



**Kentucky Opiate Replacement  
Treatment Outcome Study**

**2016**

## Executive Summary

**T**his report summarizes client outcomes from a statewide evaluation of opiate treatment programs (OTPs). The goal of the Kentucky Opiate Replacement Treatment Outcome Study (KORTOS) is to examine client satisfaction, recovery support, and outcomes for several specific targeted factors including: (1) substance use and severity of substance use; (2) mental health, stress, and physical health; (3) education and employment; (4) homelessness, living situation, and economic hardship; and (5) criminal justice system involvement. This report presents findings on outcomes for 223 men and women who participated in an OTP from January 2014 through December 2014 and then completed a follow-up interview about 6 months later.

Results show that program clients reported high levels of satisfaction with their experience at the OTP. The vast majority of clients reported that they were treated with respect, understood the expectations of the program, felt better about themselves, and got the services needed to get better at the OTP. In addition, clients reported many positive aspects of their participation in the OTP including decreased substance use, improved relationships with others, improved mental health and their feelings about

themselves, and improved financial situation. Further, clients rated their quality of life and their satisfaction with their lives as significantly higher after participating in the OTP. At follow-up, clients also had significantly more positive feelings and fewer negative feelings than they experienced at intake. Compared to intake, significantly more individuals at follow-up reported they had attended mutual help recovery group meetings in the past 30 days. At follow-up, clients also reported having significantly more people they could count on for recovery support than at intake.

There were significant reductions in drug use and alcohol use as well as self-reported substance use severity. For example, 80% of clients reported using prescription opiates in the past 6 months at intake, whereas only 11% of clients reported using prescription opiates at follow-up. Also, over half of clients (55%) reported heroin use at intake, while only a little more than 11% of clients reported heroin use at follow-up. Not only did clients' use of opioids/opiates decrease significantly from intake to follow-up, but their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, stimulants) also decreased significantly. The number of KORTOS clients with an ASI composite score indicating severe drug use disorder decreased

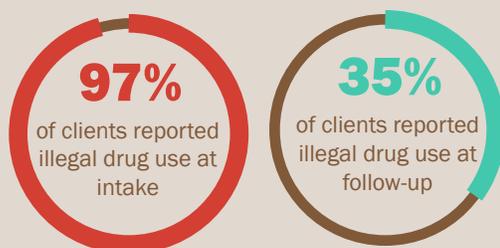
significantly. Additionally, even though only a minority of clients reported using alcohol in the 6 months before intake, this number decreased significantly at follow-up. The mental health of clients who participated in treatment was significantly improved at follow-up with fewer clients reporting symptoms of depression, generalized anxiety, comorbid depression and anxiety, and suicidal thoughts or attempts. Also, overall stress and physical health was better for clients at follow-up than at intake. Specifically, clients reported significantly reduced stress-related health consequences, number of days of poor physical and mental health, and number of days their physical

or mental health problems limited their daily activities at follow-up when compared to intake. Finally, significantly fewer clients reported they had experienced chronic pain in the 6 months before follow-up than the 6 months before treatment intake.

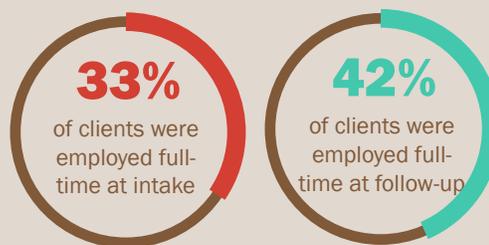
Change in education was not significantly different from intake to follow-up with over 80% of clients at both points having at least a high school diploma or GED. Current employment status significantly improved with 42% of clients reporting full-time employment at follow-up compared to 33% of clients at intake. Changes in living situation were improved for a significant number of clients. The

**Overall, KORTOS clients had significant improvements in key factors that have been associated with facilitating recovery.**

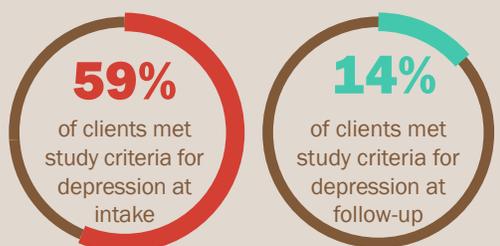
#### PAST-6-MONTH SUBSTANCE USE



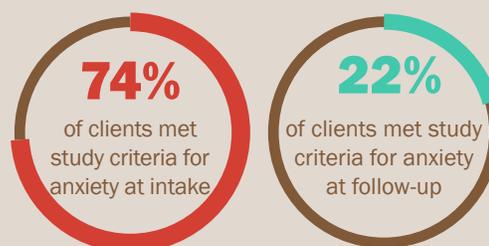
#### PAST-6-MONTH EMPLOYMENT



#### PAST-6-MONTH DEPRESSION



#### PAST-6-MONTH ANXIETY



number of clients who reported they were homeless at some point in the past 6 months decreased from 16% at intake to 6% at follow-up. In addition, significantly fewer clients reported living in a jail, treatment program, shelter, or on the street at follow-up compared to intake. Furthermore, at follow-up, fewer clients reported having economic hardship in terms of difficulty with being able to afford basic living needs (such as food, shelter, and utilities) at intake. At intake, 19% of clients reported an arrest in the 6 months before treatment compared to 6% in the past 6 months at follow-up. Further, 17% of clients reported being incarcerated in the past 6 months at treatment intake and 4% of clients reported being incarcerated in the past 6 months at follow-up.

There are, however, several findings that suggest additional opportunities to provide support after they begin treatment at OTPs. Co-occurring problem areas including tobacco smoking, mental health, and economic difficulties were reported by high numbers of participants. Smoking was very high for clients at intake and remained high at follow-up. Smoking has been associated with increased mental health symptoms and physical health problems. Smoking cessation, however, has been associated with lower alcohol and drug relapse and should, therefore, be encouraged in

treatment programs.<sup>1, 2</sup> In addition, while the number of participants reporting having difficulty meeting basic needs for financial reasons decreased at follow-up, 27% of clients still reported having difficulty meeting basic living needs at follow-up and 18% of clients reported they had difficulty meeting health care needs such as seeing a doctor when needed or obtaining a needed medical prescription. Similarly, while the number of clients reporting full-time employment increased significantly, 46% of clients remained unemployed at follow-up. In addition, though mental health symptoms improved, almost one-quarter of clients still reported generalized anxiety symptoms at follow-up. Furthermore, even though only a minority of clients reported using alcohol, there was a significant increase in problematic alcohol use from intake to follow-up, among those alcohol users. Providing support for these dimensions may help improve basic living situations for many clients and support continued recovery living for long-term positive results

---

<sup>1</sup> Brown, R., Strong, D., Abrantes, A., Myers, M., Ramsey, S., & Kahler, C. (2009). Effects on substance use outcomes in adolescents receiving motivational interviewing for smoking cessation during psychiatric hospitalization. *Addictive Behaviors, 34*, 887-891.

<sup>2</sup> Cooney, N., Litt, M., Cooney, J., Pilkey, D., Steinberg, H., & Oncken, C. (2007). Concurrent brief versus intensive smoking intervention during alcohol dependence treatment. *Psychology of Addictive Behaviors, 21*, 570-575.

after treatment.

The rise in heroin use in Kentucky has been evidenced by multiple sources including arrests, overdose fatalities, and ER visits. This increase in heroin use is also reflected in this year's KORTOS report. Even though the majority of KORTOS clients continue to report use of prescription opioids/opiates when they enter treatment, the percentage of clients who report using heroin in the 6 months before entering treatment has increased again in 2014 to 52% as compared to previous years: 48% in 2013, 26% in 2012, 9% in 2011, 10% in 2010, 9% in 2009, and 7% in 2008.

Finally, there were several gender differences in targeted factors. For example, overall, women had more symptoms of depression and more stress-related health consequences at intake and more symptoms of anxiety at follow-up compared to men. In addition, more women were currently unemployed at intake and follow-up and they reported working fewer months at intake and follow-up when compared to men. 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 \$0.82 for every dollar employed men made and at follow-up, the gap in median hourly wages increased, with

employed women making only \$0.72 for every dollar employed men made. Significantly more men reported using smokeless tobacco at intake and follow-up while more women reported using smoking tobacco at follow-up. In addition, more men reported drinking alcohol to intoxication and binge drinking at intake compared to women.

The 2016 KORTOS evaluation indicates that opiate treatment programs in Kentucky have been successful in facilitating positive changes in clients' lives in a variety of ways, including improved quality of life, decreased substance use, decreased severity of substance use, decreased mental health symptoms, decreased economic hardship, decreased involvement with the criminal justice system, and more support for recovery.



**THEY ARE JUST AMAZING.  
THE AMOUNT OF CARE  
THEY HAVE FOR YOU IS  
OVERWHELMING.”**

- KORTOS Follow-up Client

# Table of Contents

**Executive Summary ..... 2**

**Introduction and Overview ..... 8**

**Section 1. KORTOS Client Characteristics ..... 11**

    Description of KORTOS Clients at Treatment Intake..... 11

    KORTOS Follow-up Sample ..... 15

    KORTOS 2015 Quality of Data and Locator Efforts ..... 16

**Section 2. Client Satisfaction with Opiate Treatment Programs (OTPs) and Quality of Life Ratings ..... 18**

    Overall Client Satisfaction ..... 18

    Client Ratings of Program Experiences ..... 18

    Positive and Negative Aspects of OTP ..... 19

    Quality of Life and Satisfaction with Life ..... 20

**Section 3. Substance Use ..... 23**

    Alcohol and/or Drug Use ..... 24

    Any Illegal Drugs ..... 25

    Prescription Opioid Misuse..... 26

    Non-prescribed Use of Methadone ..... 28

    Non-prescribed Use of Buprenorphine ..... 29

    Heroin ..... 31

    Trend Alert: ..... 33

    Opioid/Opiate Use..... 33

    Other Non-opioid Drug Use ..... 34

    Alcohol Use ..... 35

    Self-reported Severity of Alcohol and Drug Use ..... 39

    Tobacco Use ..... 42

**Section 4. Mental Health, Stress, and Physical Health ..... 46**

    Depression Symptoms ..... 46

    Anxiety Symptoms ..... 47

    Comorbid Depression and Anxiety Symptoms ..... 49

    Suicide Ideation and/or Attempts..... 49

    Stress-related Health Consequences ..... 50

    Perceptions of Physical and Mental Health ..... 51

    Physical Health Issues ..... 52

**Section 5. Education and Employment ..... 54**

    Education ..... 54

    Employment..... 54

## Kentucky Opiate Replacement Treatment Program Outcome Study 2016 Annual Report

Presented by:  
 Kentucky Department  
 for Behavioral Health,  
 Developmental and Intellectual  
 Disabilities,  
 Division of Behavioral Health  
 275 East Main St.  
 Frankfort, KY 40621-0001  
 (502) 564-4527

**WENDY MORRIS**  
 Acting Commissioner,  
 Department for Behavioral  
 Health, Developmental and  
 Intellectual Disabilities

**NATALIE KELLY**  
 Director, Division of Behavioral  
 Health

**MAGGIE SCHROEDER**  
 Substance Abuse Treatment  
 Branch Manager

Report prepared by:  
 University of Kentucky Center  
 on Drug & Alcohol Research  
 333 Waller Avenue, Suite 480,  
 Lexington, KY 40504

The 2015 KORTOS report includes data from 223 clients at Kentucky opiate treatment programs (OTPs) who completed both an intake interview between January 1, 2014 and December 31, 2014 and a six month follow-up interview targeted between July 2014 and June 2015.

**Section 6. Homelessness, Living Situation, and Economic Hardship ..... 59**

Homelessness ..... 59

Living Situation..... 59

Economic Hardship..... 60

**Section 7. Criminal Justice System Involvement ..... 61**

Arrests..... 61

Incarceration ..... 62

Criminal Justice System Supervision ..... 63

**Section 8. Recovery Supports..... 64**

Mutual Help Recovery Group Meeting Attendance ..... 64

Number of People Client Can Count on for Recovery Support..... 64

What Will Be Most Useful in Staying Off Drugs/Alcohol..... 65

Chances of Staying Off Drugs/Alcohol..... 65

**Section 9. Implications and Conclusions ..... 67**

Areas of Concern..... 69

Study Limitations ..... 70

Conclusion ..... 71

**Appendix A. Methods ..... 72**

**Appendix B. Locating Efforts for the 2015 KORTOS Follow-up Study ..... 74**

**Appendix C. Client Characteristics at Intake for Those Who Completed Follow-up Interviews and Those Who Did Not Complete a Follow-up Interview ..... 77**

**Appendix D. Trends in Prescription Opioid, Methadone, Buprenorphine, and Heroin Use Among KORTOS Clients with a Completed Follow-up Survey..... 85**

Suggested citation: Cole, J., Logan, TK, Miller, J., & Scrivner, A. (2016). Kentucky's Opiate Replacement Treatment Program Outcome Study 2016 Annual Report. Lexington, KY: University of Kentucky, Center on Drug & Alcohol Research.



## 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 opiates is a continuing health concern in Kentucky where 4.1% of individuals 18 years and older report nonmedical use of pain relievers.<sup>3</sup> Since 2000, the rate of deaths from drug overdose involving opioids has increased 200%. In 2014, Kentucky had the 4th highest age-adjusted drug overdose death rate in the United States, with 24.7 deaths per 100,000 population,<sup>4</sup> and prescription opiates were the primary drug class involved in drug overdose deaths.<sup>5</sup>

One of the key methods for treating persons addicted to opioids who have not been successful in traditional substance abuse treatment programs is through medication assisted therapy (or treatment, MAT) primarily with methadone or buprenorphine. One of three priority areas of the United States Health and Human Services' (HHS) recently launched initiative to reduce prescription opioid- and heroin-related overdose, death, and dependence is to expand the use of medication-assisted therapy.<sup>6</sup> These federally regulated opiate treatment programs (OTPs) provide evidence-based, clinically monitored, medication-assisted therapy with methadone or buprenorphine.<sup>7</sup> Research evidence supports the effectiveness of methadone maintenance and buprenorphine maintenance in retaining clients in treatment and suppressing opioid use.<sup>8, 9, 10</sup> 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 buprenorphine multiplied by 5 from 2011 to 2013.<sup>11</sup>

In 2007, Kentucky OTPs began collecting outcome data on medication-assisted therapy. The outcome project is conducted in collaboration with the Kentucky Division of Behavioral Health and Narcotic Treatment Authority. In calendar year 2014, thirteen Kentucky licensed OTPs submitted

<sup>3</sup> 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 Behavioral Health Statistics and Quality.

<sup>4</sup> Rudd, R. A., Aleshire, N., Zibbell, J. E., & Gladden, R. M. (2016). Increases in drug and opioid overdose deaths—United States, 2000-2014. *Morbidity and Mortality Weekly Report*, 64(50), 1378-1382.

<sup>5</sup> Slavova, S., Bunn, T. L., & Gao, W. (2015). *Drug overdose deaths in Kentucky, 2000-2013*. Lexington, KY: Kentucky Injury Prevention and Research Center.

<sup>6</sup> 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.

<sup>7</sup> National Institute on Drug Abuse. (2011). *Prescription drugs abuse and addiction: research report series*. NIH Publication Number 05-4881. Retrieved from <http://drugabuse.gov/publications/research-reports/prescription-drugs>

<sup>8</sup> 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).

<sup>9</sup> Kakko, J. Svanborg, K. D., Kreek, M J., & Heilig, M. (2003). 1-year retention and social function after buprenorphine-assisted relapse prevention treatment for heroin dependence in Sweden: A randomised, placebo-controlled trial. *Lancet*, 361, 662-668.

<sup>10</sup> Mattick, R. P., Kimber, J., Breen, C., & Davoli, M. (2008). Methadone maintenance therapy versus placebo or methadone maintenance for opioid dependence. *Cochrane Database of Systematic Reviews*, 2. CD002207.

<sup>11</sup> Substance Abuse and Mental Health Services Administration. (2015). *Behavioral health barometer: Kentucky, 2014*. HHS Publication No. SMA-15-4895KY. Rockville, MD: Substance Abuse and Mental Health Services Administration.

data for KORTOS.<sup>12</sup> The Kentucky Opiate Replacement Treatment Outcome Study (KORTOS) includes client-level intake data collected by OTPs as part of their licensure agreements. Through a contract with the Division of Behavioral Health, the data are submitted to the University of Kentucky Center on Drug and Alcohol Research (UK CDAR) where 6-month follow-up interviews are completed with consenting maintenance treatment clients. The KORTOS project collects data from clients at licensed OTPs since they follow clinical monitoring protocols; thus this report does not include data from independent physicians who prescribe buprenorphine outside of an OTP.

In this annual KORTOS report, data are included on 236 clients from Kentucky OTPs who completed both an intake interview between January 1, 2014 and December 31, 2014 and a six-month follow-up interview targeted between July 1, 2014 and June 30, 2015. A total of 717 clients completed an intake survey that was submitted to CDAR. Of these clients, 374 agreed to be contacted for the follow-up survey (52.2% agreement rate).<sup>13</sup> A total of 334 were selected into the follow-up sample, and of these 291 were eligible for the follow-up survey 6 months later.<sup>14</sup> Of these 291 clients, interviewers completed follow-up surveys with 236 clients (83.8% follow-up rate). To help facilitate the honest evaluation of client outcomes and evaluation of program services, the follow-up interviews were independently conducted over the telephone by UK CDAR staff and the program and responses were kept confidential (see Appendices A and B for detailed information about the methods and locating efforts).

Results are reported within nine main sections.

**Section 1. Overview and Description of KORTOS Clients.** This section briefly describes the Kentucky Opiate Replacement Treatment Outcome Study (KORTOS) including a description of clients who participated in Kentucky's licensed OTPs in calendar year 2014 and who had an intake submitted to CDAR (n=717) as well as clients who completed a 6-month follow-up interview (n=236).

**Section 2. Client Satisfaction with the Opiate Treatment Programs and Quality of Life Ratings.** This section describes: (1) overall client satisfaction with the OTP; (2) clients' ratings of program experiences; (3) positive and negative aspects of OTP participation; (4) quality of life ratings; (5) clients' positive and negative feelings; and (6) satisfaction with life.

**Section 3. Substance Use.** This section examines change in substance use (illegal drugs, alcohol, and tobacco) for 6-month and 30-day periods at intake and follow-up. Specific classes of illegal drugs examined include prescription opiates, methadone, buprenorphine, heroin, and other illegal drugs. In addition, self-reported severity of alcohol and drug use based on the Addiction Severity Index (ASI) alcohol and drug use composite scores are compared at intake and follow-up. Significant differences between the genders are reported when applicable.

<sup>12</sup> In 2014, 13 of the OTPs submitted intake surveys for clients: Behavioral Health Group, BHG Paintsville, bluegrass.org/Narcotics Addiction Program, Center for Behavioral Health-Elizabethtown, Center for Behavioral Health-Frankfort, Center for Behavioral Health-Louisville, Corbin Professional Associates, M.O.R.E. Center, Northern Kentucky Medical Clinic, Perry County Treatment Services, Pikeville Treatment Center, Ultimate Treatment Center, and Western Kentucky Medical.

<sup>13</sup> From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one address), and then selecting those clients by intake month.

<sup>14</sup> In order to be eligible for the follow-up study, clients had to still be in an OTP at the time of the follow-up interview, not in a controlled environment, agree to be contacted for follow-up, and provide contact information in the client locator data at the end of the intake interview.

**Section 4. Mental Health, Stress, and Physical Health.** This section examines changes in mental health, stress, and physical health from intake to follow-up. Specifically, this section examines: (1) depression; (2) generalized anxiety; (3) comorbid depression and generalized anxiety; (4) suicide ideation and attempts; (5) stress-related health consequences; (6) perceptions of physical and mental health; (7) chronic pain; and (8) body mass index. The mental health and physical health questions in the KORTOS intake and follow-up surveys were self-report measures. Significant differences between the genders are reported when applicable.

**Section 5. Education and Employment.** This section examines changes in education and employment from intake to follow-up including: (1) highest level of education completed; (2) the percentage of clients who worked full-time or part-time; (3) the number of months clients were employed full-time or part-time; and (4) hourly wage. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

**Section 6. Homelessness, Living Situation, and Economic Hardship.** This section examines changes in clients' socio-economic status from intake to follow-up. Specifically, this section examines: (1) if clients consider themselves to be homeless; (2) their living situation (i.e., own home or someone else's home, residential program, shelter); and (3) economic hardship (i.e., difficulty meeting living and health care needs). Significant differences between the genders are reported when applicable.

**Section 7. Criminal Justice System Involvement.** This section describes change in client involvement with the criminal justice system during the 6-month period before entering treatment and the 6-month period before the follow-up interview. Specifically, results include changes in: (1) any arrest; (2) the number of times arrested, among clients with any arrests; (3) any incarceration; (4) the number of nights incarcerated, among clients with any incarceration; and (5) criminal justice supervision status.

**Section 8. Change in Recovery Supports.** This section focuses on four main changes in recovery supports: (1) percentage 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. Significant differences between the genders are reported when applicable.

**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 Opiate 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 opiate treatment programs in calendar year 2014 and who had an intake assessment that was submitted to CDAR (n = 717), including clients who also completed a 6-month follow-up interview (n = 236).*

KORTOS includes a face-to-face intake interview conducted by program staff to assess targeted factors such as substance use, mental health symptoms, education, employment status, living situation, and involvement in the criminal justice system prior to entering medication-assisted treatment (submitted to UK CDAR from January 1, 2014 to December 31, 2014). In 2014, 717 adults completed an intake survey<sup>15</sup> that was submitted by 13 Kentucky licensed OTPs to UK CDAR.<sup>16</sup> At the completion of the intake interview, staff persons inform individuals about the KORTOS follow-up study and ask if they are interested in participating. If they agree to participate they are asked to provide contact information. The first section below describes characteristics for all clients with a completed and submitted intake assessment.

**Description of KORTOS Clients at Treatment Intake**

Table 1.1 shows that the majority of clients with an intake survey submitted in 2014 were male (51.6%) and White (96.4%). Only a minority of clients reported their race as African American/Black (1.5%) and 2.1% reported they were American Indian, Asian, Hispanic, or multiracial. Clients were, on average, 34.6 years old, with the youngest client being 19 and the oldest being 68 years old at intake. The majority of clients were not married at intake: 42.8% were never married, 28.6% were separated or divorced, and 2.2% were widowed. About 1 in 4 (26.4%) reported being married. A large minority of clients reported they had at least one child (42.5%).

<sup>15</sup> When a client had more than one intake survey in the same fiscal year, the survey with the earliest submission date was kept in the data file and the other intake surveys were deleted so that each client was represented once and only once in the data set.

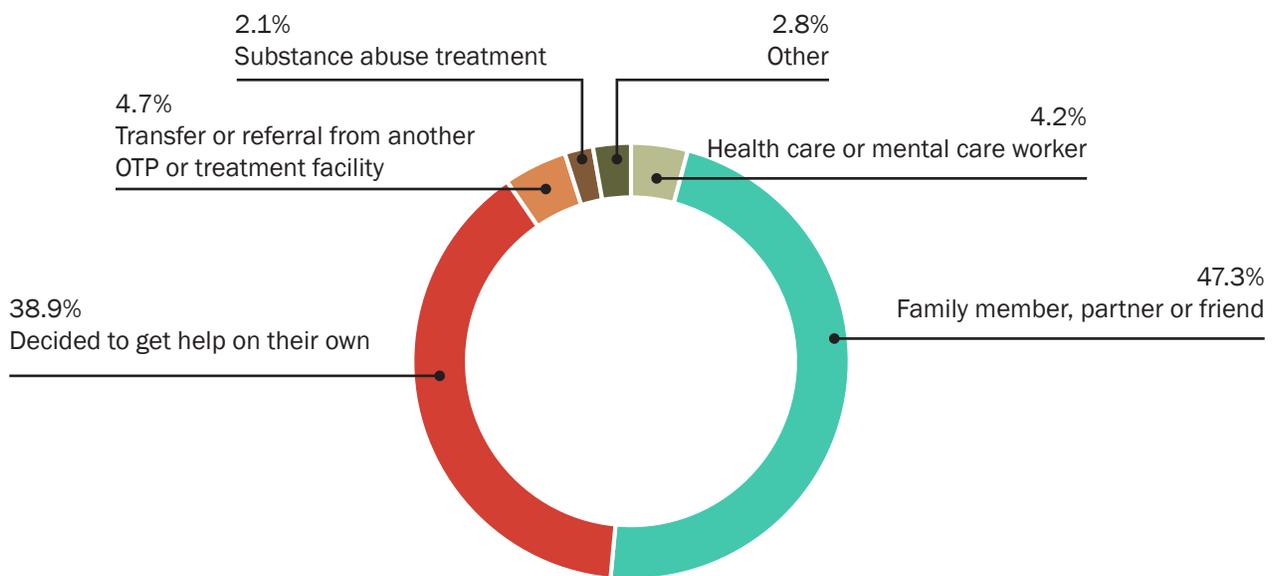
<sup>16</sup> In 2014, 13 of the OTPs submitted intake surveys for clients: Behavioral Health Group, BHG Paintsville, [bluegrass.org/NarcoticsAddictionProgram](http://bluegrass.org/NarcoticsAddictionProgram), Center for Behavioral Health-Elizabethtown, Center for Behavioral Health-Frankfort, Center for Behavioral Health-Louisville, Corbin Professional Associates, M.O.R.E. Center, Northern Kentucky Medical Clinic, Perry County Treatment Services, Pikeville Treatment Center, Ultimate Treatment Center, and Western Kentucky Medical.

