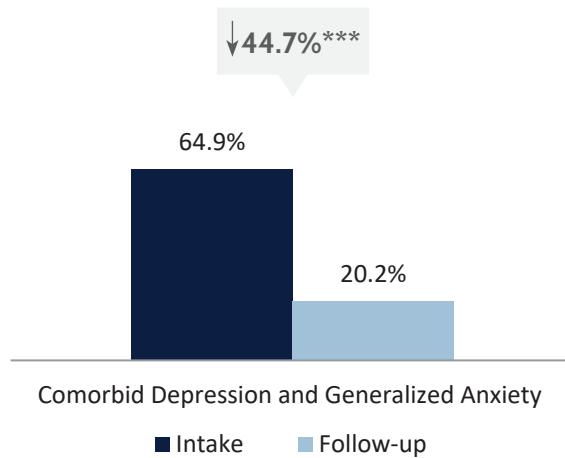
a - Significant difference by gender at intake ($p < .01$).

*** $p < .001$.

Comorbid Depression and Anxiety Symptoms

Figure 3.6 shows that at intake, 64.9% of clients met study criteria for both depression and generalized anxiety. There was a significant decrease of 44.7% to 20.2% at follow-up.

FIGURE 3.6. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 114)

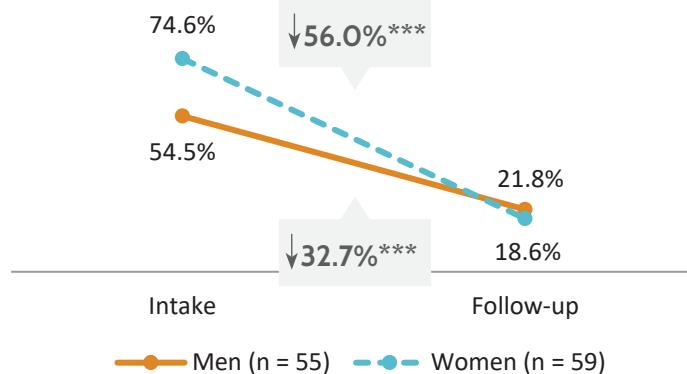


*** $p < .001$.

Gender Differences in Clients Meeting Study Criteria for Comorbid Depression and Generalized Anxiety

Significantly more women met study criteria for comorbid depression and generalized anxiety at intake compared to men. At intake, 74.6% of women met study criteria compared to 54.5% of men (see Figure 3.7). The number of both women and men who met criteria for comorbid depression and generalized anxiety decreased significantly at follow-up.

FIGURE 3.7. GENDER DIFFERENCES IN MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP^a



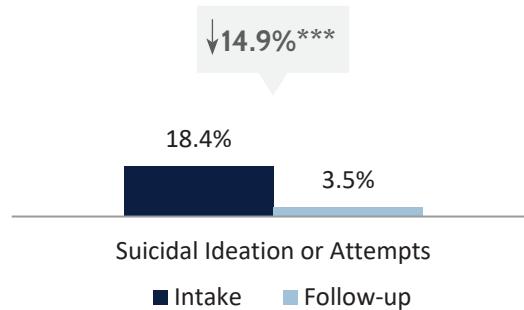
a – Significant difference by gender at intake ($p < .05$).

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

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 14.9% decrease in the percent of clients reporting suicidal ideation or attempts from intake (18.4%) to follow-up (3.5%; see Figure 3.8).

FIGURE 3.8. CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 114)

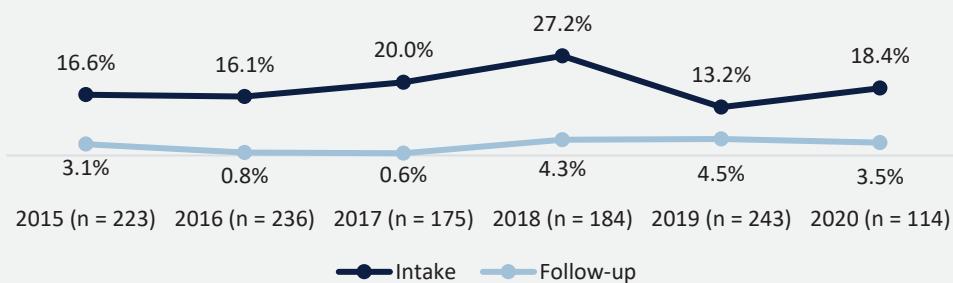


*** $p < .001$.

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

The percent of clients who reported suicidal ideation and attempts at intake appeared to increase between 2015 and 2018 from 16.6% to 27.2%. In 2019, however, 13.2% of clients reported suicidal ideation and attempts at intake, but increased again in 2020. At follow-up, the percent of clients reporting suicidal ideation and attempts increased slightly from 0.6% in 2017 to 3.5% in 2020.

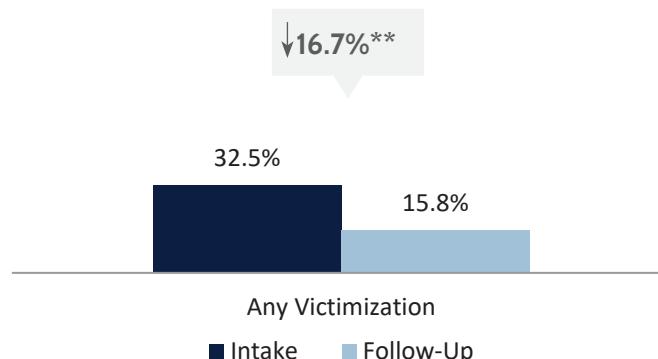
FIGURE 3.9. TRENDS IN THE NUMBER OF CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020



Interpersonal Victimization Experiences

Clients were asked about several types of interpersonal victimization (including when they may have been the victim of a crime, harmed by someone else, or felt unsafe)⁶⁶ in the 6 months before entering programs and in the 6 months before follow-up (see Figure 3.10). Because relatively small percentages of clients reported each specific type of victimization experience in the 6-month periods, the items were collapsed. The percent of clients who reported experiencing any victimization in the past 6 months decreased significantly from 32.5% at intake to 15.8% at follow-up (a significant decrease of 16.7%).

FIGURE 3.10. PAST-6-MONTH CRIME AND INTERPERSONAL VICTIMIZATION (N = 114)



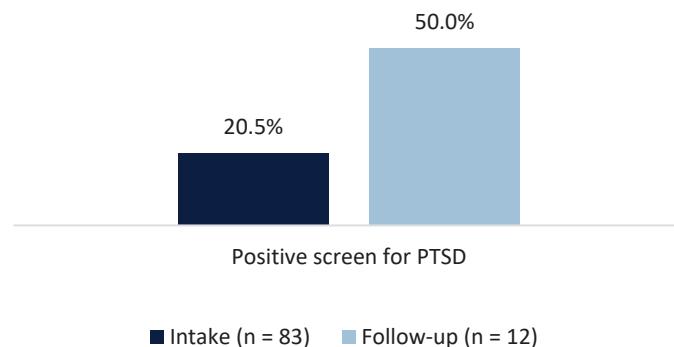
** $p < .01$.

⁶⁶ Harassment was removed from the victimization measures, but added back in October 2018; therefore, only 65 clients had the opportunity to answer that question.

Post-Traumatic Stress Disorder

Among the clients who completed an intake interview and were asked the PTSD items ($n = 83$),⁶⁷ 20.5% had PTSD scores that indicated a risk of PTSD.⁶⁸ Among clients who were asked the PTSD items at follow-up ($n = 12$), 50.0% had PTSD scores that indicated a risk of PTSD.

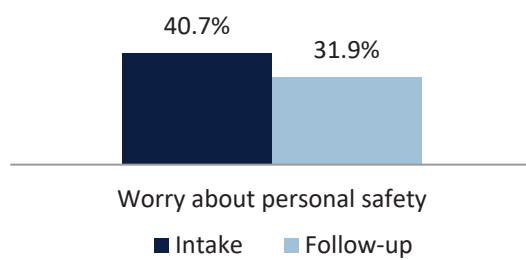
FIGURE 3.11. CLIENTS WHO SCREENED POSITIVE FOR POST-TRAUMATIC STRESS DISORDER SYMPTOMS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP



Worry About Personal Safety

At intake, 40.7% of clients reported they were worried about their personal safety. Only 2.7% of clients, however, were worried about personal safety a great deal (not displayed in a figure). At follow-up, 31.9% of clients were worried about their personal safety (which was not a significant decrease). A little over 6% of clients reported they were worried about personal safety a great deal at follow-up (not displayed in a figure).

FIGURE 3.12. CLIENTS WHO WORRIED ABOUT PERSONAL SAFETY AT INTAKE AND FOLLOW-UP (N = 113)⁶⁹



⁶⁷ In earlier versions of the instrument, individuals who reported no to all victimization questions were not asked the PTSD symptom items; thus, 83 individuals who were included in the follow-up analysis had PTSD scores at intake. A score of 10 or higher is indicative of clinically significant PTSD symptomatology.

⁶⁸ 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.

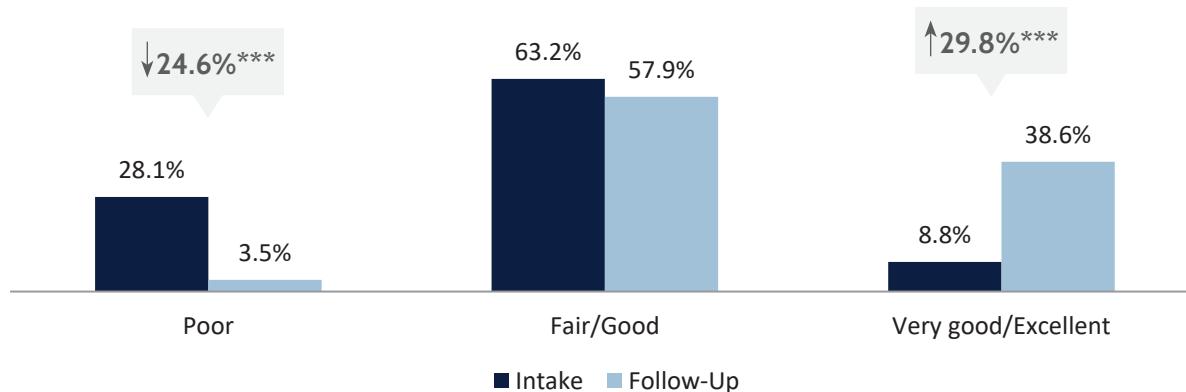
⁶⁹ One client was missing data on their worry about personal safety at follow-up.

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 2.2 at intake and this significantly increased to 3.3 at follow-up (not depicted in figure). Figure 3.13 shows that significantly more clients rated their overall physical health as very good or excellent (38.6%) at follow-up when compared to intake (8.8%).

FIGURE 3.13. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 114)^a

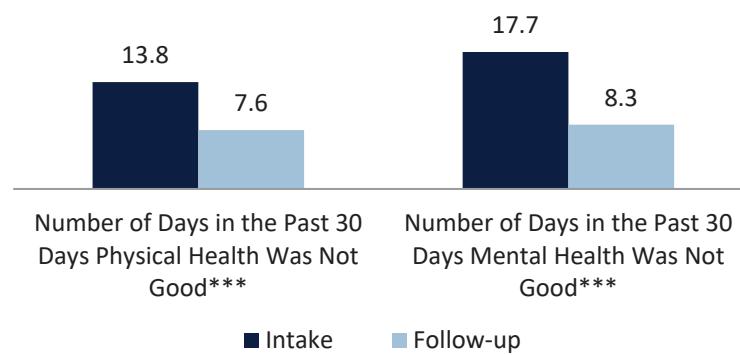


a - Significance tested with the Stuart-Maxwell Test for Marginal Homogeneity ($p < .001$).
*** $p < .001$.

Perceptions of Physical and Mental Health

Clients were asked how many days in the past 30 days their physical and mental health were not good at intake and follow-up (see Figure 3.14). The number of days clients reported their physical health was not good decreased significantly from an average of 13.8 days to 7.6 days. The number of days clients' mental health was not good also decreased significantly from intake (17.7) to follow-up (8.3).

FIGURE 3.14. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 113)⁷⁰



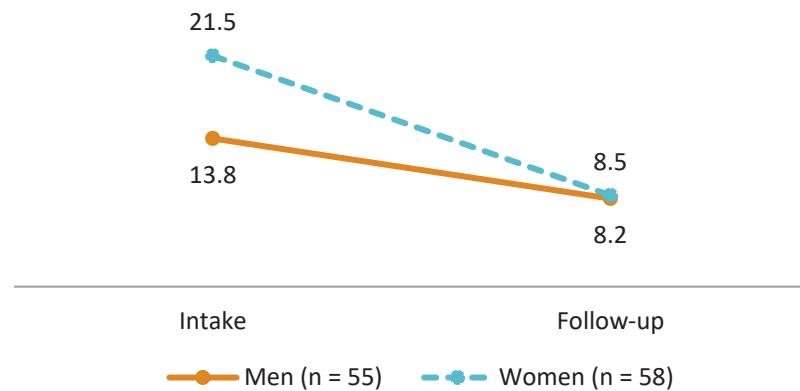
*** $p < .001$.

⁷⁰ One client had missing information for the number of physical and mental health days at follow-up.

Gender Differences in Perceptions of Mental Health

When compared to men (13.8), women reported a significantly higher average number of days their mental health was poor at intake (21.5; see Figure 3.15). At follow-up, there was no significant difference in the average number of days women reported their mental health was poor (8.5) compared to men (8.2).

FIGURE 3.15. GENDER DIFFERENCES IN PERCEPTIONS OF MENTAL HEALTH 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 ($p < .01$) and women ($p < .001$) as measured by paired t-test.

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 before increasing again to 13.8 days in 2020. 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 2020 to 7.6 days.

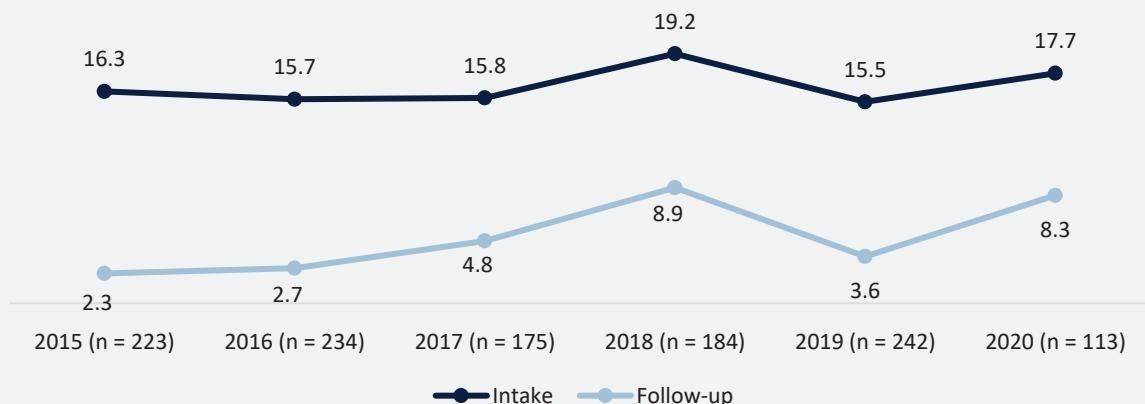
FIGURE 3.16. TRENDS IN PERCEPTIONS OF PHYSICAL HEALTH AT INTAKE AND FOLLOW, REPORTS 2015-2020



Trends in Perceptions of Poor Mental Health

The average number of days clients reported their mental health was not good in the past 30 days has increased at 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, but increased again to 17.7 days in 2020. 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, but increased to 8.3 days in 2020.

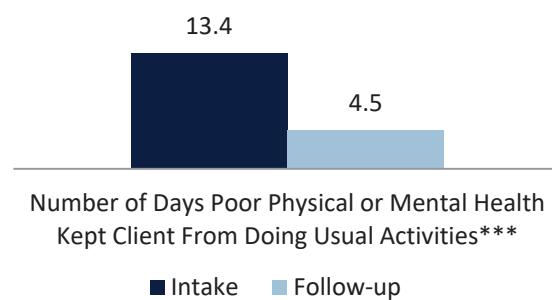
FIGURE 3.17. TRENDS IN PERCEPTIONS OF MENTAL HEALTH AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020⁷¹



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 13.4 days at intake to 4.5 days at follow-up (see Figure 3.18).

