



**2018**

**FINDINGS FROM THE**

**RECOVERY CENTER OUTCOME STUDY**

**ANNUAL REPORT**

# EXECUTIVE SUMMARY

Recovery Kentucky was created to help Kentuckians recover from substance abuse, which often leads to chronic homelessness. There are currently 17 Recovery Kentucky centers across the Commonwealth, providing housing and recovery services for up to 2,100 persons simultaneously.

Recovery Kentucky is a joint effort by the Kentucky Department for Local Government (DLG), the Department of Corrections, and Kentucky Housing Corporation. Local governments and communities at each Recovery Kentucky center location have also contributed greatly to making these centers a reality. This is the seventh annual Recovery Center Outcome Study (RCOS) follow-up report conducted by the Behavioral Health Outcome Study team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR).

The goal of RCOS is to examine client satisfaction, recovery support, and program outcomes for several targeted factors including: (1) substance use, (2) mental health, physical health, and stress, (3) criminal justice involvement, (4) quality of life, (5) education and employment, and (6) living situation. More specifically, this report describes outcomes for 300 men and women who attended

one of 15 Recovery Kentucky programs that participated in FY 2016 data collection, agreed to participate in RCOS, completed an intake interview at entry to Phase 1 between July 1, 2015 and June 30, 2016 (i.e., FY 2016), and then completed a 12-month follow-up survey between July 2016 and June 2017 (FY 2017). In addition, this report includes analysis and estimates of avoided costs to society in relation to the cost of recovery service programs.

Overall, in FY 2016, 1,924 clients from 15 participating Recovery Kentucky programs across the state completed the RCOS intake interview. Information from those intakes indicate that clients were an average of 33 years old ranging from 18 to 68 years old. A little more than half (51.6%) were male and 48.3% were female. The majority of clients (72.7%) self-reported they were referred to the recovery center by the criminal justice system (e.g., judge, probation officer, Department of Corrections).

A random sample of clients to be followed up was drawn and stratified by gender, Department of Corrections (DOC) referral

## Four core components of the RCOS evidence based assessment



Substance Use



Mental Health



Criminal Justice  
Involvement



Quality of Life

into the program, and month of intake.<sup>1</sup> Overall, the clients who were followed up received, on average, about 7.6 months of services from the recovery centers.<sup>2</sup> There was no difference in length of service between clients who were referred by DOC and clients who were not referred by DOC. Multivariate analysis examining the relationship between length of service, DOC referral status, and several targeted outcomes showed no significant associations between DOC referral status and the outcomes, but significant associations were found between length of service and two outcomes. Specifically, shorter length of service was associated with greater odds of meeting criteria for depression and with greater odds of being incarcerated in the 6-month follow-up period.

Comparisons between those who completed a follow-up and those who did not found no significant differences on key targeted factors including substance use, mental health symptoms, criminal justice involvement, physical health, and economic and living circumstances. However,

<sup>1</sup> At the completion of the follow-up period, among the 300 clients with follow-up interviews, 53.7% (n = 161) were referred by the Department of Corrections (DOC) and 46.3% (n = 139) were not DOC-referred.

<sup>2</sup> Twenty-six individuals had missing values for the length of service variable; thus, 274 individuals were included in the analysis examining length of service data.

significantly more clients who were in the follow-up sample were female. For those who completed a follow-up, 10.7% were still involved with the program at the time of the follow-up, with most of those clients (68.8%, n = 22) in Phase II of the program.

At follow-up, there were significant reductions in substance use, improvements in mental health, physical health, and stress-related health consequences, and decreased involvement with the criminal justice system. There were also improvements in quality of life, education and employment, living situation, and recovery supports at follow-up.

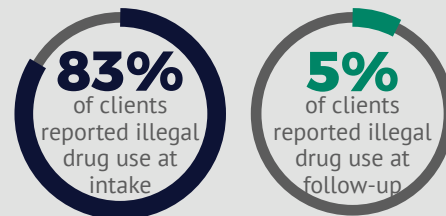
### SUBSTANCE USE

Specifically, 83% of clients indicated they used illegal drugs in the 6 months before entering the recovery center and during the 6-month follow-up period, only 5% of clients reported using illegal drugs. There was a similar trend for alcohol use as 50% of clients reported using alcohol in the 6 months before entering the recovery center and only 5% reported using alcohol during the follow-up period.

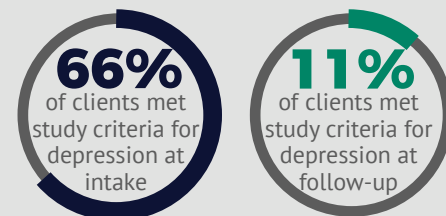
A trend analysis from FY 2010 to FY 2016 examining substance use patterns before entering the program shows that even though a higher

Overall, evaluation results indicate that Recovery Kentucky programs have been successful in facilitating positive changes in clients

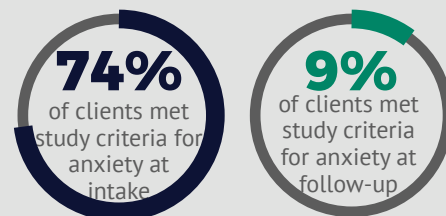
#### PAST-6-MONTH ILLEGAL DRUG USE



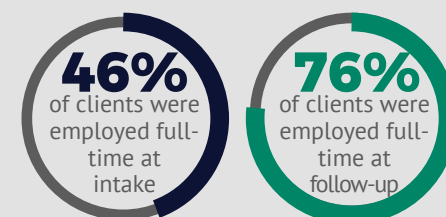
#### PAST-6-MONTH DEPRESSION



#### PAST-6-MONTH ANXIETY



#### PAST-6-MONTH EMPLOYMENT



## Three supplemental components of the RCOS evidence based assessment



Health Status



Economic and Living  
Conditions



Recovery Supports

percentage of clients reported using opioids than using heroin each fiscal year, the percent of clients reporting they misused prescription opioids and non-prescribed methadone has decreased while the percent of clients that used heroin has increased. This trend corresponds to other data sources, including the National Drug Use and Health Survey.<sup>3</sup>

### MENTAL HEALTH

There were also significant improvements in mental health over time for clients. The majority of clients (66%) met study criteria for depression at intake and by follow-up, only 11% of clients met study criteria for depression. At intake, 74% of clients reported symptoms that met study criteria for generalized anxiety and at

follow-up, 9% of clients met study criteria for generalized anxiety. In addition, there was a significant decrease in the number of clients who met study criteria for both depression and generalized anxiety, from 61% at intake to 7% at follow-up. The percent of clients reporting suicide ideation and/or attempts decreased significantly from 31% at intake to 2% at follow-up.

### PHYSICAL HEALTH AND STRESS

General health status also improved from intake to follow-up. Only 10% of clients reported their health was very good or excellent at intake. By follow-up that number had increased to 57%. Number of days of poor physical or mental health reported decreased from intake to follow-up. One-quarter of clients reported chronic pain at intake and that number decreased to 9% at follow-up. Clients' scores on the stress index decreased significantly from intake (15.7) to follow-up

“The program changed me and I'm now a peer mentor. I know about this disease better and I have the tools to stay sober.

—RCOS FOLLOW-UP CLIENT

<sup>3</sup> Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (September 4, 2014). *The NSDUH Report: Substance Use and Mental Health Estimates from the 2013 National Survey on Drug Use and Health: Overview of Findings*. Rockville, MD.

(1.5) and the number of people reporting they used substances to reduce or manage stress decreased from 59% at intake to 2% at follow-up.

## CRIMINAL JUSTICE INVOLVEMENT

The number of clients who reported being arrested decreased significantly from before entering the recovery center (56%) to after involvement in the program (3%). Likewise, the percent of clients reporting they spent at least one day in jail or prison decreased from 76% at intake to 13% at follow-up. About 73% of clients were on probation or parole at intake and that number decreased to 63% at follow-up.

## QUALITY OF LIFE

Clients reported a significantly higher quality of life after the program. On a scale of 1 (worst imaginable) to 10 (best imaginable), the average quality of life rating at intake was a 3.3. This increased significantly to 8.0 at follow-up. Clients were also more satisfied with their lives at follow-up compared to intake.

## EDUCATION AND EMPLOYMENT

Education and employment improved from intake to

follow-up. At intake, 84% of clients had a high school diploma/GED or higher degree and this increased to 89% at follow-up. Less than half of clients reported working at least 1 month in the 6 months before program entry and 76% reported working at least 1 month during the follow-up period, representing a 30% increase. Although, there was no significant gender difference in the number of men and women employed at follow-up, men reported working significantly more months at follow-up compared to women. There was also a significant wage gap between employed men and women at both intake and follow-up.

## LIVING SITUATION

The percent of clients who considered themselves currently homeless decreased from 38% at intake to 2% at follow-up. Almost 40% of clients reported living in jail or prison at intake and 49% lived in a private residence. At follow-up, the majority of clients reported their usual living situation was a private residence. Further, at intake, half of clients reported they had difficulty meeting basic living needs (e.g., food, shelter, utilities, telephone). By follow-up this number had decreased to 18%. Similarly, the number

of individuals who reported having difficulty obtaining health care for financial reasons (e.g., doctor, dental, and prescription medications) was 29% at intake and decreased to 5% at follow-up.

## RECOVERY SUPPORT

At follow-up, there was a significant increase in the number of individuals reporting they had gone to mutual help recovery group meetings in the past 30 days, from 42% at intake to 88% at follow-up. Of those who attended meetings at both intake and follow-up, there was a significant increase in the number of meetings attended. Further, of those who did not attend meetings at intake, 87% did attend meetings at follow-up.

There was a significant increase in the number of clients who had interactions with family and friends who were supportive of their recovery as well as the number of clients who had supportive interactions with an AA/NA sponsor. The average number of people individuals reported they could count on for recovery support significantly increased from intake (6.7) to follow-up (33.2). Additionally, almost all clients (96%) reported they felt their chances of getting off and staying off drugs or alcohol was moderately or very good at follow-up.

## PROGRAM SATISFACTION

Results show that clients were largely satisfied (overall average of 8.8 out of 10 as the highest possible score) with their Recovery Kentucky program experience. The majority of clients reported they received the information and services they needed and felt better about themselves as a result of their program experience. Clients reported the biggest benefits of the program were their reduced substance use, major life changes, improved mental health and feelings about self, positive interactions and relationships with other people, and the positive lessons they learned in the recovery center.

## ANALYSIS OF RELAPSE

Using a logistic regression, targeted factors were examined in relation to having reported drug use in the 6 months before follow-up. Results of the analysis show that no recovery supportive contact in the 30 days before follow-up and a lower quality of life rating at follow-up was associated with past-6-month illegal drug use at follow-up.

## COST ESTIMATE

Examining the total costs of drug and alcohol abuse to society in relation to expenditures on recovery

services, estimates suggest that for every dollar invested in Recovery Kentucky programs there was a \$2.60 return in avoided costs (or costs that would have been expected given the costs associated with drug and alcohol use before participation in Recovery Kentucky programs).

Overall, evaluation results indicate that Recovery Kentucky programs have been successful in facilitating positive changes in clients in a variety of areas including decreased substance use, improved mental health, physical health, and stress, decreased involvement in the criminal justice system, improved education and employment situations, and improved living circumstances. Results also suggest clients appreciate their experiences in the recovery centers and have more support for their recovery as well as a higher quality of life after participating in a Recovery Kentucky program.

“They truly, honestly cared about me and want me to have a fruitful and productive future.”

—RCOS FOLLOW-UP CLIENT

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# OVERVIEW OF REPORT

Recovery Kentucky was created to help Kentuckians recover from substance abuse, which often leads to chronic homelessness. There are currently 17 Recovery Kentucky centers across the Commonwealth, providing housing and recovery services for up to 2,100 persons simultaneously.

Recovery Kentucky is a joint effort by the Kentucky Department for Local Government (DLG), the Department of Corrections, and Kentucky Housing Corporation. Local governments and communities at each Recovery Kentucky center location have also contributed greatly to making these centers a reality.<sup>4</sup>

This is the seventh annual Recovery Center Outcome Study (RCOS) follow-up report conducted by the Behavioral Health Outcome Study team at the University of Kentucky Center on Drug and Alcohol Research (UK CDAR). Fifteen of the currently established Recovery Kentucky programs participated in this year's Recovery Center Outcome Study (RCOS). Of the participating recovery centers, there were 7 Recovery Kentucky facilities for women and 8 facilities for men across the state.<sup>5,6</sup>

Figure 1 below shows the program modules and how the RCOS study fits into the timing of the program modules. The first component of the program is the Safe, Off-the-Street (SOS) program which lasts about 3-7 days. Once clients successfully complete SOS they move into the Motivational Tracks which includes assessments of a client's readiness for recovery. Motivational Tracks I and II last approximately 5-6 weeks. After SOS and the Motivational Tracks are completed clients enter Phase I. Phase I lasts about 5 months on average, and then clients can move to Phase 2 which can last 6 months or more. If clients drop out of the program during the motivational tracks or Phase I, they may reenter the program but will restart the SOS program.

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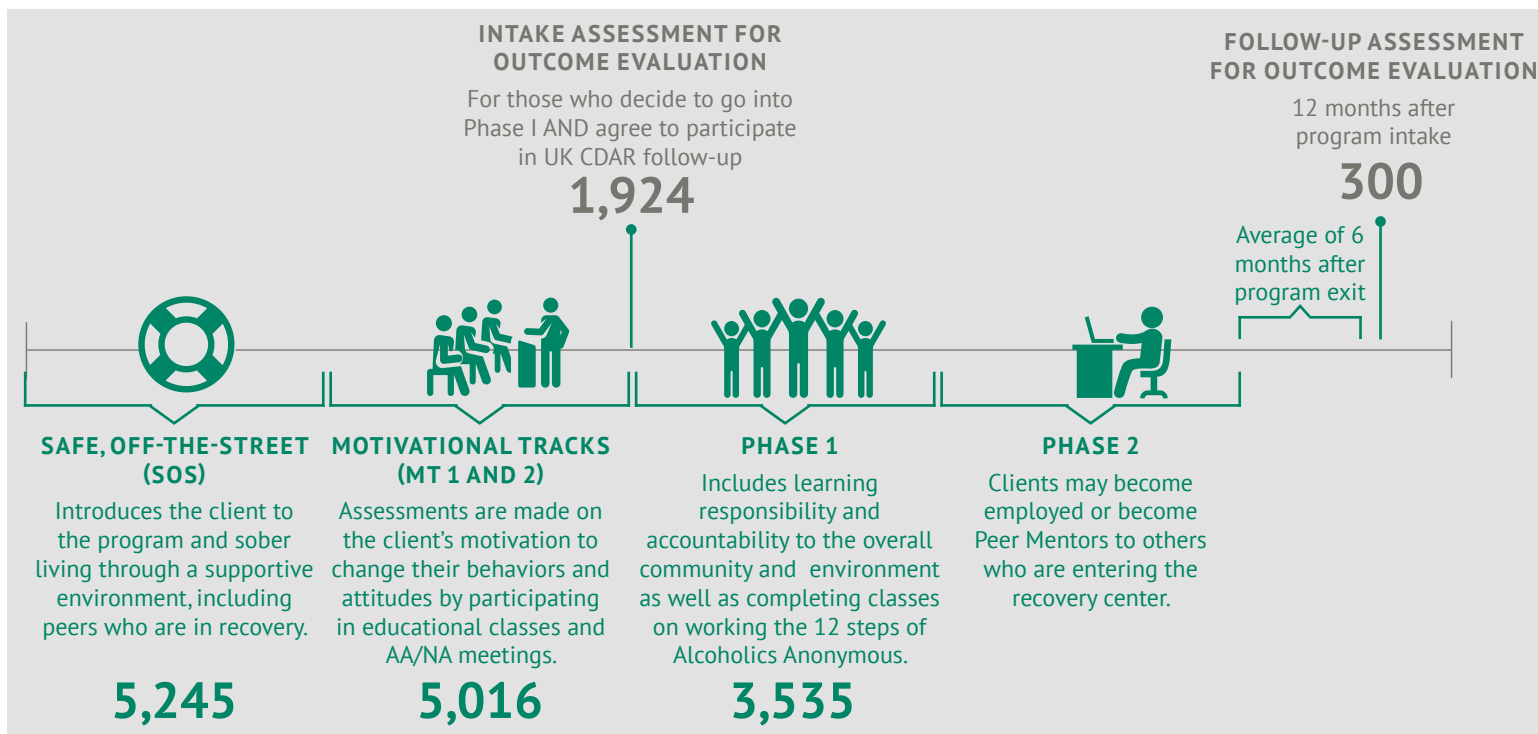
<sup>4</sup> For more information about Recovery Kentucky, contact KHC's Mike Townsend toll-free in Kentucky at 800-633-8896 or 502-564-7630, extension 715; TTY711; or email [MTownsend@kyhousing.org](mailto:MTownsend@kyhousing.org).

<sup>5</sup> Women's facilities include: Trilogy Center for Women – Hopkinsville; Women's Addiction Recovery Manor – Henderson; Brighton Recovery Center for Women – Florence; Liberty Place for Women – Richmond; Cumberland Hope Community Center for Women – Evarts; The Healing Place for Women – Louisville; The Hope Center for Women – Lexington.

Men's facilities include: Owensboro Regional Recovery Center for Men – Owensboro; The Healing Place for Men – Louisville; The Transitions Grateful Life Center for Men – Erlanger; Morehead Inspiration Center for Men – Morehead; The Healing Place of Campbellsville – Campbellsville; George Privett Recovery Center – Lexington; CenterPoint Recovery Center for Men – Paducah; Hickory Hill Recovery Center – Knott County.

<sup>6</sup> Two additional recovery centers were opened in 2016 and are not included in this report. The Men's Addiction Recovery Campus in Bowling Green began data collection in Dec 2016 and the Genesis Recovery Kentucky Center in Grayson began data collection in Feb 2017.

FIGURE 1. PROCESS OF RECOVERY KENTUCKY PROGRAM PARTICIPATION



Recovery Kentucky staff conduct a face-to-face interview with clients as they enter Phase 1; thus, only individuals who have progressed through Safe, Off-the-Street, Motivational Tracks 1 and 2, and have entered Phase 1 are offered the opportunity to participate in the outcome evaluation. At the Phase 1 intake, an evidence based assessment is used to inform about substance use, mental health symptoms, health and stress, criminal justice involvement, quality of life, education and employment status, living situation, and recovery supports prior to entering the recovery center.<sup>7</sup> Intake interview items ask about the 6 months or 30 days before clients entered the recovery center. Then, an evidence based follow-up interview is conducted with a selected sample of clients about 12 months after the intake survey is completed (see Figure 1). Follow-up interview items ask about the past-6-month or past-30-day periods. 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 an honest evaluation of client outcomes and satisfaction with program services.

Results are presented for the overall sample and by gender when there were significant gender differences. There are ten main sections including:

**Section 1. Overview of RCOS Methods and Client Characteristics.** This section briefly describes the Recovery Center Outcome Study (RCOS) method including how clients are selected into the outcome evaluation. In addition, this section describes characteristics of clients who entered Phase 1 of a recovery center program and agreed to participate in RCOS between July 1, 2015 and June 30, 2016. This section also describes characteristics for clients who completed a 12-month follow-up survey conducted by UK CDAR between July 1, 2016 and June 30, 2017.

<sup>7</sup> Logan, T., Cole, J., Miller, J., Scrivner, A., & Walker, R. (2016). Evidence Base for the Recovery Center Outcome Study Assessment and Methods. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research. (Available upon request).

**Section 2. Substance Use.** This section describes change in illegal drug, alcohol, and tobacco use for clients. Past-6-month substance use is examined, as well as past-30-day substance use, separately for clients who were not in a controlled environment all 30 days before entering the Recovery Kentucky program and clients who were in a controlled environment all 30 days before entering the program.

**Section 3. Mental Health, Stress, and Physical Health.** This section describes change in mental health, stress, and physical health including the following factors: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicidal thoughts or attempts, (5) general health status, (6) chronic pain, and (7) stress-related health consequences.

**Section 4. Criminal Justice System Involvement.** This section examines change in clients' involvement with the criminal justice system from intake to follow-up. Specifically, information about: (1) arrests, (2) incarceration, (3) self-reported misdemeanor and felony convictions, and (4) self-reported supervision by the criminal justice system.

**Section 5. Quality of Life Ratings.** This section shows change over time for three measures of quality of life: (1) overall quality of life, (2) positive versus negative feelings, and (3) satisfaction with life.

**Section 6. Education and Employment.** This section examines changes in education and employment including: (1) highest level of education completed, (2) the percent of clients who worked full-time or part-time, (3) the number of months clients were employed full-time or part-time, among those who were employed the year prior to program entry, (4) median hourly wage among employed individuals, and (5) the percent of clients who expect to be employed in the next 6 months.

**Section 7. Living Situation.** This section examines the clients' living situation before they entered the program and at follow-up. Specifically, clients are asked at both points: (1) if they consider themselves currently homeless, (2) in what type of situation (i.e., own home or someone else's home, residential program, shelter) they have lived, and (3) about economic hardship.

**Section 8. Recovery Supports.** This section focuses on five main changes in recovery supports: (1) attending mutual help recovery group meetings, (2) recovery supportive interactions in the past 30 days, (3) the number of people the individual said they could count on for recovery support, (4) what will help them stay off drugs or alcohol, and (5) how good their chances are of staying off drugs or alcohol.

**Section 9. Client Satisfaction with Recovery Kentucky Programs.** This section describes three aspects of client satisfaction: (1) overall client satisfaction, (2) client ratings of program experiences, and (3) client ratings of most positive outcomes of program participation.

**Section 10. Multivariate Analysis of Relapse.** This section presents a comparison of those who reported drug use at follow-up and those who did not on targeted factors. It also focuses on a multivariate analysis examining factors related to relapse in the 2018 RCOS follow-up sample.

**Section 11: Cost and Implications for Kentucky.** This section examines cost reductions or avoided costs to society after Recovery Kentucky Program participation. Using the number of individuals who reported drug or alcohol use at intake and follow-up, a national per person cost was applied to the sample used in this study to estimate the cost to society of drug and alcohol use for the year before individuals were in recovery and then for the same individuals in the year following entry to Phase I.

**Section 12. Conclusion and Study Limitations.** This section summarizes the report findings and discusses some major implications within the context of the limitations of the outcome evaluation study.

## SECTION 1.

# OVERVIEW OF RCOS METHODS AND CLIENT CHARACTERISTICS

*This section briefly describes the Recovery Center Outcome Study (RCOS) method including how clients are selected into the outcome evaluation. In addition, this section describes characteristics of clients who entered Phase 1 of a recovery center program and agreed to participate in RCOS between July 1, 2015 and June 30, 2016.*

## RCOS INTAKE SAMPLE

RCOS is comprised of a face-to-face intake interview using an evidence based assessment conducted by recovery center staff with clients as they enter Phase I. This interview includes demographic questions as well as questions in four main targeted factors (substance use, mental health symptoms, criminal justice system involvement, quality of life)<sup>8</sup> and three supplemental areas (health and stress-related health consequences, economic and living circumstances, and recovery supports).<sup>9</sup> Intake interviews are conducted with clients who voluntarily agree to be included in the outcome evaluation. Intake interview items ask about the 6 months or 30 days before clients entered the recovery center (i.e., intake). This report examines responses on intakes collected between July 1, 2015 and June 30, 2016 (i.e., FY 2016) for 1,924 clients.<sup>10</sup>

## CHARACTERISTICS OF RCOS CLIENTS AT PHASE I INTAKE

### DEMOGRAPHICS

Table 1.1 presents demographic information on clients with an intake survey submitted in FY 2016. Clients' average age was 33.3 years old and men made up 51.6% of the sample. The majority of clients (91.1%) were White and 5.6% were Black. Half of the RCOS clients reported they had never been married at intake (50.7%), 33.5% were separated or divorced, and only 13.8% were married. Over half of RCOS clients had children under the age of 18. About 3% of individuals were currently serving in the military or a veteran.

“They’re personal and really care about you while you’re there and when you go home.”

—RCOS FOLLOW-UP CLIENT

<sup>8</sup> A fifth targeted factor, victimization and trauma, was added to the interview in September 2016 and is not included in this report.

<sup>9</sup> For more information about the evidence based assessment, see: Logan, T., Cole, J., Miller, J., Scrivner, A., & Walker, R. (2016). *Evidence Base for the Recovery Center Outcome Study Assessment and Methods*. Lexington, KY: University of Kentucky, Center on Drug and Alcohol Research. (Available upon request).

<sup>10</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.

TABLE 1.1. DEMOGRAPHICS FOR ALL RCOS CLIENTS AT PHASE I INTAKE IN FY 2016 (N = 1,924)<sup>11</sup>

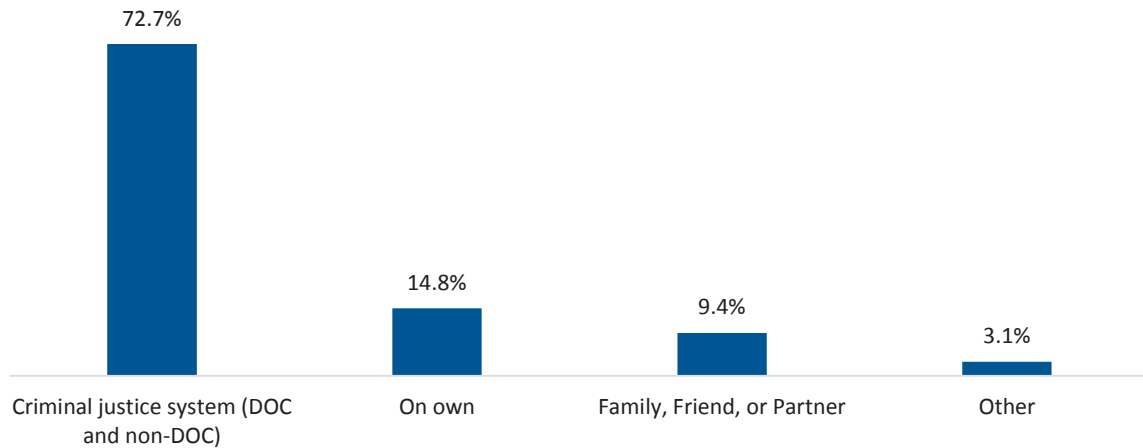
AGE	33.3 (Min. = 18, Max. = 68)
GENDER	
Male	51.6%
Female	48.3%
Transgender	0.1%
RACE	
White	91.1%
Black/African American	5.6%
Other or multiracial	2.4%
MARITAL STATUS	
Never married	50.7%
Separated or divorced	33.5%
Married	13.8%
Widowed	1.9%
HAS CHILDREN UNDER 18 YEARS OLD	58.0%
ACTIVE DUTY OR MILITARY VETERAN	2.7%

## SELF-REPORTED REFERRAL SOURCE

Figure 1.1 shows the self-reported referral source for RCOS clients. The majority of clients (72.7%) self-reported they were referred to the recovery center by the criminal justice system (e.g., judge, probation officer, Department of Corrections). The next two largest referral categories were the client decided to get help on his/her own (14.8%) and the client was referred to the recovery center by a relative, friend, or partner (9.4%). The remaining 3.1% indicated another referral source such as a treatment program, a health care provider, a mental health care provider, or another recovery center.

<sup>11</sup> Eight clients had missing data for date of birth and age was not able to be calculated, one client had missing data for race.

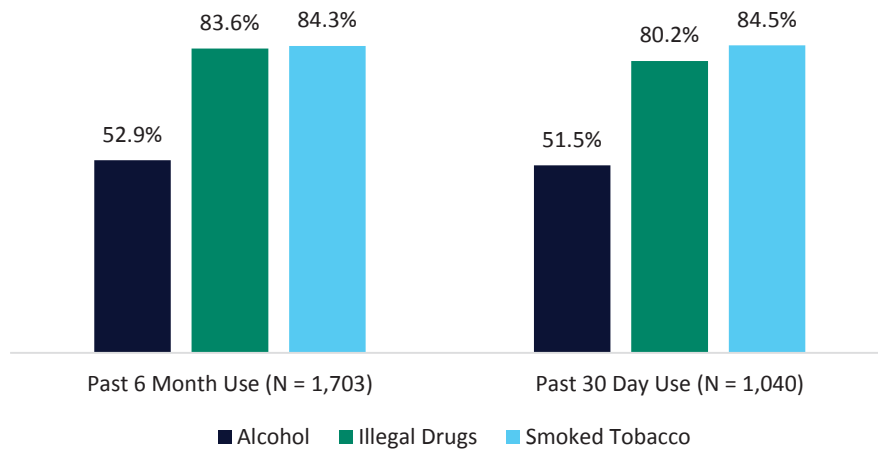
FIGURE 1.1. REFERRAL SOURCE FOR ALL RCOS CLIENTS (N = 1,924)



## SUBSTANCE USE

The majority of clients reported using illegal drugs, alcohol, and tobacco in the 6-month period before entering the recovery center (see Figure 1.2).<sup>12</sup> Similar results were found when past-30-day use was examined for clients who were not in a controlled environment all 30 days before entering the recovery center.<sup>13</sup>

FIGURE 1.2. ALCOHOL, DRUG AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE ENTERING RECOVERY CENTER



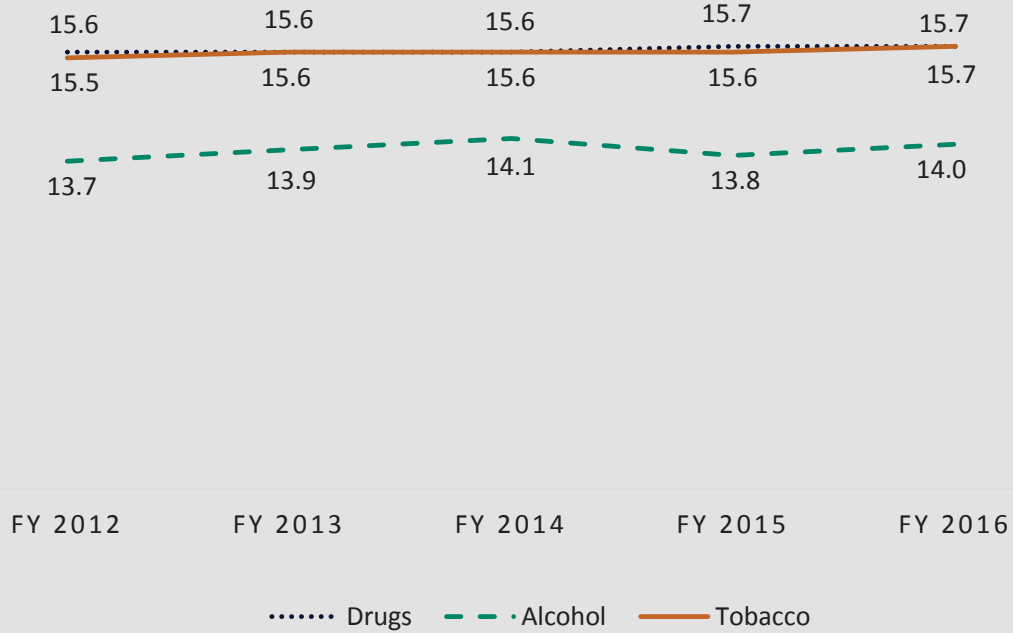
<sup>12</sup> Because being in a controlled environment reduces access to alcohol and illegal drugs, individuals who were in a controlled environment the entire intake 6-month period of the study (n = 221) were not included in the analysis of substance use during that period of time.

<sup>13</sup> Because being in a controlled environment reduces access to alcohol and illegal drugs, individuals who were in a controlled environment the entire intake 30-day period assessed for the study (n = 884) are not included in the analysis of substance use during that period of time.



### TREND ALERT: AGE OF FIRST USE

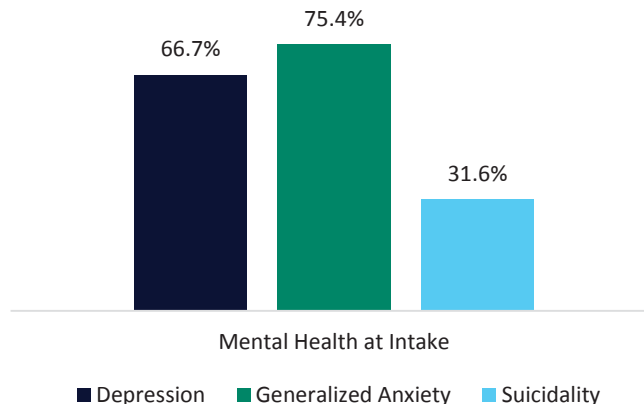
Clients were asked, at intake, how old they were when they first began to use illegal drugs, when they had their first alcoholic drink (more than a few sips), and when they began smoking regularly.<sup>14</sup> The age of first use for each substance has remained steady for the past five fiscal years, however, clients' age of first alcoholic drink is consistently younger than the age reported for illegal drug and tobacco use.



### MENTAL HEALTH

At intake, two-thirds of RCOS clients met study criteria for depression in the past 6 months (see Figure 1.3). Additionally, three-fourths of RCOS clients met study criteria for generalized anxiety at intake. About 32% reported suicidal thoughts or attempts in the 6 months before entering the recovery center.

FIGURE 1.3. DEPRESSION, GENERALIZED ANXIETY, AND SUICIDALITY IN THE PAST 6 MONTHS AT INTAKE FOR ALL RCOS CLIENTS (N = 1,924)



<sup>14</sup> The data reported here is for the entire RCOS intake sample over the past 5 fiscal years, regardless of whether or not they were in a controlled environment.

## PHYSICAL HEALTH

At intake, clients reported an average of 9.5 days of poor physical health in the past 30 days and an average of 17.1 days of poor mental health in the past 30 days (see Table 1.2). One quarter of RCOS clients reported chronic pain in the 6 months before entering the recovery center. Sixty percent of individuals reported they had at least one of the 15 chronic health problems listed on the intake interview. The most common medical problems were hepatitis C (25.8%), arthritis (14.6%), asthma (12.3%), and cardiovascular disease (11.0%).

TABLE 1.2. HEALTH-RELATED CONCERNS FOR ALL RCOS CLIENTS AT INTAKE (N = 1,924)

AVERAGE NUMBER OF POOR HEALTH DAYS IN PAST 30 DAYS	9.5
AVERAGE NUMBER OF POOR MENTAL HEALTH DAYS IN PAST 30 DAYS	17.1
CHRONIC PAIN	25.5%
AT LEAST ONE CHRONIC MEDICAL PROBLEM	60.1%
Hepatitis C	25.8%
Arthritis	14.6%
Asthma	12.3%
Cardiovascular/heart disease	11.0%

The most common insurance provider reported at intake was Medicaid (52.3%; see Table 1.3). Over one-quarter of clients did not have any insurance. Small numbers of clients had insurance through an employer, including through a spouse, partner, or self-employment (10.0%), Medicare (9.4%), and through the Health Exchange (1.3%).

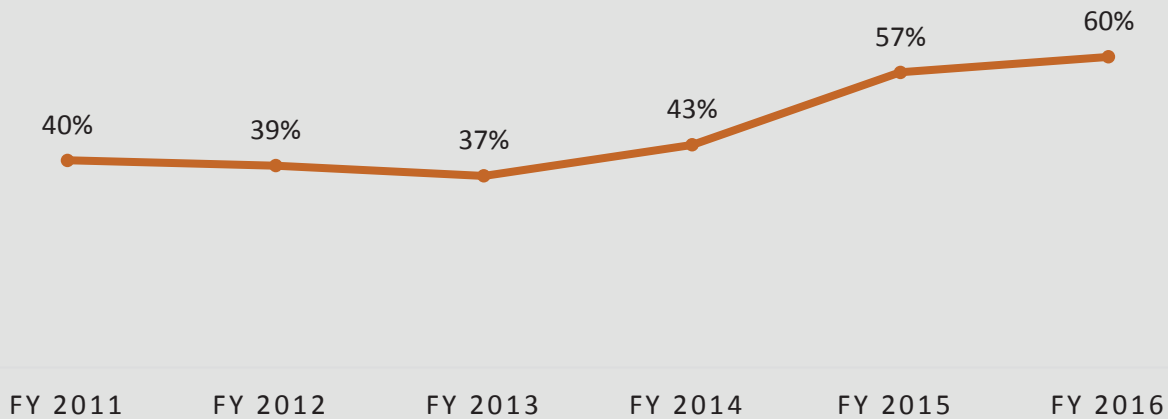
TABLE 1.3 SELF-REPORTED INSURANCE FOR ALL RCOS CLIENTS AT INTAKE (N = 1,916)<sup>15</sup>

No insurance	26.4%
Medicaid	52.3%
Through employer (including spouse's employer, parents' employer, and self-employed)	10.0%
Medicare	9.4%
Through Health Exchange	1.3%

<sup>15</sup> Eight individuals had missing data for self-reported insurance at intake.