TABLE 1.1. DEMOGRAPHICS FOR ALL KORTOS CLIENTS AT INTAKE (N = 717)<sup>17</sup>

AGE	34.6 years (Min. = 19, Max. = 68)
GENDER	
Male	51.6%
Female	48.4%
Transgender	0.0%
RACE	
White	96.4%
African American	1.5%
Other or multiracial	2.1%
MARITAL STATUS	
Never married	42.8%
Separated or divorced	28.6%
Married	26.4%
Widowed	2.2%
HAVE CHILDREN UNDER THE AGE OF 18 WHO LIVE WITH THEM	42.5%

Figure 1.1 shows the treatment referral source for all KORTOS clients at intake. Nearly half of clients (47.3%) reported they were referred by a family member, partner or friend and 38.9% decided to get help on their own. A small minority of clients (4.2%) were referred by a health care or mental health care worker. Fewer than 1 in 20 clients were transferred or referred by another OTP (4.7%) or referred by a substance abuse treatment facility (2.1%) and 2.8% were referred by other sources.

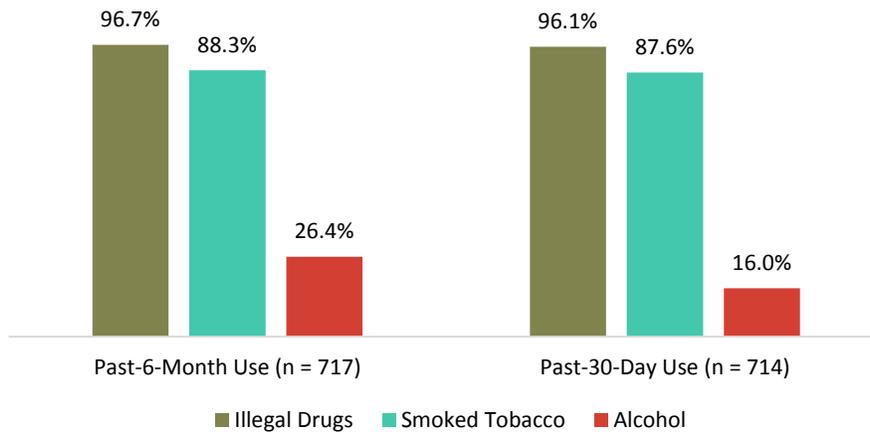
FIGURE 1.1 REFERRAL SOURCE FOR ALL KORTOS CLIENTS AT INTAKE (N = 717)



<sup>17</sup> Two individuals had missing data for date of birth and age was not calculated.

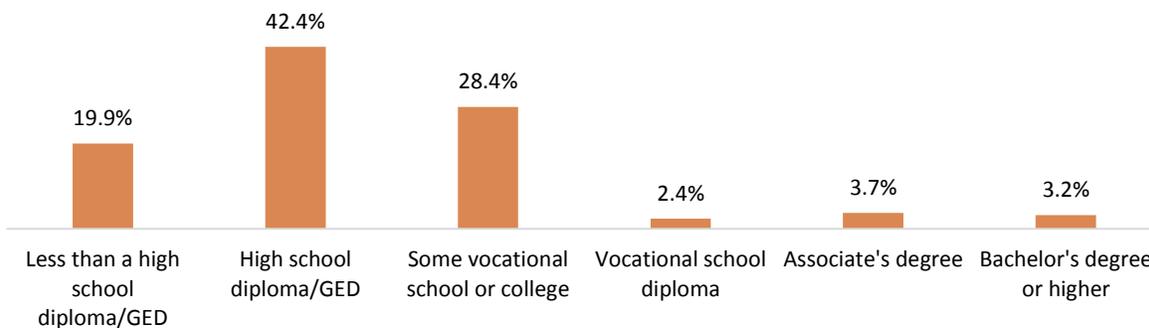
The majority of adults who completed an intake survey reported using illegal drugs (96.7%) and smoking tobacco (88.3%) while over one-quarter of clients reported using alcohol (26.4%) in the 6 months before intake (see Figure 1.2). The drug classes reported by the greatest number of clients were prescription opioid/opiate (79.4%), marijuana (52.9%), heroin (52.6%), and tranquilizers (43.2%). Because being in a controlled environment inhibits substance use, individuals who were in a controlled environment all 30 days before entering treatment (n = 3) are not included in the analysis of substance use in the 30 days before entering treatment. Of the 714 individuals who were not in a controlled environment all 30 days, 96.1% reported using illegal drugs, 87.6% reported smoking tobacco, and 16.0% reported using alcohol in the 30 days before entering treatment.

FIGURE 1.2 ALCOHOL, DRUG AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE TREATMENT<sup>18</sup>



One in five clients (19.9%) had less than a high school diploma or GED at intake. The highest level of education of 42.4% of the sample was a high school diploma or GED. Just under 30% of clients had completed some vocational/technical school or college. Only a minority of clients had completed vocational/technical school (2.4%), an associate’s degree (3.7%), or a bachelor’s degree or higher (3.2%).

FIGURE 1.3 HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 698)<sup>19</sup>

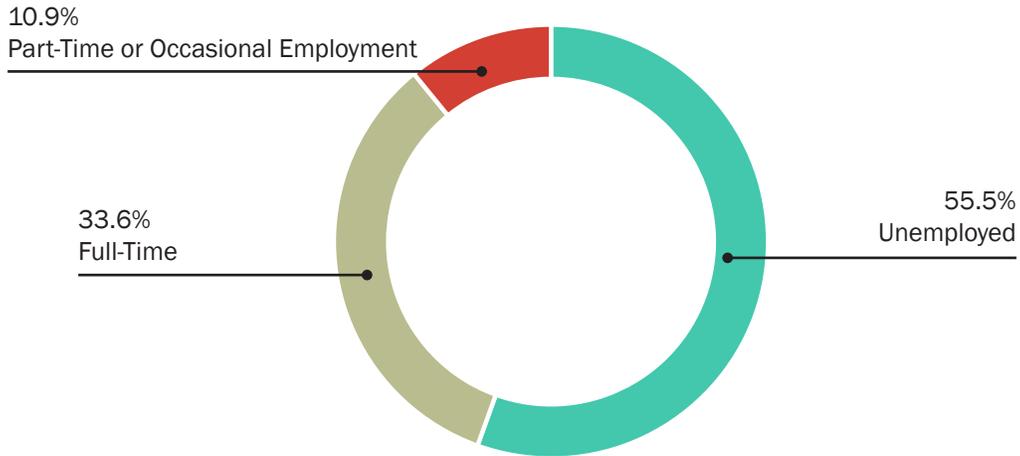


<sup>18</sup> Thirty-four individuals had missing data for 6-month (and 30-day) alcohol use and 6-month (and 30-day) smoking tobacco use because they answered “never” to the questions “How old were you when you had your first alcohol drink” and “How old were you when you first started smoking tobacco regularly”.

<sup>19</sup> Nineteen individuals had missing data for years of education completed.

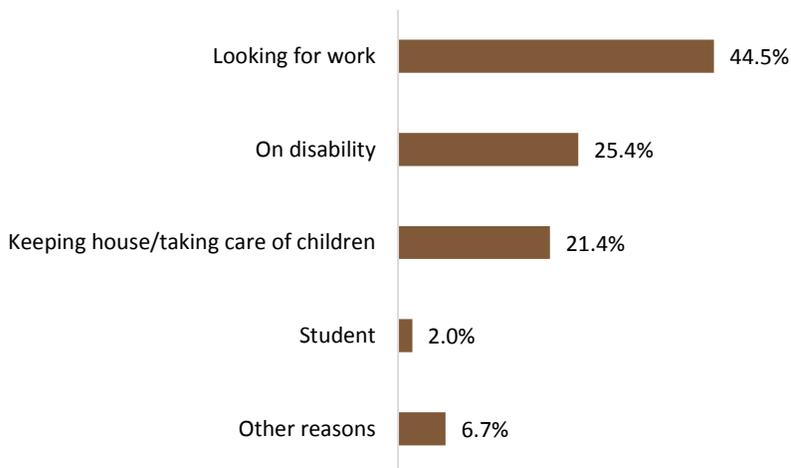
In the 6 months before intake, two-fifths of clients (46.2%) reported they had not worked any, 10.7% had worked 1 to 3 months, and 43.1% had worked 4 or more months (not depicted in figure). At intake, one-third of individuals reported they were currently employed full-time (33.6%), 55.5% reported being unemployed, and 10.9% were employed part-time or had occasional or seasonal employment (see Figure 1.4). Among those who reported being employed full or part-time at intake (n = 319), the median hourly wage was \$11.00.

FIGURE 1.4. CURRENT EMPLOYMENT STATUS AT INTAKE (N = 717)



Of the individuals who were currently unemployed at intake (n = 398), a large minority stated they were looking for work (44.5%), 25.4% were on disability, 21.4% were keeping the house or taking care of children full-time at home, 2.0% were students, and the remaining 6.7% gave other reasons for not being employed (e.g., on furlough or temporarily laid off, retired, other health problems prevented them from work but they weren't on disability, in a controlled environment, or they were not looking for work).

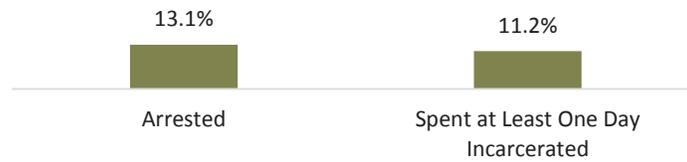
FIGURE 1.5 OF THOSE UNEMPLOYED, REASONS FOR BEING UNEMPLOYED (N = 398)



Fewer than 1 in 7 individuals reported being arrested at least once (13.1%) and 1 in 9 reported being incarcerated at least one night (11.2%) in the 6 months before entering treatment (see

Figure 1.6). Among those who were arrested in the past 6 months (n = 94), they were arrested an average of 1.5 times. Among those who were incarcerated in the past 6 months (n = 80), they were incarcerated an average of 23.4 nights.

FIGURE 1.6. CRIMINAL JUSTICE INVOLVEMENT 6 MONTHS BEFORE TREATMENT AT INTAKE (N = 717)



### KORTOS Follow-up Sample

Follow-up interviews are conducted with a selected sample of KORTOS clients about 6 months after the intake survey is completed. All individuals who agree to be contacted by UK CDAR for the follow-up interview and have given at least one mailing address and one phone number, or two phone numbers if they do not have a mailing address in their locator information, are eligible for the follow-up component of the study. All eligible individuals are then selected by the month in which they completed intake surveys, with the exception that if a person has more than one intake survey in a given year, then the survey with the earliest date will be selected into the follow-up sample. The follow-up interviews are conducted over the telephone by an interviewer at UK CDAR. Client responses to the follow-up interviews are kept confidential to help facilitate the honest evaluation of client outcomes and satisfaction with program services. There was a low refusal rate for follow-up participation (0.3%) and a high follow-up rate (81.0%). This means that only 19.0% of individuals included in the sample to be followed up were not successfully contacted.<sup>20</sup>

This report describes outcomes for 236 adults who participated in a Kentucky OTP and who completed an intake interview and a follow-up telephone interview about 6 months (average of 178.7 days) after the intake survey was completed. Detailed information about the methods and follow-up efforts can be found in Appendices A and B.

**“ I LIKED WHAT IT HAS DONE FOR ME AND HOW IT HAS HELPED ME.”**

- KORTOS Follow-up Client

<sup>20</sup> Clients are not contacted for a variety of reasons including follow-up staff are not able to find a working address or phone number or are unable to contact any friends or family members of the client.

## KORTOS 2015 Quality of Data and Locator Efforts

For the last year's 2015 follow-up study, 350 cases were selected for the follow-up sample. Of those selected, 80 clients were not eligible for the follow-up (e.g., no longer in OTP treatment, was in a controlled environment) leaving a sample of 270. A total of 223 follow-up surveys were completed for a follow-up rate of 82.6%. Only 13.4% of clients were not contacted.

**82.6%**  
FOLLOW-UP RATE

PHONE CALLS  
**2,955**  
ESTIMATED TOTAL

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

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

MAILINGS  
**671**  
ESTIMATED TOTAL

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

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

**83.7%** 5 out of 6 clients had at least one unique contact phone number.

**28.5%** Almost 30% of clients had at least one complete, unique contact address.

### ONLINE SEARCH

Client information was verified through external search in cases where (a) client contact information was incomplete; and (b) client contact information was incorrect. Overall, approximately 41% of all clients were searched with medium level effort and 20.8% of all clients were searched in-depth.

**92.3%** of all clients were searched with light effort (i.e., verification, VINE, Whitepages)

**52.9%** of all clients were searched with medium effort (i.e., social media, other public directory databases)

**28.9%** of all clients were searched with in-depth effort (i.e., in-depth searching methods)

\*For more detail on the locating efforts of UK CDAR staff, please see Appendix B

Of the 236 adults who completed a 6-month follow-up interview, 55.9% were female and 44.1% were male. The majority of follow-up clients were White (94.5%), 1.7% were African American and 3.8% were Hispanic, American Indian, or multiracial. They were an average of 34.4 years old at the time of the intake interview. The majority of follow-up clients (62.1%) were 30 years old or older at intake and 37.9% were 18 to 29 years old at intake. Almost half of clients were never married (46.2%), 26.3% were married, 24.2% were separated or divorced, and 3.4% were widowed. Nearly half of follow-up clients (44.9%) had at least one child under age 18 who was living with them.

TABLE 1.2. DEMOGRAPHICS FOR KORTOS FOLLOW-UP CLIENTS AT INTAKE (N = 236)<sup>21</sup>

AGE	34.4 years (range of 19-62)
GENDER	
Male	55.9%
Female	44.1%
Transgender	0.0%
RACE	
White	94.5%
African American	1.7%
Other or multiracial	3.8%
MARITAL STATUS	
Never married	46.2%
Separated or divorced	24.2%
Married	26.3%
Widowed	3.4%
HAVE CHILDREN UNDER THE AGE OF 18 WHO LIVE WITH THEM	44.9%

When those with a follow-up interview were compared with those who did not have a follow-up interview on a variety of intake variables, there were some significant differences for demographics, substance use, mental health, physical health, and economic hardship. Specifically, more females completed a follow-up interview than did not. Many of the significant differences between clients who were followed up and those who were not may, therefore, be due to gender differences between the two groups. For example, more of the clients who completed a follow-up survey reported they had depression, generalized anxiety, a chronic medical problem, used CNS depressants, and had difficulty meeting basic living and health care needs for financial reasons in the 6 months before treatment intake when compared to clients who were not followed up. However, there were some differences that may not be due to gender differences in the follow-up sample. For example, significantly more clients who were followed up reported having a lifetime history of traumatic brain injury, being arrested and incarcerated in the 6 months before treatment, as well as using non-prescribed buprenorphine, non-prescribed methadone, heroin, and stimulants in the 6 months before treatment when compared to clients who did not complete a follow-up interview.

See Appendix C for detailed comparisons of clients who completed a follow-up interview (n = 236) and clients who did not complete a follow-up interview (n = 481).

<sup>21</sup> One individual had missing data for date of birth and age was not calculated.

Section 2.

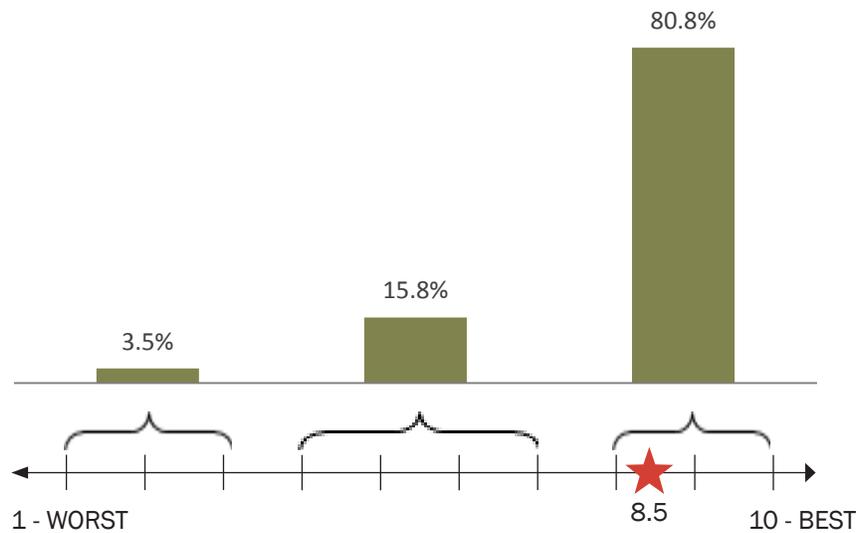
## Client Satisfaction with Opiate Treatment Programs (OTPs) and Quality of Life Ratings

At the beginning of the follow-up interview, clients are asked to give their opinions and feedback regarding their program experience. The items measured in this report include: (1) overall client satisfaction with the OTP; (2) clients’ ratings of program experiences; (3) positive and negative aspects of OTP participation; (4) quality of life ratings; (5) clients’ positive and negative feelings; and (6) satisfaction with life.

### Overall Client Satisfaction

At the beginning of the follow-up interview, clients are asked to rate their experience at the OTP on a scale from 1 representing the worst possible experience to 10 representing the best possible experience. The average rating given by clients in the follow-up sample was 8.5, with 80.8% of clients giving a highly positive rating of 8 through 10 (see Figure 2.1).

FIGURE 2.1. RATING OF EXPERIENCE AT THE OTP (n = 234)<sup>22</sup>

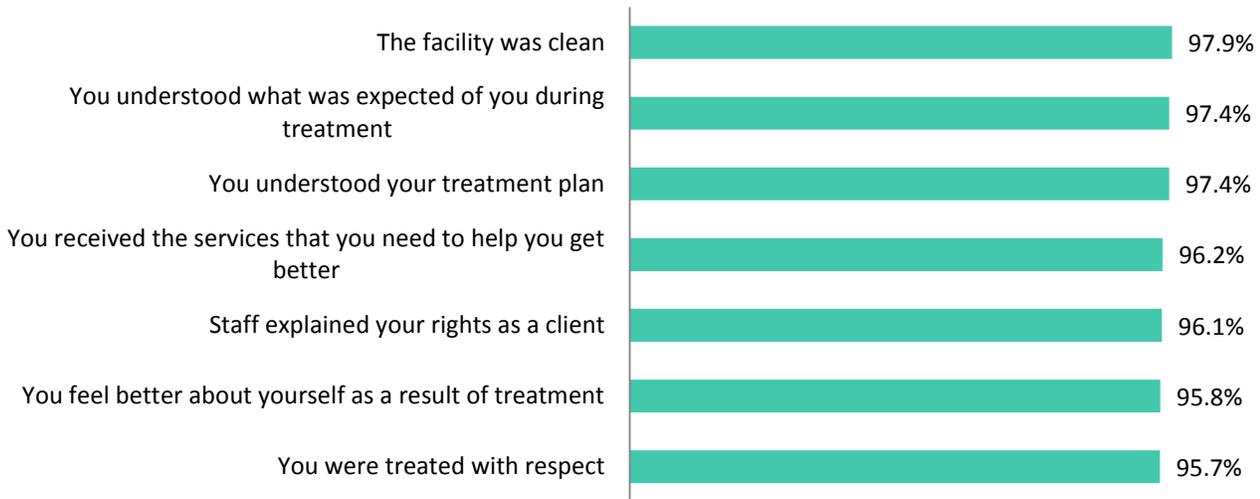


### Client Ratings of Program Experiences

When asked a series of program satisfaction questions, the majority of clients indicated each aspect of their experience was positive (see Figure 2.2). The vast majority of clients reported that they were treated with respect, understood the expectations of the program, felt better about themselves, and got the services needed to get better at the OTP.

<sup>22</sup> Two individuals responded with ‘don’t know’ for this question.

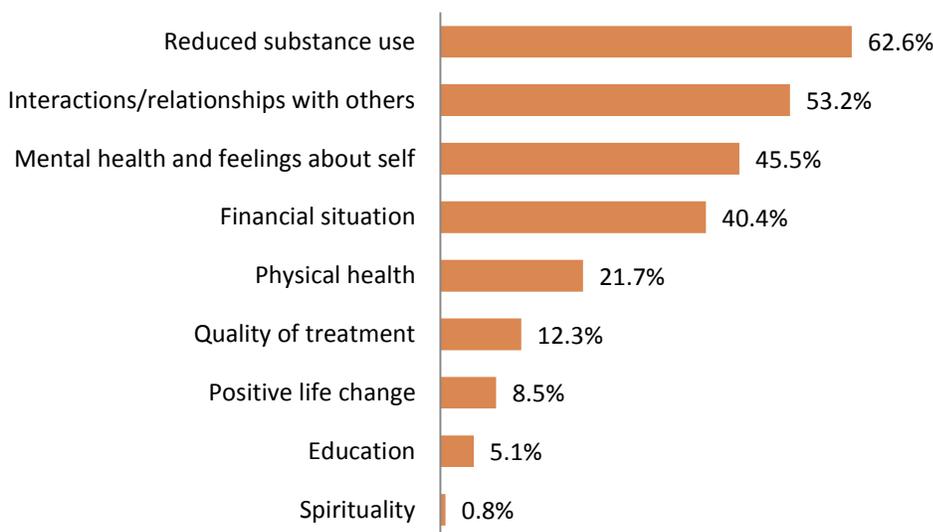
FIGURE 2.2. PERCENTAGE OF CLIENTS THAT AGREED OR STRONGLY AGREED WITH STATEMENTS ABOUT THEIR OTP EXPERIENCE (n=235)<sup>23</sup>



### Positive and Negative Aspects of OTP

Clients were asked to identify the three most positive aspects of their participation in the OTP (Figure 2.3). The majority (62.6%) of clients reported that reduction in substance use was a positive outcome and 53.2% stated that improved interactions and relationships with others was a positive aspect. Less than half of clients (45.5%) said change in their mental health and how they felt about themselves was a positive outcome and 40.4% believed changes in their financial situation and employment was a positive outcome of their OTP experience. Nearly one-quarter (21.7%) said improved physical health was a positive aspect. Other positive outcomes were quality of treatment, positive life changes, education, and spirituality.

FIGURE 2.3. PERCENTAGE OF CLIENTS REPORTING POSITIVE ASPECTS OF THE OTP (N = 235)<sup>24</sup>

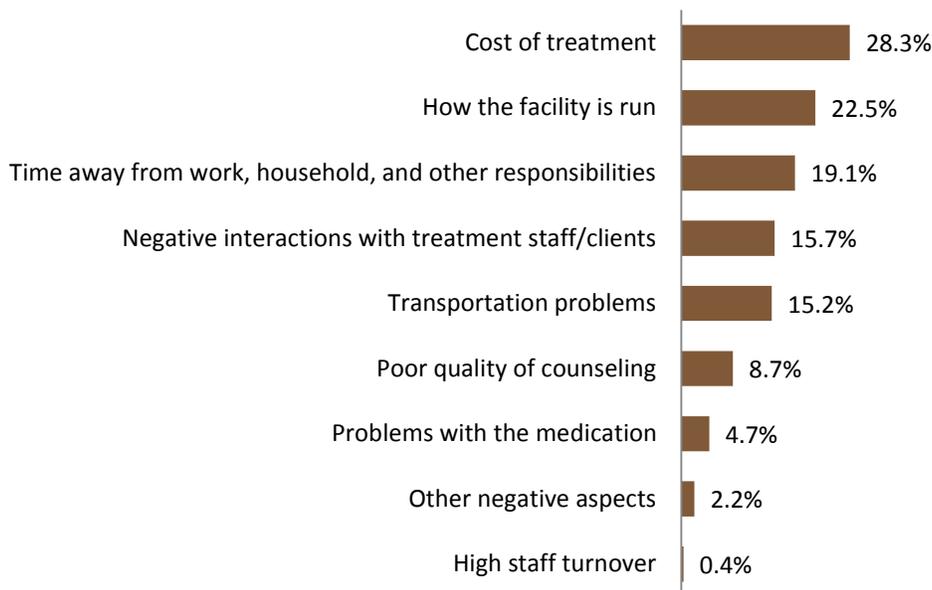


<sup>23</sup> One individual had missing data for these questions.

<sup>24</sup> One individual had missing data for these questions.

Aspects of treatment that clients identified as problematic or needing improvement are displayed in Figure 2.4. The negative aspects of the OTP program suggest barriers that clients must overcome to participate in the program including the cost and time investment. Specifically, cost of the OTP (28.3%), how the facility is run (e.g., wait time, rules being too strict; 22.5%), and time away from work, household, or other responsibilities (19.1%), were most frequently mentioned as negative aspects of OTP. Just over 15% stated that interactions with OTP staff or clients were sometimes problematic. Other areas of difficulty included transportation problems (15.2%), the quality of counseling (e.g., not enough counseling; 8.7%), problems with the methadone itself (4.7%) and other negative aspects (2.2%). Less than 1% of clients mentioned high staff turnover as negative aspects of their OTP experience.

FIGURE 2.4. PERCENTAGE OF CLIENTS REPORTING NEGATIVE ASPECTS OF THE OTP (N = 230)<sup>25</sup>



## Quality of Life and Satisfaction with Life

There were three quality of life and satisfaction with life indexes used including: (1) quality of life rating, (2) positive and negative feelings, and (3) satisfaction with life.

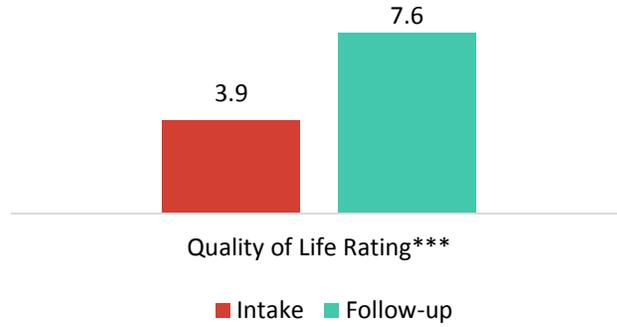
### Quality of Life Ratings

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 at intake on average as a 3.9 (see Figure 2.5). The average quality of life rating significantly increased to 7.6 at follow-up.