FIGURE 3.18. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 112)⁷²



*** $p < .001$.

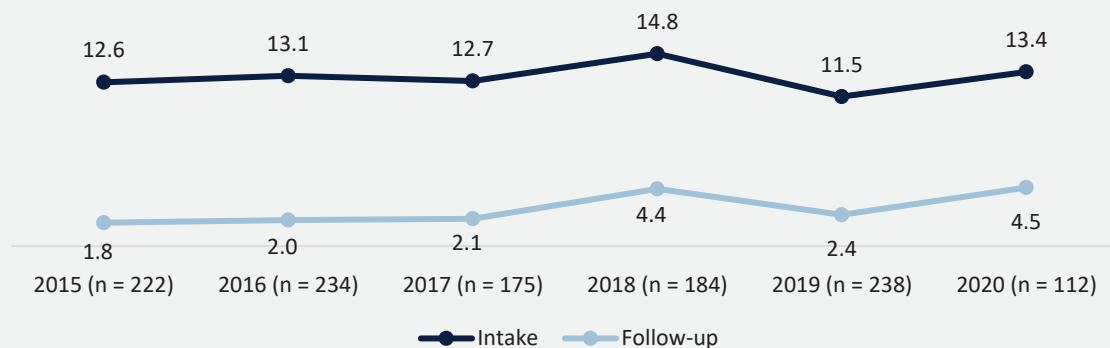
⁷¹ In 2015, 3 cases had missing data for perceptions of mental health at intake, 2019 had one client with missing data, and 2020 had one client with missing data.

⁷² Two 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. In 2020, the average number of days clients reported their poor physical or mental health kept them from doing their usual activities increased at both intake and follow-up.

FIGURE 3.19. TRENDS IN THE NUMBER OF DAYS POOR PHYSICAL OR MENTAL HEALTH KEEP CLIENT FROM DOING USUAL ACTIVITIES AT INTAKE AND FOLLOW, REPORTS 2015-2020⁷³



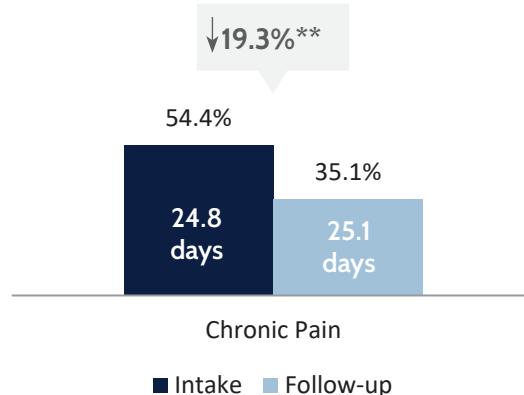
Chronic Pain

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 19.3% (see Figure 3.20). At intake, 54.4% of clients reported chronic pain and that percent dropped to 35.1% by follow-up. Of those clients who reported chronic pain at intake (n = 62), clients reported that the pain started around the age of 25. In addition, clients reported experiencing chronic pain for about 25 of the 30 days before entering the program. On a scale of 0 (no pain) to 10 (pain as bad as you can image), clients reported an average of 6.8 intensity in the 30 days before entering the program (not shown in the figure).

Of those clients who reported chronic pain at follow-up (n = 40), clients reported experiencing chronic pain for about 25 of the past 30 days. On a scale of 0 (no pain) to 10 (pain as bad as you can image), clients reported an average of 6.1 intensity in the past 30 days (not shown in the figure).

⁷³ In 2015, one case had a missing value, in 2019 five cases had a missing value, and in 2020 two cases had a missing value for this item at follow-up.

FIGURE 3.20. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 114)

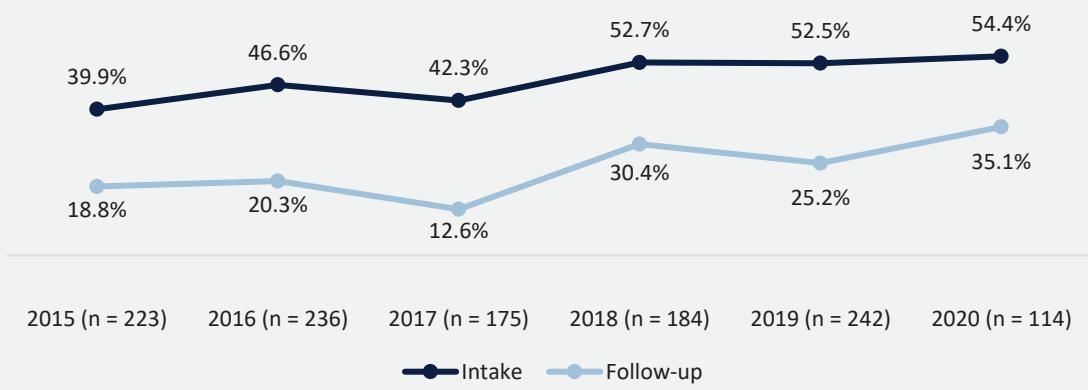


** $p < .01$.

Trends in Chronic Pain

Overall, the percent of clients who reported chronic pain increased over time at intake. 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 increased slightly again in 2020 to 54.4%.

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%, but increased in 2020 to 35.1%.

FIGURE 3.21. TRENDS IN THE NUMBER OF CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020⁷⁴

⁷⁴ In 2018, one client was missing information on chronic pain at follow-up.

Prescription Opioid Misuse and Chronic Pain

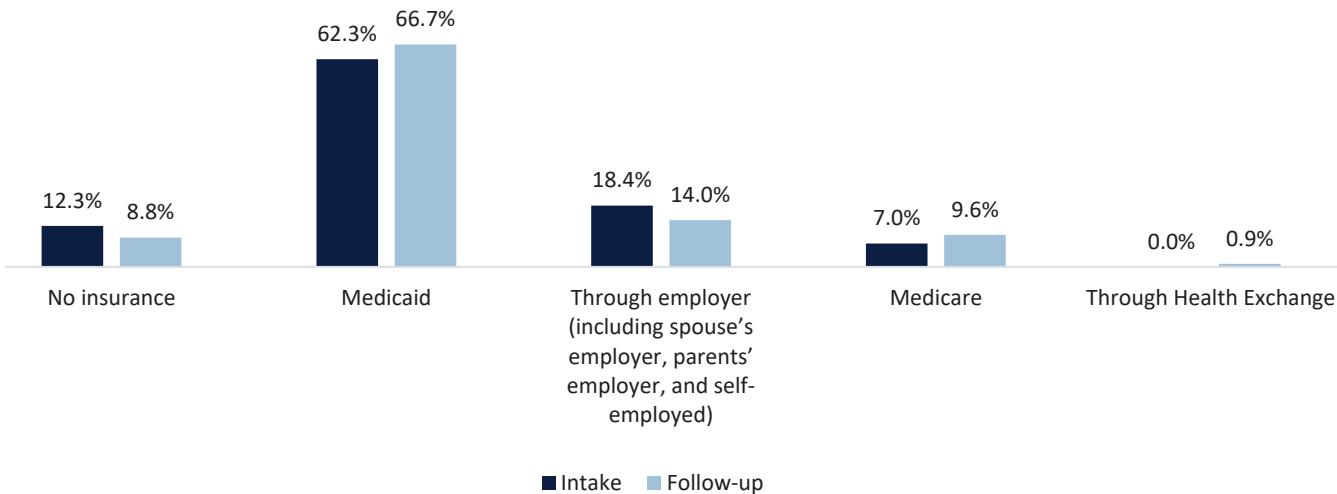
Of those who were not incarcerated all 180 days before entering the program or in the 6 months before follow-up and misused prescription opioids at intake (n = 83), 61.4% reported chronic pain in the 6 months before entering the program and 38.6% experienced chronic pain at follow-up, which was a significant decrease of 22.8%.

Additionally, among 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 = 51), 51.0% (n = 26) reported chronic pain in the past 6 months at follow-up and 9.8% (n = 5) reported past-6-month misuse of prescription opioids.

Health Insurance

At intake and follow-up, around two-thirds of KORTOS clients reported they had health insurance through Medicaid (see Figure 3.22). Around 12% of clients at intake and 8.8% of clients at follow-up did not have any insurance. About 18% of clients at intake and 14.0% of clients at follow-up reported they had health insurance through an employer (including spouse's, parents', and self-employed). A minority of clients had insurance at either point through Medicare or Health Exchange.

FIGURE 3.22 HEALTH INSURANCE FOR KORTOS CLIENTS AT INTAKE AND FOLLOW-UP (N = 114)



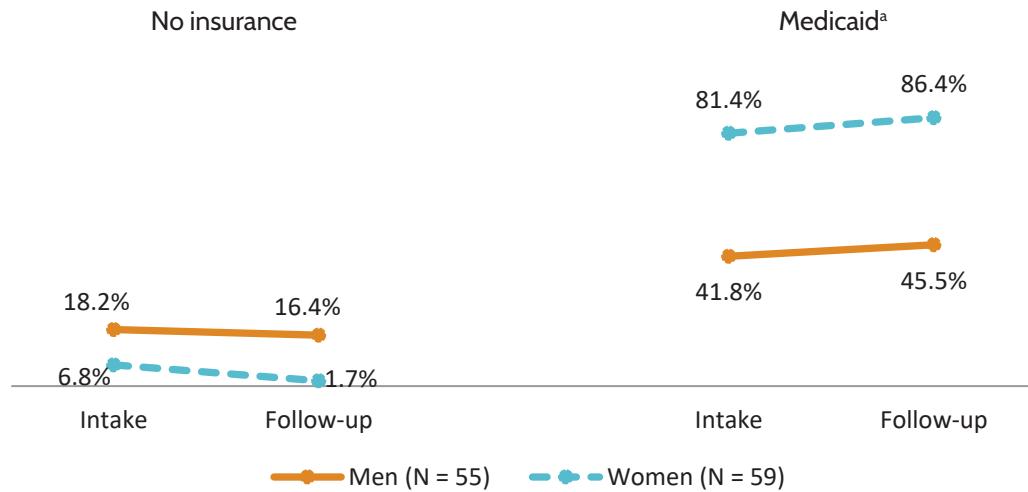
A Closer Look at Insurance

Of those clients who were employed full-time at intake (n = 39), 38.5% had insurance through an employer (including a spouse's or parent's employer). In addition, 43.6% of clients who were employed full-time at intake indicated they had insurance through Medicaid and 17.9% had no medical insurance. At follow-up, of those clients employed full-time (n = 54), only 24.1% had insurance through an employer. Almost 58%, however, had insurance through Medicaid and 18.5% had no medical insurance.

Gender Differences in Medical Insurance

Significantly more women reported being insured by Medicaid at both intake and follow-up compared to men (see Figure 3.23).

FIGURE 3.23. GENDER DIFFERENCES IN CLIENTS REPORTING HAVING MEDICAID INSURANCE AT INTAKE AND FOLLOW-UP



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

“Super helpful to me from the beginning. My counselor has helped me with issues I didn’t know I needed help with.”

KORTOS FOLLOW-UP CLIENT

Section 4. Criminal Justice System Involvement

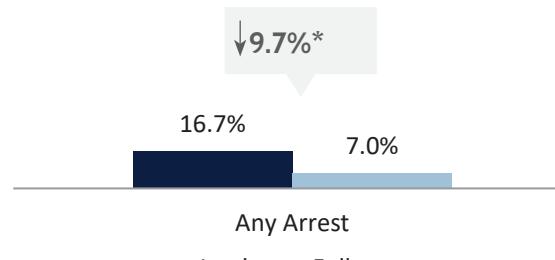
This section describes change in client involvement with the criminal justice system during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest, (2) the number of times arrested, among clients with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

Arrests

Any Arrests in the Past 6 Months

About 17% of clients reported any arrests in the 6 months before entering treatment and 7.0% of clients reported any arrests in the 6 months before follow-up, which was a significant decrease of 9.7% (see Figure 4.1).

FIGURE 4.1. PAST-6 MONTH ARRESTS AT INTAKE AND FOLLOW-UP (N = 114)

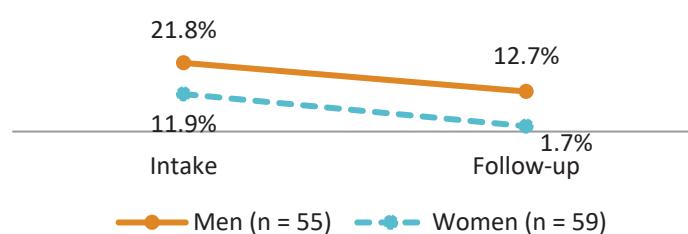


* $p < .05$.

GENDER DIFFERENCES IN PAST-6-MONTH ARRESTS

At follow-up, significantly more men reported having been arrested at least one time compared to women (12.7% vs. 1.7%, respectively). The decreases from intake to follow-up for men and women, separately, were not statistically significant.

FIGURE 4.2. GENDER DIFFERENCES IN PAST-6 MONTH ARRESTS AT INTAKE AND FOLLOW-UP^a

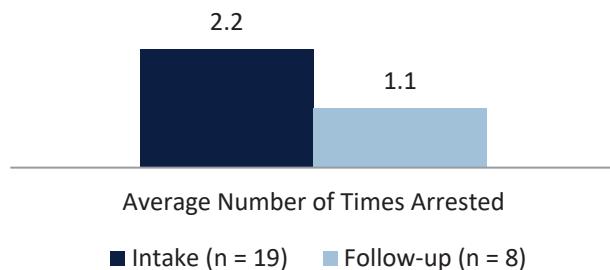


a – Significant difference by gender at follow-up ($p < .05$).

AVERAGE NUMBER OF ARRESTS

Among clients who reported at least one arrest in the 6 months before entering the program ($n = 19$), the average number of times they were arrested was 2.2 (see Figure 4.3). Among clients who reported at least one arrest in the 6 months before follow-up ($n = 8$), the average number of times they were arrested was 1.1.

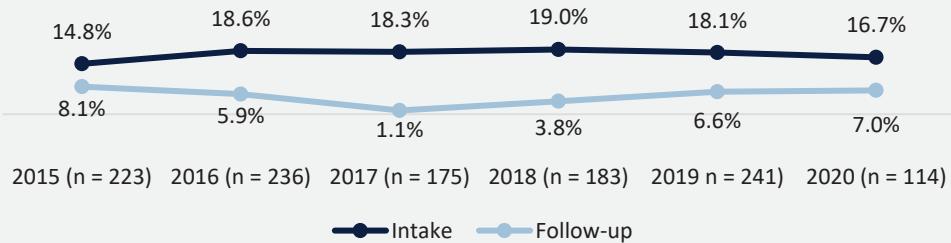
FIGURE 4.3. AVERAGE NUMBER OF TIMES ARRESTED AT INTAKE AND FOLLOW-UP, AMONG CLIENTS ARRESTED DURING EACH PERIOD



Trends in Past-6-month Arrests

While the percent of clients reporting an arrest in the past 6 months at intake has been stable overall in the past 6 years, the percent of clients reporting an arrest in the past 6 months at follow-up since 2015 decreased slightly before increasing again in 2020 (see Figure 4.4).

FIGURE 4.4. TRENDS IN THE NUMBER OF CLIENTS REPORTING ANY ARRESTS IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020⁷⁵



Incarceration

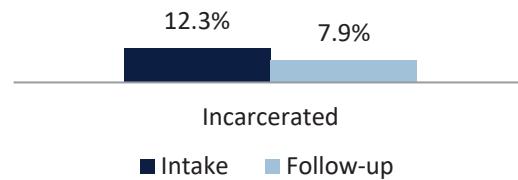
Incarceration in the Past 6 Months

About 12% of clients reported they had spent at least one night in jail or prison at intake. At follow-up, only 7.9% of clients reported they had spent at least one night in jail or prison in the past 6

⁷⁵ 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.

months which was not a significant decrease (see Figure 4.5).

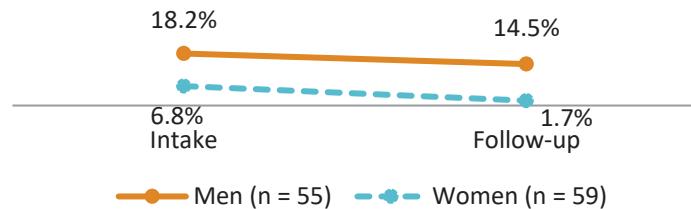
FIGURE 4.5. CLIENTS REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP (N = 114)



GENDER DIFFERENCES IN PAST-6-MONTH INCARCERATION

At follow-up, significantly more men reported having spent at least one night in jail or prison compared to women (14.5% vs. 1.7%, respectively).

FIGURE 4.6. GENDER DIFFERENCES REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP^a

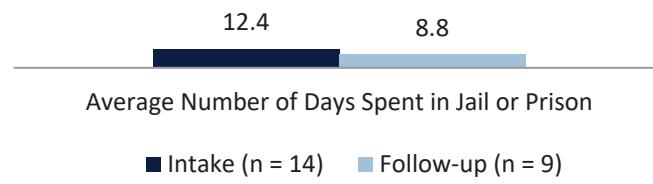


a – Significant difference by gender at follow-up ($p < .05$).