## TREND ALERT: CHRONIC MEDICAL PROBLEMS AT INTAKE

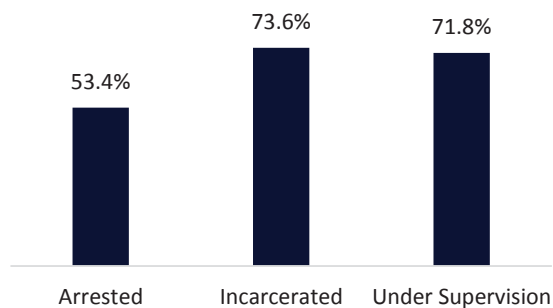
At intake, clients were asked if, in their lifetime, they have been told by a doctor they have any of the chronic medical problems listed (e.g., diabetes, arthritis, asthma, heart disease, cancer, hepatitis B or C, cirrhosis of the liver). The number of RCOS clients reporting at least one chronic health problem in their lifetime remained steady from FY 2011 (40%) to FY 2013 (37%) and has increased from FY 2013 to FY 2016 (60%).



## CRIMINAL JUSTICE INVOLVEMENT

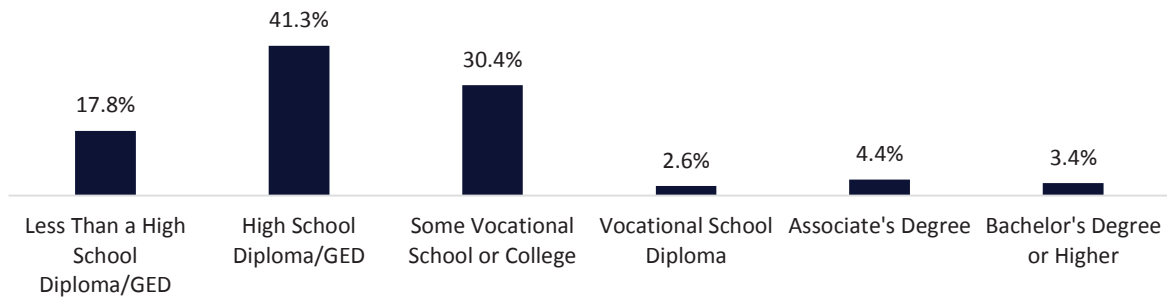
Over half of individuals reported they had been arrested at least once (53.4%) and almost three-fourths reported they had been incarcerated at least one night (73.6%) in the 6 months before they entered the recovery center (see Figure 1.4). Additionally, 71.8% of clients reported they were currently under criminal justice supervision (i.e., probation, parole) at intake.

FIGURE 1.4. CRIMINAL JUSTICE INVOLVEMENT BEFORE ENTERING THE RECOVERY CENTER (N = 1,924)



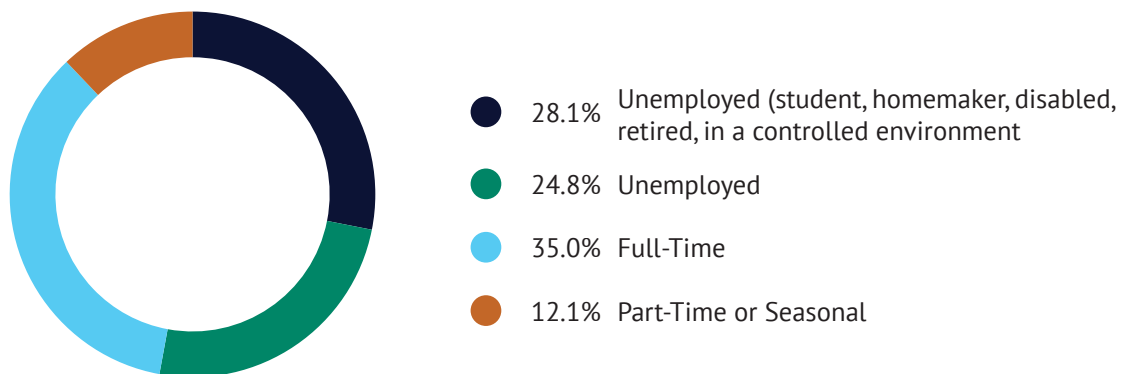
## EDUCATION AND EMPLOYMENT STATUS

About 18% of clients had less than a high school diploma or GED at intake (see Figure 1.5). Two-fifths (41.3%) of clients had a high school diploma or GED and 30.4% had completed some vocational/technical school or college. Only a minority of clients had completed vocational/technical school (2.6%), an associate’s degree (4.4%), or a bachelor’s degree or higher (3.4%).

FIGURE 1.5. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 1,902)<sup>16</sup>

More than one-third of clients (35.0%) reported their usual employment status in the 6 months before they entered the recovery center was full-time employment and 12.1% reported part-time or seasonal work (see Figure 1.6). Less than 30% reported they were unemployed because they were a full-time student, parent/homemaker, retired, disabled, or in a controlled environment (28.1%) and 24.8% reported they were unemployed for some other reason (i.e., looking for work).

FIGURE 1.6. USUAL EMPLOYMENT STATUS AT INTAKE (N = 1,924)



## RCOS FOLLOW-UP SAMPLE

The following sections of this report describes outcomes for 300 men and women who completed both an intake and a follow-up interview about 11 months (average of 333.7 days) after the intake survey was completed. Data from Kentucky Housing Corporation shows that the average length of service for the program participants included in this report was 230.1 days, which includes time in Safe Off the Streets, Motivational Tracks, Phase 1 and Phase 2.<sup>17</sup> The average number of days after program exit the follow-up interviews were conducted was 180.5, which is about 6 months. Detailed information about the methods can be found in Appendix A. Individuals who gave at least one mailing address and one phone number, or two phone numbers if they do not have a

<sup>16</sup> Twenty-two cases had inconsistencies in highest level of education reported at intake and follow-up, which were changed to missing values.

<sup>17</sup> There were some outliers for length of service. To keep the outliers from having too large of an effect on the calculation of cost of services, the value at the 94.9th percentile of the distribution for days of service (442) was applied to the top 5% of cases (i.e., outliers). Once this was done the average number of days of service was 230.1 days.

mailing address in their locator information, were eligible for selection into the 12-month follow-up component of the study.<sup>18</sup> The follow-up interviews were conducted over the telephone by an interviewer at UK CDAR with eligible individuals. Client responses to the follow-up interview were kept confidential to help facilitate an accurate and unbiased evaluation of client outcomes and satisfaction with program services. Overall, 24 completed follow-ups are targeted for each month. Due to the cost of the follow-up component of the study, the follow-up sample is targeted for as close to 280 follow-up interviews as possible. However, this year there was additional budget space to expand the number of follow-ups to 300 or an average of 25 per month.

Similar to the follow-up sampling plan used in the RCOS 2017 report, the sample to be followed up was originally stratified by target month (i.e., 12 months after intake is the target month for each client), gender, and self-reported DOC referral status at intake so that there were close to equal numbers of individuals in each of the following categories: (1) Male, referred by DOC, (2) Male, not referred by DOC, (3) Female, referred by DOC, and (4) Female, not referred by DOC.<sup>19</sup> Thus, at the completion of the follow-up period, among the 300 clients with follow-up interviews, 53.7% (n = 161) were referred by the Department of Corrections (DOC) and 46.3% (n = 139) were not DOC-referred.<sup>20</sup> The primary reason the sample was stratified by DOC status was to allow examination of whether length of service differs by DOC referral status, and whether either of these factors are related to key targeted outcomes. Analysis presented in Appendix D shows that DOC referral status was not associated with any of the targeted outcomes, while length of service was associated with several targeted outcomes. Specifically, shorter length of service was associated with greater odds of meeting criteria for depression in the 6 months before follow-up, and with greater odds of being incarcerated in the 6 months before follow-up.

See Appendix B for detailed information about clients who were followed up (n=300) compared to clients who were not followed up (n=1,624). There was only one significant difference between those followed-up and not followed-up: significantly more individuals in the follow-up sample were female.

Of the 300 individuals who completed a follow-up survey, 10.7% (n = 32) reported they were still in the recovery center at the time of the follow-up. For those clients who were in the recovery center at the time of the follow-up, 22 clients were in Phase 2, 6 clients were in Phase 1, and 4 clients were in the Motivational Track.

## CHARACTERISTICS OF RCOS FOLLOW-UP CLIENTS AT INTAKE

### DEMOGRAPHICS

Table 1.4 presents demographic information on clients with an intake survey submitted in FY 2016 and a follow-up interview completed between July 2016 and June 2017. Clients' average age was 33.6 years old and women made up 56.7% of the sample. The majority of clients (91.7%) were White and 5.7% were Black. Over half of RCOS follow-up clients reported they had never been

<sup>18</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.

<sup>19</sup> The selection criteria for the follow-up sample was determined in collaboration with Kentucky Housing Corporation and may change each year depending on the study needs and priorities.

<sup>20</sup> For the referral to be considered DOC, the Department of Corrections had to pay per diem for the client. Clients who were referred by the justice system (i.e., probation officer, drug court, etc.) but did not have per diem paid for by the Department of Corrections were considered non-DOC.

married at intake (54.3%), 32.7% were separated or divorced, and only 11.3% were married. Over half of RCOS clients had children under the age of 18. About 1% of individuals were currently serving in the military or a veteran.

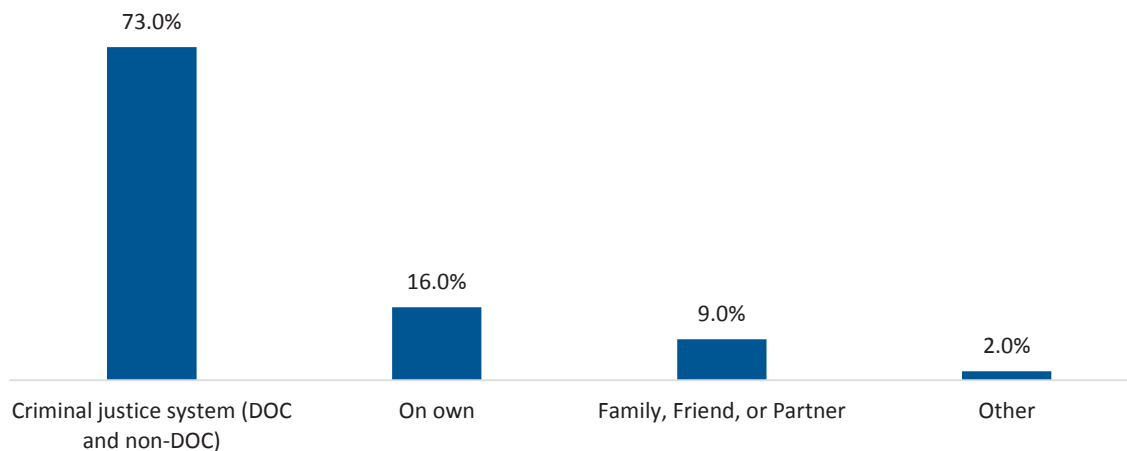
TABLE 1.4. DEMOGRAPHICS FOR FOLLOWED-UP RCOS CLIENTS AT PHASE I INTAKE IN FY 2016 (N = 300)

AGE	33.6 (Min. = 19, Max. = 61)
GENDER	
Male	43.3%
Female	56.7%
RACE	
White	91.7%
Black/African American	5.7%
Other or multiracial	2.7%
MARITAL STATUS	
Never married	54.3%
Separated or divorced	32.7%
Married	11.3%
Widowed	1.7%
HAS CHILDREN UNDER 18 YEARS OLD	52.3%
ACTIVE DUTY OR MILITARY VETERAN	1.3%

## SELF-REPORTED REFERRAL SOURCE

Figure 1.7 shows the self-reported referral source for RCOS clients in the follow-up sample. The majority of clients (73.0%) self-reported they were referred to the recovery center by the criminal justice system (e.g., judge, probation officer, Department of Corrections). The next two largest referral categories were the client decided to get help on his/her own (16.0%) and the client was referred to the recovery center by a relative, friend, or partner (9.0%). The remaining 2.0% indicated another referral source such as a treatment program, a health care provider, a mental health care provider, or another recovery center.

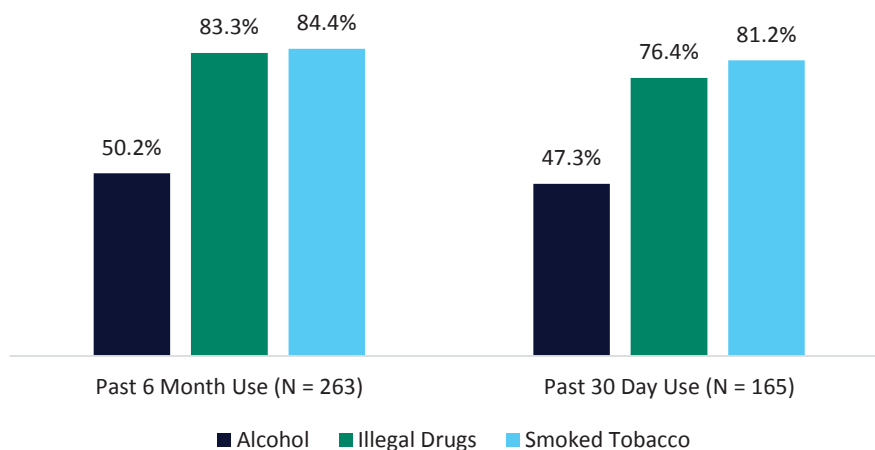
FIGURE 1.7. SELF-REPORTED REFERRAL SOURCE FOR FOLLOWED-UP RCOS CLIENTS (N = 300)



## SUBSTANCE USE

The majority of clients in the follow-up sample reported using illegal drugs and tobacco and half of clients reported using alcohol in the 6-month period before entering the recovery center (see Figure 1.8).<sup>21</sup> Similar numbers were found when past-30-day use was examined for clients who were not in a controlled environment all 30 days before entering the recovery center.<sup>22</sup>

FIGURE 1.8 FOLLOW UP SAMPLE ALCOHOL, DRUG AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE ENTERING RECOVERY CENTER



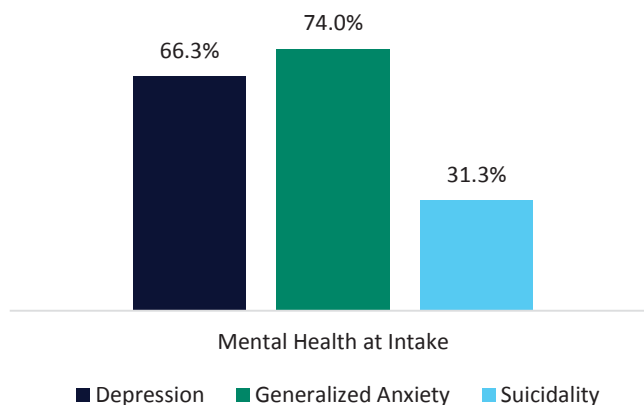
<sup>21</sup> Because being in a controlled environment reduces access to alcohol and illegal drugs, individuals who were in a controlled environment the entire intake 6-month period of the study (n = 37) were not included in the analysis of substance use during that period of time.

<sup>22</sup> Because being in a controlled environment reduces access to alcohol and illegal drugs, individuals who were in a controlled environment the entire intake 30-day period assessed for the study (n = 135) are not included in the analysis of substance use during that period of time.

## MENTAL HEALTH

At intake, two-thirds of RCOS clients in the follow-up sample met study criteria for depression in the past 6 months (see Figure 1.9). Additionally, three-fourths of followed-up clients met study criteria for generalized anxiety at intake. About 32% reported suicidal thoughts or attempts in the 6 months before entering the recovery center.

FIGURE 1.9. DEPRESSION, GENERALIZED ANXIETY, AND SUICIDALITY IN THE PAST 6 MONTHS AT INTAKE FOR FOLLOWED-UP RCOS CLIENTS (N = 300)



## PHYSICAL HEALTH

At intake, clients in the follow-up sample reported an average of 9.3 days of poor physical health in the past 30 days and an average of 16.4 days of poor mental health in the past 30 days (see Table 1.4). One quarter of RCOS follow-up clients reported chronic pain in the 6 months before entering the recovery center. Over sixty percent of individuals in the follow-up sample reported they had at least one of the 15 chronic health problems listed on the intake interview. The most common medical problems were hepatitis C (24.0%), arthritis (18.3%), asthma (14.7%), and cardiovascular disease (11.3%).

TABLE 1.4. HEALTH-RELATED CONCERNS FOR FOLLOWED-UP RCOS CLIENTS AT INTAKE (N = 300)

AVERAGE NUMBER OF POOR HEALTH DAYS IN PAST 30 DAYS	9.3
AVERAGE NUMBER OF POOR MENTAL HEALTH DAYS IN PAST 30 DAYS	16.4
CHRONIC PAIN	25.3%
AT LEAST ONE CHRONIC MEDICAL PROBLEM	62.3%
Hepatitis C	24.0%
Arthritis	18.3%
Asthma	14.7%
Cardiovascular/heart disease	11.3%



At intake, the most common insurance provider among followed-up individuals was Medicaid (51.9%; see Table 1.5). Over one-quarter of clients did not have any insurance. Small numbers of clients had insurance through an employer, including through a spouse, partner, or self-employment (10.8%), Medicare (9.5%), and through the Health Exchange (0.7%).

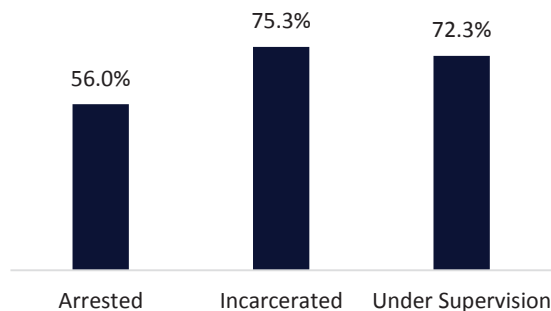
TABLE 1.5 SELF-REPORTED INSURANCE FOR FOLLOWED-UP RCOS CLIENTS AT INTAKE (N = 295)<sup>25</sup>

No insurance	26.8%
Medicaid	51.9%
Through employer (including spouse’s employer, parents’ employer, and self-employed)	10.8%
Medicare	9.5%
Through Health Exchange	0.7%

## CRIMINAL JUSTICE INVOLVEMENT

Over half of followed-up individuals reported they had been arrested at least once (56.0%) and three-fourths reported they had been incarcerated at least one night (75.3%) in the 6 months before they entered the recovery center (see Figure 1.10). Additionally, 72.3% of clients reported they were currently under criminal justice supervision (i.e., probation, parole) at intake.

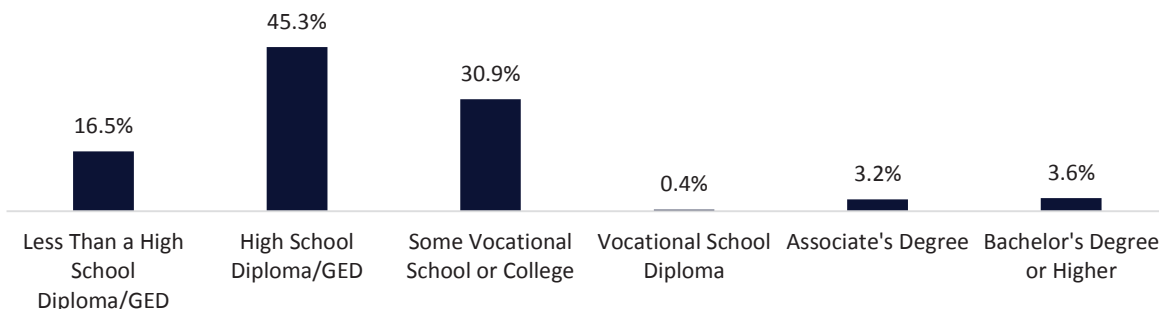
FIGURE 1.10. FOLLOW UP SAMPLE CRIMINAL JUSTICE INVOLVEMENT BEFORE ENTERING THE RECOVERY CENTER (N = 300)



## EDUCATION AND EMPLOYMENT STATUS

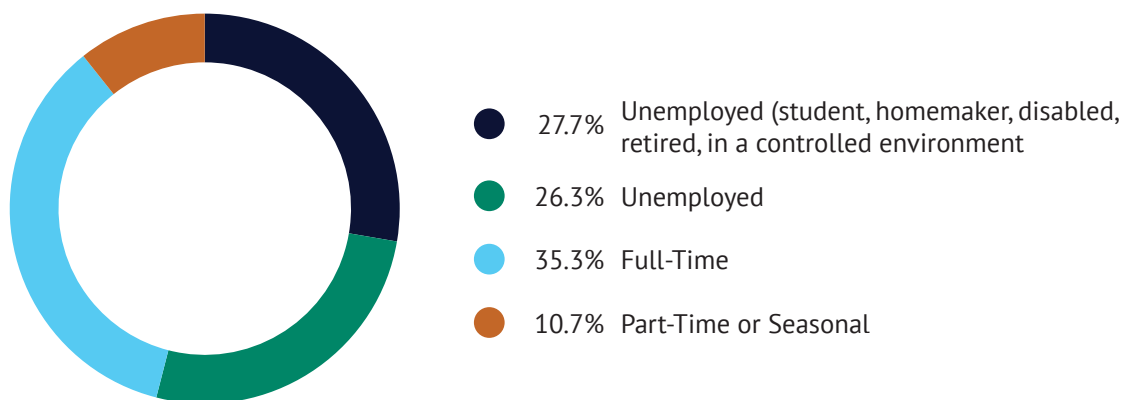
About 17% of followed-up clients (16.5%) had less than a high school diploma or GED at intake (see Figure 1.11). About 45% of clients had a high school diploma or GED and 30.9% had completed some vocational/technical school or college. Only a minority of clients had completed vocational/technical school (0.4%), an associate’s degree (3.2%), or a bachelor’s degree or higher (3.6%).

<sup>25</sup> Five individuals had missing data for self-reported insurance at intake.

FIGURE 1.11. HIGHEST LEVEL OF EDUCATION COMPLETED BY FOLLOW-UP SAMPLE AT INTAKE (N = 278)<sup>24</sup>

More than one-third of followed-up clients (35.3%) reported their usual employment status in the 6 months before they entered the recovery center was full-time employment and 10.7% reported part-time or seasonal work (see Figure 1.12). Less than 30% reported they were unemployed because they were a full-time student, parent/homemaker, retired, disabled, or in a controlled environment (27.7%) and 26.3% reported they were unemployed for some other reason (i.e., looking for work).

FIGURE 1.12. USUAL EMPLOYMENT STATUS FOR FOLLOW-UP SAMPLE AT INTAKE (N = 300)



“It changed my life. I learned from others and got a lot out of the program.”

—RCOS FOLLOW-UP CLIENT

<sup>24</sup> Twenty-two cases had inconsistencies in highest level of education reported at intake and follow-up, which were changed to missing values.

## ABOUT RCOS LOCATING EFFORTS

To ensure the highest possible follow-up rate, extensive locating efforts are made to contact each client selected for the follow-up study. Because of the transient nature of the client population and the living situation at the time of the follow-up (Recovery Centers), it can be challenging to find the clients. In order to understand the specific efforts it takes to achieve a high follow-up rate, 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 = 527) for the 2015 RCOS outcomes report. All the locator files\* were examined and used to extract information about the efforts project interviewers made to locate and contact participants as well as the type of contact information provided by participants in the original locator information when the intake survey data was submitted to UK CDAR.

The results for all 527 records in the 2015 report show a total of 1,741 phone calls were made to client phone numbers and 1,217 calls to contact persons' phone numbers (see following page). As the pull-out on the following page shows, project interviewers made an average of about 3.3 calls to client phone numbers and 2.4 calls to contact persons' phone numbers. Fewer than 30% of clients called in at any point and only 3.4% called-in to complete the survey after receiving the initial mailing without project interviewers putting additional effort into contacting the clients. That means follow-up interviewers put in considerable effort to attempt to locate, contact, and complete follow-up surveys with 96.6% of the individuals included in the follow-up sample.

Note: At the time of extraction, there were 2 (physical) files missing. Information on phone number, address, and contacts listed was pulled from the electronic data files. The other information was filled in with the sample averages for these 2 files.

## RCOS 2015 LOCATOR EFFORTS

283

SURVEYS  
COMPLETED

Of the 527 clients selected into the sample of individuals to be followed up from July 2013 to June 2014,<sup>25</sup> **all were selected to examine efforts in locating and contacting participants.** Overall, 283 surveys were completed.

### PHONE CALLS



3.3

An estimated total of 1,741 calls were made to client phone numbers, an average of 3.3 per client.

2.4

An estimated total of 1,217 calls were made to contact phone numbers, an average of 2.4 per client.

79%

8 out of 10 clients selected for follow-up had at least one unique contact phone number.

### MAILINGS



1.5

An estimated total of 794 mailings were sent to a client address, an average of 1.5 per client.

0.2

An estimated total of 102 mailings were sent to contact addresses, an average of 0.2 per client.

59%

Over half of clients selected for follow-up had at least one complete, unique contact address.

### ONLINE SEARCH

Client information was verified through external search in cases where client contact information was incomplete or incorrect. Approximately 44.4% of all clients were searched to verify correct information.



86%

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

44%

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

23%

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

<sup>25</sup> 90 individuals were ineligible for participating in the follow-up survey for a variety of reasons. Of the remaining 437 individuals, interviewers completed follow-up surveys with 283 individuals.

## SECTION 2.

# SUBSTANCE USE

*This section describes intake (before entry into SOS) compared to follow-up (i.e., 6 months and 30 days before the follow-up interview) change in illegal drug, alcohol, and tobacco use. Both past-6-months substance use and past 30-day substance use is examined separately for clients who were not in a controlled environment all 30 days before entering a recovery program and clients who were in a controlled environment all 30 days before entering the program (for the 30 day use).<sup>26</sup> Results for each analysis are presented for the overall sample and then by gender if there were significant gender differences.*

Section 2A examines change in the use of (1) any illegal drugs, (2) alcohol,<sup>27</sup> and, (3) tobacco before entering the recovery center and before the follow-up for clients who were not in a controlled environment the entire period before entering the program (i.e., 6 months or 30 days).<sup>28</sup> Results and significant gender differences are presented for each substance group in four main subsections:

1. **Change in 6-month substance use from intake to follow-up for clients not in a controlled environment.**<sup>29</sup> Comparisons of use of substances (any illegal drug use, alcohol use, and tobacco use) in the 6 months before the client entered the program and use of substances during the 6-month follow-up period are presented (n = 262). Appendix C provides change over time on specific substances for men and women.
2. **Average number of months individuals used substances.** For those who used the substances, the number of months they used the substance before program entry and during the follow-up period are analyzed.
3. **Change in 30-day substance use from intake to follow-up for clients not in a controlled environment.** Comparisons of any use in the 30 days before program entry and the 30 days before the follow-up interview for any illegal drugs, alcohol, and tobacco for clients who were not in a controlled environment all 30 days before entering the recovery center (n = 164) are presented.<sup>30</sup>

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<sup>26</sup> If the client progresses through the phases of the Recovery Kentucky Program in a typical manner, the follow-up interview should occur about 6 months after they are discharged from Phase I. However, because clients progress through phases at their own pace and many factors can affect when they are discharged from Phase 1, the follow-up timing varies by client. For example, some individuals may not complete Phase 1 and may be discharged before the approximate 6 months it should take to complete Phase 1.

<sup>27</sup> Alcohol use was asked three main ways: (1) how many months/days did you drink any alcohol (alcohol use), (2) how many months/days did you drink alcohol to intoxication (alcohol to intoxication), and (3) how many months/days did you have 5 or more (4 if female) alcoholic drinks in a period of about 2 hours (i.e., binge drinking).

<sup>28</sup> McNemar's test was used for significance testing of substance use; Chi-square test of independence was used to test for significant differences for gender at intake and then at follow-up.

<sup>29</sup> Thirty-seven individuals were not included in the analysis of change in substance use from the 6 months before entering the recovery center to the 6 months before follow-up because they reported being incarcerated the entire period measured at intake. One individual had missing data for number of days incarcerated at follow-up and was also not included in past-6-month analysis.

<sup>30</sup> Because many individuals enter the Recovery Kentucky program after leaving jail or prison, substance use in the 30 days before entering the program was examined separately for individuals who were in a controlled environment all 30 days from individuals who were not in a controlled environment all 30 days. The assumption for this divided analysis is that being in a controlled environment inhibits opportunities for alcohol and drug use. A total of 135 individuals were in a controlled environment all 30 days before entering the program and 1 individual was in a controlled environment all 30 days before follow-up.

4. **Change in self-reported severity of substance use disorder from intake to follow-up.** There are two indices of substance use severity presented in this report. One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they met the 11 criteria included in the DSM-5 for diagnosing substance use disorder in the past 6 months. Under DSM-5 anyone meeting any two of the 11 criteria during the same 12-month period would receive a diagnosis of substance use disorder (SUD) as long as their symptoms were causing clinically significant impairments in functioning. The severity of the substance use disorder in this report (i.e., none, mild, moderate, or severe) is based on the number of criteria met. The percent of individuals in each of the four categories at intake and follow-up is presented.

The Addiction Severity Index (ASI) composite scores are examined for change over time for illegal drugs (n = 125), alcohol (n = 79) and those with alcohol and/or illegal drug use (n = 137). 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.

Section 2B presents results for each substance group in two main subsections for clients who were in a controlled environment all 30 days before entering the program:

1. **Change in 30-day substance use from intake to follow-up for clients who were in a controlled environment all 30 days before entering the recovery center.** Comparisons of any use in the 30 days before program entry and the 30 days before the follow-up interview for any illegal drugs, alcohol, and tobacco for clients who were in a controlled environment all 30 days before entering the recovery center (n = 135) are presented.
2. **Change in self-reported severity of substance use disorder for clients who were in a controlled environment all 30 days before entering the recovery center.** ASI alcohol and drug severity composite scores are examined for change over time for clients who reported alcohol use in the past 30 days (n = 16) and for clients who reported drug use in the past 30 days (n = 49) at intake and/or follow-up.

## 2A. SUBSTANCE USE FOR CLIENTS WHO WERE NOT IN A CONTROLLED ENVIRONMENT

### ANY ILLEGAL DRUG USE

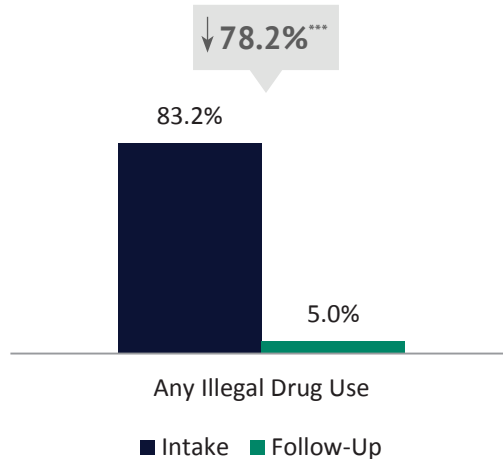
#### PAST-6-MONTH ILLEGAL DRUG USE

At intake, 83.2% of clients reported using any illegal drugs (including prescription drug misuse and other illegal drugs) in the 6 months before entering the recovery center. At follow-up, only 5.0% of clients reported using illegal drugs in the 6 months before follow-up (a significant decrease of 78.2%; see Figure 2A.1).

At intake, clients were asked how old they were when they first began to use illicit drugs. On average, RCOS clients were 15.6 years old when they first began using drugs.<sup>a</sup>

<sup>a</sup> Nine individuals had missing data for this question.

FIGURE 2A.1 ANY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP (N = 262)

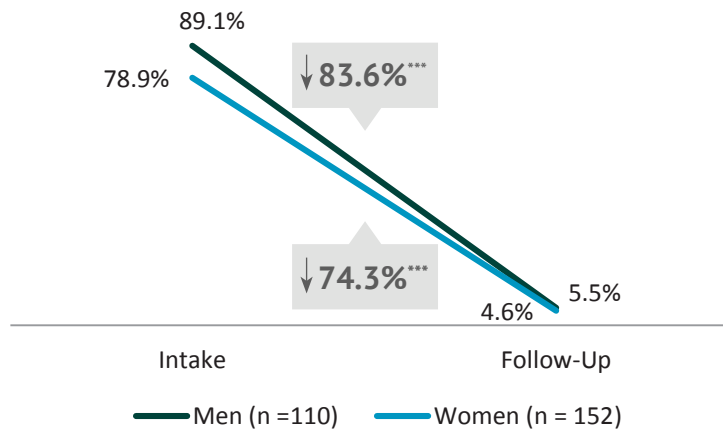


\*\*\*p < .001.

*GENDER DIFFERENCES IN PAST-6-MONTH USE OF ANY ILLEGAL DRUGS*

At intake, significantly more men than women reported using any illegal drugs in the past 6 months (see Figure 2A.2). The number of men and women reporting past-6-month illegal drug use significantly decreased from intake to follow-up. At follow-up, there was no gender difference in illegal drug use in the past 6 months.

FIGURE 2A.2. GENDER DIFFERENCES IN PAST-6-MONTH USE OF ANY ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP<sup>a</sup>



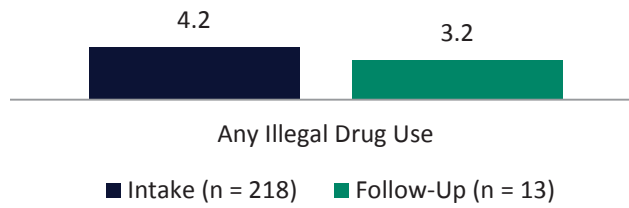
a—Significant difference by gender at intake (p < .05).

\*\*\*p < .001.

**AVERAGE NUMBER OF MONTHS USED ANY ILLEGAL DRUGS**

Among clients who reported illegal drug use in the 6 months before entering the program (n = 218), they reported using drugs an average of 4.2 months (see Figure 2A.3). Among individuals who reported using illegal drugs at follow-up (n = 13), they reported using an average of 3.2 months.

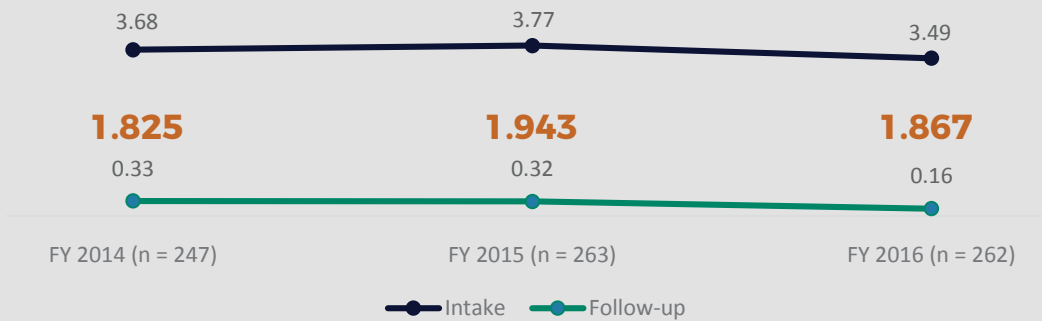
FIGURE 2A.3. AMONG CLIENTS WHO USED ANY ILLEGAL DRUGS, THE AVERAGE NUMBER OF MONTHS INDIVIDUALS USED ILLEGAL DRUGS



### EFFECT SIZES

#### AVERAGE MAXIMUM NUMBER OF MONTHS OF ILLEGAL DRUG USE IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER AND THE FOLLOW-UP

From FY 2014 to FY 2016, the effect size for the average maximum number of months of illegal drug use was large. In FY 2015, the effect size was 1.943, up from 1.825 the year prior, and in FY 2016, the effect size was 1.867.



Per Cohen (1988), 0.2 is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size.

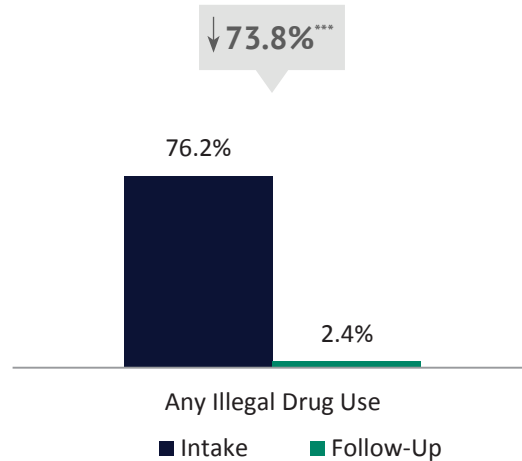
### PAST-30-DAY ILLEGAL DRUG USE

About three-quarters of individuals (76.2%) who were not in a controlled environment all 30 days reported they had used illegal drugs (including prescription misuse and other illegal drugs) in the 30 days before entering the recovery center (see Figure 2A.4). At follow-up, only 2.4% of individuals reported they had used illegal drugs in the past 30 days—a significant decrease by 73.8%.

*The number of individuals who reported using illegal drugs in the past 30 days decreased by 74%*



FIGURE 2A.4. PAST 30-DAY USE OF ANY ILLEGAL DRUGS AT INTAKE TO FOLLOW-UP (n = 164)

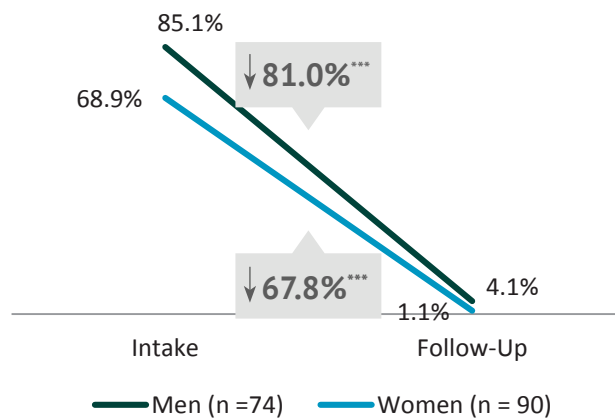


\*\*\*p < .001.