**Average rating of quality of life significantly increased from 3.9 at intake to 7.6 at follow-up**

<sup>25</sup> Six individuals had missing data for these items.

FIGURE 2.5. PERCEPTION OF QUALITY OF LIFE BEFORE AND AFTER THE OTP (N = 236)



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

\*\*\*p < .001.

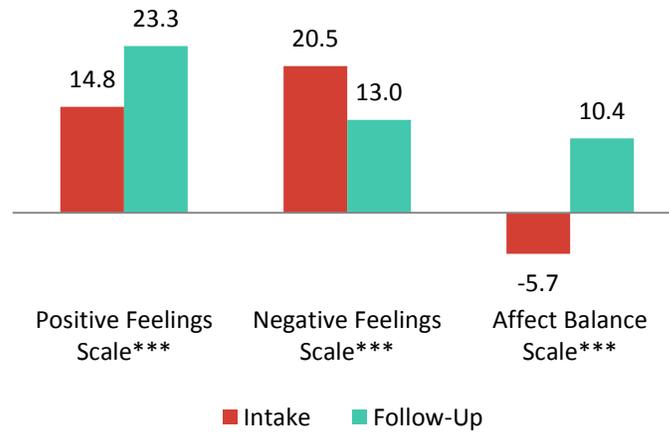
### Positive and Negative Feelings

At intake and follow-up, clients were asked a set of questions about how often they experienced 6 positive and 6 negative emotions/states in the past month (Scale of Positive and Negative Experience [SPANE]<sup>26</sup>). Clients answered using a scale with 1 representing “Very rarely or never” to 5 “Very often or always.” The responses are then added for the 6 positive items, yielding a Positive Feelings Score, and the same scoring method is used for the Negative Feelings Score. The lowest possible score is 6 and the highest possible score is 30. Low scores on the Positive Feelings Scale indicate the client rarely or infrequently experienced the six positive emotions/states. A high score on the Positive Feelings Scale indicates the client very often or frequently experienced the six positive emotions/states. To determine the overall affect balance (or the balance of negative and positive feelings about one’s life), the score derived from the negative feelings score is subtracted from the positive feelings score (with -24 being the minimum and unhappiest to 24 being the happiest). For example, a client with a high affect balance score reports that he/she rarely experiences negative feelings and very often has positive feelings.

Figure 2.6 shows that clients’ positive feelings increased significantly and their negative feelings decreased significantly from intake to follow-up. Further, the affect balance score also increased significantly from intake to follow-up. The affect balance score of -5.7 at intake indicates that clients’ negative feelings were more frequent than their positive feelings, whereas the significantly higher and more positive score of 10.4 at follow-up indicates that clients’ positive feelings were more frequent than their negative feelings.

<sup>26</sup> Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2009). New measures of well-being: Flourishing and positive and negative feelings. *Social Indicators Research*, 39, 247-266.

FIGURE 2.6. POSITIVE AND NEGATIVE FEELINGS BEFORE INTAKE AND FOLLOW-UP (N = 234)<sup>27</sup>

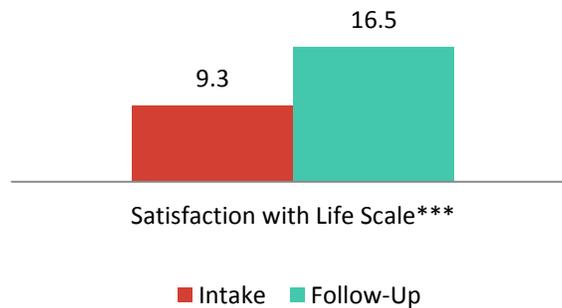


\*\*\*p < .001.

### Satisfaction with Life

At intake and follow-up, clients were presented with five statements and asked to respond how much they agreed or disagreed with each statement, using a scale with 1 representing “Strongly disagree” and 5 representing “Strongly agree”.<sup>28</sup> Each statement is a positively worded aspect of high satisfaction with one’s life. One statement, for example, is “In most ways my life is close to my ideal.” The values assigned to each response are added to create a life satisfaction score. The lowest possible score is 5 and the highest possible score is 25. Lower scores indicate lower satisfaction and higher scores represent higher satisfaction. Figure 2.7 shows that clients’ scores on the satisfaction with life scale increased significantly from intake to follow-up.

FIGURE 2.7. SATISFACTION WITH LIFE BEFORE INTAKE AND FOLLOW-UP (N = 233)<sup>29</sup>



\*\*\*p < .001.

<sup>27</sup> Two individuals had missing data for the positive and negative feelings scale at follow-up.

<sup>28</sup> Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.

<sup>29</sup> Three individuals had missing data for the satisfaction with life scale at follow-up.

### Section 3.

## Substance Use

*This section describes change in illegal drug, alcohol, and tobacco use for adult clients 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. 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 OTP 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 use [including opiates such as morphine, Percocet, Oxycontin, Lortab], (b) non-prescribed methadone, (c) non-prescribed buprenorphine, (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 groups and organized by type of substance use:

1. **Change in past-6-month illegal drug, alcohol, and tobacco use from intake to follow-up.** Comparison of any illegal drugs, prescription opiates, non-prescribed methadone, non-prescribed buprenorphine, heroin, other non-opioid drug use, alcohol, and tobacco in the 6 months before the client entered the program and any use of illegal drugs and alcohol during the 6-month follow-up period (n = 236) 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.** In addition to looking at past 6-month substance use, change in any use in the 30 days before entering the OTP and the 30 days before the follow-up interview for any illegal drug use (including prescription opiates, non-prescribed methadone, non-prescribed buprenorphine, heroin, and other non-opioid drugs), alcohol use, and tobacco use (n = 233) is also presented.<sup>30</sup>
4. **Change in self-reported alcohol and drug composite scores from intake to follow-up.** The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs (n = 220), alcohol (n = 53) and those with both alcohol and illegal drug use among clients who used drugs and/or alcohol (n = 226). The ASI composite score assesses self-reported addiction severity even among those reporting no substance use in the past 30 days. The alcohol and drug composite scores are computed from items about 30-day alcohol (or drug) use and the number of days individuals used multiple drugs in a day, as well as the impact of substance use on the individual's life, such as money spent on alcohol, number of days individuals had alcohol (or drug) problems, how troubled or bothered individuals were by their alcohol (or drug) problems, and how important treatment was to them.

<sup>30</sup> Three individuals were in a controlled environment all 30 days before intake and were not included in past-30-day analysis.

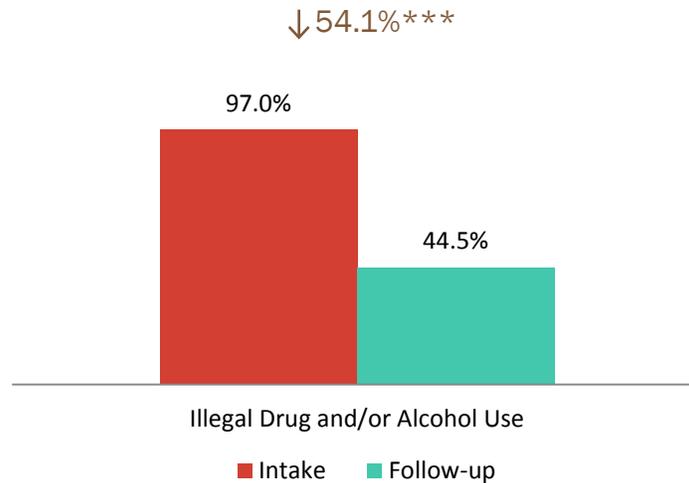
## Alcohol and/or Drug Use

### Past-6-month Alcohol and/or Drug Use

The majority of clients (97.0%) reported using alcohol and/or illegal drugs in the 6 months before entering the OTP, which decreased to 44.5% at follow-up. This was a 54.1% significant decrease in the number of clients reporting use of alcohol and/or illegal drugs (see Figure 3.1).

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

FIGURE 3.1. PAST-6-MONTH ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 236)



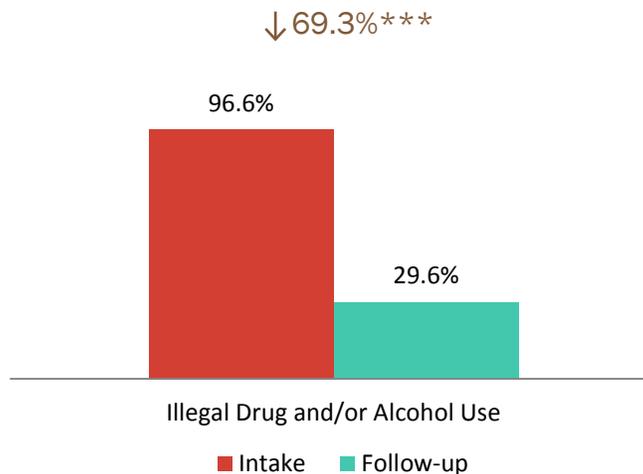
\*\*\*p < .001.

### Past-30-day Alcohol and/or Drug Use

The majority of clients (96.6%) reported using alcohol and/or illegal drugs in the 30 days before entering the OTP, which decreased to 29.6% at follow-up. This was a 69.3% significant decrease in the number of clients reporting use of alcohol and/or illegal drugs (see Figure 3.2).

The number of clients reporting **alcohol and/or illegal drug use in the past 30 days decreased by 69%**

FIGURE 3.2. PAST-30-DAY ALCOHOL AND/OR DRUG USE AT INTAKE AND FOLLOW-UP (N = 233)



\*\*\*p < .001.

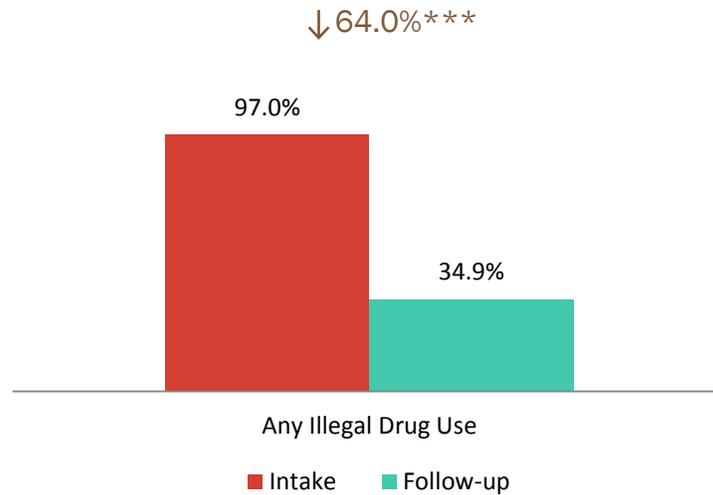
## Any Illegal Drugs

### Past-6-month Any Illegal Drug Use

Almost all clients (97.0%) reported using illegal drugs in the 6 months before entering the OTP, which decreased to 34.9% at follow-up. Overall, for the KORTOS follow-up sample, there was a 64.0% significant decrease in the number of clients reporting use of any illegal drugs (see Figure 3.3).

The number of clients reporting **illegal drug use decreased by 64%**

FIGURE 3.3. PAST-6-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP (N = 235)<sup>31</sup>

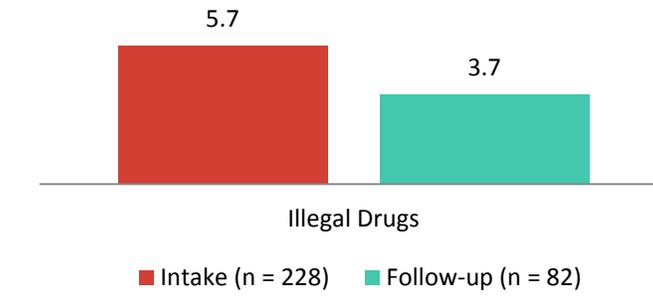


\*\*\*p < .001.

### Average Number of Months Used Any Illegal Drugs

Clients who reported any illegal drug use at intake (n = 228) reported an average maximum of 5.7 months of use in the 6 months before OTP entry. Among clients who reported any illegal drug use in the 6 months before follow-up (n = 82), the maximum number of months they reported using any drug was, on average, 3.7 months (see Figure 3.4).

FIGURE 3.4. AVERAGE NUMBER OF MONTHS CLIENTS USED ILLEGAL DRUGS



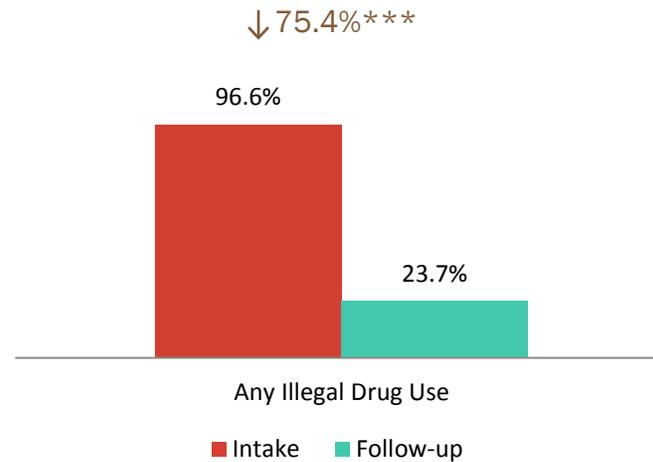
<sup>31</sup> One client had missing values on use of heroin at follow-up.

### Past-30-day Any Illegal Drug Use

There was a significant decrease in past-30-day illegal drug use from intake to follow-up (see Figure 3.5). At intake, 96.6% of clients reported any illegal drug use in the 30 days before entering the OTP and at follow-up, 23.7% of clients reported any illegal drug use in the past 30 days, which was a significant decrease of 75.4%.

There was a significant **reduction of 75% in the number of clients who reported past 30-day illegal drug use**

FIGURE 3.5. PAST-30-DAY USE OF ANY ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP (N = 232)<sup>32</sup>



\*\*\*p < .001.

### Prescription Opioid Misuse

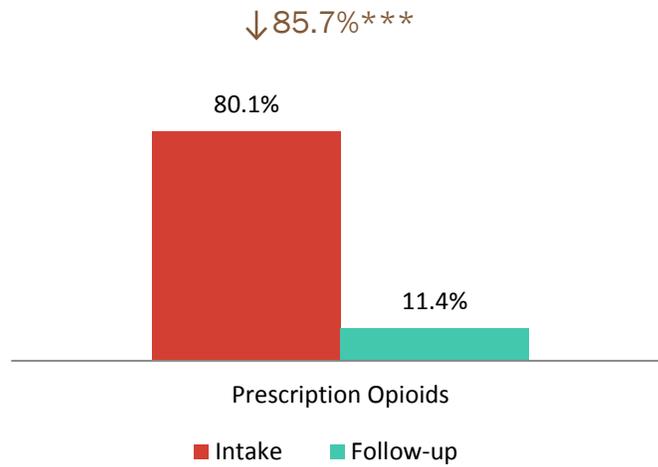
#### Past-6-month Prescription Opioid Misuse

The majority of KORTOS clients (80.1%) reported misusing prescription opioids (such as morphine, Percocet, Oxycontin, Lortab) in the 6 months before OTP entry. At follow-up, 11.4% of clients reported misusing prescription opioids (see Figure 3.6). This means there was an 85.7% significant decrease in the number of clients reporting prescription opioid misuse.

The number of clients reporting **prescription opioid misuse decreased by 86%**

<sup>32</sup> One case had missing values on heroin use at follow-up.

FIGURE 3.6. PAST-6-MONTH PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 236)

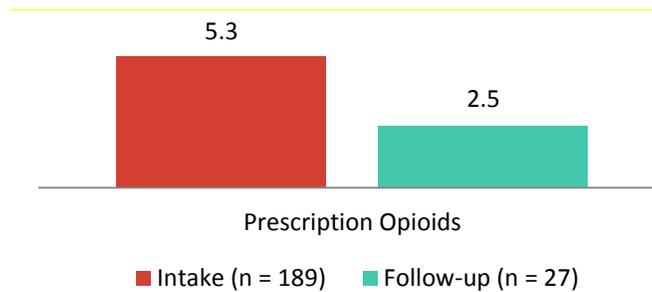


\*\*\*p < .001.

### Average Number of Months Misused Prescription Opioids

Figure 3.7 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 = 189), clients reported using prescription opioids an average of 5.3 of the 6 months. Among clients who reported misusing opioids at follow-up (n = 27), clients reported using an average of 2.5 of the 6 months before follow-up.

FIGURE 3.7. AVERAGE NUMBER OF MONTHS CLIENTS USED PRESCRIPTION OPIOIDS

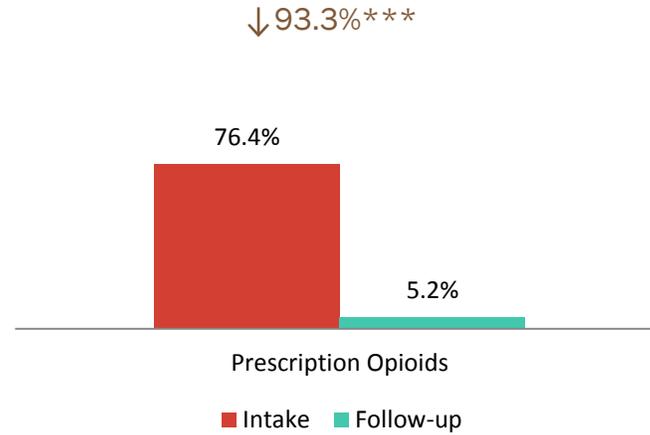


### Past-30-day Prescription Opioid Misuse

There was a significant decrease in the past-30-day misuse of prescription opioids from intake to follow-up (Figure 3.8). At intake, 76.4% of clients reported misuse of prescription opioids in the 30 days before entering the OTP. At follow-up 5.2% of clients reported use of prescription opioids. This reflects a significant decrease of 93.3% in the number of clients reporting misuse of prescription opioids.

The number of clients reporting **prescription opioid misuse** decreased by **93%**

FIGURE 3.8. PAST-30-DAY PRESCRIPTION OPIOID MISUSE AT INTAKE AND FOLLOW-UP (N = 233)



\*\*\*p < .001.

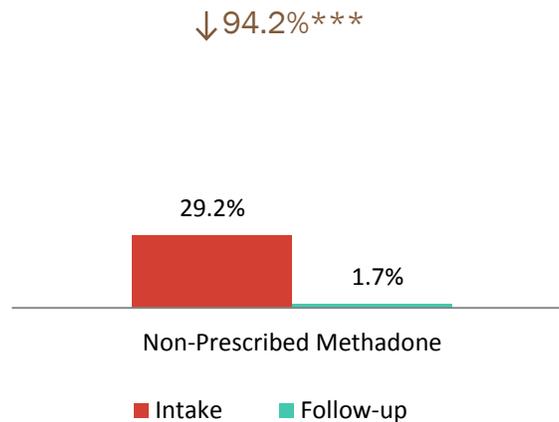
## Non-prescribed Use of Methadone

### Past-6-month Non-prescribed Use of Methadone

About 3 in 10 KORTOS clients reported using non-prescribed methadone in the 6 months before intake, and at follow-up, only 1.7% of clients reported non-prescribed use of methadone. This was a 94.2% significant decrease in the number of clients reporting non-prescribed use of methadone (see Figure 3.9).

**94% fewer clients reported non-prescribed methadone use at follow-up**

FIGURE 3.9. PAST-6-MONTH NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 236)

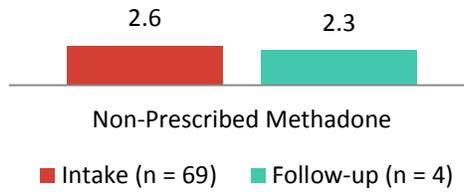


\*\*\*p < .001.

### Average Number of Months Used Non-prescribed Methadone

Among the clients who reported non-prescribed use of methadone in the 6 months before entering the program (n = 69), they reported using on average 2.6 months (see Figure 3.10). Among clients who reported non-prescribed use of methadone in the 6 months before follow-up (n = 4), they reported using, on average, 2.3 months.

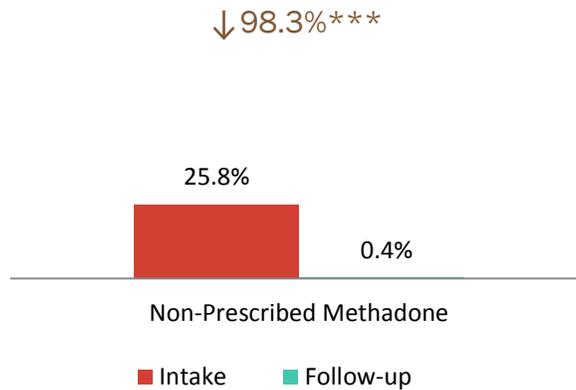
FIGURE 3.10. AVERAGE NUMBER OF MONTHS CLIENTS USED NON-PRESCRIBED METHADONE



### Past-30-day Non-prescribed Use of Methadone

A little over one quarter of clients (25.8%) reported using non-prescribed methadone in the 30 days before entering the OTP, and at follow-up 0.4% of clients reported past-30-day use of non-prescribed methadone (Figure 3.11). This was a 98.3% significant decrease in the number of clients who reported past-30-day use of non-prescribed methadone.

FIGURE 3.11. PAST-30-DAY NON-PRESCRIBED METHADONE USE AT INTAKE AND FOLLOW-UP (N = 233)



\*\*\*p < .001.

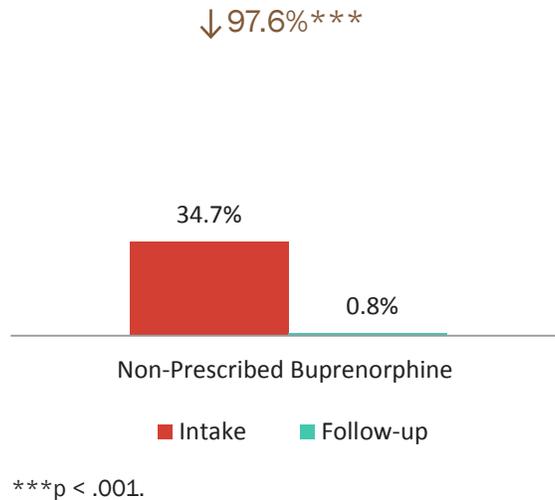
### Non-prescribed Use of Buprenorphine

#### Past-6-month Non-prescribed Use of Buprenorphine

Figure 3.12 shows that over one-third (34.7%) of KORTOS clients reported using non-prescribed buprenorphine in the 6 months before intake. At follow-up, only 0.8% of clients reported using non-prescribed buprenorphine—a significant decrease of 97.6%.

**98% fewer clients reported buprenorphine use at follow-up**

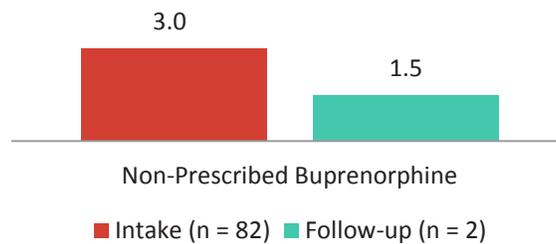
FIGURE 3.12. PAST-6-MONTH NON-PRESCRIBED USE OF BUPRENORPHINE AT INTAKE AND FOLLOW-UP (N = 236)



### Average Number of Months Used Non-prescribed Buprenorphine

Among the clients who reported non-prescribed use of buprenorphine in the 6 months before entering the program (n = 82), they reported using non-prescribed buprenorphine, on average, 3.0 months (see Figure 3.13). Among clients who reported non-prescribed use of buprenorphine in the 6 months before follow-up (n = 2), they reported using, on average, 1.5 months.

FIGURE 3.13. AVERAGE NUMBER OF MONTHS CLIENTS USED NON-PRESCRIBED BUPRENORPHINE



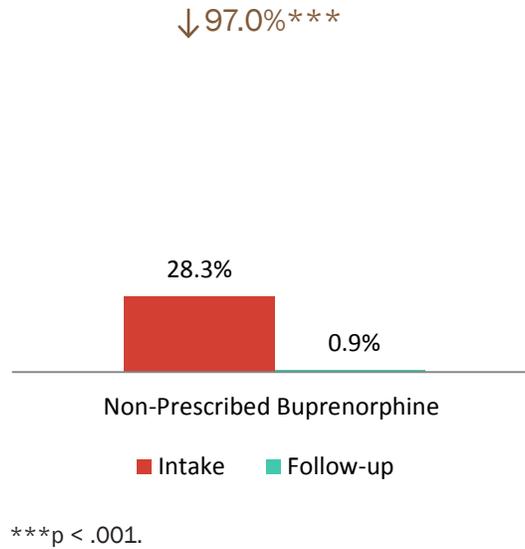
### Past-30-day Non-prescribed Use of Buprenorphine

At intake, 28.3% of clients reported using non-prescribed buprenorphine in the 30 days before entering the OTP (see Figure 3.14). At follow-up, only 0.9% of clients reported past-30-day use of non-prescribed buprenorphine-- a significant decrease of 97.0%.

“THEY’RE GREAT. THEY’VE HELPED ME SO MUCH. MORE PEOPLE NEED TO KNOW ABOUT THEM.”

