

**FINDINGS FROM THE
RECOVERY CENTER
OUTCOME STUDY**

2016 REPORT

Executive Summary

Recovery Kentucky was created to help Kentuckians recover from substance abuse, which often leads to chronic homelessness. There are 15 Recovery Kentucky centers across the Commonwealth, providing housing and recovery services for up to 1,800 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. The Recovery Kentucky task force was created in 2008 to ensure the continued effectiveness and financial success of this initiative.

This is the fifth annual Recovery Center Outcome Study (RCOS) report. The goal of RCOS is to examine client satisfaction, recovery support, and outcomes for

several specific targeted factors including: (1) substance use; (2) mental and physical health; (3) education; (4) employment; (5) homelessness and living situation; and (6) criminal justice involvement. In addition, RCOS estimates avoided costs to society in relation to the cost of recovery services. This report describes outcomes for 285 men and women who participated in a Recovery Kentucky program, completed an intake interview at entry to Phase 1 and agreed to participate in RCOS between July 1, 2013 and June 30, 2014 (i.e., FY 2014), and then completed a 12-month follow-up survey between July 2014 and June 2015.

Overall, in FY 2014 1,949 clients from all 14 Recovery Kentucky programs across the state completed the RCOS intake interview. Clients' average age was 33 years old and ranged from 19 years old to 70 years old. A little more than half (52.1%) were male and 47.7% were female. A

random sample of clients stratified by gender and by Department of Corrections (DOC) referral into the program was drawn and was also stratified by month of intake.¹ Overall, the 285 clients who were followed up received, on average, about 8.2 months of services from the recovery centers. There was no difference in length of service between clients who were referred by DOC and clients who were not referred by DOC. Analysis examining the relationship between length of service, DOC referral status, and several targeted outcomes showed no significant associations between DOC referral status

¹ Minor modifications to the sampling plan were made to oversample clients from programs that had not yet received a program specific report in the prior three years because increasing the number of clients from those programs to be included in the follow-up sample would allow us to examine program specific outcomes for those programs. Thus, at the completion of the follow-up period, among the 285 clients with follow-up interviews, 53.0% (n = 151) were referred by the Department of Corrections (DOC) and 47.0% (n = 134) were not DOC-referred.

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 using alcohol or drugs and with fewer months of employment in the 6 months before follow-up.

Comparisons between those who completed a follow-up and those who did not found few significant differences on any of the key targeted factors including pre-program education, employment, living status, substance use, mental health, criminal justice involvement, and treatment history. For those who completed a follow-up, 10.9% were still involved with the program at the time of the follow-up, with most of those clients in Phase II of the program.

Results show that clients were largely satisfied with their Recovery Kentucky program experience. On a scale of 1 to 10, with 1 being the worst possible experience and 10 being the best possible

experience, clients rated their program experience, on average, as 8.7. Further, over 95% of clients reported being treated with respect, understanding what was expected of them, being told their rights as a client by staff, and feeling better about themselves as a result of their program experience. The most commonly self-reported positive outcomes of the program included reductions in substance use, positive interactions and relationships with other people, improved mental health and feelings about self, and major life changes.

In addition to the positive program experience reported by clients, their overall quality of life improved

significantly. Clients reported significantly higher quality of life after the program, having significantly more positive feelings and significantly fewer negative feelings, and higher satisfaction with life at follow-up compared to the period before they entered the recovery program. Similarly, clients reported fewer stress-related health consequences and fewer days their physical and mental health were not good at follow-up compared to intake.

At follow-up, there were significant reductions in substance use, improvements in mental health, employment and living situation, decreased involvement with the criminal justice system, and improvements in recovery

A trend analysis from FY 2010 to FY 2014 shows that the percentage of clients reporting at intake they had used opioids has significantly decreased while the percentage of clients that used heroin has significantly increased

supports.

Specifically, 84.6% of clients indicated they used illegal drugs in the 6 months before entering the recovery center while during the 6 month follow-up period, only 14.2% of clients reported using illegal drugs. There was a similar trend for alcohol use as 62.8% of clients reported using alcohol in the 6 months before entering the recovery center and only 14.2% reported using alcohol during the follow-up period.

A trend analysis from FY 2010 to FY 2014 shows that even though higher percentages of clients reported using opioids than using heroin each fiscal year, the percentage of clients reporting at intake they had used opioids (i.e., prescription opiates, methadone, and buprenorphine) has significantly decreased while the percentage of clients that used heroin has significantly increased. This trend corresponds to other data sources, including the National Drug Use and Health

Survey,² which have found an increase in the percentage of individuals who use heroin as the number of individuals who use prescription opiates/opioids decreases.

Analysis shows significant improvements in mental health. The majority of clients (71.6%) met study criteria for depression at intake and by follow-up only 10.5% of clients met criteria for depression. At intake, 76.1% of clients reported symptoms that met criteria for generalized anxiety and at follow-up 14.7% met criteria for generalized anxiety. In addition, there was a significant decrease in the number of clients reporting criteria for both depression and generalized anxiety from 66.7% at intake to 7.0% at follow-up. The percentage of clients reporting suicide ideation and/or attempts

decreased significantly from 32.6% at intake to 2.8% at follow-up.

Employment and living situation improved from intake to follow-up. At intake 47.2% of clients reported working at least 1 month in the 6 months before program entry and 76.1% reported working at least 1 month during the follow-up period, representing a 61% increase. More men reported working at intake (60.3% vs. 37.4%) but by follow-up, the number of women who reported being employed at least one month increased by 95% to 73.0% so there was no difference by gender at follow-up. Also, the percentage of clients who considered themselves currently homeless decreased from 34.7% at intake to 7.6% at follow-up. Further, the number of clients who reported economic hardship decreased significantly from intake to follow-up. Nearly half of clients (48.1%) reported at intake they had difficulty meeting basic living needs (e.g., food, shelter,

² 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.

utilities, telephone) in the 6 months before entering the recovery center. By follow-up this number had decreased 66% to 16.3%. Similarly, the number of individuals who reported having difficulty obtaining health care for financial reasons (e.g., doctor, dental, and prescription medications) decreased from

at least one day in jail or prison decreased 87% from 71.1% at intake to 9.2% at follow-up.

Furthermore, 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 36.8% at intake to

to society in relation to expenditures on recovery services, estimates suggest that for every dollar spent on Recovery Kentucky programs there was a \$2.99 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).

Estimates suggest that for every dollar spent on Recovery Kentucky programs there was a \$2.99 return in avoided costs

42.0% at intake to 12.5% at follow-up.

Fewer clients were involved in the criminal justice system during the follow-up period compared to the 6 months before they entered the recovery center. The number of clients who reported being arrested decreased 51.9% in the 6 months before entering the recovery center to 7.4% in the 6 months before follow-up. Likewise, the percentage of clients reporting they spent

84.9% at follow-up. Also there was an increase in the average number of meetings clients attended. There was an 11% increase in the percentage of clients who felt they had interactions with family and friends who were supportive of their recovery. Finally, the average number of people individuals reported they could count on for recovery support more than tripled from intake to follow-up.

Examining the total costs of drug and alcohol abuse

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 problems, improved employment situations, improved living situations, and a decrease in involvement with the criminal justice system. Results also suggest clients appreciate their experiences in the recovery centers and have much more support for their recovery as well as a higher quality of life after participating in Recovery Kentucky.

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FINDINGS FROM THE RECOVERY CENTER OUTCOME STUDY 2016 REPORT

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Overview of the Report

Recovery Kentucky was created to help Kentuckians recover from substance abuse, which often leads to chronic homelessness. There are 15 Recovery Kentucky centers across the Commonwealth, providing housing and recovery services for up to 1,800 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. The Recovery Kentucky task force was created in 2008 to ensure the continued effectiveness and financial success of this initiative.³

This is the fifth 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). All 14 of the currently established Recovery Kentucky programs participate in this Recovery Center Outcome Study (RCOS). There are currently 7 Recovery Kentucky facilities for women and 7 facilities for men across the state.^{4,5}

Figure 1 below shows the program modules with the first component being Safe, Off-the-Street Sobriety (SOS) which introduces the client to the program. Once clients successfully complete SOS they will move into the Motivational Tracks which includes assessments on their motivation to change as well as their behaviors and attitudes. After SOS and the Motivational Tracks are completed clients enter Phase I. Phase I lasts about 6 months on average, and then clients can move to Phase 2. If clients drop out of the program during the motivational tracks or Phase I, when they decide to come back into the program they will again start with SOS.

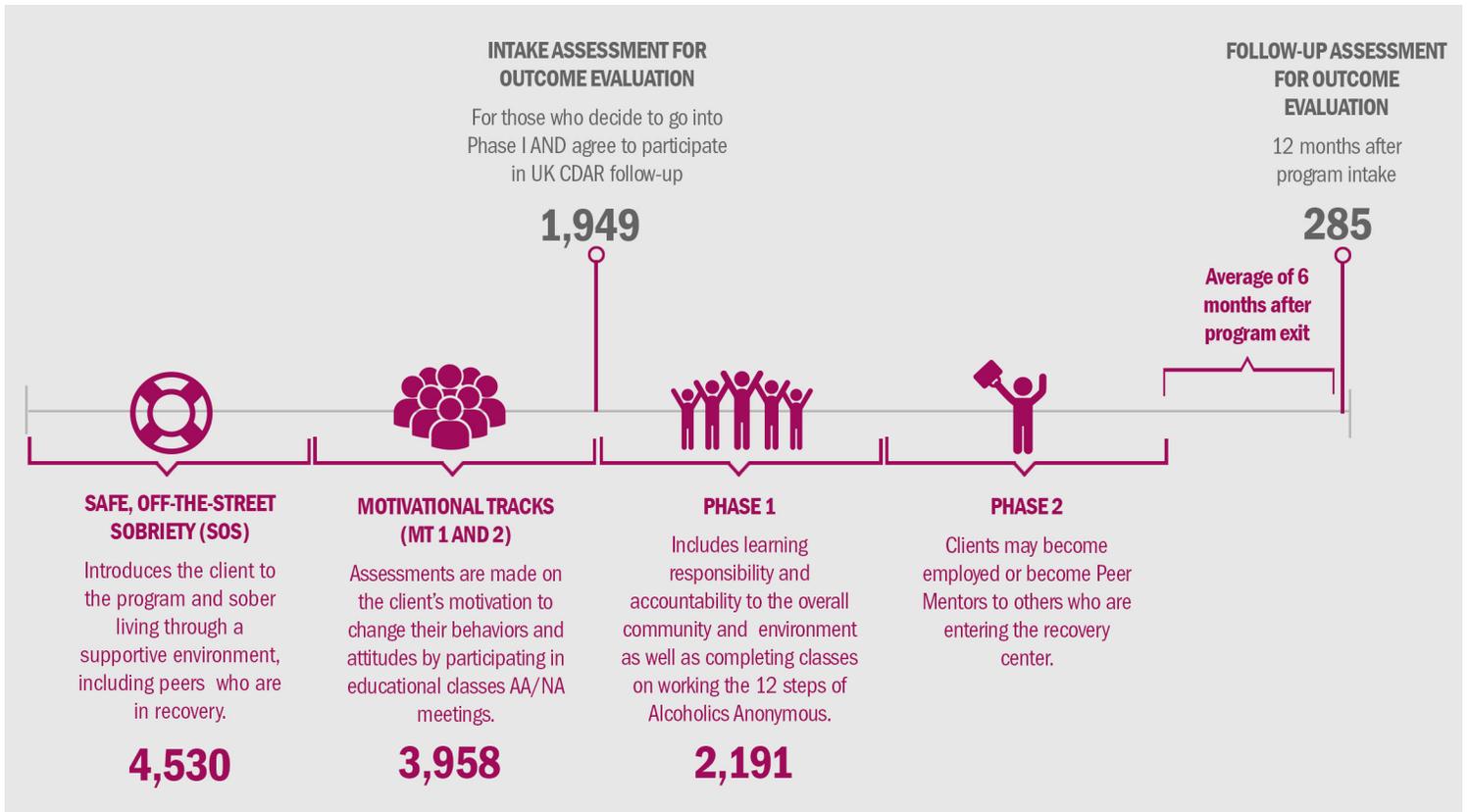
³ For more information about Recovery Kentucky, contact KHC's Mike Townsend toll-free in Kentucky at 800-633-8896 or 502-564-7630, extension 715; TTY711; or email MTownsend@kyhousing.org.

⁴ 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.

⁵ An eighth recovery center for men opened in December 2014 (Hickory Hill Recovery Center). This center was not included in this year's outcome evaluation.

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 Sobriety and Motivational Tracks 1 and 2 and who have made the decision to enter Phase 1 are included in the outcome evaluation. The Phase 1 intake interview assesses targeted factors such as substance use, mental health symptoms, education, employment status, living situation, and criminal justice involvement prior to entering the recovery center. Intake interview items ask about the 6-month or 30-days before clients entered the recovery center (i.e., pre-program). Then, a 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 (i.e., follow-up). The follow-up interviews are conducted over the telephone by an interviewer at UK CDAR. Client responses to the follow-up interviews are kept confidential to help facilitate the honest evaluation of client outcomes and satisfaction with program services.

Results are presented in ten main sections including:

Section 1: Overview of RCOS Method 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, 2013 and June 30, 2014. This section also describes characteristics for clients who completed a 12-month follow-up survey conducted by UK CDAR between July 1, 2014 and June 30, 2015.

Section 2: Client Satisfaction with Recovery Kentucky Programs and Quality of Life Ratings. This section describes three aspects of client satisfaction: (1) overall client satisfaction; (2) client ratings of program experiences; and (3) quality of life rating changes.

Section 3: Substance Use. This section describes pre-program to follow-up 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. Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

Section 4. Mental Health, Stress, and Physical Health. This section describes pre-program to follow-up change on mental health, stress, and physical health including the following factors: (1) depression; (2) generalized anxiety; (3) suicidal thoughts or attempts; (4) number of days physical and mental health were not good; and (5) stress-related health consequences. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 5. Education and Employment. This section examines pre-program to follow-up changes in education and employment including: (1) highest level of education completed; (2) the percentage of clients who worked full-time or part-time; (3) the number of months clients were employed full-time or part-time, among those who were employed the year prior to program entry; (4) median hourly wage among employed individuals; and (5) the percentage of clients who expect to be employed in the next 6 months. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 6. Homelessness, Living Situation, and Economic Hardship. This section of target factors examines the clients' living situation before they entered the program (i.e., intake) 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. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 7. Criminal Justice System Involvement. This section examines pre-program to follow-up change in clients' involvement with the criminal justice system from intake to follow-up. Specifically, information about: (1) arrests; (2) incarceration; and (3) supervision by the criminal justice system. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.

Section 8. Recovery Supports. This section focuses on three main changes in recovery supports: (1) attending mutual help recovery group meetings; (2) recovery supportive interactions with family/friends in the past 30 days; and (3) the number of people the individual said they could count on for recovery support.

Section 9: Cost and Implications for Kentucky. Section 9 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. The cost savings were then divided by the cost of providing the Recovery Kentucky Program to the 285 individuals in the follow-up sample, yielding a return of \$2.99 for every dollar spent on recovery programs.

Section 10. 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 Method 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, 2013 and June 30, 2014.

RCOS includes a face-to-face intake interview conducted by recovery center staff with clients as they enter Phase I to assess targeted factors such as substance use, mental health symptoms, education, employment, living situation, involvement with the criminal justice system, and recovery supports prior to entering the recovery center. Intake interviews are conducted only with clients who agree to be included in the outcome evaluation. Intake interview items ask about the 6-month or 30-day periods before clients entered the recovery center (i.e., pre-program). From July 1, 2013 through June 30, 2014 (i.e., FY 2014), 1,949 clients completed an intake survey.⁶

DESCRIPTION OF RCOS CLIENTS AT PHASE I INTAKE

Table 1.1 presents demographic information on clients with an intake survey submitted in FY 2014. Clients' average age was 32.8 years old and men made up 52.1% of the sample. The majority of clients (89.2%) were White and 8.5% were Black. Half of the RCOS clients reported they had never married, 32.7% were separated or divorced, and only 15.3% were married at intake.

TABLE 1.1. DEMOGRAPHICS FOR ALL RCOS CLIENTS AT PHASE I INTAKE IN FY 2014 (N = 1,949)^{7,8,9}

AGE	32.8 (Min. = 19, Max. = 70)
GENDER	
Male	52.1%
Female	47.7%
Transgender	0.2%
RACE	
White	89.2%
Black/African American	8.5%
Other or multiracial	2.4%
MARITAL STATUS	
Never married	50.0%
Separated or divorced	32.7%
Married	15.3%
Widowed	2.0%
HAS CHILDREN UNDER 18 YEARS OLD	62.8%

Figure 1.1 shows the referral source for RCOS clients. The majority of clients (70.8%) were referred to the recovery center by the criminal justice system (e.g., judge, probation officer, Department of

⁶ 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.

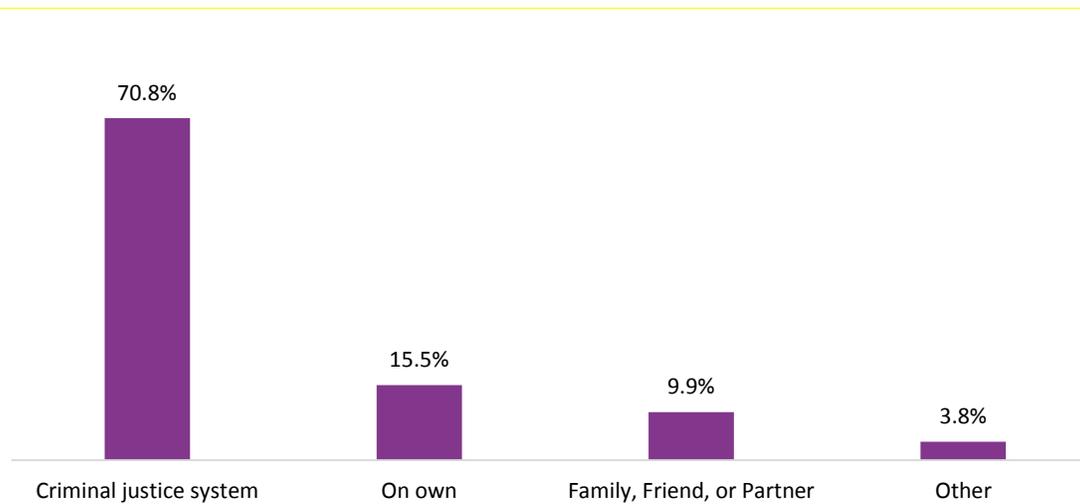
⁷ Two clients had missing data for date of birth.

⁸ One client reported 'unsure' for race.

⁹ Five clients had missing data on children under the age of 18.

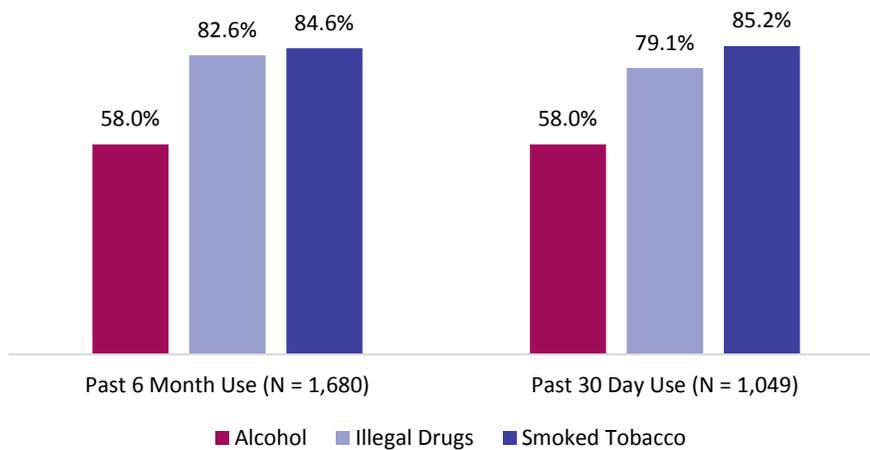
Corrections). The next two largest referral categories were the client decided to get help on his/her own (15.5%), and the client was referred to the recovery center by a relative, friend, or partner (9.9%). The remaining 3.8% of clients stated other referral sources such as a treatment program, Department of Community Based Services, a health care provider, a mental health care provider, or another recovery center.

FIGURE 1.1. REFERRAL SOURCE FOR ALL RCOS CLIENTS (N = 1,949)



The majority of clients reported using illegal drugs, alcohol, and tobacco in the 6-month period before entering the recovery center.¹⁰ Similar percentages 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.¹¹

FIGURE 1.2 ALCOHOL, DRUG AND TOBACCO USE 6 MONTHS AND 30 DAYS BEFORE TREATMENT



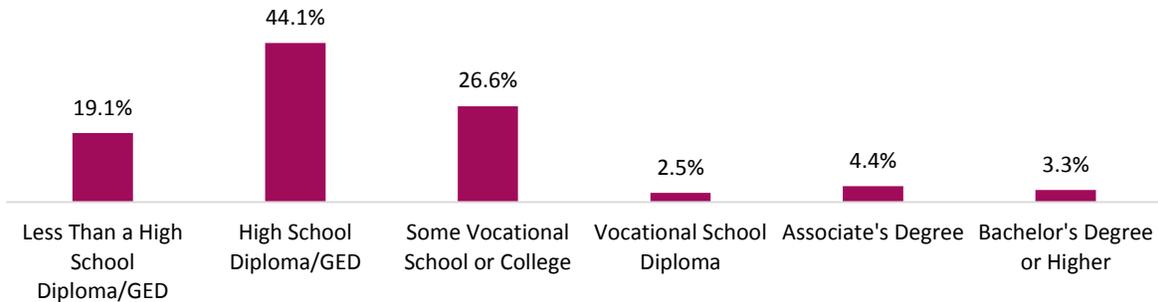
Less than one in five clients (19.1%) had less than a high school diploma or GED at intake. The highest

¹⁰ Because being in a controlled environment inhibits substance use, individuals who were in a controlled environment the entire period before entering the recovery center (N = 269) are not included in the analysis of substance use in the past 6 month period before entering the recovery center.