*GENDER DIFFERENCES IN PAST-30-DAY USE OF ANY ILLEGAL DRUGS*

In the past 30 days before entering the recovery center program, significantly more men reported any illegal drug use when compared to women (see Figure 2A.5). The number of men and women who reported past-30-day illegal drug use decreased significantly over time and at follow-up, there was no difference in illegal drug use by gender.

FIGURE 2A.5. GENDER DIFFERENCES IN PAST-30-DAY USE OF ANY ILLEGAL DRUGS AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

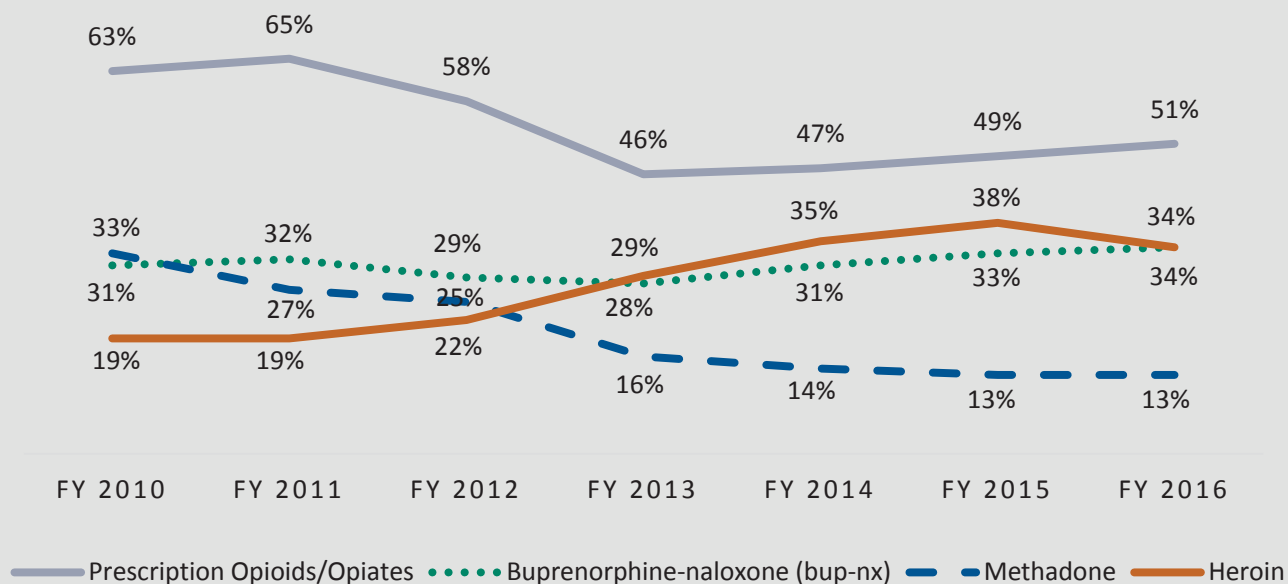
## TREND REPORT

### HOW MUCH HAS OPIOID AND HEROIN USE CHANGED OVER TIME?

This trend analysis examines the percent of RCOS clients who reported misusing prescription opiates/opioids, non-prescribed methadone, non-prescribed buprenorphine-naloxone (bup-nx), and heroin in the 6 months before entering the program from FY 2010 to FY 2016.<sup>31</sup>

As the figure shows, about two-thirds of clients reported misusing prescription opioids in FY 2010 and FY 2011. A significant decline in the percent of clients reporting opioid misuse began in FY 2012 (58%) and continued through FY 2013 (46%). This number began to slightly rise again in FY 2014 (47%), FY 2015 (49%), and FY 2016 (51%).

The number of clients reporting non-prescribed bup-nx has remained relatively stable over the years, dipping to its lowest in FY 2012 (29%) and peaking in FY 2016 (34%). The percent of individuals reporting non-prescribed methadone use has steadily decreased from FY 2010 (33%) to FY 2016 (13%). Heroin use, however, has increased from 19% in FY 2010 to 38% in FY 2015. The number of clients reporting heroin use dipped slightly in FY 2016 to 34%.



<sup>31</sup> On average, there were 1,200 intake surveys submitted each fiscal year.

## ALCOHOL

### PAST-6-MONTH ALCOHOL USE

Alcohol use was asked three main ways: (1) how many months/days did you drink any alcohol (i.e., alcohol use), (2) how many months/days did you drink alcohol to intoxication (i.e., alcohol to intoxication), and (3) how many months/days did you have 5 or more (4 or more if female) alcoholic drinks in a period of about 2 hours (i.e., binge drinking).<sup>32</sup>

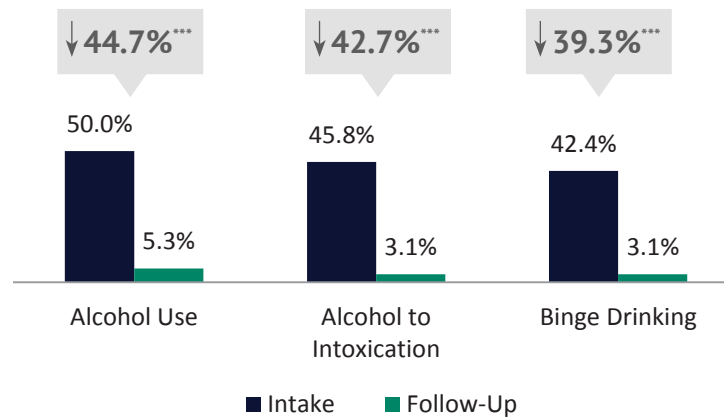
Half of clients reported using alcohol in the 6 months before entering the recovery center while 5.3% of clients reported alcohol use in the 6 months before follow-up. There was a 44.7% decrease in the number of individuals reporting alcohol use (see Figure 2A.6). Overall, 45.8% of individuals reported using alcohol to intoxication before entering the recovery center and 3.1% reported using alcohol to intoxication at follow-up—a 42.7% decline. Also, 42.4% of individuals reported binge drinking in the 6 months before program entry and only 3.1% reported binge drinking in the follow-up period—a 39.3% decrease.

At intake, clients were asked how old they were when they had their first alcoholic drink (other than a few sips). RCOS clients, on average, reported they were 13.9 years old when they began drinking.<sup>a</sup>

<sup>a</sup> Eighteen clients had missing data for this question

*The number of individuals who reported alcohol use in the past 6 months decreased by 45%*

FIGURE 2A.6. PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP (N = 262)



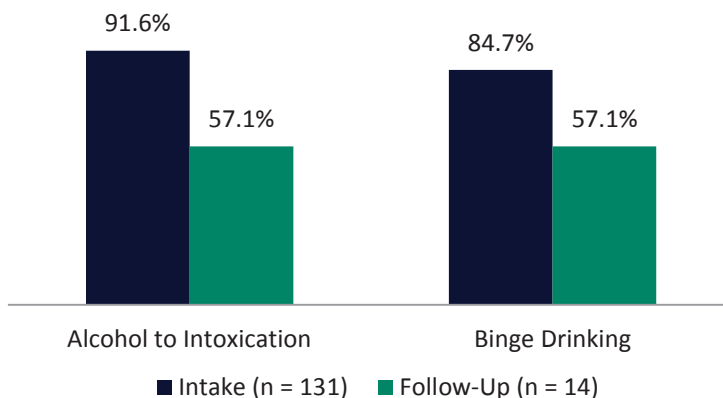
\*\*\*p < .001.

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

Of the individuals who used alcohol in the 6 months before entering the recovery center (n = 131), 91.6% used alcohol to intoxication and 84.7% binge drank alcohol (see Figure 2A.7). Of the individuals who used alcohol in the 6 months before follow-up (n = 14), 57.1% of clients reported alcohol use to intoxication and binge drinking.

<sup>32</sup> National Institute on Alcohol Abuse and Alcoholism. (2004). NIAAA Newsletter, Winter 2004, Number 3. Rockville, MD: U.S. Department of Health and Human Services.

FIGURE 2A.7. PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE TO FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 2A.8 shows the number of months of alcohol use for those who reported using any alcohol in the 6 months before intake and any alcohol in the 6 months before follow-up. Among the individuals who reported using alcohol in the 6 months before entering the program (n = 131), they used an average of 3.7 months. Among individuals who reported using alcohol at follow-up (n = 14), they used an average of 2.5 months.

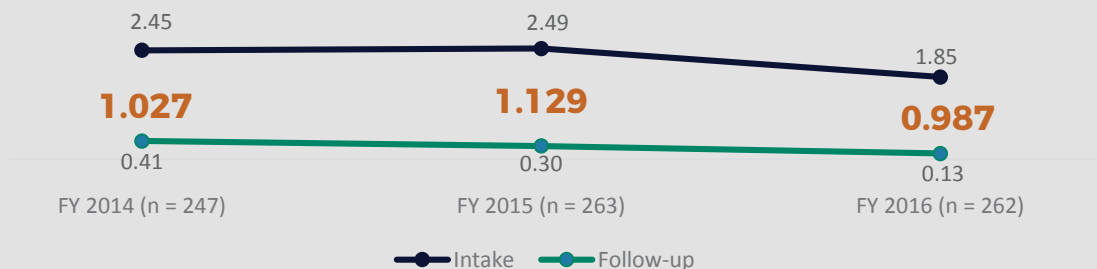
FIGURE 2A.8. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE



EFFECT SIZES

AVERAGE NUMBER OF MONTHS OF ALCOHOL USE IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER AND THE FOLLOW-UP

Each year, the effect size for the average number of months of alcohol use in the past 6 months was large (1.027 in FY 2014, 1.129 in FY 2015), and 0.987 in FY 2016.

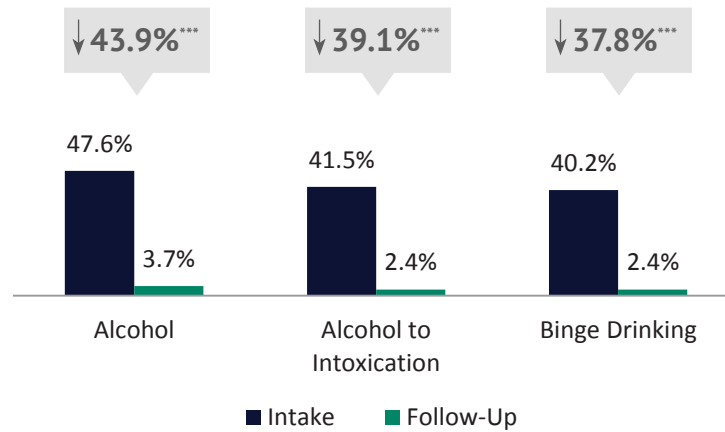


Per Cohen (1988), 0.2 is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size.

### PAST-30-DAY ALCOHOL USE

There was a decrease of 43.9% in the number of individuals who reported using alcohol in the past 30 days from intake (47.6%) to follow-up (3.7%; see Figure 2A.9). Decreases in the number of individuals who reported using alcohol to intoxication (by 39.1%) and binge drinking (by 37.8%) were also significant for the sample overall.

FIGURE 2A.9. PAST-30-DAY ALCOHOL USE FROM INTAKE TO FOLLOW-UP (N = 164)

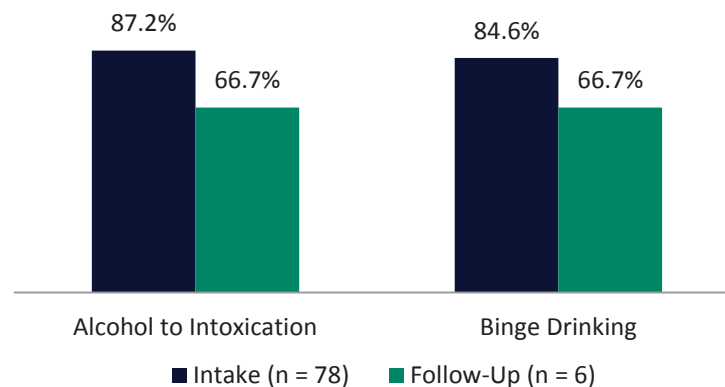


\*\*\*p < .001.

### ALCOHOL INTOXICATION AND BINGE DRINKING AMONG THOSE WHO USED ALCOHOL IN THE PAST 30 DAYS

Of the 78 individuals who used alcohol in the 30 days before entering the recovery center, 87.2% used alcohol to intoxication and 84.6% binge drank alcohol in the 30 days before entering the program (see Figure 2A.10). Of the 6 individuals who reported using alcohol in the 30 days before follow-up, 66.7% reported alcohol use to intoxication and binge drinking.<sup>33</sup>

FIGURE 2A.10. PAST-30-DAY ALCOHOL TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



<sup>33</sup> It was not possible to conduct a chi square test to examine difference in the percent of men and women who used alcohol to intoxication and binge drank in the 30 days before follow-up among those who used alcohol because of the small number of individuals who reported using alcohol in the 30 days before follow-up (n = 6).

## SELF-REPORTED SEVERITY OF ALCOHOL AND DRUG USE

### DSM-5 CRITERIA FOR SUBSTANCE USE DISORDER, PAST 6 MONTHS

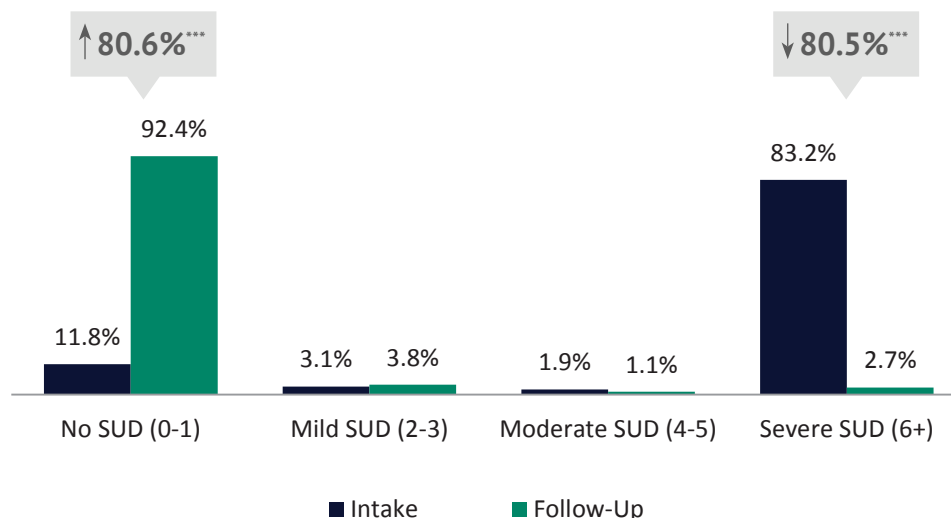
One way to examine overall change in degree of severity of substance use is to ask participants to self-report whether they meet any of the 11 symptoms included in the DSM-5 criteria for diagnosing substance use disorder (SUD) in the past 6 months.<sup>34</sup> The DSM-5 substance use disorder diagnosis has four levels of severity which were used to classify severity groups in this study: (1) no SUD (1 or no criteria met), (2) mild SUD (2 or 3 criteria met), (3) moderate SUD (4 or 5 criteria met), and (4) severe disorder (6 or more criteria met). Client self-reports of DSM-5 criteria suggest, but do not diagnose, a substance use disorder.

“It’s a good program and helps you get ready for the real world. And I am still sober today.”

– RCOS FOLLOW-UP CLIENT

Change in the severity of SUD in the prior 6 months was examined for clients at intake and follow-up. Figure 2A.11 displays the change in the percent of individuals in each SUD severity classification, based on self-reported criteria in the preceding 6 months. At intake, only 11.8% met criteria for no substance use disorder (meaning they reported 0 or 1 DSM-5 criteria), while at follow-up, the vast majority (92.4%) met criteria for no SUD, a significant increase of 80.6%. At the other extreme of the continuum, more than 80% of individuals met criteria for severe SUD at intake, while at follow-up, only 2.7% met criteria for severe SUD, a significant decrease of 80.5%.

FIGURE 2A.11. DSM-5 SUD SEVERITY AT INTAKE AND FOLLOW-UP (N = 262)<sup>a</sup>



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

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

<sup>34</sup> The DSM-5 diagnostic criteria for substance use disorders included in the RCOS intake and follow-up interviews are similar to the criteria for DSM-IV, which has evidence of excellent test-retest reliability and validity. However, the DSM-5 eliminates the distinction between substance abuse and dependence, substituting severity ranking instead. In addition, the DSM-5 no longer includes the criterion about legal problems arising from substance use but adds a new criterion about craving and compulsion to use.

## ADDICTION SEVERITY INDEX (ASI), PAST 30 DAYS

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

- 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 the recovery program is to them (see sidebar).

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

Figure 2A.12 displays the change in average scores.<sup>35</sup> Among individuals who reported using any alcohol, the average alcohol composite score decreased significantly from 0.53 at intake to 0.07 at follow-up. Among individuals who reported any illegal drug use, the average drug composite score decreased significantly from 0.36 at intake to 0.04 at follow-up.

<sup>35</sup> The following numbers of cases were not included in the analysis of change in the composite score: 85 individuals reported abstaining from alcohol and 39 individuals reported abstaining from drugs at intake and follow-up.

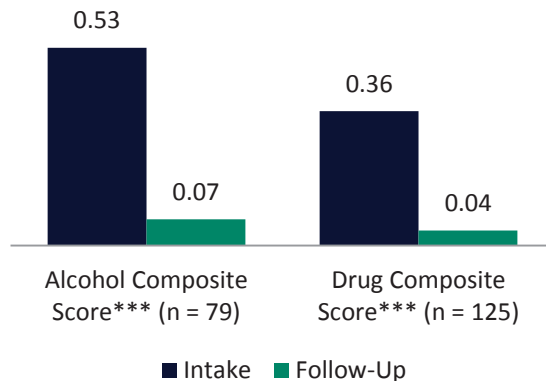
## ASI ALCOHOL AND DRUG COMPOSITE SCORES AND SUBSTANCE USE DISORDER

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

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

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

FIGURE 2A.12. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP

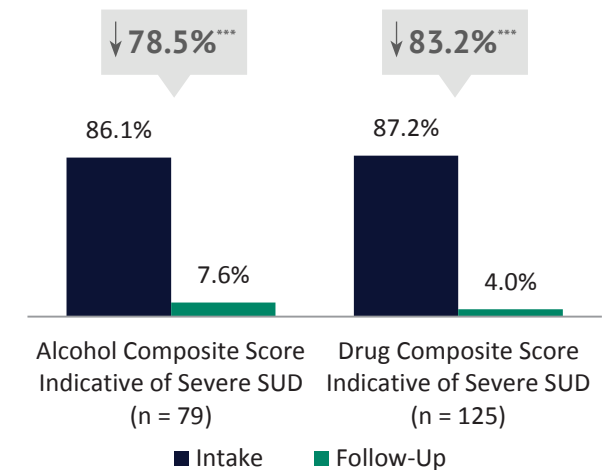


\*\*\*p < .001

The percent of individuals who had ASI composite scores that met the cutoff for severe substance use disorder (SUD) decreased significantly from intake to follow-up (see Figure 2A.13). At intake, the majority of individuals had alcohol and drug composite scores that met the cutoff for severe SUD (86.1% and 87.2% respectively), while the percent of individuals with alcohol and drug composite scores that met the cutoff for severe SUD were significantly lower at follow-up. Only 7.6% of individuals had an alcohol composite score that met the cutoff for severe SUD at follow-up and only 4.0% had a drug composite score that met the cutoff for severe SUD at follow-up.

*The average ASI alcohol and drug composite scores decreased significantly from intake to follow-up*

FIGURE 2A.13. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



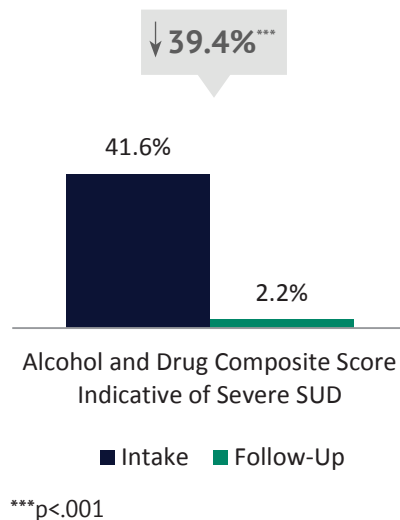
\*\*\*p < .001.



Among individuals who used alcohol and/or drugs in the 30 days before intake, 41.6% had alcohol and drug composite scores that met the cutoff for both severe alcohol use disorder and drug use disorder (see Figure 2A.14). The percent of clients who had composite scores that met the cutoff for severe SUD for both alcohol and drugs decreased significantly by 39.4% to only 2.2% at follow-up.

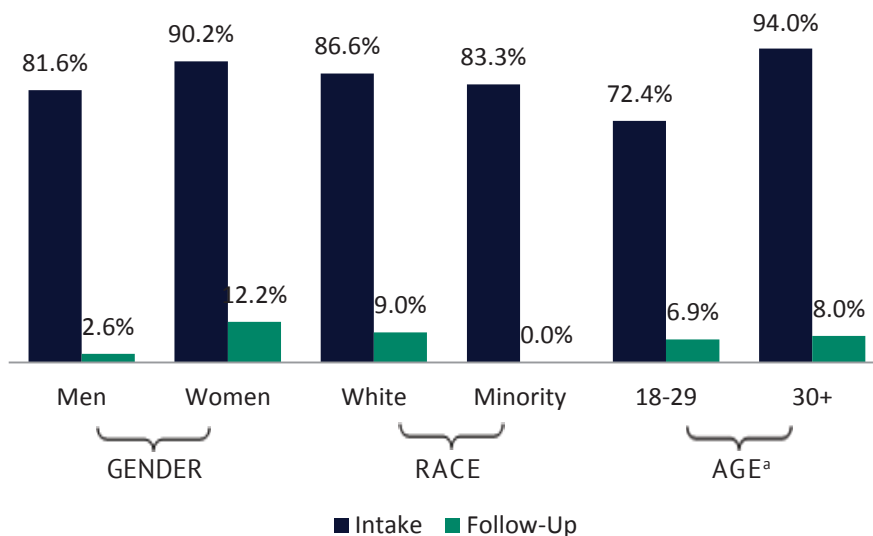
*The number of individuals with ASI composite scores indicating severe alcohol and drug use disorders decreased significantly at follow-up*

FIGURE 2A.14. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE ALCOHOL AND DRUG USE DISORDERS AT INTAKE AND FOLLOW-UP (n = 137)



Analysis was also conducted to examine differences between individuals who had an alcohol composite score meeting the cutoff for severe SUD at intake and follow-up by gender, race/ethnicity, or age (see Figure 2A.15). At intake, significantly more clients who were 30 years old or older (94.0%) had an alcohol composite score meeting the cutoff for severe SUD when compared to those younger (72.4%).

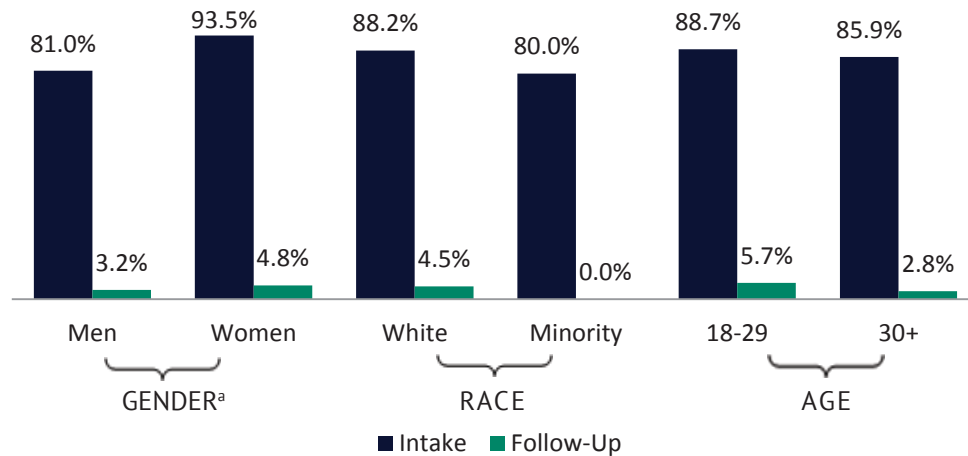
FIGURE 2A.15. ALCOHOL-USING INDIVIDUALS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 79)



a – Significant difference in alcohol composite score at intake (p<.01).

Analysis was also conducted to examine whether individuals who had a drug composite score indicative of severe SUD at intake and follow-up differed by gender, race/ethnicity, or age (see Figure 2A.16). At intake, significantly more women (93.5%) had drug composite scores that met the cutoff for severe SUD when compared to men (81.0%).

FIGURE 2A.16. DRUG-USING INDIVIDUALS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 125)<sup>36</sup>



a – Significant difference in drug composite score at intake ( $p < .05$ ).

## TOBACCO USE

### PAST-6-MONTH SMOKING, E-CIGARETTE, AND SMOKELESS TOBACCO USE

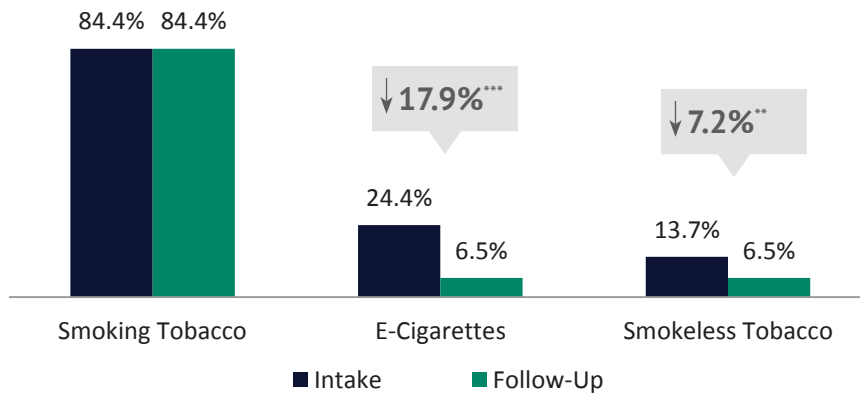
Overall, there was no change in smoking tobacco from intake to follow-up (see Figure 2A.17). Most individuals reported smoking tobacco in the 6 months before entering the recovery center and in the 6 months before follow-up (84.4%). The percent of individuals reporting use of e-cigarettes (e.g., battery-powered nicotine delivery devices that vaporize a liquid mixture consisting of propylene glycol, glycerin, flavorings, nicotine, and other chemicals) decreased significantly from intake (24.4%) to follow-up (6.5%). The percent of individuals who reported using smokeless tobacco also significantly decreased from intake (13.7%) to follow-up (6.5%).

At intake, clients were asked how old they were when they began smoking regularly (on a daily basis). RCOS clients reported, on average, that they began smoking regularly at 16.2 years old.<sup>a</sup>

<sup>a</sup> Thirty-four clients reported they had never smoked regularly.

<sup>36</sup> One individual had missing data for date of birth and age could not be calculated.

FIGURE 2A.17. PAST-6-MONTH SMOKING TOBACCO, E-CIGARETTE, AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 262)

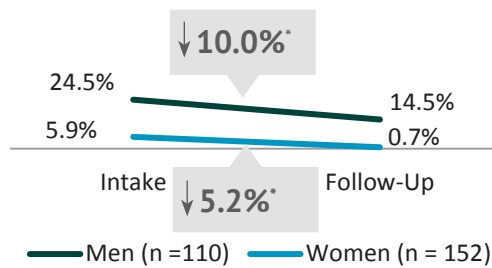


\*\*p<.01, \*\*\*p<.001.

*GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO*

At intake and follow-up, significantly more men than women reported using smokeless tobacco (see Figure 2A.18). One fourth of men (24.5%) and only 5.9% of women reported using smokeless tobacco at intake. Those numbers decreased significantly at follow-up.

FIGURE 2A.18. GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

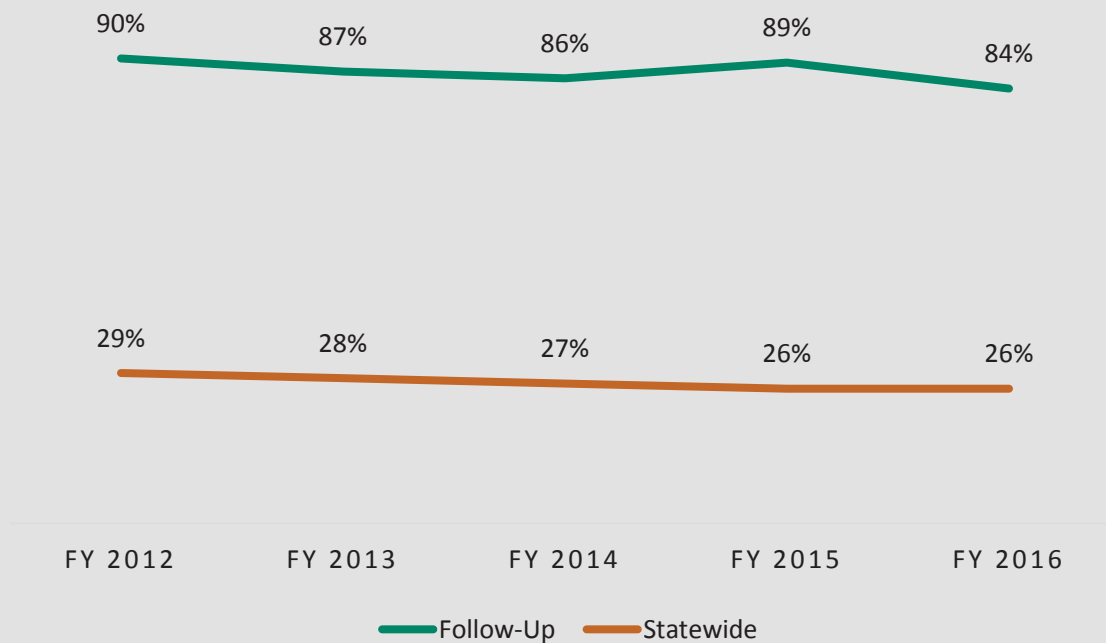
\*p<.05.

## TREND REPORT

### PAST-6-MONTH SMOKING TOBACCO AT FOLLOW-UP

Smoking rates for RCOS clients consistently remain high in the 6 months before follow-up. In FY 2012, 90% of clients reported smoking at follow-up. A similar percentage was reported in FY 2013 (87%) and in FY 2014 (86%). In FY 2015, 89% of clients reported smoking at follow-up and 84% smoked in the past 6 months in FY 2016.

When compared to a statewide sample, over three times more RCOS clients report smoking at follow-up.<sup>37</sup>

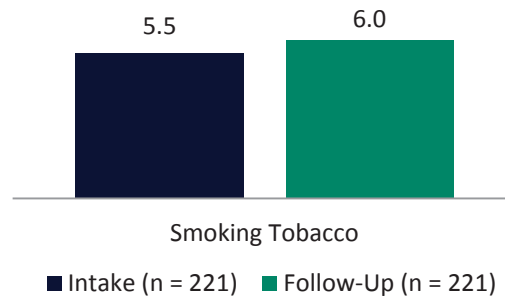


### AVERAGE NUMBER OF MONTHS SMOKED TOBACCO

Figure 2A.19 shows, among smokers, the average number of months clients reported smoking tobacco at intake and follow-up. Among the individuals who reported smoking tobacco in the 6 months before entering the program (n = 221), they reported smoking tobacco, on average, 5.5 months. Among individuals who reported smoking tobacco at follow-up (n = 221), they reported using, on average, 6.0 months of the 6-month period.

<sup>37</sup> <https://www.americashealthrankings.org/explore/2016-annual-report/measure/Smoking/state/KY>

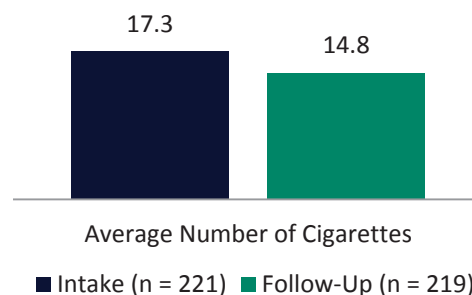
FIGURE 2A.19. AVERAGE NUMBER OF MONTHS TOBACCO USE



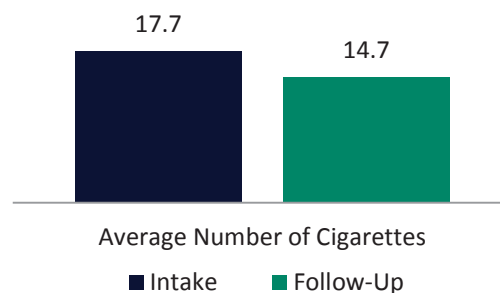
### AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY

Figure 2A.20 shows, among individuals who smoked tobacco, the average number of cigarettes smoked per day: 17.3 cigarettes per day at intake (n = 221) and 14.8 cigarettes per day at follow-up (n = 221).<sup>38</sup>

FIGURE 2A.20. AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY



Among the individuals who reported smoking tobacco in the 6 months both before intake and the 6 months before follow-up (n = 202), the average number of cigarettes they smoked per day decreased significantly from 17.7 at intake to 14.7 at follow-up (see Figure 2A.21).

FIGURE 2A.21. AMONG INDIVIDUALS WHO SMOKED CIGARETTES AT INTAKE AND FOLLOW UP (N = 200)<sup>39</sup>, THE AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY<sup>a</sup>

a--Paired sample t-test was conducted (p < .001).

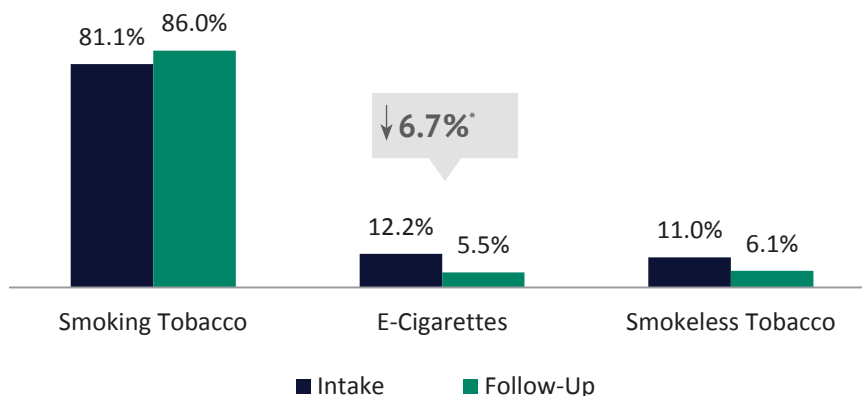
<sup>38</sup> Two individuals did not know how many cigarettes per day they smoked at follow-up.

<sup>39</sup> 202 individuals reported smoking tobacco in the 6 months before intake and follow-up, however, two had missing values for the number of cigarettes smoked per day at follow-up.

## PAST-30-DAY SMOKING, E-CIGARETTE, AND SMOKELESS TOBACCO USE

Among the individuals who were not in a controlled environment all 30 days before entering the program, the majority reported smoking tobacco in the 30 days before entering the recovery center (81.1%) and at follow-up (86.0%), with no significant change from intake to follow-up (see Figure 2A.22). A small minority of individuals reported using e-cigarettes in the 30 days before entering the program and that number significantly decreased at follow-up. Eleven-percent of individuals reported smokeless tobacco use in the 30 days before entering the program and 6.1% reported use before follow-up.

FIGURE 2A.22. PAST-30-DAY SMOKING, E-CIGARETTE AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 164)



\*p<.05.

### GENDER DIFFERENCES IN PAST-30-DAY E-CIGARETTE AND SMOKELESS TOBACCO USE

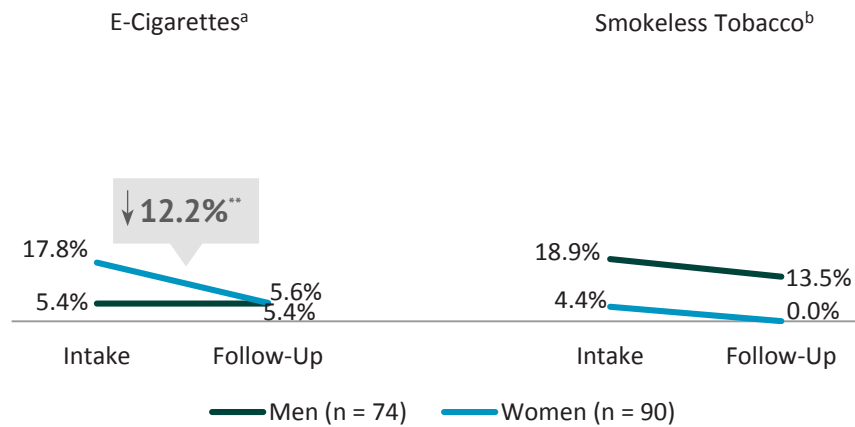
More women reported past-30-day use of e-cigarettes at intake compared to men (see Figure 2A.23). The number of women reporting e-cigarette use decreased significantly from intake to follow-up.