- KORTOS Follow-up Client

FIGURE 3.14. PAST-30-DAY NON-PRESCRIBED BUPRENORPHINE USE AT INTAKE AND FOLLOW-UP (N = 233)



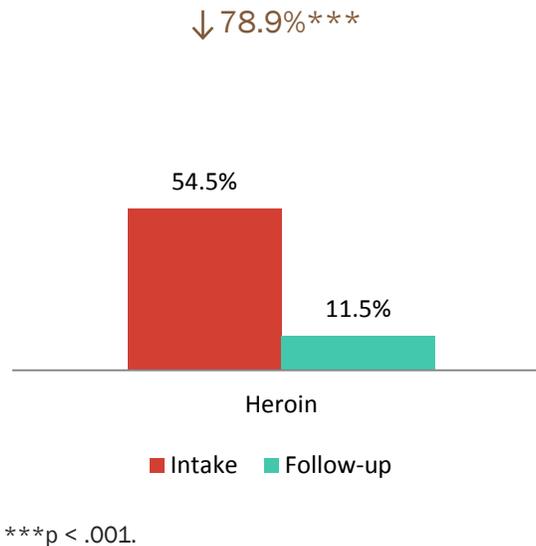
## Heroin

### Past-6-month Heroin Use

Over half of clients (54.5%) reported using heroin in the 6 months before entering treatment, which significantly decreased 78.9% to 11.5% at follow-up (see Figure 3.15).

The number of clients reporting **heroin use** decreased by **79%**

FIGURE 3.15. PAST-6-MONTH HEROIN USE AT INTAKE AND FOLLOW-UP (N = 235)<sup>33</sup>

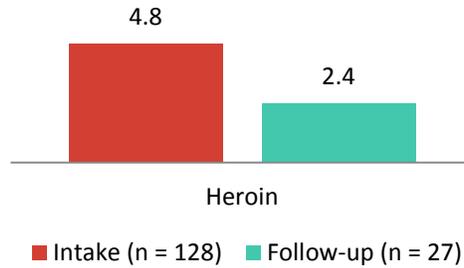


### Average Number of Months Used Heroin

Among the clients who reported using heroin in the 6 months before entering treatment (n = 128), they reported using heroin, on average, 4.8 months (see Figure 3.16). Among clients who reported using heroin in the 6 months before follow-up (n = 27), they reported using, on average, 2.4 months.

<sup>33</sup> One case had missing data for heroin use at follow-up.

FIGURE 3.16. AVERAGE NUMBER OF MONTHS CLIENTS USED HEROIN

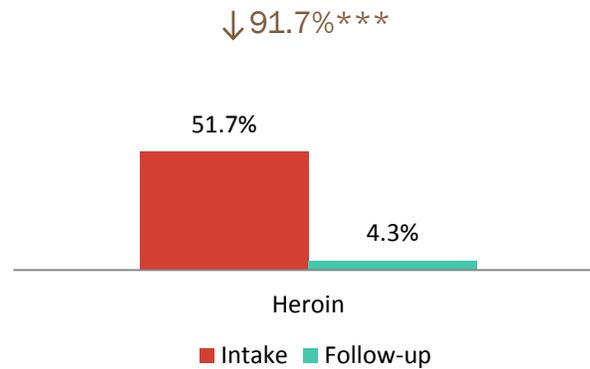


### Past-30-day Heroin Use

Slightly over half of clients (51.7%) reported using heroin in the 30 days before intake. At follow-up, 4.3% reported using heroin in the past 30 days, a significant decrease of 91.7% (see Figure 3.17).

The number of clients reporting **heroin use decreased significantly by 92%**

FIGURE 3.17. PAST-30-DAY HEROIN USE AT INTAKE AND FOLLOW-UP (N = 232)<sup>34</sup>



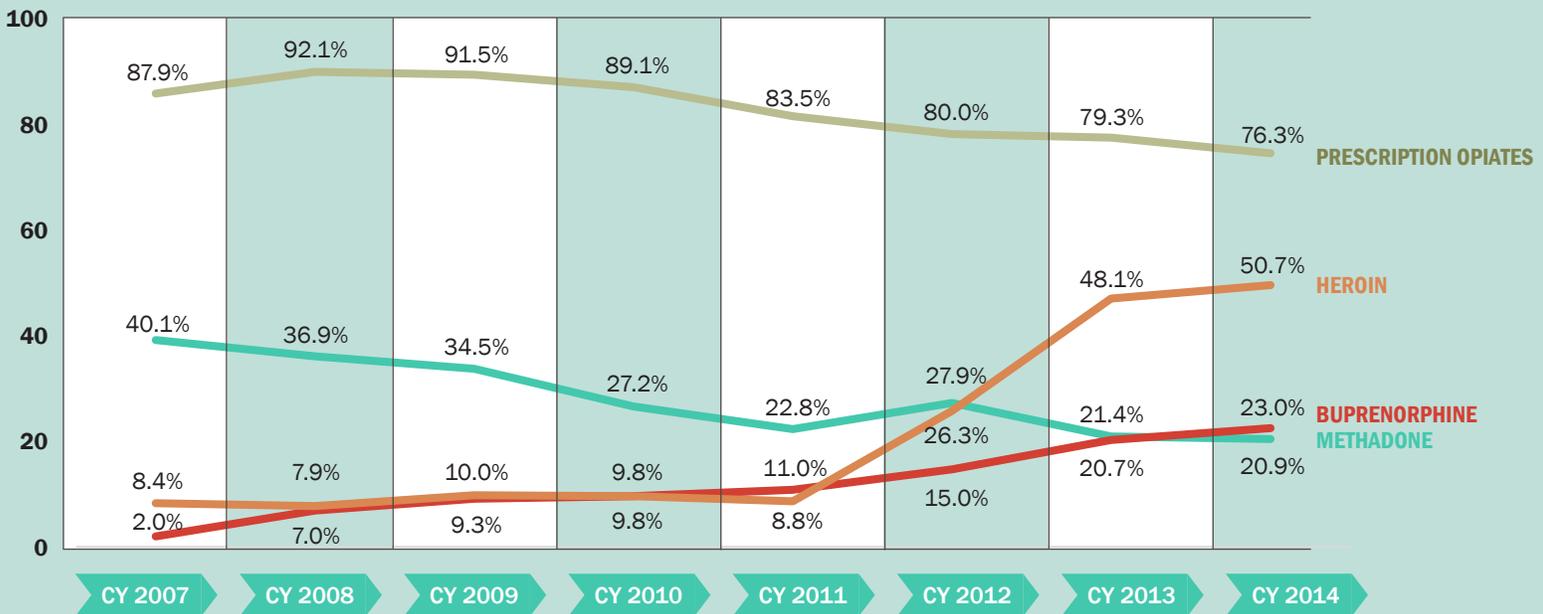
\*\*\*p < .001.

<sup>34</sup> One case had missing data for heroin use at follow-up.

# Trend Alert: Opioid/Opiate Use

The majority of KORTOS clients report using prescription opiates in the 30 days before entering treatment. When looking at trends over time for all clients with completed intake surveys, the percentage of clients using prescription opiates peaked in calendar year 2008 and has steadily dropped. Similarly, the percentage of clients who reported using non-prescribed methadone in the 30 days before entering treatment has declined since calendar year 2007 until 2014. The percentage of clients who reported using buprenorphine remained stable from 2007 through 2011 and then increased in 2012 and 2013, and slightly in 2014. The most notable change in substance use among KORTOS clients is for heroin. Small percentages of KORTOS clients reported using heroin in the 30 days before entering treatment from 2007 through 2011. The percentage tripled from 2011 (8.8%) to 2012 (26.3%) and then the percentage nearly doubled from 26.3% in 2012 to 50.7% in 2014. These trends are very similar when examining only those clients who were followed-up (see Appendix D).

Percentage of All Clients With a Completed Intake Survey Reporting Non-Prescribed Use of Prescription Opiates, Methadone, Buprenorphine, and Heroin in the 30 Days Before Entering Treatment at the OTP (N = 7,548)<sup>35</sup>



<sup>35</sup> Clients who reported being in a controlled environment all 30 days before entering treatment (n = 70) are not included in this analysis.

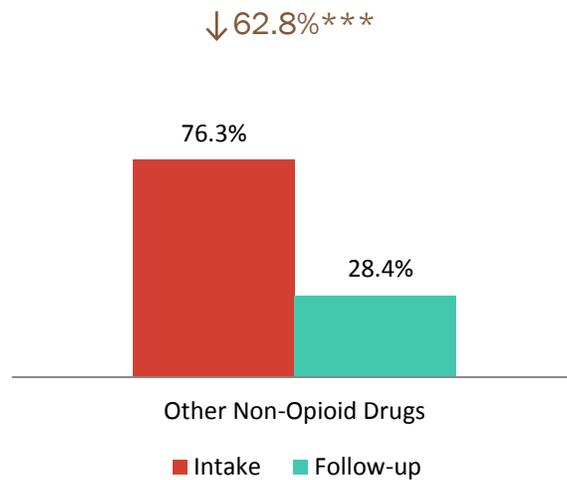
## Other Non-opioid Drug Use

### Past-6-month Use of Other Non-opioid Drugs

About three-fourths of clients (76.3%) used illegal drugs other than prescription opiates, non-prescribed methadone, non-prescribed buprenorphine, or heroin in the 6 months before entering the program (see Figure 3.18). Drugs in this category include marijuana, cocaine, amphetamines, tranquilizers, hallucinogens, inhalants, barbiturates, and synthetic drugs (like synthetic marijuana or bath salts). The number of clients who reported use of other non-opioid drugs decreased to 28.4% at follow-up (a significant decrease of 62.8%).

**Other non-opioid drug use was reported by 63% fewer clients at follow-up**

FIGURE 3.18. PAST-6-MONTH OTHER NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 236)



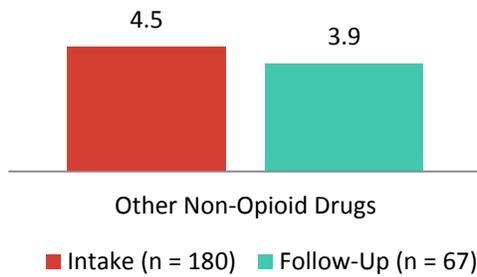
\*\*\*p < .001.

### Average Number of Months Used Other Non-opioid Drugs

Figure 3.19 shows the maximum number of months clients that used other non-opioid drugs reported using these illegal drugs (e.g., marijuana, cocaine, amphetamine, tranquilizers, barbiturates, inhalants, hallucinogens, synthetic drugs).<sup>36</sup> Among the clients who reported using other non-opioid drugs in the 6 months before entering the program (n = 180), the maximum number of months clients reported using any of these drugs was an average of 4.5 months. Among clients who reported using other non-opioid drugs in the 6 months before follow-up (n = 67), the maximum number of months clients reported using any of these drugs was an average of 3.9 months.

<sup>36</sup> Because number of months of use of each class of substance was measured separately (e.g., marijuana, cocaine, amphetamines, tranquilizers, barbiturates, inhalants, hallucinogens, synthetic drugs), the value is a calculation of the maximum number of months clients used any substance class.

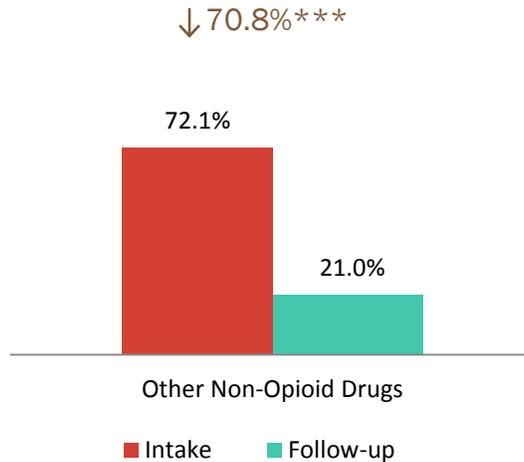
FIGURE 3.19. AVERAGE MAXIMUM NUMBER OF MONTHS CLIENTS USED OTHER NON-OPIOID DRUGS



### Past-30-day Use of Other Non-opioid Drugs

Nearly three-fourths of clients (72.1%) reported using other non-opioid drugs in the 30 days before intake (see Figure 3.20). At follow-up, 21.0% of clients reported other non-opioid drug use, which is a 70.8% significant decrease.

FIGURE 3.20. PAST-30-DAY OTHER NON-OPIOID DRUG USE AT INTAKE AND FOLLOW-UP (N = 233)



\*\*\*p < .001.

### Alcohol Use

There were three measures of alcohol use including: (1) any alcohol use, (2) alcohol use to intoxication, and (3) binge drinking. Binge drinking was defined as having 5 or more (4 or more if client was female) alcoholic drinks in a period of about 2 hours.<sup>37</sup>

#### Past-6-month Alcohol Use

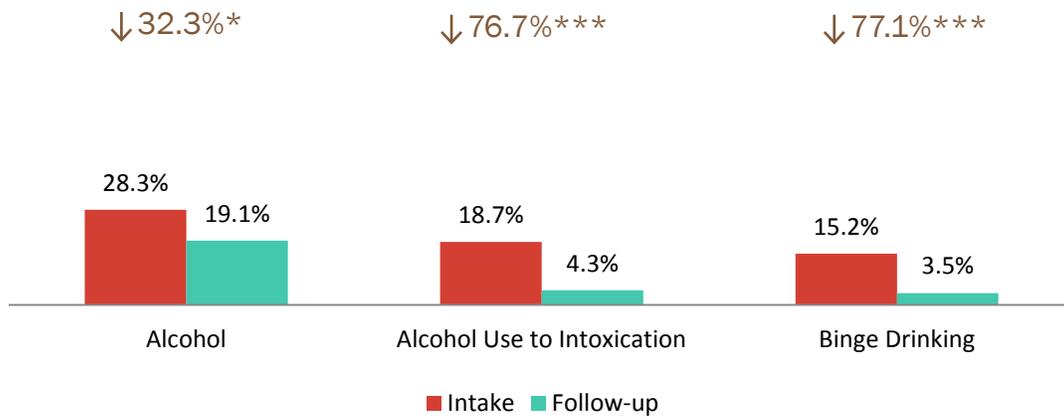
A little more than 1 in 4 clients (28.3%) reported using alcohol in the 6 months before entering treatment while 19.1% of clients reported alcohol use in the 6 months before follow-up (see Figure 3.21). Overall, for the KORTOS follow-up sample, there was a 32.3% significant decrease in the number of clients reporting alcohol use. Smaller percentages of clients reported using alcohol

The number of clients reporting alcohol use decreased by 32%

<sup>37</sup> National Institute on Alcohol Abuse and Alcoholism. (2004, Winter). NIAAA council approves definition of binge drinking. *NIAAA Newsletter, Winter 2004* (3). Rockville, MD: Department of Health and Human Services, National Institutes of Health, national Institute on Alcohol Abuse and Alcoholism.

to intoxication (18.7%) or binge drinking (15.2%) in the 6 months before entering treatment. There were significant decreases in the number of individuals who reported alcohol use to intoxication and binge drinking in the 6 months before follow-up.

FIGURE 3.21. PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 230)<sup>38</sup>

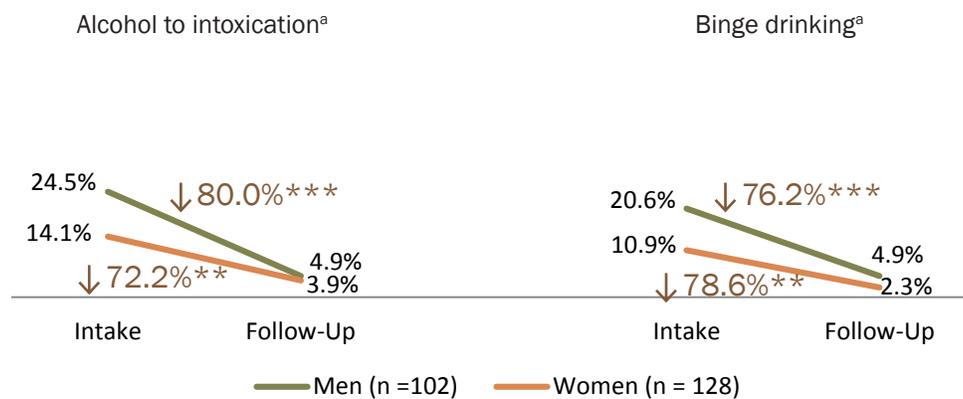


\*p < .05, \*\*\*p < .001.

### Gender Differences in Past-6-month Alcohol to Intoxication Use and Binge Drinking

Significantly more men than women reported using alcohol to intoxication and binge drinking in the 6 months before entering treatment (see Figure 3.22). The number of men and women who reported using alcohol to intoxication and binge drinking decreased significantly from intake to follow-up. At follow-up, there was no significant difference by gender in alcohol use to intoxication and binge drinking.

FIGURE 3.22. GENDER DIFFERENCES PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP



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

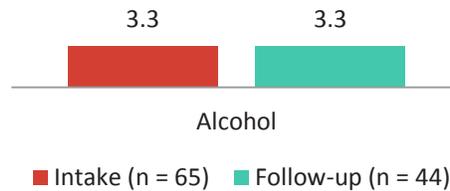
a—Significant difference by gender at intake, p < .05.

<sup>38</sup> Five cases had missing data for alcohol use at intake and one case had missing data for alcohol to intoxication and binge drinking at follow-up.

### Average Number of Months Used Alcohol

Figure 3.23 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 = 65), they reported using alcohol, on average, 3.3 months. Among clients who reported using alcohol in the 6 months before follow-up (n = 44), they also reported using, on average, 3.3 months.

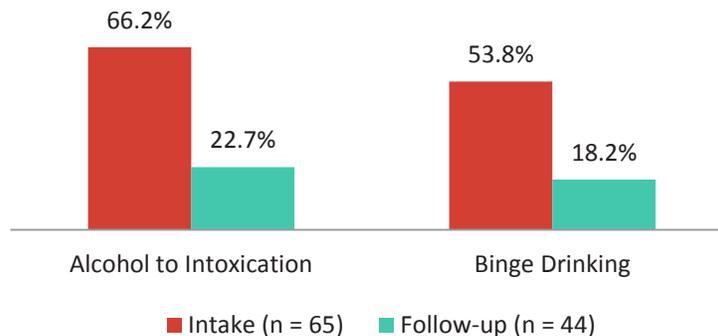
FIGURE 3.23. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE



### Past-6-month Alcohol Intoxication and Binge Drinking Among Those Who Used Alcohol

Of the clients who used alcohol in the 6 months before entering treatment (n = 65), 66.2% used alcohol to intoxication and 53.8% reported binge drinking in the 6-month period (see Figure 3.24). Of the clients who used alcohol in the 6 months before follow-up (n = 44), 22.7% of clients reported alcohol use to intoxication and 18.2% reported binge drinking in the 6-month period.

FIGURE 3.24. PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



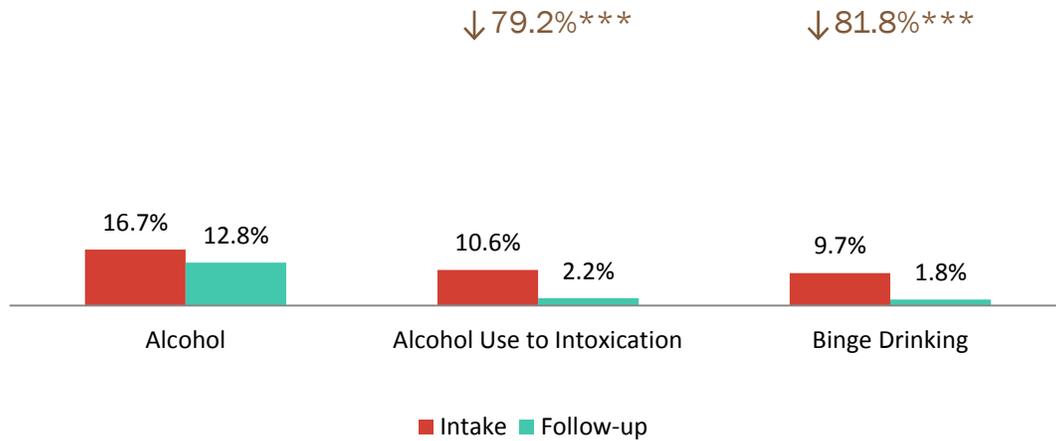
### Past-30-day Alcohol Use

There was no significant decrease in the percentage of clients who reported using alcohol in the past 30 days from intake (16.7%) to follow-up (12.8%). The number of clients who reported using alcohol to intoxication decreased significantly by 79.2% from intake to follow-up and the number of clients who reported binge drinking decreased significantly 81.8% from intake to follow-up.

“**NOT A BUSINESS ATMOSPHERE, EASY TO TALK TO PEOPLE. THEY WILL DO WHATEVER THEY CAN TO HELP YOU OUT.**”

- KORTOS Follow-up Client

FIGURE 3.25. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 227)<sup>39</sup>

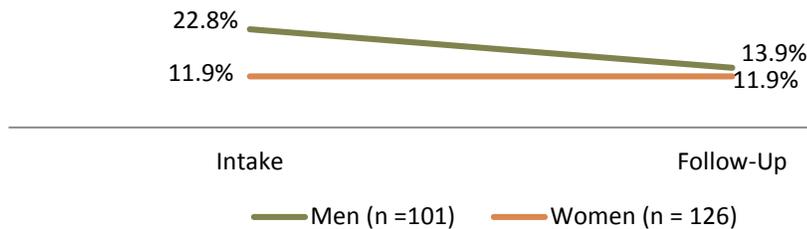


\*\*\*p < .001.

### Gender Differences in Past-30-day Alcohol Use

Significantly more men than women reported using alcohol in the 30 days before entering treatment (see Figure 3.26). At follow-up, there was no significant difference by gender in alcohol use.

FIGURE 3.26. GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

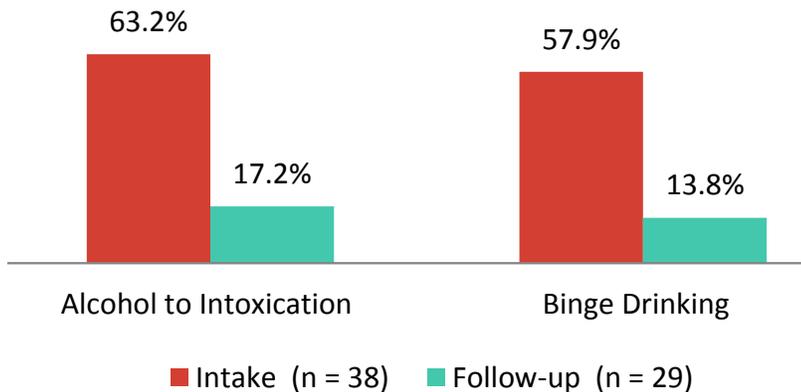
### Past-30-day Alcohol Intoxication and Binge Drinking Among Those Who Used Alcohol

Of the 38 clients who used alcohol in the 30 days before intake, 63.2% used alcohol to intoxication and 57.9% binge drank in the 30 days before intake (see Figure 3.27).

Of the 29 clients who reported using alcohol in the 30 days before follow-up, 17.2% reported using alcohol to intoxication and 13.8% reported binge drinking in the 30 days before follow-up.

<sup>39</sup> Five cases had missing data for alcohol use at intake and one case had missing data for alcohol to intoxication and binge drinking at follow-up.

FIGURE 3.27. PAST-30-DAY ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



### Self-reported Severity of Alcohol and Drug Use

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

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

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

### ASI Alcohol and Drug Composite Scores and Substance Use Disorders

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. While the clients who were followed up in this study were provided with treatment under previous DSM-IV-TR conditions, we relate their severity of use in terms that are compatible with current nosology. Thus, ASI composite scores that met the threshold can be considered indicative of severe substance use disorder to be compatible with current thinking about substance use disorders in the DSM-V (American Psychiatric Association, 2013), where we would have previously referred to them as meeting the threshold for dependence. Change from intake to follow-up in the severity rating has the same clinical relevance as moving from dependence to abuse in the older criteria.

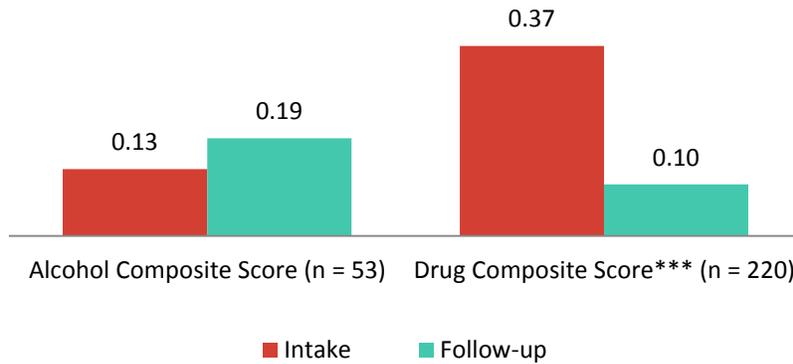
Rikoon, S., Cacciola, J., Carise, D., Alterman, A., McLellan, A. (2006). Predicting DSM-IV dependence diagnoses from Addiction Severity Index composite scores. *Journal of Substance Abuse Treatment*, 31(1), 17-24.

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

Figure 3.28 displays the change in average composite scores. The average for the alcohol composite score increased from 0.13 at intake to 0.19 at follow-up. The average for the drug composite score decreased significantly from 0.37 at intake to 0.10 at follow-up.