¹¹ Because being in a controlled environment inhibits substance use, individuals who were in a controlled environment the entire period before entering the recovery center (N = 900) are not included in the analysis of substance use in the past 30 days before entering the recovery center.

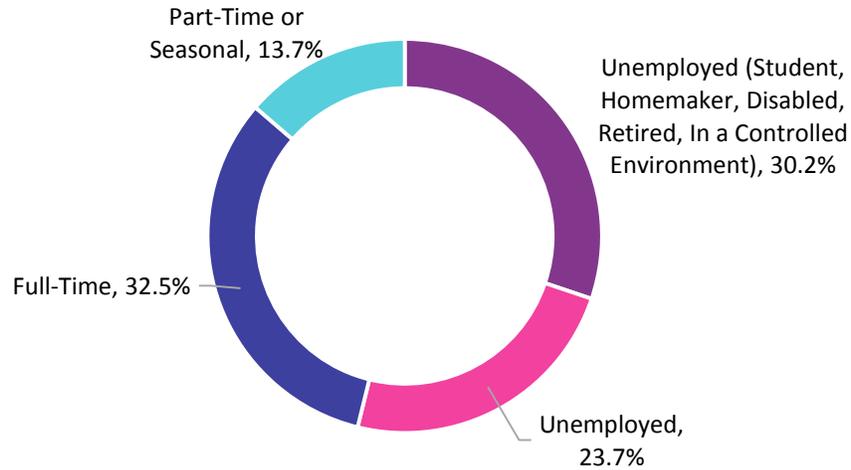
level of education for 44.1% of the sample was a high school diploma or GED. Over one-fourth of clients (26.6%) had completed some vocational/technical school or college. Only a minority of clients had completed vocational/technical school (2.5%), an associate’s degree (4.4%), or a bachelor’s degree or higher (3.3%).

FIGURE 1.3. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE (N = 1,944)¹²



Almost one-third of clients (32.5%) reported their usual employment status in the 6 months before they entered the recovery center was full-time employment, with 13.7% reporting part-time or seasonal work (see Figure 1.4). Three in ten (30.2%) reported they were unemployed because they were a full-time student, parent/homemaker, retired, disabled, or in a controlled environment and nearly one-fourth (23.7%) reported they were unemployed for some other reason (i.e., looking for work).

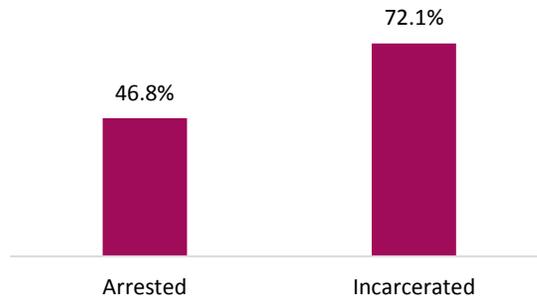
FIGURE 1.4. USUAL EMPLOYMENT STATUS AT INTAKE (N = 1,949)



Less than half of individuals reported being arrested at least once (46.8%) and almost three-fourths reported being incarcerated at least one night (72.1%) in the 6 months before they entered the recovery center (see Figure 1.5).

¹² Five cases had inconsistencies in highest level of education reported at intake and follow-up, which were changed to missing values.

FIGURE 1.5. CRIMINAL JUSTICE INVOLVEMENT BEFORE ENTERING THE RECOVERY CENTER (N = 1,949)



RCOS FOLLOW-UP SAMPLE

This report describes outcomes for 285 men and women who participated in a Recovery Kentucky program and who completed an intake interview at Phase 1 entry in FY 2014 and a follow-up telephone interview about 12 months (average of 358.5 days) after the intake survey was completed. Data from Kentucky Housing Corporation shows that the average length of service for the 285 program participants included in this report was 245.5 days, which includes time in Safe Off the Streets, Motivational Tracks, Phase 1 and Phase 2.¹³ The average number of days after program exit follow-up interviews were conducted was 193.1, which is a little more than 6 months. Detailed information about the methods can be found in Appendix A.

All individuals who give at least one mailing address and one phone number, or two phone numbers if they do not have a mailing address in their locator information, are eligible for selection into the 12-month follow-up component of the study.¹⁴ The follow-up interviews are conducted over the telephone by an interviewer at UK CDAR with eligible individuals. Client responses to the follow-up interview are kept confidential to help facilitate the honest evaluation of client outcomes and satisfaction with program services.

The target number of follow-up surveys to be completed each fiscal year is 280. Similar to the follow-up sampling plan used in the RCOS 2015 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 DOC referral status 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.¹⁵ However, minor modifications to the sampling plan were made to oversample clients from certain recovery centers that had not yet received a program-specific report in the prior three years. By increasing the number of clients from those programs in the follow-up sample, the sample size would then be large enough to examine program-specific outcomes for those centers.¹⁶ Thus, at the completion of the follow-up period, among the 285 clients with follow-up interviews, 53.0% (n = 151) were referred by the Department of Corrections (DOC) and 47.0% (n = 134) were not DOC-referred. Because three of the oversampled programs were women's recovery centers, the majority of the follow-up sample included in this report was female (57.2%) and 42.8% was male. The

¹³ To deal with outlier cases, that may be in part due to inconsistencies in program's entering all of the entry and exits into program phases, cases in the top 5% of values for length of service were recoded to the value at the 95th percentile (462).

¹⁴ 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.

¹⁵ 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.

¹⁶ Brighton Recovery Center for Women, Healing Place of Campbellsville for Men, Liberty Place Recovery Center for Women, and Trilogy Center for Women.

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 using alcohol or drugs in the 6 months before follow-up, and with fewer months of employment in the 6 months before follow-up.

Almost all followed up clients were White (89.8%) or African American (8.1%) and were an average of 33 years old at the time of the intake interview. Overall, at intake, half of the clients who completed a follow-up interview (50.9%) reported at intake that they were never married, 31.2% were separated or divorced, and only 15.8% were married at intake.

See Appendix B for detailed information about clients who were followed up (n=285) compared to clients who were not followed up (n=1,163). Few differences on selected key factors were found when comparing clients who completed a follow-up interview to those who had not completed a follow-up interview. Specifically, due to the oversampling of three women's programs in the follow-up sample there were significantly more women who were followed up than were not followed up. The only other two significant differences between followed up and not followed up include: more followed up clients reported using other illicit drugs (e.g., inhalants, hallucinogens, and synthetic drugs) and fewer followed up clients reported using smokeless tobacco in the 6 months before entering the program. There were no significant differences for demographics (other than gender), socio-economic status indicators (e.g., education, employment, living situation, economic hardship), severity of alcohol and drug use, mental health (e.g., depression, generalized anxiety, suicidality), criminal justice involvement (e.g., arrested, incarcerated), and treatment history.

Of the 285 individuals who completed a follow-up survey, 10.9% (n = 31) were in the recovery center at follow-up, which was targeted to be about 12 months after the intake survey was completed. For those clients who were in the recovery center at the time of the follow-up, 24 clients were in Phase 2 at the time the follow-up was completed; 3 clients were in Phase 1, and 3 clients were back in Safe off the Streets. Information about whether or not the client was in the recovery program at the time of the follow up interview was missing for 1 individual.

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—the year before this report's follow-up surveys were conducted (n = 527). All the locator files¹⁷ 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.

For all 527 records, 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.

¹⁷ 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

Quality of Data and Locator Efforts

For the 2015 follow-up study, the target number of follow-up surveys to be completed was 280. Those cases selected into the follow-up sample were stratified by target month, gender, and DOC referral status so that there were close to equal numbers of individuals for males and females and for DOC and non-DOC referred. Overall, 283 surveys were completed.

283
SURVEYS COMPLETED

PHONE CALLS

2,958
TOTAL

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

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

79.2% 8 out of 10 clients had at least one unique contact phone number

MAILINGS

896
TOTAL

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

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

58.8% Over half of clients had at least one complete, unique contact address.

Client information was verified through external searches in cases where (a) client contact information was incomplete; and (b) client contact information was incorrect. Overall, approximately 44.4% of all clients were searched with medium level techniques and 22.6% of all clients were searched using in-depth methods. Only 12.7% of clients were contacted using the locator information that was provided without the need for any additional searching.

ONLINE SEARCH



85.8% of all clients were searched using basic methods (i.e., verification, VINE, Whitepages)

44.4% of all clients were searched using medium level methods (i.e., social media, other public directory databases)

22.6% of all clients were searched using in-depth methods (i.e., in-depth searching methods)

Section 2.

Client Satisfaction with Recovery Center Programs and Quality of Life Ratings

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 five aspects of client satisfaction with the program and quality of life indicators: (1) overall client satisfaction; (2) client ratings of program experiences; (3) clients’ rating of their quality of life before and after involvement in the program; (4) clients’ positive and negative feelings before and after their involvement in the program; and (5) clients’ satisfaction with their life before and after their involvement in the program.

OVERALL CLIENT SATISFACTION

The majority of individuals (80.3%) gave a highly positive rating between 8 and 10 of their experience in the Recovery Kentucky program, where 10 represented the best possible experience (not in a table). Overall, the average rating was 8.7 indicating a very positive experience.

CLIENT RATINGS OF PROGRAM EXPERIENCES

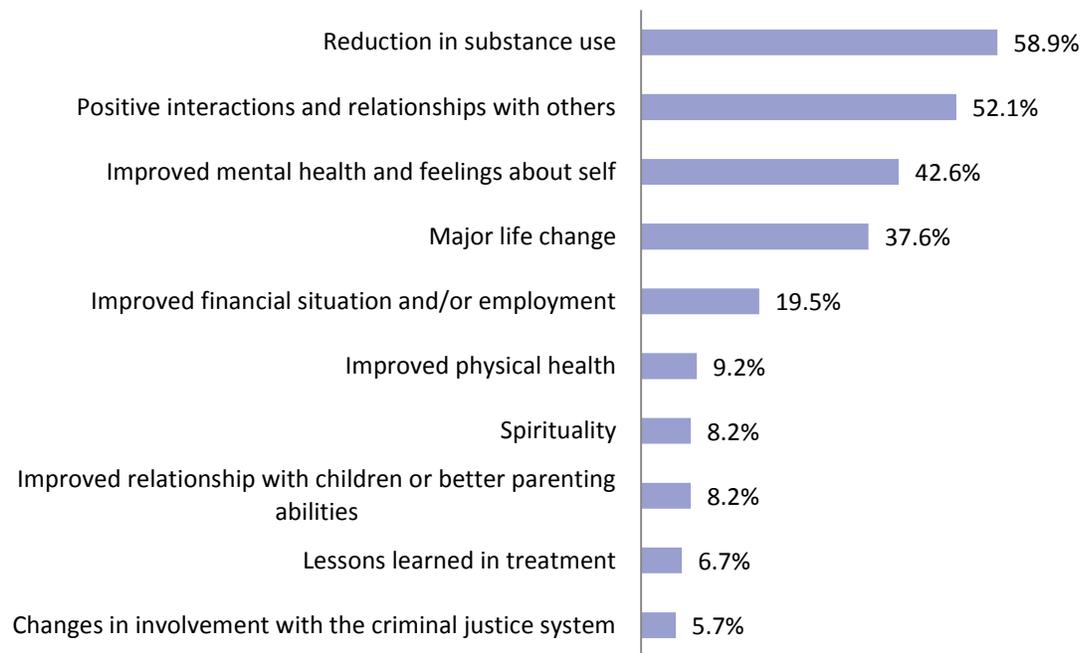
When asked about specific aspects of the program, the majority of clients reported they either agreed or strongly agreed with each aspect of the Recovery Kentucky program assessed (see Figure 2.1). The overwhelming majority of clients (95% or higher) reported they were treated with respect, understood what was expected of them in the program, felt better about themselves, and got the services needed to get better.

FIGURE 2.1. PERCENTAGE OF INDIVIDUALS WHO AGREED/STRONGLY AGREED WITH THE FOLLOWING STATEMENTS ABOUT THE RECOVERY KENTUCKY PROGRAM AT FOLLOW-UP (N = 285)



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 2.2). The most commonly self-reported positive outcomes of the program included reduction in substance use, positive interactions and relationships with other people, improved mental health and feelings about themselves, major life changes (e.g., better quality of life, better able to function, having a “normal” life, greater control over life), and improved financial situation and/or employment.

FIGURE 2.2. PERCENTAGE OF INDIVIDUALS WHO REPORTED THE MOST POSITIVE OUTCOMES OF THEIR RECOVERY KENTUCKY PROGRAM EXPERIENCE AT FOLLOW-UP (n = 282)¹⁸



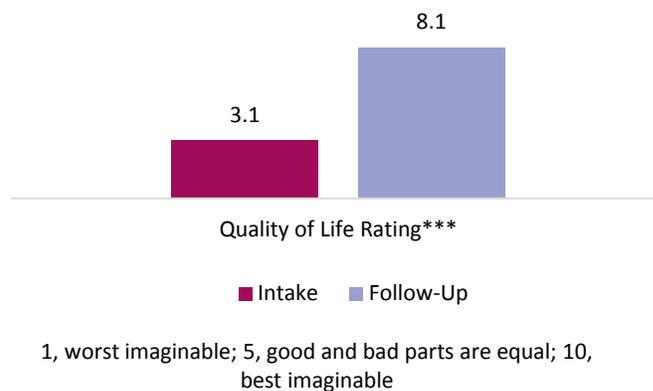
QUALITY OF LIFE AND SATISFACTION WITH LIFE

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

QUALITY OF LIFE

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 3.1 (see Figure 2.3). The average rating of quality of life after participating in the program significantly increased to 8.1.

FIGURE 2.3. PERCEPTION OF QUALITY OF LIFE BEFORE AND AFTER THE PROGRAM (N = 285)



¹⁸ Three cases had missing values for this question (i.e., interviewer skipped)

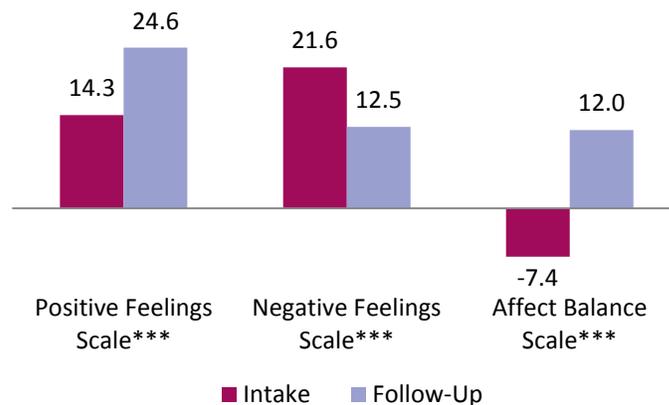
POSITIVE AND NEGATIVE FEELINGS

At intake and follow-up, clients were asked a set of questions about how often they experienced 6 positive and 6 negative emotions/states in the past month (Scale of Positive and Negative Experience [SPANE]).¹⁹ Clients answered using a scale with 1 representing “Very rarely or never” to 5 “Very often or always.” The responses are then added for the 6 positive items, yielding a Positive Feelings Score, and the same scoring method is used for the Negative Feelings Score. The lowest possible score is 6 and the highest possible score is 30. Low scores on the Positive Feelings Scale indicate the client rarely or infrequently experienced the six positive emotions/states. A high score on the Positive Feelings Scale indicates the client very often or frequently experienced the six positive emotions/states. To determine the overall affect balance (or the balance of negative and positive feelings about one’s life), the score derived from the negative feelings score is subtracted from the positive feelings score (with -24 being the minimum and unhappiest to 24 being the happiest). For example, a client with a high affect balance score reports that she rarely experiences negative feelings and very often has positive feelings.

“They helped me build this foundation for my life. I have a life worth living now.”
-RCOS Follow-up Client

Figure 2.4 shows that clients’ positive feelings increased significantly and their negative feelings decreased significantly from intake to follow-up. Further, the affect balance score also increased significantly from intake to follow-up. The affect balance score of -7.4 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 2.4. POSITIVE AND NEGATIVE FEELINGS BEFORE INTAKE AND FOLLOW-UP (N = 281)
GENDER DIFFERENCES IN POSITIVE AND NEGATIVE FEELINGS²⁰



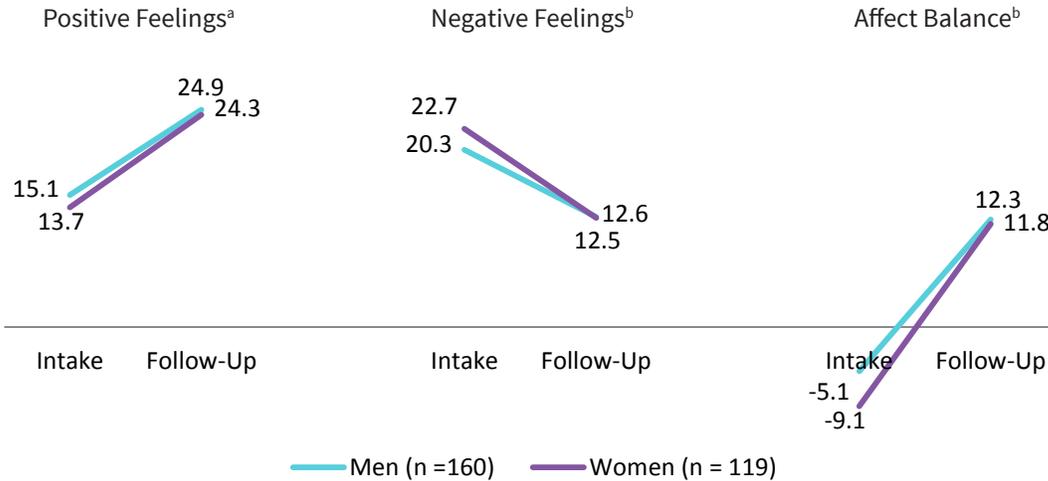
GENDER DIFFERENCES IN POSITIVE AND NEGATIVE FEELINGS

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 2.5).

¹⁹ 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.

²⁰ The following numbers of cases had missing values on at least one of the items that were included in the computation of the subscales: positive feelings (n = 4), negative feelings (n = 6), and affect balance (n = 8).

FIGURE 2.5. GENDER DIFFERENCES IN POSITIVE AND NEGATIVE FEELINGS AT INTAKE AND FOLLOW-UP (N = 283)



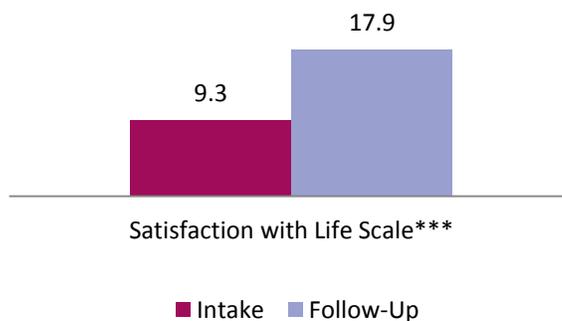
a—Significant difference by gender at intake; $p < .01$.

b—Significant difference by gender at intake; $p < .001$.

SATISFACTION WITH LIFE

At intake and follow-up, clients were presented with five statements and asked to respond how much they agreed or disagreed with each statement, using a scale with 1 representing “Strongly disagree” and 5 representing “Strongly agree”.²¹ Each statement is a positively worded aspect of high satisfaction with one’s life. One statement, for example, is “In most ways my life is close to my ideal.” The values assigned to each response are added to create a life satisfaction score. The lowest possible score is 5 and the highest possible score is 25. Lower scores indicate lower satisfaction and higher scores represent higher satisfaction. Figure 2.6 shows that clients’ scores on the satisfaction with life scale increased significantly from intake to follow-up.

FIGURE 2.6. SATISFACTION WITH LIFE BEFORE INTAKE AND FOLLOW-UP (N = 284)²²



*** $p < .001$.

²¹ Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.

²² One case had a missing value on the satisfaction with life item at follow-up.

Section 3.

Substance Use

This section describes pre-program (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 for adult clients. Past-6-months 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 a recovery program and clients who were in a controlled environment all 30 days before entering the program.²³ Results for each targeted factor are presented for the overall sample and by gender when there were significant gender differences.

Section 3A examines change in the use of (1) any illegal drugs; (2) alcohol;²⁴ 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 (e.g., 12 months or 30 days).²⁵ Results are presented for each substance in four main subsections:

1. **Change in 6-month substance use from intake to follow-up for clients not in a controlled environment.**²⁶ 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 = 247). Significant gender differences are highlighted. 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 = 162) are presented.²⁷ Significant gender differences are highlighted. Appendix C provides change over time on specific substances for men and women.
4. **Change in self-reported alcohol and drug severity composite scores for client not in a controlled environment.** The Addiction Severity Index (ASI) composite score based on self-reported severity of alcohol or drug problems are also examined for change over time for alcohol (n = 98) and illegal drugs (n = 123). The alcohol and drug severity composite scores assess

²³ 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.

²⁴ 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).

²⁵ z-test for proportion 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.

²⁶ Thirty-eight 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 (n = 37) or the number of days in a controlled environment at follow-up was missing (n = 1).

