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Sierra Tucson Outcomes Report Q1 2024

2024-04-09

This Quarterly Report provides updated information for January - March 2024 on treatment outcomes at Sierra Tucson.

Sierra Tucson assesses the outcomes of its patients via the Measurement Based Care (MBC) program, which records their outcomes while they are being treated at our residential facility, and the Connect 365 program, which records outcomes for the first year after patients have left residential care. The first part of the report focuses on changes in outcomes while patients are in treatment, and the second part focuses on changes in outcomes in the first year after patients have left treatment.

In March 2024, the MBC program updated the measures it uses. The primary reason for the update was to reduce the number of questions residents need to fill out, especially at follow-up appointments that track outcomes over time. The typical time needed to complete these appointments has been reduced by approximately 50%. Using shorter assessments also means that the first time assessments are taken, more broad screening measures can be included, such as screeners for bipolar disorder, ADHD, and eating disorders. These are one-time measures that help us make sure we catch any potential issues with residents as our clinicians create treatment plans.

In this report, we combine information from the prior MBC assessments and the new MBC assessments. We do this by rescaling all comparable measures (e.g., two different depression measures) to a 0-100 scale, called a Percentage of Maximum Possible (POMP) score. This was possible for most, but not all, of the scales we used. Data in the outcomes tables and graphs are a combination whenever possible.

Patient Details

Below are basic demographic characteristics of the patients who completed MBC surveys while in residential treatment:

- There are 281 people included in this sample.
- The average age was 39.8 years old, with a range from 18 to 77 years old.
- There were 55 % men, 43 % women, and 1 % individuals who identified as nonbinary or did not specify their gender.

Data from the C365 program analyzed included data from all people who took at least one measurement during Q1 2024. Below is some information about the C365 data:

- There are 49 people included in this sample.
- The average age was 33 years old, with a range from 19 to 55 years old.
- There were 53 % men, 44 % women, and 3 % who identified as nonbinary or did not specify their gender.

Progress at Sierra Tucson

Residents at Sierra Tucson complete MBC assessments every two weeks while in treatment. The most typical trajectory is an assessment at baseline (within the first two days of starting residential treatment), at mid-treatment (two weeks in), and at the end of treatment (four weeks in).

Some residents stayed longer than four weeks. However, to capture the typical trajectory of change, plots were made that end at the four week mark. Often patients who needed to stay longer were atypical, dealing with problems that required the longer stay. The intent of this report is to capture the normal pattern of treatment response at Sierra Tucson.

A few notes on the figures below:

- The points on the graphs represents the average score on the scale, and the error bars surrounding them represent the standard error of the average. These error bars represent a level of uncertainty. If we were to collect data on many other samples like this one, we would expect that 95% of the time the average score would be between the top and the bottom of these bars.

Changes in Mental Health Symptoms

Average changes in mental health symptoms from the start of treatment to the end of treatment were assessed using t-tests. This tests how much the symptoms decrease from start to finish. Note that all changes illustrated here represent statistically significant decreases.

Measure	N	Pre Avg	Last Avg	Difference	t	p	sig
PROMIS Pain	244	37.3	29.3	-8.0	5.44	< .001	***
Depression	244	58.9	34.6	-24.3	13.20	< .001	***
Anxiety	244	63.8	47.5	-16.2	9.55	< .001	***
Sleep	244	63.7	43.7	-20.0	10.37	< .001	***
Stress	158	66.1	41.7	-24.4	11.73	< .001	***
PCL5 Overall PTSD	244	57.4	36.5	-20.8	12.24	< .001	***