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

Figure 4.7 shows that among clients who reported incarceration, the average number of days incarcerated was 12.4 at intake ($n = 14$) and 8.8 at follow-up ($n = 9$).

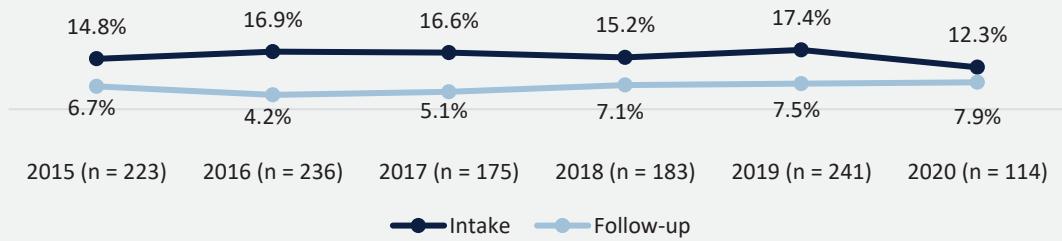
FIGURE 4.7. AVERAGE NUMBER OF DAYS INCARCERATED, FOR CLIENTS WHO WERE INCARCERATED AT EACH PERIOD



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 6 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 4.8).

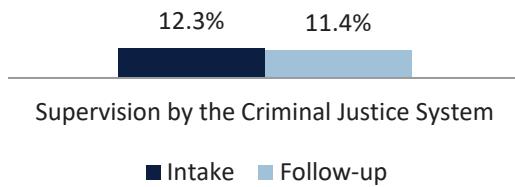
FIGURE 4.8. TRENDS IN THE NUMBER OF CLIENTS REPORTING ANY INCARCERATION IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020⁷⁶



Criminal Justice System Supervision

The percent of clients who self-reported they were under criminal justice system supervision (e.g., probation or parole) did not change significantly from 12.3% at intake to 11.4% at follow-up (see Figure 4.9).

FIGURE 4.9. CLIENTS REPORTING CRIMINAL JUSTICE SYSTEM SUPERVISION AT INTAKE AND FOLLOW-UP (N = 114)



⁷⁶ 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.

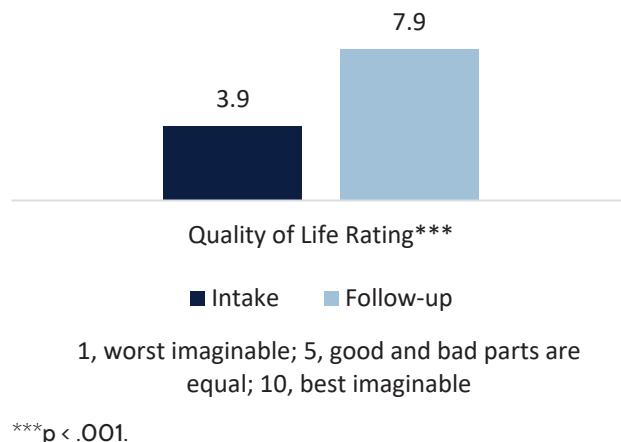
Section 5. Quality of Life and Well-Being

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) client functioning and well-being.

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 5.1). The average quality of life rating significantly increased to 7.9 at follow-up.

FIGURE 5.1. PERCEPTION OF QUALITY OF LIFE AT INTAKE AND FOLLOW-UP (N = 114)



Trends in Quality of Life Rating

Clients were asked to rank their overall quality of life on a scale from 1 (worst imaginable) to 10 (best imaginable) at both intake and follow-up. At intake, KORTOS clients have consistently rated their quality of life, on average, close to 4.0. At follow-up, that rating has significantly increased to an average of about a 7.6 (see Figure 5.2).

FIGURE 5.2. TRENDS IN QUALITY OF LIFE RATING AT INTAKE AND FOLLOW, REPORTS 2015-2020

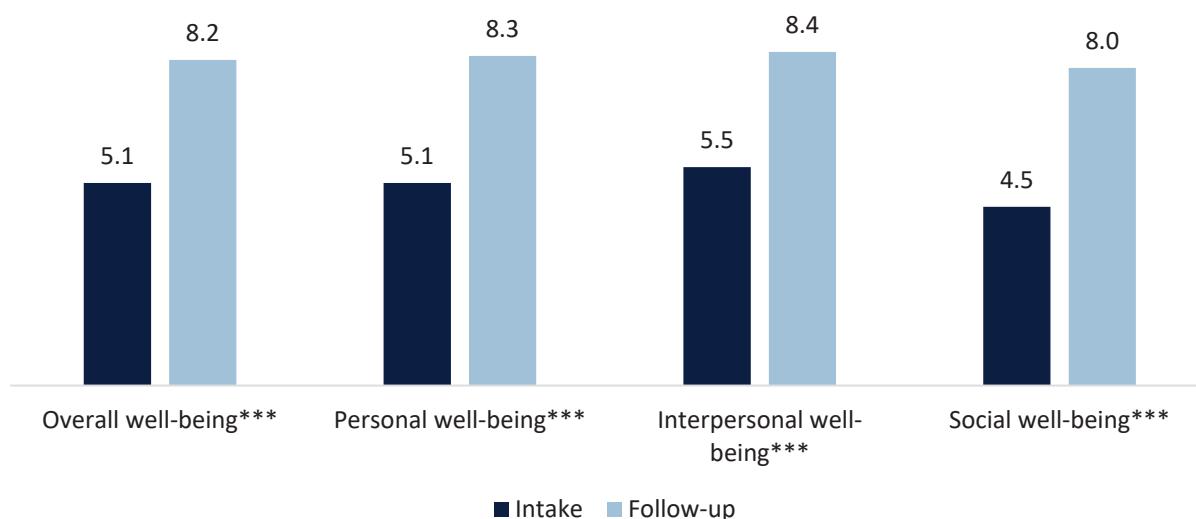


Client Functioning and Well-Being

At intake and follow-up, clients were presented with four items asking them to think about the past week and rate how well they had been doing in the following areas of their lives: (1) individually (i.e., personal well-being), (2) interpersonally (i.e., family, close relationships), (3) socially (i.e., work, school, friendships), and (4) overall (i.e., general sense of well-being). These items were taken from the Outcome Rating Scale,⁷⁷ which uses a visual analog scale for respondents to mark their responses on corresponding 10 cm lines; however, because the follow-up interviews are conducted over the telephone, the visual analog format was modified to be a scale with anchors: 0, “Not at all good” to 10, “Extremely good.”

Clients’ ratings of their functioning and well-being for all four dimensions increased significantly from intake to follow-up (see Figure 5.3).

FIGURE 5.3. CLIENT FUNCTIONING AND WELL-BEING AT INTAKE AND FOLLOW-UP (N = 62)^a⁷⁸



a— Significant increase from intake to follow-up as measured by paired t-test.

*** $p < .001$.

“They care about what I want as far as my goals. They care about me and my health and what I want out of life. They’ve helped me turn my whole life around. I’ve gotten a promotion at work because of coping and social skills I’ve learned.”

KORTOS FOLLOW-UP CLIENT

⁷⁷ Miller, S.D., Duncan, B. L., Brown, J., Sparks, J.A., & Claud, D.A. (2003). The Outcome Rating Scale: A preliminary study of the reliability, validity, and feasibility of a brief visual analog measure. *Journal of Brief Therapy*, 2(2), 91-100.

⁷⁸ The Outcome Rating Scale items were added to the surveys around April 2018. Thus, the data is available for only 62 cases at intake for this data set. In next year’s report, all clients will have taken surveys including these items.

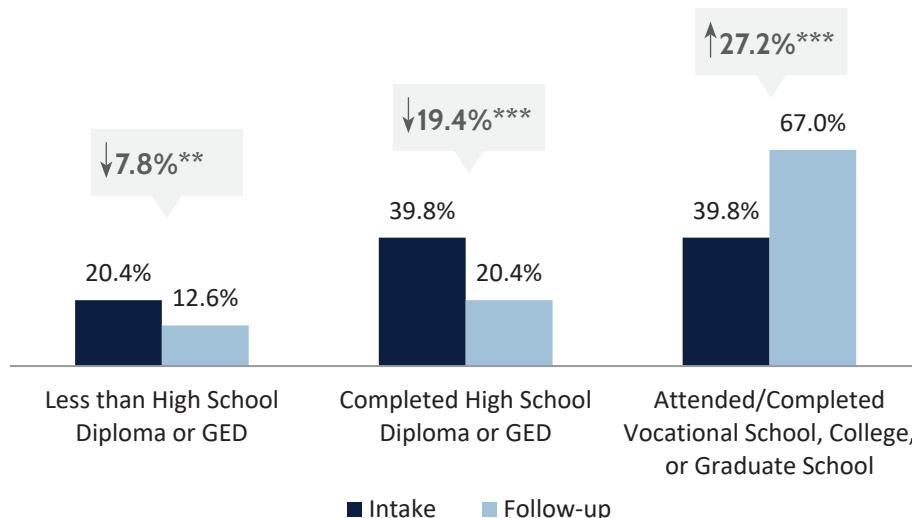
Section 6. Education, Economic Status, and Living Circumstances

This section examines changes in education, economic status, and living circumstances from intake to follow-up including: (1) highest level of education completed, (2) the number of months clients were employed full-time or part-time, (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 (13.1), where 12 = High school diploma or GED (not depicted in a figure). Another way to examine change in education is to examine change in the percent of clients who reported different levels of education. There was 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 6.1). Likewise, there was a significant decrease in clients reporting they had less than a high school diploma or GED and clients reporting they had completed their high school diploma or GED.

FIGURE 6.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE AND FOLLOW-UP (n = 103)⁷⁹



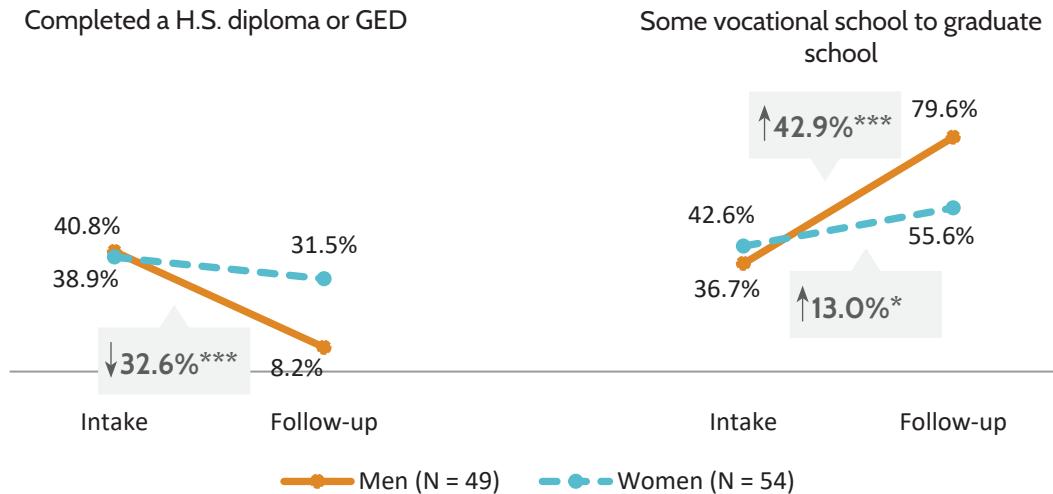
a - Significance tested with the Stuart-Maxwell Test of Overall Marginal Homogeneity ($p < .001$)

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

Gender Differences in Education

At follow-up, significantly fewer men (8.2%) reported that their highest level of education was completing a high school diploma or GED compared to women (31.5%). Significantly more men, however, reported they had some vocational school to graduate school at follow-up compared to women (79.6% vs. 55.6%, respectively).

⁷⁹ Eleven cases had missing values for education because of inconsistencies in data from intake to follow-up.

FIGURE 6.2. GENDER DIFFERENCES IN HIGHEST LEVEL OF EDUCATION AT INTAKE AND FOLLOW-UP^a

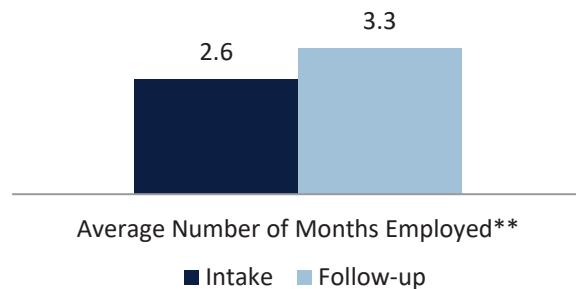
^a=Significant gender difference at follow-up ($p < .05$).

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

Employment

Average Number of Months Employed in the Past 6 Months

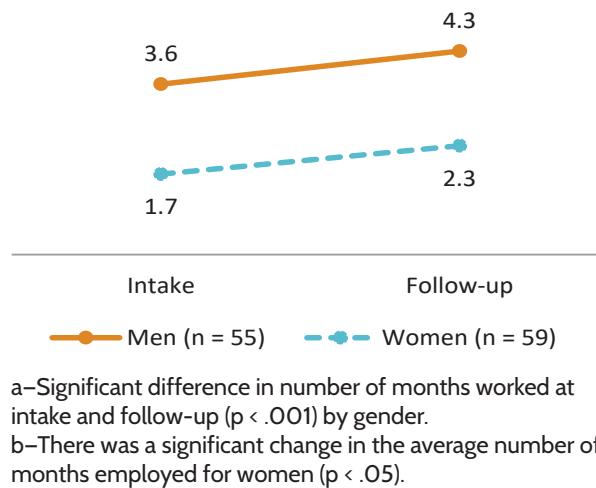
At both intake and follow-up, clients were asked to report the number of months in the past 6 months they were employed at least part-time. Figure 6.3 shows there was a significant increase over time in the average number of months clients reported they were employed from intake (2.6) to follow-up (3.3).

FIGURE 6.3. AVERAGE NUMBER OF MONTHS EMPLOYED IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP
(N = 114)

* $p < .05$.

GENDER DIFFERENCES IN THE NUMBER OF MONTHS EMPLOYED

Men reported working significantly more months at both periods compared to women (intake, 3.6 vs. 1.7 and follow-up, 4.3 vs. 2.3). There was a significant increase in the number of months employed from intake to follow-up for women (see Figure 6.4).

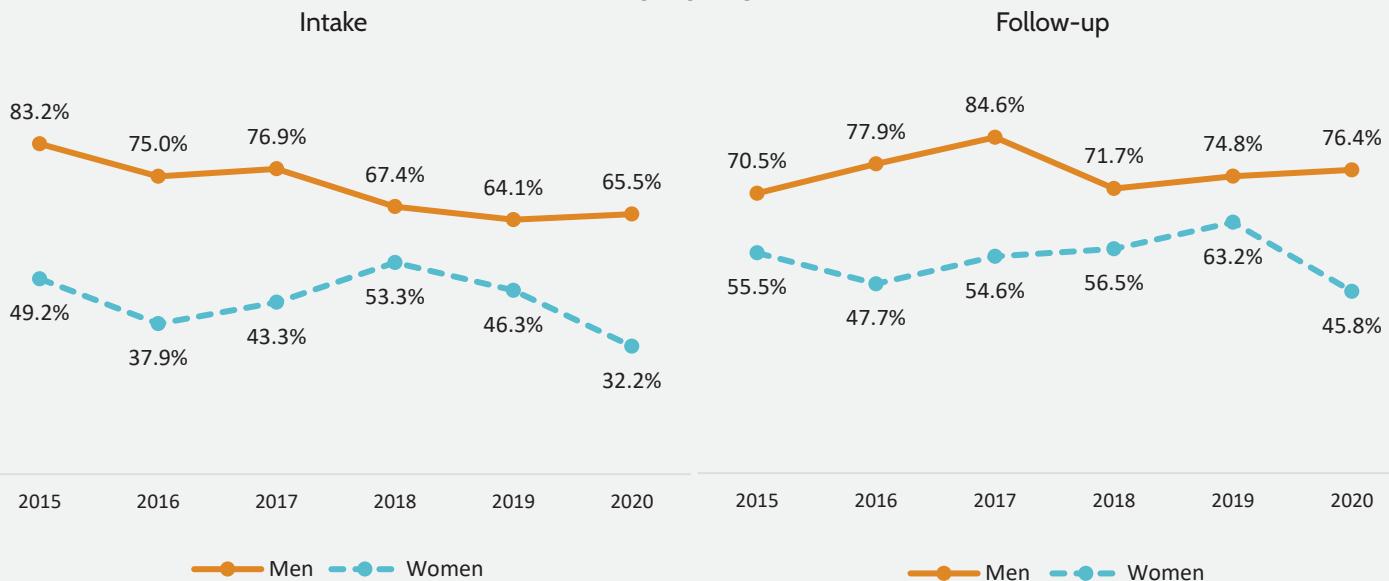
FIGURE 6.4. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP^{a,b}

Trends in Employment by Gender

For the past 6 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 and in 2020 the gap between men and women reporting employment widened further.