²⁷ 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 123 individuals were in a controlled environment all 30 days before entering the program (n = 123) and 3 of these individuals were also in a controlled environment all 30 days before the follow-up survey).

addiction severity even among those reporting no substance use in the past 30 days. The alcohol and drug severity composite scores are computed from items about 30 days alcohol (or drug) use as well as:

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

Section 3B presents results for each substance 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 = 123) are presented.
2. **Change in self-reported alcohol and drug severity composite scores for clients who were in a controlled environment all 30 days before entering the recovery center.** Alcohol and drug severity composite scores are also examined for change over time for clients who reported alcohol use in the past 30 days (n = 27) and for clients who reported drug use in the past 30 days (n = 52) at intake and/or follow-up.

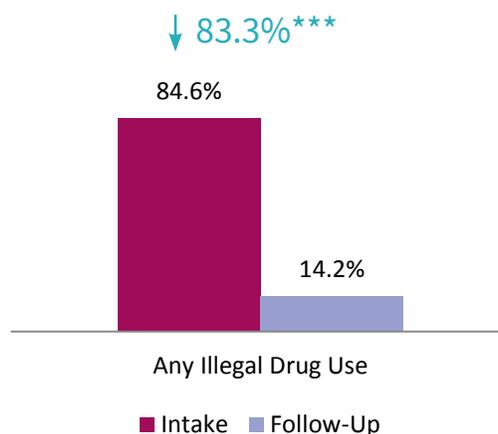
3A. SUBSTANCE USE FOR CLIENTS WHO WERE NOT IN A CONTROLLED ENVIRONMENT

ANY ILLEGAL DRUG USE

PAST-6-MONTH ILLEGAL DRUG USE

At intake, 84.6% 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 14.2% of clients reported using illegal drugs in the 6 months before follow-up (a significant decrease of 83.3%; see Figure 3A.1).

FIGURE 3A.1 ANY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP (N = 247)



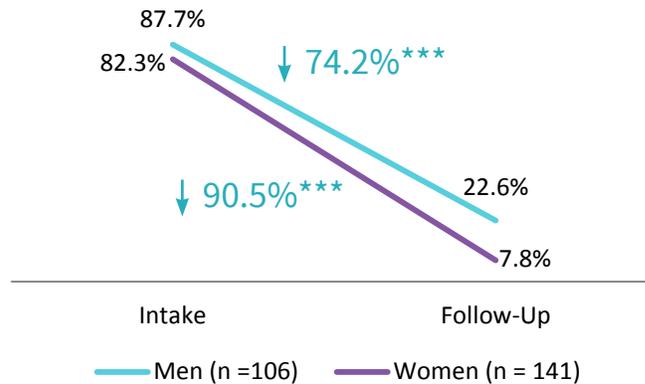
***p < .001.

GENDER DIFFERENCES IN PAST-6-MONTH ILLEGAL DRUG USE

At intake, there was no significant difference in the percentage of men and women who reported using any illegal drugs (see Figure 3A.2). The number of men and women who reported illegal drug use decreased significantly at follow-up. However, significantly more men than women reported using any illegal drugs in the 6 months before follow-up.

Significantly more men reported using illegal drugs at follow-up compared to women

FIGURE 3A.2. GENDER DIFFERENCES IN PAST-6-MONTH ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP^a

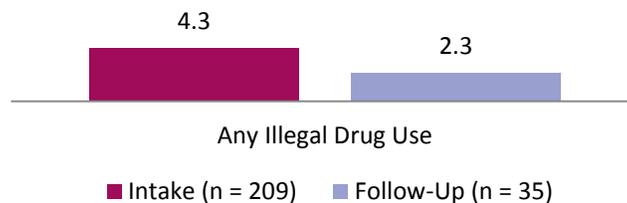


a—Significant difference by gender at follow-up, $p < .01$.

AVERAGE NUMBER OF MONTHS USED ANY ILLEGAL DRUGS

Among clients who reported illegal drug use in the 6 months before entering the program ($n = 209$), they reported using drugs an average of 4.3 months (see Figure 3A.3). Among individuals who reported using illegal drugs at follow-up ($n = 35$), they reported using an average of 2.3 months.

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

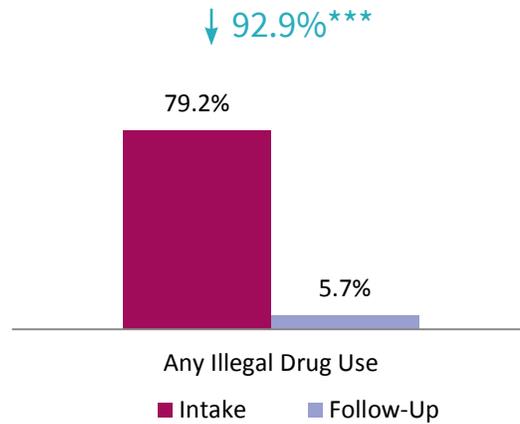


PAST-30-DAY ILLEGAL DRUG USE

About four in five individuals (79.2%) 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 3A.4). At follow-up, only 5.7% of individuals reported they had used illegal drugs in the past 30 days—a significant decrease by 92.9%.

The number of individuals who reported using illegal drugs in the past 30 days decreased by 93%

FIGURE 3A.4. PAST 30-DAY USE OF ANY ILLEGAL DRUG USE AT INTAKE TO FOLLOW-UP (n = 159)



***p < .001.

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).²⁸

The number of individuals who reported alcohol use in the past 6 months decreased 77% at follow-up

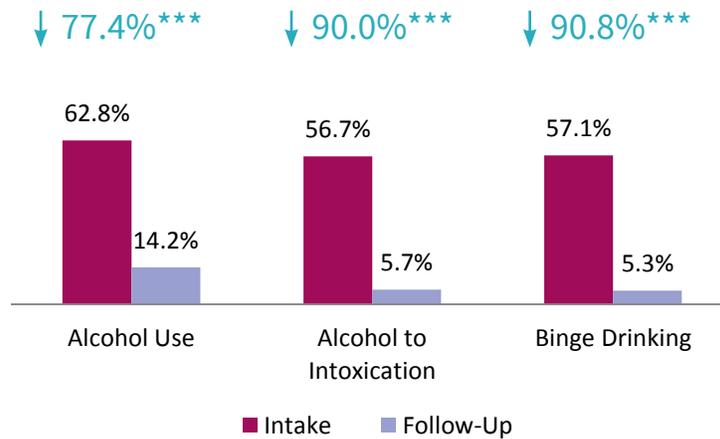
“**[My counselor] helped me work through my problems and discover myself. Helped me see life without drugs.**”

-RCOS Follow-up Client

The majority of individuals (62.8%) reported using alcohol in the 6 months before entering the recovery center while 14.2% of clients reported alcohol use in the 6 months before follow-up. There was a 77.4% decrease in the number of individuals reporting alcohol use (see Figure 3A.5). Overall, 56.7% of individuals reported using alcohol to intoxication before entering the recovery center and 5.7% reported using alcohol to intoxication at follow-up—a 90.0% decline. Also, 57.1% of individuals reported binge drinking in the 6 months before program entry and only 5.3% reported binge drinking in the follow-up period—a 90.8% decrease.

²⁸ 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 3A.5. PAST-6-MONTH ALCOHOL USE AT INTAKE A FOLLOW-UP (N = 247)



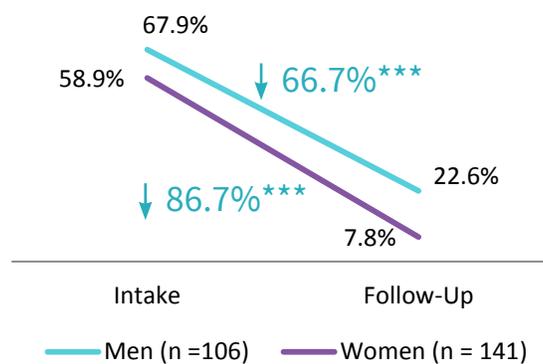
***p < .001.

GENDER DIFFERENCES IN PAST-6-MONTH ALCOHOL USE, ALCOHOL USE TO INTOXICATION, AND BINGE DRINKING

There were no significant differences in the percentages of men and women who reported using alcohol, alcohol to intoxication, or binge drinking in the 6 months before entering the program. However, at follow-up, significantly more men than women reported using alcohol. Nonetheless, the number of men and women who reported alcohol use decreased significantly by 66.7% and 86.7% respectively (see Figure 3A.6). The number of men and women who reported alcohol use to intoxication and binge drinking did not significantly differ at follow-up.

Significantly more men reported alcohol use at follow-up compared to women

FIGURE 3A.6. GENDER DIFFERENCES IN PAST-6-MONTH ALCOHOL USE AT INTAKE AND FOLLOW-UP^a



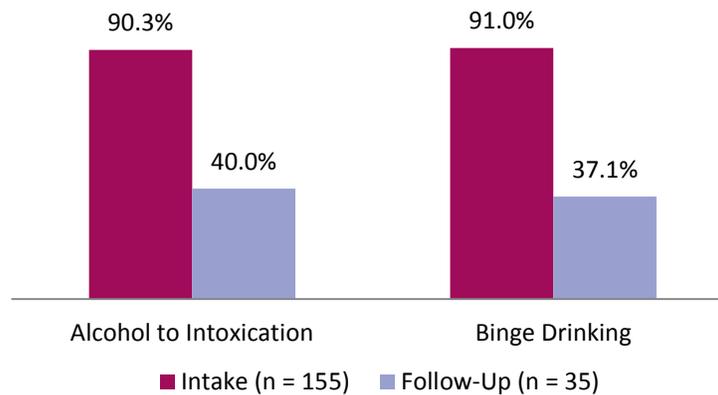
***p < .001

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

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 = 155), 90.3% used alcohol to intoxication and 91.0% binge drank alcohol (see Figure 3A.7). Of the individuals who used alcohol in the 6 months before follow-up (n = 35), 40.0% of clients reported alcohol to intoxication and 37.1% reported binge drinking.

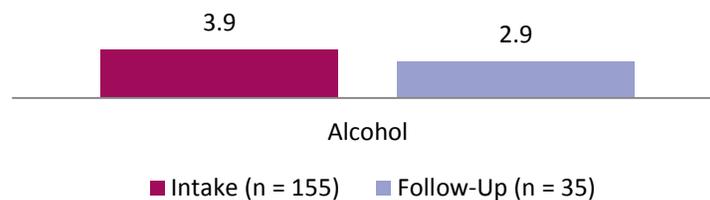
FIGURE 3A.7. PAST-6-MONTH ALCOHOL USE TO INTOXICATION AND BINGE DRINKING AT INTAKE TO FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



AVERAGE NUMBER OF MONTHS USED ALCOHOL

Figure 3A.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 = 155), they used an average of 3.9 months. Among individuals who reported using alcohol at follow-up (n = 35), they used an average of 2.9 months.

FIGURE 3A.8. AVERAGE NUMBER OF MONTHS OF ALCOHOL USE

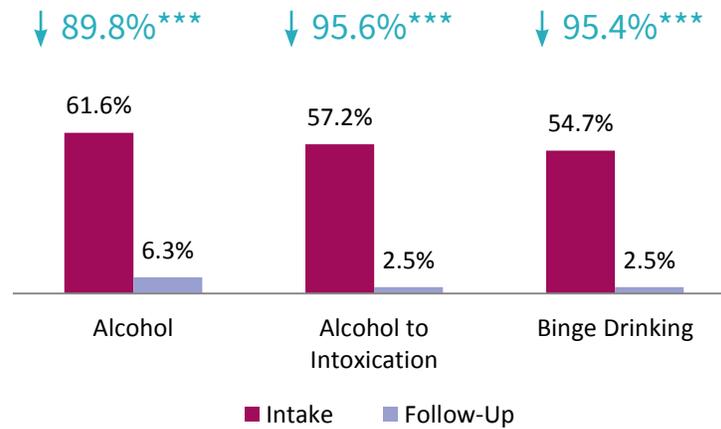


PAST-30-DAY ALCOHOL USE

There was a decrease of 89.8% in the percentage of individuals who reported using alcohol in the past 30 days from intake (61.6%) to follow-up (6.3%; see Figure 3A.9). Decreases in the number of individuals who reported using alcohol to intoxication (by 95.6%) and binge drinking (by 95.4%) were also significant for the sample overall.

“I really love how they make you feel a part of them. They love you back to life.”
-RCOS Follow-up Client

FIGURE 3A.9. PAST-30-DAY ALCOHOL USE FROM INTAKE TO FOLLOW-UP (N = 159)



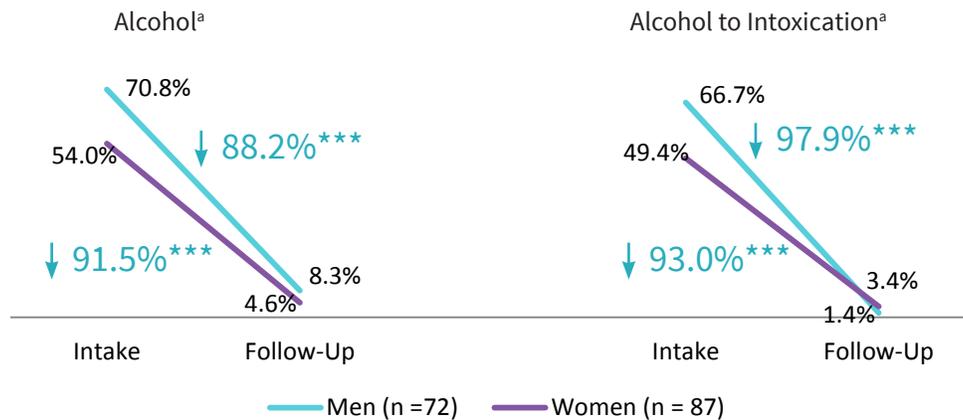
***p < .001.

GENDER DIFFERENCES IN PAST- 30-DAY ALCOHOL USE AND ALCOHOL USE TO INTOXICATION

Figure 3A.10 shows that significantly more men than women reported using alcohol (70.8% vs. 54.0%) and alcohol to intoxication (66.7% vs. 49.4%) in the 30 days before entering the program. Decreases in the number of men and women who reported using alcohol, alcohol to intoxication were significant from intake to follow-up; only a small number of men and women reported using alcohol in the 30 days before follow-up.

Significantly more men than women reported using alcohol and alcohol to intoxication in the 30 days before entering the program

FIGURE 3A.10. GENDER DIFFERENCES PAST-30-DAY ALCOHOL USE AND ALCOHOL TO INTOXICATION AT INTAKE AND FOLLOW-UP



***p < .001

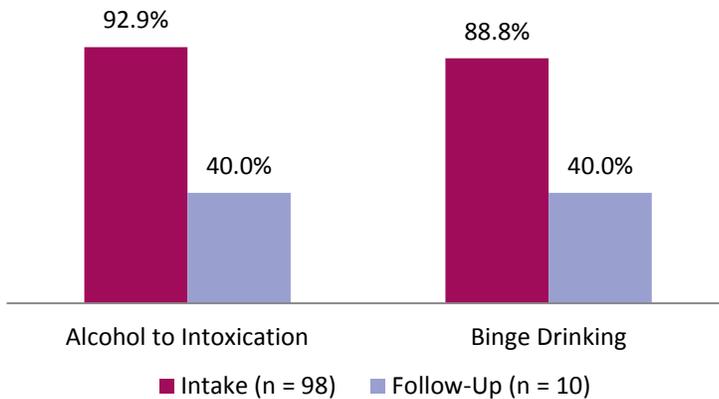
a—Significant difference by gender at intake, p < .05.

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

Of the 98 individuals who used alcohol in the 30 days before entering the recovery center, 92.9% used alcohol to intoxication and 88.8% binge drank alcohol in the 30 days before entering the program (see Figure 3A.11). Of the 10 individuals who reported using alcohol in the 30 days before follow-up, 40.0%

reported alcohol use to intoxication and 40.0% reported binge drinking.²⁹

FIGURE 3A.11. PAST-30-DAY ALCOHOL TO INTOXICATION AND BINGE DRINKING AT INTAKE AND FOLLOW-UP, AMONG THOSE REPORTING ALCOHOL USE AT EACH POINT



SELF-REPORTED SEVERITY OF ALCOHOL AND DRUG USE AMONG CLIENTS WHO WERE NOT IN A CONTROLLED ENVIRONMENT

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-days 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).³⁰

Change in the average ASI composite score for alcohol and drug use was examined for individuals who were not in a

²⁹ It was not possible to conduct a chi square test to examine difference in the percentage 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 = 10).

³⁰ Rikoon, S.H., Cacciola, J.S., Carise, D., Alterman, A.I., & McLellan, A.T. (2006). Predicting DSM-IV dependence diagnoses from ASI composite scores. *Journal of Substance Abuse Treatment*, 31, 17-24.

ASI ALCOHOL AND DRUG COMPOSITE SCORES AND SUBSTANCE USE DISORDERS

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 percentage of clients who met a threshold for alcohol and drug dependence. However, recent changes in the diagnostics for substance abuse call into question the distinction between dependence and abuse. Thus, ASI composite scores that met the threshold can be considered indicative of severe substance use disorder to be compatible with current thinking about substance use disorders in the DSM-V,³¹ where we would have previously referred to them as meeting the threshold for dependence. Change from intake to follow-up in the severity rating has the same clinical relevance as moving from dependence to abuse in the older criteria.

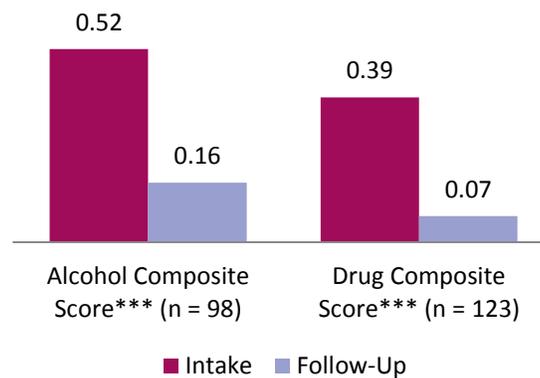
³¹ American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

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 3A.12 displays the change in average scores.³² Among individuals who reported using any alcohol, the average alcohol composite score decreased significantly from 0.52 at intake to 0.16 at follow-up. Among individuals who reported any illegal drug use, the average drug composite score decreased significantly from 0.39 at intake to 0.07 at follow-up.

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

FIGURE 3A.12. AVERAGE ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



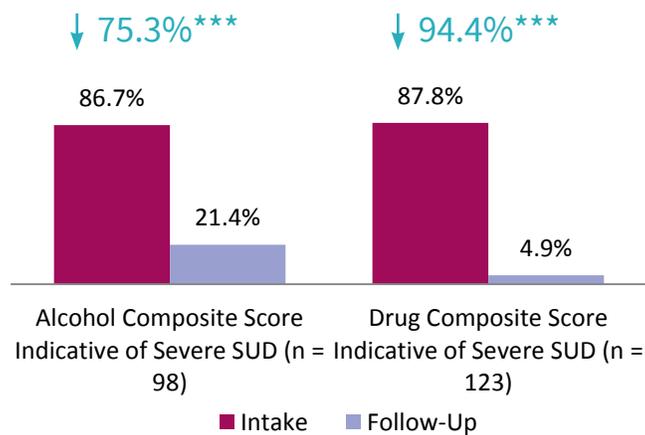
***p < .001

The percentage 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 3A.13). At intake, the vast majority of individuals had alcohol and drug composite scores that met the cutoff for severe SUD (86.7% and 87.8% respectively), while the percentages of individuals with alcohol and drug composite scores that met the cutoff for severe SUD were significantly lower at follow-up. Only 21.4% of individuals had an alcohol composite score that met the cutoff for severe SUD at follow-up, and only 4.9% had a drug composite score that met the cutoff for severe SUD at follow-up. Thus, the number of individuals who had an alcohol composite score that met the cutoff for severe SUD decreased significantly by 75.3% and the number of individuals who had a drug composite score that met the cutoff for severe SUD at follow-up decreased significantly by 94.4%.

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

³² The following numbers of cases were not included in the analysis of change in the composite score because 60 individuals reported abstaining from alcohol and 33 individuals reported abstaining from drugs at intake and follow-up, 2 individuals had missing values on some of the items that were used to compute the alcohol composite score at follow-up and 6 individuals had missing values on some of the items that were used to compute the drug composite score at follow-up.

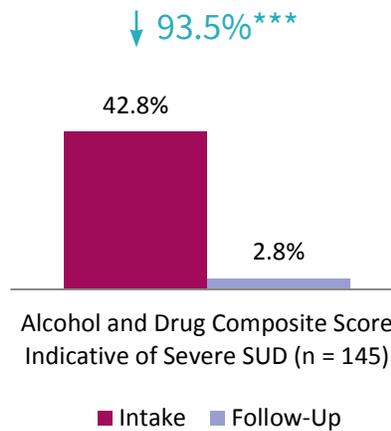
FIGURE 3A.13. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



***p < .001.

Among individuals who used alcohol and/or drugs in the 30 days before intake, about 2 in 5 individuals (42.8%) had alcohol and drug composite scores that met the cutoff for both severe alcohol use disorder and drug use disorder (see Figure 3A.14). The percentage of clients who had composite scores that met the cutoff for severe SUD for both alcohol and drugs decreased significantly by 93.5% to only 2.8% at follow-up.