Among clients who used drugs, **the average ASI drug composite scores decreased significantly** from intake to follow-up

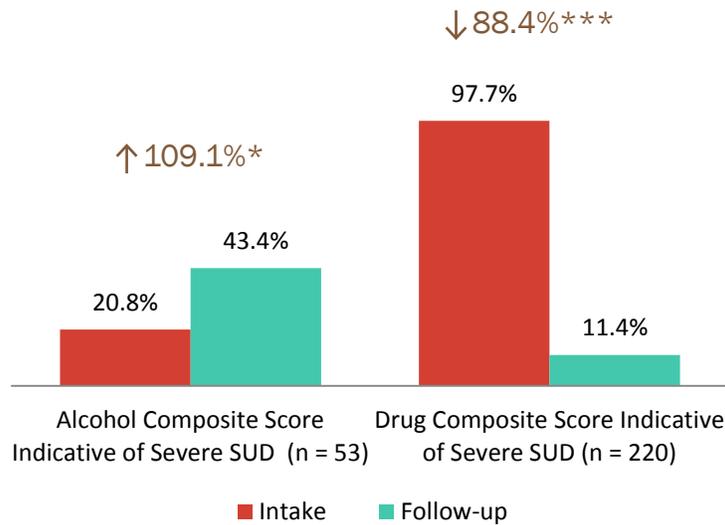
FIGURE 3.28. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP<sup>40</sup>



\*\*\*p < .001.

The percentage of individuals who had ASI drug composite scores that met the cutoff for severe substance use disorder (SUD) decreased significantly by 88.4% from intake (97.7%) to follow-up (11.4%; see Figure 3.29). However, one-fifth of individuals who used alcohol had alcohol composite scores that met the cutoff for severe SUD at intake. That number increased significantly by 109.1% at follow-up (43.4%).

FIGURE 3.29. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP

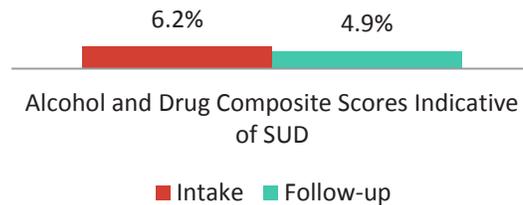


\*p < .05, \*\*\*p < .001.

<sup>40</sup> Among clients who used alcohol in the 30 days before intake or follow-up (n = 56), three clients had missing values on one of the items that is part of the calculation for the alcohol composite score at follow-up. Among clients who used drugs in the 30 days before intake or follow-up (n = 226), six clients had missing values for at least one of the items that are part of the calculation for the drug composite score at follow-up.

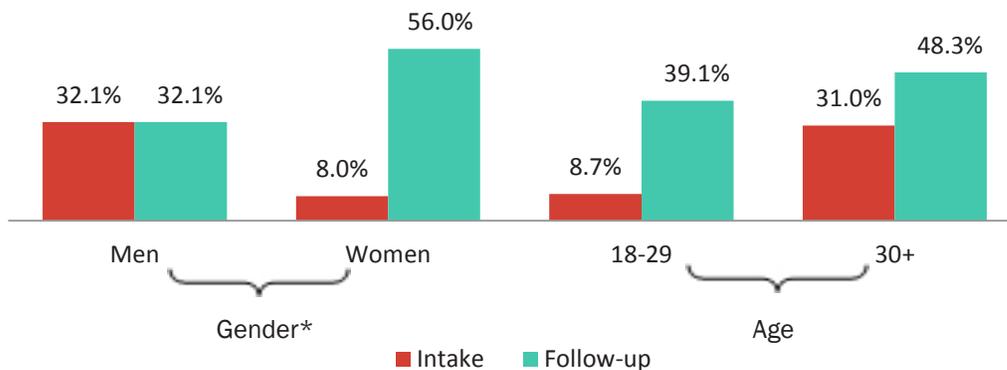
Among the individuals who were not in a controlled environment all 30 days before entering the OTP and who reported using alcohol and/or drugs at intake or follow-up, 6.2% of clients had alcohol and drug composite scores that met the cutoff for severe SUD at intake (see Figure 3.30). The percentage of clients who had composite scores that met the cutoff for severe SUD for both alcohol and drugs decreased slightly to 4.9% at follow-up.

FIGURE 3.30. CLIENTS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR BOTH ALCOHOL AND DRUG SEVERE SUBSTANCE USE DISORDERS AT INTAKE AND FOLLOW-UP (N = 226)



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 or age (see Figure 3.31).<sup>41</sup> Significantly more men than women had an alcohol composite score indicative of severe SUD at intake (32.1% vs. 8.0%). There were no differences between age groups at intake or follow-up.

FIGURE 3.31. ALCOHOL-USING CLIENTS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 52)



\*p<.05.

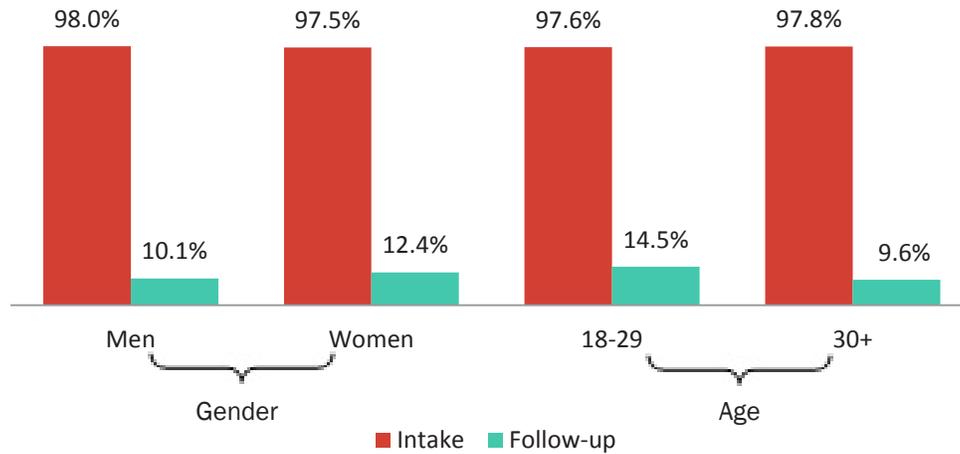
Analyses were also conducted to determine if clients who had a drug composite score indicative of severe SUD at intake and follow-up differed by gender or age (see Figure 3.32).<sup>42</sup> There were no significant differences for drug composite scores indicative of severe SUD at intake and follow-up

<sup>41</sup> Race/ethnicity was not included in the analysis because there were only 3 clients who were considered non-white or multi-racial.

<sup>42</sup> Race/ethnicity was not included in the analysis because there were only 12 clients who were considered non-white or multi-racial.

between men and women or between younger and older clients.

FIGURE 3.32. DRUG-USING CLIENTS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 220)

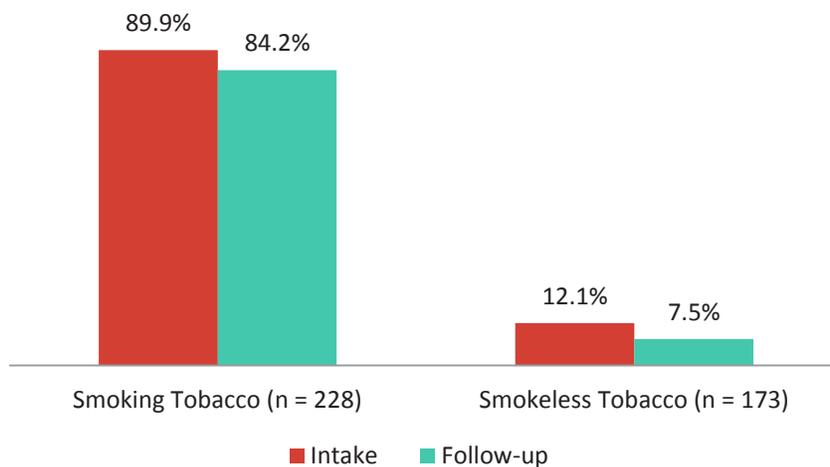


## Tobacco Use

### Past-6-month Tobacco Use

There was no change in smoking and smokeless tobacco use from intake to follow-up (see Figure 3.33). Most clients reported using tobacco in the 6 months before entering treatment (89.9%) and in the 6 months before follow-up (84.2%). A small minority of clients reported using smokeless tobacco in the 6 months before intake (12.1%) and follow-up (7.5%).

FIGURE 3.33. PAST-6-MONTH TOBACCO USE AT INTAKE AND FOLLOW-UP<sup>43</sup>



<sup>43</sup> Eight cases had missing data on past-6-month smoking tobacco use at intake, 61 cases had missing data on past-6-month smokeless tobacco use at intake and 2 cases had missing data on past-6-month smokeless tobacco use at follow-up.

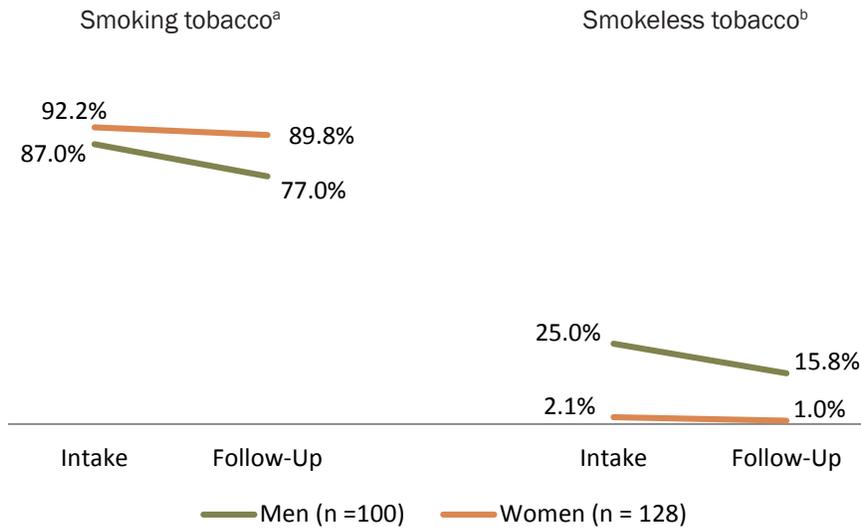
### Gender Differences in Past-6-month Tobacco Use

High percentages of men and women reported smoking tobacco in the 6 months before intake and follow-up (see Figure 3.34). Significantly more women reported smoking tobacco in the 6 months before follow-up when compared to men. Even though only a small percentage of clients reported using smokeless tobacco in the 6 months before entering treatment and follow-up, there was a significant difference by gender; almost all of the clients who reported using smokeless tobacco were men (see Figure 3.34).



Significantly **more men reported using smokeless tobacco** at both intake and follow-up compared to women

FIGURE 3.34. GENDER DIFFERENCES IN PAST-6-MONTH TOBACCO USE FROM INTAKE TO FOLLOW-UP

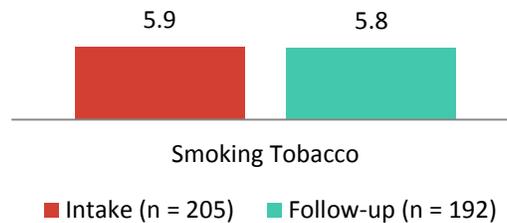


a—Significant difference by gender at follow-up,  $p < .01$ .  
 b—Significant difference by gender at intake and follow-up,  $p < .001$ .

### Average Number of Months Used Smoking Tobacco

Figure 3.35 shows that among clients who reported smoking tobacco in the 6 months before entering treatment ( $n = 205$ ), they reported smoking tobacco, on average, 5.9 months. There was no change in the average number of months clients who smoked tobacco reported smoking tobacco in the 6 months before follow-up (5.8 months;  $n = 192$ ).

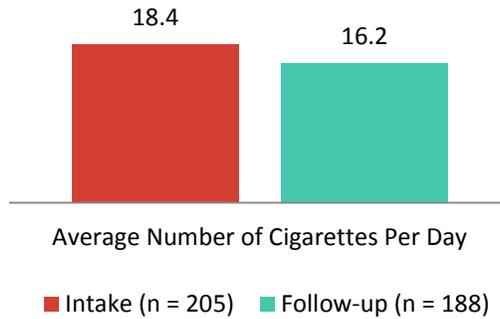
FIGURE 3.35. AVERAGE NUMBER OF MONTHS OF SMOKING TOBACCO USE



### Average Number of Cigarettes Smoked

The average number of cigarettes clients reported smoking at intake and follow-up decreased slightly (see Figure 3.36). Of those who smoked tobacco at intake, clients reported smoking an average of 18.4 cigarettes per day. At follow-up, among clients who reported smoking tobacco, they reported smoking an average of 16.2 cigarettes per day.

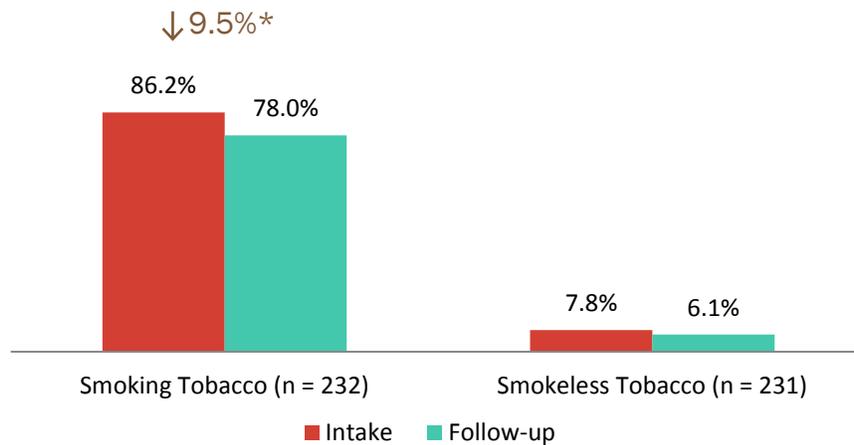
FIGURE 3.36. NUMBER OF CIGARETTES SMOKED IN AN AVERAGE DAY AMONG CLIENTS WHO SMOKED TOBACCO<sup>44</sup>



### Past-30-day Tobacco Use

The number of clients who reported any smoking tobacco use in the past 30 days significantly decreased 9.5%, from 86.2% at intake to 78.0% at follow-up. Smokeless tobacco use did not change from intake to follow-up (see Figure 3.37).

FIGURE 3.37. PAST-30-DAY TOBACCO USE AT INTAKE AND FOLLOW-UP<sup>45</sup>



\*p<.05.

### Gender Differences in Past-30-day Tobacco Use

In the 30 days before follow-up, significantly more women than men used smoking tobacco (85.3% vs. 68.9%). The number of men who used smoking tobacco significantly decreased from



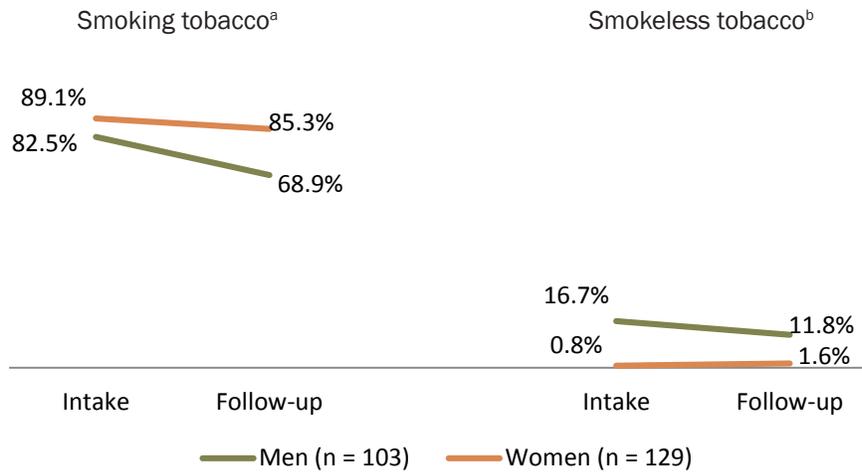
Significantly more women reported smoking tobacco in the 30 days before follow-up compared to men

<sup>44</sup> Four cases had missing values for number of cigarettes smoked at follow-up.

<sup>45</sup> One case had missing values for past-30-day smoking tobacco use and two cases had missing values for past-30-day smokeless tobacco use at follow-up.

intake to follow-up. Only a small percentage of clients reported using smokeless tobacco in the 30 days before entering treatment and follow-up, however, there was a significant difference by gender; almost all of the clients who reported using smokeless tobacco were men (see Figure 3.38).

FIGURE 3.38. GENDER DIFFERENCES IN PAST-6-MONTH TOBACCO USE FROM INTAKE TO FOLLOW-UP



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

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

\* $p < .05$

Section 4.

## Mental Health, Stress, and Physical Health

This section examines changes in mental health, stress, and physical health from intake to follow-up. Specifically, this section examines: (1) depression; (2) generalized anxiety; (3) comorbid depression and generalized anxiety; (4) suicide ideation and attempts; (5) stress-related health consequences; (6) perceptions of physical and mental health; (6) chronic pain; and (7) body mass index. The mental health and physical health questions in the KORTOS intake and follow-up surveys were self-report measures.

### Depression Symptoms

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

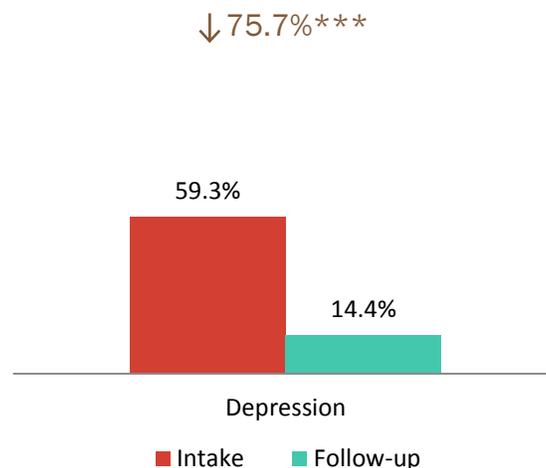
1. “Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?” and
2. “Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?”

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). 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 symptoms.

The majority of clients (59.3%) met criteria for depression in the 6 months before they entered treatment (see Figure 4.1). At follow-up, 14.4% met criteria for depression—a significant decrease of 75.7%.

The percentage of **clients meeting criteria for depression decreased significantly by 76%** from intake to follow-up

FIGURE 4.1. MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 236)



\*\*\*p < .001.

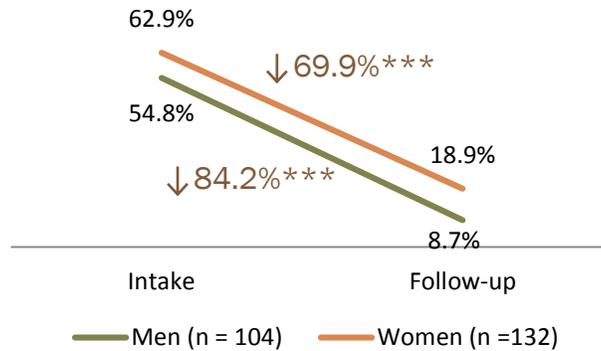
### Gender Differences in Depression Symptoms

Significantly more women met criteria for depression at follow-up compared to men (see Figure 4.2). The number of women who met criteria for depression decreased significantly by 69.9% from intake to follow-up. The number of men who met criteria for depression decreased significantly by 84.2% at follow-up.



Significantly more **women met criteria for depression** at follow-up compared to men

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



a—Statistical difference by gender at follow-up,  $p < .05$ .  
\*\*\* $p < .001$ .

### Anxiety Symptoms

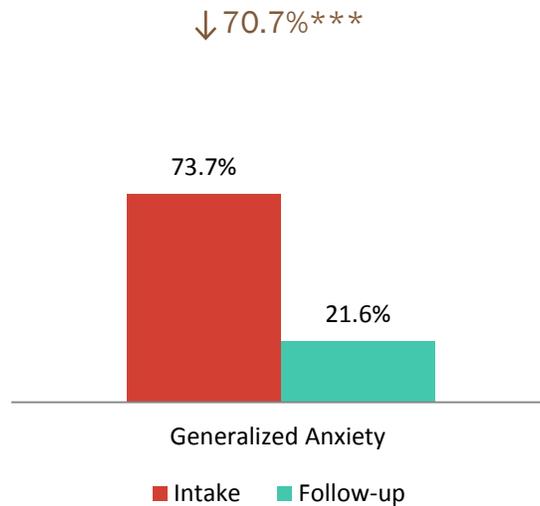
To assess for generalized anxiety symptoms, participants were first asked: “In the 6 months before you entered this program, did you worry excessively or were you anxious about multiple things on more days than not for all 6 months (like family, health, finances, school, or work difficulties)?”

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). To meet study criteria for generalized anxiety, clients had to answer “yes” to the screening question and to at least 3 of the symptom items.

In the 6 months before entering treatment, 73.7% of clients reported symptoms that met study criteria for generalized anxiety and 21.6% reported symptoms at follow-up – a significant decrease of 70.7% (see Figure 4.3).

The percentage of **clients meeting criteria for generalized anxiety decreased significantly** from intake follow-up

FIGURE 4.3. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 236)



\*\*\*p < .001.

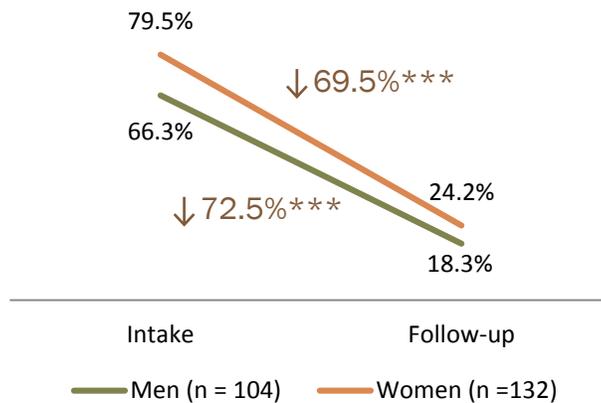
### Gender Differences in Generalized Anxiety Symptoms

Significantly more women met criteria for generalized anxiety at intake compared to men (see Figure 4.4). The number of women who met criteria for generalized anxiety decreased significantly by 69.5% from intake to follow-up. The number of men who met criteria for generalized anxiety decreased significantly by 72.5% at follow-up.



Significantly **more women met criteria for generalized anxiety at intake** compared to men

FIGURE 4.4. GENDER DIFFERENCES IN PERCENTAGE OF CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY<sup>a</sup>



a—Statistical difference by gender at intake, p < .05.

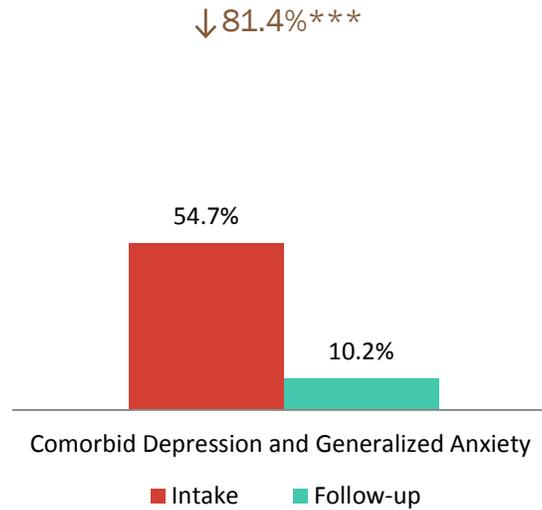
\*\*\*p < .001.

### Comorbid Depression and Anxiety Symptoms

Figure 4.5 shows that at intake, over half of clients (54.7%) met study criteria for both depression and generalized anxiety and there was a significant decrease of 81.4% to 10.2% at follow-up.

The percentage of clients meeting criteria for **both depression and generalized anxiety decreased 81%**

FIGURE 4.5. CLIENTS MEETING STUDY CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 236)



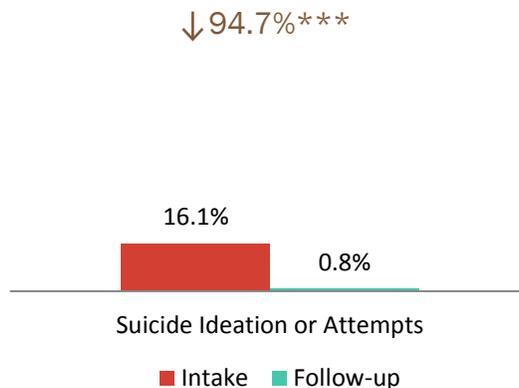
\*\*\*p < .001.

### Suicide Ideation and/or Attempts

Suicide 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 94.7% decrease in the number of clients reporting suicidal ideation and attempts from intake (16.1%) to follow-up (0.8%; see Figure 4.6).

The percentage of **clients reporting suicidal ideation and/or attempts decreased 95%** at follow-up

FIGURE 4.6. CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 236)

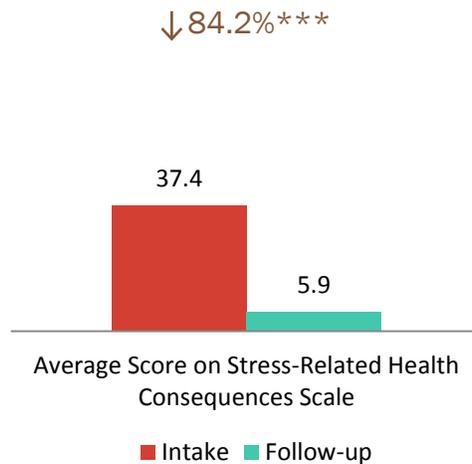


\*\*\*p < .001.

## Stress-related Health Consequences

Clients were also asked about their physiological symptoms often associated with higher stress with questions from the Stress-Related Health Consequences Scale.<sup>46</sup> The scale contains 15 symptoms and clients indicate how often they have experienced these symptoms in the past 7 days (e.g., experienced unexplained aches and pains, slept poorly, experienced an increased heart rate). Higher scores on the scale indicate higher stress and greater physiological indicators of stress. The minimum score is 0 and the maximum score is 75. For the overall sample, scores decreased significantly from 37.4 at intake to 5.9 at follow-up, representing a significant decrease of 84.2% (see Figure 4.7).