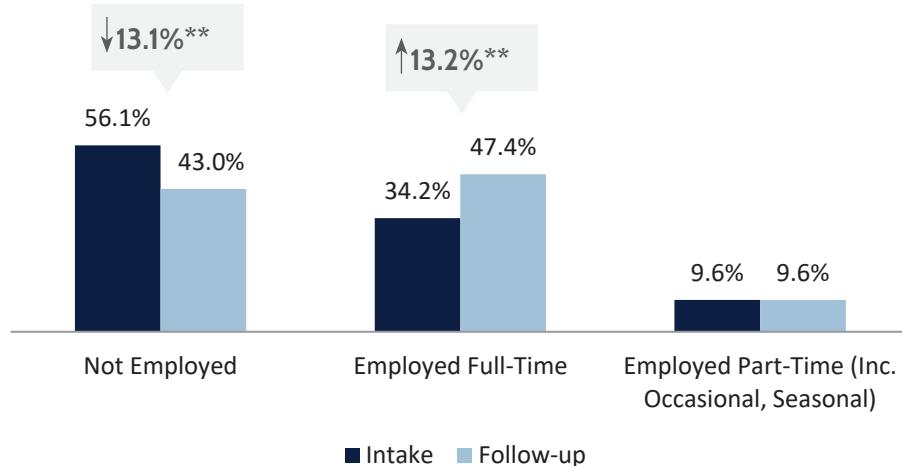
By follow-up, on average, around half of women reported they were employed full-time or part-time at least one month in the past 6 months but significantly more men reported employment during that same time frame. Since 2016, the percent of women who reported being employed at least one month at follow-up has increased. In 2019, almost two-thirds of women reported being employed at least one month at follow-up. In 2020, however, less than half of female clients reported being employed at follow-up compared to over three-quarters of men.

FIGURE 6.5. TRENDS IN GENDER DIFFERENCES IN CLIENTS EMPLOYED AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP



Current Employment Status

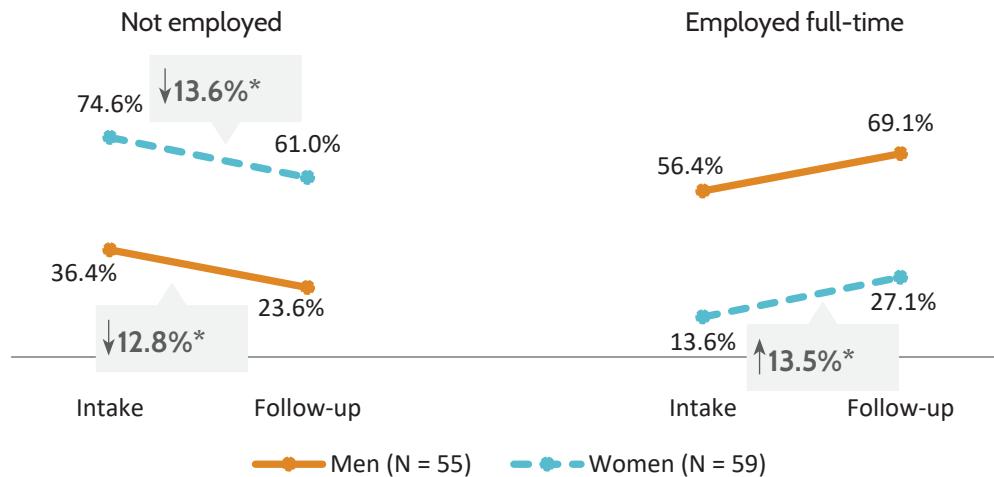
At intake, 56.1% of clients were not employed (see Figure 6.6) in the 30 days before they entered the program and at follow-up, the percent of clients who were not employed was 43.0%. Additionally, the percent of clients who were employed full-time significantly increased 13.2%, from 34.2% at intake to 47.4% at follow-up.

FIGURE 6.6. CURRENT EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP (N = 114)^a

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

GENDER DIFFERENCES IN CURRENT EMPLOYMENT STATUS

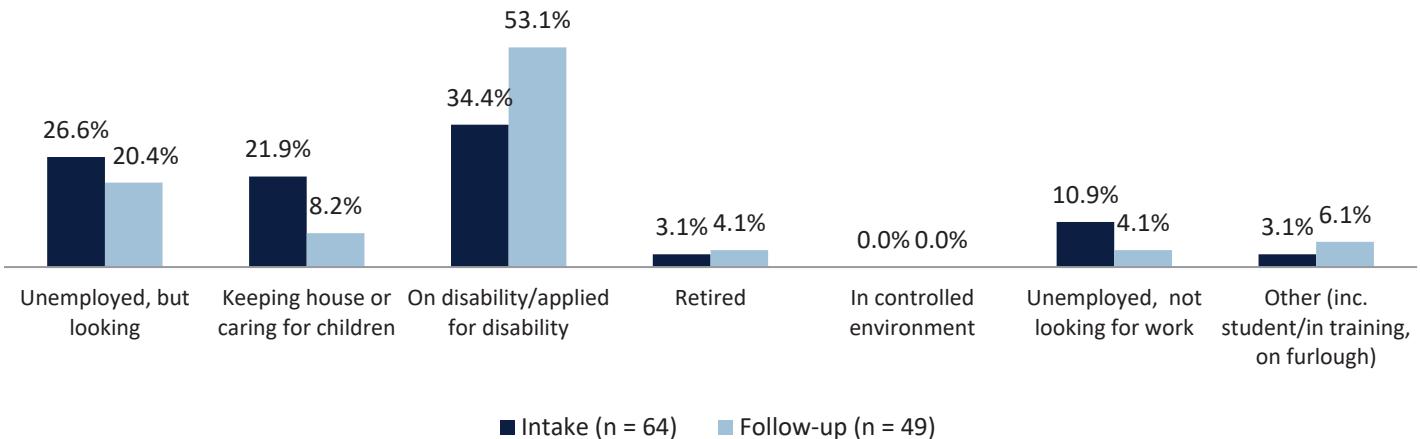
At both intake and follow-up, significantly more women were currently unemployed and significantly more men were employed. The percent of men and women reporting being unemployed significantly decreased at follow-up. In addition, the percent of women reporting being employed full-time increased at follow-up.

FIGURE 6.7. GENDER DIFFERENCES IN CURRENT EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP^a

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

Of those not employed at each point, clients were asked why they were not currently employed. At intake (n = 64), 26.6% of clients reported they were unemployed, but looking for work, 10.9% were unemployed, but were not looking for a job, and 34.4% were also on disability or had applied for disability. Of clients not employed at follow-up (n = 49), 20.4% were unemployed, but looking for work and 53.1% reported they were on disability or had applied for disability.

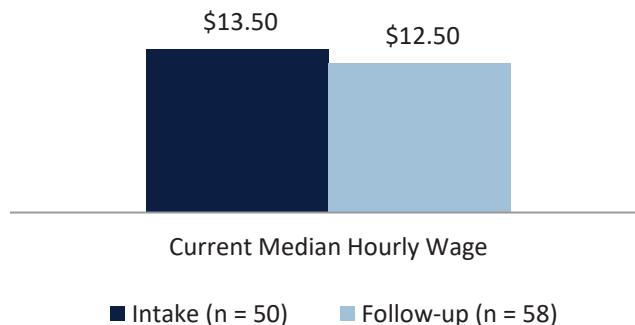
FIGURE 6.8. REASONS FOR UNEMPLOYMENT STATUS AT EACH POINT



Hourly Wage

Of those clients who were employed at intake (n = 50), the median hourly wage was \$13.50. Of those employed at follow-up and who reported their hourly wage (n = 58),⁸⁰ the median hourly wage was \$12.50 (see Figure 6.9).

FIGURE 6.9. 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 \$0.63 for every \$1 men made (\$16.00 for men and \$10.00 for women). At follow-up, employed men again reported a significantly higher hourly wage than employed women (\$15.00 vs. \$10.00; see Figure 6.10).

"When I first started with my counselor, she listened to everything I had to say. She worked with me to set goals. I love it."

KORTOS FOLLOW-UP CLIENT

⁸⁰ While 65 clients were employed at follow-up, 5 clients refused to report their hourly wage, and 2 clients were missing data for hourly wage at follow-up.

FIGURE 6.10. GENDER WAGE GAP AT INTAKE AND FOLLOW-UP



Trends in the Gender Wage Gap

For the past six 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. While the gap between hourly wage for men and women remained narrow in 2020, the median wage decreased at both intake and follow-up compared to 2019.

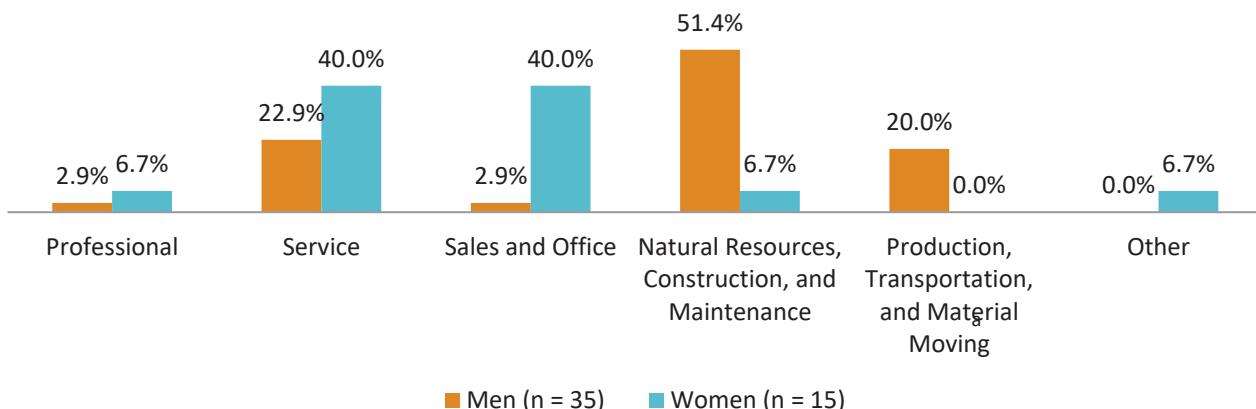
FIGURE 6.11. TRENDS IN THE GENDER WAGE GAP AT INTAKE AND FOLLOW, REPORTS 2015-2020⁸¹

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, 40.0% of employed women reported having a service job (e.g., waiter/waitress, child care, housekeeping, hair stylist, etc.) while only 22.9% of employed men reported having a service job (see Figure 6.12a). Significantly more men reported working natural resources, construction, and maintenance jobs (e.g., mining, logging, farming, mechanic, heating/air conditioning tech, etc.) than women (51.4% vs. 6.7%) and production, transportation, and material moving (20.0% vs. 0.0%), which tend to be higher paying than service jobs.

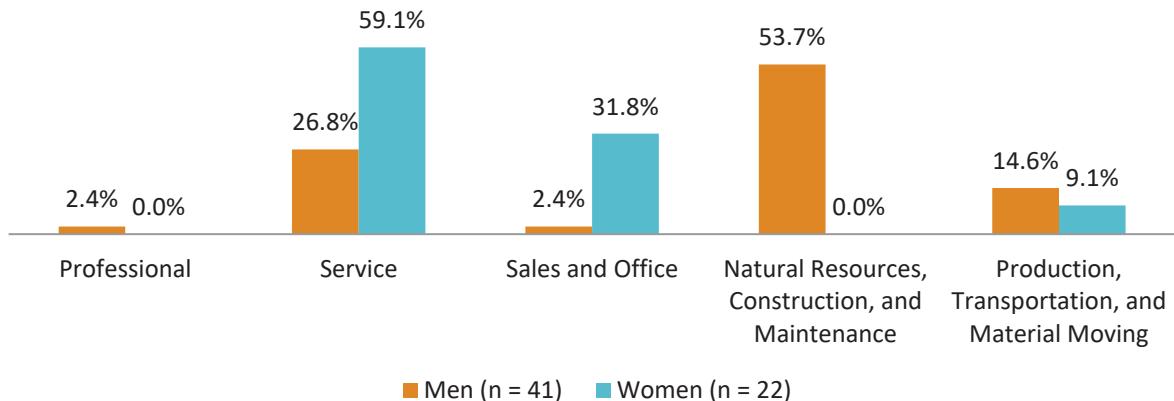
FIGURE 6.12a. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT INTAKE^a



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

At follow-up, the difference in occupation type was similar. Over half of employed women (59.1%) reported having a service job whereas 26.8% of employed men had a service job (see Figure 6.12b). About 32% of women had sales and office jobs (e.g., administrative support, cashier, retail sales, telemarketer, bank teller, etc.) while only 2.4% 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 (53.7% vs. 0.0%). Production, transportation, and material moving jobs (e.g., factory production line, power plant, bus driver, welder, sanitation worker, etc.) were reported by 14.6% of employed men and 9.1% of employed women.

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

FIGURE 6.12B. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP^a

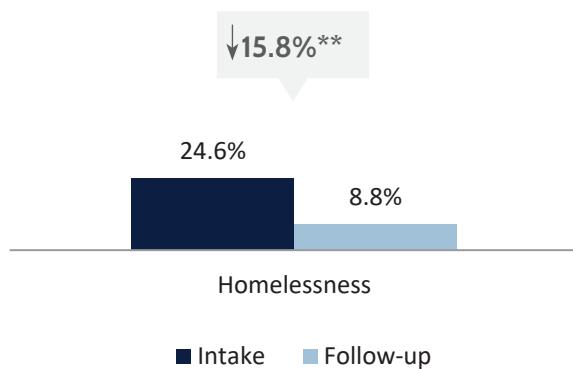
a – Significant difference by gender, $p < .001$.

Living Circumstances

Homelessness

About one-quarter of clients (24.6%) reported at treatment intake they were homeless at some point in the past 6 months. At follow-up, 8.8% of clients reported they had been homeless at some point in the past 6 months, which was a significant decrease of 15.8% (see Figure 6.13).

FIGURE 6.13. CLIENTS REPORTING HOMELESSNESS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 114)

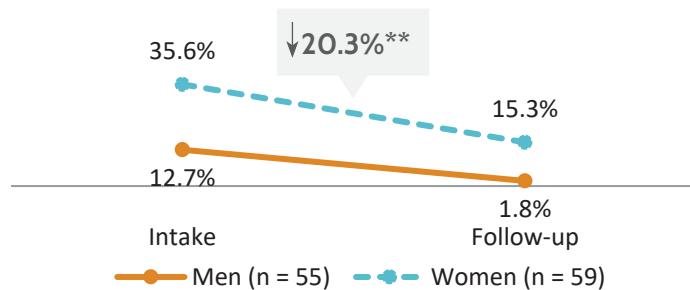


$^{**}p < .01$.

GENDER DIFFERENCES IN PAST-6-MONTH HOMELESSNESS

At intake, significantly more women reported considering themselves homeless compared to men (35.6% vs. 12.7%). The percent of women who considered themselves homeless significantly decreased at follow-up by 20.3%.

FIGURE 6.14. GENDER DIFFERENCES REPORTING HOMELESSNESS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP^a



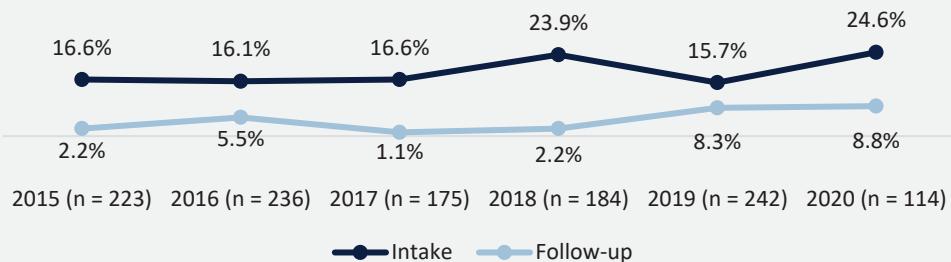
a – Significant difference by gender at intake ($p < .01$) and follow-up ($p < .05$).
 ** $p < .01$.

Trends in Past-6-month Homelessness

From 2015 to 2017, the percent of clients reporting that they considered themselves homeless in the past 6 months at intake remained steady at around 16% of clients. In 2018, the percent of clients who considered themselves homeless at intake increased slightly to 23.9%, but decreased again in 2019 to 15.7%. In 2020, the percent of clients reporting that they considered themselves homeless increased again to 24.6%.