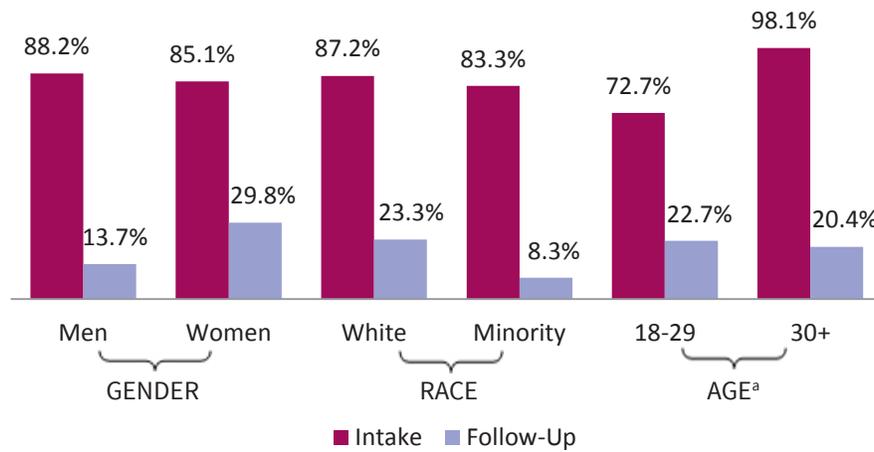
FIGURE 3A.14. INDIVIDUALS WITH ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE ALCOHOL AND DRUG USE DISORDERS AT INTAKE AND FOLLOW-UP (n = 145)



***p < .001

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 3A.15). No differences for the percentage of individuals who had an alcohol composite score indicative of severe SUD by gender or race/ethnicity were found at intake or follow-up. At intake, significantly more individuals 30 years and older had an alcohol composite score indicative of a substance use disorder when compared to individuals who were 18 – 29 years old. Nonetheless, at follow-up, similar percentages of older adults and younger adults had alcohol composite scores indicative of a substance use disorder.

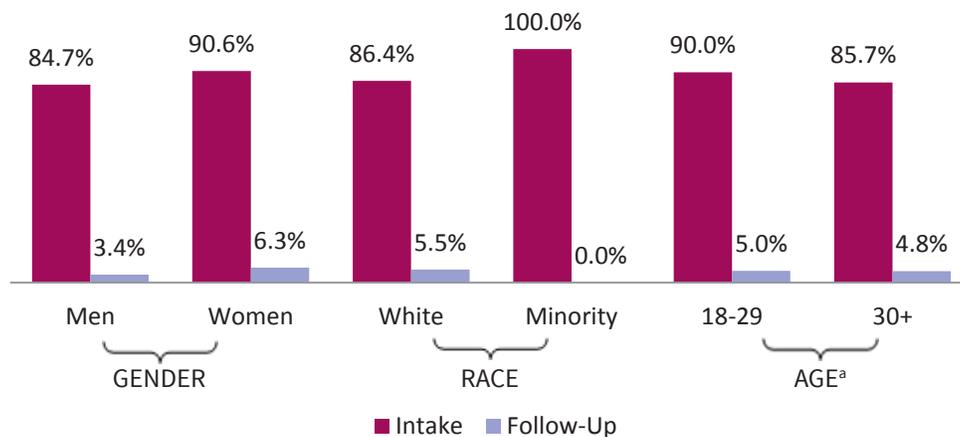
FIGURE 3A.15. ALCOHOL-USING INDIVIDUALS WITH AN ALCOHOL COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 98)



a—Significant difference by group at intake; $p < .001$.

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 3A.16). No statistically significant differences were found at intake or follow-up.

FIGURE 3A.16. DRUG-USING INDIVIDUALS WITH A DRUG COMPOSITE SCORE INDICATIVE OF SEVERE SUD AT INTAKE AND FOLLOW-UP BY DEMOGRAPHIC FACTORS (N = 123)

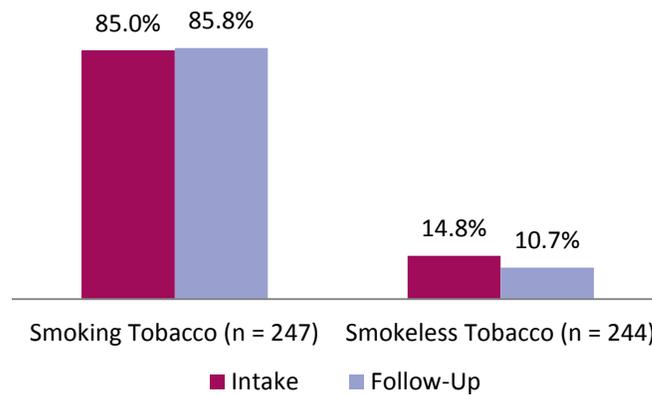


TOBACCO USE

PAST-6-MONTH SMOKING AND SMOKELESS TOBACCO USE

Overall, there was no change in smoking tobacco from intake to follow-up (see Figure 3A.17). Most individuals reported smoking tobacco in the 6 months before entering the recovery center (85.0%) and in the 6 months before follow-up (85.8%). Also, the percentage of individuals who reported using smokeless tobacco did not significantly change from intake to follow-up.

FIGURE 3A.17. PAST-6-MONTH SMOKING TOBACCO AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 247)³³

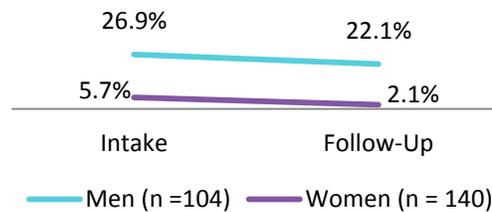


GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO

At intake and follow-up significantly more men than women reported using smokeless tobacco (see Figure 3A.18). A little more than one fourth of men (26.9%) and only 5.7% of women reported using smokeless tobacco at intake, with non-significant decreases at follow-up.

Significantly more men than women reported smokeless tobacco use at intake and follow-up

FIGURE 3A.18. GENDER DIFFERENCES IN PAST-6-MONTH SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP^a (n = 244)



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

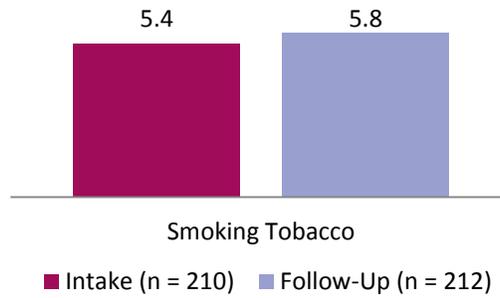
AVERAGE NUMBER OF MONTHS SMOKED TOBACCO

Figure 3A.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 = 210), they reported smoking tobacco, on average, 5.4 months. Among individuals who reported smoking tobacco at follow-up (n = 212), they reported using, on average, 5.8 months of the 6-month period.

“It really changed my life and helped me get my life back on track so I could get custody of my kids again.”
-RCOS Follow-up Client

³³ Three cases had missing values for smokeless tobacco at follow-up.

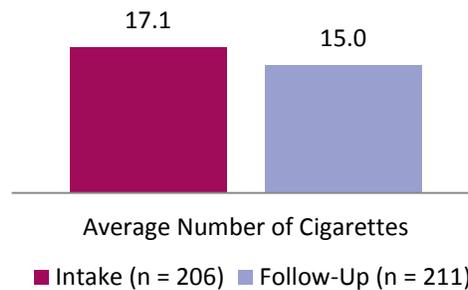
FIGURE 3A.19. AVERAGE NUMBER OF MONTHS TOBACCO USE



AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY

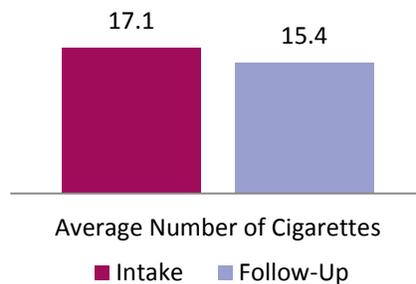
Figure 3A.20 shows, among individuals who smoked tobacco, the average number of cigarettes smoked per day: 17.1 cigarettes per day at intake (n = 206)³⁴ and 15.0 cigarettes per day at follow-up (n = 211).³⁵

FIGURE 3A.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 = 194),³⁶ the average number of cigarettes they smoked per day decreased significantly from 17.1 at intake to 15.4 at follow-up (see Figure 3A.21).

FIGURE 3A.21. AMONG INDIVIDUALS WHO SMOKED CIGARETTES AT INTAKE AND FOLLOW UP (N = 194), THE AVERAGE NUMBER OF CIGARETTES SMOKED PER DAY^a



a--Paired sample t-test was conducted; *p < .01.

³⁴ Three cases had a missing value for the number of cigarettes smoked per day at intake.

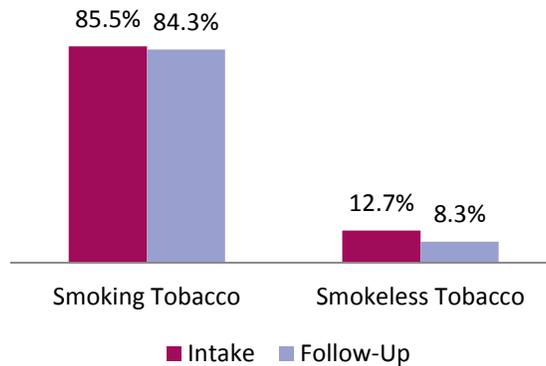
³⁵ One case had a missing value for the number of cigarettes smoked per day at follow-up.

³⁶ 198 individuals reported smoking tobacco in the 6 months before intake and follow-up, however, three had missing values for the number of cigarettes smoked per day at intake and one case had a missing value for the number of cigarettes smoked per day at follow-up.

PAST-30-DAY USE SMOKING 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 (85.5%) and at follow-up (84.3%), with no significant change from intake to follow-up (see Figure 3A.22). A small minority of individuals reported using smokeless tobacco in the 30 days before entering the program with a non-significant decrease at follow-up.

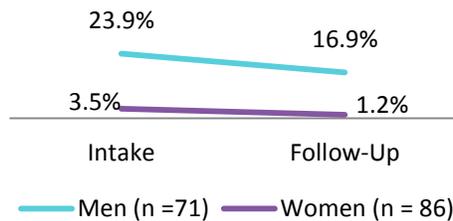
FIGURE 3A.22. PAST-30-DAY SMOKING AND SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 159)



GENDER DIFFERENCES IN PAST-30-DAY SMOKELESS TOBACCO

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 (see Figure 3A.23).

FIGURE 3A.23. GENDER DIFFERENCES IN PAST-30-DAY SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP (N = 160)^a



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

3B. SUBSTANCE USE FOR CLIENTS WHO WERE IN A CONTROLLED ENVIRONMENT

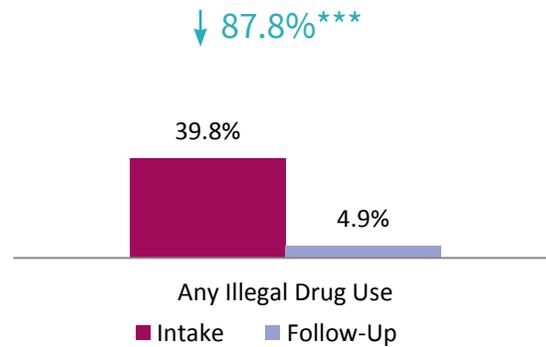
Changes in drug and alcohol use from intake to follow-up were analyzed separately for individuals who were in a controlled environment (e.g., prison, jail, other drug-free residential facility) all 30 days before entering the recovery center (n = 123) because being in a controlled environment reduces 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, 39.8% 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 3B.1). In the 30 days before follow-up, 4.9% of clients reported illegal drug use, which is a significant decrease of 87.8% from intake to follow-up.

FIGURE 3B.1. PAST-30-DAY ILLEGAL DRUG USE AT INTAKE AND FOLLOW-UP FOR CLIENTS IN A CONTROLLED ENVIRONMENT (N = 123)

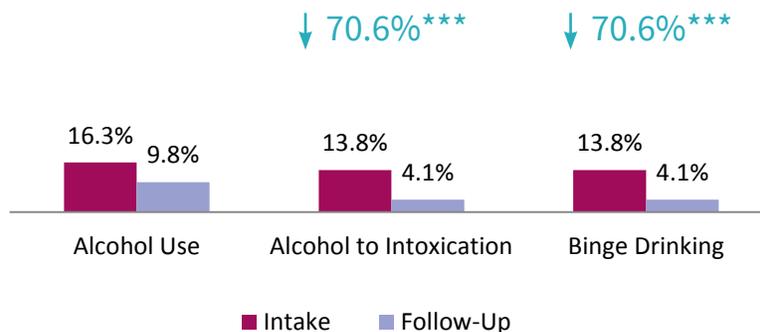


***p < .001.

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 3B.2). The lower number of individuals who reported using alcohol in the 30 days before follow-up was not statistically significant. However, there were significant decreases in the percentage of individuals who reported using alcohol to intoxication and binge drinking at follow-up.

FIGURE 3B.2. PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP FOR CLIENTS IN A CONTROLLED ENVIRONMENT (N = 123)

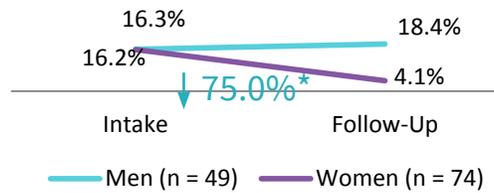


**p < .01

GENDER DIFFERENCES IN PAST-30-DAY ALCOHOL USE

Among the individuals in a controlled environment all 30 days before intake, there was a significant decrease in the number of women who reported using alcohol at follow-up; however the number of men who reported using alcohol did not change (see Figure 3B.3).

FIGURE 3B.3. GENDER DIFFERENCE IN PAST-30-DAY ALCOHOL USE AT INTAKE AND FOLLOW-UP^a



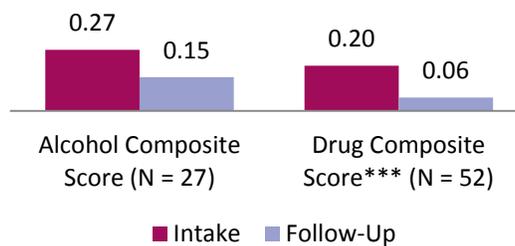
*p < .05.

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

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 drug use decreased significantly from intake to follow-up (see Figure 3B.4).³⁷ The average composite score for alcohol use did not change significantly from intake to follow-up.

FIGURE 3B.4. AVERAGE ALCOHOL ASI ALCOHOL AND DRUG COMPOSITE SCORES AT INTAKE AND FOLLOW-UP



***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 half (48.1%) had an alcohol composite score that met the cutoff for severe SUD at intake, and the percentage did not change significantly at follow-up (33.3%; see Figure 3B.5). The majority of individuals (61.5%) had a drug composite score that met the cutoff for severe SUD, and only 3.8% had a drug composite score that met the cutoff for severe SUD at follow-up—a significant decrease of 93.8%.³⁸

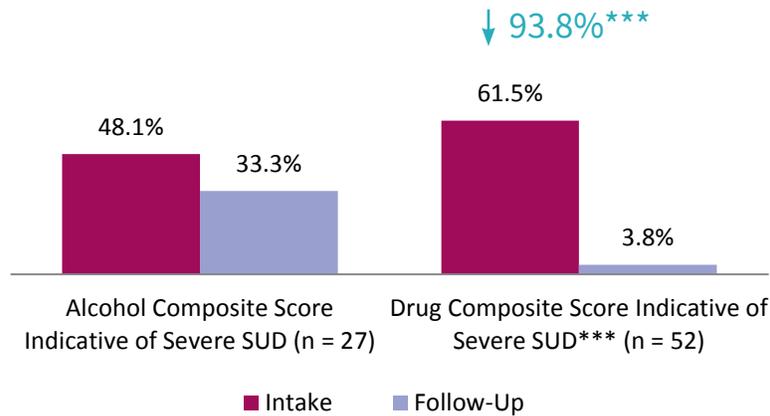
“I really liked the structure of the program, that was the best part for me. It also helped me become more responsible.”

-RCOS Follow-up Client

³⁷ Of the 123 cases where the individual was in a controlled environment all 30 days before entering the recovery center, 28 individuals used alcohol and 52 individuals used drugs in the 30 days before entering the recovery center, follow-up or both periods. One case had missing data on items used to compute the alcohol composite score at follow-up.

³⁸ 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.

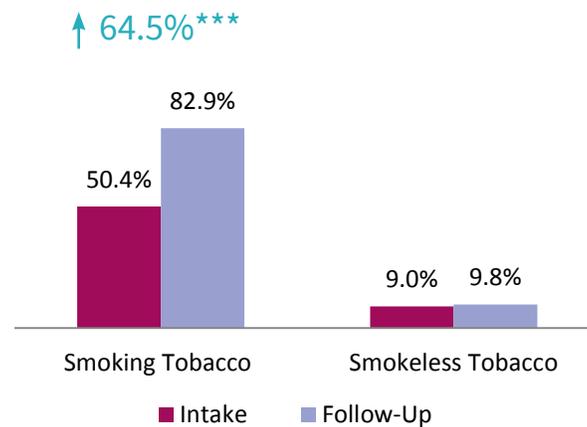
FIGURE 3B.5. ASI COMPOSITE SCORES MEETING THE CUTOFF FOR SEVERE SUBSTANCE USE DISORDER AT INTAKE AND FOLLOW-UP



PAST-30-DAY SMOKING 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 3B.6). 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 82.9% (an increase of 64.5%). Fewer than 1 in 10 individuals who were in a controlled environment reported they had used smokeless tobacco in the 30 days before entering the program and the follow-up.

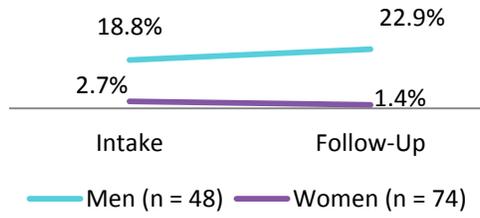
FIGURE 3B.6. PAST-30-DAY SMOKING AND SMOKELESS TOBACCO AT INTAKE AND FOLLOW-UP FOR CLIENTS IN A CONTROLLED ENVIRONMENT



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 they entered the program and in the 30 days before follow-up (see Figure 3B.7).

FIGURE 3B.7. GENDER DIFFERENCE IN PAST-30-DAY SMOKELESS TOBACCO USE AT INTAKE AND FOLLOW-UP^a



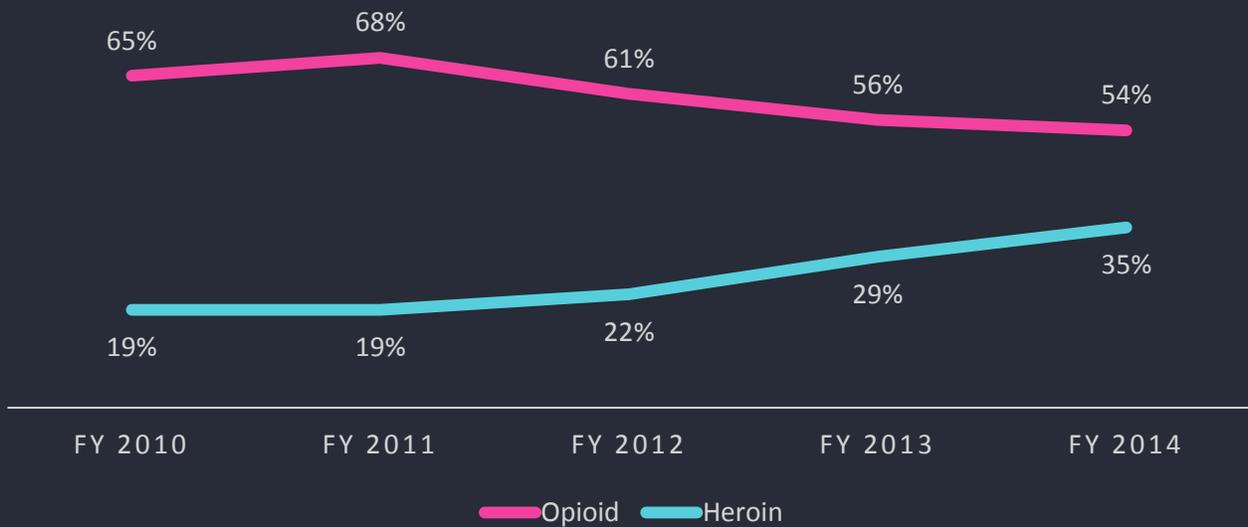
a—Significant difference by gender at intake and follow-up, $p < .01$.

Trend Alert:

How much has opioid and heroin use changed over time?

This trend analysis examines the percentage of RCOS clients who reported using opioids (including prescription opiates/opioids, methadone, and buprenorphine) and heroin in the 6 months before entering the program from FY 2010 to FY 2014.³⁹ As the figure shows, the use of opioids remained fairly steady in FY 2010 and FY 2011, with two-thirds of clients reporting opioid use. A significant decline in the percentage of clients reporting opioid use began in FY 2012 and continued through FY 2014 (54%).

In FY 2010, 19% of clients reported heroin use 12 months before entering the recovery center and while this remained unchanged in FY 2011, the percentage of clients reporting heroin use increased slightly to 22% in FY 2012 and increased significantly higher to 29% in FY 2013. In FY 2014, a little over one-third of clients (35%) reported using heroin in the 6 months before entering the program.



³⁹ On average, there were 1,200 intake surveys submitted each fiscal year.

Section 4.

Mental Health, Physical Health, And Stress

This section describes pre-program compared to follow-up change on mental health, stress, and physical health including the following factors: (1) depression; (2) generalized anxiety; (3) suicidal thoughts or attempts; (4) number of days physical and mental health were not good; and (5) stress-related health consequences. Results for each targeted factor are presented for the overall sample and separately by gender when there were significant differences.⁴⁰

DEPRESSION AND/OR ANXIETY SYMPTOMS

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

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

If participants answered “yes” to at least one of these two screening questions, they were then asked seven additional questions about symptoms of depression (e.g., sleep problems, weight loss or gain, feelings of hopelessness or worthlessness). To meet the study criteria for depression, individuals had to say “yes” to at least one of the two screening questions and “yes” to 5 or more of the 9 total symptoms.