FIGURE 4.7. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP (N = 236)



\*\*\*p < .001.

## Gender Differences in Stress-related Health Consequences

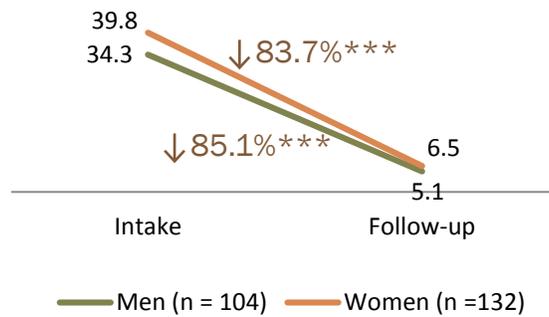
Figure 4.8 shows that Stress-Related Health Consequences Scale scores for men decreased significantly by 85.1% and women’s scores decreased significantly by 83.7%. At intake, women’s average scores were significantly higher than men’s scores (39.8 compared to 34.3) but there was no difference at follow-up.



At intake, **women’s average Stress-Related Health Consequences scores were significantly higher** than men’s scores

<sup>46</sup> Measure created by Logan, TK and Walker, R. Stress-Related Health Consequences.

FIGURE 4.8. GENDER DIFFERENCES IN AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP<sup>a</sup>



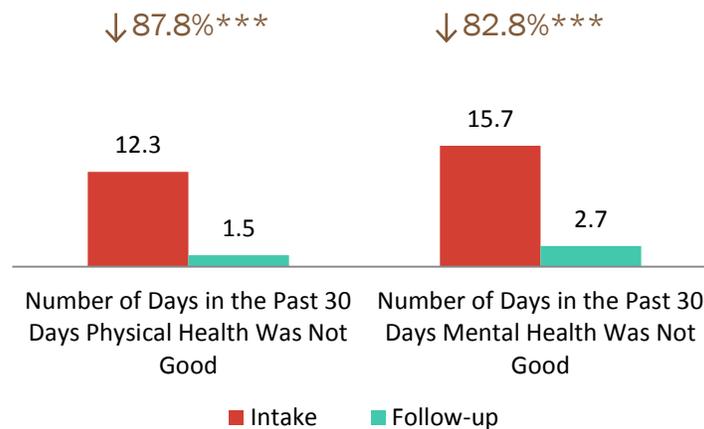
a—Statistical difference by gender at intake,  $p < .01$ .  
 \*\*\* $p < .001$ .

### Perceptions of Physical and Mental Health

Clients were asked how many days in the past 30 days their physical and mental health were not good, at intake and follow-up (see Figure 4.9). The number of days clients reported their physical health was not good decreased significantly by 87.8% from an average of 12.3 days at intake to 1.5 days at follow-up. The number of days clients' mental health was not good decreased significantly by 82.8% from intake (15.7) to follow-up (2.7).

The **average number of days clients' physical and mental health was not good decreased significantly**

FIGURE 4.9. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 234)<sup>47</sup>



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

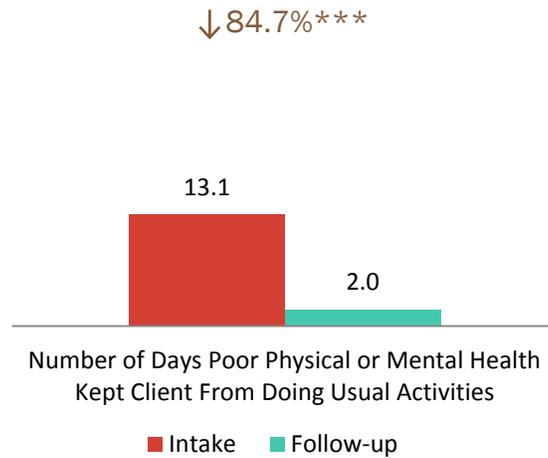
### Perceptions of Poor Physical or Mental Health Limiting Activities

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 by

<sup>47</sup> Two individuals had missing data for physical health at follow-up and three individuals had missing data for mental health at follow-up.

84.7% from 13.1 days at intake to 2.0 days at follow-up (see Figure 4.10).

FIGURE 4.10. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 234)<sup>48</sup>



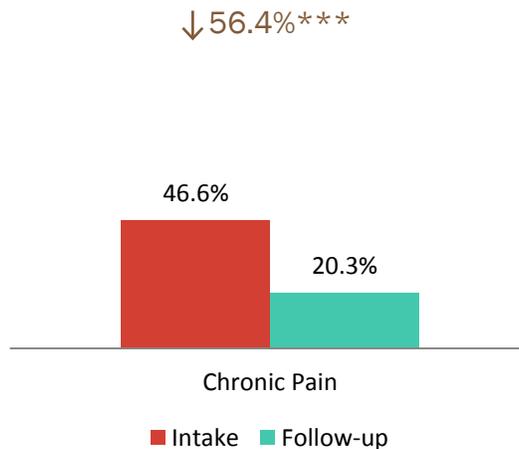
\*\*\*p < .001.

## Physical Health Issues

### Chronic Pain

The percentage of clients who reported chronic pain that was persistent and lasts at least 3 months decreased by more than half from intake to follow-up (see Figure 4.11). At intake, 46.6% of clients reported chronic pain and 20.3% of clients reported chronic pain at follow-up.

FIGURE 4.11. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 236)



\*\*\*p < .001.

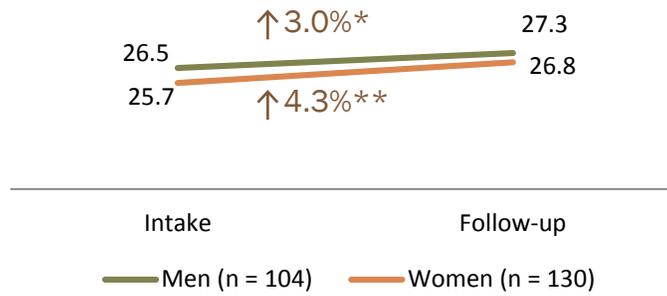
### Body Mass Index

Body mass index (BMI) was calculated from clients' self-reported height and weight at intake and follow-up (see Figure 4.12). Because their overall body size is larger, the BMI for men were calculated separately from women so as to get a more accurate picture of the BMI of KORTOS

<sup>48</sup> Two cases had a missing value for this item at follow-up.

clients. Men's and women's average BMI increased significantly from intake to follow-up.

FIGURE 4.12. BODY MASS INDEX BASED ON SELF-REPORTED HEIGHT AND WEIGHT AT INTAKE AND FOLLOW-UP  
(N = 234)<sup>49</sup>



<sup>49</sup> One case had missing data at intake and one case had missing data at follow-up.

## Section 5.

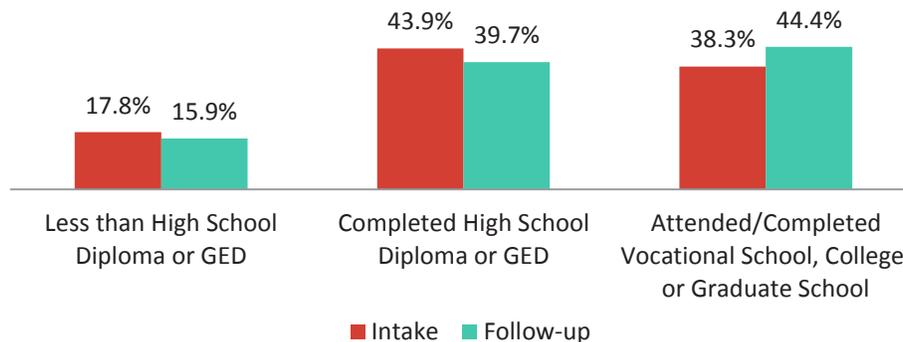
# Education and Employment

This section examines changes in education and employment from intake to follow-up including: (1) highest level of education completed; (2) the percentage of clients who worked full-time or part-time; (3) the number of months clients were employed full-time or part-time; and (4) hourly wage. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

## Education

The average highest level of education increased significantly from intake (12.7) 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 number of clients who reported different levels of education. There was no significant change in the percentage of clients in each education category from intake to follow-up (see Figure 5.1).

FIGURE 5.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE AND FOLLOW-UP (N = 214)<sup>50</sup>



## Employment

### Current Employment Status

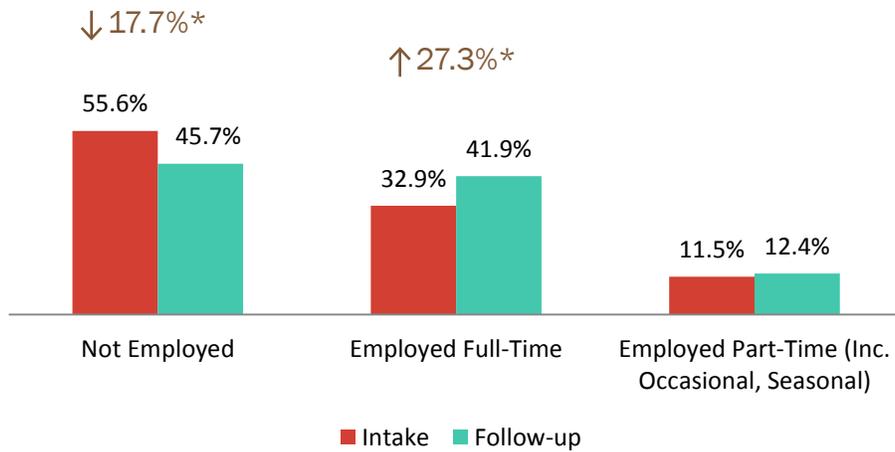
At intake, over half of the clients were not employed and at follow-up 45.7% were not employed, a significant decrease of 17.7% (see Figure 5.2). The number of clients who were employed full-time increased 27.3%, from 32.9% at intake to 41.9% at follow-up.

“IT SAVED MY LIFE. IT GOT ME TO STAY OFF HEROIN AND I’M ABLE TO WORK NOW BECAUSE I’M NOT SICK ALL THE TIME.”

- KORTOS Follow-up Client

<sup>50</sup> Twenty-two cases had missing values for education at follow-up because of inconsistencies in data from intake to follow-up.

FIGURE 5.2. CHANGE IN CURRENT EMPLOYMENT STATUS (N = 234)<sup>51</sup>



\*p < .05

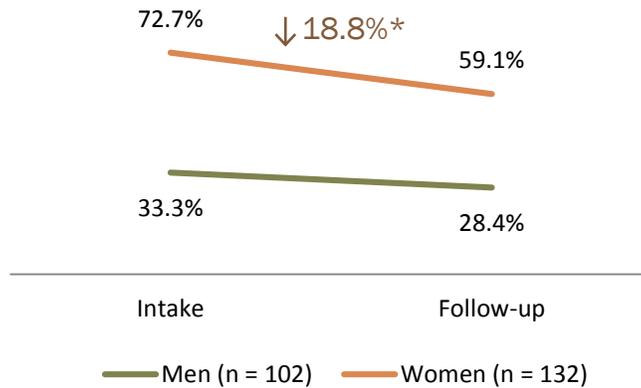
Of those clients who were not employed at intake (n = 130) and follow-up (n = 107),<sup>52</sup> significantly more women than men stated they were not employed because they were staying at home to care for children or others (37.5% vs. 8.6% at intake, and 41.0% vs. 6.9% at follow-up; not depicted in a figure). However, at both intake and follow-up, more men than women reported they were looking for work while unemployed.

**Gender Differences in Current Employment Status**

*Currently Unemployed*

Significantly more women at intake and follow-up reported that they were currently unemployed compared to men: 72.7% vs. 33.3% at intake and 59.1% vs. 28.4% at follow-up. The number of women who were currently unemployed decreased significantly 18.8% from intake to follow-up, whereas the percentage of men unemployed did not change significantly (see Figure 5.3).

FIGURE 5.3. GENDER DIFFERENCES IN UNEMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

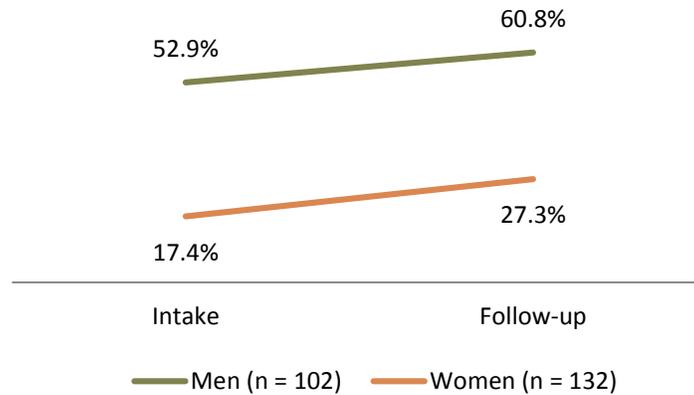
<sup>51</sup> Two cases had missing data for current employment status at follow-up.

<sup>52</sup> Two cases had missing data for current employment status at follow-up.

### Currently Employed Full-time

The number of men who reported they were employed full-time was 3 times higher than the number of women who were employed full-time at intake (52.9% vs. 17.4%). At follow-up the number of men who were employed full-time was more than double the number of women (60.8% vs. 27.3%; see Figure 5.4).

FIGURE 5.4. GENDER DIFFERENCES IN CURRENT FULL-TIME EMPLOYMENT STATUS AT INTAKE AND FOLLOW-UP<sup>a</sup>

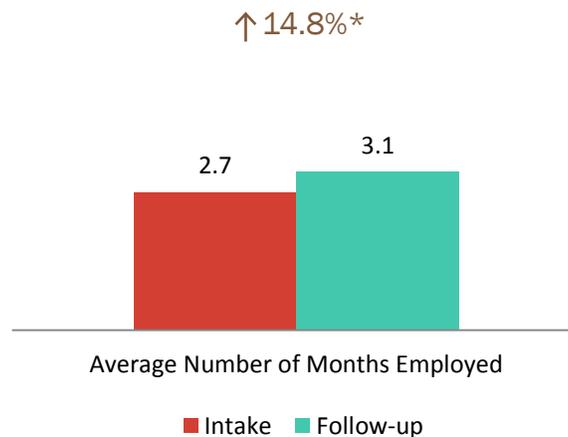


a—Significant difference by gender at intake and follow-up,  $p < .001$ .

### Average Number of Months Employed

Clients were asked in the intake survey to report the number of months they were employed full-time or part-time in the 6 months before they entered the OTP. At follow-up they were asked to report the number of months they were employed full-time or part-time in the 6 months before the follow-up survey. Figure 5.5 shows there was a significant increase in the number of months clients were employed from intake (2.7 months) to follow-up (3.1 months).

FIGURE 5.5. AVERAGE NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP (N = 229)<sup>53</sup>



\* $p < .05$

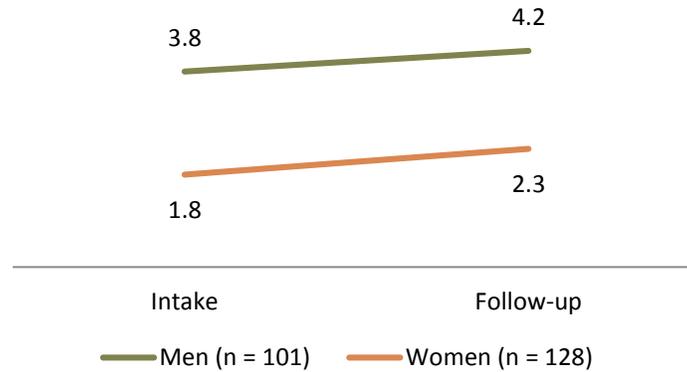
<sup>53</sup> Seven cases had missing values for number of months employed in the 6 months before follow-up.

### Gender Differences in the Number of Months Employed

Men reported working significantly more months at both periods compared to women (intake, 3.8 vs. 1.8 and follow-up, 4.2 vs. 2.3). There were no significant increases in the number of months employed from intake to follow-up for men or women (see Figure 5.6).

**Men reported more months of employment than women at intake and follow-up**

FIGURE 5.6. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP<sup>a</sup>

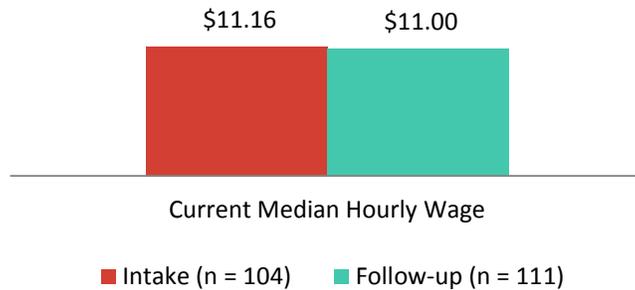


a—Significant difference in number of months worked at intake and follow-up by gender,  $p < .001$ .

### Hourly Wage

Of those clients who were employed at intake ( $n = 104$ ), the median hourly wage was \$11.16. At follow-up, the median hourly wage was \$11.00<sup>54</sup> (see Figure 5.7).

FIGURE 5.7. CURRENT MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG EMPLOYED CLIENTS



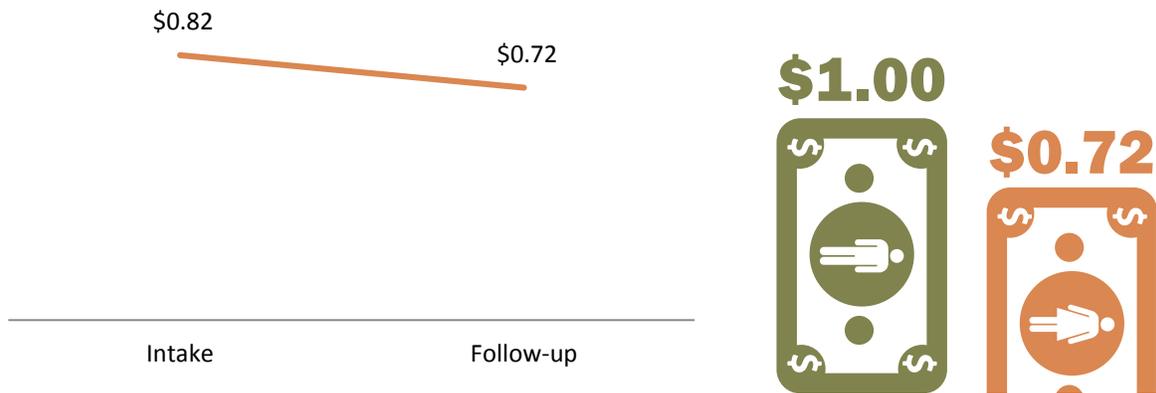
### Gender Differences in Hourly Wage

Among employed clients, there was no significant difference in median hourly wage between men and women at intake; however, employed women made \$0.82 for every \$1 men made (\$12.25 for men and \$10.00 for women). At follow-up, employed men reported a significantly higher hourly wage than employed women (\$12.00 vs. \$8.60; see Figure 5.8).

**At follow-up, employed women made only \$0.72 for every \$1 employed men made**

<sup>54</sup> Sixteen clients reported they did not know their hourly wage at follow-up, because they had salaried or commission jobs.

FIGURE 5.8. MEDIAN HOURLY WAGE EMPLOYED WOMEN MAKE FOR EVERY DOLLAR EMPLOYED MEN MAKE AT INTAKE AND FOLLOW-UP<sup>a</sup>



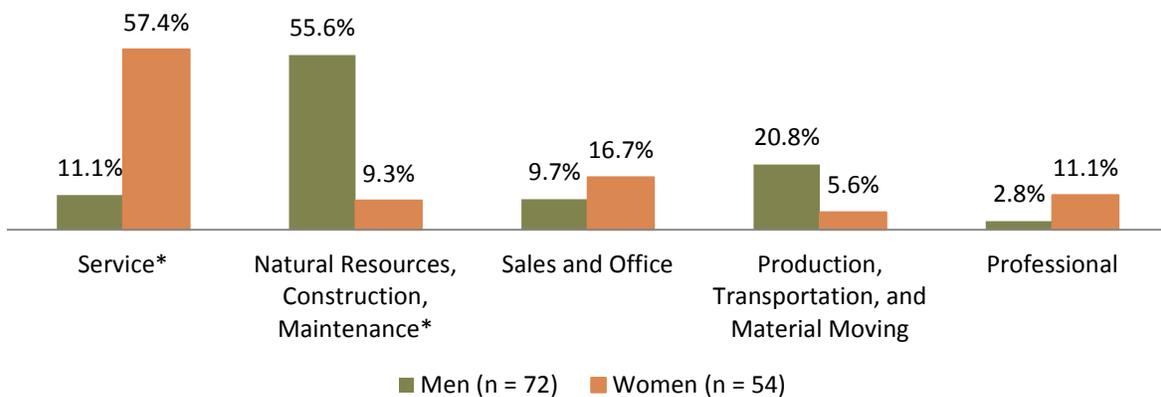
a—Significant difference in median hourly wage at follow-up by gender,  $p < .001$ .

### Gender Differences in Occupation Type

At least part of the reason for the marked difference in hourly wages between men and women is due to the significant difference in occupation type for employed individuals by gender.<sup>55</sup> At follow-up, over half of employed women (57.4%) reported having a service job whereas only 11.1% of employed men had a service job (see Figure 5.9). Additionally, more employed men reported having a natural resources, construction, or maintenance job than women (55.6% vs. 9.3%). One-sixth of employed women (16.7%) and 9.7% of employed men had sales and office jobs. Production, transportation, and material moving jobs were reported by 20.8% of employed men and only 5.6% of employed women. Small numbers of men and women reported having professional jobs.

At follow-up, among employed individuals, **more women had service jobs and more men had natural resources, construction, and maintenance jobs, which are typically higher paying than service jobs**

FIGURE 5.9. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 126)



\* $p < .05$

<sup>55</sup> Occupation type was asked only of individuals who reported they were currently employed at intake and at follow-up.

Section 6.

# Homelessness, Living Situation, and Economic Hardship

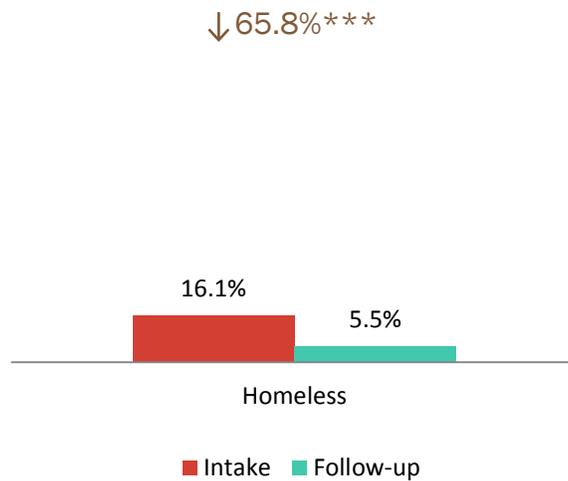
This section examines changes in clients' socio-economic status from intake to follow-up. Specifically, this section examines: (1) if clients consider themselves to be homeless; (2) their living situation (i.e., own home or someone else's home, residential program, shelter); and (3) economic hardship (i.e., difficulty meeting living and health care needs).

## Homelessness

One in 6 clients (16.1%) reported at treatment intake they were homeless at some point in the past 6 months. At follow-up, 5.5% of clients reported they had been homeless at some point in the past 6 months (see Figure 6.1).

The number of clients who reported **homelessness decreased 66%** from intake to follow-up

FIGURE 6.1. CLIENTS REPORTING CURRENT HOMELESSNESS AT INTAKE AND FOLLOW-UP (N = 236)



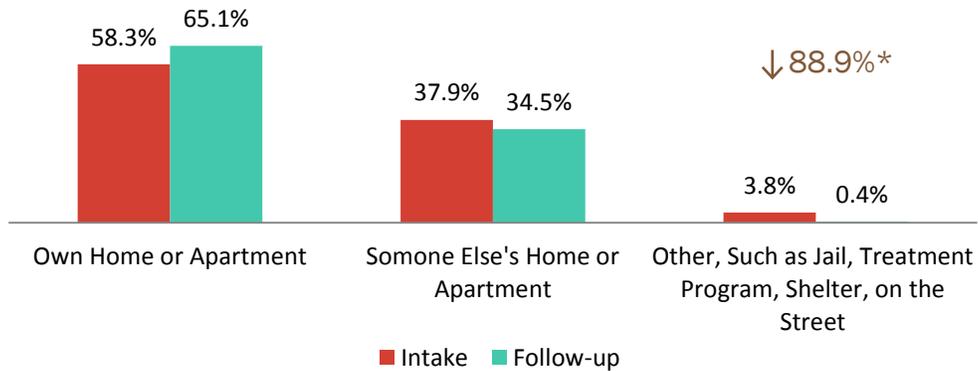
\*\*\*p < .001.

## Living Situation

Figure 6.2 shows that there was no difference in the number of clients who reported they were living in their own home or apartment or someone else's home or apartment in the past 6 months at follow-up than before OTP intake. The number of clients who lived in jail, treatment center, shelter, or on the street significantly decreased by 88.9%.