Similar to the gender difference in 6-month smokeless tobacco use, at intake and follow-up significantly more men than women reported 30-day smokeless tobacco use.

“I liked everything. It taught me a lot about myself and to be more open to others. I’m more accountable.”

—RCOS FOLLOW-UP CLIENT

FIGURE 2A.23. GENDER DIFFERENCES IN PAST-30-DAY E-CIGARETTE AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP



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

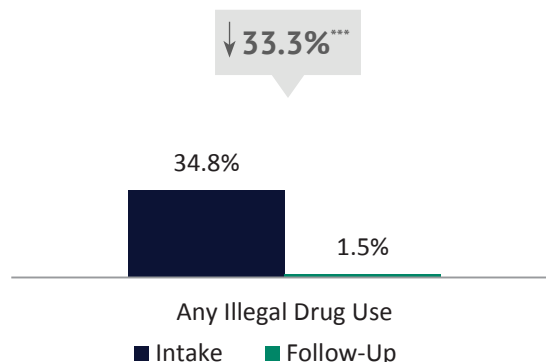
## 2B. SUBSTANCE USE FOR CLIENTS WHO WERE IN A CONTROLLED ENVIRONMENT

Changes in drug and alcohol use from intake to follow-up were analyzed separately for individuals who were in a controlled environment (e.g., prison, jail, other drug-free residential facility) all 30 days before entering the recovery center (n = 135) because being in a controlled environment reduces opportunities for alcohol and drug use.

### PAST-30 DAY-USE OF ANY ILLEGAL DRUGS

Of the individuals who were in a controlled environment all 30 days, 34.8% reported they used illegal drugs (including marijuana, cocaine, heroin, methadone, hallucinogens, barbiturates, inhalants, synthetic marijuana, and non-prescribed use of prescription opiates, sedatives, and amphetamines) in the 30 days before they entered the recovery center (see Figure 2B.1). In the 30 days before follow-up, 1.5% of clients reported illegal drug use, which is a significant decrease of 33.3% .

FIGURE 2B.1. PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP FOR CLIENTS IN A CONTROLLED ENVIRONMENT (N = 135)

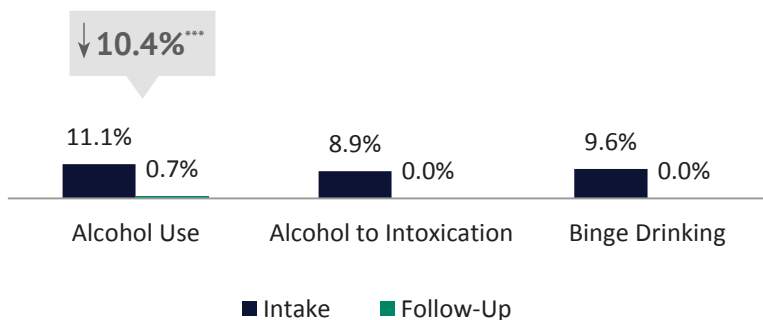


\*\*\*p < .001.

## PAST-30-DAY ALCOHOL USE

As expected, given their confinement to a controlled environment in the 30 days before entering the recovery center, only a minority of individuals reported they had used alcohol in those 30 days (see Figure 2B.2). There was a significant decrease in the percent of individuals who reported using alcohol at follow-up.

FIGURE 2B.2. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP FOR CLIENTS IN A CONTROLLED ENVIRONMENT (N = 135)<sup>a</sup>



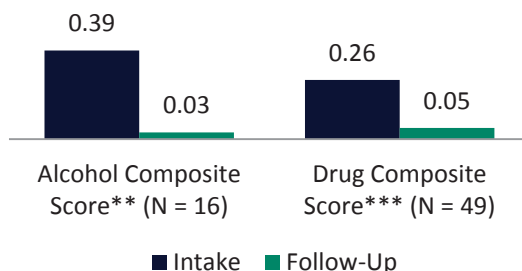
a – No measures of association could be computed for alcohol use to intoxication and binge drinking in the past 30 days because the value at follow-up was 0.

\*\*\*p < .001

## SELF-REPORTED SEVERITY OF ALCOHOL AND DRUG USE AMONG CLIENTS WHO WERE IN A CONTROLLED ENVIRONMENT

Among the individuals who were in a controlled environment all 30 days before entering the program and who did not report abstaining from the substance (alcohol, drugs) at intake and follow-up, the average composite score for alcohol use and the average composite score for drug use decreased significantly from intake to follow-up (see Figure 2B.3).

FIGURE 2B.3. AVERAGE ALCOHOL ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



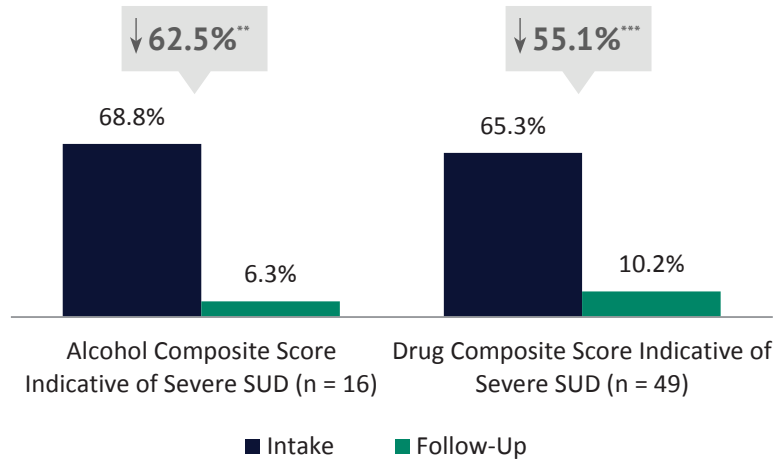
\*\*p<.01, \*\*\*p < .001.

Among the individuals who were in a controlled environment all 30 days before entering the program and who did not report abstaining from the substance, nearly 70% had an alcohol composite score that met the cutoff for severe SUD at intake, and the percent significantly



decreased at follow-up (6.3%; see Figure 2B.4). The majority of individuals (65.3%) had a drug composite score that met the cutoff for severe SUD, and only 10.2% had a drug composite score that met the cutoff for severe SUD at follow-up—a significant decrease of 55.1%.<sup>40</sup>

FIGURE 2B.4. ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



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

## PAST-30-DAY SMOKING, E-CIGARETTE, AND SMOKELESS TOBACCO USE

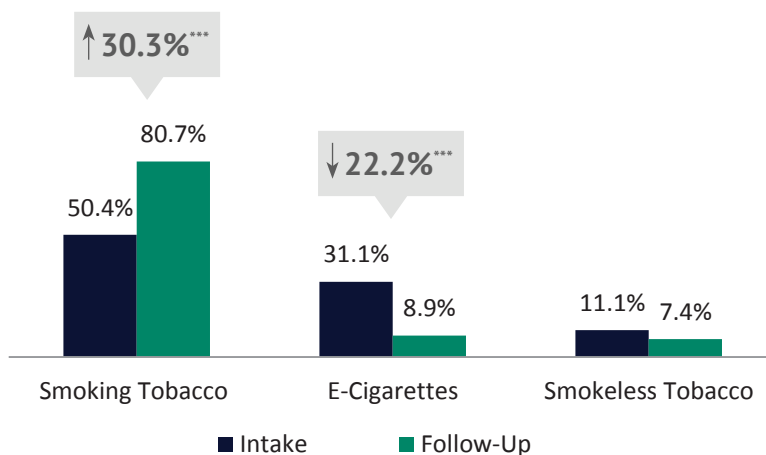
Among individuals who were in a controlled environment all 30 days before they entered the recovery center, 50.4% reported they had smoked tobacco in those 30 days (see Figure 2B.5). Unlike alcohol and illegal drug use that decreased from intake to follow-up, there was a significant increase in the number of clients who reported past-30-day tobacco smoking at follow-up to 80.7% (an increase of 30.3%). Over 30% of those who were in a controlled environment all 30 days before entering the program reported using e-cigarettes. That number significantly decreased to 8.9% at follow-up. A small minority of individuals who were in a controlled environment reported they had used smokeless tobacco in the 30 days before entering the program and 7.4% reported using smokeless tobacco in the 30 days before follow-up.

“This is the first program I completed, it saved my life. It’s totally life changing.”

—RCOS FOLLOW-UP CLIENT

<sup>40</sup> It was not possible to examine demographic differences between individuals who had alcohol composite scores and drug composite scores indicative of dependence with those who did not at intake or follow-up because the number of individuals in several of the cells of the cross tabulations were less than 5; thus, chi square test of independence is not appropriate.

FIGURE 2B.5. PAST-30-DAY SMOKING, E-CIGARETTE, AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP FOR CLIENTS IN A CONTROLLED ENVIRONMENT (N = 135)

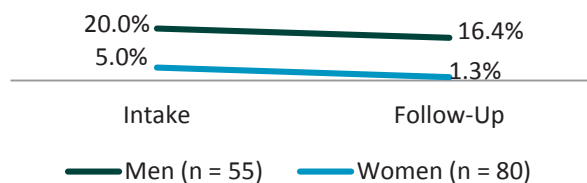


\*\*\*p < .001.

### GENDER DIFFERENCES IN PAST-30-DAY SMOKELESS TOBACCO USE

Among the individuals in a controlled environment, compared to women significantly more men reported using smokeless tobacco in the 30 days before intake and the 30 days before follow-up (see Figure 2B.6).

FIGURE 2B.6. GENDER DIFFERENCE IN PAST-30-DAY SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP<sup>a</sup>



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

SECTION 3.

# MENTAL HEALTH, PHYSICAL HEALTH, AND STRESS

This section describes changes in mental health, stress, and physical health status at intake compared to follow-up including for: (1) depression, (2) generalized anxiety, (3) comorbid depression and generalized anxiety, (4) suicidal thoughts or attempts, (5) general health status, (6) chronic pain, and (7) stress-related health consequences.

## DEPRESSION

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).

Two-thirds of clients (66.3%) met study criteria for depression in the 6 months before they entered the recovery center (see Figure 3.1). By follow-up, almost 11% met criteria for depression, representing an 55.6% significant decrease.

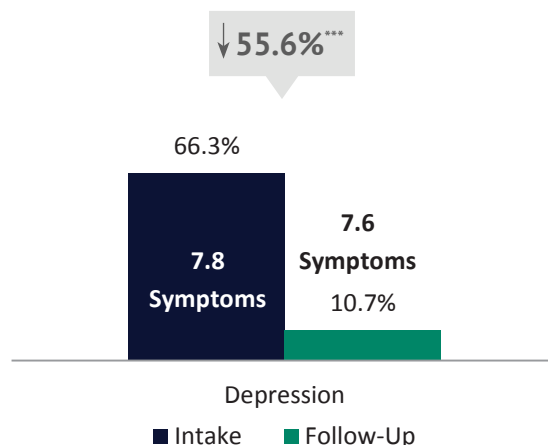
Of those who met criteria for depression at intake (n = 199), clients reported an average of 7.8 symptoms out of 9. Similarly, of those who met criteria for depression at follow-up (n = 32), they reported an average of 7.6 symptoms out of 9.

### STUDY CRITERIA FOR DEPRESSION

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

*The percent of clients meeting criteria for depression decreased 56% at follow-up*

FIGURE 3.1. CLIENTS MEETING STUDY CRITERIA FOR DEPRESSION AT INTAKE AND FOLLOW-UP (N = 300)

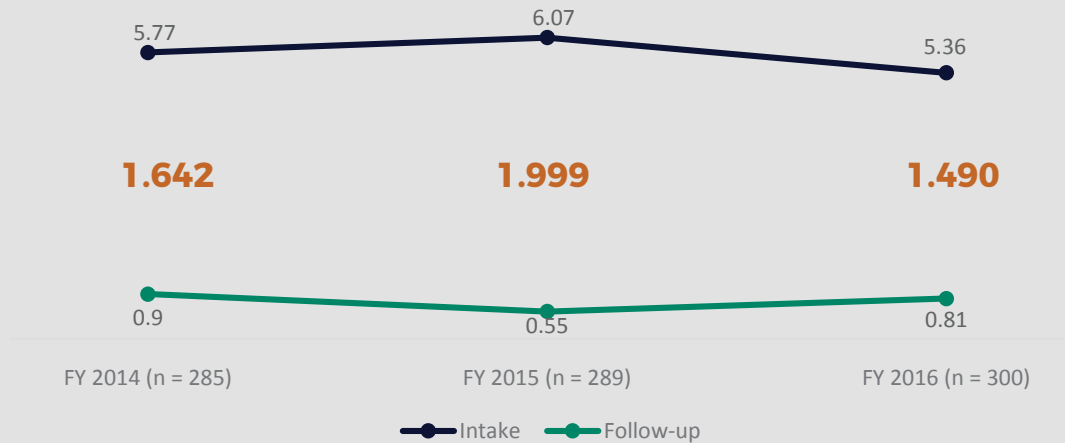


\*\*\*p < .001.

## EFFECT SIZES

### AVERAGE NUMBER OF DEPRESSION SYMPTOMS IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER AND THE FOLLOW-UP

Each year, the overall effect size for the average number of depression symptoms in the past 6 months was large. In FY 2014, the effect size was 1.642 and increased to 1.999 in FY 2015. The effect size was slightly smaller in FY 2016 but still a large effect size.



Per Cohen (1988), 0.2 is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size.

## GENERALIZED ANXIETY

To assess for generalized anxiety, participants were first asked:

“Did you have a period lasting 6 months or longer where you worried excessively or were anxious about multiple things on more days than not (like family, health, finances, school, or work difficulties)?”

Participants who answered “yes” were then asked 6 additional questions about anxiety symptoms (e.g., felt restless, keyed up or on edge, have difficulty concentrating, feel irritable).

In the 6 months before entering the recovery center, a majority of clients (74.0%) reported symptoms that met the study criteria for generalized anxiety and 9.3% reported symptoms at follow-up (see Figure 3.2). This indicates there was a 64.7% significant decrease in the number of clients meeting the study criteria for generalized anxiety.

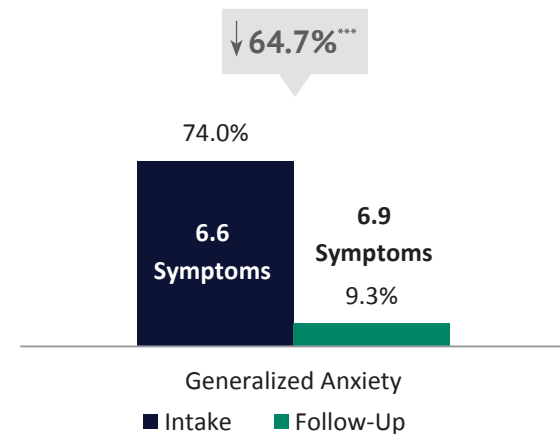
Of those who met study criteria for generalized anxiety at intake (n = 222), clients reported an average of 6.6 symptoms out of 7. At follow-up, those who met criteria for generalized anxiety (n = 28) reported an average of 6.9 symptoms out of 7.

### STUDY CRITERIA FOR GENERALIZED ANXIETY

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

*The percent of clients meeting criteria for generalized anxiety decreased 65% at follow-up*

FIGURE 3.2. CLIENTS MEETING STUDY CRITERIA FOR GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 300)

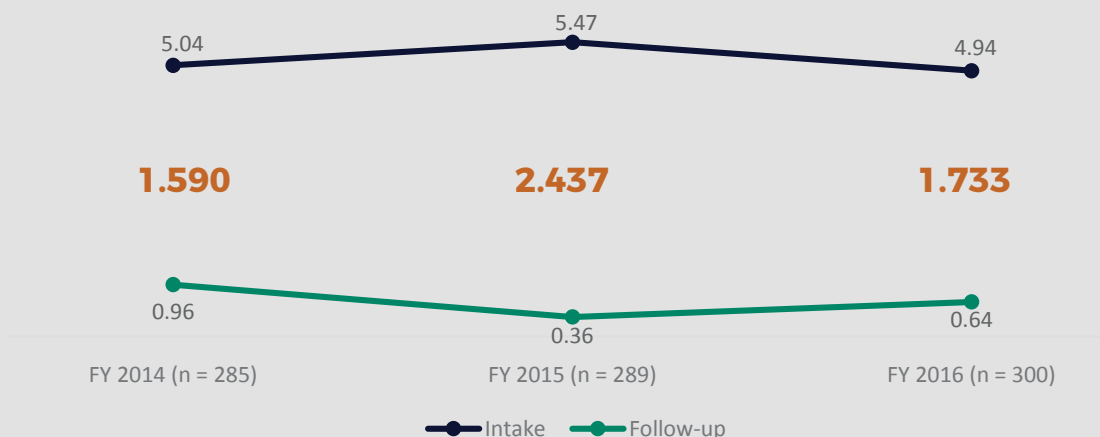


\*\*\*p < .001.

### EFFECT SIZES

#### AVERAGE NUMBER OF ANXIETY SYMPTOMS IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER AND THE FOLLOW-UP

Like depression, each year, the effect size for the average number of anxiety symptoms in the past 6 months was large. In FY 2014, clients reported 5.04 symptoms (0 to 7) at intake and 0.96 symptoms at follow-up for an effect size of 1.590. The difference was greater in FY 2015 with an effect size of 2.437. In FY 2016, there was an effect size of 1.733.



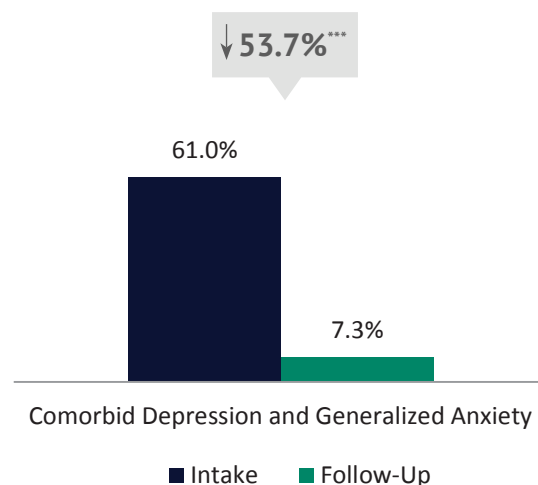
Per Cohen (1988), 0.2 is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size.

## COMORBID DEPRESSION AND GENERALIZED ANXIETY

At intake, about two-thirds of clients (61.0%) met criteria for both depression and generalized anxiety and at follow-up only 7.3% met criteria for both (see Figure 3.3). There was a 53.7% significant reduction in the number of individuals who reported symptoms that met the criteria for both depression and generalized anxiety at follow-up.

*The percent of clients meeting criteria for both depression and generalized anxiety decreased 54% at follow-up*

FIGURE 3.3. CLIENTS MEETING CRITERIA FOR COMORBID DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP (N = 300)



\*\*\*p < .001.

## GENDER DIFFERENCES IN DEPRESSION, GENERALIZED ANXIETY, AND COMORBID DEPRESSION AND GENERALIZED ANXIETY

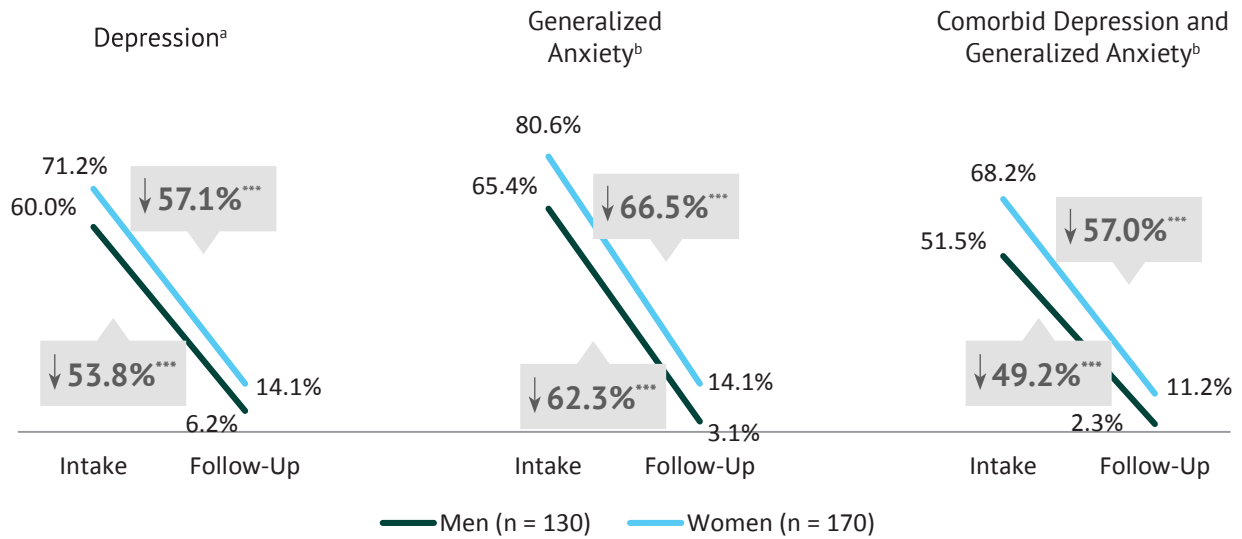
Significantly more women met criteria for depression at intake and follow-up compared to men (see Figure 3.4). By follow-up there was a significant 57.1% and 53.8% decrease respectively.

Significantly more women than men also met criteria for generalized anxiety at intake (80.6% vs. 65.4%) as well as follow-up (14.1% vs. 3.1%). However, by follow-up, the number of men and women who met criteria for generalized anxiety had decreased significantly by 62.3% and 66.5%, respectively.

*Significantly more women met criteria for depression and generalized anxiety at intake and follow-up compared to men*

Additionally, significantly more women than men met criteria for comorbid depression and generalized anxiety at intake and follow-up. There was a significant decrease in comorbid depression and anxiety from intake to follow-up for both men and women.

FIGURE 3.4. GENDER DIFFERENCES IN CLIENTS MEETING CRITERIA FOR DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP



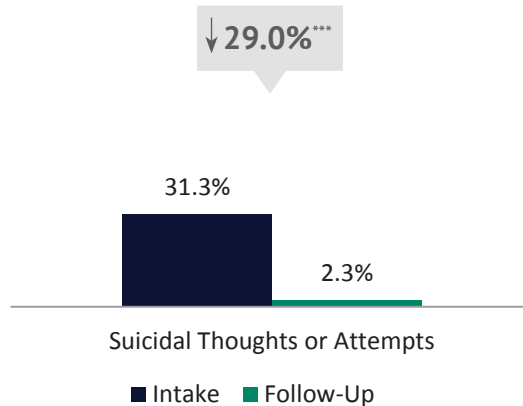
a—Statistical difference by gender at intake and follow-up ( $p < .05$ ).  
 b—Statistical difference by gender at intake and follow-up ( $p < .01$ ).  
 \*\*\* $p < .001$ .

### SUICIDE IDEATION AND/OR ATTEMPTS

Suicide ideation and attempts were measured with questions about thoughts of suicide and attempts to commit suicide. About one-third of individuals (31.3%) reported thoughts of suicide or attempted suicide in the 6 months before entering the program. At follow-up, only 2.3% of individuals reported thoughts of suicide or attempted suicide in the 6 months before follow-up. There was a 29.0% decrease in suicidal ideation and attempts from intake to follow-up (see Figure 3.5).

*The percent of clients reporting suicidal ideation and/or attempts decreased 29% at follow-up*

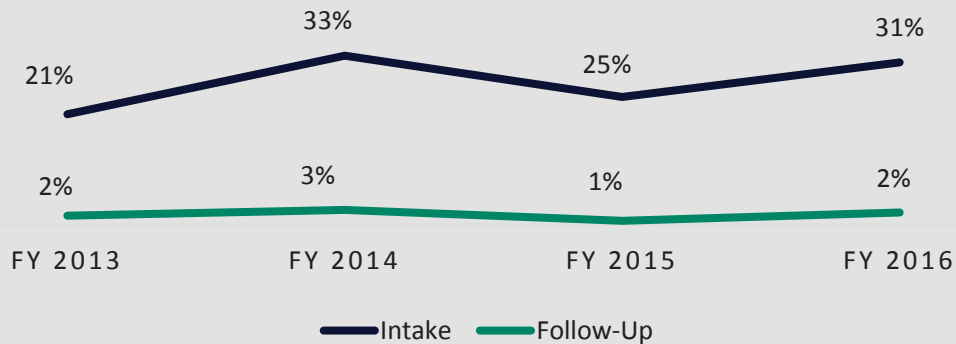
FIGURE 3.5. CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 300)



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

## TREND REPORT SUICIDAL THOUGHTS AND/OR ATTEMPTS

The number of clients reporting suicidal thoughts and/or attempts in the 6 months before entering the recovery center has fluctuated between one-quarter and one-third over the past four fiscal years. Each year there has been a significant decrease in the number of clients reporting suicidality – only 2% of clients reported suicidal thoughts or attempts at follow-up in FY 2013, 3% in FY 2014, 1% in FY 2015, and 2% in FY 2016.

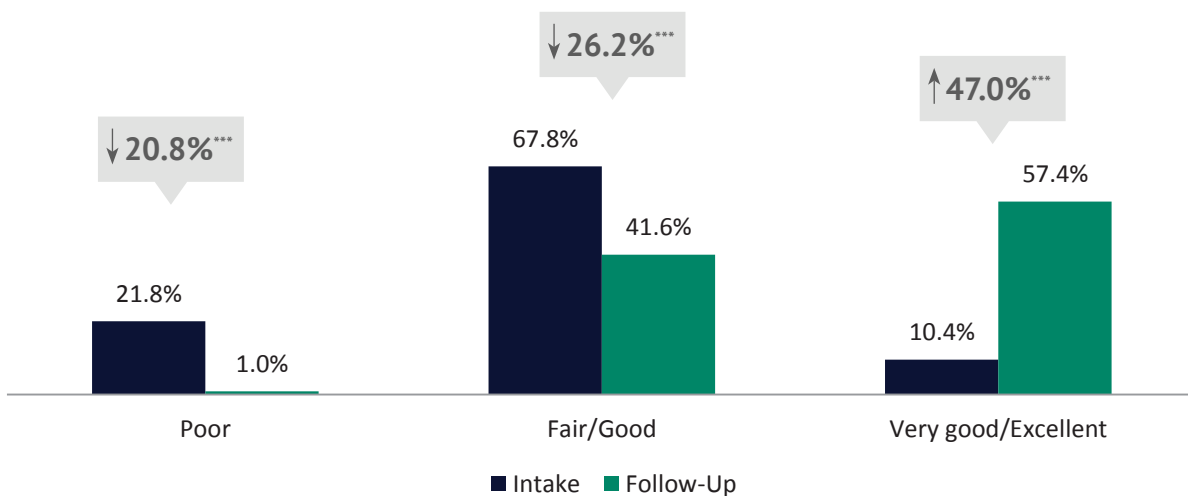


## GENERAL HEALTH STATUS

### OVERALL HEALTH

At both intake and follow-up, clients were asked to rate their overall health in the past 6 months from 1 = poor to 5 = excellent. Clients rated their health, on average, as 2.4 at intake and this significantly increased to 3.6 at follow-up (not depicted in figure). Figure 3.6 shows that significantly more clients rated their overall physical health as very good or excellent (57.4%) at follow-up when compared to intake (10.4%).<sup>41</sup>

FIGURE 3.6. CLIENTS' SELF-REPORT OF OVERALL HEALTH STATUS AT INTAKE AND FOLLOW-UP (N = 298)<sup>a</sup>



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

<sup>41</sup> Two individuals had missing data for overall health status at intake.

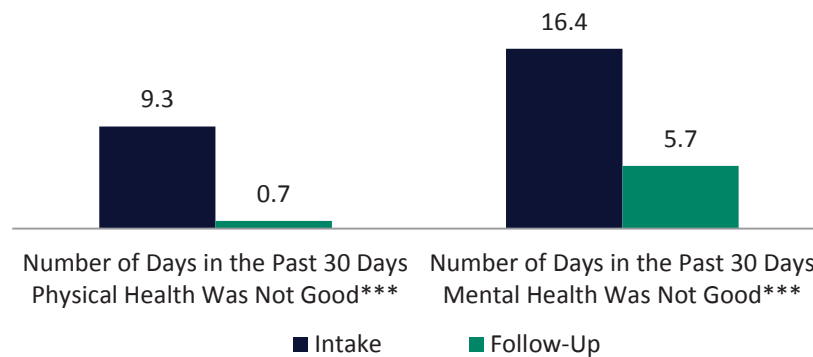


## NUMBER OF DAYS PHYSICAL AND MENTAL HEALTH WAS NOT GOOD

At intake and follow-up, individuals were asked how many days in the past 30 days their physical and mental health were not good. The number of days individuals reported their physical health was not good decreased significantly from intake (9.3) to follow-up (0.7; see Figure 3.7). Also, clients' self-reported number of days their mental health was not good decreased significantly from intake (16.4) to follow-up (5.7).

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

FIGURE 3.7. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 300)<sup>a</sup>

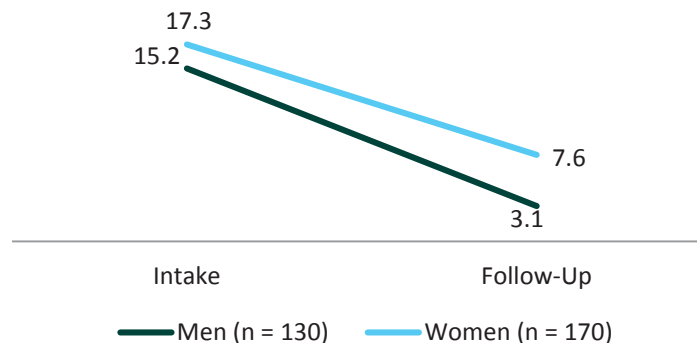


a—Statistical significance tested by paired t-test, \*\*\*p < .001.

## GENDER DIFFERENCES IN PERCEPTIONS OF POOR MENTAL HEALTH

Women reported significantly more days their mental health was not good at follow-up compared to men (see Figure 3.8). The number of days clients reported poor mental health decreased significantly for both men and women from intake to follow-up.

FIGURE 3.8. GENDER DIFFERENCES IN PERCEPTION OF POOR MENTAL HEALTH AT INTAKE AND FOLLOW-UP<sup>a,b</sup>

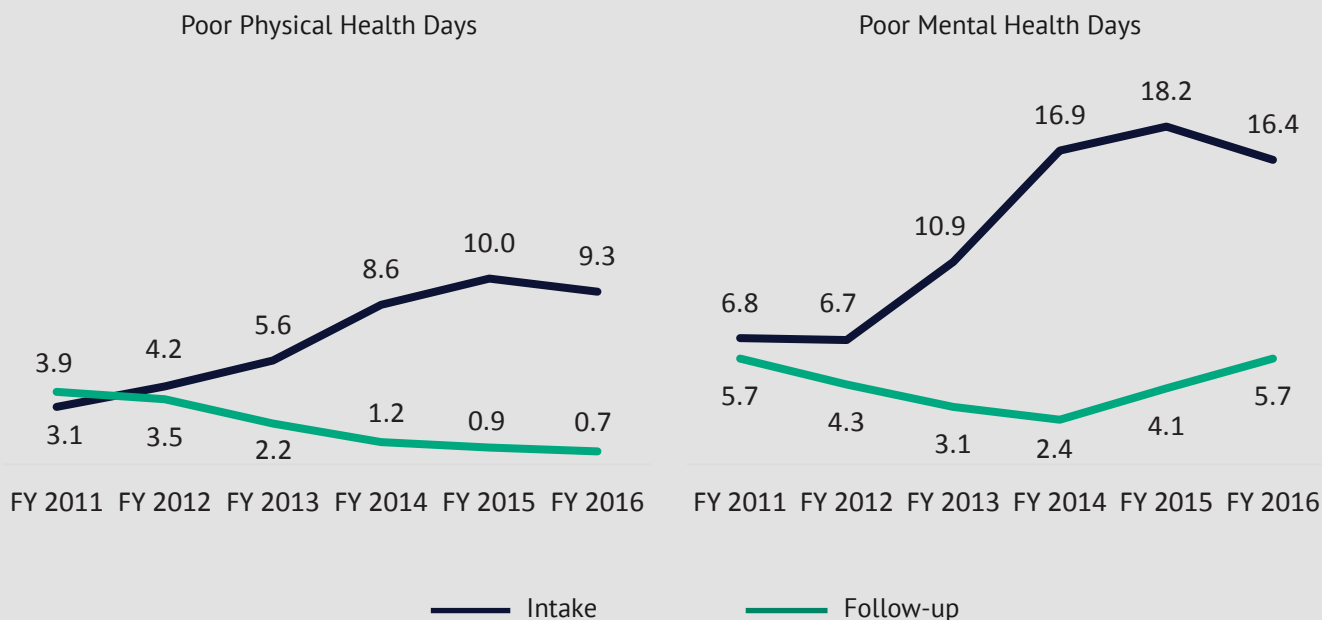


a—Statistical difference by gender at follow-up (p < .001).  
 b – Significant decrease from intake to follow-up for men and women as measured by paired T-Test, p < .001.

## TREND REPORT POOR PHYSICAL AND MENTAL HEALTH DAYS

At intake and follow-up, individuals are asked how many days in the past 30 days their physical health has been poor. Since FY 2011, the average number of poor physical health days at intake has increased from 3.1 days to 10.0 days in FY 2015. In FY 2016, clients reported an average of 9.3 days of poor physical health at intake. The average number of poor physical health days at follow-up has decreased over time: 3.9 days in FY 2011 to 0.7 days in FY 2016.

At intake and follow-up, clients are also asked how many days in the past 30 days their mental health has been poor. The average number of poor mental health days reported at intake has increased dramatically from FY 2011 (6.8) to FY 2015 (18.2). In FY 2016, clients reported an average of 16.4 poor mental health days at intake. At follow-up, the number of poor mental health days decreased from FY 2011 (5.7) to FY 2014 (2.4), increased in FY 2015 (4.1), and again in FY 2016 (5.7).



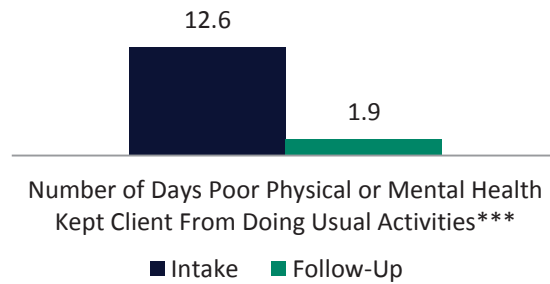
### NUMBER OF DAYS POOR PHYSICAL AND MENTAL HEALTH LIMITED ACTIVITIES

Individuals 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 (see Figure 3.9). The average number of days clients reported their physical or mental health kept them from doing their usual activities decreased significantly from intake to follow-up (12.6 to 1.9).

“I grew a lot there as a person and I learned a lot of education about addiction.”

—RCOS FOLLOW-UP CLIENT

FIGURE 3.9. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS (N = 300)<sup>a</sup>

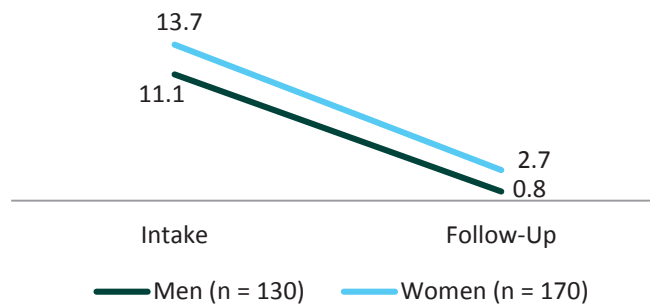


a—Statistical significance tested by paired t-test; \*\*\*p < .001

### GENDER DIFFERENCES IN PERCEPTION OF POOR PHYSICAL AND MENTAL HEALTH LIMITING ACTIVITIES

At follow-up, women reported significantly more days of poor physical or mental health limiting their activities when compared to men (see Figure 3.10). There was, however, a significant decrease in number of days for both men and women from intake to follow-up.

FIGURE 3.10. GENDER DIFFERENCES IN PERCEPTION OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES AT INTAKE AND FOLLOW-UP<sup>a, b</sup>

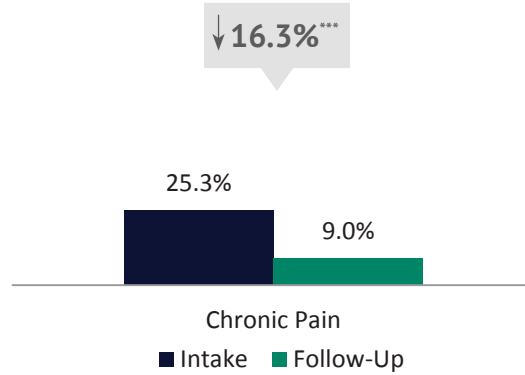


a—Statistical difference by gender at follow-up (p < .01).  
 b – Significant decrease from intake to follow-up for men and women as measured by paired T-Test, p < .001.

### CHRONIC PAIN

The percent of clients who reported chronic pain that was persistent and lasted at least 3 months decreased significantly from intake to follow-up by 16.3% (see Figure 3.11).