About 7 in 10 individuals (71.6%) met study criteria for depression in the 6 months before they entered the recovery center (see Figure 4.1). By follow-up, only 1 in 10 (10.5%) met criteria for depression, representing an 85.3% significant decrease.

The percentage of **clients meeting criteria for depression decreased 85% at follow-up**

To assess for generalized anxiety, participants were first asked:

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

In the 6 months before entering the recovery center, about three-fourths of clients (76.1%) reported symptoms that met the study criteria for generalized anxiety and 14.7% reported symptoms at follow-up. This indicates there was an 80.6% significant decrease in the number of clients meeting the study criteria for generalized anxiety.

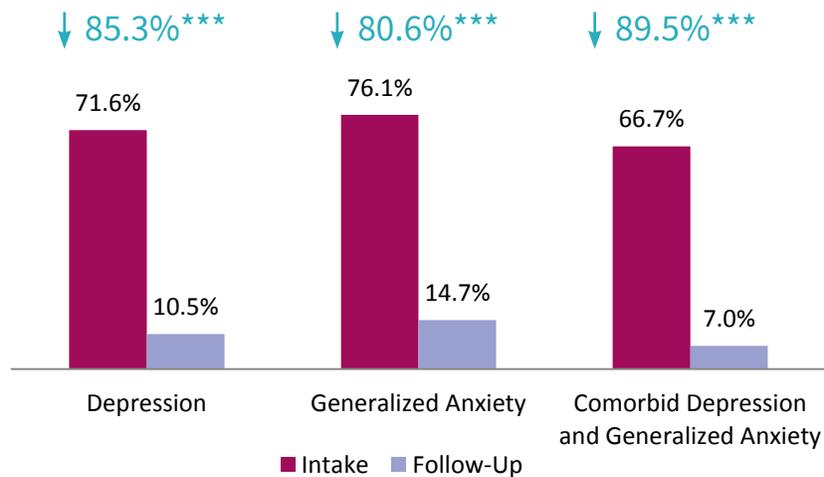
The percentage of **clients meeting criteria for generalized anxiety decreased 81% at follow-up**

⁴⁰ Results are presented as change in the percentage of clients meeting criteria for mental health problems in the 6 months before entering the recovery center to the 6 months before follow-up.

At intake, two-thirds of clients (66.7%) met criteria for both depression and generalized anxiety and at follow-up only 7.0% met criteria for both. There was an 89.5% significant reduction in the number of individuals who reported symptoms that met the criteria for both depression and generalized anxiety at follow-up.

The percentage of clients meeting criteria for both depression and generalized anxiety decreased 90% at follow-up

FIGURE 4.1. CLIENTS MEETING CRITERIA FOR DEPRESSION, GENERALIZED ANXIETY, AND COMORBID DEPRESSION AND GENERALIZED ANXIETY (N = 285)



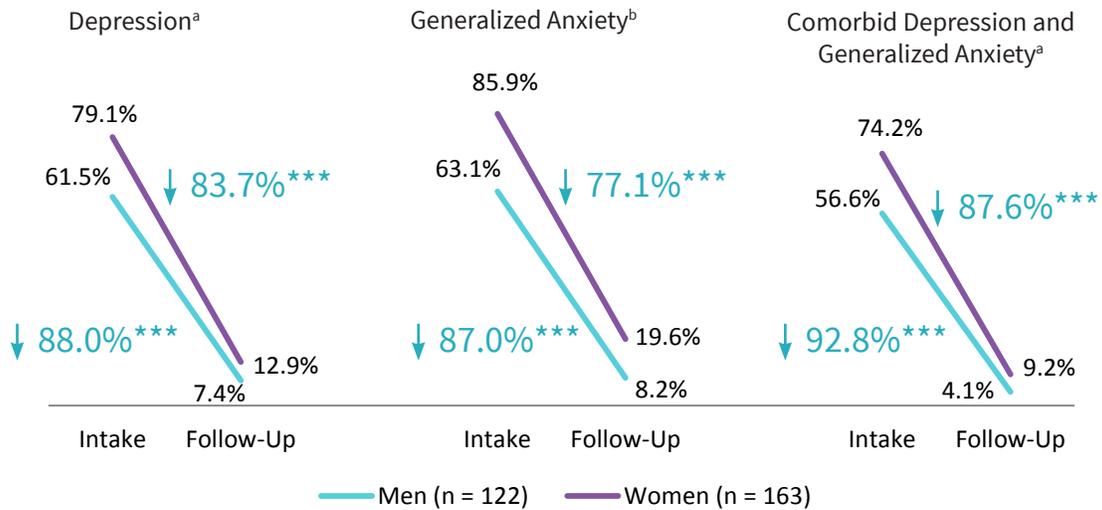
***p < .001.

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

Significantly more women met criteria for depression at intake compared to men at intake (79.1% vs. 61.5%; see Figure 4.2). By follow-up, only 12.9% of women and 7.4% of men met criteria for depression, which are significant decreases: 83.7% for women and 88.0% for men. At follow-up, there was no significant difference in the percentage of men and women reporting depression. Significantly more women than men met criteria for generalized anxiety at intake (85.9% vs. 63.1%) and at follow-up (19.6% vs. 8.2%). There were significant decreases from intake to follow-up in the number of women and men who met criteria for generalized anxiety. Finally, significantly more women than men met criteria for comorbid depression and generalized anxiety at intake (74.2% vs. 56.6%); however, at follow-up there was no difference by gender.

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

FIGURE 4.2. GENDER DIFFERENCES IN CLIENTS MEETING CRITERIA FOR DEPRESSION AND GENERALIZED ANXIETY AT INTAKE AND FOLLOW-UP^a



***p < .001.

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

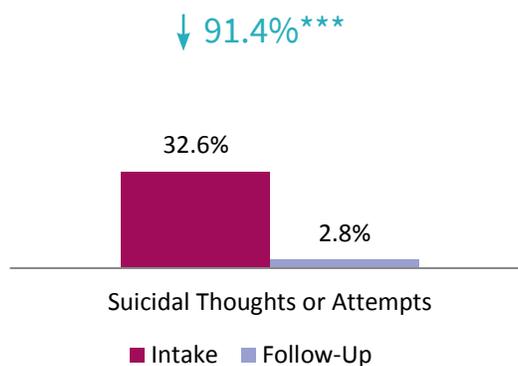
b—Statistical difference by gender at intake (p < .001) and at follow-up (p < .01).

SUICIDE IDEATION AND/OR ATTEMPTS

Suicide ideation and attempts were measured with questions about thoughts of suicide and attempts to commit suicide. Nearly one-third of individuals reported thoughts of suicide or attempted suicide in the 6 months before entering the program. At follow-up, only 2.8% of individuals reported thoughts of suicide or attempted suicide in the 6 months before follow-up. There was a 91.4% decrease in suicidal ideation and attempts from intake to follow-up (see Figure 4.3).

The percentage of clients reporting suicidal ideation and/or attempts decreased 91% at follow-up

FIGURE 4.3. CLIENTS REPORTING SUICIDAL IDEATION AND/OR ATTEMPTS AT INTAKE AND FOLLOW-UP (N = 285)



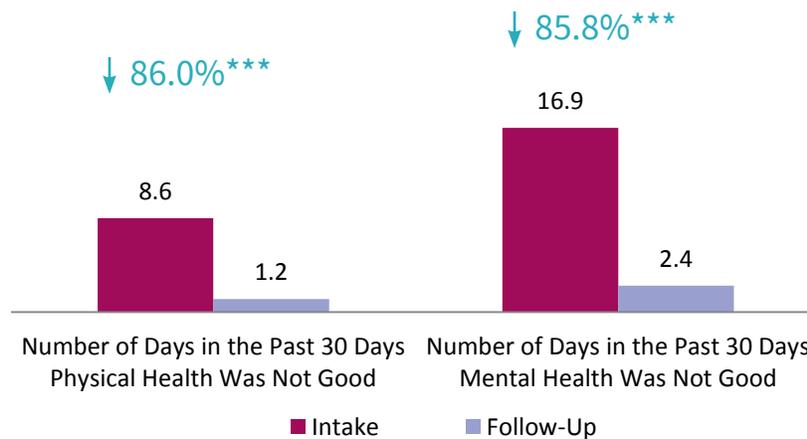
***p < .001.

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 by 86.0% from intake to follow-up (see Figure 4.4). Also, clients' self-reported number of days their mental health was not good decreased significantly by 85.8%, from

intake (16.9) to follow-up (2.4).

FIGURE 4.4. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH IN THE PAST 30 DAYS AT INTAKE AND FOLLOW-UP (N = 282)^{a 41}



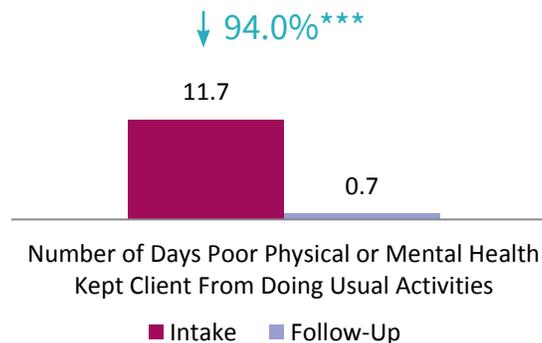
***p < .001.

a—Statistical significance tested by paired t-test

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 4.5). 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 (11.7 to 0.7).

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

FIGURE 4.5. PERCEPTIONS OF POOR PHYSICAL HEALTH AND MENTAL HEALTH LIMITING ACTIVITIES IN THE PAST 30 DAYS (N = 282)^{a 42}



***p < .001

a—Statistical significance tested by paired t-test

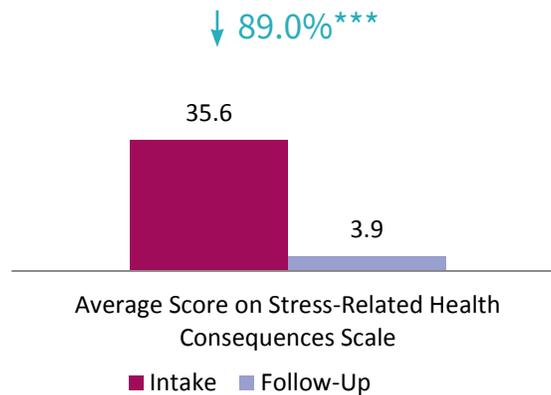
⁴¹ Three cases had missing values for the items about number of days physical and mental health were not good in the 30 days before follow-up.

⁴² Three cases had missing values for the items about number of days physical and mental health kept the client from doing their usual activities in the 30 days before follow-up.

STRESS-RELATED HEALTH CONSEQUENCES

Clients were also asked 15 items about their physiological symptoms often associated with higher stress: called the Stress-Related Health Consequences scale.⁴³ The index contains 15 symptoms; 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 75 and the lowest possible score is 0. For the overall sample, scores on the Stress-Related Health Consequences scale decreased significantly from 35.6 at intake to 3.9 at follow-up, representing a decrease of 89.0% (see Figure 4.6).⁴⁴

FIGURE 4.6. AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE AT INTAKE AND FOLLOW-UP (N = 279)^a



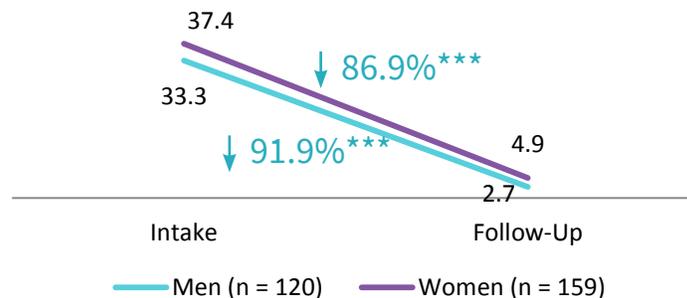
a—Significance tested with paired t-test; ***p < .001.

GENDER DIFFERENCES IN STRESS-RELATED HEALTH CONSEQUENCES

Figure 4.7 shows that men’s and women’s scores on the Stress-Related Health Consequences scale were not significantly different at intake; however, women’s scores were higher than men’s scores at follow-up. Both men’s and women’s scores decreased significantly from intake to follow-up.

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

FIGURE 4.7. GENDER DIFFERENCES IN AVERAGE SCORES ON THE STRESS-RELATED HEALTH CONSEQUENCES SCALE^a



***p < .001.

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

⁴³ Measure created by Logan, T. and Walker, R. Stress and Allostatic Load.

⁴⁴ Six cases had missing values on the scale sum at follow-up.

Section 5.

Education and Employment

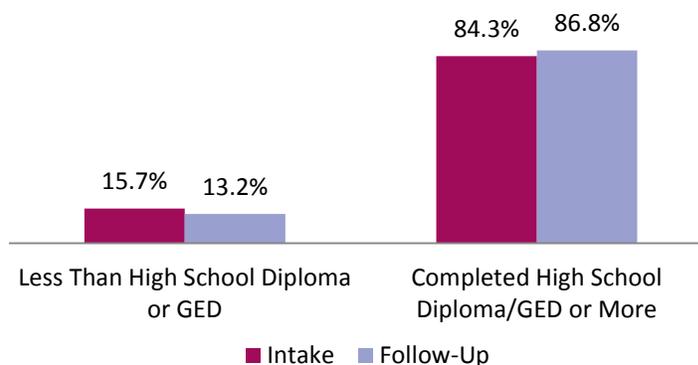
This section examines changes in education and employment from pre-program to follow-up including: (1) highest level of education completed; (2) the percentage of clients who worked full-time or part-time; (3) the number of months clients were employed full-time or part-time, among those who were employed 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 did not change significantly from intake (12.4) to follow-up (12.5).⁴⁵

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 5.1). At intake, 84.3% 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 percentage had increased slightly (but not significantly) to 86.8%. At intake, 15.7% of the follow-up sample reported that they had less than a high school diploma or GED. At follow-up, 13.2% reported that they had completed less than a high school diploma or GED.

FIGURE 5.1. HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE AND FOLLOW-UP (N = 280)⁴⁶



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 (47.2%) 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 5.2). At follow-up,

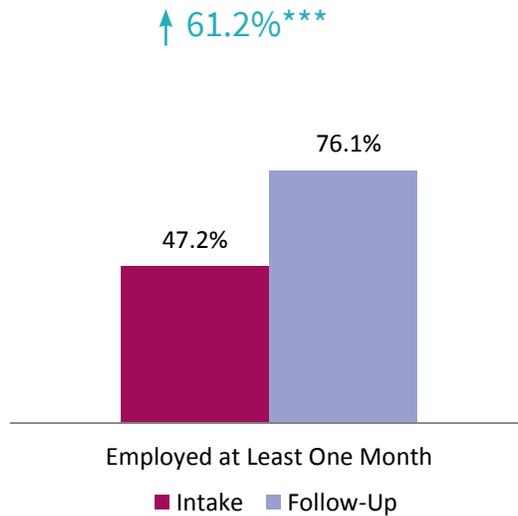
The percentage of clients reporting being employed at least one month increased 61% at follow-up

⁴⁵ Number of years of education was recoded for analysis so that 12 years of education and GED were equal to 12.

⁴⁶ Five cases had missing values on highest level of education because of inconsistencies between values in the intake and follow-up surveys.

76.1% worked part-time or full-time at least one month in the past 6 months, which was a significant increase of 61.2%.

FIGURE 5.2. EMPLOYED FULL-TIME OR PART-TIME FOR AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP (N= 284)⁴⁷



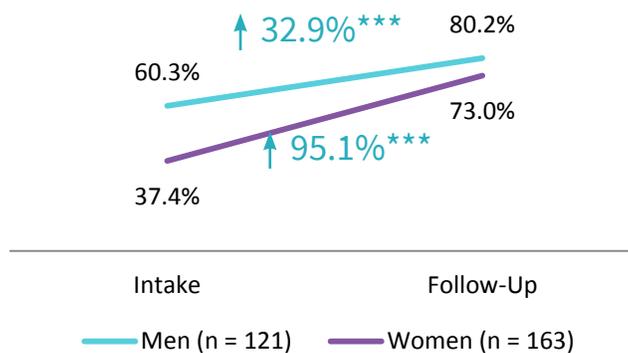
***p < .001.

GENDER DIFFERENCES IN THE PERCENTAGE OF INDIVIDUALS EMPLOYED

Significantly more men (60.3%) than women (37.4%) were employed part-time or full-time at least one month before they entered the recovery center (see Figure 5.3). The number of men and women who reported being employed at least one month in the follow-up period increased significantly by 32.9% and 95.1% respectively. Thus, at follow-up, there was no significant difference in the number of men and women who reported they were employed at least one month in the past 6 months.

The number of women employed at least one month increased significantly by 95%

FIGURE 5.3. GENDER DIFFERENCES IN EMPLOYED AT LEAST ONE MONTH AT INTAKE AND FOLLOW-UP (N = 284)^a



***p < .001.

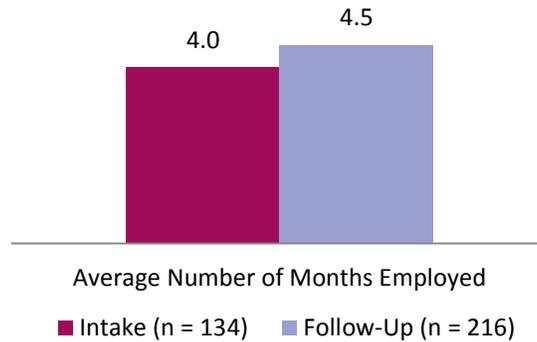
a—Significant difference in the percentage of individuals who were employed part-time or full-time in at least one month at intake by gender; p < .001.

⁴⁷ One case had a missing value on employment at follow-up.

AVERAGE NUMBER OF MONTHS EMPLOYED

As seen in Figure 5.4, among individuals who reported being employed part-time or full-time at all before entering the program (n = 134), the average number of months worked was 4.0. Among the 216 individuals who worked at all in the 6-month follow-up period, the average number of months they worked was 4.5.

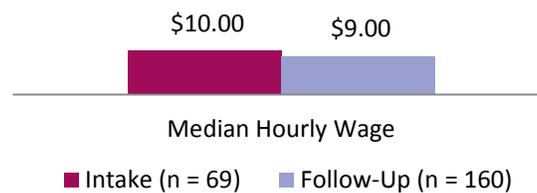
FIGURE 5.4. AVERAGE NUMBER MONTHS EMPLOYED AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO REPORTED BEING EMPLOYED



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 percentage of clients reported they were currently employed at intake (n = 71)⁴⁸ and their median hourly wage was \$10.00 (see Figure 5.5). At follow-up, the median hourly wage was \$9.00.

FIGURE 5.5. MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP, AMONG THOSE WHO REPORTED BEING CURRENTLY EMPLOYED



GENDER DIFFERENCES IN MEDIAN HOURLY WAGE

At intake, employed women reported a median hourly wage of \$8.00, which was significantly lower than the median hourly wage for employed men, \$12.50, meaning women made \$0.64 for every dollar men made (see Figure 5.6). At follow-up, men reported significantly higher hourly wages compared to women (\$10.00 for men and \$8.00 for women). At follow-up, employed women made \$0.80 for every dollar employed men made.

At intake, **employed women made only \$0.64 for every \$1 employed men made**

⁴⁸ Of those who were currently employed at intake (n = 71), two cases had missing values for hourly wage. Of those currently employed at follow-up (n = 171), eleven cases had missing values for hourly wage.

FIGURE 5.6. GENDER DIFFERENCES MEDIAN HOURLY WAGE AT INTAKE AND FOLLOW-UP^a



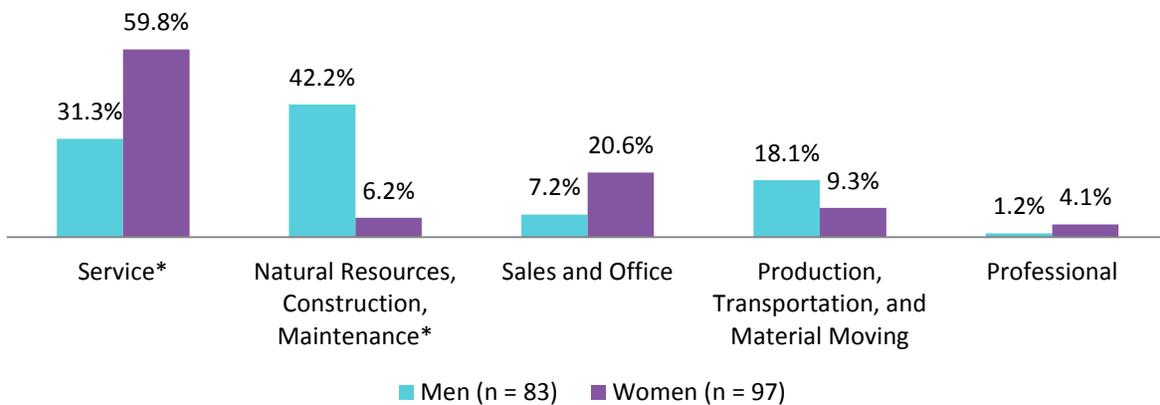
a—Significant difference in hourly wage at intake and follow-up by gender tested with Mann-Whitney U test; $p < .001$.