Significantly **fewer clients reported they were living in jail, treatment program, shelter, or on the street** at follow-up

FIGURE 6.2. TYPE OF TYPICAL RESIDENCE IN THE PAST 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 235)<sup>56</sup>



\*p < .05

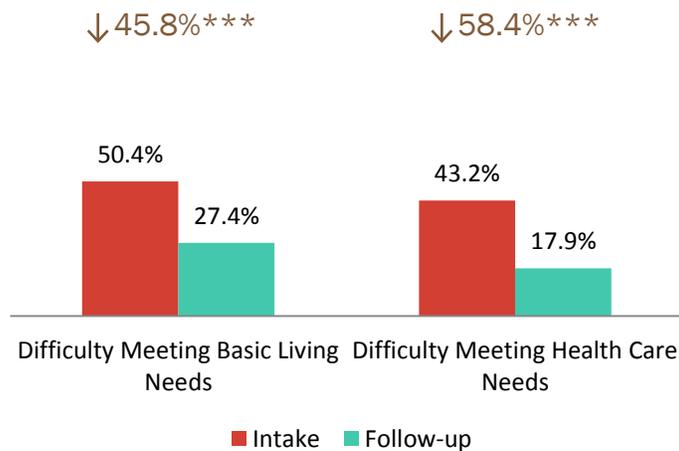
### Economic Hardship

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 medical care for financial reasons.

The number of clients who reported having difficulty meeting basic living needs such as food, shelter, telephone, and utilities decreased from intake to follow-up (see Figure 6.3). The number of clients reporting difficulty meeting basic living needs (e.g., shelter, utilities, phone, food) significantly decreased by 45.8% from the 6 months before entering the OTP (50.4%) to the 6 months before follow-up (27.4%). The number of clients who reported difficulty meeting health care needs (i.e., doctor visits, dental visits, and prescription medications) for financial reason decreased by 58.4% from intake to follow-up.

Percentage of clients reporting **difficulty meeting basic living needs decreased by 46%**

FIGURE 6.3. DIFFICULTY MEETING BASIC LIVING NEEDS AND HEALTH CARE NEEDS FOR FINANCIAL REASONS AT INTAKE AND FOLLOW-UP (N = 234)<sup>57</sup>



\*\*\*p < .001.

<sup>56</sup> One individual had missing data for living situation at follow-up.

<sup>57</sup> Two clients had missing values for the items in the scale.

Section 7.

# Criminal Justice System Involvement

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

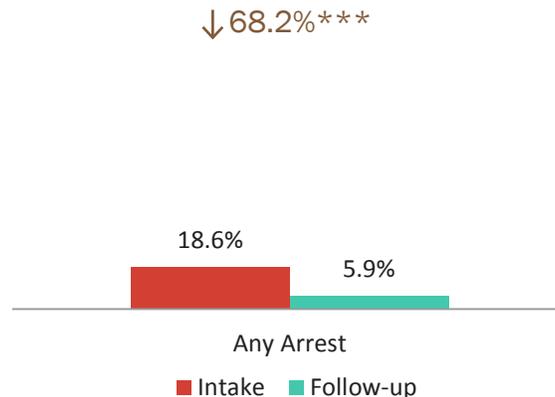
## Arrests

### Any Arrests in the Past 6 Months

Clients were asked about their arrests in the 6 months before they entered treatment at the OTP and the past 6 months (at follow-up). A small percentage of KORTOS clients (18.6%) reported any arrests in the 6 months before entering treatment and an even smaller percentage reported any arrests in the 6 months before follow-up (5.9%; see Figure 7.1).

Percentage of clients reporting **any arrest significantly decreased 68% at follow-up**

FIGURE 7.1. PAST-6 MONTH ARRESTS AT INTAKE AND FOLLOW-UP (N = 236)



\*\*\*p < .001.

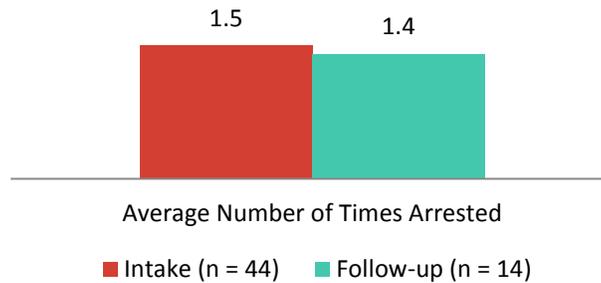
### Average Number of Arrests, Among Clients Who Reported an Arrest

Among clients who reported at least one arrest in the 6 months before entering treatment at the OTP (n = 44), the average number of times they were arrested was 1.5 (see Figure 7.2). Among clients who reported at least one arrest in the 6 months before follow-up (n = 14), the average number of times they were arrested was 1.4.

“THEY TREAT YOU LIKE THEY WOULD TREAT ANYBODY ELSE. THEY TREAT YOU LIKE A HUMAN BEING.”

- KORTOS Follow-up Client

FIGURE 7.2. AVERAGE NUMBER OF TIMES ARRESTED AT INTAKE AND FOLLOW-UP, AMONG CLIENTS ARRESTED DURING EACH PERIOD



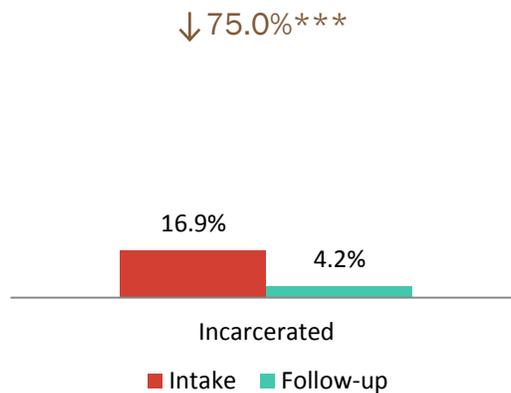
## Incarceration

### Any Incarceration in the Past 6 Months

A small minority of KORTOS clients (16.9%) reported they had spent at least one night in jail or prison in the 6 months before they entered the OTP. At follow-up, only 4.2% of clients reported they had spent at least one night in jail or prison in the past 6 months. The percentage of clients reporting any incarceration decreased significantly by 75.0% (see Figure 7.3).

The number of clients who **spent at least one day incarcerated** decreased by 75%

FIGURE 7.3. CLIENTS REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP (N = 236)

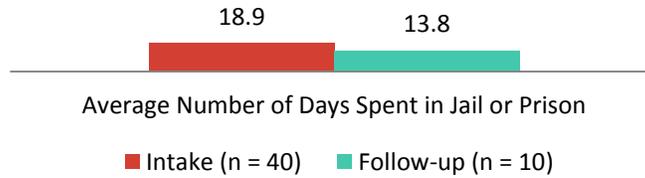


\*\*\*p < .001.

### Average Number of Days Spent Incarcerated, Among Clients Who Reported Incarceration

Figure 7.4 shows that among clients who reported incarceration, the average number of days incarcerated was 18.9 at intake (n = 40) and 13.8 at follow-up (n = 10).

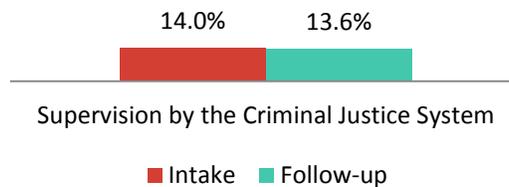
FIGURE 7.4. AVERAGE NUMBER OF DAYS INCARCERATED, FOR CLIENTS WHO WERE INCARCERATED AT EACH PERIOD



### Criminal Justice System Supervision

The number of clients that self-reported they were under criminal justice system supervision (e.g., drug court, probation, or parole) did not change significantly from 14.0% at intake to 13.6% at follow-up (see Figure 7.5).

FIGURE 7.5. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 236)



Section 8.

# Recovery Supports

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

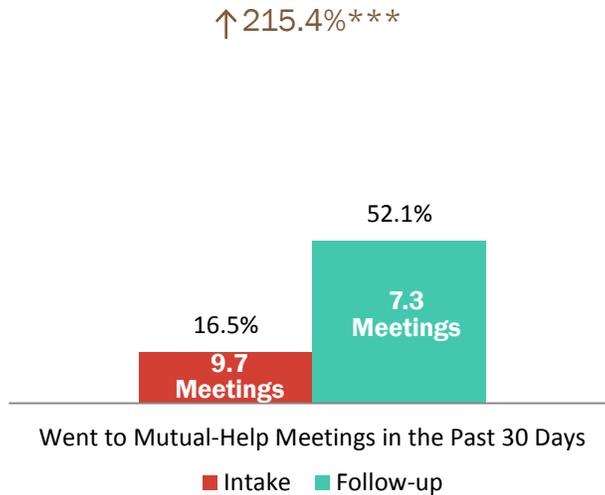
## Mutual Help Recovery Group Meeting Attendance

At intake, only 16.5% of clients reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the past 30 days (See Figure 8.1). At follow-up, there was a significant increase of 215.4%, with 52.1% of clients reporting they had gone to mutual help recovery group meetings in the past 30 days.

Among clients who had attended mutual help recovery group meetings in the 30 days before intake (n = 39), they reported attending an average of 9.7 meetings. Among clients who attended mutual help recovery group meetings in the 30 days before follow-up (n = 123), they reported attending an average of 7.3 meetings.

The number of clients who **attended mutual help recovery meetings increased by 215%**

FIGURE 8.1. CLIENTS REPORTING MUTUAL HEALTH RECOVERY GROUP ATTENDANCE AT INTAKE AND FOLLOW-UP (N = 236)

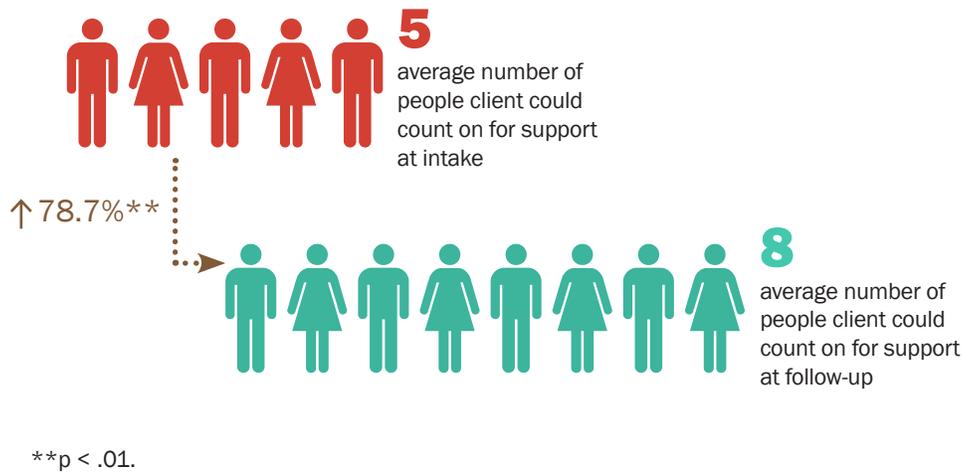


\*\*\*p < .001.

## Number of People Client Can Count on for Recovery Support

The average number of people clients reported they could count on for recovery support increased by 78.7% from intake to follow-up (see Figure 8.2).

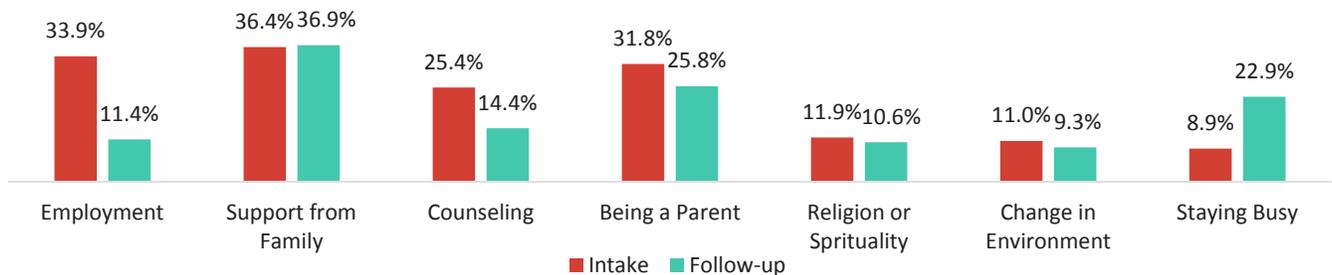
FIGURE 8.2. AVERAGE NUMBER OF PEOPLE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N=235)<sup>58</sup>



### What Will Be Most Useful in Staying Off Drugs/Alcohol

At intake and follow-up, clients were asked what, other than medication-assisted therapy, 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, responses that were reported by 11% of clients or more are presented for descriptive purposes in Figure 8.3.

FIGURE 8.3. CLIENTS REPORTING WHAT WILL BE MOST USEFUL TO THEM IN STAYING OFF DRUGS AND/OR ALCOHOL (N = 236)



### Chances of Staying Off Drugs/Alcohol

At intake and follow-up, clients were asked, based upon their situation, how good they believed their chances were of getting off and staying off drugs/alcohol (see Figure 8.4). The majority of clients believed they had very good chances of staying off drugs/alcohol at intake with

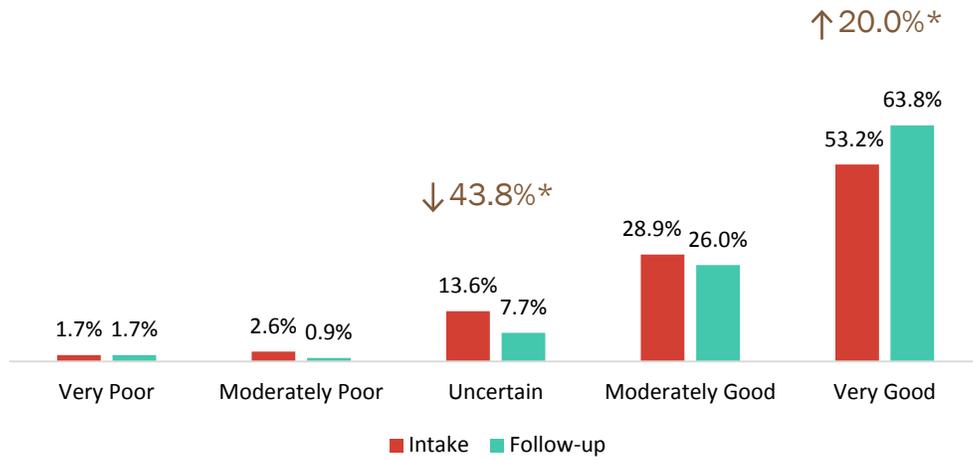
**“IT GOT MY WHOLE LIFE TOGETHER.”**

- KORTOS Follow-up Client

<sup>58</sup> One case had missing values for the item about recovery support persons at follow-up.

a significant increase of 20.0% at follow-up

FIGURE 8.4. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 235)<sup>59</sup>



\*p < .05.

<sup>59</sup> One case had missing values for rating their chances of staying off drugs and/or alcohol in the follow-up survey.

## Section 9.

# Implications and Conclusions

The KORTOS 2016 Annual Follow-Up Report describes characteristics of clients who had completed intakes (N = 717) and outcomes for 236 clients who participated in opiate treatment programs during calendar year 2014 and completed a follow-up telephone interview 6 months after the intake survey was submitted to UK CDAR.

Overall, of the clients with intake surveys (N = 717), half were male and half were female age 19 to 68 (average age 35 years old). They were mostly white and 56% were unemployed in the six months before the intake. Over 10% had been arrested and/or spent at least one night in jail six months before the intake was completed. The majority of adults who completed an intake survey reported using illegal drugs (96.7%) and smoked tobacco (88.3%) while over one-quarter of clients reported using alcohol (26.4%) in the 6 months before intake. The drug classes reported by the greatest number of clients were prescription opioid/opiates (79.4%), marijuana (52.9%), heroin (52.6%), and tranquilizers (43.2%). When looking at referral to treatment, the largest categories were self-referred (38.9%) and referred by a family member, partner or friend (47.3%).

Results for those who were followed-up show that clients made substantial improvements from intake to follow-up in several important dimensions of their lives, including significant reductions in illegal drug and alcohol use as well as the severity of their drug and alcohol use, significant reductions in mental health problems and stress, significant improvements in their living and housing situations, significant reductions in economic hardship, and significant reductions in criminal justice system involvement.

Additionally, clients reported high levels of satisfaction with their experience at the OTP, higher quality of life, and more recovery supports at follow-up. Specifically, the majority of clients agreed that treatment at the OTPs helped them get better and feel better about themselves, program staff treated them with respect, and clients understood their treatment plan and what staff expected of them in the program. In addition, clients reported many positive aspects of their participation in the OTP including decreased substance use, improved relationships with others, improved mental health and their feelings about themselves, and improved financial situation. Further, clients rated their quality of life and satisfaction with their lives as significantly higher after participating in the OTP. At follow-up, clients had significantly more positive feelings and fewer negative feelings. Compared to intake, significantly more individuals reported at follow-up they had attended mutual help recovery group meetings in the past 30 days. At follow-up, clients also reported having significantly more people they could count on for recovery support than at intake.

KORTOS clients had significant reductions in drug use and alcohol use as well as self-reported substance use severity. For example, 8 in 10 clients reported using prescription opiates in the past 6 months at intake, whereas only slightly more than 1 in 10 clients reported using prescription opiates at follow-up. Also, almost 6 in 10 clients reported heroin use at intake, while only a little more than 1 in 10 (11.5%) clients reported heroin use at follow-up. Not only did clients' use of opioids/opiates decrease significantly from intake to follow-up, but their use of non-opioid drugs (such as marijuana, tranquilizers, benzodiazepines, stimulants) also decreased from 76% at intake to 28% at follow-up. The number of KORTOS clients with an ASI composite score indicating severe drug use disorder decreased significantly by 88% from 97.7% at intake to 11.4% at follow-up.

Additionally, even though a little over 25% of clients reported using alcohol in the 6 months before intake, this number decreased significantly at follow-up to 10%.

Even though prescription opioids account for the majority of drug overdose fatalities, heroin has been playing an increasing role in recent years.<sup>60</sup> Total drug-poisoning deaths increased 6.4% from 2011 to 2013, with an increase of 87.8% in deaths involving heroin and a 4.0% decrease in deaths involving opioid analgesics. In Kentucky, while drug overdoses involving prescription opioids and benzodiazepines decreased from 2011 to 2012 there was a sharp increase in heroin involvement in overdose deaths (207%), inpatient hospitalizations (174%), and emergency department visits (197%) from 2011 to 2012.<sup>61</sup> Even though the majority of KORTOS clients report use of prescription opioids/opiates when they enter treatment, the percentage of clients who report using heroin in the 6 months before entering treatment has increased again in 2014 to 51.7% as compared to previous years: 48.1% in 2013, 26.3% in 2012, 8.8% in 2011, 9.8% in 2010, 9.3% in 2009, and 7.0% in 2008. Increasing attention is being paid to naloxone, an opioid antagonist, which binds to opioid receptors and can reverse the effects of opioids. The U.S. Health and Human Services (HHS) launched an initiative to address opioid misuse, with one priority area calling for the increase in the use of naloxone to reverse opioid overdoses.<sup>62</sup> Increasing the number of people who can carry naloxone was a key feature of Senate House Bill 192 in Kentucky's legislative session in 2015.

Clients' mental health also showed significant improvements. Fewer clients had symptoms of depression, generalized anxiety, comorbid depression and anxiety, and suicidal thoughts or attempts at follow-up compared to intake. Also, stress and physical health was better for clients at follow-up than at intake. Specifically, clients reported significantly reduced stress-related health consequences, number of days of poor physical and mental health, and number of days their physical or mental health problems limited their daily activities at follow-up when compared to intake. Finally, significantly fewer clients reported they had experienced chronic pain in the 6 months before follow-up than the 6 months before treatment intake.

Overall, KORTOS clients had stable socioeconomic status (e.g., education, employment) with some improvements from intake to follow-up. Almost half of followed-up clients had at least one year of vocational school or college and almost half of clients were unemployed at follow-up. In addition, the number of clients who reported they were homeless at some point in the past 6 months decreased significantly from intake to follow-up. At follow-up fewer clients reported having economic hardship in terms of difficulty meeting basic living needs (such as food, shelter, and utilities) and health care needs (i.e., doctor visits, dental visits, and prescription medications) as a result of financial problems than at intake. Even though only a minority of KORTOS clients reported criminal justice system involvement at intake, the number of clients reporting being arrested or incarcerated was significantly lower at follow-up.

<sup>60</sup> Centers for Disease Control and Prevention. (2014, October 3). Increases in heroin overdose deaths – 28 states, 2010 to 2012. *Morbidity and Mortality Weekly Report*, 63(39), 849-854.

<sup>61</sup> Slavova, S., Bunn, T., & Lambert, J. (2014). *Drug overdose deaths, hospitalizations, and emergency department visits in Kentucky, 2000-2012*. Lexington, KY: Kentucky Injury Prevention and Research Center.

<sup>62</sup> 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.

## 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 at OTPs.

**Smoking.** Smoking rates were high for clients at intake and remained high at follow-up. Smoking has been associated with increased mental health symptoms and physical health problems.<sup>63, 64</sup> 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.<sup>65</sup> Voluntary smoking cessation during substance abuse treatment has been associated with lower relapse. Because tobacco use is associated with increased mental health symptoms as well as well-known physical health problems, including increased mortality, and smoking cessation has been associated with lower alcohol and drug relapse, smoking cessation interventions should be promoted (but not required) in substance abuse treatment programs.<sup>66</sup>

**Alcohol Use.** Even though only a minority of KORTOS clients reported alcohol use in the 30 days before intake and/or follow-up (n = 53), the percentage of alcohol users who met criteria for a severe alcohol disorder doubled from intake to follow-up. Research has found that a significant minority of OTP clients (about one-third) have alcohol problems while in MAT.<sup>67, 68, 69</sup> Because many opioid-dependent patients underestimate the risks associated with their alcohol use, alcohol consumption should be regularly assessed in MAT.<sup>70</sup>

**Mental Health.** Though mental health symptoms improved, almost one-quarter of KORTOS clients still reported generalized anxiety symptoms at follow-up. People with an anxiety disorder are more likely to self-medicate with substances to ease their symptoms and, in turn, substances may make the mental health symptoms worse. In fact, individuals with anxiety disorder may also have an increase in alcohol severity and higher relapse rates following substance abuse treatment.<sup>71</sup> Therefore, treating substance use alone will not treat the anxiety. As a result, more clients may need additional treatment (such as therapy) for their anxiety or mood disorders to prevent possible relapse.

<sup>63</sup> 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.

<sup>64</sup> 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.

<sup>65</sup> Baca, C., & Yahne, C. (2009). Smoking cessation during substance abuse treatment: What you need to know. *Journal of Substance Abuse Treatment*, 36, 205-219.

<sup>66</sup> Proschaska, J. (2010). Failure to treat tobacco use in mental health and addiction treatment settings: A form of harm reduction? *Drug and Alcohol Dependence*, 110, 177-182.

<sup>67</sup> Rittmannsberger, H., Silberbauer, C., Lehner, R., & Ruschak, M. (2000). Alcohol consumption during methadone maintenance treatment. *European Addiction Research*, 6, 2-7.

<sup>68</sup> Dobler-Mikola, A., Mattenschwiler, J., Meili, D., Beck, T., Boni, e., & Modestin, J. (2005). Patterns of heroin, cocaine, and alcohol abuse during long-term methadone maintenance treatment. *Journal of Substance Abuse Treatment*, 29, 259-265.

<sup>69</sup> Hartzler, B., Donovan, D. M., Huang, Z. (2010). Comparison of opiate-primary treatment seekers with and without alcohol use disorder. *Journal of Substance Abuse Treatment*, 39, 114-123.

<sup>70</sup> Soyka, M. (2015). Alcohol use disorders in opioid maintenance therapy: Prevalence, clinical correlates and treatment. *European Addiction Research*, 21, 78-87.

<sup>71</sup> Grant BF, Stinson FS, Dawson DA, Chou SP, Dufour MC, Compton W, Pickering RP, & Kaplan K. (2004). Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry*, 61 (8), 807-816.

**Financial issues.** Meeting basic needs including health, stable living arrangements, having a purpose with daily meaningful activities, and recovery community are the four key dimensions to recovery.<sup>72</sup> While the number of participants reporting a difficulty meeting basic needs for financial reasons decreased at follow-up, 27% of clients still reported at follow-up having difficulty meeting basic living needs and 17.9% of clients reported they had difficulty meeting health care needs such as seeing a doctor when needed or obtaining a needed medical prescription. Similarly, while the number of clients reporting full-time employment increased significantly, 46% of clients remained unemployed at follow-up. The resulting financial strain from these economic factors could lead to increased substance use to alleviate the stress.<sup>73</sup> Providing referrals and support for these dimensions may help improve basic living situations for many clients and support continued recovery living for long-term positive results after treatment.

Finally, there were several gender differences in targeted factors. For example, as a group, women had more symptoms of depression and more stress-related health consequences at intake and more symptoms of anxiety at follow-up compared to men. In addition, more women were currently unemployed at intake and follow-up and they reported working fewer months at intake and follow-up when compared to men. 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 \$0.82 for every dollar employed men made and at follow-up, the gap in median hourly wages increased, with employed women making only \$0.72 for every dollar employed men made. Significantly more men reported using smokeless tobacco at intake and follow-up while more women reported using smoking tobacco at follow-up. In addition, more men reported drinking alcohol to intoxication and binge drinking at intake compared to women.