FIGURE 3.11. CLIENTS REPORTING CHRONIC PAIN AT INTAKE AND FOLLOW-UP (N = 300)

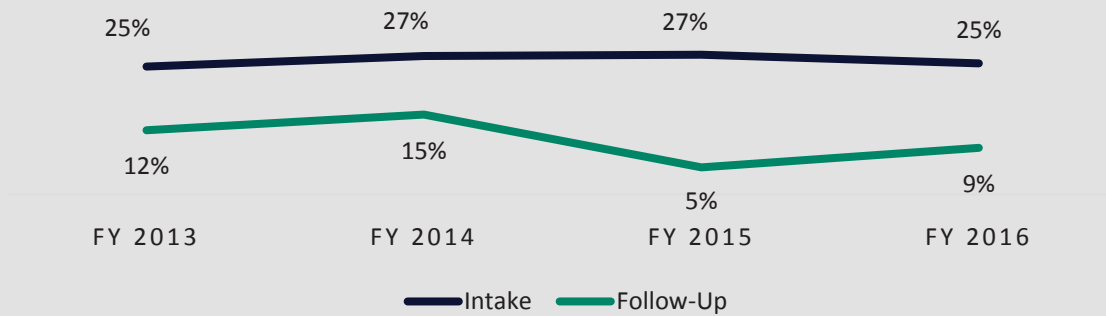


\*\*\*p < .001

### TREND REPORT CHRONIC PAIN

Over the past four fiscal years, the number of RCOS clients reporting chronic pain that persisted for at least 3 months in the 6 months before entering the recovery center has stayed stable: 25% in FY 2013 and FY 2016 and 27% in FY 2014 and FY 2015.

At follow-up, the number of clients reporting persistent chronic pain in the past 6 months increased slightly from FY 2013 (12%) to FY 2014 (15%) and decreased from FY 2014 to FY 2015 (5%) and FY 2016 (9%).

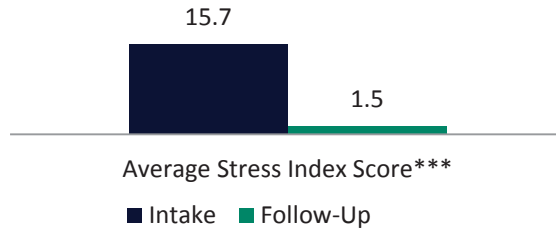


## STRESS-RELATED HEALTH CONSEQUENCES

Clients were also asked 12 items about their physiological symptoms often associated with higher stress called the Stress-Related Health Consequences scale.<sup>42</sup> The index contains 12 symptoms and the client indicates how often they have experienced each symptom in the past 7 days (e.g., experienced unexplained aches and pains, slept poorly, experienced an increased heart rate). Higher scores indicate higher stress and greater physiological indicators of stress. The highest possible score is 45 and the lowest possible score is 0. For the overall sample, scores on the Stress-Related Health Consequences scale decreased significantly from 15.7 at intake to 1.5 at follow-up (see Figure 3.12).

*At intake and follow-up, women's scores on the Stress-Related Health Consequences scale were significantly higher than men's scores*

FIGURE 3.12. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP (N = 300)<sup>a</sup>

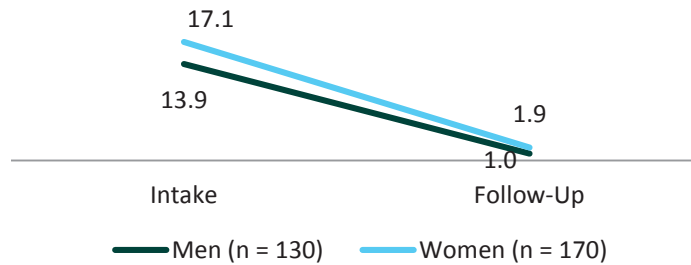


a—Significance tested with paired t-test ; \*\*\*p < .001.

## GENDER DIFFERENCES IN STRESS-RELATED HEALTH CONSEQUENCES

Figure 3.13 shows that women’s scores on the Stress-Related Health Consequences scale were higher than men’s scores at both intake and follow-up. Scores for men and women decreased significantly over time.

FIGURE 3.13. GENDER DIFFERENCES IN AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE<sup>a,b</sup>

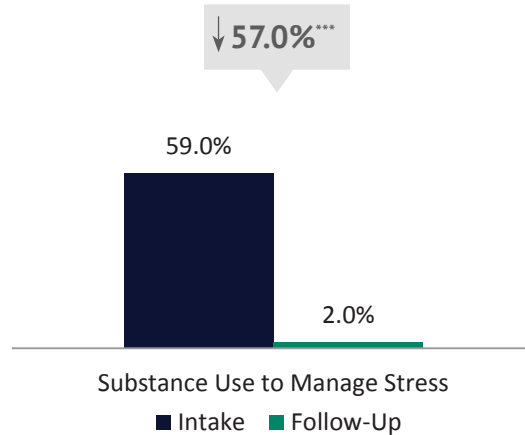


a—Statistical difference by gender at intake and follow-up (p < .01).  
 b – Significant decrease from intake to follow-up for men and women (p < .001) as measured by a paired T-Test.

<sup>42</sup> Logan, T. & Walker, R. (2010). Toward a deeper understanding of the harms caused by partner stalking. *Violence and Victims*, 25(4), 440-455.

Clients were also asked if they used alcohol, prescription drugs, or illegal drugs in the past 7 days to reduce or manage stress at intake and follow-up. Figure 3.14 shows that 59.0% of clients reported they used at least one type of substance to reduce or manage their stress in the 7 days before entering the recovery center. At follow-up, that number significantly decreased to 2.0%.

FIGURE 3.14. CLIENTS REPORTING SUBSTANCE USE TO REDUCE OR MANAGE STRESS AT INTAKE AND FOLLOW-UP (N = 300)

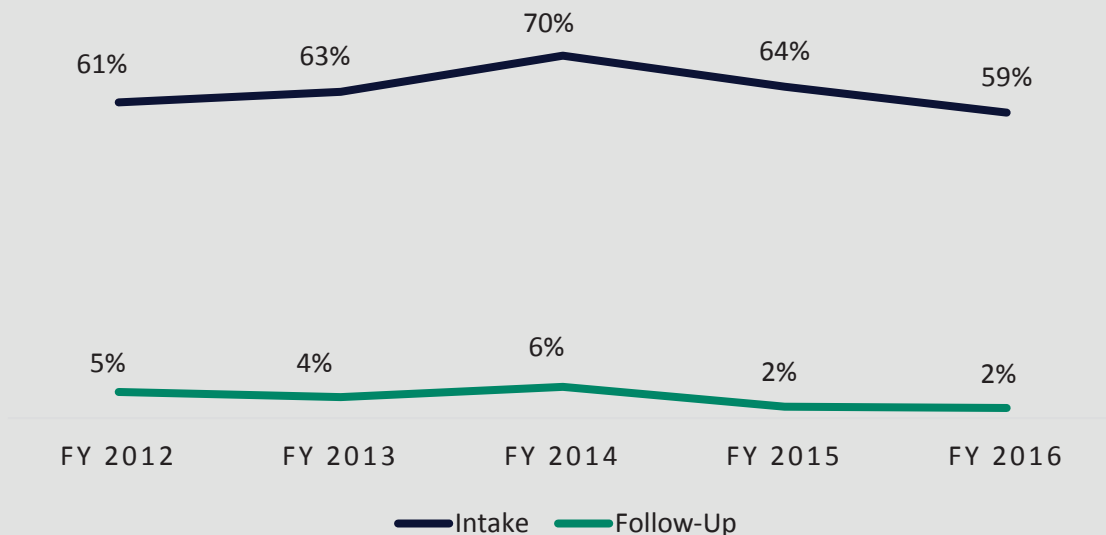


\*\*\*p < .001

### TREND REPORT SUBSTANCE USE TO MANAGE STRESS

Clients are asked at both intake and follow up if they have used alcohol, prescription drugs, or illegal drugs to reduce any stress, anxiety, worry, or fear in the past 7 days. In FY 2012, 61% of clients reported they used substances to manage their stress or anxiety at intake. This number rose to 63% in FY 2013 and 70% in FY 2014. In FY 2015, the percent that reported substance use to manage stress decreased to 64% and again to 59% in FY 2016.

At follow-up, very few RCOS clients reported using any substances, including prescribed drugs, to manage their stress.



SECTION 4.

# INVOLVEMENT IN THE CRIMINAL JUSTICE SYSTEM

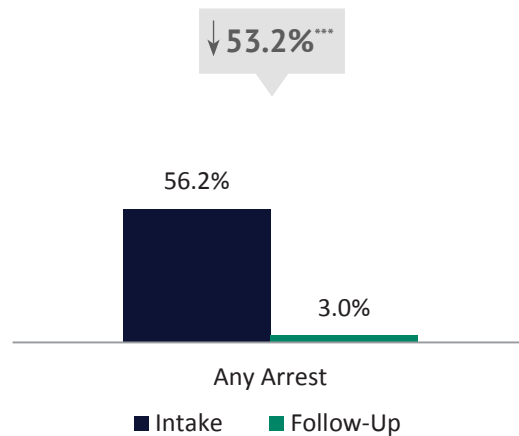
This section describes change in client involvement with the criminal justice system from intake to follow-up. Specifically, the following targeted factors are presented in this section: (1) arrests, (2) incarceration, (3) self-reported misdemeanor and felony convictions, and (4) self-reported supervision by the criminal justice system.

## ARRESTS

At intake, individuals were asked about their arrests in the 6 months before they entered the recovery center and at follow-up, individuals were asked about their arrests in the past 6 months. Over half of individuals (56.2%) reported an arrest in the 6 months before entering the recovery center (see Figure 4.1). At follow-up, this percent had decreased significantly by 53.2% to 3.0%.

*The percent of clients reporting any arrest significantly decreased 53% at follow-up*

FIGURE 4.1. CLIENTS REPORTING ANY ARRESTS AT INTAKE AND FOLLOW-UP (N = 299)



\*\*\*p < .001.

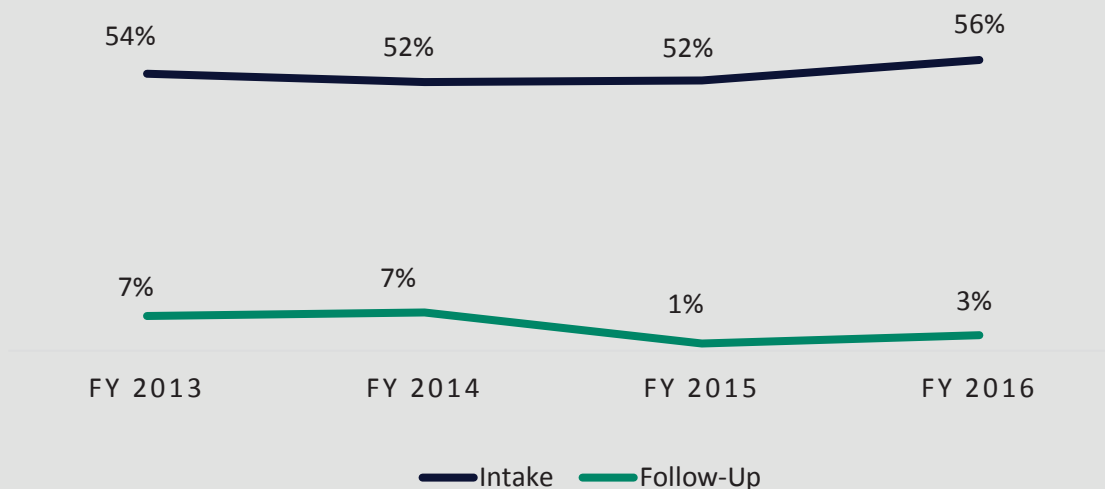
“It saved my life. It’s not a cookie cutter program. They work with you 1 on 1 and teach you to live life. It showed me how to be a mom.”

—RCOS FOLLOW-UP CLIENT

## TREND REPORT ARRESTS

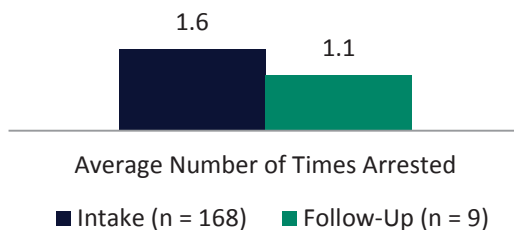
At intake, over half of RCOS clients reported being arrested at least once in the past 6 months. This number fluctuated from 54% in FY 2013 to 52% in FY 2014 and FY 2015. In FY 2016, 56% of clients reported at least one arrest in the past 6 months at intake.

At follow-up, significantly fewer clients reported an arrest in the past 6 months. Only 7% of clients in FY 2013 and FY 2014 reported an arrest and that decreased to 1% in FY 2015 and 3% in FY 2016.



Of those who reported being arrested in the 6 months before entering the recovery center (n = 168), they were arrested an average of 1.6 times (see Figure 4.2). Similarly, of those who reported an arrest in the 6 months before follow-up, they reported being arrested 1.1 times.

FIGURE 4.2. AMONG INDIVIDUALS WHO WERE ARRESTED, THE AVERAGE NUMBER OF TIMES ARRESTED AT INTAKE AND FOLLOW-UP

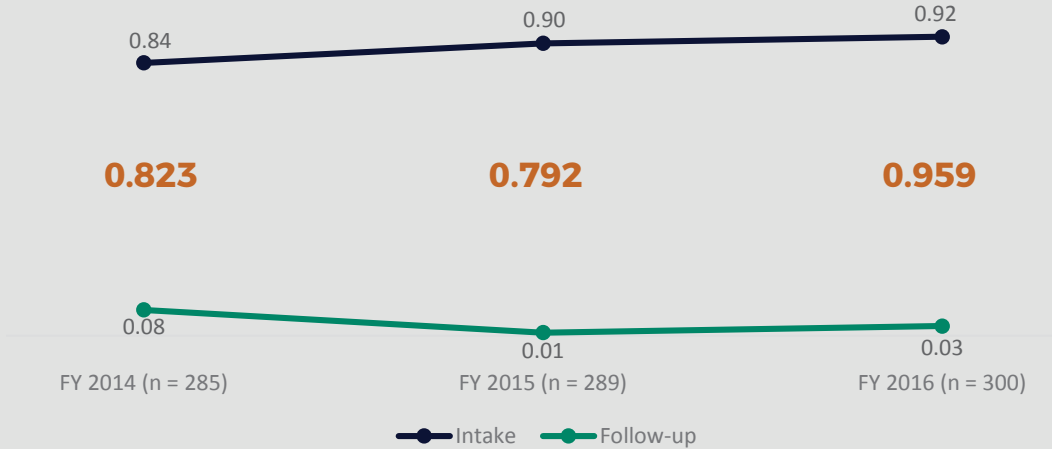




### EFFECT SIZES

#### AVERAGE NUMBER OF TIMES ARRESTED AND CHARGED IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER AND THE FOLLOW-UP

Each year, effect size for the average number of times a client was arrested and charged with an offense was large. At intake in FY 2016, clients reported being arrested and charged with an offense 0.92 times and 0.03 at follow-up (a large effect size of 0.959).



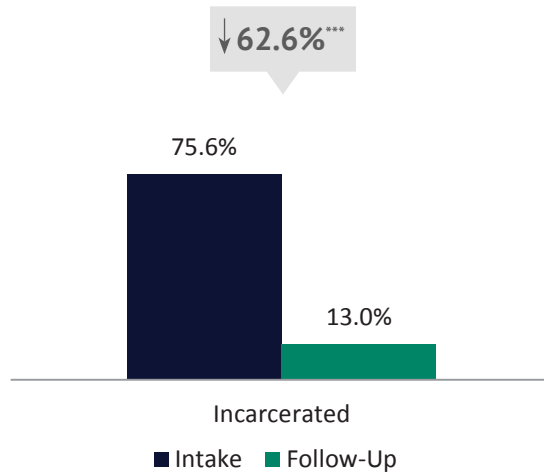
Per Cohen (1988), 0.2 is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size.

### INCARCERATION

Seven in 10 individuals (75.6%) reported spending at least one day in jail or prison in the 6 months prior to entering the recovery center (see Figure 4.3). At follow-up, only 13.0% reported spending at least one day incarcerated in the past 6 months; a significant decrease of 62.6%.

*There was an 63% decrease in the number of individuals who were incarcerated at follow-up*

FIGURE 4.3. CLIENTS REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP (N = 299)<sup>43</sup>

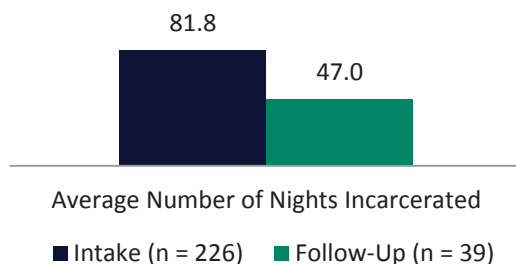


\*\*\*p < .001.

<sup>43</sup> One case had a missing value for the incarceration variable at follow-up.

Among individuals who were incarcerated in the 6 months before entering the program (n = 226), the average number of nights incarcerated was 81.8 (see Figure 4.4). Among the number of individuals who reported being incarcerated in the 6 months before follow-up (n = 39), the average number of nights incarcerated was 47.0.

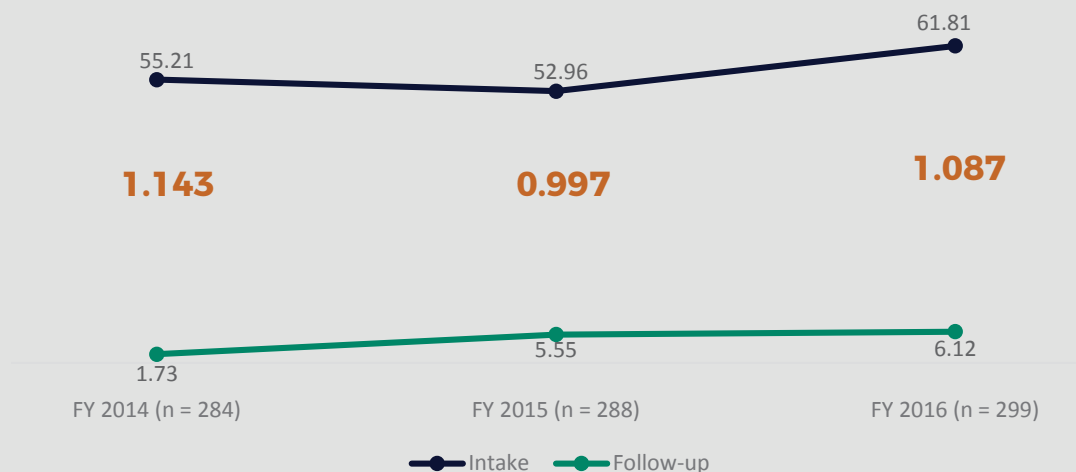
FIGURE 4.4. AMONG INDIVIDUALS WHO WERE INCARCERATED, THE AVERAGE NUMBER OF NIGHTS INCARCERATED AT INTAKE AND FOLLOW-UP



### EFFECT SIZES

#### AVERAGE NUMBER OF NIGHTS INCARCERATED IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER AND THE FOLLOW-UP

Each year the effect size for the average number of nights incarcerated was large. In FY 2014, at intake, clients reported an average of 55.21 nights (almost 2 months) incarcerated. At follow-up, however, clients reported an average of only 1.73 nights incarcerated. In FY 2016, at intake, the overall sample reported an average of 61.81 nights incarcerated and at follow-up, clients reported 6.12 nights incarcerated.

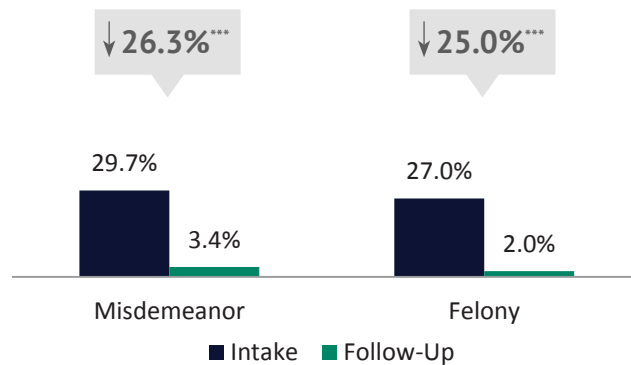


Per Cohen (1988), 0.2 is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size.

## SELF-REPORTED MISDEMEANOR AND FELONY CONVICTIONS

At intake, almost 30% of individuals reported they had been convicted of a misdemeanor in the 6 months before entering the recovery center (see Figure 4.5). That number significantly decreased to 3.4% at follow-up. The number of individuals who reported being convicted of a felony also significantly decreased from intake (27.0%) to follow-up (2.0%).

FIGURE 4.5. CLIENTS REPORTING CONVICTIONS AT INTAKE AND FOLLOW-UP (N = 300)

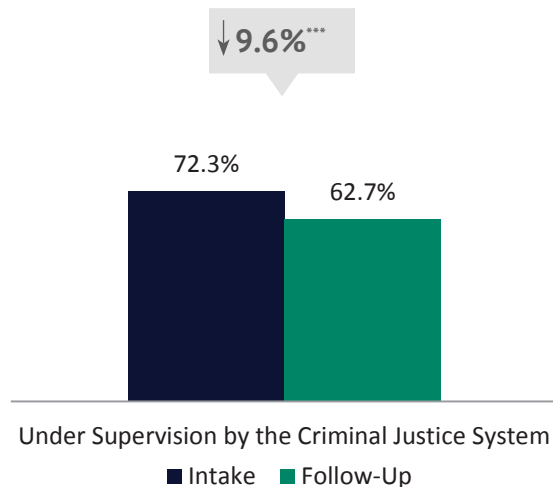


\*\*\*p < .001.

## SELF-REPORTED CRIMINAL JUSTICE SYSTEM SUPERVISION

The majority of clients (72.3%) were under criminal justice system supervision (e.g., probation or parole) when they entered the recovery center and 62.7% were under criminal justice supervision at follow-up (a significant decrease of 9.6%; see Figure 4.6).

FIGURE 4.6. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 300)



\*\*\*p < .001.

## SECTION 5.

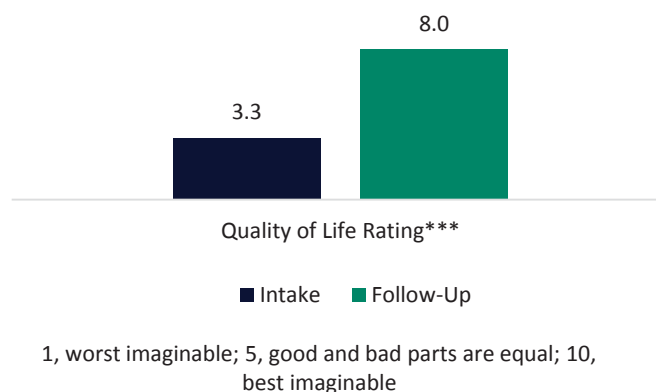
## QUALITY OF LIFE

There were three different measures of quality of life including: (1) overall quality of life rating, (2) index of positive versus negative feelings, and (3) the satisfaction with life scale.

## OVERALL QUALITY OF LIFE RATING

At follow-up, clients were asked to rate their quality of life before entering the recovery center and after participating in the program. Ratings were from 1='Worst imaginable' to 5='Good and bad parts were about equal' to 10='Best imaginable'. RCOS clients rated their quality of life before entering the recovery center, on average, as 3.3 (see Figure 5.1). The average rating of quality of life after participating in the program significantly increased to 8.0.

FIGURE 5.1. PERCEPTION OF QUALITY OF LIFE BEFORE AND AFTER THE PROGRAM (N = 300)



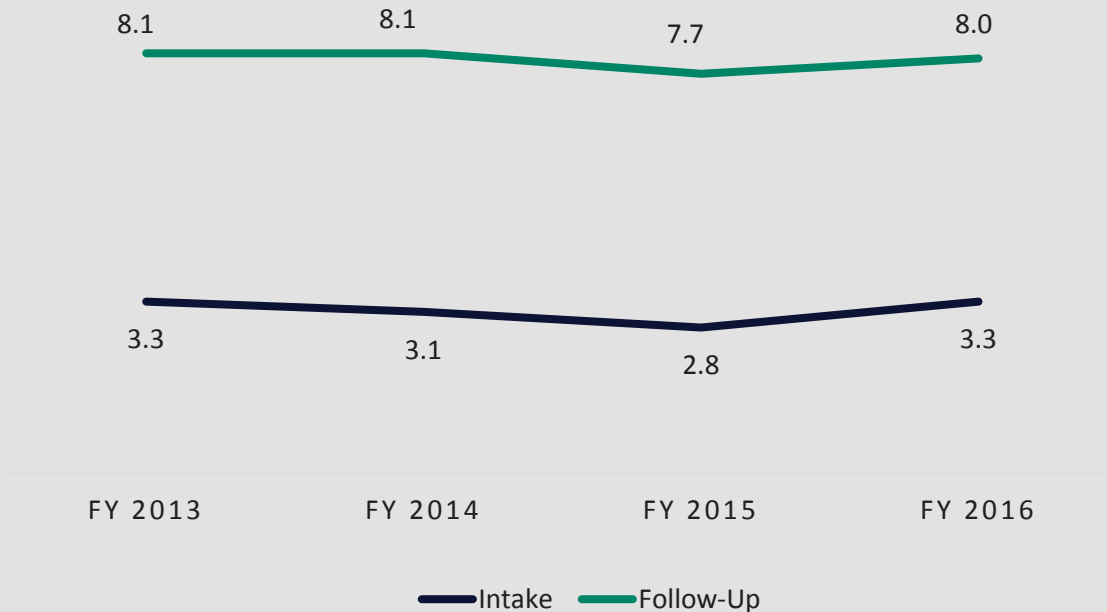
\*\*\*p < .001.

“It changed my life. I had a negative outlook on life and was headed down the wrong directions and the program changed all of that. The counselors and directors were great.”

—RCOS FOLLOW-UP CLIENT

## TREND REPORT OVERALL QUALITY OF LIFE RATING

Clients are asked to rank their overall quality of life on a scale from 1 (worst imaginable) to 10 (best imaginable) at both intake and follow-up. At intake, RCOS clients have consistently rated their quality of life, on average, around a 3. At follow-up, that rating has significantly increased to an average of about an 8.



## INDEX OF POSITIVE VERSUS NEGATIVE FEELINGS

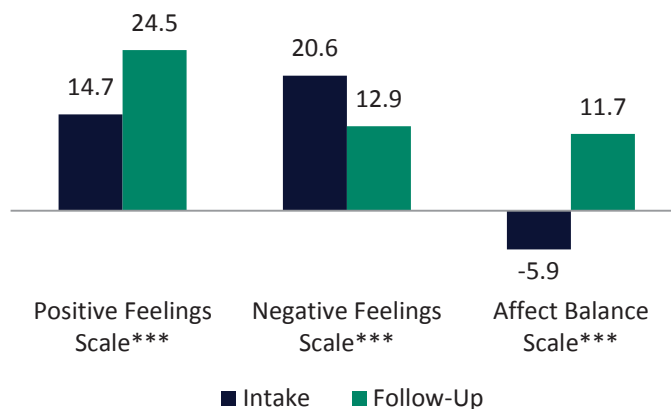
At intake and follow-up, clients were asked a set of questions about how often they experienced 6 positive and 6 negative emotions/states in the past month (Scale of Positive and Negative Experience [SPANE]).<sup>44</sup> Clients answered using a scale with 1 representing “Very rarely or never” to 5 “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 positive 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 she rarely experiences negative feelings and very often has positive feelings.

Figure 5.2 shows that clients’ positive feelings increased significantly and their negative feelings

<sup>44</sup> Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, RR. (2009). New measures off well-being: Flourishing positive and negative feelings. *Social Indicators Research*, 39, 247-266.

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 -5.9 at intake indicates that clients' negative feelings were more frequent than their positive feelings, whereas the significantly higher and positive affect balance score at follow-up indicates that clients' positive feelings were more frequent than their negative feelings at follow-up.

FIGURE 5.2. POSITIVE AND NEGATIVE FEELINGS BEFORE INTAKE AND FOLLOW-UP (N = 104)<sup>45</sup>

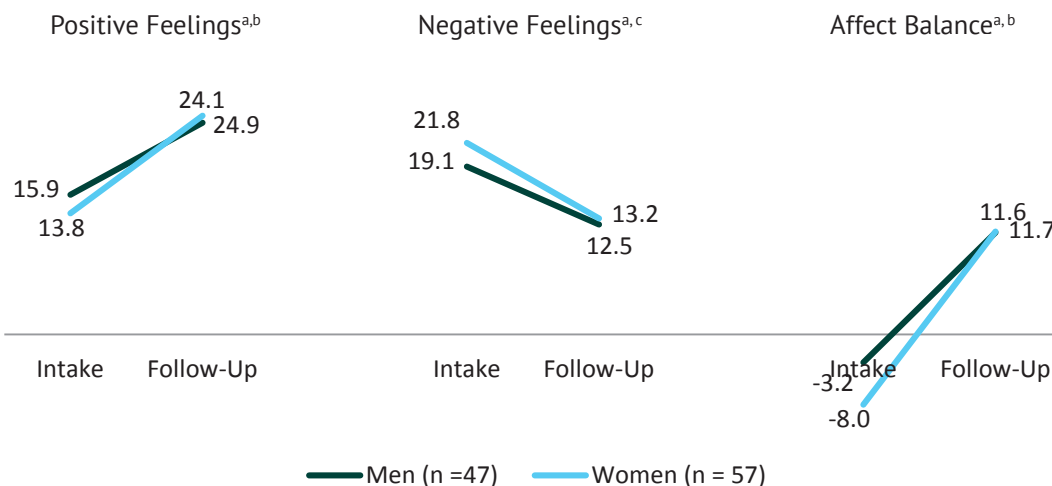


\*\*\*p < .001.

### GENDER DIFFERENCES IN POSITIVE AND NEGATIVE FEELINGS

At intake, men had significantly higher positive feelings, lower negative feelings, and higher affect balance scores compared to women. At follow-up, there were no significant differences by gender (see Figure 5.3).

FIGURE 5.3. GENDER DIFFERENCES IN POSITIVE AND NEGATIVE FEELINGS AT INTAKE AND FOLLOW-UP (N = 104)



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

b – Significant increase from intake to follow-up for men and women (p < .001) as measured by a paired T-Test.

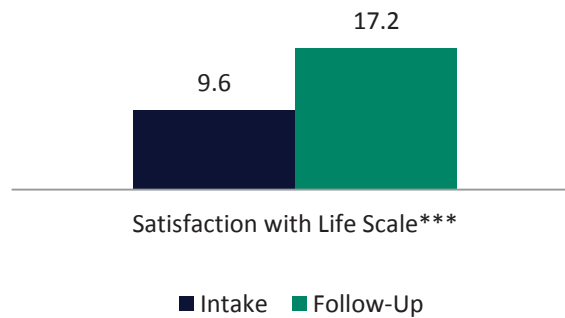
c – Significant decrease from intake to follow-up for men and women (p < .001) as measured by a paired T-Test.

<sup>45</sup> These questions were removed from the survey in Oct 2016.

## 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>46</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 5.4 shows that clients’ scores on the satisfaction with life scale increased significantly from intake to follow-up.

FIGURE 5.4. SATISFACTION WITH LIFE BEFORE INTAKE AND FOLLOW-UP (N = 298)



<sup>46</sup> Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.

## SECTION 6.

# EDUCATION AND EMPLOYMENT

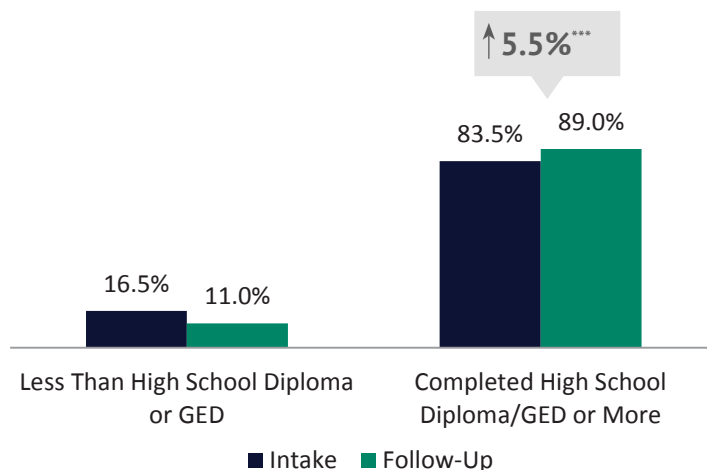
This section examines changes in education and employment from intake to follow-up including: (1) highest level of education completed, (2) the percent of clients who worked full-time or part-time, (3) the number of months clients were employed full-time or part-time, among those who were employed at any point in the 6 month period, (4) the median hourly wage, among those who were employed in the prior 30 days, and (5) expectations to be employed in the next 6 months.

## EDUCATION

Overall, the highest number of years of education completed increased significantly from intake (12.3) to follow-up (12.6).<sup>47</sup>

Another way to examine change in education was to categorize individuals into one of two categories, based on their highest level of education completed: (1) less than a high school diploma or GED, or (2) a high school diploma or GED or higher (see Figure 6.1). At intake, 83.5% of the follow-up sample had a high school diploma or GED or had attended school beyond a high school diploma or GED and at follow-up the percent had increased significantly to 89.0%. At intake, 16.5% of the follow-up sample reported that they had less than a high school diploma or GED. At follow-up, 11.0% reported that they had completed less than a high school diploma or GED.

FIGURE 6.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE AND FOLLOW-UP (N = 278)<sup>48</sup>



\*\*\*p < .001.

<sup>47</sup> Number of years of education was recoded for analysis so that 12 years of education and GED were equal to 12.

<sup>48</sup> Twenty-two cases had missing values on highest level of education because of inconsistencies between values in the intake and follow-up surveys.

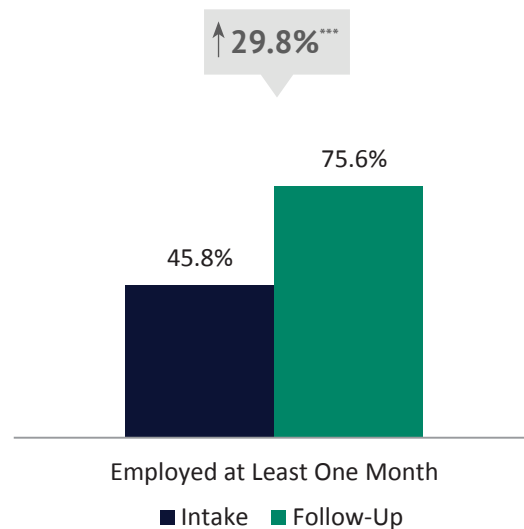


## EMPLOYMENT

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 recovery center. 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. A little less than one half of clients (45.8%) reported at intake they had worked full-time or part-time at least one month in the 6 months before entering the recovery center (see Figure 6.2). At follow-up, 75.6% worked part-time or full-time at least one month in the past 6 months, which was a significant increase of 29.8%.

*The percent of clients reporting being employed at least one month increased 30% at follow-up*

FIGURE 6.2. EMPLOYED FULL-TIME OR PART-TIME FOR AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP (N= 299)<sup>49</sup>



\*\*\*p < .001.

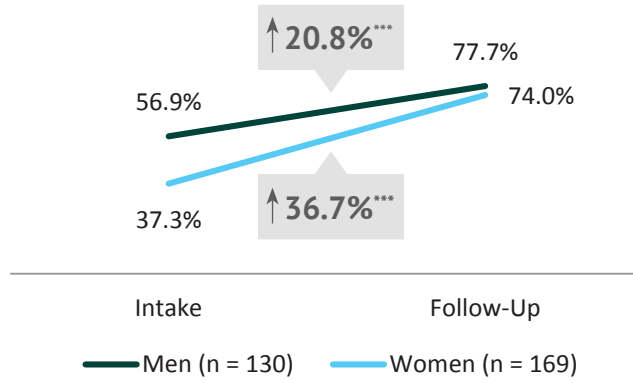
## GENDER DIFFERENCES IN THE PERCENT OF INDIVIDUALS EMPLOYED

Significantly more men (56.9%) than women (37.3%) were employed part-time or full-time at least one month before intake (see Figure 6.3). For both men and women, there was a significant increase in those reporting employment from intake to follow-up. At follow-up, there was no gender difference in those employed.

*There were significant increases in both men and women who reported being employed at least one month from intake to follow-up*

<sup>49</sup> One case had a missing value on employment at follow-up.