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.⁴⁹ At follow-up, over half of employed women (59.8%) reported having a service job whereas only 31.3% of employed men had a service job (see Figure 5.7). More employed men reported having a natural resources, construction, or maintenance job than women (42.2% vs. 6.2%). One-fifth of employed women (20.6%) had sales and office jobs and 7.2% of employed men had sales and office jobs. Production, transportation, and material moving jobs were reported by 18.1% of employed men and 9.3% of employed women. Small numbers of men and women reported having professional jobs.

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

FIGURE 5.7. AMONG EMPLOYED INDIVIDUALS, TYPE OF OCCUPATION BY GENDER AT FOLLOW-UP (N = 180)



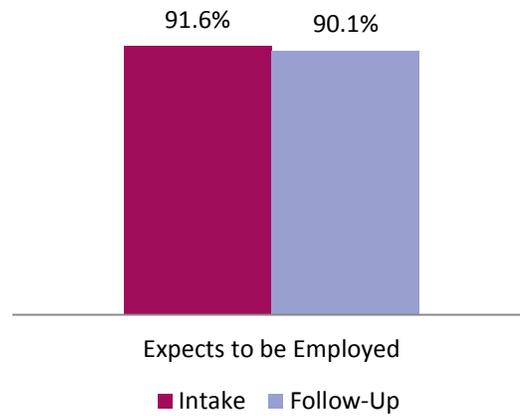
** $p < .01$.

⁴⁹ 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.

EXPECT TO BE EMPLOYED

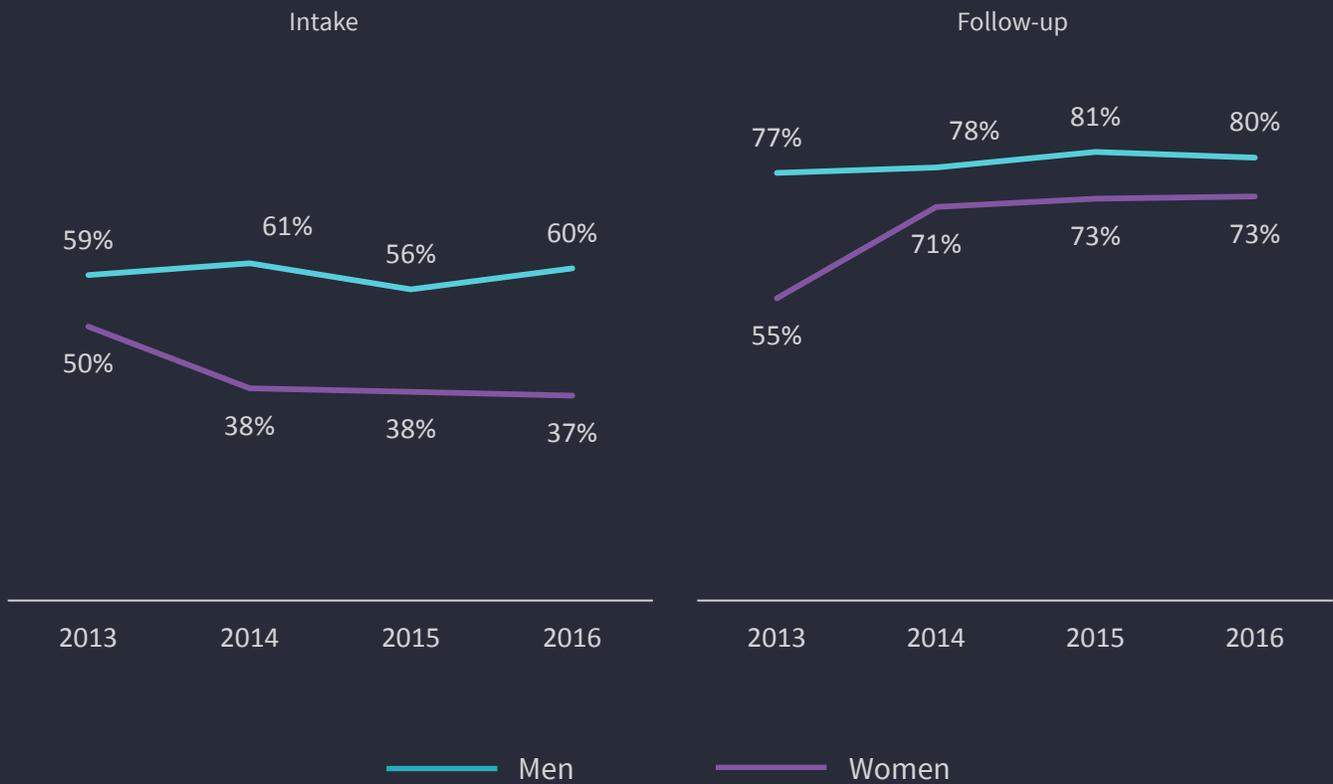
The vast majority of clients reported they expected to be employed in the next 6 months at intake and follow-up, with no significant change (see Figure 5.8).

FIGURE 5.8. CLIENT EXPECTS TO BE EMPLOYED IN THE NEXT 6 MONTHS AT INTAKE AND FOLLOW-UP (N = 285)



Trend Alert: Employment trends by gender

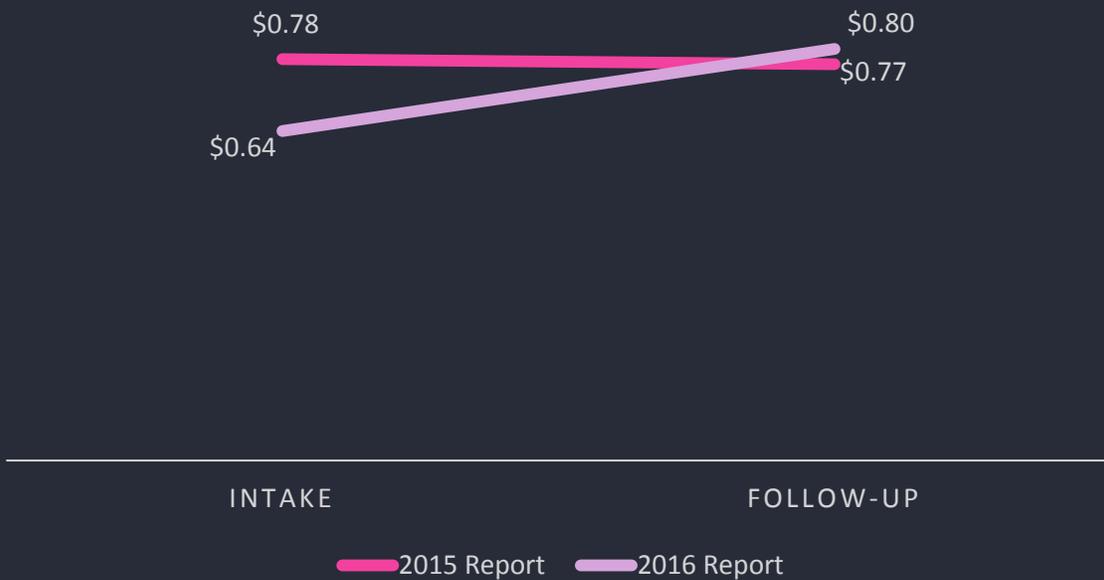
In the 2014 and 2015 RCOS Follow-Up Report as well as this report, significantly fewer women reported being employed at intake compared to men, but by follow-up the majority of women reported they were employed full-time or part-time at least one month in the follow-up period. This is a significant improvement for women compared to findings from the RCOS 2013 Report. The number of women who reported being employed at either point, however, was considerably lower than for men.



Trend Alert:

Gender wage gap trend

In the 2015 RCOS Follow-Up Report as well as this report, 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 2015 Report, employed women made \$0.78 for every \$1.00 men made at intake and \$0.77 for every \$1.00 men made at follow-up. In this year's report, the gender wage gap was also found; at intake, employed women made \$0.64 for every \$1.00 men made and at follow-up, employed women made \$0.80 for every \$1.00 men made.



Section 6. Living Situation

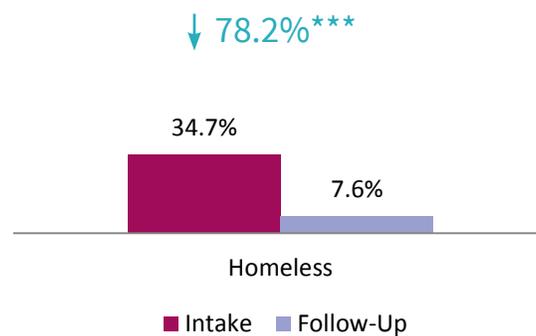
This section of target factors examines the clients' living situation before they entered the program and at follow-up. Specifically, clients are asked at both points: (1) if they consider themselves currently homeless; (2) in what type of situation (i.e., own home or someone else's home, residential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

HOMELESSNESS

Clients were asked if they considered themselves homeless at intake and at follow-up. A little more than one third of clients (34.7%) reported being homeless when they entered the recovery center, and 7.6% reported being homeless at follow-up. This is a significant decrease of 78.2% in the number of clients who reported they were homeless (see Figure 6.1).

There was a **78% decrease in homelessness at follow-up**

FIGURE 6.1. HOMELESSNESS AT INTAKE AND FOLLOW-UP (N = 251)⁵⁰



***p < .001.

LIVING SITUATION

Change in living situation from intake to follow-up was examined for the RCOS follow-up sample (see Figure 6.2). At intake and follow-up, individuals were asked about where they lived in the past 30 days. The majority of individuals reported living in a private residence (i.e., their own home or someone else's home), with a significant increase from intake to follow-up. The number of clients who reported living in a jail or prison decreased significantly by 100% from intake (32.3%) to follow-up (0.0%).

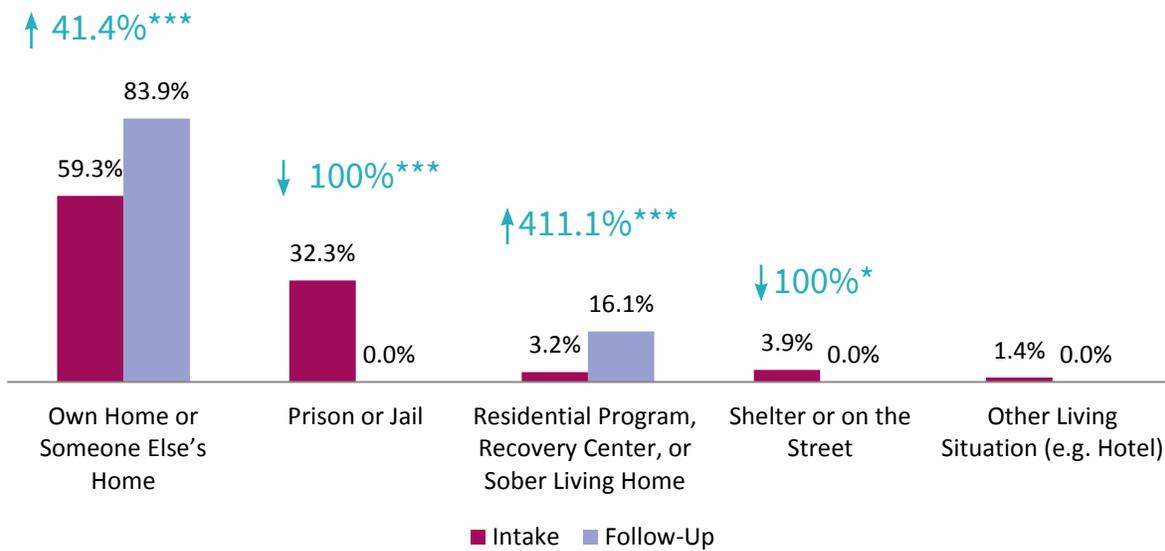
Even though individuals were targeted for the follow-up survey 12 months after they completed their intake survey and entry into Phase 1, 16.1% reported living in a recovery center, residential program, or sober living home at follow-up. Thus, the change in number of individuals in a recovery center, residential program, or sober living home increased significantly by 411.1%. Only a small number of individuals reported living in a shelter or on the street at intake (3.9%) and none reported

“It saved my life. I learned a new way to live. It taught me how to accept things and made me feel human.”
-RCOS Follow-up Client

⁵⁰ Individuals who said they were currently living at a recovery center at follow-up were not asked this question in the follow-up survey.

this at follow-up (0.0%).

FIGURE 6.2. LIVING SITUATION AT INTAKE AND FOLLOW-UP (N=285)



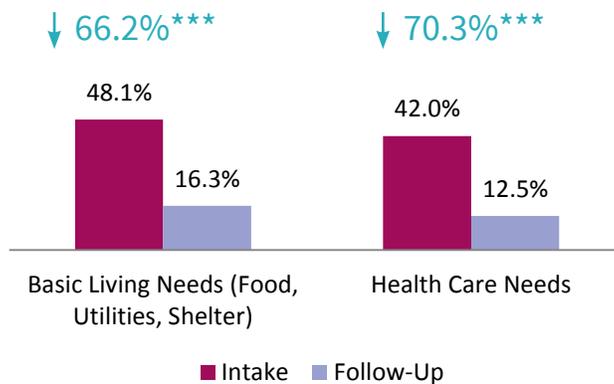
*p < .05, ***p < .001.

ECONOMIC HARDSHIP

Economic hardship may be a better indicator of the actual day-to-day stressors individuals 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.⁵¹ 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 66.2% from intake (48.1%) to follow-up (16.3%; see Figure 6.3). 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 70.3%.

FIGURE 6.3. DIFFICULTY MEETING BASIC LIVING AND HEALTH CARE NEEDS FOR FINANCIAL REASONS AT INTAKE AND FOLLOW-UP (N=283)⁵²



***p < .001

⁵¹ She, P., & Livermore, G. (2007). Material hardship, poverty, and disability among working-age adults. *Social Science Quarterly*, 88(4), 970-989.

⁵² There was missing data on items that comprised the basic living needs for two individuals and the health care needs for four individuals.

Section 7.

Involvement in the Criminal Justice System

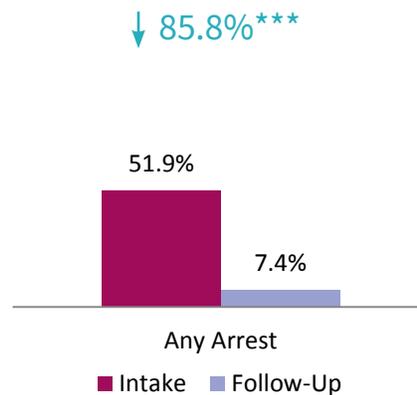
This section describes change in client involvement with the criminal justice system from pre-program to follow-up. Specifically, the following targeted factors are presented in this section: (1) arrests; (2) incarceration; and (3) supervision by the criminal justice system.

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. The majority of individuals (51.9%) reported an arrest in the 6 months before entering the recovery center (see Figure 7.1). At follow-up, this percentage had decreased significantly by 85.8% to 7.4%.

The percentage of **clients reporting any arrest significantly decreased 86% at follow-up**

FIGURE 7.1. CLIENTS REPORTING ANY ARRESTS AT INTAKE AND FOLLOW-UP (N = 285)



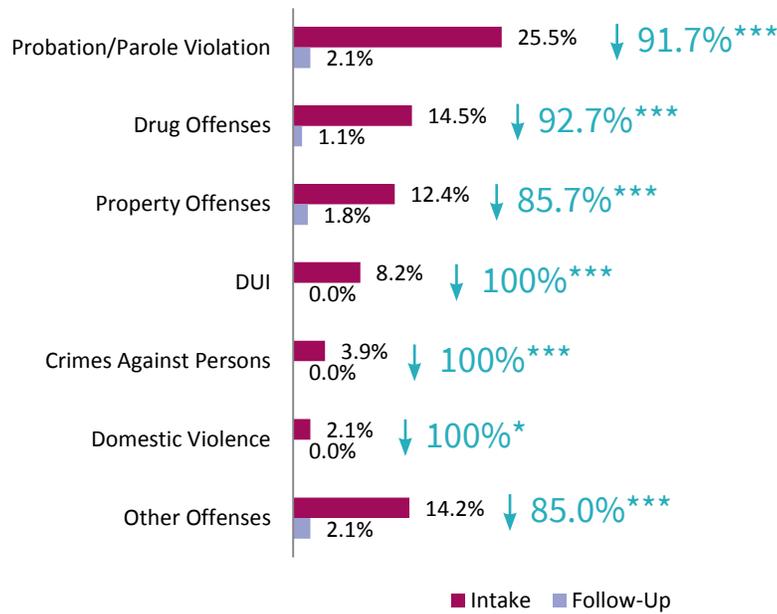
ARRESTS BY OFFENSE TYPE

As shown in Figure 7.2, the number of individuals reporting an arrest for a probation/parole violation decreased by 91.7%, from 25.5% at intake to 2.1% at follow-up.⁵³ The percentage of individuals who reported having been arrested for drug offenses decreased by 92.7% from 14.5% at intake to 1.1% at follow-up. Individuals reporting arrests for property offenses decreased by 85.7%. A minority of clients reported a DUI in the 6 months before entering the program and none reported a DUI in the 6 months before follow-up. Even though only a small percentage of individuals reported a crime against a person at intake, there was a decrease of 100.0% at follow-up. Similarly, only a small number of individuals reported being arrested for a domestic violence-related offense (i.e., crime against a family member, intimate partner) and this number decreased to 0.0% at follow-up. The number of individuals arrested for other offenses (e.g., public intoxication, contempt, evading arrest) decreased from 14.2% at intake to 2.1% at follow-up.

“They are amazing. They don’t treat you like an addict. They treat you like a person.”
-RCOS Follow-up Client

⁵³ Three cases had missing data on arrests for specific types of offenses at follow-up.

FIGURE 7.2. ARRESTS FOR SPECIFIC TYPES OF CRIMINAL OFFENSES AT INTAKE AND FOLLOW-UP (N = 282)

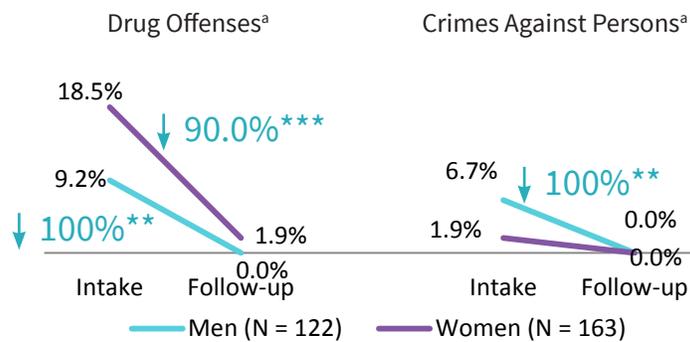


*p < .05, ***p < .001

GENDER DIFFERENCES IN ARRESTS FOR SPECIFIC TYPES OF OFFENSES

At intake, significantly more women reported having been arrested for a drug offense in the 6 months before entering the program when compared to men (18.5% vs. 9.2%; see Figure 7.3). The numbers of men and women who reported a drug offense arrest were significantly lower at follow-up. Significantly more men reported an arrest for a crime against persons at intake when compared to women; however, at follow-up, no men or women reported an arrest for a crime against persons.

FIGURE 7.3. GENDER DIFFERENCES IN ARRESTS FOR SPECIFIC TYPES OF OFFENSES (N = 282)^a



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

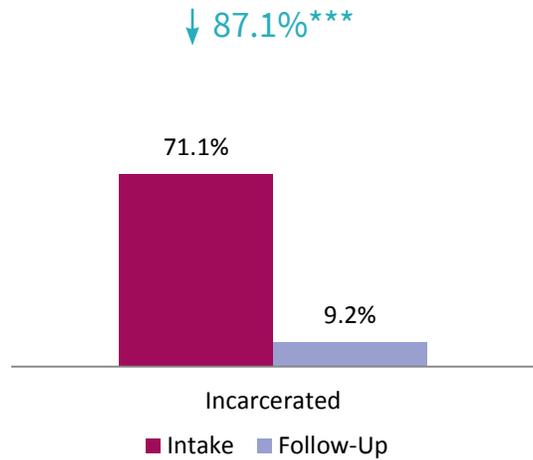
a—Significant difference by gender at intake.

INCARCERATION

Seven in 10 individuals (71.1%) reported spending at least one day in jail or prison in the 6 months prior to entering the recovery center (see Figure 7.4). At follow-up, only 9.2% reported spending at least one day incarcerated in the past 6 months; a significant decrease of 87.1%.

There was an **87% decrease in the number of individuals who were incarcerated at follow-up**

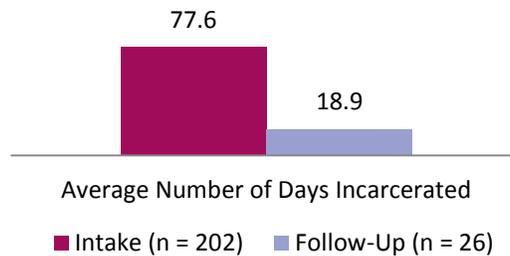
FIGURE 7.4. CLIENTS REPORTING INCARCERATION AT INTAKE AND FOLLOW-UP (N = 284)⁵⁴



***p < .001.

Among individuals who were incarcerated in the 6 months before entering the program, the average number of days incarcerated was 77.6 (see Figure 7.5). Among the smaller number of individuals who reported being incarcerated in the 6 months before follow-up, the average number of days incarcerated was 18.9.