## Study Limitations

The study findings must be considered within the context of the study's limitations. First, because there is no appropriate group of opiate dependent individuals who would like treatment but do not receive it to compare with the KORTOS individuals who participate in treatment, one cannot attribute all changes from intake to follow-up to opiate replacement treatment. Second, because not all clients agree to participate in the 6-month follow-up survey, it is unclear how generalizable the findings are to the entire client population that completes an intake survey. Analysis comparing those individuals who completed a follow-up survey with those who did not complete a follow-up survey for any reason (for example, they did not agree to be in the follow-up study, they were not selected into the follow-up sample, or they were not successfully contacted for the follow-up survey) found some significant differences between the two groups, several of which were likely due to the fact that significantly more females were followed up than were not followed up. For example, more of the clients who completed a follow-up survey reported they had depression, generalized anxiety, a chronic medical problem, and difficulty meeting basic living needs and health care needs for financial reasons in the 6 months before treatment intake when compared to clients who were not followed up. However, there were some differences that may not be due to gender differences in the follow-up sample. For example, significantly more clients who were followed up reported using non-prescribed buprenorphine, non-prescribed methadone, heroin, and stimulants compared to clients who did not complete a follow-up interview. Although there were selected significant differences

<sup>72</sup> <http://blog.samhsa.gov/2012/03/23/definition-of-recovery-updated/>

<sup>73</sup> Shaw, B. A., Agahi, N., & Krause, N. (2011). Are Changes in Financial Strain Associated With Changes in Alcohol Use and Smoking Among Older Adults?. *Journal of Studies on Alcohol and Drugs*, 72(6), 917-925.

between those followed up, compared to those not followed up, the differences suggest those followed up had more challenges associated with more difficult recovery.

Third, data included in this report were self-reported by clients. There is reason to question the validity and reliability of self-reported data, particularly with regard to sensitive topics, such as illegal behavior and stigmatizing issues such as mental health and substance use. However, recent research has supported findings about the reliability and accuracy of individuals' reports of their substance use.<sup>74,75,76,77</sup> Earlier studies found that the context of the interview influences reliability.<sup>78</sup> During the informed consent process for the KORTOS follow-up study, interviewers tell participants that the research team operates independently from the opiate treatment programs, responses will be reported in group format and will not be identifiable at the individual level, and that the research team has a Federal Certificate of Confidentiality. These assurances of confidentiality and lack of affiliation with the data collectors may minimize individuals' concern about reporting stigmatizing or illegal behavior or conditions.

## Conclusion

The 2016 KORTOS evaluation indicates that opiate treatment programs in Kentucky have been successful in facilitating positive changes in clients' lives in a variety of ways, including decreased substance use, decreased severity of substance use, decreased mental health symptoms, decreased economic hardship, and decreased involvement with the criminal justice system. Results also show that clients appreciate and value their experiences in treatment programs, have an improved quality of life, and more support for recovery after participating in treatment. Overall, KORTOS clients had significant improvements in their lives that have been shown to be key factors that facilitate recovery: meeting basic needs, stable living arrangements, having a purpose with daily meaningful activities, and recovery community.<sup>79</sup>

<sup>74</sup> Del Boca, F., & Noll, J. (2000). Truth or consequences: the validity of self-report data in health services research on addictions. *Addiction, 95*, 347-360.

<sup>75</sup> Harrison, L., Martin, 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). Rickville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

<sup>76</sup> Shannon, E., Mathias, C., Marsh, D., Dougherty, D., & Liguori, A. (2007). Teenagers do not always lie: Characteristics and correspondence of telephone and in-person reports of adolescent drug use. *Drug and Alcohol Dependence, 8*(90), 288-291.

<sup>77</sup> Rutherford, M., Cacciola, J., Alterman, A., McKay, J., & Cook, T. (2000). Contrasts between admitters and deniers of drug use. *Journal of Substance Abuse Treatment, 18*, 343-348.

<sup>78</sup> Babor, T., Stephens, R., & Marlatt, A. (1987). Verbal report methods in clinical research on alcoholism: Response bias and its minimization. *Journal of Studies on Alcoholism, 48*, 410-424.

<sup>79</sup> <http://blog.samhsa.gov/2012/03/23/definition-of-recovery-updated/>

## Appendix A.

# Methods

The KORTOS evaluation uses a pre- and post-intervention research design, which means that client data is collected at treatment intake and compared to data collected 6 months later at follow-up. At the end of the intake survey, clinicians explain the follow-up study to clients and give them the opportunity to volunteer to participate in the follow-up study. To participate in the follow-up study, clients must first volunteer and give informed consent. During the consent process clients are informed that the research staff at the University of Kentucky have obtained a Certificate of Confidentiality from the U.S. Department of Health and Human Services to protect the research team from being forced to release client-identifying data to law enforcement or other government agencies. Identifying data are encrypted as the data are submitted on the web-based survey. Electronic data are stored on password protected computers and servers in secure facilities. Clients who agree to participate in the follow-up study give their consent using an electronic consent form on the web survey, which is approved by the University of Kentucky Medical Institutional Review Board (IRB).

Of the 717 clients who completed an intake survey in 2014, 374 (52.2%) agreed to be contacted for the follow-up study. From this group of clients who voluntarily agreed to be contacted for the follow-up study, the research team pulled the follow-up sample by first identifying clients who had provided the minimum amount of contact information (e.g., two phone numbers or one phone number and one address), and then randomly selecting clients by intake month (n = 334).

Follow-up surveys were conducted by interviewers on the research team at the University of Kentucky Center on Drug and Alcohol Research via telephone 6 months after the intake survey was submitted. Of the 334 clients included in the follow-up sample, 43 were ineligible for participating in the follow-up survey for a variety of reasons (e.g., no longer in OTP, incarcerated, in residential treatment), which left 291 clients eligible for follow-up. Of these clients, 236 completed a follow-up survey (see Table AA.1). Thus, the follow-up rate was 81.1%. The remaining clients either (1) refused (0.3%) to complete the follow-up survey, or (2) were never successfully contacted, or if contacted they never completed the follow-up survey (18.6%).

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS (N = 334)

	Number of Records	Percent
Ineligible for follow-up survey	43	12.6%
Number of cases eligible for follow-up (n = 291)		
Completed follow-up surveys	236	
Follow-up rate is calculated by dividing the number of completed surveys by the number of eligible cases and multiplying by 100		81.1%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	54	
Expired rate ((the number of expired cases/eligible cases)*100)		18.6%
Refusal	1	
Refusal rate ((the number of refusal cases/eligible cases)*100)		0.3%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	280	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		83.8%

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 OTP treatment (see Table AA.2). Of the 43 cases that were ineligible for follow-up, the majority (58.1%) were ineligible because they were no longer in treatment at the OTP during the follow-up period. Almost 35% of these clients were ineligible because they were incarcerated at the time of follow-up and a small number of clients were ineligible for follow-up were because they were in residential treatment at the time of follow-up (7.0%).

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 43)

	Number	Percent
Not in treatment at OTP	25	58.1%
Incarcerated	15	34.9%
Residential treatment	3	7.0%

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

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

## 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). 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 survey 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 survey 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 surveys.

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 want 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%).

TABLE AB.1. LOCATING EFFORTS FOR ALL FILES (N = 350)

LOCATING EFFORTS	% OF CLIENT RECORDS	AVERAGE PER CLIENT
Number of total phone calls made to reach client		6.2
Number of phone calls made to contact persons (n=326)		2.4
Clients who called in	38.9%	
<i>Clients who called in and completed survey</i>	20.3%	
<i>Clients who called in and completed survey after receiving the initial client mailing</i>	4.3%	
Contact persons who called in	8.0%	
At least one text message was sent to client	4.3%	
At least one text message was sent to contact person	0.6%	
Number of mailings sent to client		1.9
Handwritten note was sent	14.0%	
Returned mail from client's address	12.3%	
Number of mailings sent to contact persons		0.1
Returned mail from contact person's address	1.4%	
Client level of searching:		
Light (verification, VINE, Whitepages)	92.3%	
Medium (Facebook, Ancestry, USsearch, etc.)	52.9%	
In-depth (other in-depth databases)	28.9%	
Contact searched in any way	6.7%	

Because of study inclusion criteria, a complete client phone number was listed on 100.0% of the records. Less than half of these were working numbers for the client (46.3%), 9.7% were working numbers for a contact who knew the client, and 4.9% were working numbers but the contact did not know the client (i.e., wrong number). Over one-fifth of the phone numbers (22.3%) listed never resulted in contact (e.g., voicemail, busy signal, not receiving incoming calls, etc.) and 8.0% were disconnected. The majority of records also listed one unique, complete address for the client (87.4%; see Table AB.2).

Most of the clients provided the name of at least one other person that they thought would know how to get in touch with them in the next six months (90.9%). In addition, one-quarter also provided a unique and complete address and most (75.1%) provided a unique phone number for that person.

TABLE AB.2. QUALITY OF CONTACT INFORMATION FOR ALL FILES (N = 350)

QUALITY OF CONTACT INFORMATION	% OF RECORDS	AVERAGE PER CLIENT
<b>Client Contact Information</b>		
Client phone number listed	100.0%	
Client phone number was:		
Working number for client	46.3%	
Working number, person knew client	9.7%	
Working number, but no one knew the client	4.9%	
Working number for a facility or clinic	0.3%	
Called but did not reach a person (e.g., voicemail, busy signal, not receiving incoming calls)	22.3%	
Disconnected	8.0%	
Never called	8.0%	
<b>Complete client address listed</b>	<b>87.4%</b>	
<b>Locator Contact Information</b>		
Number of contact persons listed		1.0
0	9.1%	
1	78.6%	
2	12.3%	
Number of unique, complete addresses listed for contact persons		0.3
0	71.4%	
1	25.1%	
2	3.4%	
Number of unique, complete phone numbers listed for contact persons		0.9
0	16.3%	
1	75.1%	
2	8.6%	

Appendix C.

## Client Characteristics at Intake for Those Who Completed Follow-up Interviews and Those Who Did Not Complete a Follow-up Interview

Clients who completed a follow-up interview are compared in this section with clients who did not complete a follow-up interview for any reason (e.g., did not agree to be contacted for the follow-up survey, not selected into the follow-up sample, ineligible for follow-up, not successfully located for the follow-up).

### Demographics

The majority of the sample for this annual report was White and male; however, significantly more clients who completed a follow-up survey were female compared to clients who did not complete a follow-up survey (see Table AC.1). There were no significant differences on other demographics between clients who completed a follow-up survey and those who did not. The average client age for both groups was around 35.

TABLE AC.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP<sup>80</sup>

	FOLLOWED UP	
	NO n = 481	YES n = 236
AGE	34.7 years	34.4 years
GENDER**		
Female	44.7%	55.9%
Male	55.3%	44.1%
RACE		
White	97.3%	94.5%
African American	1.5%	1.7%
Other or Multiracial	1.2%	3.8%
MARITAL STATUS		
Never married	41.2%	46.2%
Married	26.4%	26.3%
Separated or divorced	30.8%	24.2%
Widowed	1.7%	3.4%

\*\*p < .01.

<sup>80</sup> Two cases had missing data for date of birth so age was not calculated.

## 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/opiates, heroin, marijuana, and CNS depressants. Significantly more clients who were followed up reported using non-prescribed buprenorphine (34.7% vs. 23.3%), non-prescribed methadone 29.2% vs. 20.4%), and CNS depressants (50.0% vs. 40.5%) compared to clients who did not complete a follow-up interview. Less than 8% of clients who completed a follow-up reported using hallucinogens, inhalants, and synthetic drugs in the 6 months before entering the OTP, which was significantly higher when compared to clients who did not complete a follow-up.

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

	FOLLOWED UP	
	NO n = 481	YES n = 236
Any illegal drug	96.5%	97.0%
Prescription opioid/opiate (illegal use)	79.0%	80.1%
Non-prescribed methadone**	20.4%	29.2%
Non-prescribed buprenorphine (Suboxone, Subutex)**	23.3%	34.7%
Heroin	51.8%	54.2%
Marijuana	51.8%	55.1%
CNS depressants*	40.5%	50.0%
Stimulants (cocaine, amphetamines, methamphetamine, prescription stimulants)	28.1%	34.7%
Other illicit drugs (hallucinogens, inhalants, synthetic drugs)*	4.8%	8.9%

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

About one-fourth of clients reported alcohol use in the 6 months before entering treatment. Around 1 in 6 clients in both groups reported alcohol use to intoxication in the same period. Smaller percentages of clients reported binge drinking in the 6 months before entering treatment. Significantly more individuals who completed a follow-up survey reported they had binge drank alcohol in the 6 months before intake when compared to individuals who did not complete a follow-up survey (see Table AC.3).

TABLE AC.3. PERCENTAGE OF CLIENTS REPORTING ALCOHOL USE IN THE 6 MONTHS BEFORE ENTERING TREATMENT<sup>81</sup>

	FOLLOWED UP	
	NO n = 452	YES n = 231
Alcohol	25.4%	28.1%
Alcohol to intoxication	13.3%	18.2%
Binge drank alcohol (i.e., drank 5 or more [4 for women] drinks in 2 hours*)	9.4%	14.8%

\*p &lt; .05

In the 6 months before entering the OTP, the vast majority of clients reported use of smoked 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 significant difference between groups on smokeless tobacco use.

TABLE AC.4. PERCENTAGE OF CLIENTS REPORTING TOBACCO USE IN THE 6 MONTHS BEFORE ENTERING TREATMENT<sup>82,83</sup>

	FOLLOWED UP	
	NO n = 455	YES n = 228
Smoked tobacco	87.5%	89.9%
Smokeless tobacco	15.3%	12.6%

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.<sup>84</sup> The highest composite score is 1.0 for each of the two substance categories.

The majority of clients who were not in a controlled environment all 30 days met or surpassed the Addiction Severity Index (ASI) composite score cutoff for alcohol and/or drug severe SUD with no difference by follow-up status. The average score for the drug severity composite score was .36 for clients who did not complete a follow-up interview and .37 for followed-up clients. These average cutoff scores include clients with scores of 0 on the composites.

<sup>81</sup> Thirty-four cases had missing data for past-6-month alcohol use.

<sup>82</sup> Thirty-four clients had missing data for smoked tobacco at intake.

<sup>83</sup> Twenty-eight percent (n = 203) of clients had missing data for smokeless tobacco at intake because this item was added to the survey several months after intake surveys began in calendar year 2014.

<sup>84</sup> 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.

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 = 478	YES n = 236
Percentage of clients with ASI composite score equal to or greater than cutoff score for ...		
Severe alcohol or drug use disorder	95.8%	97.0%
Severe alcohol use disorder	5.2%	5.9%
Severe drug use disorder	95.8%	97.0%
Average composite score for alcohol use <sup>a</sup>	.03	.04
Average composite score for drug use <sup>b</sup>	.36	.37

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.

Almost two-thirds of clients reported ever having been in substance abuse treatment in their lifetime, with no significant difference by follow-up status (see Table AC.6). Among clients who reported a history of substance abuse treatment, the mean number of lifetime treatment episodes was less than 3 for the two groups.

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

	FOLLOWED UP	
	NO n = 481	YES n = 236
Ever been in substance abuse treatment in lifetime	68.6%	65.7%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 330)	(n = 155)
Mean number of times in treatment	2.3	2.7

## Mental Health at Intake

The mental health questions included in the KORTOS intake and follow-up surveys are not clinical measures, but instead are research measures. A total of 9 questions were asked to determine if they met study criteria for depression, including at least one of the two leading questions: (1) “Did you have a two-week period when you were consistently depressed or down, most of the day, nearly every day?” and (2) “Did you have a two-week period when you were much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?”. Significantly more clients who completed a follow-up interview than clients who did not complete a follow-up interview reported symptoms that met criteria for depression: 59.3% vs. 42.8% (see Table AC.7).

A total of 7 questions were asked to determine if clients met study criteria for generalized anxiety, including the leading question: “In the 6 months before entering this program, did you worry excessively or were you anxious about multiple things on more days than not for all 6 months (like family, health, finances, school, or work difficulties)?”. Significantly more clients who completed a

follow-up interview than clients who did not complete a follow-up interview reported symptoms that met criteria for generalized anxiety: 73.7% vs. 52.0%.

Two questions were included in the intake survey that asked about thoughts of suicide and attempted suicide in the 6 months before clients entered treatment. A minority of clients reported suicidal ideation or attempts, with no difference by follow-up status (see Table AC.7).

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

	FOLLOWED UP	
	NO n = 481	YES n = 236
Depression***	42.8%	59.3%
Generalized Anxiety***	52.0%	73.7%
Suicidality (e.g., thoughts of suicide or suicide attempts)	13.5%	16.1%

\*\*\*p < .001.

### Physical Health at Intake

To give an idea of the physical health of clients when they entered treatment, Table AC.8 presents the percentage of the follow-up sample that reported health problems at intake. Overall, about 2 in 5 clients were experiencing chronic pain (pain that lasted more than 3 months) at intake with no difference between groups. Significantly more clients with a completed follow-up survey had ever experienced a head injury that resulted in loss of consciousness or hospitalization in their lifetime when compared to individuals who did not complete a follow-up survey. Finally, clients were asked at intake if a doctor had ever told them they had any of the 12 chronic medical problems listed (e.g., asthma, arthritis, cardiovascular disease, diabetes, chronic obstructive pulmonary disease (COPD), tuberculosis, severe dental disease, cancer, Hepatitis B, Hepatitis C, HIV, and other sexually transmitted diseases). Significantly more clients who were followed up reported they had been told by a doctor that they had at least one of the chronic medical problems compared to clients who were not followed up (53.8% vs. 44.7%). The most commonly reported chronic medical problems are presented in Table AC.8: Hepatitis C, arthritis, severe dental disease, asthma, and cardiovascular disease.

TABLE AC.8. PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 481	YES n = 236
Chronic pain (lasting at least 3 months)	40.5%	46.6%
Ever had a head injury that resulted in being knocked out or hospitalized for at least one night *	28.3%	37.3%
Ever told by a doctor that client had one of the 12 chronic medical problems listed*	44.7%	53.8%
Hepatitis C	19.1%	20.3%
Arthritis	11.6%	16.5%
Severe dental disease*	6.9%	12.3%
Asthma	8.9%	7.2%
Cardiovascular disease*	6.2%	11.4%

\*p < .05

## Socioeconomic Indicators

Table AC.9 describes clients' level of education when entering treatment. There were no significant differences between groups: about one-fifth of clients reported less than a high school diploma or GED at intake and a little less than two-fifths reported attending vocational school or higher.

 TABLE AC.9. CLIENTS' HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE<sup>85</sup>

	FOLLOWED UP	
	NO n = 481	YES n = 236
HIGHEST LEVEL OF EDUCATION COMPLETED		
Less than GED or high school diploma	21.0%	17.5%
GED or high school diploma	41.8%	43.8%
Vocational school to graduate school	37.2%	38.7%

There were no significant differences between groups on employment status 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 = 481	YES n = 236
EMPLOYMENT		
Not currently employed	55.5%	55.5%
Full-time	33.9%	33.1%
Part-time	8.9%	9.7%
Occasional	1.7%	1.8%

<sup>85</sup> Nineteen cases that completed a follow-up had missing data for education level.

About three in five clients reported that their usual living arrangement in the 6 months before entering the OTP was living in their own home or apartment (see Table AC.11). Over one-third were living in someone else’s home or apartment. Less than four percent reported that they lived in an institutional facility, such as jail, prison, or a hospital, a hotel, or on the street. There were no differences between the groups on the number of clients who considered themselves homeless at intake.

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

	FOLLOWED UP	
	NO n = 481	YES n = 236
USUAL LIVING ARRANGEMENT IN THE 6 MONTHS BEFORE ENTERING THE PROGRAM		
Own home or apartment	62.6%	58.5%
Someone else’s home or apartment	34.1%	37.7%
Institutional facility, hotel or on the street	3.3%	3.8%
Consider themselves to be currently homeless	14.3%	16.1%

Measures of economic hardship may be better indicators of the actual day-to-day stressors clients face than a measure of income. Therefore, the intake survey included several questions about clients’ ability to meet expenses for basic needs and food insecurity (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 difference in the percentage of clients who had difficulty meeting basic living needs such as shelter, utilities, phone, and food but significantly more clients in the follow-up sample reported they were unable to receive needed health care for financial reasons compared to those who were not followed-up (43.2% vs 30.8%).

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

	FOLLOWED UP	
	NO n = 481	YES n = 236
Had difficulty meeting basic living needs (e.g. shelter, utilities, phone, food)	46.8%	50.4%
Had difficulty obtaining needed health care for financial reasons**	30.8%	43.2%

\*\*p < .01.

## Criminal Justice System Involvement at Intake

About 12% of clients were under supervision by the criminal justice system when they entered the OTP (e.g., probation, parole, drug court), with no significant difference by follow-up status (see Table AC.13).

Significantly more clients who completed a follow-up survey were arrested for any charge in the 6 months before entering the OTP when compared to those who did not complete a follow-up survey (18.6% vs 10.4%). Of those who had been arrested, both groups had an average of fewer than 2 arrests in the 6 months before intake.

In addition, significantly more followed-up clients were incarcerated at least one night in the 6 months before entering the OTP (16.9%) compared to those not followed-up (8.3%). 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 reporting an average of 18.9 nights and clients who did not complete a follow-up reporting an average of 27.9 nights.

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

	FOLLOWED UP	
	NO n = 481	YES n = 236
Currently under supervision by the criminal justice system	11.6%	14.0%
Arrested for any charge in the 6 months before entering treatment**	10.4%	18.6%
Of those arrested	n = 50	n = 44
Average number of arrests	1.5	1.5
Incarcerated in the 6 months before OTP**	8.3%	16.9%
Of those incarcerated	n = 40	n = 40
Average number of nights in jail	27.9	18.9

\*\*p < .01.

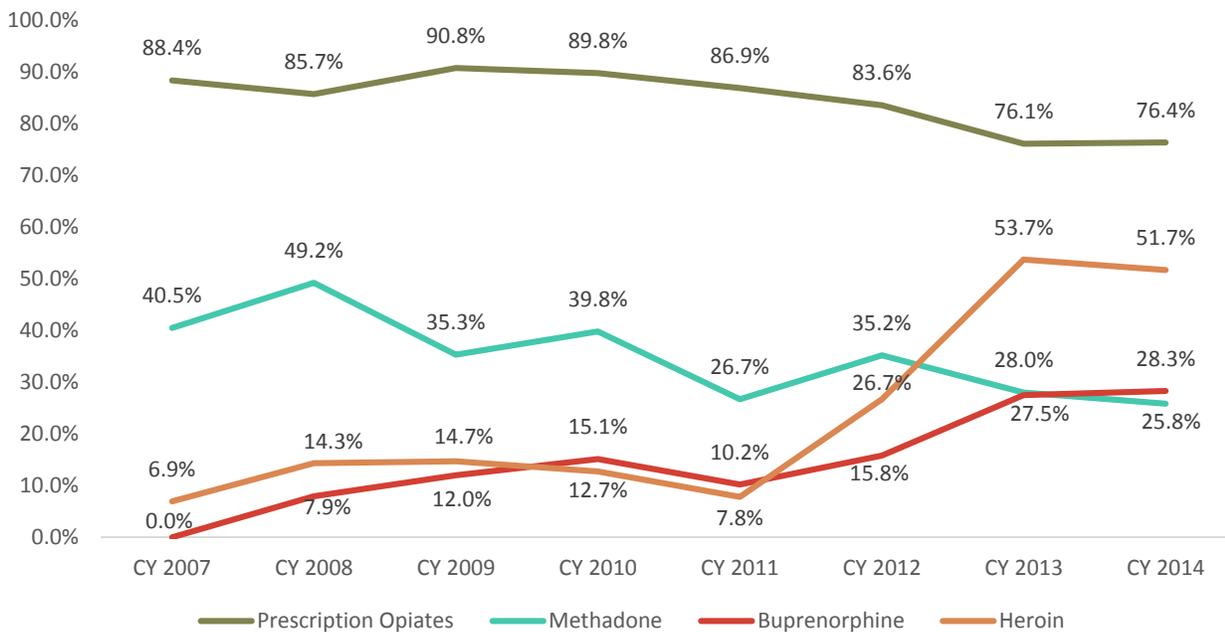
Most of the significant differences between clients who were followed up and those who were not may be due to gender differences between the two groups, wherein more of the followed up clients were female compared to the clients who did not complete a follow-up survey. Specifically, more of the clients who completed a follow-up survey reported they had depression, generalized anxiety, had a chronic medical problem, used CNS depressants in the 6 months before treatment, and had difficulty meeting health care needs for financial reasons in the 6 months before treatment intake when compared to clients who were not followed up. However, there were some differences that may not be due to gender differences in the follow-up sample. For example, significantly more clients who were followed up reported having had a traumatic brain injury in their lifetime, being arrested or incarcerated in the 6 months before treatment, as well as using non-prescribed buprenorphine, non-prescribed methadone, and other illicit drugs when compared to clients who did not complete a follow-up interview.

Appendix D.

## Trends in Prescription Opioid, Methadone, Buprenorphine, and Heroin Use Among KORTOS Clients with a Completed Follow-up Survey

Looking at trends over time for all clients with completed follow-up surveys, the percentage of clients using prescription opiates peaked in calendar year 2009 and has steadily dropped. Similarly, the percentage of clients who reported using non-prescribed methadone in the 30 days before entering treatment has declined since calendar year 2008. The percentage of clients who reported using buprenorphine slowly increased from 2007 through 2010, dipped slightly in 2011, and then dramatically increased in 2013 and 2014. The most notable change in substance use among KORTOS clients is for heroin. Small percentages of KORTOS clients reported using heroin in the 30 days before entering treatment from 2007 through 2011. The percentage tripled from 2011 (7.8%) to 2012 (26.7%) and then the percentage doubled from 26.7% in 2012 to 53.7% in 2013. While the number of clients reporting heroin use decreased slightly in 2014, it remained relatively high.

FIGURE AD.1. PERCENTAGE OF FOLLOWED-UP CLIENTS REPORTING NON-PRESCRIBED USE OF PRESCRIPTION OPIATES, METHADONE, BUPRENORPHINE, AND HEROIN IN THE 30 DAYS BEFORE ENTERING TREATMENT AT THE OTP (N = 1,408)<sup>86</sup>



<sup>86</sup> Clients who reported being in a controlled environment all 30 days before entering treatment (n = 70) are not included in this analysis.