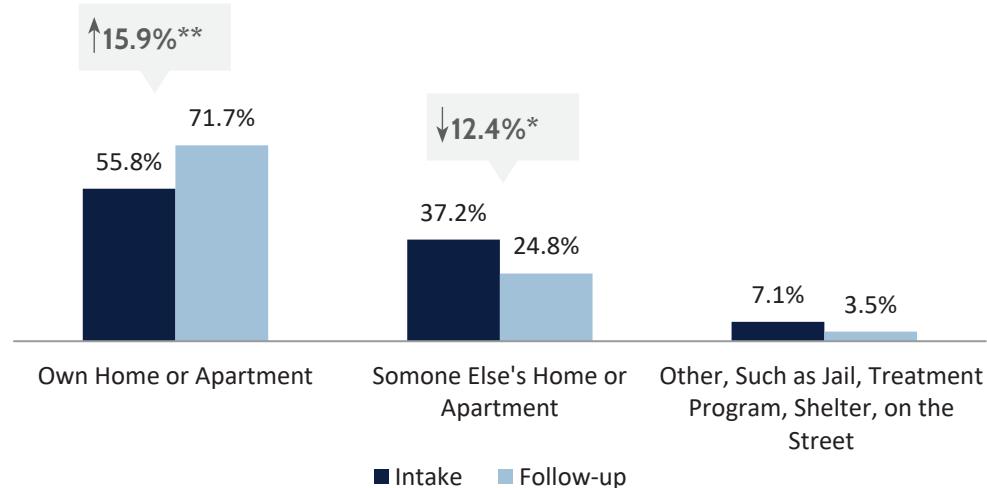
At follow-up each year, very few clients reported that they considered themselves homeless. In both 2015 and 2018, only 2.2% of clients considered themselves homeless in the past 6 months at follow-up. The percent of clients who considered themselves homeless at follow-up increased to 8.3% in 2019 and again to 8.8% in 2020.

FIGURE 6.15. TRENDS IN THE NUMBER OF CLIENTS REPORTING HOMELESSNESS IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020



Living Situation in the Past 6 Months

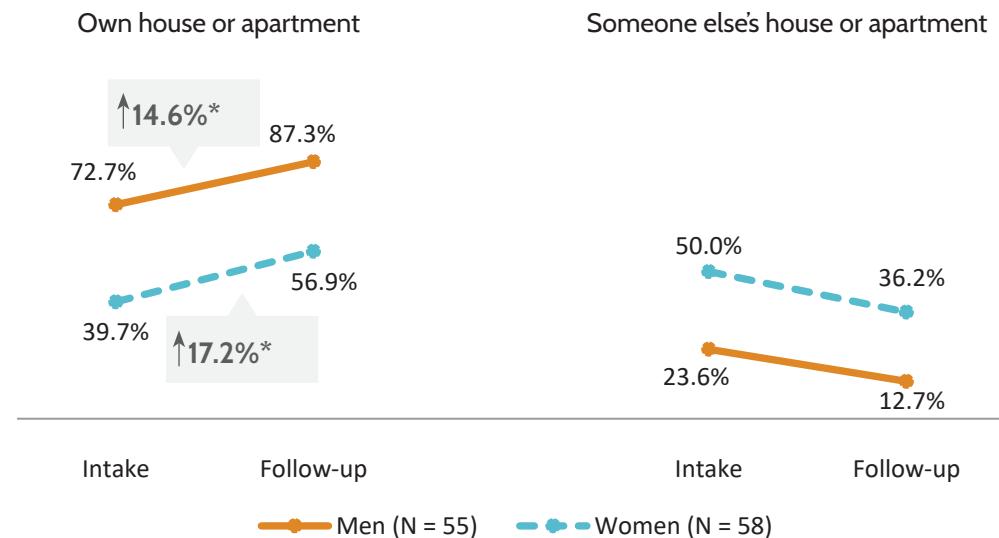
Figure 6.16 shows that about 56% of clients reported they were living in their own home or apartment in the past 6 months at intake and 71.7% reported they were living in their own home or apartment at follow-up (a significant increase of 15.9%). About 37% of clients at intake and 24.8% of clients at follow-up reported living in someone else's home or apartment. Only 7.1% of client at intake and 3.5% of clients at follow-up lived in another situation such as jail, a treatment program, shelter, or on the street.

FIGURE 6.16. TYPE OF TYPICAL LIVING SITUATION IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 113)⁸³

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

GENDER DIFFERENCES IN LIVING SITUATION

At both intake and follow-up, there were significant gender differences for living situation. Significantly more men at intake and follow-up reported living in their own house or apartment compared to women. Significantly more women reported living in someone else's house or apartment at intake and follow-up.

FIGURE 6.17. GENDER DIFFERENCES IN TYPE OF TYPICAL LIVING SITUATION IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP^a

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

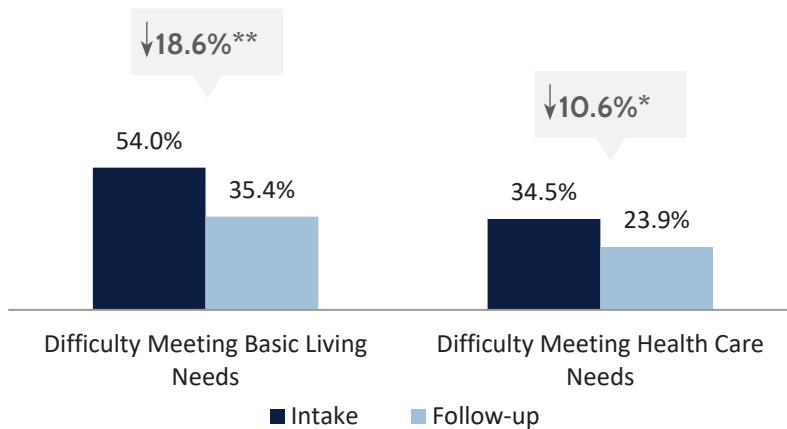
⁸³ One client was missing data on living situation at follow-up.

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 18.6% from 54.0% to 35.4% (see Figure 6.18). The percent of clients who reported difficulty meeting health care needs (e.g., doctor visits, dental visits, and prescription medications) for financial reasons decreased significantly from 34.5% at intake to 23.9% at follow-up.

FIGURE 6.18. DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 113)⁸⁴



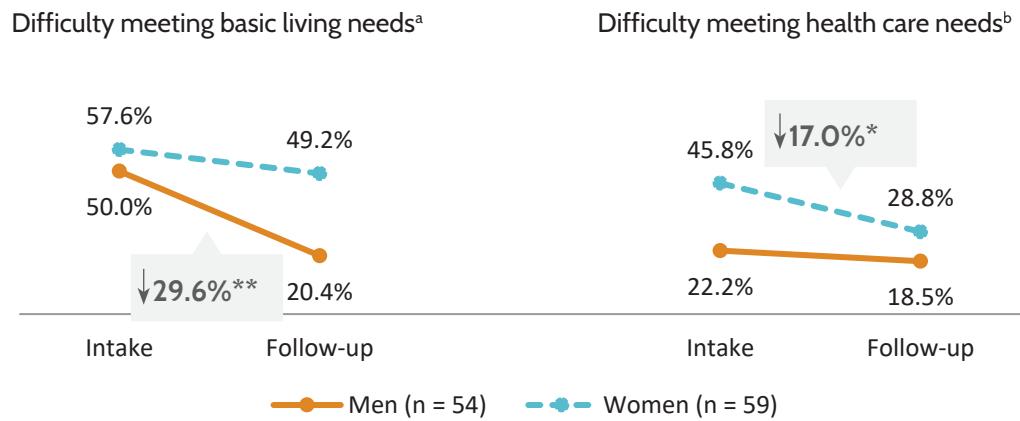
Gender Differences in Difficulty Meeting Basic Living Needs

The percent of men reporting having difficulty meeting basic living needs for financial reasons decreased significantly at follow-up. At follow-up, significantly more women reported having difficulty meeting basic living needs for financial reasons (49.2%) compared to men (20.4%); see Figure 6.19).

Significantly more women reported having difficulty meeting health care needs in the past 6 months at intake compared to men (45.8% vs. 22.2%, respectively). The percent of women who reported having difficulty meeting health care needs decreased significantly by 17.0% from intake to follow-up.

⁸⁴ One client was missing data on difficulty meeting living and health care needs for financial reasons at follow-up.

FIGURE 6.19. GENDER DIFFERENCES IN DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP



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

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

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

"My life has gone from horrible/medium to 10x better! Helped me tremendously."

KORTOS FOLLOW-UP CLIENT

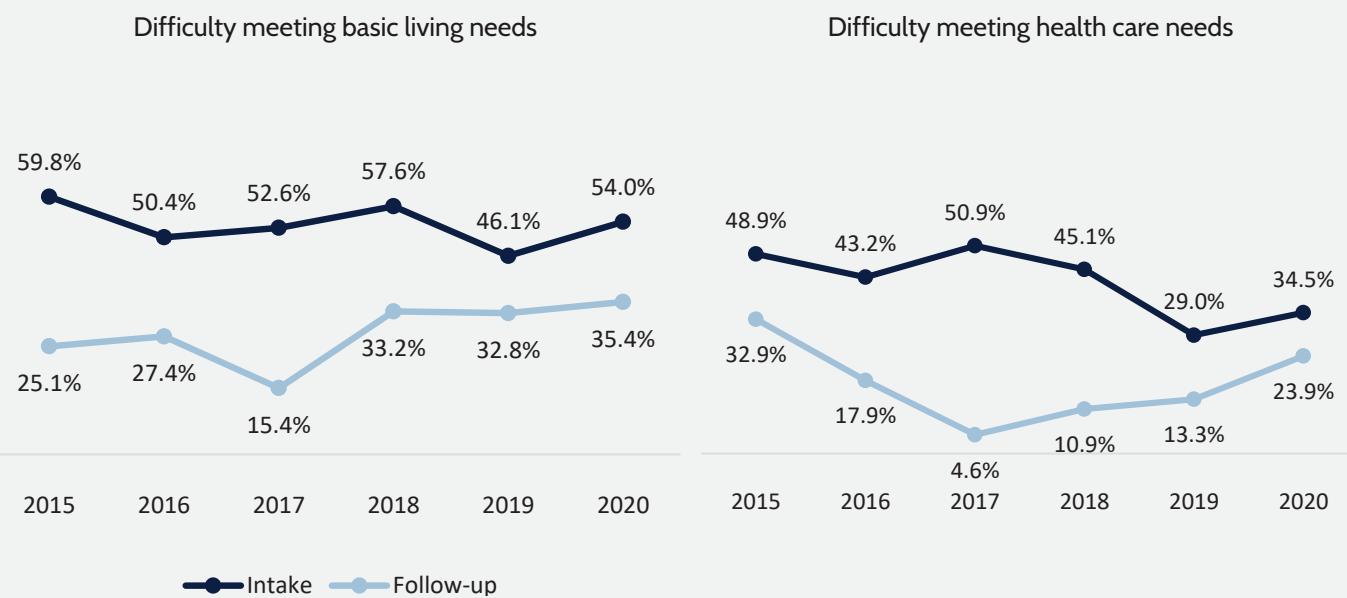
Trends in Difficulty Meeting Living and Health Care Needs for Financial Reasons

For each of the past 6 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 which increased to 54.1% in 2020. 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 and 2020.

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. In 2020, the percent of clients reporting difficulty meeting basic health care needs at intake increased slightly to 34.5%. 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 6.20. TRENDS IN THE NUMBER OF CLIENTS REPORTING ECONOMIC DIFFICULTY IN THE PAST-6-MONTHS AT INTAKE AND FOLLOW-UP, REPORTS 2015-2020



Section 7. Recovery Supports

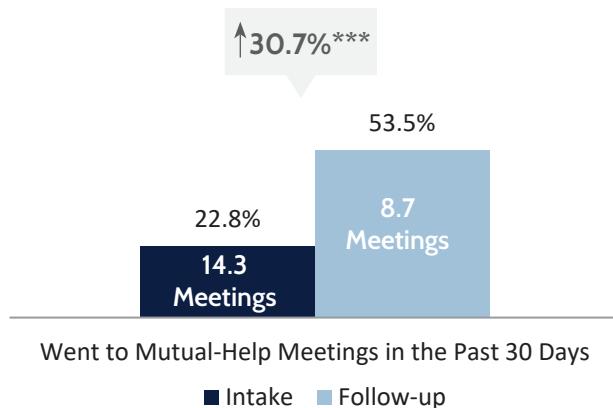
This section focuses on four main changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) the number of people the client said they could count on for recovery support, (3) what will be most useful to the client in staying off drugs/alcohol, and (4) clients'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

Mutual Help Recovery Group Meeting Attendance

At intake, 22.8% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (see Figure 7.1). At follow-up, there was a significant increase of 30.7%, with 53.5% of clients reporting they had gone to mutual help recovery group meetings.

Among clients who had attended mutual help recovery group meetings at intake ($n = 26$), they reported attending an average of 14.3 meetings. Among clients who attended mutual help recovery group meetings at follow-up ($n = 61$), they reported attending an average of 8.7 meetings.

FIGURE 7.1. CLIENTS REPORTING MUTUAL HEALTH RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP
($N = 114$)



*** $p < .001$.

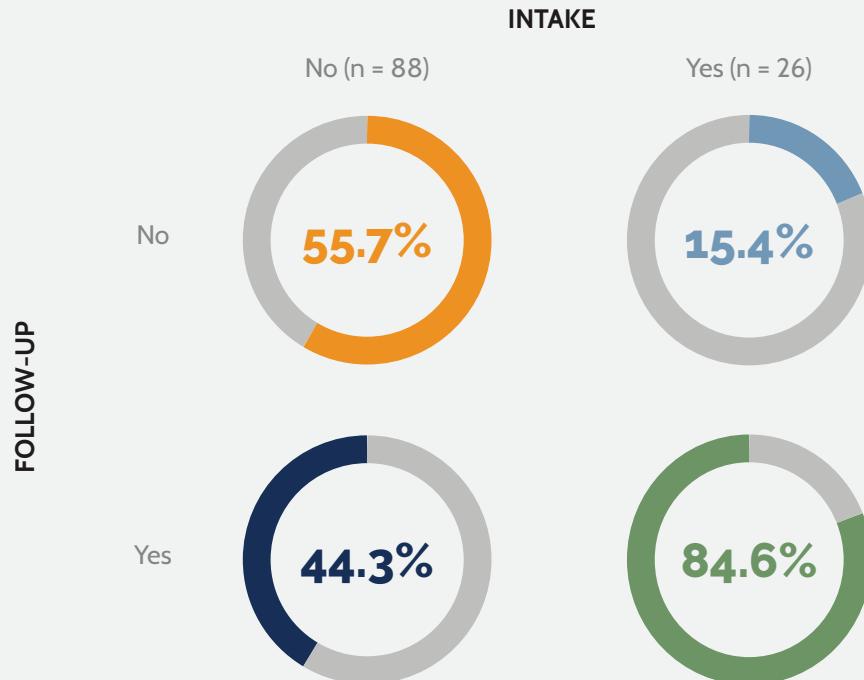
"Before I went there I had been struggling with opiates close to 14/15 years. With the methadone, I don't feel cravings anymore and I'm more focused on kids."

KORTOS FOLLOW-UP CLIENT

Taking A Closer Look at Recovery Support

About 23% of clients reported attending mutual help recovery group meetings in the 30 days before entering treatment (n = 26). Of those clients, 84.6% 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 = 88), 44.3% did attend at least one meeting in the past 30 days at follow-up.

FIGURE 7.2. A CLOSER LOOK AT THE NUMBER 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 from intake (3.9) to follow-up (6.9; see Figure 7.3).

FIGURE 7.3. AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N=114)***

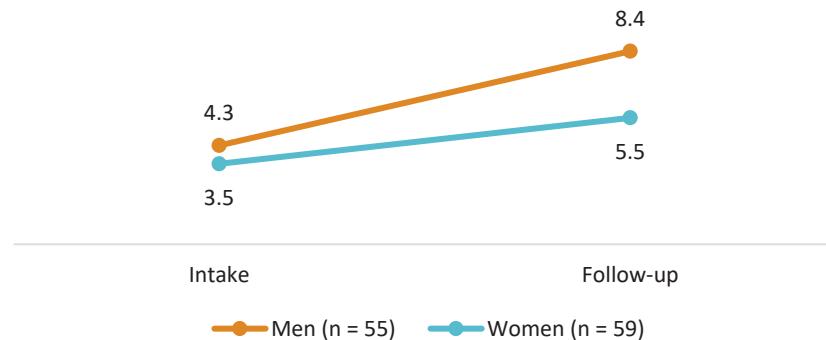


***p < .001.

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

Both men and women reported significantly more people they could count on for recovery support at follow-up compared to intake. There was a significant difference between men and women at follow-up where men reported significantly more people (8.4 vs. 5.5, respectively).