FIGURE 7.5. AMONG INDIVIDUALS WHO WERE INCARCERATED, THE AVERAGE NUMBER OF DAYS INCARCERATED AT INTAKE AND FOLLOW-UP

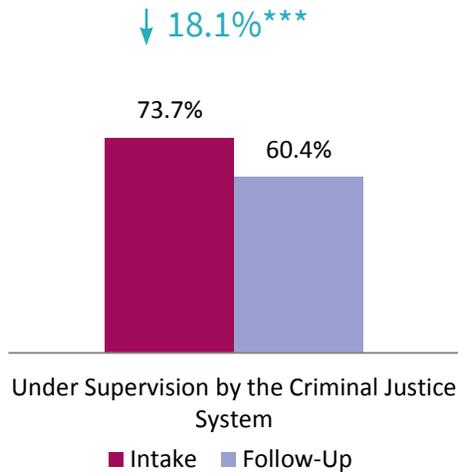


⁵⁴ One case had a missing value for the incarceration variable at follow-up.

SELF-REPORTED CRIMINAL JUSTICE SYSTEM SUPERVISION

The majority of clients were under criminal justice system supervision when they entered the recovery center and at follow-up. The number of individuals that self-reported they were under criminal justice system supervision (e.g., drug court, probation, or parole) decreased significantly by 18.1% (see Figure 7.6).

FIGURE 7.6. CLIENTS REPORTING SUPERVISION BY THE CRIMINAL JUSTICE SYSTEM AT INTAKE AND FOLLOW-UP (N = 285)



***p < .001.

Section 8.

Recovery Supports

This section focuses on three main changes in recovery supports: (1) percentage of clients attending mutual help recovery group meetings; (2) recovery supportive interactions with family/friends in the past 30 days; and (3) the number of people the individual said they could count on for recovery support.

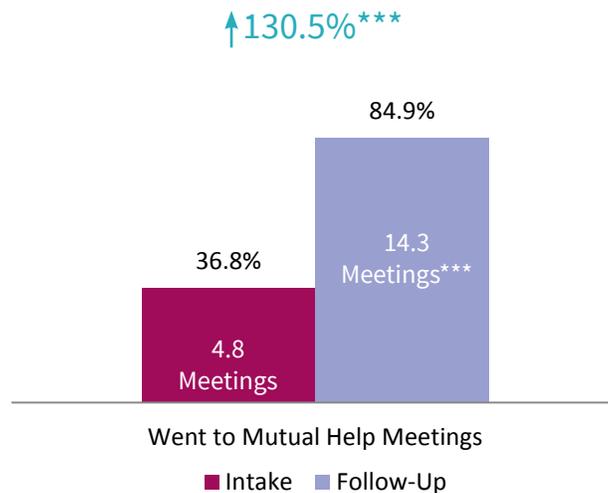
MUTUAL HELP RECOVERY GROUP MEETINGS

At intake, 36.8% of individuals reported going to mutual help recovery group meetings (e.g., AA, NA, or faith-based) in the 30 days before they entered the recovery center (see Figure 8.1). At follow-up, there was a significant increase of 130.5%, with 84.9% of individuals reporting they had gone to mutual help recovery group meetings in the past 30 days.

There was a **131% increase in the percentage of clients reporting attending mutual help recovery groups**

To have a better idea how often individuals attended mutual-help recovery group meetings before entering the recovery center and follow-up, the average number of meetings attended was examined. The number of meetings attended increased significantly from 4.8 at intake to 14.3 at follow-up (see Figure 8.1).

FIGURE 8.1. RECOVERY SUPPORTS AT INTAKE AND FOLLOW-UP (N=285)⁵⁵



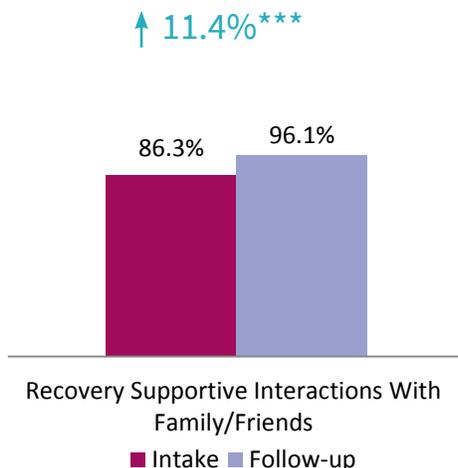
***p < .001.

RECOVERY SUPPORTIVE INTERACTIONS WITH FAMILY/FRIENDS

As seen in Figure 8.2, at follow-up, significantly more individuals (96.1%) reported that they had interactions with family and friends who were supportive of their recovery in the past 30 days compared to intake (86.3%).

⁵⁵ Three individuals reported they had attended mutual help meetings in the 30 days before follow-up but they did not know how many times so their data is treated as missing for the analysis examining change in number of meetings attended.

FIGURE 8.2. RECOVERY SUPPORTIVE INTERACTIONS WITH FAMILY/FRIENDS IN THE PAST 30 DAYS (N = 285)

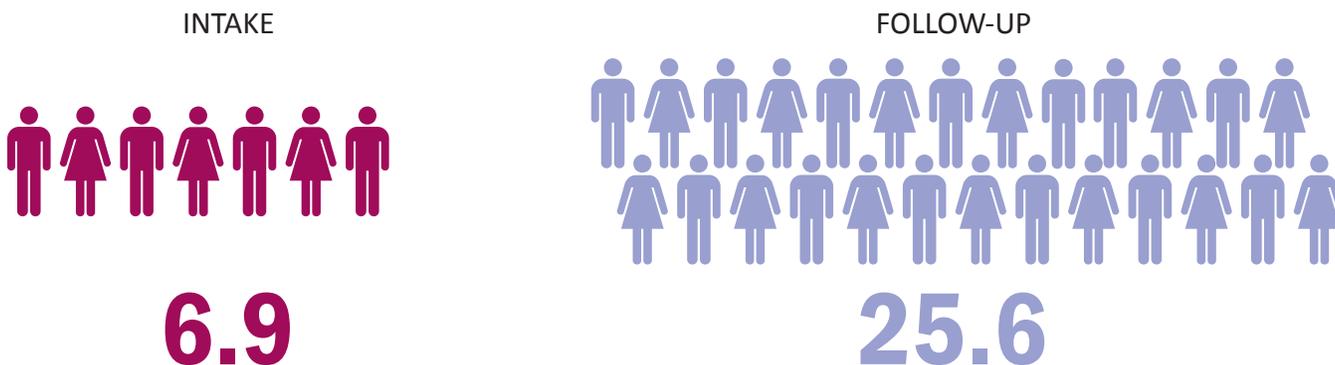


***p < .001.

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 by 271.0%, from 6.9 people at intake to 25.6 people at follow-up (see Figure 8.3).⁵⁶

FIGURE 8.3. AVERAGE NUMBER OF PEOPLE CLIENTS SAID THEY COULD COUNT ON FOR RECOVERY SUPPORT AT INTAKE AND FOLLOW-UP (N = 280)



GENDER DIFFERENCES IN NUMBER OF PEOPLE THE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT

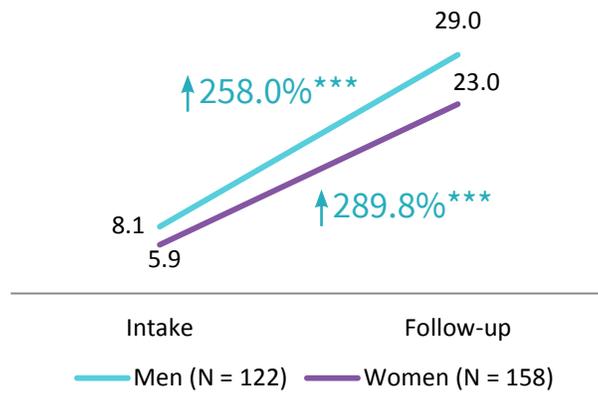
At intake, men reported a significantly higher average number of people they could count on for recovery support when compared to women (8.1 vs. 5.9; see Figure 8.4). The average number of recovery supportive people men stated they could count on increased significantly to 29.0 at follow-up, while women’s average number of recovery supportive persons also increased significantly to 23.0 at follow-up.

“I liked it because the staff has been through addiction themselves so they understand where I’m coming from.”

-RCOS Follow-up Client

⁵⁶ Five cases had missing values at follow-up; 4 answered “Don’t know” and 1 had an extreme value that was an outlier.

FIGURE 8.4. GENDER DIFFERENCES IN THE AVERAGE NUMBER OF PEOPLE THE CLIENT COULD COUNT ON FOR RECOVERY SUPPORT (N = 280)^a



***p < .001.

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

Section 9.

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 \$2.99 for every dollar spent on recovery programs.

COST SAVINGS FROM 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.⁵⁷ 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.^{58,59} 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 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 2014 dollars using a CPI indexing from

⁵⁷ 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.

⁵⁸ 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.

⁵⁹ National Drug Intelligence Center. (2011). *The Economic Impact of Illicit Drug Use on American Society*. Washington, DC: United States Department of Justice.

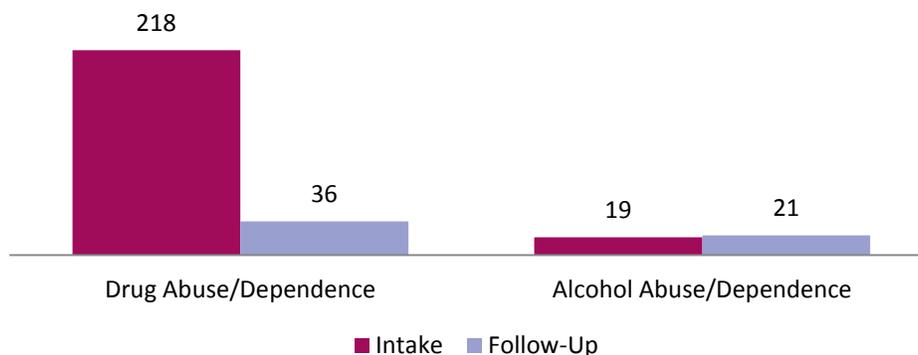
a federal reserve bank (<http://www.minneapolisfed.org>).

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 abuse/dependence (or drug abuse/dependence).⁶⁰ The estimate of the cost to society of alcohol abuse/dependence was \$267,722,200,000 after conversion to 2014 dollars. This amount was then divided by the 17,000,000 individuals estimated in the NSDUH in 2014 to have an alcohol abuse or dependence disorder in the NSDUH in 2014, yielding a cost per person of alcohol abuse of \$15,748 (after rounding to a whole dollar). The estimate of the cost to society of drug abuse/dependence was \$220,130,500,200 after conversion to 2014 dollars. This amount was then divided by the 7,100,000 individuals estimated in the NSDUH in 2014 to have an illicit drug abuse or dependence disorder, yielding a cost per person of alcohol abuse of \$31,004 (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 9.1 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 abuse/dependent category. Individuals who reported using alcohol but not using illegal drugs were classified in the alcohol abuse/dependent category. The change from intake to follow-up is substantial (see Figure 9.1). At intake 218 of the 285 RCOS clients were classified in the drug abuse/dependent category and 19 in the alcohol abuse/dependent category. At follow-up, only 36 individuals were classified in the drug abuse/dependent category and 21 individuals in the alcohol abuse/dependent category.

FIGURE 9.1 CHANGE IN THE NUMBER OF INDIVIDUALS WHO WERE ACTIVE DRUG ABUSERS OR ALCOHOL ABUSERS FROM INTAKE TO FOLLOW-UP (N = 285)



⁶⁰ Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from <http://www.samhsa.gov/data>

When the estimated cost per individual drug user was applied to the 218 individuals who were active drug users at intake, the annual estimated cost to society for the RCOS individuals before entry into the recovery center was \$6,758,872. When the average annual cost per individual alcohol user was applied to the 19 individuals who were active alcohol users at intake, the estimated cost to society was \$299,212. The total estimated cost of drug and alcohol abuse applied to the sample of individuals in RCOS was \$7,058,084. By follow-up, the estimated cost of the 31 individuals who were still active drug abusers was \$1,116,144 and the estimated cost of the 21 individuals who were active alcohol abusers was \$330,708, for a total of \$1,446,852. Thus, as shown in Figure 9.2, after participation in a Recovery Kentucky program, the aggregate cost to society for the RCOS follow-up sample was reduced by \$5,611,232.

FIGURE 9.2. CHANGE IN COST TO SOCIETY AT INTAKE AND FOLLOW-UP (AMOUNTS IN MILLIONS OF DOLLARS) (N = 285)



The daily cost of participation in a Recovery Kentucky program in FY 2014 was \$26.85 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 \$26.85 for a total cost of \$1,878,345 for the 285 individuals included in this report.⁶¹ When the cost of Recovery Kentucky programs is subtracted from the cost savings from increased alcohol and drug abstinence, there is an estimated net savings to society of \$3,732,887 for serving this sample of 285 individuals. Examining the total avoided costs in relation to expenditures on recovery services, these figures suggest that for **every dollar spent on recovery, there was a \$2.99 return in avoided costs.**

For every dollar spent on recovery, there was a \$2.99 return in avoided costs.

⁶¹ 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 94.9 percentile of the distribution for days of service (462) was applied to the top 5% of cases (i.e., outliers). Once this was done the average number of days of service was 245.5 days.

Section 10.

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 285 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. Evaluation results indicate that Recovery Kentucky programs have been successful in facilitating substantial positive changes in clients' lives.

First, clients reported very high levels of satisfaction with Recovery Kentucky programs. Specifically, the vast majority indicated that the services helped them get better and feel better about themselves, they were treated with respect and they understood what was expected of them in the program. They also reported positive outcomes to their participation in the Recovery Kentucky programs such as reductions in substance use, more positive interactions and relationships with other people, improved mental health and feelings about themselves, and major life improvements. Clients reported more frequent positive feelings and at the same time less frequent negative feelings at follow-up when compared to intake. Further, individuals who completed follow-up interviews reported their quality of life as well as their satisfaction with their lives were significantly higher at follow-up compared to intake. No doubt helping with this increased satisfaction with life was the fact that there was an increase in the percentage of clients who felt they had people in their lives who were supportive of their recovery as well as a significant increase in the number of people in their lives they could rely on for recovery support.

Recovery Kentucky clients reported significant reductions in substance use after entering the program. While reported substance use was high in the 6 months prior to entry to the recovery centers, by follow-up only a small minority of clients reported any substance use. Not only did the number of individuals who reported any alcohol or drug use decrease significantly, but also the number of individuals who met criteria for severe alcohol use disorder and severe drug use disorder decreased significantly from intake to follow-up.

Individuals also made dramatic improvements in reported mental health symptoms and stress. Before entering the program, the majority of clients reported depression as well as anxiety; however, at follow-up, only 10.5% reported depression and 14.7% reported anxiety. About 1 in 3 clients (32.6%) reported suicidal ideation or attempts in the 6 months before entering the program, with a significant decrease at follow-up (2.8%). Further, clients self-reported stress-related health consequences decreased significantly from intake to follow-up.

Clients were asked how many days out of the past 30 days their physical and mental health was not good. These questions are asked on a national survey administered on an annual basis. In the 2014 Behavioral Risk Factor Surveillance System (BRFSS) Kentuckians reported 4.5 days their mental health not good (the highest across all the states with the national average at 3.7) and 4.9 days their physical health was not good (ranking of 47, with the 3rd highest number of days compared to the national average of 3.9 days).⁶² The RCOS clients reported, on average, 16.9 days their mental health was not

⁶² United Health Foundation. (2014). *America's health rankings®: A call to action for individuals and their communities* (25th Anniversary Ed.). Minnetonka, MN: United Health Foundation. www.americashealthrankings.org

good in the 30 days before they entered the program and 2.4 days at the follow-up. Similarly, clients reported 8.6 days their physical health was not good the 30 days before entering the program and 1.2 days their physical health was not good at follow-up.

Recovery Kentucky program clients had more success with employment at follow-up with a significant increase of 61% in the number of clients who reported full-time or part-time employment at follow-up. The majority of clients expected to be employed in the next six months after follow-up. In the 2013 RCOS Follow-Up Report, significantly fewer women reported being employed at both intake and follow-up compared to men. In the 2014 and 2015 RCOS Follow-Up Report as well as this current report, significantly fewer women reported being employed at intake compared to men, but by follow-up the majority of women reported they were employed full-time or part-time. This is a significant improvement for women compared to findings from the RCOS 2013 report. Nonetheless, compared to employed men's, employed women's median hourly wage was still significantly lower at follow-up as well as at intake.

Improvements in program participants' living situation and ability to meet their basic needs were found at follow-up when compared to intake. The number of individuals who reported they were homeless decreased from 34.7% at intake to 7.6% at follow-up. Additionally, there was a shift in significantly more individuals with a usual living situation in a private residence than in jail/prison at follow-up. Finally, fewer RCOS clients reported economic hardship at follow-up than at intake. Specifically, nearly half of clients reported at intake they had difficulty meeting basic living needs (e.g., food, shelter, utilities, telephone) in the 6 months before entering the recovery center; however, the number decreased by 66% to 16.3% at follow-up. Similarly, the number of individuals who reported having difficulty for financial reasons obtaining health care (e.g., doctor, dental, and prescription medications) decreased from 42.0% at intake to 12.5% at follow-up. Compared to the RCOS 2015 report findings on economic hardship the percentage of individuals who reported experiencing economic hardship at follow-up in this report was lower (29.8% vs. 12.5%).

Evaluation results show that fewer clients were involved with the criminal justice system at follow-up. The number of clients who reported they were arrested decreased 85.8% from intake to follow-up. Similarly, the number of clients who reported spending any time in jail or prison decreased 87.1%. There was also a small, but significant decrease in self-reported criminal justice system supervision for individuals.

These findings suggest that both the behavioral outcomes and cost savings from recovery services are parallel to the outcomes from substance abuse treatment. The fact that recovery centers focus on individuals needing longer term residential support means that they add an important new component to the array of publicly supported substance abuse interventions. State-funded treatment programs typically focus on shorter residential stays and a wide array of outpatient services. Recovery centers complement these services with longer term residential care.

There were a few areas where the data results suggest additional attention may be warranted. Specifically,

- Compared to women, more men reported illegal drugs and alcohol in the past 6 months at follow-up. In fact, about 1 in 5 men reported they had used any illegal drugs and about 1 in 5 reported they had used alcohol in the 6 months before follow-up. Further, more men than women reported they used alcohol to intoxication at intake.
- Similar to national and statewide trends, the number of individuals who report using heroin has increased significantly over the five fiscal years RCOS reports have been conducted.

- Smoking tobacco use is very high among Recovery Kentucky clients at intake (85.0%) and follow-up (85.8%).
- Compared to men, significantly more women had generalized anxiety at intake and follow-up as well as depression at intake. Moreover, women reported significantly higher levels of stress-related health consequences at follow-up compared to men.
- Compared to men, significantly fewer women reported they were employed in the 6 months before intake and among the currently employed, women had significantly lower wages at intake and follow-up. In fact, at intake, employed women made \$0.64 for every \$1.00 employed men made and at follow-up employed women made \$0.80 for every \$1.00 employed men made.
- Even though there were significant reductions in the number of clients experiencing homelessness and economic hardship at follow-up than at intake, individuals who experience homelessness and economic hardship after leaving Recovery Kentucky programs may be at greater risk for relapse. Greater attention and efforts to increasing job training, employment capabilities, and linkages to social safety nets are warranted.

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.^{63, 64, 65, 66} Earlier studies found that the context of the interview influences reliability.⁶⁷ 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 is limited to about 280 follow-up surveys in a 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 few differences. Due to the oversampling of three women's programs in the follow-up sample there were significantly more women who were followed up than were not followed up. Also, likely due to the gender difference in the two groups, more followed up clients reported using other illicit drugs (e.g., inhalants, hallucinogens, and synthetic drugs) and fewer followed up clients reported using smokeless tobacco in the 6 months before entering the program. There were no significant differences for demographics (other than gender), socio-economic status indicators (e.g., education, employment, living situation, inability to meet basic needs), severity of alcohol and drug

⁶³ 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.

⁶⁴ 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.

⁶⁵ 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.

⁶⁶ 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.

⁶⁷ 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.

use, mental health (e.g., depression, generalized anxiety, suicidality), criminal justice involvement (e.g., arrested, incarcerated), and treatment history. Thus, this bolsters confidence that the sample of individuals who are included in this report are representative of individuals who complete a baseline 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.

CONCLUSION

This RCOS 2016 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.

Thus 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 1,949 individuals had an intake survey submitted from July 1, 2013 through June 30, 2014. 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. However, minor modifications to the sampling plan were made to oversample clients from recovery centers that had not yet received a program specific report in the prior three years because increasing the number of clients from those recovery centers to be included in the follow-up sample would allow us to examine outcomes specific for those programs.⁶⁸ Thus, at the completion of the follow-up period, among the 285 clients with follow-up interviews, 53.0% (n = 151) were referred by the Department of Corrections (DOC) and 47.0% (n = 134) were not DOC-referred. Because three of the oversampled programs were women's recovery centers, the majority of the follow-up sample included in this report was female (57.2%) and 42.8% was male. 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 537 individuals were selected into the sample of individuals to be followed up from July 2014 to June 2015. Of these individuals 108 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 429 individuals, interviewers completed follow-up surveys with 285⁶⁹ individuals, representing a follow-up rate of 66.4% (see Table AA.1). Of the eligible individuals, 143 (33.3%) 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. No individuals refused to complete the follow-up survey when the interviewer contacted him/her. The project interviewers' efforts accounted for 73.2% of the cases (N = 393) included in the follow-up sample. The only cases not considered accounted for are those individuals who are classified as expired.

⁶⁸ Brighton Recovery Center for Women, Healing Place of Campbellsville for Men, Liberty Place Recovery Center for Women, and Trilogy Center for Women.