FIGURE 6.3. GENDER DIFFERENCES IN EMPLOYED AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP<sup>a</sup>



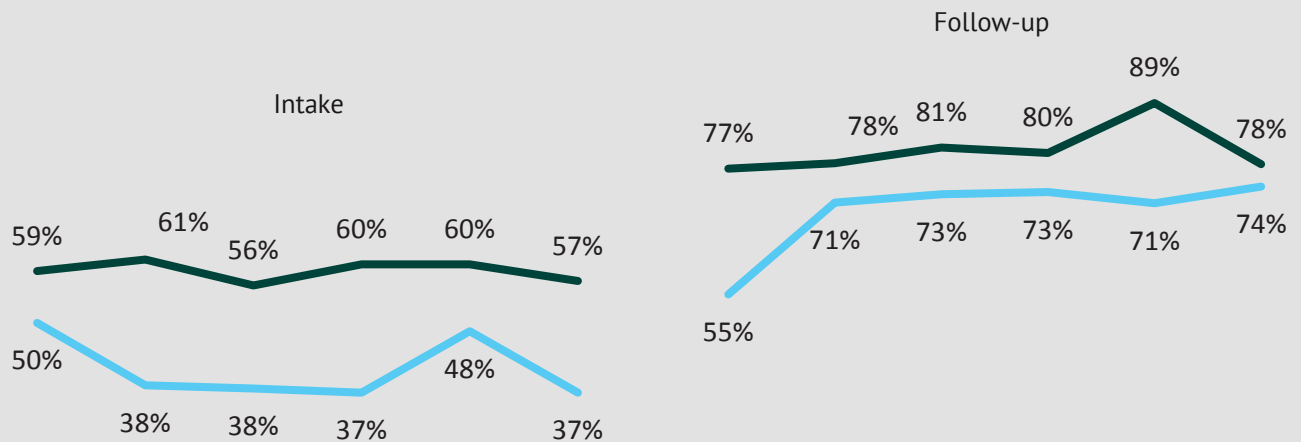
a—Significant difference by gender at intake ( $p < .01$ ).  
 \*\*\* $p < .001$ .

### TREND REPORT EMPLOYMENT TRENDS BY GENDER

Since FY 2011, the disparity in employment between men and women in the RCOS follow-up sample has been documented.

In FY 2013 and FY 2014, significantly fewer women reported being employed at intake compared to men, however in FY 2015, there was no significant difference in the number of men and women reporting employment at intake. In FY 2016, only 37% of women were employed at least one month at intake while 57% of men reported employment.

By follow-up, on average, a majority of women reported they were employed full-time or part-time at least one month in the past 6 months but significantly more men reported employment during that same time frame. This is, however, a significant improvement for women compared to findings from FY 2011. In FY 2016, there was no significant difference in the number of men and women who reported employment at least one month in the past 6 month.



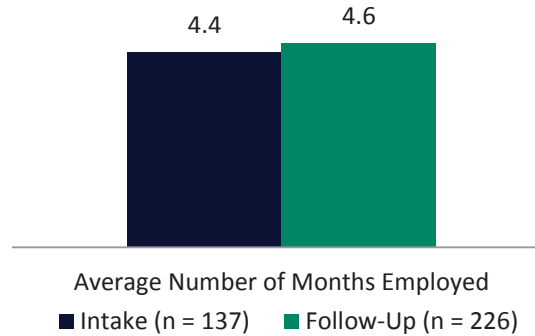
FY 2011 FY 2012 FY 2013 FY 2014 FY 2015 FY 2016      FY 2011 FY 2012 FY 2013 FY 2014 FY 2015 FY 2016

— Men      — Women

## AVERAGE NUMBER OF MONTHS EMPLOYED

As seen in Figure 6.4, among individuals who reported being employed part-time or full-time at all before entering the program (n = 137), the average number of months worked was 4.4. Among the 226 individuals who worked at all in the 6-month follow-up period, the average number of months they worked was 4.6.

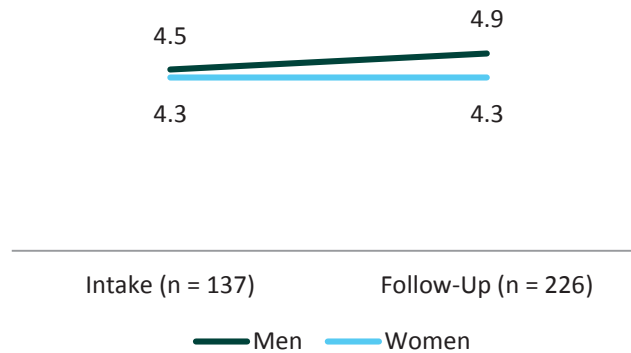
FIGURE 6.4. AVERAGE NUMBER MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO REPORTED BEING EMPLOYED



## GENDER DIFFERENCE IN AVERAGE NUMBER OF MONTHS EMPLOYED

Figure 6.5 shows that at follow-up, of those who were employed, men (4.9) reported working a higher average number of months than women (4.3).

FIGURE 6.5. GENDER DIFFERENCES IN NUMBER OF MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO REPORTED BEING EMPLOYED<sup>a</sup>



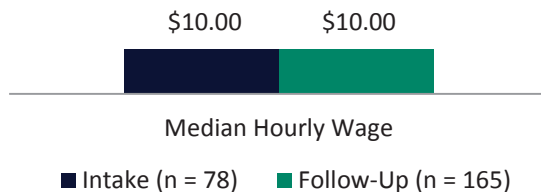
a—Significant difference by gender at follow-up (p < .01).

## MEDIAN HOURLY WAGE

At each period, individuals who reported they were employed in the 30 days before entering the program were asked their hourly wage. Only a small percent of clients reported they were currently employed at intake (n = 78)<sup>50</sup> and their median hourly wage was \$10.00 (see Figure 6.6). At follow-up, the median hourly wage was also \$10.00.

<sup>50</sup> Of those currently employed at follow-up (n = 188), 23 cases had missing values for hourly wage.

FIGURE 6.6. MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO REPORTED BEING CURRENTLY EMPLOYED

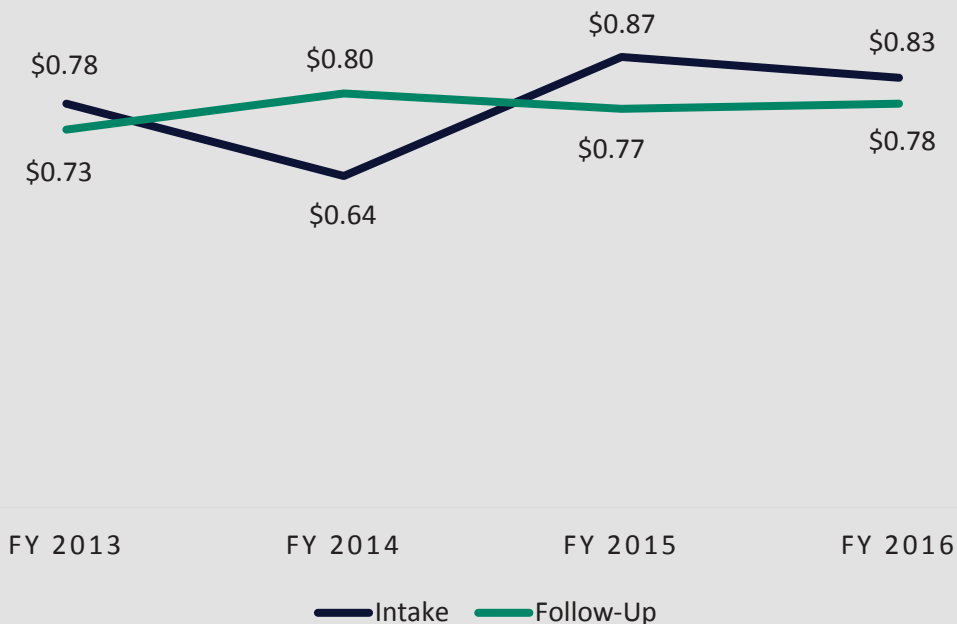


### TREND ALERT GENDER WAGE GAP

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

In the FY 2013 report, employed women made \$0.78 for every \$1.00 men made at intake and \$0.73 for every \$1.00 men made at follow-up. The gender wage gap was even more pronounced in the FY 2014 report where, at intake, employed women made just \$0.64 for every \$1.00 men made. At follow-up this number improved; however, employed women still made \$0.20 less, on average, than men.

FY 2015 continued to show a wage gap at both intake (\$0.87) and follow-up (\$0.77). In FY 2016, women again made less than men: \$0.83 for each \$1.00 men made at intake and \$0.78 at follow-up.

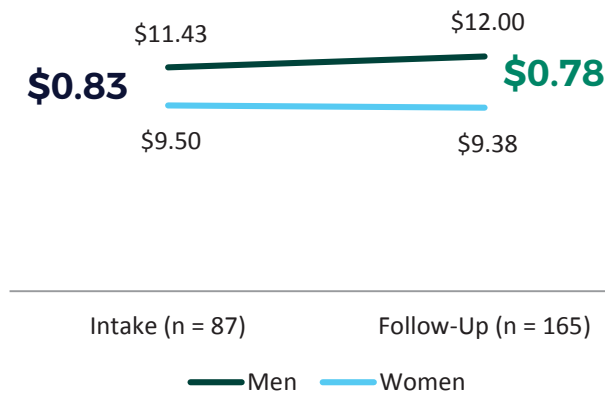


## GENDER DIFFERENCES IN MEDIAN HOURLY WAGE

At intake, employed women reported a median hourly wage of \$9.50, which was lower than the median hourly wage for employed men, \$11.43, meaning women made \$0.83 for every dollar men made (see Figure 6.7). At follow-up, men reported significantly higher hourly wages compared to women (\$12.00 for men and \$9.38 for women). At follow-up, employed women made \$0.78 for every dollar employed men made.

*At follow-up, employed women made only \$0.78 for every \$1 employed men made*

FIGURE 6.7. GENDER DIFFERENCES MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP<sup>a</sup>



a—Significant difference in hourly wage at intake and follow-up by gender tested with Man-Whitney U test;  $p < .001$ .

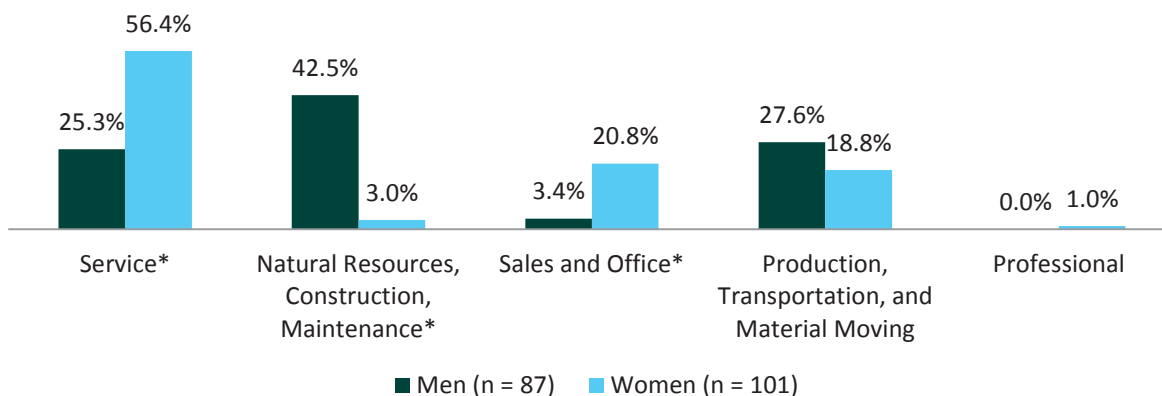
## GENDER DIFFERENCES IN OCCUPATION TYPE

At least part of the reason for the marked difference in hourly wages between men and women is due to the significant difference in occupation type for employed individuals by gender.<sup>51</sup> At follow-up, over half of employed women (56.4%) reported having a service job (i.e., food preparation and serving, child care, landscaping, housekeeping, lifeguard, hair stylist, etc.) whereas only 25.3% of employed men had a service job (see Figure 6.8). More employed men reported having a natural resources, construction, or maintenance job (i.e., mining, farming, logging, construction, plumber, mechanic, etc.) than women (42.5% vs. 3.0%). One-fifth of employed women (20.8%) had sales and office jobs (i.e., cashier, retail, telemarketer, bank teller, etc.) while 3.4% of employed men had sales and office jobs, also a significant difference. Production, transportation, and material moving jobs (i.e., factory production line, power plant, bus driver, sanitation worker, etc.) were reported by 27.6% of employed men and 18.8% 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*

<sup>51</sup> Occupation type was asked only of individuals who reported they were employed in the 30 days before entering the recovery center at intake and the past 30 days at follow-up. Because so few individuals reported employment in the 30 days before entering the recovery center, there were too few cases reporting several occupation types at intake to examine statistical difference by gender.

FIGURE 6.8. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 188)<sup>a</sup>

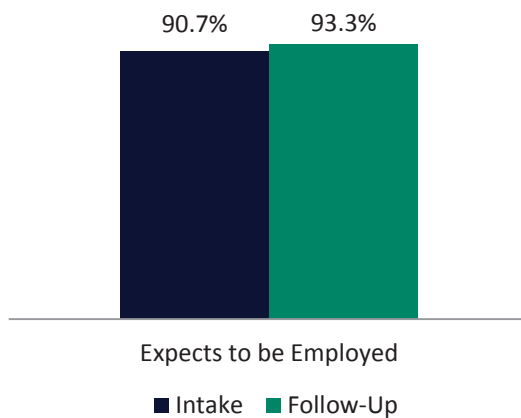


a – Significance tested with a chi-square test of independence (p < .001).

### EXPECT TO BE EMPLOYED

The vast majority of clients reported they expected to be employed in the next 6 months at intake and follow-up, with no significant change (see Figure 6.9).

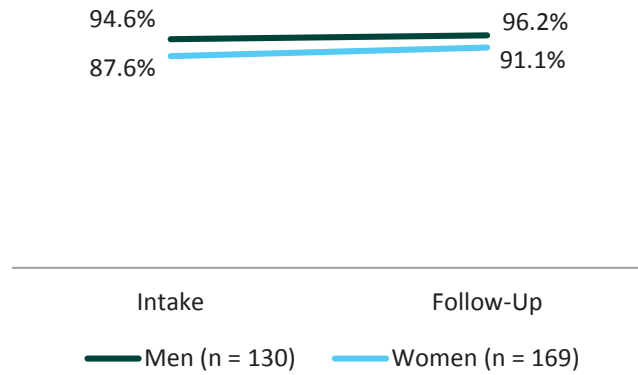
FIGURE 6.9. CLIENT EXPECTS TO BE EMPLOYED IN THE NEXT 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 299)<sup>52</sup>



### GENDER DIFFERENCES IN CLIENTS WHO EXPECT TO BE EMPLOYED

At intake, significantly more men expected to be employed in the next 6 months compared to women (see Figure 6.10). At follow-up, there was no significant difference by gender.

<sup>52</sup> One individual had missing data for this variable at follow-up.

FIGURE 6.10. GENDER DIFFERENCES IN CLIENTS EXPECTING TO BE EMPLOYED AT INTAKE AND FOLLOW-UP (N = 299)<sup>a</sup>

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

“It’s a great place. It teaches you things I’ve never learned before. It taught me how to be more responsible.”

—RCOS FOLLOW-UP CLIENT

## SECTION 7. LIVING SITUATION

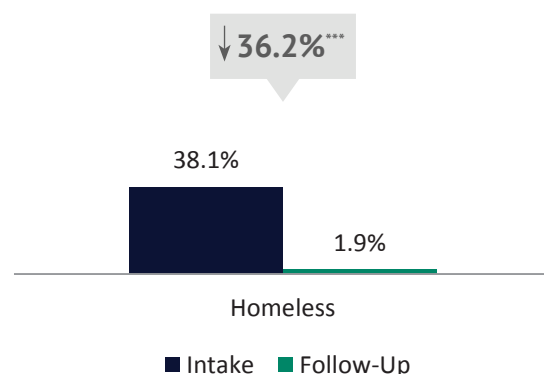
This section of targeted factors examines the clients' living situation before they entered the program and at follow-up. Specifically, clients are asked at both points: (1) if they consider themselves currently homeless, (2) in what type of situation (i.e., own home or someone else's home, residential program, shelter) they have lived, and about (3) economic hardship.

### HOMELESSNESS

More than one third of clients (38.1%) reported being homeless when they entered the recovery center and 1.9% reported being homeless at follow-up. This is a significant decrease of 36.2% in the number of clients who reported they were homeless (see Figure 7.1).

*There was a 36% decrease in homelessness at follow-up*

FIGURE 7.1. HOMELESSNESS AT INTAKE AND FOLLOW-UP (N = 268)<sup>53</sup>

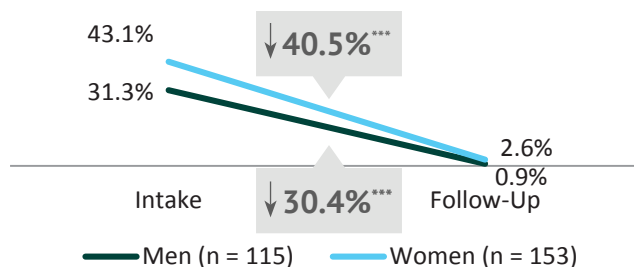


\*\*\*p < .001.

### GENDER DIFFERENCES IN HOMELESSNESS

At intake, significantly more women reported being homeless compared to men (see Figure 7.2). The number of women and men who were homeless decreased significantly from intake to follow-up. At follow-up, there was no difference by gender.

FIGURE 7.2. GENDER DIFFERENCES IN HOMELESSNESS AT INTAKE AND FOLLOW-UP (N = 268)<sup>a</sup>



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

\*\*\*p < .001.

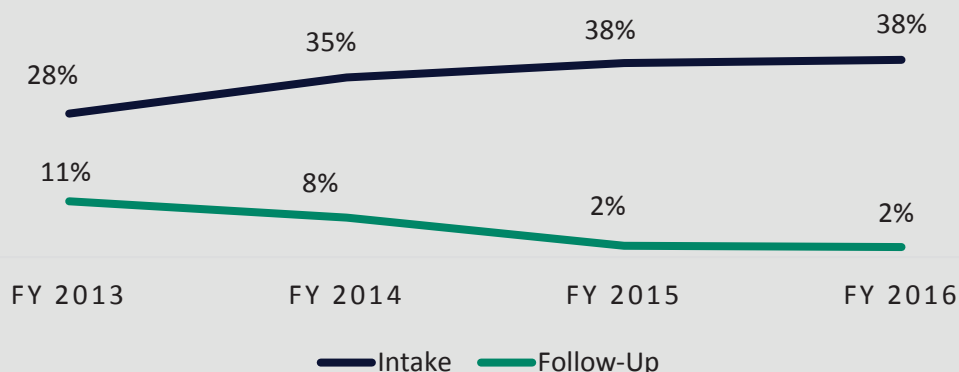
<sup>53</sup> Individuals who said they were currently living at a recovery center at follow-up were not asked this question in the follow-up survey.



## TREND REPORT HOMELESSNESS

In the past four fiscal years, the number of people reporting homelessness at intake has increased slightly and the number of people reporting homeless at follow-up has decreased.

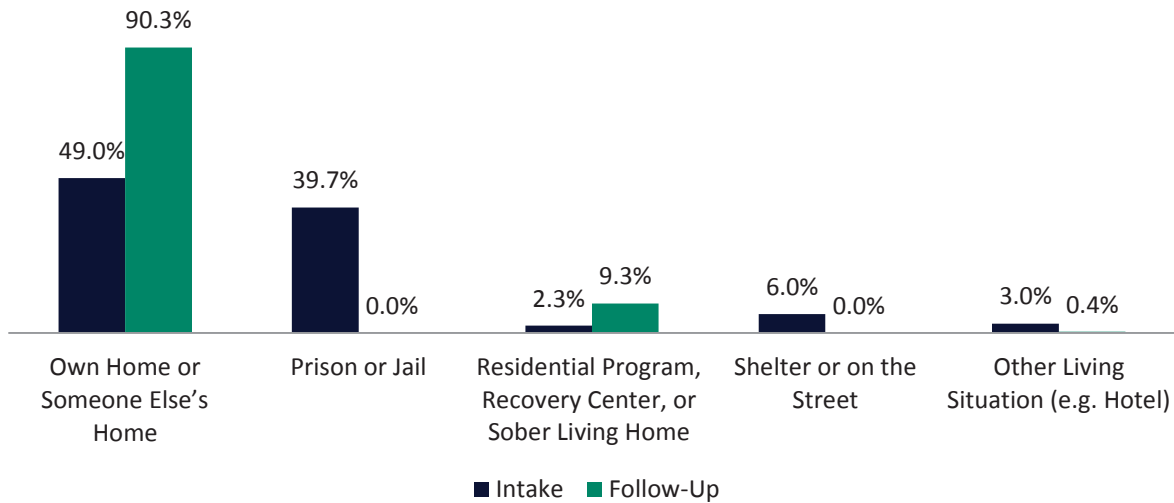
On average, about one-third of clients entering Phase I of the recovery center reported that they were homeless in the 6 months before entering the program. At follow-up, the number reporting homelessness was significantly lower: 11% in FY 2013, 8% in FY 2014, and only 2% of clients in FY 2015 and FY 2016.



## LIVING SITUATION

Change in living situation from intake to follow-up was examined for the RCOS follow-up sample (see Figure 7.3). At intake and follow-up, individuals were asked about where they lived in the past 30 days. Less than half of individuals (49.0%) reported living in a private residence (i.e., their own home or someone else's home) at intake while the vast majority (90.3%) reported living in their own home or someone else's home at follow-up. The number of clients who reported living in a jail or prison decreased from 39.7% at intake to 0.0% at follow-up.

Even though individuals were targeted for the follow-up survey 12 months after they completed their intake survey and entry into Phase 1, 9.3% reported living in a recovery center, residential program, or sober living home at follow-up. Only a small number of individuals reported living in a shelter or on the street at intake (6.0%) and no individuals reported living in a shelter or on the street at follow-up.

FIGURE 7.3. LIVING SITUATION AT INTAKE AND FOLLOW-UP (N=300)<sup>a</sup>

a – No measures of association could be computed for living situation because the value for prison or jail and shelter or on the street at follow-up was 0.

## ECONOMIC HARDSHIP

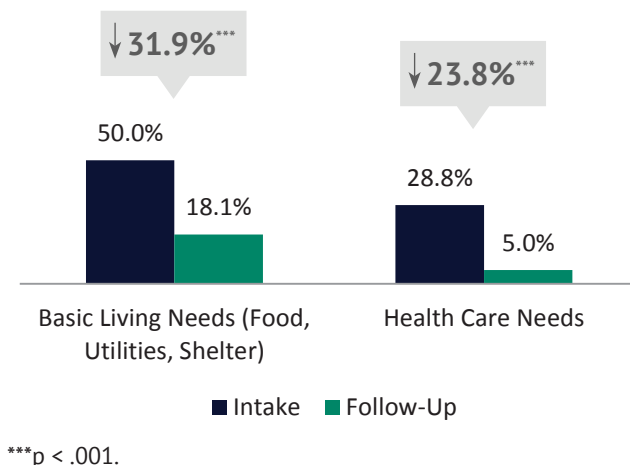
Economic hardship may be a better indicator of the actual day-to-day living situation clients face than a measure of income. Therefore, the intake and follow-up surveys included several questions about clients' difficulty meeting basic living needs and health care needs.<sup>54</sup> Clients were asked eight items, five of which asked about difficulty meeting basic living needs such as food, shelter, utilities, and telephone, and three items asked about difficulty for financial reasons in obtaining health care.

The number of clients who reported having difficulty meeting basic living needs decreased significantly from intake (50.0%) to follow-up (18.1%; see Figure 7.4). Similarly, the number of clients who reported having difficulty in obtaining health care needs (e.g., doctor visits, dental visits, and filling prescriptions) for financial reasons decreased significantly from 28.8% at intake to 5.0% at follow-up.

*The number of clients who reported difficulty meeting basic living needs and health care needs for financial reasons decreased significantly from intake to follow-up*

<sup>54</sup> She, P., & Livermore, G. (2007). Material hardship, poverty, and disability among working-age adults. *Social Science Quarterly*, 88(4), 970-989.

FIGURE 7.4. DIFFICULTY MEETING BASIC LIVING AND HEALTH CARE NEEDS FOR FINANCIAL REASONS AT INTAKE AND FOLLOW-UP (N=299)<sup>55</sup>

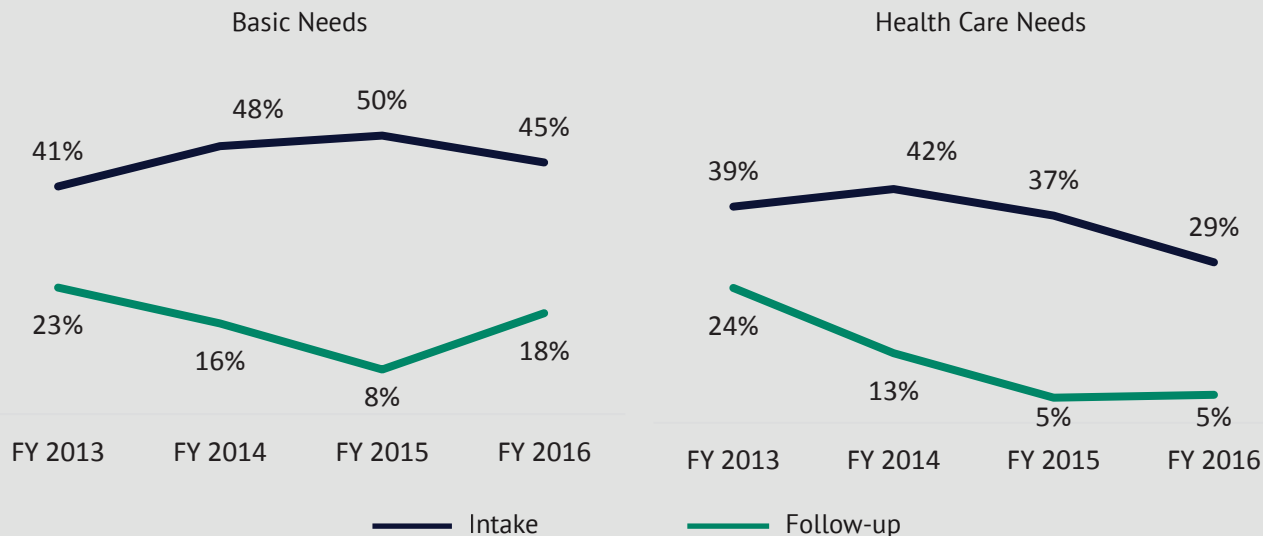


### TREND REPORT ECONOMIC HARDSHIP

Since FY 2013, there has been a significant decrease each year in the number of clients who reported they had difficulty meeting basic living needs and health care needs in the past 6 months from intake to follow-up.

At intake, the percent of clients who had difficulty meeting basic living needs (e.g., rent, utilities, food) has increased, from 41% in FY 2013 to 50% in FY 2015. In FY 2016, 45% of clients had difficulty meeting basic needs at intake. At follow-up, the number of clients who had difficulty meeting basic needs was still high in FY 2013 (23%). That number decreased in FY 2014 and FY 2015, where it was the lowest (8%). In FY 2016, almost one-fifth of RCOS clients were struggling to meet basic needs at follow-up.

Clients reporting difficulty meeting health care needs (e.g., unable to see a doctor, dentist, or pay for prescription medication) at intake and follow-up has seen a more dramatic decrease since FY 2013. Only 5% of clients at follow-up reported difficulty meeting health care needs in FY 2015 and FY 2016. The expansion of Medicaid in the state under the implementation of the Affordable Care Act corresponds to the follow-up period in FY 2015.



<sup>55</sup> There was missing data on items that comprised the basic living needs and the health care needs for one individual.

## SECTION 8.

## RECOVERY SUPPORTS

This section focuses on five changes in recovery supports: (1) percent of clients attending mutual help recovery group meetings, (2) recovery supportive interactions in the past 30 days, (3) the number of people the individual said they could count on for recovery support, (4) what would be most useful to them in staying off drugs or alcohol, and (5) how good they felt their chances were of staying off drugs or alcohol in the future.

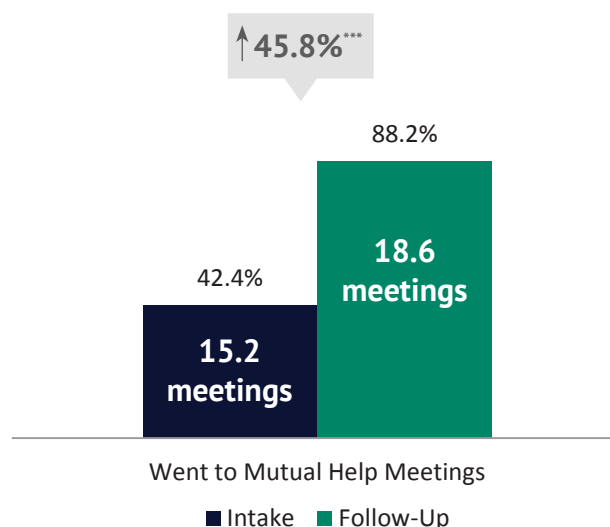
## MUTUAL HELP RECOVERY GROUP MEETINGS

At intake, 42.4% of individuals reported going to mutual help recovery group meetings (e.g., AA, NA) in the 30 days before they entered the recovery center (see Figure 8.1). At follow-up, there was a significant increase of 45.8%, with 88.2% of individuals reporting they had gone to mutual help recovery group meetings in the past 30 days.

To have a better idea how often individuals attended mutual-help recovery group meetings before entering the recovery center and at follow-up, the average number of meetings attended was examined. Of those who attended meetings, the average number of meetings attended at intake (n = 126) was 15.2 and at follow-up (n = 262), clients reported attending 18.6 meetings on average (see Figure 8.1).

*There was a 46% increase in the percent of clients reporting attending mutual help recovery groups*

FIGURE 8.1. RECOVERY SUPPORTS AT INTAKE AND FOLLOW-UP (N=297)<sup>56</sup>



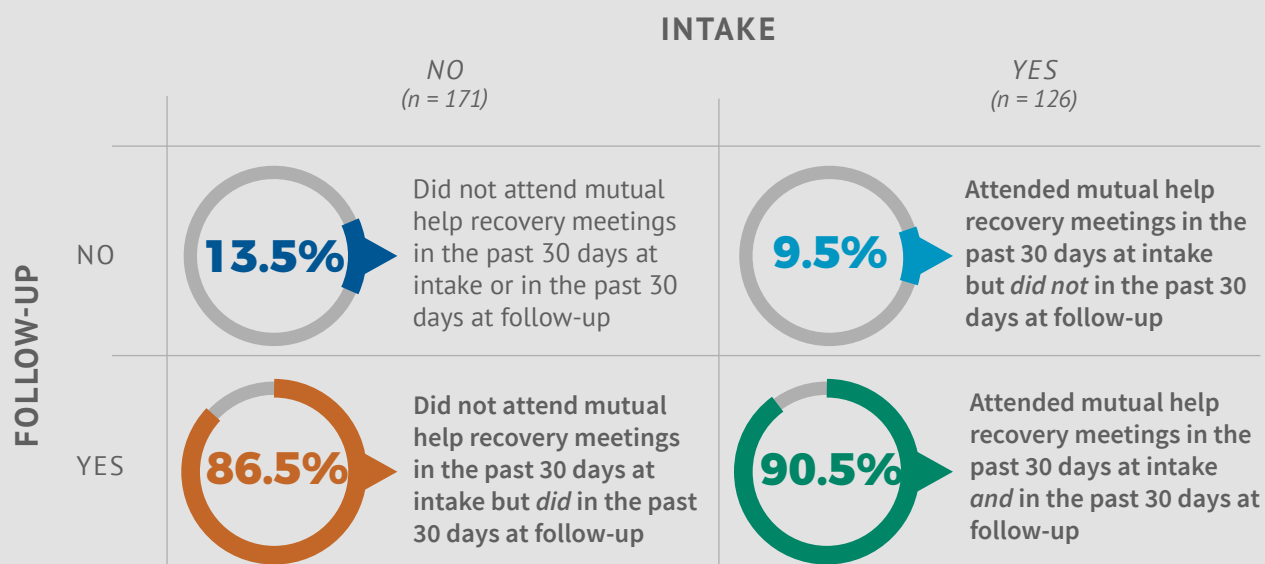
\*\*\*p < .001.

<sup>56</sup> Three individuals had missing data for recovery meeting attendance at follow-up.

Of those who attended mutual-help recovery group meetings in the past 30 days at both intake and follow-up (n = 114), there was a significant increase in the number of meetings attended from intake (14.7) to follow-up (19.3).

### TAKING A CLOSER LOOK AT RECOVERY SUPPORT

Less than half of clients reported attending mutual help recovery group meetings in the 30 days before entering the recovery center (42.4%; n = 126). Of these clients who attended meetings at intake, 90.5% also attended meetings in the 30 days before follow-up. Additionally, of those who did not attend recovery self-help meetings at intake (n = 171), 86.5% did attend at least one meeting in the past 30 days at follow-up.

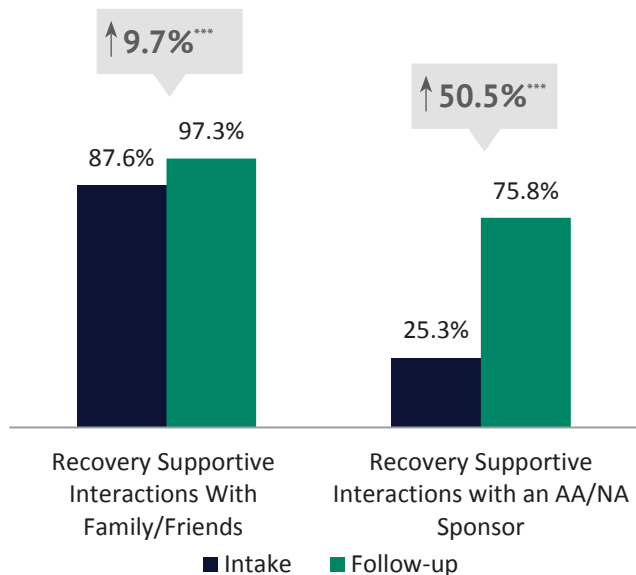


### RECOVERY SUPPORTIVE INTERACTIONS

As seen in Figure 8.2, at follow-up, significantly more individuals (97.3%) reported that they had interactions with family and friends who were supportive of their recovery in the past 30 days compared to intake (87.6%).

The number of individuals who reported having contact with an AA, NA, or other self-help group sponsor in the past 30 days also significantly increased from intake (25.3%) to follow-up (75.8%).

FIGURE 8.2. RECOVERY SUPPORTIVE INTERACTIONS IN THE PAST 30 DAYS (N = 298)<sup>57</sup>



\*\*\*p < .001.

## AVERAGE NUMBER OF PEOPLE THE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT

The average number of people individuals reported that they could count on for support increased significantly from 6.7 people at intake to 33.2 people at follow-up (see Figure 8.3).<sup>58</sup>

FIGURE 8.3. AVERAGE NUMBER OF PEOPLE CLIENTS SAID THEY COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 296)<sup>a</sup>



a – Significant increase from intake to follow-up as measured by a paired T-Test (p < .001)

<sup>57</sup> Two individuals had missing data for recovery supportive interactions at follow-up.

<sup>58</sup> Four individuals had missing data for number of people they could count on at follow-up.

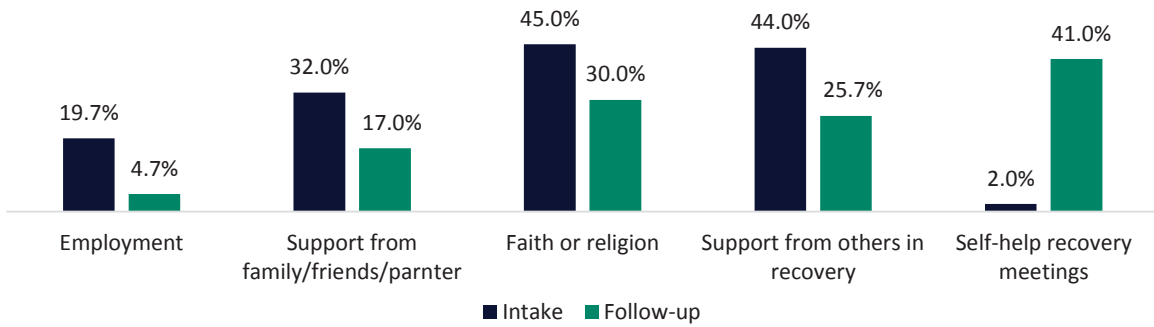
## WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS/ALCOHOL

At intake and follow-up, clients were asked what, other than being at the Recovery Center, 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 15% of clients or more are presented for descriptive purposes in Figure 8.4. The most common responses at intake were faith or religion, support from others in recovery, support from family/friends/partner, and employment. At follow-up, the most common response was self-help recovery meetings (i.e., AA or NA). Faith or religion, support from others in recovery, and support from family/friends/partner were also common answers at follow-up.

“There was nothing I disliked, it saved my life. I’ve been 16 months sober and I have a job now and I get to see my child.”