FIGURE 7.4. GENDER DIFFERENCES IN AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP^{a,b}



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

b-There was a significant change in the average number of people clients could count on for support for men ($p < .01$) and women ($p < .05$).

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 7.5. The most common responses at intake were employment, being a parent, and counseling. At follow-up, the most common responses were support from family, change in environment, and staying busy.

FIGURE 7.5. CLIENTS REPORTING WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL (N = 113)⁸⁵

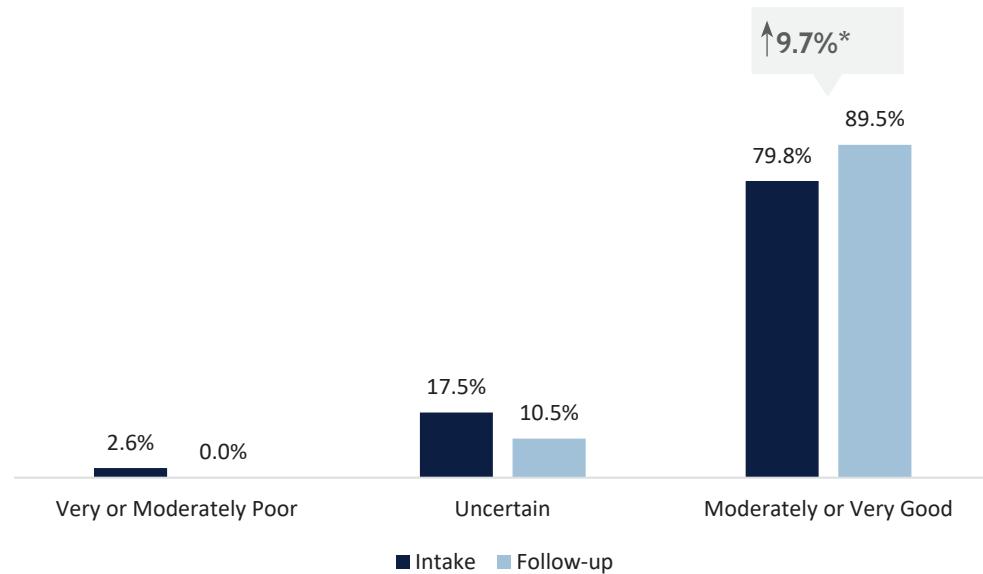


⁸⁵ One client was missing data for these questions.

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 4.3 at intake and a 4.7 at follow-up, which was a significant increase (not depicted in figure). Overall, 79.8% of clients at intake and 89.5% of clients at follow-up believed they had moderately or very good chances of staying off drugs/alcohol which was a significant increase (see Figure 7.6).

FIGURE 7.6. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 114)



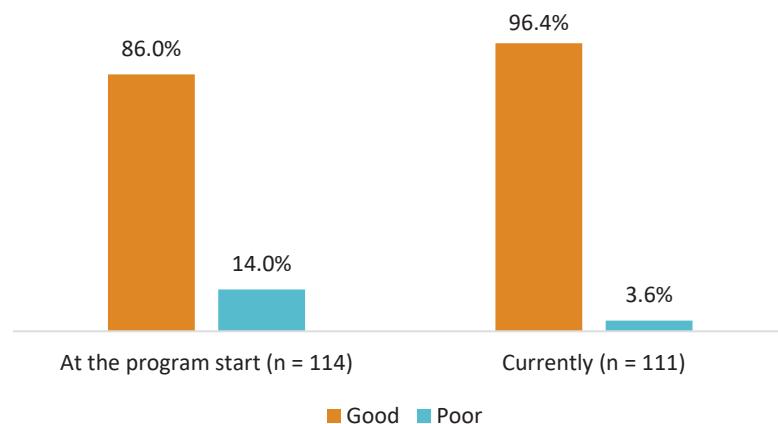
Section 8. Client Satisfaction With Opioid Treatment Programs

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

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

Clients reported having been involved in the treatment program an average of 11.6 months (range of 1 to 72 months).⁸⁶ Figure 8.1 shows the percent of clients who reported the program started poor or good and ended poor or good. The majority of clients reported that the program started good (86.0%) and 96.4% reported it was currently going good.

FIGURE 8.1. PERCENT OF CLIENTS WHO REPORTED AT FOLLOW-UP THE TREATMENT STARTED AND IS CURRENTLY POOR OR GOOD⁸⁷



Overall, the majority of clients (93.8%) reported that the treatment episode is working pretty well or extremely well for them.

About 10% reported they had been in other treatment programs since they started this treatment episode. Of those clients (n = 11), clients reported they had been involved in an average of 1.9 (min = 1, max = 6) other treatment programs or episodes.

⁸⁶ In December 2018, the follow-up instrument was changed to include clients who were not currently involved in the OTP. For continuity purposes, these clients (n = 9) were not included in this year's follow-up analysis, but will be included in a separate section of the 2021 report. Of the clients who indicated they were not currently involved in the opiate treatment program at follow-up (n = 9), 37.5% reported that the main reason they were no longer using bup-nx or methadone was because of cost or insurance, 25.0% reported problems with the clinic, 12.5% reported that it didn't seem to help them, and 25.0% reported other reasons (legal issues and the client moved). In addition, these clients reported they had been involved with the treatment program an average of 5.9 months (min = 4, max = 8; two clients were missing data for how long they were involved in the program).

⁸⁷ Three clients were missing data on how the program is going now.

Recommendation to the Program

Almost all clients (94.7%) indicated they would refer a close friend or family member to their treatment provider. Of the clients who reported they would refer a close friend or family member to the program ($n = 108$), 38.0% reported they would warn their friend or family member about certain things or tell them who to work with or who to avoid.

Client Ratings of Program Experiences

Clients were asked to report their perceptions of how the treatment program worked for them. The statements presented in Figure 8.2 had separate response options, with ratings ranging from 0 to 10. The higher values corresponded to the more positive responses and the lower values corresponded to the negative responses. For example, for the statement, “My expectations and hopes for treatment and recovery were met” the anchors were 0 “Not at all met” and 10 “Perfectly met.” Even the negatively worded items had anchors in which the higher values represented the more positive side of the continuum. For example, for the statement, “There were things I did not talk about or that I did not fully discuss with my counselor/program staff” the response option 0 corresponds to “I did not discuss lots of things, I held things back,” and 10 corresponds to “I discussed everything, I held back nothing.” Clients who rated each statement from 8 to 10 are shown in the figure below.

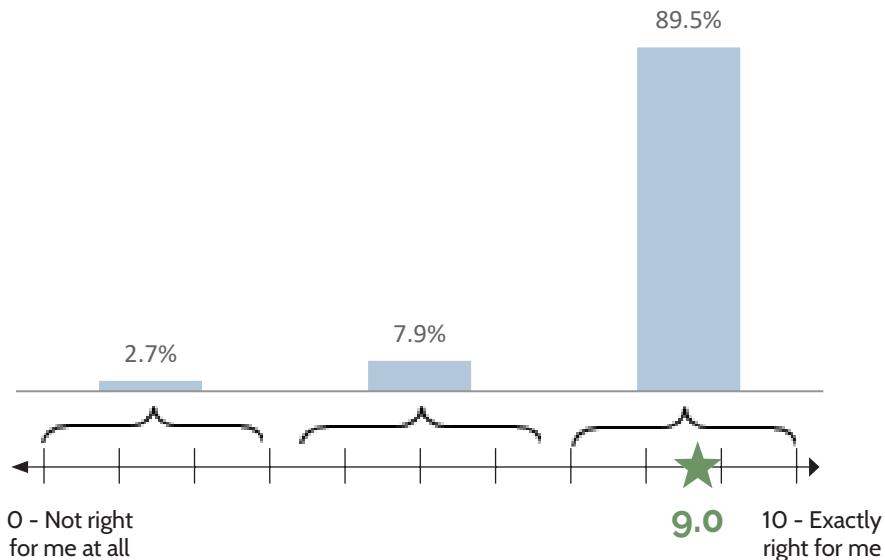
FIGURE 8.2. RATINGS OF PROGRAM TREATMENT EXPERIENCE (N = 114)⁸⁸



⁸⁸ One client was missing a response for if they had input into treatment goals and two clients were missing data on the length of the treatment program.

Clients rated their overall program experience, on average, as 9.0 (see Figure 8.3). Overall, 89.5% gave a rating between 8 and 10 and 63.2% of clients gave the highest possible rating, 10.

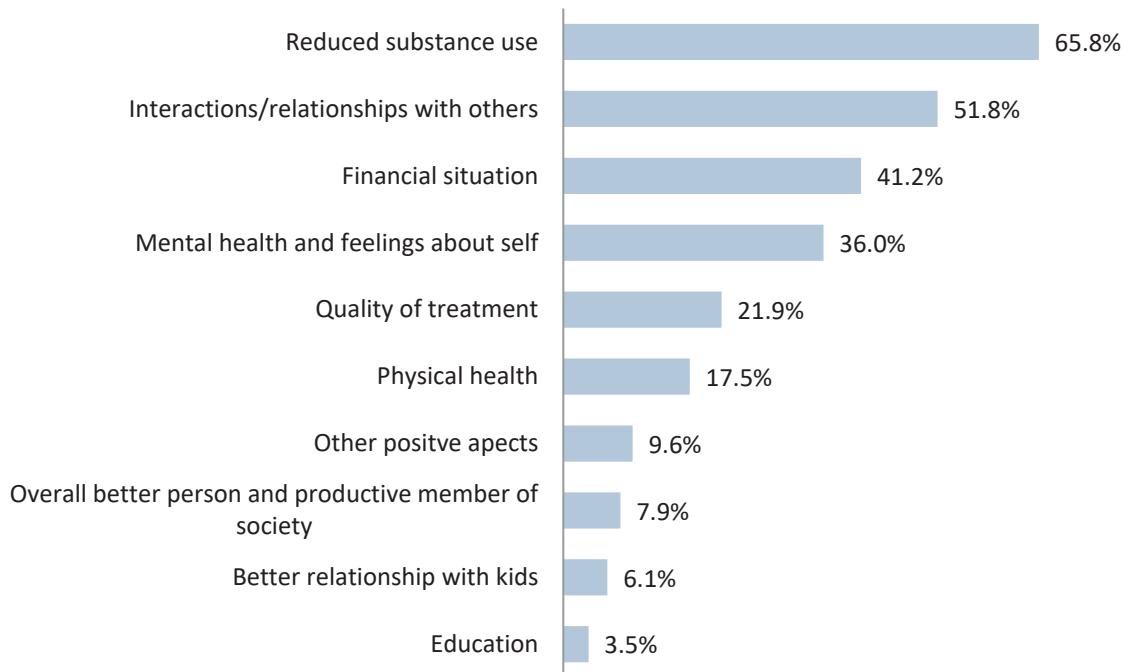
FIGURE 8.3. RATING OF EXPERIENCE AT THE PROGRAM (n = 114)



Positive and Negative Aspects of Program

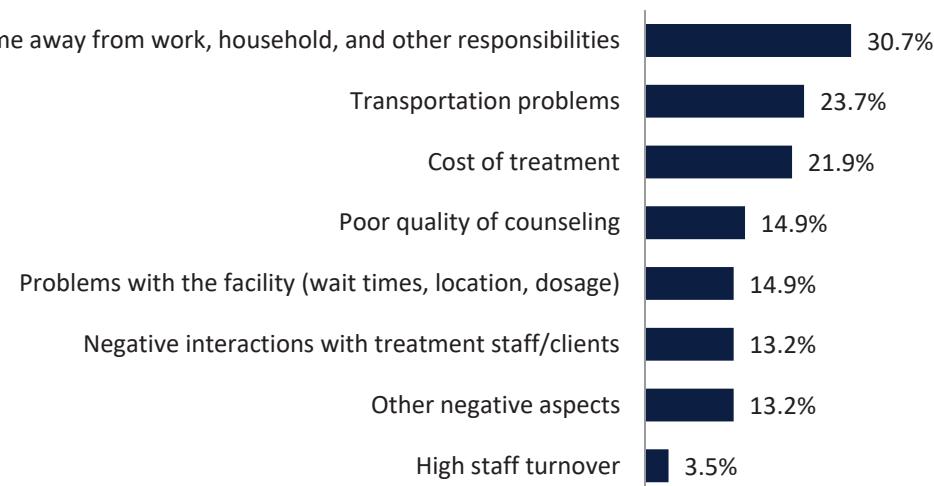
Clients were asked to identify the three most positive aspects of their participation in the program (Figure 8.4). Almost two-thirds of clients (65.8%) reported that reduction in substance use was a positive outcome and 51.8% of clients reported improved interactions and relationships with others was a positive aspect. About 41% of clients reported that changes in their financial situation and 36.0% reported improved mental health and feelings about self as positive aspects. Less than one-quarter of clients (21.9%) said the quality of treatment was a positive aspect and 17.5% of clients reported that changes in physical health was a positive aspect. Less than 1 in 10 clients reported that other aspects of treatment were positive (such as living situation or independence; 9.6%), being an overall better person and productive member of society (7.9%), better relationship with and/or custody of children (6.1%), and education (3.5%).

FIGURE 8.4. PERCENT OF CLIENTS REPORTING POSITIVE ASPECTS OF THE PROGRAM (N = 114)



Aspects of treatment that clients identified as problematic or needing improvement are displayed in Figure 8.5. The negative aspects of the program suggest barriers that clients must overcome to participate in the program. Specifically, time away from work, household, or other responsibilities (30.7%), transportation problems (23.7%), cost of the program (21.9%), and quality of counseling (e.g., not enough counseling; 14.9%). Other areas of difficulty included problems with the facility (such as wait times, location, dosage; 14.9%), negative interactions with staff or other clients (13.2%), other negative aspects such as effects of the medication and personal problems (13.2%), and high staff turnover (3.5%).

FIGURE 8.5. PERCENT OF CLIENTS REPORTING NEGATIVE ASPECTS OF THE PROGRAM (N = 114)



Section 9. Conclusion and Implications

The KORTOS 2020 Annual Follow-Up Report describes characteristics of 384 clients who participated in opioid treatment programs during calendar year 2018 and completed intake interviews. In addition, outcomes are presented for 114 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 ($n = 384$), over half were male and 45.6% were female with ages 18 to 63 (average age 38 years old). Most were White and the majority had at least a high school diploma or GED (80.1%). Almost half (49.0%) were unemployed in the six months before intake and of those clients ($n = 188$), 30.3% were looking for work. When looking at referral to treatment, about half of clients reported they were self-referred (50.5%), and 32.6% 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 39% reported 1-3 childhood experiences and 24.0% 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 neglect and sexual abuse before the age of 18 compared to men. Women also reported more household risks in childhood compared to men including having a household member with a mental illness and having parents who were separated or divorced. 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. More men, however, reported having been directly or indirectly threatened with a gun or held at gunpoint.

The majority of clients also reported symptoms that met study criteria for mental health problems such as depression (68.2%) and generalized anxiety (75.5%) in the past 6 months. Almost two-thirds (65.4%) reported having at least one medical problem (51.0% of clients with a medical problem mentioned Hepatitis C). Trend analysis shows that from CY 2013 to CY 2018 the percent of clients who reported chronic medical problems has increased from just under half of clients to almost two-thirds of clients. Clients reported an average of 12.9 days of poor health in the past 30 days, 16.9 days of poor mental health, and 12.6 out of 30 days that their poor physical or mental health limited their activities. About 15% of KORTOS clients had no medical insurance and 60.7% had Medicaid.

Among the clients who were not incarcerated all 180 days before entering the program, the majority reported using illegal drugs (96.1%) and smoking tobacco (83.0%) while less than one-fifth of clients reported using alcohol (19.1%) in the 6 months before intake. Less than one-quarter reported only using opioids (22.3%) while 72.0% reported using opioids and at least one other class of drug.

Close to 15% of clients reported being arrested at least once and 15.4% reported being incarcerated at least one night in the 6 months before entering treatment. In addition, 13.3% of clients reported being under supervision by the criminal justice system.

Areas of Success

The 2020 evaluation findings indicated that Kentucky opioid treatment programs have been successful in facilitating substantial positive changes in clients' lives. Results for those who were included in the followed-up analysis ($n = 114$) 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 96.4% of clients reporting any illegal drug use at intake compared to 39.6% at follow-up. Close to three-quarters of clients (72.8%) reported misusing prescription opioids (such as morphine, Percocet, Oxycontin, Lortab) at intake, whereas 10.5% of clients reported prescription opioid misuse at follow-up. Approximately two-thirds of followed-up clients also reported heroin use at intake and that percent significantly decreased to 13.2% at follow-up. The percent of clients using non-prescribed methadone and bup-nx also decreased significantly. Not only did clients' use of overall opioids decrease significantly, but also their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, and stimulants) decreased from almost three-quarters to slightly more than one-quarter. In addition, the percent of clients with ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) decreased from 96.2% at intake to 11.5% at follow-up.