⁶⁹ 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 = 537)	Percent
Ineligible for follow-up survey	108	20.1%
	Number of cases eligible for follow-up (N = 429)	
Completed follow-up surveys	285	
Follow-up rate is calculated by dividing the number of completed surveys by the number of eligible cases and multiplying by 100		66.4%
Expired cases (i.e., never contacted, did not complete the survey during the follow-up period)	143	
Expired rate ((the number of expired cases/eligible cases)*100)		33.3%
Refusal	0	
Refusal rate ((the number of refusal cases/eligible cases)*100)		0.0%
Cases accounted for (i.e., records ineligible for follow-up + completed surveys + refusals)	393	
Percent of cases accounted for ((# of cases accounted for/total number of records in the follow-up sample)*100)		73.2%

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 108 cases that were ineligible for follow-up, the majority (86.1%) were ineligible because they were incarcerated during the follow-up period. Eleven individuals were ineligible because they were in residential treatment at the time of follow-up. Other reasons a small number of individuals were ineligible for follow-up were because of death or a health condition that made completing a telephone interview impossible.

TABLE AA.2. REASONS CLIENTS WERE INELIGIBLE FOR FOLLOW-UP (N = 108)

	Number	Percent
Incarcerated	93	86.1%
In residential treatment	11	10.2%
Deceased	3	2.8%
Health Condition	1	0.9%

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).⁷⁰

DEMOGRAPHIC CHARACTERISTICS

The average client age was in the early 30s. The majority of the sample for this annual report was White and a small minority of clients was Black/African American (see Table AB.1). The follow-up sample was originally stratified by gender. However, as noted in Section 1, clients from four programs (including three that were women's programs) were oversampled in the follow-up to allow for sufficient numbers of clients in those programs to produce program specific reports; thus, more women were included in the follow-up sample than men. The majority of clients reported they were never married or divorced. Other than gender, there were no other significant differences on demographics between clients who completed a follow-up survey and those who did not.

TABLE AB.1. COMPARISON OF DEMOGRAPHICS FOR CLIENTS WHO WERE FOLLOWED UP AND CLIENTS WHO WERE NOT FOLLOWED UP^{71, 72}

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
AGE	32.8 years	32.8 years
GENDER**		
Female	46.0%	57.2%
RACE		
White	89.0%	89.8%
Black/African American	8.5%	8.1%
Other or multiracial	2.4%	2.1%
MARITAL STATUS		
Never married	49.8%	50.9%
Married	15.2%	15.8%
Separated or divorced	33.0%	31.2%
Widowed	1.9%	2.1%

**p < .01

⁷⁰ Significance is reported for p<.01.

⁷¹ Two clients who did not complete a follow-up were missing information on date of birth.

⁷² One client who did not complete a follow-up was missing information on race.

SOCIO-ECONOMIC STATUS INDICATORS

Table AB.2 describes clients' level of education when entering the recovery center. A minority of individuals had less than a high school diploma or GED. About four-fifths of clients in both groups had a GED or high school diploma or higher level of education at Phase I intake.

TABLE AB.2. CLIENTS' HIGHEST LEVEL OF EDUCATION COMPLETED AT INTAKE

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
HIGHEST LEVEL OF EDUCATION COMPLETED		
Less than GED or high school diploma	19.7%	15.7%
GED/high school diploma or higher	80.3%	84.3%

There were no differences in usual employment status at intake by follow-up status (see Table AB.3). 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 3.9 for both clients not followed up and for clients followed up.

TABLE AB.3. EMPLOYMENT IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
USUAL EMPLOYMENT STATUS		
Employed full-time	32.5%	32.6%
Employed part-time (including seasonal, occasional work)	13.7%	13.7%
Unemployed and not looking for work due to being a student, homemaker, retired, disabled, or in a controlled environment	30.7%	27.0%
Unemployed	23.2%	26.7%
	(n = 768)	(n = 132)
AMONG THOSE WHO WERE EMPLOYED, AVERAGE NUMBER OF MONTHS CLIENT WAS EMPLOYED	3.9 months	3.9 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.4). About one in three 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, less than two-fifths 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.4).

TABLE AB.4 LIVING SITUATION OF CLIENTS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
USUAL LIVING ARRANGEMENT IN THE 6 MONTHS BEFORE ENTERING THE PROGRAM		
Own or someone else's home or apartment	54.1%	59.3%
Jail or prison	38.0%	32.3%
Shelter or on the street	4.5%	3.9%
Residential program, hospital, recovery center, or sober living home	2.2%	3.2%
Other living situation	1.3%	1.4%
CONSIDERS SELF TO BE CURRENTLY HOMELESS ^a		
	34.0%	35.4%
Why the individual considers himself/herself to be homeless	(n = 566)	(n = 101)
Staying temporarily with friends or family	53.0%	55.4%
Staying on the street or living in a car	20.1%	14.9%
In jail or prison	14.8%	15.8%
Staying in a shelter	7.4%	5.9%
In residential treatment, or other recovery center	1.1%	1.0%
Staying in a hotel or motel	1.1%	1.0%
Other reason	2.5%	5.9%

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

Among those clients who were not incarcerated the entire period before entering the program, over half reported they had difficulty meeting any basic needs in the 6 months before entering the program, with no significant difference by follow-up status (see Table AB.5). Similar percentages 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.5. AMONG THOSE WHO WERE NOT INCARCERATED THE ENTIRE PERIOD, CLIENTS HAD DIFFICULTY MEETING BASIC NEEDS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
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)	47.3%	50.0%
Health care needs	40.8%	44.2%
Average number of needs had difficulty meeting	2.1	2.2

Table AB.6 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. A sizable minority 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. About two-fifths reported they had ever experienced a traumatic brain injury in their lifetime. 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.6. CLIENT'S PHYSICAL HEALTH STATUS AT INTAKE

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
Client was ever told by a doctor that client had a chronic medical problem	47.6%	47.4%
Experienced chronic pain (pain lasting 3 months or more)	25.4%	26.7%
Ever had a head injury that caused loss of consciousness or resulted in hospitalization in lifetime	40.1%	38.9%
In the 30 days before entering the program:		
Average number of days physical health was not good	8.1	8.5
Average number of days mental health was not good	15.4	16.9

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.7 for those clients who were not incarcerated the entire period. There were a few significant differences in the percentage 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 percentage of clients was prescription opiates/opioids. The majority of followed up clients (52.7%) and clients who did not complete a follow-up survey (48.4%) reported using marijuana. About half of clients reported using stimulants (including amphetamines and cocaine). Sizable minorities of followed up and not followed up clients used CNS depressants and heroin. Over one-fifth (23.3%) of clients who completed a follow-up survey used other illegal drugs (e.g., synthetic drugs, hallucinogens, inhalants) and 15.4% of clients who did not complete a follow-up used other illegal drugs, which was a significant difference. About three-fifths of clients reported using any alcohol at intake. The vast majority of clients reported smoking tobacco products in the 6 months before entering the program. One-fifth (19.1%) of clients who did not complete a follow-up and only 10.9% of those who did complete a follow-up used smokeless tobacco in the 6 months before entering the program, which was a significant difference.

TABLE AB.7. PERCENTAGE OF INDIVIDUALS REPORTING ILLEGAL DRUG USE, ALCOHOL, AND TOBACCO IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
SUBSTANCES		
Any illicit drug	82.6%	82.2%
Prescription opiates/opioids (including methadone and buprenorphine)	60.3%	65.5%
Marijuana	48.4%	52.7%
CNS depressants	37.5%	43.8%
Heroin	39.9%	40.3%
Stimulants (amphetamines, cocaine)	51.8%	49.6%
Other illegal drugs (synthetic drugs, hallucinogens, inhalants)**	15.4%	23.3%
Alcohol	57.5%	60.9%
Smoked tobacco	85.0%	82.9%
Smokeless tobacco**	19.1%	10.9%

**p < .01

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, for the most part. The exceptions were that significantly more followed up clients reported using CNS depressants in the 30 days before entering the program compared to clients who were not followed up and there was no significant difference in smokeless tobacco use in the 30 days before entering the program between the two groups (not depicted in a Table or Figure).

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.8 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 (89.7% for not followed up and 91.4% for followed up individuals; see Table AB.8). 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 .36 for individuals who were not followed up and .35 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 .29 for individuals who did not complete a follow-up interview and .33 for clients who did complete a follow-up interview. 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, a little more 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.8). Among individuals who were in a controlled environment all 30 days before entering the program, the average scores for the alcohol severity composite score for the two groups were .16. 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 percentage 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.8. 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 = 887)	YES (n = 162)	NO (n = 860)	YES (n = 134)
Percent of Individuals with ASI composite score equal to or greater than cutoff score for ...				
alcohol or drug use disorder	89.7%	91.4%	51.3%	53.7%
alcohol use disorder	58.6%	58.6%	30.0%	33.3%
drug use disorder	72.5%	72.2%	38.1%	39.0%
Average ASI composite score for alcohol use ^{-a}	.36	.35	.16	.16
Average ASI composite score for drug use ^{-b}	.29	.33	.16	.15

-a Score equal to or greater than .17 is indicative of alcohol severe SUD.

-b Score equal to or greater than .16 is indicative of drug severe SUD.

SUBSTANCE ABUSE TREATMENT

A small 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.9). Among clients who reported a history of substance abuse treatment, the average number of lifetime treatment episodes was 3.3 for individuals who did not complete a follow-up interview and 4.0 for individuals who did complete a follow-up interview.

TABLE AB.9. HISTORY OF SUBSTANCE ABUSE TREATMENT IN LIFETIME

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
Ever been in substance abuse treatment in lifetime	62.7%	61.8%
Among those who had ever been in substance abuse treatment in lifetime,	(n = 1,042)	(n = 176)
Average number of times in treatment	3.3	4.0

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 DSM-IV 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?” The majority of clients reported symptoms that met criteria for depression, with no significant difference by follow-up status (see Table AB.10).

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?” The majority 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. About three in ten individuals who did not complete a follow-up interview (29.0%) and 32.6% 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.10).

TABLE AB.10. PERCENTAGE OF INDIVIDUALS REPORTING MENTAL HEALTH PROBLEMS IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
Depression	65.6%	71.6%
Generalized Anxiety	72.2%	76.1%
Suicidality (e.g., thoughts of suicide or suicide attempts)	29.0%	32.6%

CRIMINAL JUSTICE SYSTEM INVOLVEMENT AT INTAKE

The majority of individuals in the sample reported being referred to the recovery center by the criminal justice system (e.g., judge, drug court, probation, Department of Corrections), with no difference between those who were not followed up and those who were followed up (70.7% vs. 71.2% respectively; 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.

Almost half of individuals (45.9% of those not followed up and 51.9% of those followed up) reported they had been arrested in the 6 months before entering the recovery center (see Table AB.11). Just under three-fourths of clients who were not followed up (72.0%) and clients who were followed up (73.7%) were under supervision by the criminal justice system (e.g., in Drug Court, on probation or parole) when they entered the recovery center. There were no significant differences by follow-up status.

TABLE AB.11. CRIMINAL JUSTICE SYSTEM INVOLVEMENT WHEN ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
Arrested for any charge in the 6 months before entering the Recovery Center	45.9%	51.9%
Currently under supervision by the criminal justice system	72.0%	73.7%
In Drug Court	8.1%	7.4%
On probation	48.5%	49.8%
On parole	20.8%	20.7%

Table AB.12 displays the percentage of individuals arrested and charged with different types of criminal charges among those who reported being arrested in the period before entering the recovery center. There were no significant differences in the percentage of individuals arrested for different types of criminal charges between those who were followed up and those who were not followed up. The criminal offenses reported by the largest percentage of clients were probation or parole violations, followed by drug offenses (e.g., trafficking, possession). Property crime offenses were reported by about 3 in 10 individuals who were not followed up and 1 in 4 individuals who were followed up. About 1 in 6 RCOS clients reported an arrest for a DUI offense. The criminal offense category reported by the smallest number of clients in both groups was crimes against persons. Other criminal offenses were reported by 25.3% of individuals who were not followed up and 27.7% of individuals who were followed up.

TABLE AB.12. AMONG THOSE WHO REPORTED BEING ARRESTED IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER, PERCENTAGE OF INDIVIDUALS ARRESTED AND CHARGED WITH TYPES OF CRIMINAL OFFENSES

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
Probation or parole violation	48.0%	48.6%
Drug charge	28.9%	28.4%
Property crime	30.6%	23.6%
DUI	15.3%	15.5%
Crimes against a person	11.9%	7.4%
Other crimes (e.g. contempt, criminal mischief, disorderly conduct, endangering minor, failure to pay child support, failure to comply with court order, moving violations, public intoxication, trespassing, resisting arrest)	25.3%	27.7%

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.13). 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.13. INCARCERATION HISTORY IN THE 6 MONTHS BEFORE ENTERING THE RECOVERY CENTER

	FOLLOWED UP	
	NO n = 1,663	YES n = 285
Incarcerated at least one day	72.3% (n = 1203)	70.9% (n = 202)
Among those incarcerated at least one day, the average number of days incarcerated	87.6	77.6

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 89.6% 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 at intake by gender; however, at follow-up, significantly more men reported using marijuana when compared to women.

TABLE AC.1. MARIJUANA USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
MARIJUANA ^b					
Men (n =106)	63	59.4%	11	10.4%	-82.5%***
Women (n = 142)	72	50.7%	3	2.1%	-95.8%***
Total (n = 248)	135	54.4%	14	5.6%	-89.6%***

a—Significance established using z test for proportions; ***p < .001.

b—Significant difference by gender at follow-up; tested with chi square test of independence (p < .01).

PAST-6-MONTH OPIOID (EXCLUDING HEROIN) USE

Individuals' self-reported use of opioids including prescription opiates, methadone, and buprenorphine decreased significantly by 87.4% from the 6 months before entering the recovery center to the 6 months before follow-up (see Table AC.2). There was no significant difference in use of opioids (excluding heroin) at intake; however, at follow-up significantly more men than women reported using opioids.

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

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
OPIOID (EXCLUDING HEROIN) ^b					
Men (n =106)	75	70.8%	15	14.2%	-80.0%***
Women (n = 142)	92	64.8%	6	4.2%	-93.5%***
Total (n = 248)	167	67.3%	21	8.5%	-87.4%***

a—Significance established using z test for proportions; ***p < .001.

b—Significant difference by gender at follow-up; tested with chi square test of independence (p < .01).

PAST-6-MONTH HEROIN USE

The number of individuals who reported using heroin decreased significantly by 90.4% 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.

TABLE AC.3. HEROIN USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
HEROIN					
Men (n =106)	42	39.6%	6	5.7%	-85.7%***
Women (n = 142)	62	43.7%	4	2.8%	-93.5%***
Total (n = 248)	104	41.9%	10	4.0%	-90.4%***

a—Significance established using z test for proportions; ***p < .001.

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 94.6% in the 6 months before entering the recovery center to the 6 months before follow-up (see Table AC.4). At follow-up significantly more men than women reported using CNS depressants.

TABLE AC.4. CNS DEPRESSANT USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
CNS DEPRESSANTS ^b					
Men (n =106)	51	48.1%	5	4.7%	-90.2%***
Women (n = 142)	61	43.0%	1	0.7%	-98.4%***
Total (n = 248)	112	45.2%	6	2.4%	-94.6%***

a—Significance established using z test for proportions; ***p < .001.

b—Significant difference by gender at follow-up; tested with chi square test of independence (p < .05).

PAST-6-MONTH STIMULANT (INCLUDING COCAINE) USE

The number of individuals who reported using cocaine/stimulants (e.g., amphetamine, methamphetamine, ecstasy, Ritalin) decreased significantly by 98.4% 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/stimulants at intake or follow-up by gender.

TABLE AC.5. COCAINE/STIMULANT USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
COCAINE/STIMULANTS					
Men (n =106)	57	53.8%	2	1.9%	-96.5%***
Women (n = 142)	70	49.3%	0	0.0%	-100.0%***
Total (n = 248)	127	51.2%	2	0.8%	-98.4%***

a—Significance established using z test for proportions; ***p < .001.

PAST-6-MONTH USE OF OTHER DRUGS

The number of individuals who reported using other illegal drugs (e.g., inhalants, hallucinogens, synthetic marijuana) decreased significantly by 98.3% (see Table AC.6). There were no gender differences in the percentage of clients who reported using other illegal drugs at intake or follow-up.

TABLE AC.6. USE OF OTHER DRUGS FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT THE ENTIRE PERIOD BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
OTHER DRUGS					
Men (n =106)	29	27.4%	1	0.9%	-96.6%***
Women (n = 142)	30	21.1%	0	0.0%	-100.0%***
Total (n = 248)	59	23.8%	1	0.4%	-98.3%***

a—Significance established using z test for proportions; ***p < .001.

CHANGE IN 30-DAY DRUG USE FROM INTAKE TO FOLLOW-UP FOR INDIVIDUALS NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

PAST-30-DAY MARIJUANA USE

About half of individuals who were not in a controlled environment all 30 days before entering the recovery center (51.9%) reported they had used marijuana in the 30 days before entering the recovery center (see Table AC.7). By follow-up, only 2.5% of individuals reported they had used marijuana, which represents a 95.2% significant decrease. At intake, significantly more men than women reported using marijuana and at follow-up, there was no significant difference in past-30-day use of marijuana.

TABLE AC.7. MARIJUANA USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
MARIJUANA ^b					
Men (n = 73)	46	63.0%	3	4.1%	-93.5%***
Women (n = 89)	38	42.7%	1	1.1%	-97.4%***
Total (n = 162)	84	51.9%	4	2.5%	-95.2%***

a—Significance established using z test for proportions; ***p < .001.

b—Significant difference by gender at intake; tested with chi square test of independence (p < .05).

PAST-30-DAY OPIOID (EXCLUDING HEROIN) USE

The majority of clients (64.2%) reported using opioids (other than heroin) in the 30 days before entering the recovery center. At follow-up, only 1.9% reported past-30-day use of opioids, which was a significant decrease of 97.1% (see Table AC.8).

TABLE AC.8. OPIOID USE (EXCLUDING HEROIN) FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
OPIOID (EXCLUDING HEROIN) ^b					
Men (n = 73)	49	67.1%	2	2.7%	-95.9%***
Women (n = 89)	55	61.8%	1	1.1%	-98.2%***
Total (n = 162)	104	64.2%	3	1.9%	-97.1%***

a—Significance established using z test for proportions; ***p < .001.

PAST-30-DAY HEROIN USE

About 2 in 5 individuals (39.5%) reported using heroin in the 30 days before they entered the recovery center (see Table AC.9). At follow-up, only 1.9% of individuals reported heroin use in the past 30 days—a significant decrease of 95.3% for the overall sample.

TABLE AC.9. HEROIN USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
HEROIN					
Men (n = 73)	30	41.1%	0	0.0%	-100.0%***
Women (n = 89)	34	38.2%	3	3.4%	-91.2%***
Total (n = 162)	64	39.5%	3	1.9%	-95.3%***

a—Significance established using z test for proportions; ***p < .001.

PAST-30-DAY CNS DEPRESSANT USE

A significant minority of individuals (45.1%) reported using CNS depressants in the 30 days before intake. At follow-up only 0.6% of individuals reported using CNS depressants in the past 30 days—a significant decrease of 98.6% (see Table AC.10).

TABLE AC.10. CNS DEPRESSANT USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
CNS DEPRESSANTS					
Men (n = 73)	36	49.3%	1	1.4%	-97.2%***
Women (n = 89)	37	41.6%	0	0.0%	-100.0%***
Total (n = 162)	73	45.1%	1	0.6%	-98.6%***

a—Significance established using z test for proportions; ***p < .001.

PAST-30-DAY STIMULANT (INCLUDING COCAINE) USE

Half of clients (50.0%) reported using stimulants (e.g., speed, methamphetamine, Ritalin) and/or cocaine in the 30 days before they entered the recovery center (see Table AC.11). At follow-up, no clients reported using amphetamines/cocaine in the past 30 days.

TABLE AC.11. STIMULANT/COCAINE USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
STIMULANT/COCAINE					
Men (n = 73)	38	52.1%	0	0.0%	-100%***
Women (n = 89)	43	48.3%	0	0.0%	-100%***
Total (n = 162)	81	50.0%	0	0.0%	-100%***

a—Significance established using z test for proportions; ***p < .001.

PAST-30-DAY USE OF OTHER DRUGS

A little more than one fifth of individuals (22.2%) who were not in a controlled environment all 30 days reported they had used other illegal drugs (i.e., hallucinogens, inhalants, and synthetic marijuana) in the 30 days before they entered the recovery center (see Table AC.12). At follow-up, no individuals had used other illegal drugs in the past 30 days, which was a significant decrease of 100.0%.

TABLE AC.12. CHANGE IN OTHER DRUG USE FOR INDIVIDUALS WHO WERE NOT IN A CONTROLLED ENVIRONMENT ALL 30 DAYS BEFORE ENTERING THE RECOVERY CENTER

	USE AT INTAKE		USE AT FOLLOW-UP		PERCENT CHANGE ^a
	n	Valid %	n	Valid %	
OTHER DRUG USE					
Men (n =73)	19	26.0%	0	0.0%	-100.0%***
Women (n = 89)	17	19.1%	0	0.0%	-100.0%***
Total (n = 162)	36	22.2%	0	0.0%	-100.0%***

a—Significance established using z test for proportions; ***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 (248.4 days) did not have significantly different lengths of service in the recovery centers compared to individuals whose per diem was not paid by DOC (242.2 days; $t(1,283) = -.503, p > .05$).

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. 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 using alcohol or drugs in the 6 months before follow-up, such that shorter lengths of service were associated with greater odds of using alcohol or drugs in the 6 months before follow-up ($OR_{adj} = .992, p < .001$). Second, individuals with greater length of service reported greater months of employment in the 6 months before follow-up. 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 using alcohol or drugs in the 6 months before follow-up;
- Longer length of service was associated with greater months of employment in the 6 months before follow-up.