—RCOS FOLLOW-UP CLIENT

FIGURE 8.4. CLIENTS REPORTING WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS AND/OR ALCOHOL (N = 300)

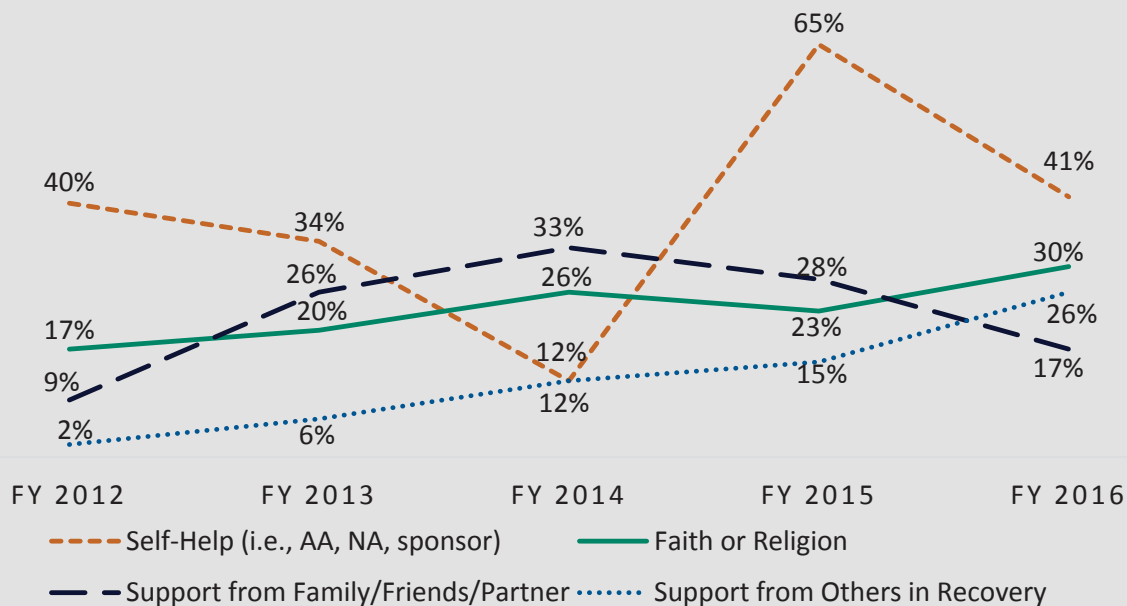


## TREND REPORT

### WHAT WILL BE MOST USEFUL IN STAYING OFF DRUGS/ALCOHOL AT FOLLOW-UP

At follow-up, clients were asked what, other than being at the recovery center, would be most useful in helping them quit or stay off drugs or alcohol. Examining the trends in four of the most common responses shows that self-help, such as AA/NA meetings, working the 12 steps, and having a sponsor, was the most commonly reported in FY 2012, FY 2013, FY 2015, and FY 2016. In FY 2014, the most common response at follow-up was support from family, friends, or a partner.

The number of individuals reporting that support from others in recovery would be most helpful has increased steadily over time from 2% in FY 2012 to 26% in FY 2016. The percent of clients stating their faith or religion to be most important has increased as well, from 17% in FY 2012 to 26% in FY 2014 and then again from 23% in FY 2015 to 30% in FY 2016.



## CHANCES OF STAYING OFF DRUGS/ALCOHOL

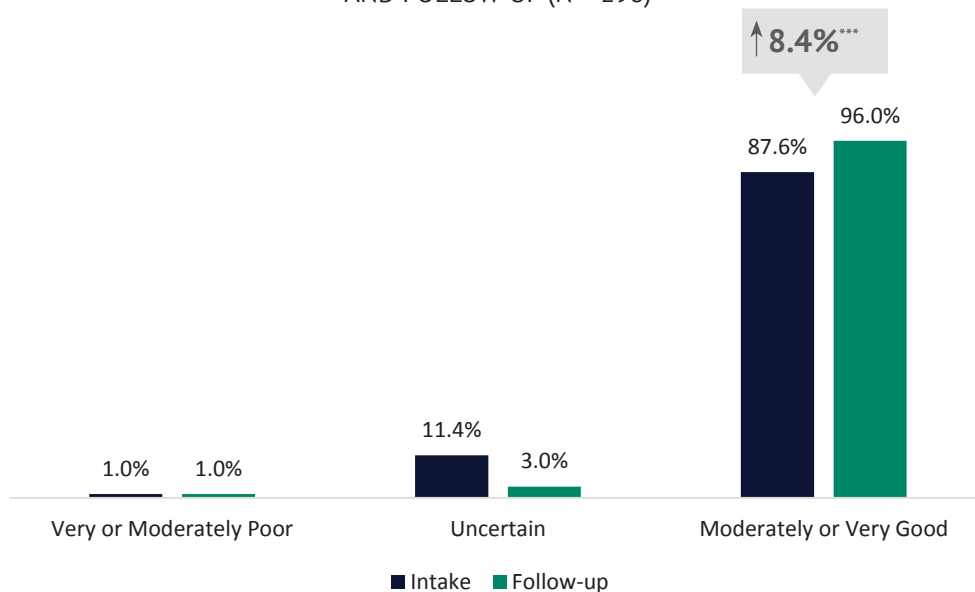
Clients were asked, based upon their situation, how good they believed their chances were of getting off and staying off drugs/alcohol using a scale from 1 (Very poor) to 5 (Very good).<sup>59</sup> Clients rated their chances of getting off and staying off drugs/alcohol as a 4.4 at intake and a 4.7 at follow-up, which was a significant increase (not depicted in figure).

Overall, 87.6% of clients believed they had moderately or very good chances of staying off drugs/alcohol at intake, with a significant increase of 8.4% at follow-up (96.0%; see Figure 8.5).

<sup>59</sup> Two individuals had missing data for this question at follow-up.



FIGURE 8.5. CLIENTS REPORTING THEIR CHANCES OF GETTING OFF AND STAYING OFF DRUGS/ALCOHOL AT INTAKE AND FOLLOW-UP (N = 298)<sup>a</sup>



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

### TREND REPORT

## CHANCES OF GETTING OFF AND STAYING OFF DRUGS ARE VERY GOOD

The percent of RCOS clients who report their chances of getting or staying off drugs and/or alcohol is very good at intake has remained steady from FY 2011 to FY 2016. In FY 2011, 56.6% of clients said they had a very good chance of getting and staying off drugs or alcohol. That number rose slightly to 59.4% in FY 2012 and again to 60.4% in FY 2013. In FY 2014 and FY 2015, about 59% of clients reported a very good chance of getting and staying off drugs or alcohol. In FY 2016, that number dipped slightly to 56%.



## SECTION 9.

# CLIENT SATISFACTION WITH RECOVERY CENTER PROGRAMS

*One of the important outcomes assessed during the follow-up interview is the client's perception of the Recovery Center program experience. This section describes three aspects of client satisfaction with the program: (1) overall client satisfaction, (2) client ratings of program experiences, and (3) positive outcomes of program participation.*

## OVERALL CLIENT SATISFACTION

The majority of individuals (83.7%) rated their experience in the Recovery Kentucky program between an 8 and a 10, where 10 represented the best possible experience (not in a table). The average rating was 8.8.

## CLIENT RATINGS OF PROGRAM EXPERIENCES

Overall, 96.0% of RCOS clients reported they felt better about themselves as a result of participating in the recovery center (not depicted in figure).

In October 2016, program satisfaction questions were expanded and reworked, therefore in this report, only 196 clients were asked to rate the following program experiences. When asked about specific positive aspects of the program, the vast majority of clients reported they either agreed or strongly agreed with many aspects of the Recovery Kentucky program assessed (see Figure 9.1a).

About 98% of clients reported that staff were sensitive to their cultural or ethnic background and that services were available at times that were convenient. Ninety-seven percent of clients were encouraged to use self-help programs. About 96% reported the staff thought they could grow, change, and recover and that staff helped them obtain information so they could take charge of managing their drug or alcohol problems. About 95% of clients felt safe at the recovery center and if they had experienced any harassment or safety concerns, they would have felt comfortable talking to staff about it. Most clients were encouraged to talk about and decide their recovery goals.

“I really liked the recovery dynamics. They explained the disease. They show a lot of love and teach you how to love yourself and others.”

—RCOS FOLLOW-UP CLIENT

FIGURE 9.1a. PERCENT OF INDIVIDUALS WHO AGREED/STRONGLY AGREED WITH THE FOLLOWING STATEMENTS ABOUT THE RECOVERY KENTUCKY PROGRAM AT FOLLOW-UP (N = 196)<sup>60</sup>

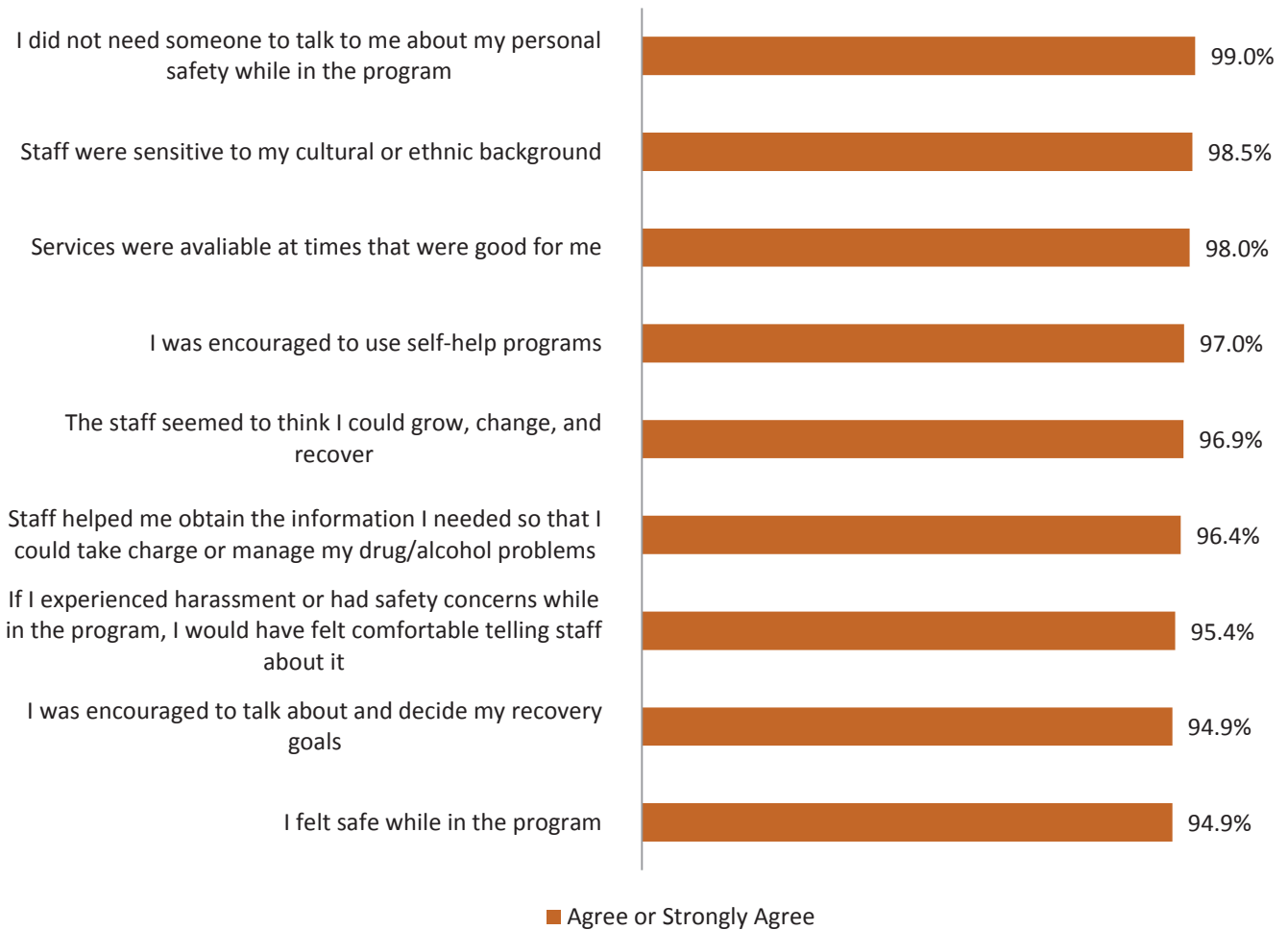
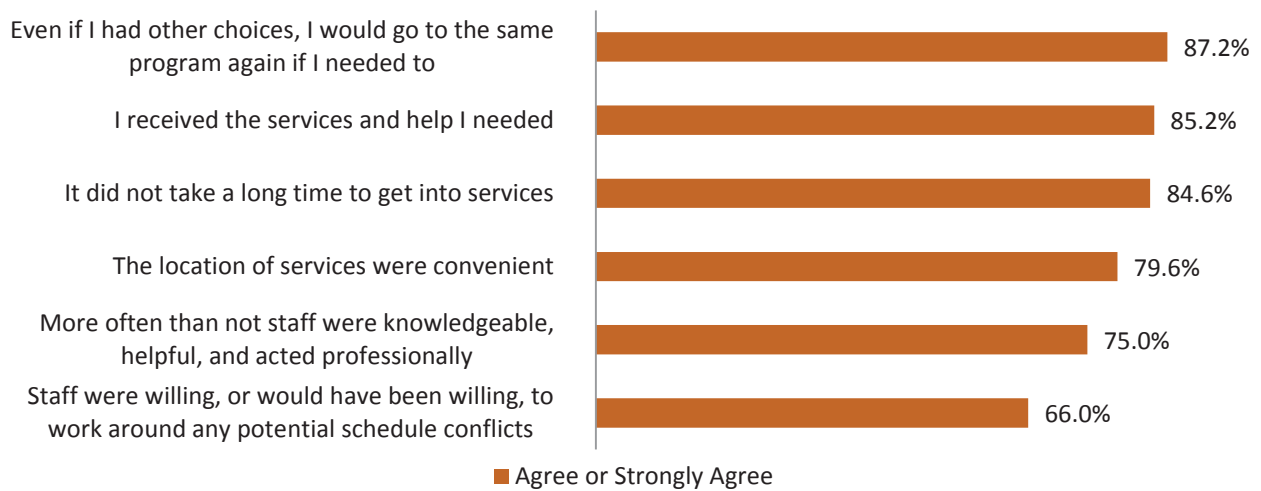


Figure 9.1b shows the program experiences that less than 95% of clients agreed or strongly agreed with. More than 80% of clients reported they would return to the same recovery center if they needed to, that they received the help they needed, and that it did not take a long time to get into services. About three-fourths of clients stated the location of the recovery center was convenient for them and that the staff were knowledgeable, helpful, and acted professionally. Only 66% of RCOS clients said the staff were willing to work around any schedule conflicts.

<sup>60</sup> Answers of don't know/don't remember were treated as missing on these items. The number of missing values ranged from 0 to 2 on the items represented in the figure.

FIGURE 9.1b. PERCENT OF INDIVIDUALS WHO AGREED/STRONGLY AGREED WITH THE FOLLOWING STATEMENTS ABOUT THE RECOVERY KENTUCKY PROGRAM AT FOLLOW-UP (N = 196)<sup>61</sup>

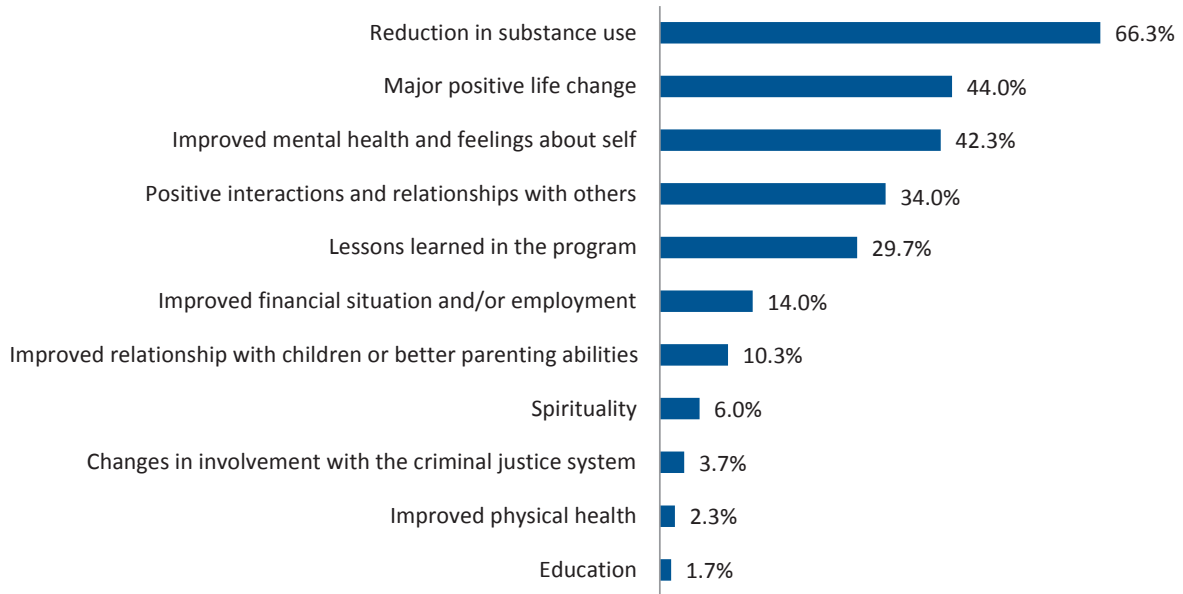


## POSITIVE OUTCOMES OF PROGRAM PARTICIPATION

At the beginning of the follow-up survey, individuals were also asked about the most positive outcomes of their Recovery Kentucky program experience (see Figure 9.2). The most commonly self-reported positive outcomes of the program included reduction in substance use, major positive life change (e.g., better quality of life, better able to function, having a “normal” life, having greater control over life), improved mental health and feelings about themselves, increased positive interactions and relationships with other people, and the lessons they learned in the program.

<sup>61</sup> Answers of don't know/don't remember were treated as missing on these items. The number of missing values ranged from 0 to 2 on the items represented in the figure.

FIGURE 9.2. PERCENT OF INDIVIDUALS REPORTING THE MOST POSITIVE OUTCOMES THEY EXPERIENCED FROM THEIR RECOVERY KENTUCKY PROGRAM EXPERIENCE AT FOLLOW-UP (n = 300)<sup>62</sup>



<sup>62</sup> Two cases had missing values for this question.

## SECTION 10.

**MULTIVARIATE ANALYSIS OF RELAPSE**

*This section focuses on a multivariate analysis examining factors related to relapse in the 2018 RCOS follow-up sample.*

RCOS clients who reported using any illicit drugs in the 6 months before follow-up (n = 13) were compared to clients who did not report use of drugs in the 6 months before follow-up (n = 286). A logistic regression was used to examine the association between selected targeted factors and use of illicit drugs during the follow-up time period (relapse).

In comparing the two groups on the targeted factors used in the regression, significant differences were found (see Table 10.1). Those who did not use illegal drugs in the 6 months before follow-up were older, reported fewer mental health symptoms at follow-up, and rated their quality of life higher than those who did use drugs at follow-up. Also, significantly more clients who did not relapse reported recovery supportive contact with family or friends at follow-up compared to those who did relapse.

TABLE 10.1. COMPARISON OF TARGETED FACTORS FOR RELAPSE AND NON-RELAPSE GROUPS

	Used illicit drugs in past 6 months at follow-up (n = 13)	Did not use illicit drugs in the past 6 months at follow-up (n = 286)
Average age at intake	28.5	33.9*
Male	46.2%	43.2%
Maximum number of months used illicit drugs at intake	3.5 months	3.1 months
Spent at least one night in jail in the 6 months before intake	69.2%	75.6%
Average number of mental health symptoms (depression and anxiety) reported at follow-up	6.5 symptoms	1.2 symptoms***
Employed at follow-up	69.2%	75.9%
Had contact with people supportive of client's recovery in past 30 days at follow-up	75.0%	98.3%***
Average quality of life rating at follow-up (out of 10)	5.9	8.1***

\*p&lt;.05, \*\*\*p&lt;.001

The targeted factors in Table 10.2 were entered into the logistic regression as predictor variables and any drug use in the past 6 months at follow-up (Yes/No) was entered as the dependent variable. Results of the analysis show that those who had no recovery supportive contact in the past 30 days and a lower quality of life rating at follow-up were more likely to have relapsed in the 6 months before follow-up.

TABLE 10.2. ASSOCIATION OF TARGETED FACTORS AND RELAPSE

<b>Factor</b>	<b>B</b>	<b>t</b>	<b>Odds Ratio</b>
Average age at intake	-.250	-1.493	.779
Gender	.025	-.526	1.026
Maximum number of months used illicit drugs at intake	.117	.567	1.125
Spent at least one night in jail in the 6 months before intake	-.012	-1.399	.988
Average number of mental health symptoms (depression and anxiety) reported at follow-up	-.026	2.730	.975
Employed at follow-up	.738	.692	2.091
Had contact with people supportive of client's recovery in past 30 days at follow-up	-2.951*	-4.480	.502
Average quality of life rating at follow-up (out of 10)	-1.546***	-3.956	.213

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

Note: Categorical variables were coded in the following ways: gender (1=male, 2= female), spent at least one night in jail at intake (0=no, 1=yes), employed at follow-up (0=no, 1=yes), contact with recovery supportive people at follow-up (0=no, 1=yes).

## SECTION 11.

# COST AND IMPLICATIONS FOR KENTUCKY

*This section examines cost reductions or avoided costs to society after Recovery Kentucky Program participation. Using the number of individuals who reported drug or alcohol use at intake and follow-up, a national per person cost was applied to the sample used in this study to estimate the cost to society for the year before individuals were in recovery and then for the same individuals during the period after leaving Phase I. The cost savings was then divided by the cost of providing Recovery Kentucky Program services, yielding a return of \$2.71 for every dollar spent on recovery programs.*

## RETURN ON INVESTMENT IN RECOVERY KENTUCKY PROGRAMS

There is great policy interest in examining cost reductions or avoided costs to society after Recovery Kentucky participation. Thorough analysis of cost savings, while increasingly popular in policy making settings, is extremely difficult and complex. Immediate proximate costs can be examined relatively easily; however, a thorough assessment requires a great number of econometrics. In order to accommodate these complexities at an aggregate level, data were extrapolated from a large federal study that was published in 1998 to estimate separate annual costs of alcohol abuse and drug abuse in the United States.<sup>63</sup> In 2000 the estimated costs of alcohol abuse in the United States was updated and in 2011 the National Drug Intelligence Center updated the estimates of drug abuse in the United States for 2007.<sup>64,65</sup> These updated costs were used in the calculations for the cost savings analysis in this RCOS follow-up report.

Most studies on the estimates of cost offsets from interventions with substance abuse focus on savings in various forms after substance abuse treatment participation. Recovery services are not treatment and thus call for separate analysis. Among the recovery centers sponsored by Recovery Kentucky and the Kentucky Housing Corporation, daily cost of care is very low. Recovery centers use considerable volunteer effort from residents and peer mentors who assist in running day-to-day activities such as housekeeping, kitchen work, and other duties. However, individuals stay in residential care for extended periods of time and these two factors mark the Recovery Kentucky Program as very different from treatment programs where residential stays average less than 20 days statewide.

## METHOD

The national cost reports factored in many explicit and implicit costs of alcohol and drug abuse to the nation, such as the costs of lost labor due to illness, accidents, the costs of crime to victims, costs of incarceration, hospital and other medical treatment, social services, motor accidents, and

<sup>63</sup> Harwood, H., Fountain, D., & Livermore, G. (1998). *The Economic Costs of Alcohol and Drug Abuse in the United States, 1992*. Report prepared for the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Department of Health and Human Services. NIH Publication No. 98-4327. Rockville, MD: National Institutes of Health.

<sup>64</sup> Harwood, H. (2000). *Updating Estimates of the Economic Costs of Alcohol Abuse in the United States: Estimates, Update Methods, and Data*. Report prepared by The Lewin Group for the National Institute on Alcohol Abuse and Alcoholism. Rockville, MD: National Institutes of Health.

<sup>65</sup> National Drug Intelligence Center. (2011). *The Economic Impact of Illicit Drug Use on American Society*. Washington, DC: United States Department of Justice.



other costs (Harwood et al., 1998; 2000; National Drug Intelligence Center, 2011). Thus, these reports consider both the hidden and obvious costs of substance abuse. For this analysis, the national estimates of the costs of drug and alcohol abuse/dependence were converted to 2016 dollars using a CPI indexing from a federal reserve bank (<http://www.minneapolisfed.org>).

In order to calculate the estimate of the cost per alcohol user or drug user, the updated national cost estimates were divided by the estimate of the number of individuals with alcohol or drug use disorder.<sup>66</sup> The estimate of the cost to society of alcohol use was \$271,840,009,815 after conversion to 2016 dollars. This amount was then divided by the 15,100,000 individuals estimated in the NSDUH in 2016 to have an alcohol use disorder, yielding a cost per person of alcohol abuse of \$18,003 (after rounding to a whole dollar). The estimate of the cost to society of drug use was \$223,513,375,133 after conversion to 2016 dollars. This amount was then divided by the 7,400,000 individuals estimated in the NSDUH in 2016 to have an illicit drug abuse or dependence disorder, yielding a cost per person of drug abuse of \$30,205 (after rounding to a whole dollar).

Given the high prevalence of severe substance abuse among the individuals entering recovery centers, analyses hinged on estimating the differences in cost to society between persons who are in active addiction compared to those who are abstinent from drug and/or alcohol use. Thus, the role that abstinence plays in reducing costs to society was examined because abstinent individuals are far less likely to be arrested, more likely to be employed or spending time volunteering, less likely to be drawing down social services supports, and less likely to be dependent on other family members. These per person costs were then applied to the follow-up sample used in this study to estimate the cost to society for the year before individuals were in Recovery Kentucky programs and then for the same individuals during the period after leaving Phase I.

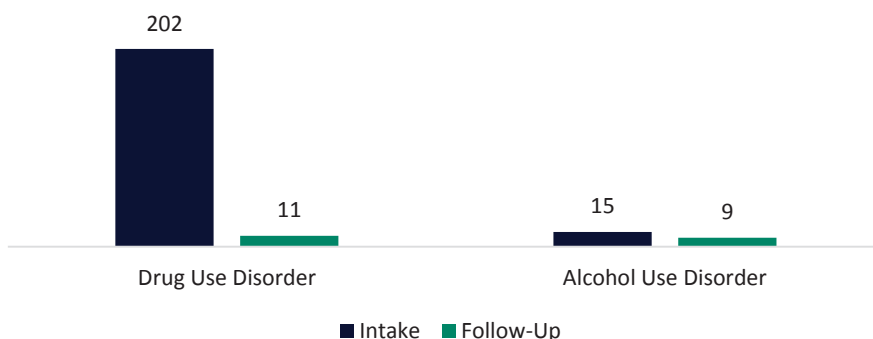
Figure 11.1 shows the change in the number of individuals who used illegal drugs and the number of individuals who used alcohol but not illegal drugs at intake and follow-up. Individuals who reported any illegal drug use in the corresponding period were classified in the drug use disorder category. Individuals who reported using alcohol but not using illegal drugs were classified in the alcohol use disorder category. The change from intake to follow-up was substantial (see Figure 11.1). At intake, 202 of the 274 RCOS clients included in the avoided cost analysis<sup>67</sup> were classified in the drug use category and 15 in the alcohol use category. At follow-up, only 11 individuals were classified in the drug use category and 9 individuals in the alcohol use category.

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<sup>66</sup> Substance Abuse and Mental Health Services Administration. (2017). *Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health* (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <http://www.samhsa.gov/data>

<sup>67</sup> Length of service in the recovery center programs was missing for 26 individuals included in the follow-up sample. Therefore, these cases were excluded from the avoided cost analysis.

FIGURE 11.1 CHANGE IN THE NUMBER OF INDIVIDUALS WHO WERE ACTIVE DRUG ABUSERS OR ALCOHOL ABUSERS FROM INTAKE TO FOLLOW-UP (N = 274)



When the estimated cost per individual drug user was applied to the 202 individuals who were active drug users at intake, the annual estimated cost to society for the RCOS individuals who used illegal drugs before entry into the recovery center was \$6,101,410. When the average annual cost per individual alcohol user was applied to the 15 individuals who were active alcohol users at intake, the estimated cost to society was \$270,045. The total estimated cost of drug and alcohol abuse applied to the sample of individuals in RCOS was \$6,371,455. By follow-up, the estimated cost of the 11 individuals who were still active drug abusers was \$332,255 and the estimated cost of the 9 individuals who were active alcohol abusers was \$162,027, for a total of \$494,282. Thus, as shown in Figure 11.2, after participation in a Recovery Kentucky program, the aggregate cost to society for the RCOS follow-up sample was reduced by \$5,877,173.

FIGURE 11.2. CHANGE IN COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N = 274)



The daily cost of participation in a Recovery Kentucky program in FY 2016 was \$35.89 per person (Kentucky Housing Corporation communication). Funding sources for the per diem cost includes the Kentucky Department of Corrections, Supplemental Nutrition Assistance Program (SNAP), Section 8 Housing Assistance, and the Community Development Block Grant (CDBG). The total number of days clients in the follow-up sample participated in Recovery Kentucky programs was obtained for each individual. The number of days of participation was multiplied by the daily cost of \$35.89 for a total cost of \$2,262,721 for the 274 individuals included in this report.<sup>68</sup> When the cost of Recovery Kentucky programs is subtracted from the cost savings from increased alcohol

<sup>68</sup> There were some outliers for number of days of service. To keep the outliers from having too large of an effect on the calculation of cost of services, the value at the 94.9th percentile of the distribution for days of service (442) was applied to the top 5% of cases (i.e., outliers). Once this was done the average number of days of service was 230.1 days.

and drug abstinence, there is an estimated net savings to society of \$3,614,452 for serving this sample of 274 individuals. Examining the total avoided costs in relation to expenditures on recovery services, these figures suggest that for every dollar invested in recovery, there was a \$2.60 return in avoided costs.

## SECTION 12.

# CONCLUSION

*This section summarizes the report findings and discusses some major implications within the context of the limitations of the outcome evaluation study.*

This report describes outcomes for 300 men and women who participated in a Recovery Kentucky program and who completed an intake interview at Phase 1 entry and a follow-up telephone interview about 12 months after the intake survey was submitted to UK CDAR.

## AREAS OF SUCCESS

The 2018 evaluation results indicate that Recovery Kentucky programs have been successful in facilitating substantial positive changes in clients' lives. Significant improvements from intake to follow-up were made in the following areas:

### PROGRAM SATISFACTION

Client satisfaction with the substance abuse program they attend is an important part of program outcomes. Clients who report positive experiences in a program have been shown to have improved drug use outcomes.<sup>69</sup> RCOS clients reported very high levels of satisfaction with Recovery Kentucky programs they attended. Specifically, the vast majority indicated that the services helped them get better and feel better about themselves. They also reported positive outcomes to their participation in the Recovery Kentucky programs such as reductions in substance use, major positive life changes, improvements in mental health and feelings about themselves, increases in positive interactions and relationships with other people, and the lessons they learned in the program.

### SUBSTANCE USE

There was a significant decrease in past-6-month illegal drug use as well as a decrease in past-6-month alcohol use from intake to follow-up among clients who were not in a controlled environment for the entire period at intake. About 95% of RCOS clients reported abstinence from illegal drugs or alcohol in the past 6 months at follow-up. Abstinence is linked to a decrease in drug related consequences<sup>70</sup> as well as improvements in health and a decrease in mortality, reductions in crime, increases in employment, and an improved quality of life.<sup>71</sup>

Further, significantly fewer clients met DSM-5 severity criteria for severe substance use disorder during the follow-up time period. The number of clients with an ASI alcohol or

<sup>69</sup> Zhang, Z., Gerstein, D., & Friedmann, P. (2009). Patient satisfaction and sustained outcomes of drug abuse treatment. *Journal of Health Psychology, 13*(3), 388-400.

<sup>70</sup> Park, T., Cheng, D., Lloyd-Travaglini, C., Bernstein, J., Palfai, T., & Saitz, R. (2015). Changes in health outcomes as a function of abstinence and reduction in illicit psychoactive drug use: A prospective study in primary care. *Addiction, 110*, 1476-1483.

<sup>71</sup> Vederhus, J., Birkeland, B., & Clausen, T. (2016). Perceived quality of life, 6 months after detoxification: Is abstinence a modifying factor? *Quality of Life Research, 25*, 2315-2322.

drug composite score that met or exceeded the cutoff for severe substance use disorder also decreased significantly in the past 30 days.

## MENTAL HEALTH

Compared to the general population, individuals who have a substance use disorder are more likely to also have a co-occurring mental health disorder.<sup>72</sup> At intake, two-thirds of clients met study criteria for depression, three-fourths met criteria for generalized anxiety, and 31.3% reported suicidal thoughts or attempts in the past 6 months. At follow-up, there were significant reductions in mental health symptoms for RCOS clients – 10.7% met depression criteria, 9.3% met anxiety criteria, and only 2.3% reported suicidality in the past 6 months.

## PHYSICAL HEALTH

The number of days individuals reported their physical health was not good in the past 30 days decreased significantly from intake (9.3) to follow-up (0.7). Comparing RCOS clients to a statewide sample, the number of poor physical health days reported at follow-up (0.7) was considerably less than others in Kentucky (5.0).<sup>73</sup> Additionally, there was a significant reduction in the number of clients reporting chronic pain in the past 6 months from intake to follow-up.

## CRIMINAL JUSTICE INVOLVEMENT

Research has shown that criminal justice involvement, specifically post-treatment arrests, may increase the likelihood of substance use relapse.<sup>74</sup> The number of RCOS clients reporting arrests and incarceration in the past 6 months at follow-up was significantly less than the number at intake. Only 3% of clients reported an arrest at follow-up and 13% reported spending any time incarcerated. The percent of clients who self-reported at least one misdemeanor or felony conviction also decreased from intake to follow-up.

## EMPLOYMENT

Unemployment has been linked to higher rates of smoking, alcohol consumption, and illicit drug use.<sup>75</sup> There was a significant increase in employment for RCOS clients from intake (46%) to follow-up (76%). The number of men who were employed at least one month out of the past 6 months increased by 21% and the number of women employed increased by 37%.

## HOMELESSNESS

Homelessness and substance use have often been shown to go hand-in-hand and one recent study found that of those with any substance abuse or dependence diagnosis in their

<sup>72</sup> <https://www.samhsa.gov/treatment#co-occurring>

<sup>73</sup> <https://www.americashealthrankings.org/explore/2016-annual-report/measure/PhysicalHealth/state/KY>

<sup>74</sup> Kopak, A., Haugh, S., Hoffmann, N. (2016). The entanglement between relapse and posttreatment criminal justice involvement. *The American Journal of Drug and Alcohol Abuse*, 42(5), 606-613.

<sup>75</sup> Henkel, D. (2011). Unemployment and substance use: A review of the literature (1990-2010). *Current Drug Abuse Reviews*, 4, 4-27.

lifetime, three-fourths had also experienced an episode of homelessness.<sup>76</sup> Overall, there was a significant decrease in the number of RCOS clients reporting homelessness in the last 6 months. Only 2% of clients reported being homeless at follow-up.

## RECOVERY SUPPORT

Research has shown that positive social and recovery supports, like AA, NA, and other 12-step programs, are linked to a lower risk of relapse.<sup>77</sup> For RCOS clients, there was a significant increase in self-help group meeting attendance in the past 30 days from intake to follow-up. Further, of those who did not attend recovery self-help meetings at intake, 86.5% did attend at least one meeting in the past 30 days at follow-up. Of individuals who attended meetings at both intake and follow-up, the number of meetings they attended in the last 30 days increased significantly over time. At follow-up, RCOS clients also reported more recovery supportive contact with family, friends, or a sponsor. Additionally, the number of people clients could count on for support was significantly higher at follow-up (33.2) compared to intake (6.7).

“The program deals with my addiction in a productive way. It gives me structure and the tools I need to stay sober.”

—RCOS FOLLOW-UP CLIENT

## COST REDUCTION

A cost-benefit analysis was beyond the scope of this outcome evaluation. Nonetheless, an estimate of the avoided costs to society in the follow-up period based on national estimates of the cost of alcohol and drug abuse and taking into account the cost of Recovery Kentucky services suggests that Recovery Kentucky has a positive return on investment. The estimate of avoided costs to society of \$5,877,173 divided by the cost of Recovery Kentucky services to the individuals in the follow-up sample suggest that for every dollar spent there was an estimated \$2.60 of avoided costs to society.

## AREAS OF CONCERN

There were a few areas where the data results suggest additional attention may be warranted:

### SMOKING RATES

The number of RCOS clients not in a controlled environment who reported past-6-month smoking tobacco use remained high from intake to follow-up (84%). Past-30-day smoking for those not in a controlled environment was also high at intake (81%) and follow-up (86%). For those clients who were in a controlled environment all 30 days before entering the recovery center, smoking tobacco use in the past 30 days drastically increased 30% from intake to

<sup>76</sup> Greenberg, G. & Rosenheck, R. (2010). Correlates of past homelessness in the National Epidemiological Survey of Alcohol and Related Conditions. *Administration and Policy in Mental Health and Mental Health Services Research*, 37, 357-366.