Medication-Assisted Treatment

In the 6 months before entering treatment, 28.9% of clients who were not incarcerated all 180 days before treatment, reported they had received medication from a clinic or doctor's office to help with their substance abuse. The majority of clients (87.9%) reported that they think their use of medication-assisted treatment helped treat their drug problem.

The majority of clients, who were not incarcerated all 180 days before treatment entry or in the past 6 months at follow-up (83.3%) reported that they received methadone in the past 6 months at follow-up. About 15% of clients reported receiving Suboxone and 1.8% received Vivitrol. Overall, at follow-up, 99.1% of clients reported that they think their use of medication-assisted treatment helped treat their drug problem.

Mental Health and Physical Health

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 18.4% at intake to 3.5% at follow-up.

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.

Clients' physical health was also better 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. 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. At both intake and follow-up, the majority of clients reported that they had health insurance with around two-thirds reporting they had health insurance through Medicaid.

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, 16.7% of clients reported having been arrested in the 6 months before entering treatment and, at follow-up, 7.0% of clients reported an arrest in the past 6 months. About 12% of clients reported spending at least one night in jail or prison in the past 6 months at intake compared to 7.9% of clients at follow-up. Past-6-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 Life and Well-Being

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 6 years. In addition, clients rated their functioning and well-being on areas such as personal, interpersonal, social, and overall well-being as significantly higher at follow-up compared to intake.

Economic Status and Living Circumstances

KORTOS clients showed improvements in economic and living circumstances from intake to follow-up. The average highest level of education increased significantly from intake (12.8) to follow-up (13.1), where 12 = High school diploma or GED. Specifically, there was a significant increase in the percent of clients reporting attending/completing vocational school, college, or graduate school from 39.8% at intake to 67.0% at follow-up. About 47% of clients reported being employed full-time at follow-up compared to 34.2% at intake. Furthermore, the average number of months clients reported working in the past 6 months increased from 2.6 months at intake to 3.3 months at follow-up. In addition, the percent of clients who considered themselves homeless in the past 6 months decreased significantly from 24.6% at intake to 8.8% follow-up. Finally, the percent of clients reporting difficulty meeting basic living needs (e.g., shelter, utilities, phone, food) and the percent of clients who reported difficulty meeting health care needs (e.g., doctor visits, dental visits, and prescription medications) for financial reasons decreased significantly from intake to follow-up.

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, 44.3% 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, 84.6% 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. The majority of clients (89.5%) stated they thought they had a moderately or very good chance of staying off drugs or alcohol 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 a 9.0 with 89.5% of clients giving a highly positive rating of 8 through 10. The majority of clients reported that when they told their counselor or program staff personal things, they felt listened to and that the treatment approach and method was a good fit for them. In addition, clients felt that their expectations and hopes for treatment and recovery were met and that they felt they had input into their treatment goals, plans, and progress. Clients reported many positive aspects of their participation in the program including reduced substance use, improved relationships with others, improved financial situation, and improved mental health and their feelings about themselves.

Areas of Concern

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

Illegal Drug Use

When looking at trends over time in past-30-day use at intake, results show that while prescription opioid and methadone use has decreased gradually over the past 12 years, heroin use has sharply increased since CY 2011. Compared to heroin and prescription opiates, methamphetamine is relatively low; however, use has increased from 13.7% in CY 2017 to 24.3% in CY 2018.

Also, almost 37% of KORTOS clients reported using illegal drugs in the 6 months before follow-up. Of those 41 clients, 36.6% reported non-prescribed opioid use (including prescription opioids, methadone, and bup-nx), 36.6% reported heroin use, and 73.2% reported illicit drugs other than prescription opioids or heroin. Overall, for the follow-up sample, 10.5% of clients still used prescription opioids, 13.2% reported using heroin, and 26.8% reported use of non-opioid drugs at follow-up. Similarly, in the past 30 days at follow-up, 7.2% of clients were still using heroin and 22.0% were still using non-opioid drugs. 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^{89,90} and longer treatment retention has been associated with more positive outcomes.^{91,92}

In addition, although the percent of clients who met DSM-5 criteria for severe SUD decreased at follow-up, 6.1% still met criteria for severe substance use disorder for drug use and 11.5% of clients still had ASI drug composite scores that met the cutoff for severe substance use disorder. While the percent of clients who reported substance use decreased from intake to follow-up, 25.5% 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 6% of 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.⁹³ Smoking has been associated with increased mental health symptoms and physical health problems.^{94,95} 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.⁹⁶ Voluntary smoking cessation during substance abuse treatment has been associated with lower relapse.

In addition, almost 3 in 10 clients reported the use of e-cigarettes at follow-up. In fact, trend analysis shows that the percent of clients reporting e-cigarette use has increased over time at follow-up. While e-cigarettes are widely believed to be a mechanism for smoking cessation and/or a less dangerous alternative to conventional cigarettes, they also carry their own health risks. Although e-cigarettes contain lower levels of carcinogens compared to regular tobacco cigarettes,⁹⁷ the e-cigarette still contains potent cancer-causing toxins as well as chemicals that can trigger

⁸⁹ 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.

⁹⁰ 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.

⁹¹ 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.

⁹² 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.

⁹³ 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.

⁹⁴ 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.

⁹⁵ 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.

⁹⁶ Baca, C., & Yahne, C. (2009). Smoking cessation during substance abuse treatment: What you need to know. *Journal of Substance Abuse Treatment*, 36, 205-219.

⁹⁷ Goniewicz ML, Knysak J, Gawron M, Kosmider L, Sobczak A, et al. (2014). Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tobacco Control*, 23(2), 133-39.

cardiovascular and lung disease,^{98,99} and gene mutation.¹⁰⁰

Mental and Physical Health

While there were significant reductions in clients meeting study criteria for depression and generalized anxiety, over one-quarter of clients still reported experiencing symptoms of depression and 35.1% of clients still reported generalized anxiety symptoms at follow-up. In addition, 2 in 10 clients met study criteria for comorbid depression and generalized anxiety at follow-up. Further, almost one-third of clients were worried about their personal safety at follow-up. Also, while chronic pain decreased significantly from intake to follow-up, a little more than 1 in 3 clients still reported chronic pain at follow-up. In addition, 15.8% of clients reported some type of interpersonal victimization in the past 6 months 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.¹⁰¹ While the percent of participants who reported having difficulty meeting needs for financial reasons decreased at follow-up, over 1 in 3 clients at follow-up still reported having difficulty meeting basic living needs and almost 1 in 4 still reported difficulty meeting health care needs. Similarly, while the percent of clients reporting current full-time employment increased significantly, almost half of clients remained unemployed at follow-up. Furthermore, almost 1 in 10 clients still considered themselves homeless at follow-up. The resulting financial strain from these economic factors could lead to increased substance use to alleviate the stress.¹⁰² 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.

Gender Differences on Targeted Factors

SUBSTANCE USE

There were several gender differences in targeted factors. Significantly more men reported prescription opioid misuse in the 6 months before intake and follow-up. Significantly more men than women also reported using non-prescribed bup-nx in the past 30 days at intake. Alcohol use was also reported by significantly more men in the 6 months before entering treatment. Significantly more men also reported they were considerably or extremely troubled or bothered by drug or alcohol problems in the past 30 days at intake. Further, significantly more men met study criteria for severe SUD at intake compared to women. Finally, though only a relatively small

⁹⁸ Drummond, M. B., & Upson, D. (2014). Electronic cigarettes. Potential harms and benefits. *Annals of the American Thoracic Society*, 11(2), 236-242.

⁹⁹ Glantz, S. A., & Bareham, D. W. (2018). E-cigarettes: use, effects on smoking, risks, and policy implications. *Annual Review Of Public Health*, 39, 215-235.

¹⁰⁰ Canistro, D., Vivarelli, F., Cirillo, S., Marquillas, C. B., Buschini, A., Lazzaretti, M., et al. (2017). E-cigarettes induce toxicological effects that can raise the cancer risk. *Scientific reports*, 7(1), 1-9.

¹⁰¹ <http://blog.samhsa.gov/2012/03/23/defintion-of-recovery-updated/>

¹⁰² 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.

percentage of clients reported using smokeless tobacco at intake and follow-up, there was a significant difference by gender at intake with significantly more men reporting smokeless tobacco use at the past 6 months and past 30 days.

MENTAL AND PHYSICAL HEALTH

Significantly more women met study criteria for generalized anxiety and comorbid depression and generalized anxiety at intake compared to men. Women reported a higher average number of days of poor mental health at intake compared to men. In addition, significantly more women reported being insured by Medicaid and significantly more men than women reported having no health insurance at both intake and follow-up.

CRIMINAL JUSTICE INVOLVEMENT AND VICTIMIZATION

Significantly more men reported having been arrested at least one time at follow-up compared to women. In addition, at follow-up, significantly more men reported having spent at least one night in jail or prison compared to women.

EDUCATION, ECONOMIC STATUS, AND EMPLOYMENT

At follow-up, significantly fewer men reported that their highest level of education was a high school diploma or GED compared to women. Significantly more men, however, reported they had some vocational school to graduate school at follow-up compared to women. In the past 6 months at both intake and follow-up, men reported working a greater average number of months (3.6 and 4.3, respectively) compared to women (1.7 and 2.3, 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 6 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 \$0.63 for every dollar employed men made and at follow-up, the gap in median hourly wages was still present, with employed women making only \$0.67 for every dollar employed men made. Further, significantly more women reported they considered themselves homeless at intake and follow-up compared to men. At intake, significantly more women reported difficulty meeting their health care needs and, at follow-up, significantly more women reported having difficulty meeting basic living needs compared to men.

Study Limitations

The study findings must be considered within the context of the study's limitations. First, 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 medication-assisted 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.^{103,104,105} For example, in many studies that have compared agreement between self-report and urinalysis the concordance or agreement is acceptable to high.^{106,107,108} 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.^{109,110,111} In other studies, higher percentages of underreporting have been found.¹¹² 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.¹¹³ 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.¹¹⁴ Therefore, the study method includes several key strategies to facilitate accurate reporting of sensitive behaviors at follow-up including: (a) the follow-up interviews are conducted by telephone with a University of Kentucky Center on Drug and Alcohol Research (UK CDAR) staff person who is not associated with any opioid replacement treatment program; (b) the follow-up responses are confidential and are reported at a group level, meaning no individual responses are linked to participants' identity; (c) the study procedures, including data protections, are consistent with federal regulations and approved by the University of Kentucky Human Subjects Institutional Review Board; (d) confidentiality is protected under Federal law through a Federal Certificate of Confidentiality; (e) participants can skip any question they do not want to answer; and (f) UK CDAR staff are trained to facilitate accurate reporting of behaviors and are regularly supervised for quality data collection and adherence to confidentiality.

¹⁰³ 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.

¹⁰⁴ 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.

¹⁰⁵ 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.

¹⁰⁶ 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.

¹⁰⁷ 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.

¹⁰⁸ 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.

¹⁰⁹ 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.

¹¹⁰ 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.

¹¹¹ Williams, R. J., & Nowatzki, N. (2005). Validity of self-report of substance use. *Substance Use & Misuse*, 40, 299-313.

¹¹² 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.

¹¹³ 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.

¹¹⁴ Williams, R. J., & Nowatzki, N. (2005). Validity of self-report of substance use. *Substance Use & Misuse*, 40, 299-313.

Conclusion

The 2020 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 recovery¹¹⁵: 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.

"Without the program I would not be as focused as a human being, completing my goals, or having a better life. It's really helped me to become a better person. I'm grateful to have the opportunity to be there."

KORTOS FOLLOW-UP CLIENT

¹¹⁵ <http://blog.samhsa.gov/2012/03/23/definition-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 reliability¹¹⁶ 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 2018, the target month for the follow-up interview was June 2019. 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 2019, interviewers began working to locate and contact the individual in May and could work the file until the end of August.

Of the 384 clients who completed an intake interview in 2018, 210 (54.7%) agreed to be contacted for the follow-up study. From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one mailing address) and whose intakes were submitted to CDAR less than 30 days after the intake was completed, which left a sample of 198 clients.

Of the 198 clients included in the follow-up sample, 22 were ineligible for participating in the follow-up interview,¹¹⁷ which left 176 clients eligible at the time of the follow-up. Of these clients, 123 completed a follow-up interview (see Table AA.1). Thus, the follow-up rate was 69.9%. However, in December 2018, the decision was made to include clients who were no longer in the OTP in the follow-up sample. Because this change was made in the middle of the fiscal year of follow-ups, this report year, clients who were no longer in an OTP but received a follow-up interview ($n = 9$) were not included in the follow-up analysis. Thus, the follow-up sample size for analysis is 114.

The remaining clients were never successfully contacted, or if contacted they never completed the follow-up interview ($n = 53$, or 30.1% of the cases eligible for follow-up). Compared to previous

¹¹⁶ 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.

¹¹⁷ 12 were no longer at the OTP, 9 were incarcerated, and 1 had died at the time of follow-up, see Table AA.2.

reports, the number of individuals in the expired category has increased. First, the quality of contact information collected at the time of intake interviews has worsened over time. Second, the percent of individuals who ever answer the follow-up interviewers' phone calls is decreasing. The volume of scam-related or robocalls increased 35% in 2019, accounting for over one-third of personal calls in the U.S.¹¹⁸ Both of these factors have necessitated changes in procedures and strategies, which the follow-up study team has developed and put into place. The project interviewers' efforts accounted for 73.2% (n = 145) of the cases included in the follow-up sample. The only cases not considered accounted for are those individuals who are classified as expired.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 198)

	Number of Records	Percent
Ineligible for follow-up interview	22	11.0%
	Number of cases eligible for follow-up (n = 176)	
Completed follow-up interviews	123*	
Follow-up rate is calculated by dividing the number of completed interviews by the number of eligible cases and multiplying by 100		69.9%
Expired cases (i.e., never contacted, did not complete the interview during the follow-up period)	53	
Expired rate ((the number of expired cases/eligible cases)*100)		30.1%
Refusal	0	
Refusal rate ((the number of refusal cases/eligible cases)*100)		0.0%
Cases accounted for (i.e., records ineligible for follow-up + completed interviews + refusals)	145	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		73.2%

*Note. While 123 follow-ups were completed, 9 were not included in the follow-up analysis as mentioned in the paragraph above Table AA.1.

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 22 cases that were ineligible for follow-up, the majority (54.5%) were ineligible because they were no longer receiving treatment at an OTP during the follow-up period. About 41% of clients were ineligible because they were incarcerated at the time of follow-up and 4.5% of clients were ineligible because they were deceased.

¹¹⁸ <https://www.usatoday.com/story/tech/news/2019/12/04/robocalls-us-eighth-most-spammed-country-report/2613528001/>

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 22)¹¹⁹

	Number	Percent
Incarcerated	9	40.9%
Death	1	4.5%
No longer in treatment	12	54.5%

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.

¹¹⁹ This table does not include the 9 clients who completed a follow-up, but were not included in the follow-up sample analysis since the clients were not ineligible based upon the change in sampling methods in December 2018.

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.