<sup>77</sup> Havassy, B., Hall, S. & Wasserman, D. (1991). Social support and relapse: Commonalities among alcoholics, opiate users, and cigarette smokers. *Addictive Behaviors*, 16, 235-246.

follow-up. There is a common belief that individuals should not attempt to quit smoking while in substance abuse treatment, because smoking cessation can endanger their sobriety. However, this has been contested by recent empirical research studies.<sup>78</sup> Continued tobacco use is associated with increased mental health symptoms as well as well-known physical health problems, including increased mortality. Voluntary smoking cessation during substance abuse treatment has been associated with lower alcohol and drug relapse and improved mental health outcomes.<sup>79,80</sup>

## MENTAL HEALTH

At intake, more women than men met study criteria for depression, generalized anxiety, and co-morbid depression and anxiety. Women remained worse off in these areas at follow-up. About 14% of women met study criteria for depression or generalized anxiety at follow-up and 11% of women met criteria for both depression and anxiety which was significantly more than men. Women with co-occurring mental health and substance use disorders have poorer treatment outcomes and high rates of program dropout.<sup>81</sup>

Further, when compared to a statewide sample of women, RCOS women reported a higher number of poor mental health days in the past 30 days at follow-up (7.6 vs. 4.9).<sup>82</sup> RCOS women also reported a significantly higher number of poor mental health days than RCOS men in the 30 days before follow-up (7.6 vs. 3.1).

## FINANCIAL HARDSHIP

About 18% of clients reported they had difficulty meeting basic living needs (e.g., food, utilities, rent) at follow-up. Additionally, despite significant increases in employment, women reported working fewer months in the past 6 months at follow-up and earning a lower median hourly wage at intake and follow-up than men. Chronic stressors like sustained economic hardship and unemployment are associated with substance abuse relapse.<sup>83</sup> Additionally, increased substance use may occur in those with financial strain in order to help alleviate the stress.<sup>84</sup>

## PROGRAM CONCERNS

Most RCOS clients rated their time at the recovery center highly however, there were a few

<sup>78</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>79</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>80</sup> Kohn, C., Tsoh, J., & Weisner, C. (2003). Changes in smoking status among substance abusers: Baseline characteristics and abstinence from alcohol and drugs at 12-month follow-up. *Drug and Alcohol Dependence, 69*(1), 61-71.

<sup>81</sup> Center for Substance Abuse Treatment. *Substance Abuse Treatment: Addressing the Specific Needs of Women*. Treatment Improvement Protocol (TIP) Series, No. 51. HHS Publication No. (SMA) 15-4426. Rockville, MD: Center for Substance Abuse Treatment, 2009. Retrieved from: <https://store.samhsa.gov/shin/content//SMA15-4426/SMA15-4426.pdf>

<sup>82</sup> <https://www.americashealthrankings.org/explore/2016-annual-report/measure/MentalHealth/state/KY>

<sup>83</sup> Tate, S., Brown, S., Glasner, S., Unrod, M., & McQuaid, J. (2006). Chronic life stress, acute stress events, and substance availability in relapse. *Addiction Research and Theory, 14*(3), 303-322.

<sup>84</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.

aspects of program satisfaction that a significant minority disagreed or strongly disagreed with. About 13% of clients reported they would not return to the same recovery center if they needed to. Fifteen percent said they did not receive the help they needed and 15.4% reported it took a long time to get into services.

One-fifth of clients did not think the location of services was convenient and one-quarter reported that, more often than not, the staff were not knowledgeable, helpful or professional. Further, 34% thought the staff were not willing, or would not have been willing, to work around any schedule conflicts.

## STUDY LIMITATIONS

The study findings must be considered within the context of the project's limitations. First, the data included in this write-up were self-reported by Recovery Kentucky 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>85, 86, 87, 88</sup> Earlier studies found that the context of the interview influences reliability.<sup>89</sup> During the informed consent process at the beginning of the follow-up survey, interviewers tell participants that the research team operates independently from the recovery centers and individuals' responses will be reported in group format and will not be identifiable at the individual level. These assurances of confidentiality and lack of affiliation with the program staff may minimize individuals' concern about reporting stigmatizing behavior or conditions.

Even though the project sample was limited to 300 follow-up surveys this fiscal year due to budget constraints, comparisons of clients who completed a follow-up survey and clients who did not complete a follow-up survey show very few differences. Significantly more women are in the follow-up sample compared to those who were not followed up. There were no significant differences for demographics, socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs), severity of alcohol and drug use, mental health (e.g., depression, generalized anxiety, suicidality), arrests, incarceration, and treatment history. Thus, this bolsters confidence that the sample of individuals who are included in this report are representative of individuals who complete an intake survey for RCOS. Also, the follow-up period is limited at 12 months after Phase 1 intake, which for the typical client is about 6 months after they leave the program. A longer-term follow-up would provide more information about the impact of the Recovery Kentucky Program on longer time life changes and events.

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<sup>85</sup> DeL Boca, F.K., & Noll, J.A. (2000). Truth or consequences: The validity of self-report data in health services research on addictions. *Addiction, 95*, 347-360.

<sup>86</sup> Harrison, L. D., Martin, S. S., Enev, T., & Harrington, D. (2007). *Comparing drug testing and self-report of drug use among youths and young adults in the general population* (DHHS Publication No. SMA 07-4249, Methodology Series M-7). Rockville, MD: Substance abuse and Mental Health Services Administration, Office of Applied Studies.

<sup>87</sup> Rutherford, M.J., Cacciola, J.S., Alterman, A.I., McKay, J.R., & Cook, T.G. (2000). Contrasts between admitters and deniers of drug use. *Journal of Substance Abuse Treatment, 18*, 343-348.

<sup>88</sup> Shannon, E.E., Mathias, C.W., Marsh, D.M., Dougherty, D.M., & Liguori, A. (2007). Teenagers do not always lie: Characteristics and correspondence of telephone and in-person reports of adolescent drug use. *Drug and Alcohol Dependence, 8* (90), 288-291.

<sup>89</sup> Babor, T.F., Stephens, R.S., & Marlatt, A. (1987). Verbal report methods in clinical research on alcoholism: Response bias and its minimization. *Journal of Studies on Alcoholism, 48*, 410-424.



## LOOKING AHEAD

In October 2016, UK CDAR added questions to the RCOS interviews about victimization and trauma, as well as a PTSD screener. The 2019 report will be the first to include this new data and show change over time from intake to follow-up on various types of victimization such as past-6-month harassment, violent crime, sexual assault, stalking, and gun violence. The 2019 report will also include analysis of Adverse Childhood Experiences (ACE) at intake.

## CONCLUSION

This RCOS 2018 report findings are encouraging and continue the first multi-year systematic evaluation of long-term residential recovery supports in the United States. Further study will lead to more research to validate the continuing value of recovery services as a key part of state commitment to intervening with the growing problem of substance abuse in Kentucky.

Overall, Recovery Kentucky clients made significant strides in all of the targeted areas, clients were largely satisfied and appreciative of the services they received through the recovery centers, and Recovery Kentucky saved taxpayer dollars through avoided costs to society or costs that would have been expected based on the rates of drug and alcohol use prior to entry into the recovery center. The overall quality of life ratings suggest that client's lives have improved meaningfully and significantly. The finding of reductions in costs related to increased abstinence suggests that commitment of public funds to recovery centers is a solid investment in the futures of many Kentucky citizens. While this study was not resourced to examine net effects of human capital investment, the past research suggests that individuals who commit themselves to recovery and abstinence go on to have gainful employment and reduced involvement with public sector services in their future years.

## APPENDIX A.

# METHODS

A total of 1,924 individuals had an intake survey submitted from July 1, 2015 through June 30, 2016. The target month for the follow-up survey was 12 months after the baseline survey was submitted. Cases were randomly selected into the follow-up sample by two strata (i.e., gender [male, female] and Department of Corrections referral [yes/no]) so that equal numbers of individuals fell into the following categories: DOC-referred men, DOC-referred women, non-DOC referred men, and non-DOC referred women. Thus, at the completion of the follow-up period, among the 300 clients with follow-up interviews, 53.7% (n = 161) were referred by the Department of Corrections (DOC) and 46.3% (n = 139) were not DOC-referred. The window for completing a follow-up survey with an individual selected into the follow-up sample began one month before the target month and spanned until two months after the target month. For example, if an individual was eligible for the follow-up survey in May (i.e., target month was May), then the interviewers would attempt to complete the follow-up survey beginning in April and ending in July.

A total of 529 individuals were selected into the sample of individuals to be followed up from July 2016 to June 2017. Of these individuals, 63 were ineligible for the follow-up survey at the time of their follow-up; thus these cases are not included in the calculation of the follow-up rate (see Table AA.1). Of the remaining 466 individuals, interviewers completed follow-up surveys with 300<sup>90</sup> individuals, representing a follow-up rate of 64.4%. Of the eligible individuals, 165 (35.4%) were never successfully contacted or if they were contacted, interviewers were not able to complete a follow-up survey with them during the follow-up period: these cases are classified as expired. One individual refused to complete the follow-up survey when the interviewer contacted him/her. The project interviewers' efforts accounted for 68.8% of the cases (N = 364) included in the follow-up sample. The only cases not considered accounted for are those individuals who are classified as expired.

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<sup>90</sup> The target number of follow-up surveys to be completed each fiscal year is 280.

TABLE AA.1. FINAL CASE OUTCOMES FOR FOLLOW-UP EFFORTS

	Number of Records (N = 529)	Percent
Ineligible for follow-up survey	63	11.9%
	Number of cases eligible for follow-up (N = 466)	
Completed follow-up surveys	300	
Follow-up rate is calculated by dividing the number of completed surveys by the number of eligible cases and multiplying by 100		64.4%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	165	
Expired rate ((the number of expired cases/eligible cases)*100)		35.4%
Refusal	1	
Refusal rate ((the number of refusal cases/eligible cases)*100)		0.2%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	364	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		68.8%

Individuals were considered ineligible for follow-up if they were living in a controlled environment during the follow-up period (see Table AA.2). Of the 63 cases that were ineligible for follow-up, almost all (96.8%) were ineligible because they were incarcerated during the follow-up period. Two individuals were ineligible because they were deceased.

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 63)

	Number	Percent
Incarcerated	61	96.8%
Deceased	2	3.2%

## APPENDIX B.

# CLIENT CHARACTERISTICS AT INTAKE FOR THOSE WITH COMPLETED FOLLOW-UP INTERVIEWS AND THOSE WITHOUT COMPLETED FOLLOW-UP INTERVIEWS

Individuals who completed a follow-up interview are compared in this section with individuals who did not complete a follow-up interview for any reason (e.g., not selected into the follow-up sample, ineligible for follow-up, and interviewers were unable to locate the client for the follow-up survey).<sup>91</sup>

## DEMOGRAPHIC CHARACTERISTICS

The average client age was about 33 and the majority of the sample for this annual report was White (see Table AB.1). About half of clients reported at intake that they had never been married and one-third were separated or divorced. Significantly more women than men were in the follow-up sample.

TABLE AB.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP<sup>92</sup>

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
AGE	33.2 years	33.6 years
GENDER**		
Male	53.1%	43.3%
Female	46.9%	56.7%
RACE		
White	92.0%	91.7%
African American	5.6%	5.7%
Other or multiracial	2.4%	2.7%
MARITAL STATUS		
Never married	50.1%	54.3%
Married	14.3%	11.3%
Separated or divorced	33.7%	32.7%
Widowed	2.0%	1.7%

\*\*p<.01.

<sup>91</sup> Significance is reported for p<.01.

<sup>92</sup> Seven individuals who were not followed-up and one individual who was followed-up had a missing date of birth and age could not be calculated.

## SUBSTANCE USE AT INTAKE

Use of illegal drugs, alcohol, and tobacco in the 6 months before entering the recovery center is presented by follow-up status in Table AB.2 for those clients who were not incarcerated the entire period.<sup>93</sup> There were no significant differences in the percent of individuals who reported using different types of illegal drugs by follow-up status.

The majority of the clients reported using any illegal drug in the 6 months before entering the program. The drug class used by the greatest percent of clients was prescription opiates/opioids. Less than half of clients reported using marijuana or other stimulants (methamphetamine, non-prescribed Adderall, Ecstasy) while 40% of clients who were not followed-up and 38.0% of followed-up clients reported heroin use. More than one-third of followed up and not followed up clients used CNS depressants. About 30% of those not followed-up and 32.7% of those who were followed-up reported using cocaine. Less than one-fifth (17.9%) of clients who completed a follow-up survey used other illegal drugs (e.g., synthetic drugs, hallucinogens, inhalants) and 17.1% of clients who did not complete a follow-up used other illegal drugs.

About half of clients in both samples reported using any alcohol at intake. The majority of clients reported smoking tobacco products in the 6 months before entering the program. Thirty percent of those not followed-up and 24.3% of those who completed a follow-up interview reported e-cigarette use. A minority (14.4%) of clients who did not complete a follow-up and 13.7% of those who did complete a follow-up used smokeless tobacco in the 6 months before entering the program.

TABLE AB.2. PERCENT OF INDIVIDUALS REPORTING ILLEGAL DRUG USE, ALCOHOL, AND TOBACCO IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
SUBSTANCES		
Any illicit drug	83.6%	83.3%
Prescription opiates/opioids (including methadone and buprenorphine-naloxone)	62.9%	62.7%
Marijuana	47.4%	49.8%
Other Stimulants (methamphetamine, Adderall, Ecstasy)	44.2%	48.3%
Heroin	40.8%	38.0%
CNS depressants	35.9%	36.5%
Cocaine	29.6%	32.7%
Other illegal drugs (synthetic drugs, hallucinogens, inhalants)	17.1%	17.9%
Alcohol	53.4%	50.2%
Smoked tobacco	84.2%	84.4%
E-Cigarettes	29.9%	24.3%
Smokeless tobacco	14.4%	13.7%

<sup>93</sup> Of those who did not complete a follow-up, 184 were incarcerated all 6 months before entering the program. Of those who completed a follow-up, 37 were incarcerated all 6 months before entering the program.

Analysis of past-30-day substance use of clients who were followed up compared to clients who were not followed up showed similar patterns to the 6-month substance use.

Table AB.3 shows the percent of followed-up and non-followed-up individuals in each DSM-5 severity classification based on self-reported criteria of the 6 months before entering the recovery center. The majority of both groups reported six or more DSM-5 symptoms at intake.

TABLE AB.3. SELF-REPORTED DSM-5 SYMPTOMS OF SUBSTANCE USE DISORDER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
No SUD (0-1 symptom)	12.1%	12.2%
Mild SUD (2-3 symptoms)	2.6%	3.0%
Moderate SUD (4-5 symptoms)	3.3%	1.9%
Severe SUD (6+ symptoms)	81.9%	82.9%

Alcohol and drug composite severity scores were calculated from items included in the intake survey. Because the ASI composite severity scores are based on past-30-day measures, it is important to take into account clients being in a controlled environment all 30 days when examining composite severity scores. Thus, alcohol and drug severity composite scores are presented in Table AB.4 separately for those individuals who were not in a controlled environment all 30 days before entering the recovery center and individuals who were in a controlled environment all 30 days before entering the recovery center. The highest composite score is 1.0 for each of the two substance categories.

Of the individuals who were not in a controlled environment all 30 days, the majority met or surpassed the Addiction Severity Index (ASI) composite score (CS) cutoff for alcohol and/or drug use disorder, with no difference by follow-up status (87.1% for not followed up and 89.1% for followed up individuals; see Table AB.4). Among individuals who were not in a controlled environment all 30 days before entering the program, the average score on the alcohol severity composite score was .32 for individuals who were not followed up and .30 for individuals who were followed up. Among clients who were not in a controlled environment all 30 days before entering the program, the average score for the drug severity composite score was .31 for those not followed up and .30 for those who were followed up. These average cutoff scores include individuals with scores of 0 on the composites.

Of the individuals who were in a controlled environment all 30 days before entering the recovery center, less than half met or surpassed the cutoff for the ASI CS for alcohol and/or drug dependence, with no difference by follow-up status (see Table AB.4). Among individuals who were in a controlled environment all 30 days before entering the program, the average score for the alcohol severity composite score for both those not followed-up and for those who were followed-up was .15. Of clients who were in a controlled environment all 30 days, the means for the drug severity composite scores were .16 for those who were not followed up and .15 for those who were followed up. The percent of individuals who met or surpassed the cutoff for the ASI CS for severe SUD did not differ significantly by follow-up status.

TABLE AB.4. SELF-REPORTED ALCOHOL AND DRUG USE SEVERITY AT INTAKE

Recent substance use problems among individuals who were....	Not in a controlled environment all 30 days before entering the recovery center		In a controlled environment all 30 days before entering the recovery center	
	FOLLOWED UP		FOLLOWED UP	
	NO (n = 875)	YES (n = 165)	NO (n = 749)	YES (n = 135)
Percent of Individuals with ASI composite score equal to or greater than cutoff score for ...				
alcohol or drug use disorder	87.1%	89.1%	45.1%	43.7%
alcohol use disorder	53.3%	50.9%	26.8%	27.4%
drug use disorder	74.4%	75.2%	33.1%	32.6%
Average ASI composite score for alcohol use <sup>a</sup>	.32	.30	.15	.15
Average ASI composite score for drug use <sup>b</sup>	.31	.30	.16	.15

a Score equal to or greater than .17 is indicative of alcohol dependence.

b Score equal to or greater than .16 is indicative of drug dependence.

## SUBSTANCE ABUSE TREATMENT

A majority of RCOS clients reported ever having been in substance abuse treatment in their lifetime, with no difference by follow-up status (see Table AB.5). Among clients who reported a history of substance abuse treatment, the average number of lifetime treatment episodes was 3.5 for individuals who did not complete a follow-up interview and 3.6 for individuals who did complete a follow-up interview.

TABLE AB.5. HISTORY OF SUBSTANCE ABUSE TREATMENT IN LIFETIME

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
Ever been in substance abuse treatment in lifetime	65.3%	71.3%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 1,061)	(n = 214)
Average number of times in treatment	3.5	3.6

## MENTAL HEALTH AT INTAKE

The mental health questions included in the RCOS 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 the 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?” Two-thirds of clients reported symptoms that met study criteria for depression, with no significant difference by follow-

up status (see Table AB.6).

A total of 7 questions were asked to determine if individuals met criteria for Generalized Anxiety, including the screening question: “In the 6 months before you entered this recovery center, did you worry excessively or were you anxious about multiple things on more days than not (like family, health, finances, school, or work difficulties) all 6 months?” Three-quarters of clients reported symptoms that met the criteria for Generalized Anxiety, with no significant difference by follow-up status.

Two questions were included in the intake survey that asked about thoughts of suicide and attempted suicide in the 6 months before clients entered recovery centers. Less than one-third of individuals who did not complete a follow-up interview (31.7%) and 31.3% of individuals who did complete a follow-up interview reported suicide ideation and/or attempts, with no difference by follow-up status (see Table AB.6).

TABLE AB.6. PERCENT OF INDIVIDUALS REPORTING MENTAL HEALTH PROBLEMS IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
Depression	66.8%	66.3%
Generalized Anxiety	75.6%	74.0%
Suicidality (e.g., thoughts of suicide or suicide attempts)	31.7%	31.3%

## CRIMINAL JUSTICE SYSTEM INVOLVEMENT AT INTAKE

The majority of individuals who were not followed-up (72.7%) and 73% of those who were followed-up self-reported being referred to the recovery center by the criminal justice system (e.g., judge, drug court, probation, Department of Corrections; not depicted in a Table or Figure). Not all of those referred by the criminal justice system were considered DOC-referred individuals whose costs were covered by the DOC.

Over half of individuals (52.9% of those not followed up and 56.0% of those followed up) reported they had been arrested in the 6 months before entering the recovery center (see Table AB.7). Over 70% of clients in both samples were under supervision by the criminal justice system (e.g., on probation or parole) when they entered the recovery center.



TABLE AB.7. CRIMINAL JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
Arrested for any charge in the 6 months before entering the Recovery Center	52.9%	56.0%
Currently under supervision by the criminal justice system	71.7%	72.3%
On probation	48.5%	54.3%
On parole	25.4%	20.0%

The majority of clients in each group reported being incarcerated for at least one day in the past 6 months before entering the program (See Table AB.8). Among those who reported being incarcerated at least one day in the 6 months before entering the program, the average number of days they were incarcerated did not differ by follow-up status.

TABLE AB.8. INCARCERATION HISTORY IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
Incarcerated at least one day	73.3% (n = 1,191)	75.3% (n = 226)
Among those incarcerated at least one day, the average number of days incarcerated	83.9	81.8

## PHYSICAL HEALTH AT INTAKE

Table AB.9 presents comparison of physical health status of clients who were not followed up with clients who were followed up. There were no significant differences by follow-up status. About 60% of clients reported they had ever been told by a doctor they had a chronic health problem, such as hepatitis C, cardiovascular disease, arthritis, asthma, severe dental problems, and diabetes. About one-quarter of clients in each group reported they had experienced chronic pain in the 6 months before intake. When asked about the 30 days before they entered the recovery center, clients who were followed up and those who were not reported similar average number of days their physical health and mental health were not good.

TABLE AB.9. CLIENT'S PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
Client was ever told by a doctor that client had a chronic medical problem	59.7%	62.3%
Experienced chronic pain (pain lasting 3 months or more)	25.5%	25.3%
In the 30 days before entering the program:		
Average number of days physical health was not good	9.6	9.3
Average number of days mental health was not good	17.2	16.4

## ECONOMIC AND LIVING CIRCUMSTANCES AT INTAKE

Table AB.10 describes clients' level of education when entering the recovery center. A minority of individuals had less than a high school diploma or GED. Over 80% of clients in both groups had a GED or high school diploma or higher level of education at Phase I intake.

TABLE AB.10. CLIENTS' HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE<sup>94</sup>

	FOLLOWED UP	
	NO n = 1,624	YES n = 278
HIGHEST LEVEL OF EDUCATION COMPLETED		
Less than GED or high school diploma	18.0%	16.5%
GED/high school diploma or higher	82.0%	83.5%

There were no differences in usual employment status at intake by follow-up status (see Table AB.11). More than half of followed up and not followed up clients were unemployed, either because they were not looking for work due to being a student, homemaker, retired, disabled, or in a controlled environment or because they were looking for work. Of the individuals who reported working at least part-time in the 6 months before entering the recovery center, the average number of months worked was 4.0 for clients not followed up and 4.2 for clients followed up.

<sup>94</sup> Twenty-two individuals who had a follow-up had invalid data for level of education.

TABLE AB.11. EMPLOYMENT IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
USUAL EMPLOYMENT STATUS		
Employed full-time	35.0%	35.3%
Employed part-time (including seasonal, occasional work)	12.3%	10.7%
Unemployed and not looking for work due to being a student, homemaker, retired, disabled, or in a controlled environment	28.2%	27.7%
Unemployed	24.5% (n = 768)	26.3% (n = 138)
AMONG THOSE WHO WERE EMPLOYED, AVERAGE NUMBER OF MONTHS CLIENT WAS EMPLOYED	4.0 months	4.2 months

There were no significant differences in living situation at intake between individuals who completed a follow-up interview and individuals who did not. The majority of individuals reported their usual living arrangement in the 6 months before entering the recovery center was in a private residence (i.e., their own home or apartment or someone else's home or apartment; see Table AB.12). About 40% of individuals were living in a correctional facility (i.e., jail or prison) before entering the recovery center. A small number of individuals reported their usual living arrangement had been in a shelter or on the street, or in a non-correctional facility controlled environment such as a recovery center, residential treatment, sober living home, or hospital.

At the time individuals entered recovery centers, about 40% of clients considered themselves to be homeless, with many of those individuals stating that they were temporarily living with family or friends, staying on the street or living in a car, or in jail or prison (see Table AB.12).

TABLE AB.12 LIVING SITUATION OF CLIENTS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
USUAL LIVING ARRANGEMENT IN THE 6 MONTHS BEFORE ENTERING THE PROGRAM		
Own or someone else's home or apartment	49.6%	49.0%
Jail or prison	40.1%	39.7%
Shelter or on the street	6.0%	6.0%
Residential program, hospital, recovery center, or sober living home	3.2%	2.3%
Other living situation	1.1%	3.0%
CONSIDERS SELF TO BE CURRENTLY HOMELESS <sup>a</sup>		
Why the individual considers himself/herself to be homeless	(n = 659)	(n = 120)
Staying temporarily with friends or family	57.7%	65.8%
Staying on the street or living in a car	20.6%	13.3%
In jail or prison	13.4%	10.0%
Staying in a shelter	6.2%	7.5%
In residential treatment, or other recovery center	1.1%	1.7%
Staying in a hotel or motel	0.5%	1.7%
Other reason	0.6%	0.0%

a—These other responses report that the client lost their home and how but not where they were staying temporarily

About half of clients reported they had difficulty meeting any needs for financial reasons in the 6 months before entering the program, with no significant difference by follow-up status (see Table AB.13). A similar percent of clients who were followed up and clients who were not followed up reported they had difficulty meeting basic living needs or health care needs.

TABLE AB.13. CLIENTS WHO HAD DIFFICULTY MEETING BASIC NEEDS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,624	YES n = 300
CLIENT'S HOUSEHOLD HAD DIFFICULTY MEETING ANY NEEDS IN THE 6 MONTHS BEFORE ENTERING THE PROGRAM		
Basic living needs (e.g., housing, utilities, telephone service, food)	45.4%	45.0%
Health care needs	30.7%	28.7%
Average number of needs had difficulty meeting	1.9	1.8

## APPENDIX C.

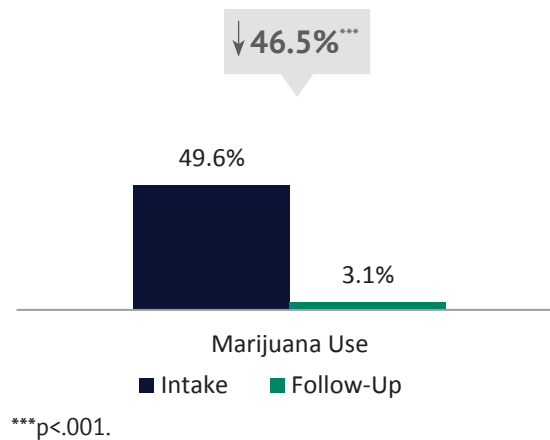
# CHANGE IN USE OF SPECIFIC CLASSES OF DRUGS FROM INTAKE TO FOLLOW-UP

## CHANGE IN 6-MONTH DRUG USE FROM INTAKE TO FOLLOW-UP FOR INDIVIDUALS NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER

### PAST-6-MONTH MARIJUANA USE

Clients' self-reported marijuana use decreased significantly by 46.5% from the 6 months before entering the program to the 6 months before follow-up (see Table AC.1). There was no significant difference in use of marijuana by gender at intake or follow-up.

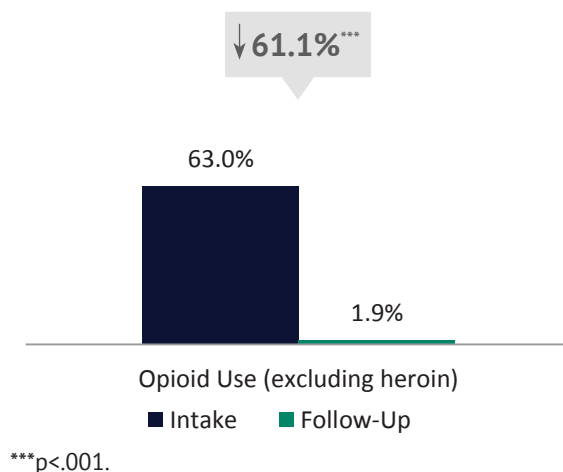
FIGURE AC.1. MARIJUANA USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



### PAST-6-MONTH OPIOID (EXCLUDING HEROIN) USE

Individuals' self-reported use of opioids including prescription opiates, methadone, and buprenorphine-naloxone (bup-nx) decreased significantly by 61.1% from the 6 months before entering the recovery center to the 6 months before follow-up (see Table AC.2). There was no significant gender difference in use of opioids (excluding heroin) at intake or follow-up.

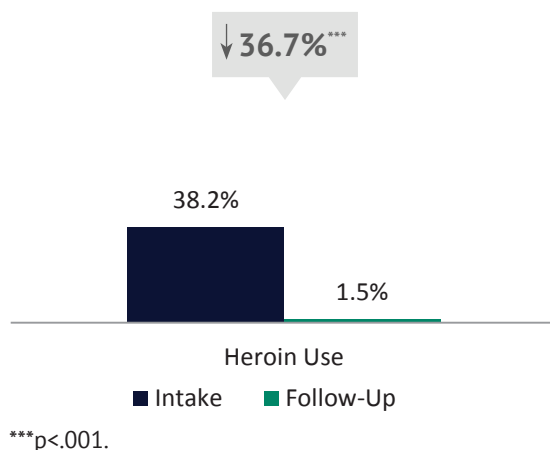
FIGURE AC.2. OPIOID USE (EXCLUDING HEROIN) FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



## PAST-6-MONTH HEROIN USE

The number of individuals who reported using heroin decreased significantly by 36.7% in the period before entering the recovery center to the 6 months before follow-up (see Table AC.3). There was no significant difference in use of heroin at intake or follow-up by gender.

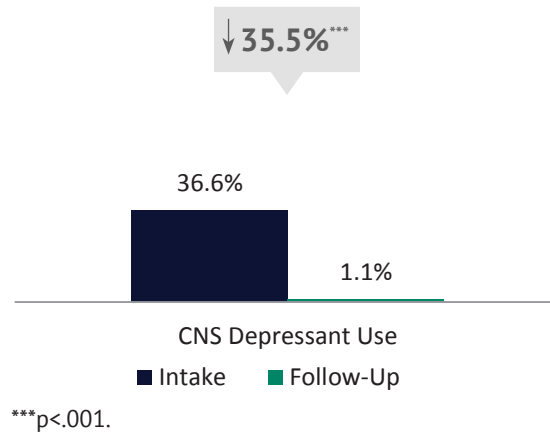
FIGURE AC.3. HEROIN USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



## PAST-6-MONTH CENTRAL NERVOUS SYSTEM (CNS) DEPRESSANT USE

The number of individuals who reported using CNS depressants (e.g., tranquilizers, barbiturates, benzodiazepines, sedatives) decreased significantly by 35.5% in the 6 months before entering the recovery center to the 6 months before follow-up (see Table AC.4). There were no gender differences at intake or follow-up for use of CNS depressants.

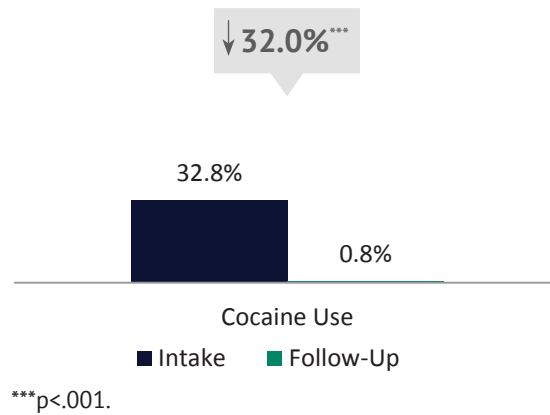
FIGURE AC.4. CNS DEPRESSANT USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



### PAST-6-MONTH COCAINE USE

The number of individuals who reported using cocaine decreased significantly by 32.0% in the period before entering the recovery center to the 6 months before follow-up (see Table AC.5). There was no significant difference in use of cocaine at intake or follow-up by gender.

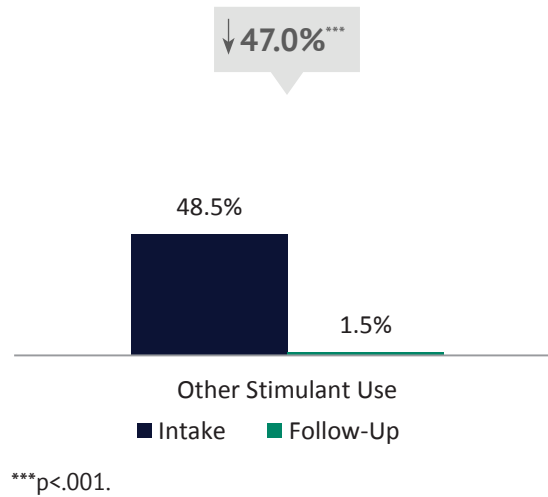
FIGURE AC.5. COCAINE USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



### PAST-6-MONTH OTHER STIMULANT USE

The number of individuals who reported using other stimulants (e.g., amphetamine, methamphetamine, ecstasy, Ritalin) decreased significantly by 47.0% in the period before entering the recovery center to the 6 months before follow-up (see Table AC.6).

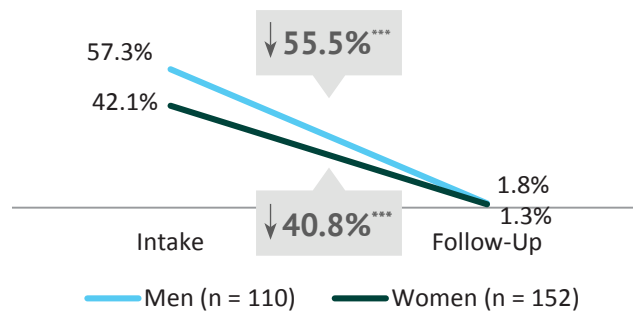
FIGURE AC.6. OTHER STIMULANT USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



### GENDER DIFFERENCES IN OTHER STIMULANT USE

Significantly more men than women reported past-6-month use of other stimulants (e.g., amphetamine, methamphetamine, ecstasy, Ritalin) at intake (see Figure AC.7). The number of men and women reporting other stimulant use decreased significantly from intake to follow-up. There were no gender differences at follow-up.

FIGURE AC.7. GENDER DIFFERENCES IN PAST-6-MONTH OTHER STIMULANT USE AT INTAKE AND FOLLOW-UP (N = 262)<sup>a</sup>



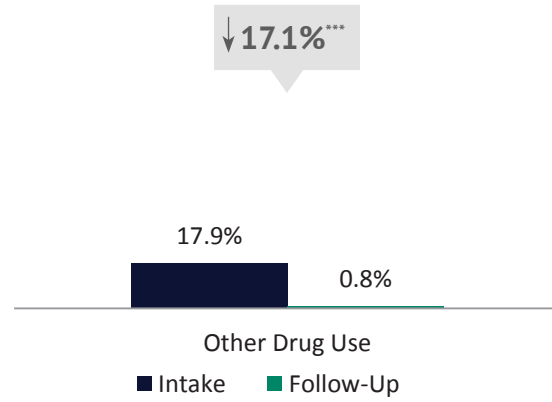
a—Significant difference by gender at intake ( $p < .05$ ).  
\*\*\*p<.001.

### PAST-6-MONTH USE OF OTHER DRUGS

The number of individuals who reported using other illegal drugs (e.g., inhalants, hallucinogens, synthetic drugs) decreased significantly by 17.1% (see Table AC.8). There were no gender differences in the percent of clients who reported using other illegal drugs at intake or follow-up.



FIGURE AC.8. USE OF OTHER DRUGS FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER (N = 262)



\*\*\*p<.001.

## APPENDIX D.

# LENGTH OF SERVICE, DOC-REFERRAL STATUS, AND TARGETED OUTCOMES

*This section describes the relationship between the length of service (i.e., number of days between entry into the program and discharge), DOC referral status, and targeted outcomes at follow-up: (1) illegal drug or alcohol use (yes/no) and average ASI alcohol and drug composite scores, (2) mental health (e.g., meeting criteria for depression or anxiety), (3) employment status (e.g., employed or unemployed), and (4) criminal justice system involvement (e.g., arrested at least once, spent at least one night incarcerated).*

Individuals whose per diem was paid by DOC (234.9 days) did not have significantly different lengths of service in the recovery centers compared to individuals whose per diem was not paid by DOC (224.4 days;  $t(1, 272) = -.846, p > .05, ns$ ).

To better understand the relationship between DOC referral status, length of service in the recovery centers, and outcomes at follow-up, we conducted multivariate analyses. We ran several logistic regression models with separate binary outcomes as the dependent variable for each model.<sup>95</sup> The outcomes examined were: (1) substance use (i.e., alcohol and/or drug use), (2) meeting criteria for depression, (3) meeting criteria for anxiety, (4) employed in the 6 months before follow-up (yes/no), (5) arrested in the 6 months before follow-up (yes/no), and (6) incarcerated in the 6 months before follow-up (yes/no). Gender, DOC-referral status, and length of service (in days) were included in the models as predictor variables. OLS regression was used to examine the relationship between the predictor variables (e.g., gender, DOC-referral status, and length of service) and outcomes that were continuous variables: the ASI Alcohol composite score, the ASI Drug composite score, and number of months employed in the 6 months before follow-up.

There were two statistically significant associations between the predictor and outcome variables. First, length of service was significantly associated with the odds of meeting criteria for depression in the 6 months before follow-up, such that shorter lengths of service were associated with greater odds of meeting criteria for depression in the 6 months before follow-up (OR<sub>adj</sub> = .993,  $p < .01$ ). Second, individuals with lower length of service reported greater odds of being incarcerated in the 6 months before follow-up (OR<sub>adj</sub> = .991,  $p < .001$ ). There were no significant associations between DOC-referral status and any of the targeted outcomes.

In conclusion, after controlling for gender, DOC referral was not associated with any of the outcomes; however, length of service was associated with two outcomes:

- Shorter length of service was associated with greater odds of meeting criteria for depression in the 6 months before follow-up.
- Shorter length of service was associated with greater odds of being incarcerated in the 6 months before follow-up.

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<sup>95</sup> The p level for statistical significance in the multivariate analyses was set at  $p < .01$ .