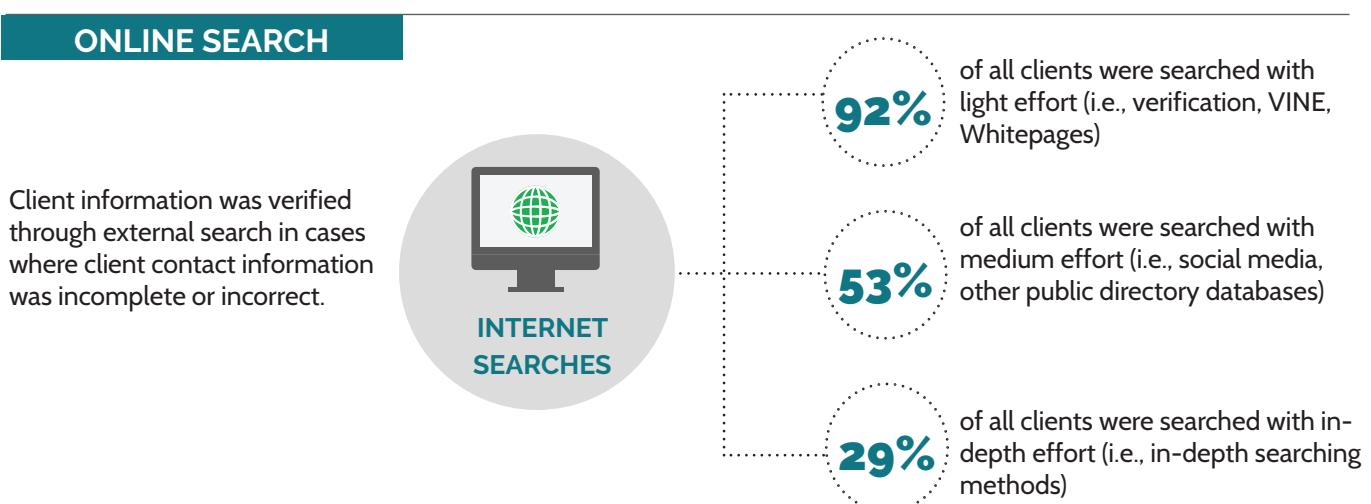
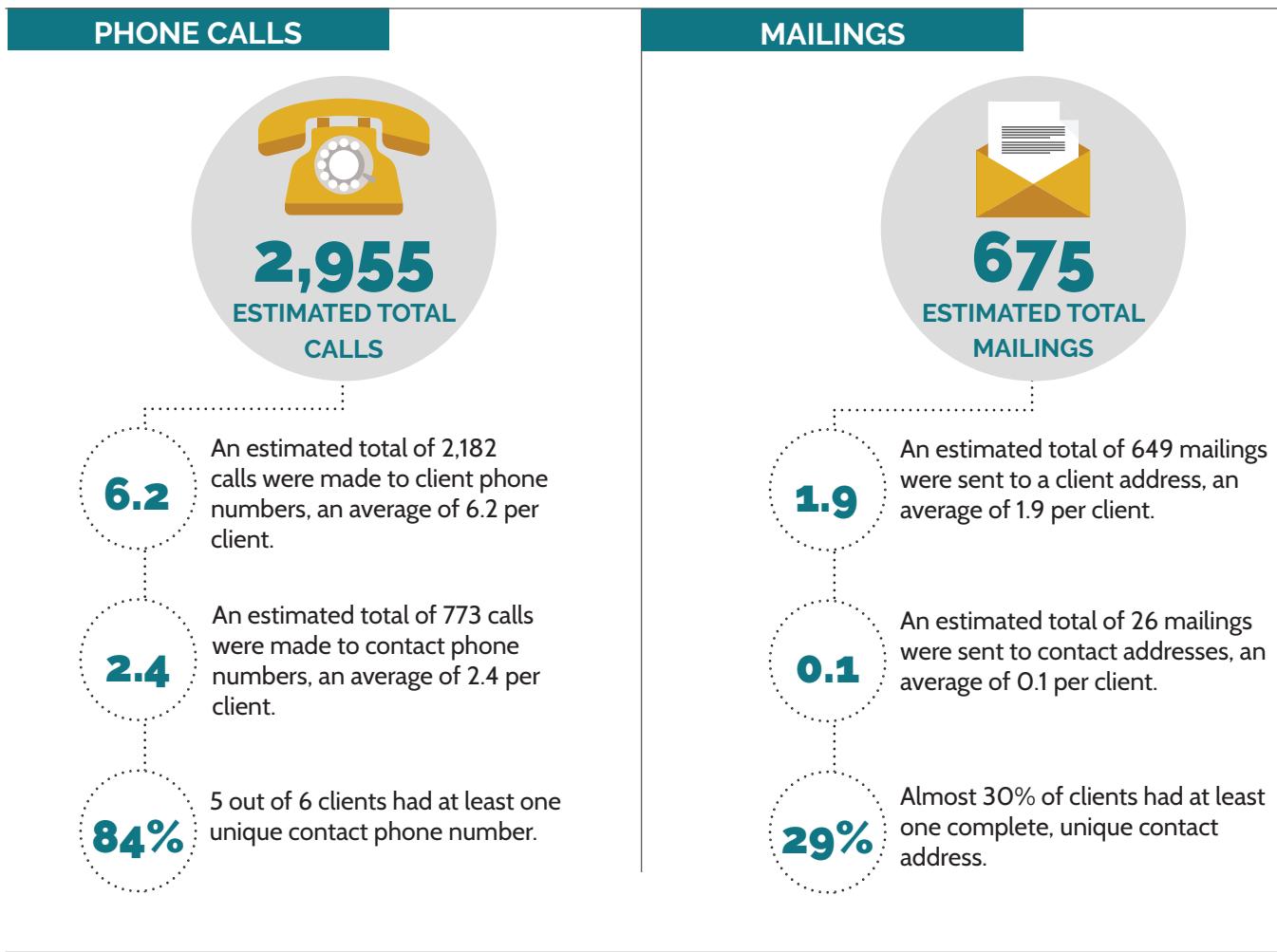
A total of 649 mailings were sent to client addresses and 26 mailings were sent to contact persons, an average of 1.9 mailings to clients and 0.1 mailings to contact persons. The research team received returned mail for 12.3% of clients that received mailings to client addresses and 1.4% of clients that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



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) or not included in the follow-up analysis.

Demographics

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

TABLE AC.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP¹²⁰

	FOLLOWED UP	
	NO n = 270	YES n = 114
Age.....	38.3 years	36.8 years
Gender		
Male.....	57.0%	48.2%
Female	43.0%	51.8%
Race		
White.....	94.8%	93.9%
African American	1.5%	3.5%
Other or Multiracial.....	3.7%	2.6%
Marital status		
Never married.....	21.5%	21.1%
Married.....	23.7%	24.6%
Separated or divorced	16.3%	24.6%
Widowed.....	3.0%	3.5%
Cohabiting	35.6%	26.3%

¹²⁰ 7 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 prescription opioids/opioids, heroin, and marijuana. The only significant difference between clients who completed a follow-up and clients who did not complete a follow-up interview was for non-prescribed methadone 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 = 270	YES n = 114
Any illegal drug.....	95.9%	96.5%
Prescription opioid/opiate (illegal use).....	69.6%	72.8%
Heroin	67.0%	65.8%
Marijuana.....	49.6%	45.6%
CNS depressants	31.9%	30.7%
Cocaine	28.1%	26.3%
Stimulants (amphetamines, methamphetamine, prescription stimulants)	31.5%	35.1%
Non-prescribed bup-nx.....	29.3%	28.1%
Non-prescribed methadone*.....	12.2%	21.1%
Other illicit drugs (hallucinogens, inhalants, synthetic drugs).....	7.0%	3.5%

*p < .05.

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 = 270	YES n = 114
Alcohol.....	20.0%	17.5%
Alcohol to intoxication.....	11.5%	12.3%
Binge drank alcohol (i.e., drank 5 or more [4 for women]) drinks in 2 hours	10.0%	9.6%

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

smokeless tobacco or e-cigarettes.

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

	FOLLOWED UP	
	NO n = 270	YES n = 114
Smoked tobacco.....	83.3%	82.5%
Smokeless tobacco.....	13.3%	9.6%
E-cigarettes.....	13.3%	19.3%

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.¹²¹ 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 severe alcohol and/or drug SUD with no difference by follow-up status. The average score for the drug severity composite score was 0.38 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

Recent substance use problems among clients who were....	Not in a controlled environment all 30 days before entering treatment	
	FOLLOWED UP	
	NO n = 264	YES n = 111
Percentage of clients with ASI composite score equal to or greater than cutoff score for...		
Severe alcohol or drug use disorder.....	92.4%	93.7%
Severe alcohol use disorder.....	7.2%	7.2%
Severe drug use disorder	93.5%	93.7%
Average composite score for alcohol use ^a04	.05
Average composite score for drug use ^b38	.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.

¹²¹ 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.

There were no significant differences between the groups for having ever been in substance abuse treatment (see Table AC.6). Among clients who reported a history of substance abuse treatment, the average number of lifetime treatment episodes was 4.1 for those who did not complete a follow-up and 3.5 for those that did; however, this was not a statistically significant difference.

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

	FOLLOWED UP	
	NO n = 270	YES n = 114
Ever been in substance abuse treatment in lifetime	75.6%	70.2%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 204)	(n = 80)
Mean number of times in treatment.....	4.1	3.5

Mental Health at Intake

The mental health questions included in the KORTOS intake and follow-up interviews are not clinical measures, but instead are research measures. A total of 9 questions were asked to determine if they met study criteria for depression, including at least one of the two leading questions: (1) “Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?” and (2) “Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?”. There was no significant difference between clients who completed a follow-up interview and clients who did not complete a follow-up interview for the percent of clients who met criteria for depression: 71.1% vs. 67.0% (see Table AC.7).

A total of 7 questions were asked to determine if clients met study criteria for generalized anxiety, including the leading question: “In the 6 months before entering this program, did you worry excessively or were you anxious about multiple things on more days than not for all 6 months (like family, health, finances, school, or work difficulties)?”. There was no significant difference between clients who completed a follow-up interview and clients who did not complete a follow-up interview for the percent of clients who met criteria for generalized anxiety: 78.1% vs. 74.4%.

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.

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

	FOLLOWED UP	
	NO n = 270	YES n = 114
Depression	67.0%	71.1%
Generalized anxiety	74.4%	78.1%
Suicidality (e.g., thoughts of suicide or suicide attempts).....	14.8%	18.4%

Physical Health at Intake

To give an idea of the physical health of clients when they entered treatment, Table AC.8 presents the percent of clients that reported health problems at intake. There was not a significant difference for experiencing chronic pain (i.e., pain that lasted more than 3 months) at intake between clients who were and were not followed up. Clients were asked at intake if a doctor had ever told them they had any of the 12 chronic medical problems listed (e.g., asthma, arthritis, cardiovascular disease, diabetes, chronic obstructive pulmonary disease [COPD], tuberculosis, severe dental disease, cancer, Hepatitis B, Hepatitis C, HIV, and other sexually transmitted diseases). The most commonly reported chronic medical problems are presented in Table AC.8: Hepatitis C, arthritis, severe dental disease, cardiovascular disease, and asthma. Significantly more clients who were followed up reported they had been told by a doctor that they had cardiovascular disease compared to clients who were not followed up (19.3% vs. 11.1%).

TABLE AC.8. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 270	YES n = 114
Chronic pain (lasting at least 3 months)	47.0%	54.4%
Ever told by a doctor that client had one of the 12 chronic medical problems listed	62.6%	71.9%
Hepatitis C.....	32.6%	35.1%
Arthritis	15.9%	23.7%
Severe dental disease.....	17.8%	20.2%
Cardiovascular disease*	11.1%	19.3%
Asthma.....	8.9%	11.4%

*p < .05.

Socioeconomic Indicators

There were no significant differences between the groups on clients' level of education when entering treatment. Around 20% of clients reported less than a high school diploma or GED at intake. Around 42% of clients who were not followed up and 39.0% of clients who were followed up reported having a GED or high school diploma. Close to 40% of clients in both groups attended vocational school or higher.

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

	FOLLOWED UP	
	NO n = 270	YES n = 114
Highest level of education completed		
Less than GED or high school diploma	19.6%	21.0%
GED or high school diploma.....	42.2%	39.0%
Vocational school to graduate school.....	38.1%	40.0%

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 = 270	YES n = 114
Employment		
Not currently employed	45.9%	56.1%
Full-time.....	43.0%	34.2%
Part-time.....	8.1%	7.9%
Occasional.....	3.0%	1.8%

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

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

	FOLLOWED UP	
	NO n = 270	YES n = 114
Usual living arrangement in the 6 months before entering the program		
Own home or apartment.....	62.6%	55.3%
Someone else's home or apartment	28.5%	37.7%
Institutional facility, hotel or on the street.....	8.9%	7.0%
Homelessness		
Consider themselves to be currently homeless	23.0%	24.6%

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 = 270	YES n = 114
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food).....	48.1%	54.4%
Had difficulty obtaining needed health care for financial reasons	34.8%	35.1%

Criminal Justice System Involvement at Intake

Around 12% of clients who completed a follow up interview and 13.7% 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 number of clients who were arrested for any charge in the 6 months before entering the program by follow up status (14.1% vs 16.7%). Of those who had been arrested,

however, clients who completed a follow-up interview reported significantly more arrests compared clients who did not complete a follow up interview (2.2 vs. 1.3).

There was no significant difference between the groups for the number of clients who were incarcerated at least one night in the 6 months before entering the program. 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 12.4 nights and clients who did not complete a follow-up interview reporting an average of 26.7 nights.

TABLE AC.13. CRIMINAL JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING TREATMENT ¹²²

	FOLLOWED UP	
	NO n = 270	YES n = 114
Currently under supervision by the criminal justice system.....	13.7%	12.3%
Arrested for any charge in the 6 months before entering treatment.....	14.1%	16.7%
Of those arrested	n = 38	n = 19
Average number of arrests*	1.3	2.2
Incarcerated in the 6 months before the program.....	16.9%	12.3%
Of those incarcerated	n = 45	n = 14
Average number of nights in jail.....	26.7	12.4

*p < .05.

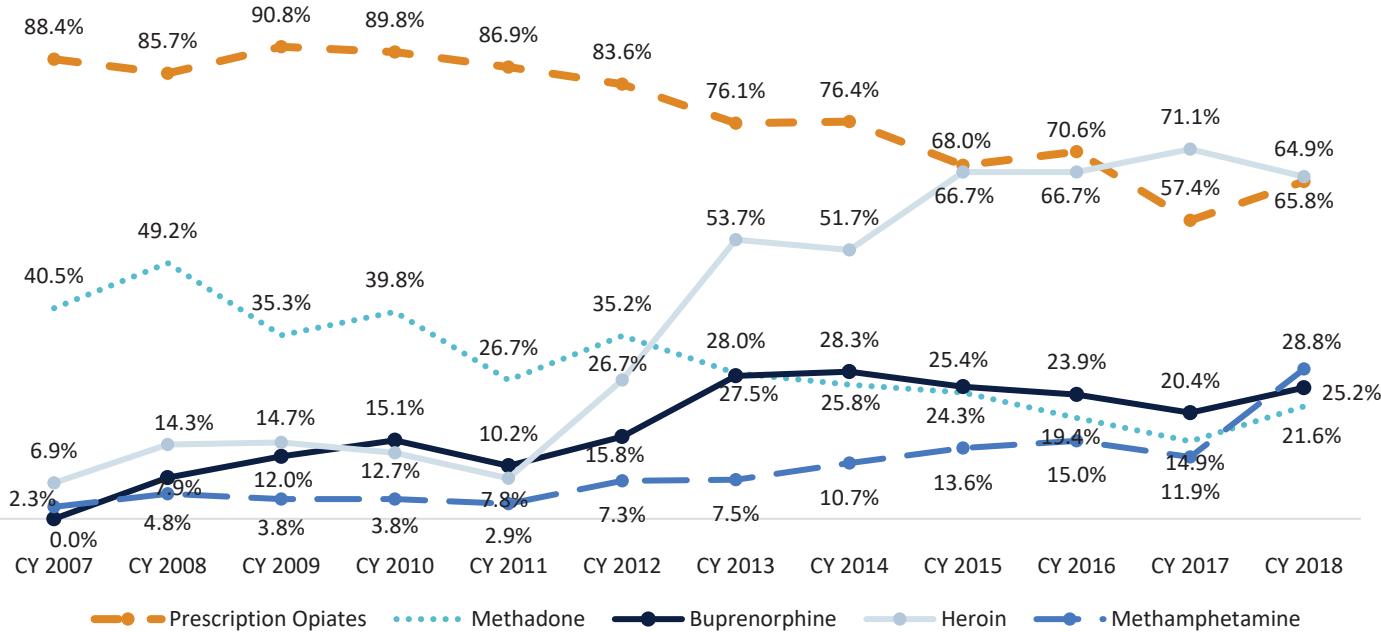
¹²² One client who was not followed up, was missing data on arrest and incarceration at intake.

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, but increased slightly again in CY 2018. 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 fairly stable since. The use of methamphetamine was relatively steady from CY 2007 to CY 2010, but has gradually increased since CY 2011 with a seemingly greater increase in CY 2018.

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 CY 2011 (7.8%) to CY 2012 (26.7%) and then the percentage doubled to 53.7% in CY 2013. In CY 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 CY 2016. In CY 2017, the percent of clients reporting heroin use increased again to 71.1%.

FIGURE AD.1. PERCENT OF FOLLOWED-UP CLIENTS REPORTING NON-PRESCRIBED USE OF PRESCRIPTION OPIOIDS, METHADONE, BUP-NX, HEROIN, AND METHAMPHETAMINES IN THE 30 DAYS BEFORE ENTERING TREATMENT (n = 2,105)¹²³



¹²³ Clients who reported being in a controlled environment all 30 days before entering treatment are not included in this analysis.