Changes in Symptoms by Week of Treatment

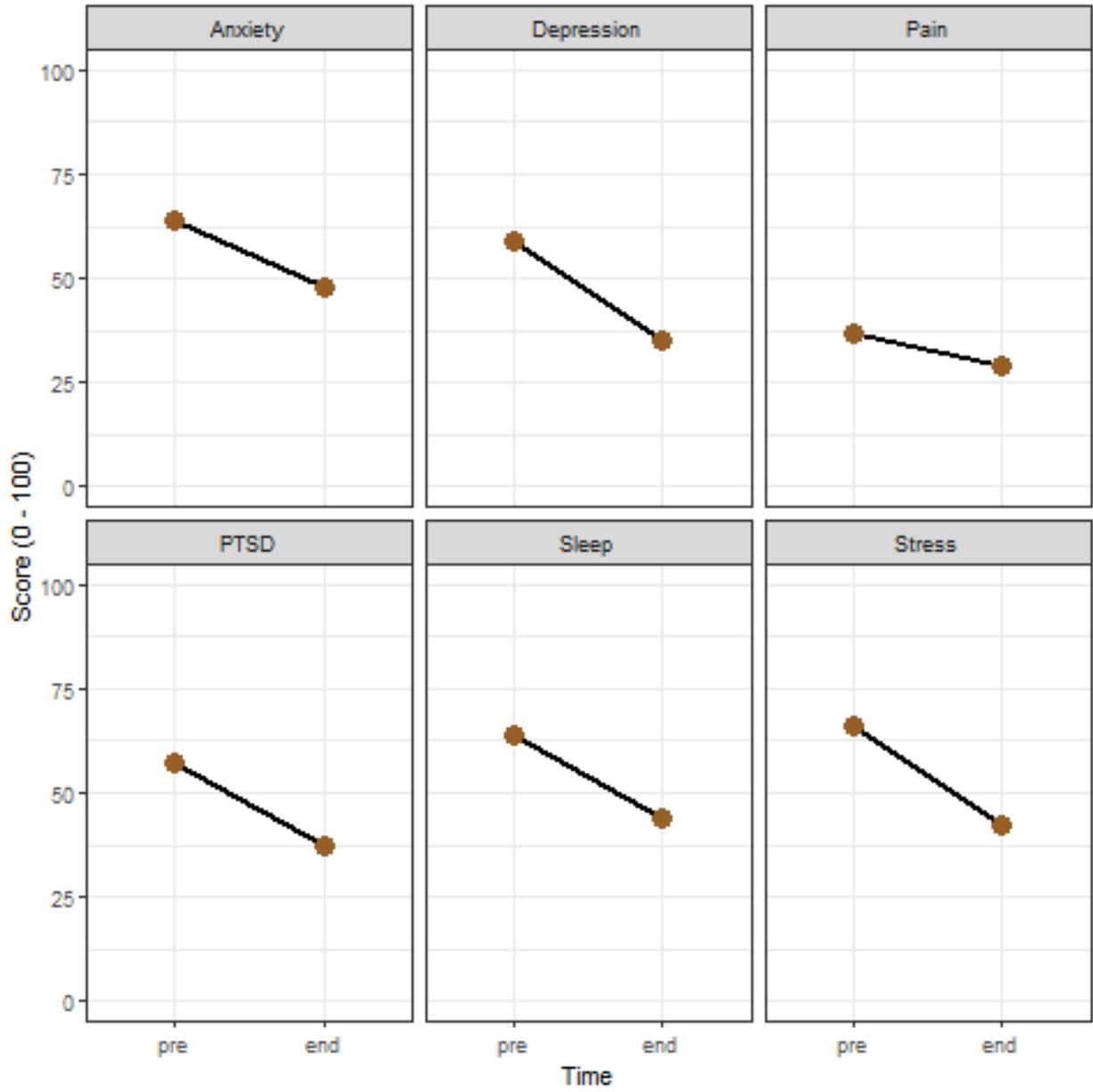


Figure 1: Average Changes in Symptoms

Changes in Cravings for Substances of Abuse

Changes in cravings for substances of abuse were analyzed so that only individuals who started treatment with some level of craving for a substance were analyzed. In other words, analysis of change in cravings for alcohol only included people who started treatment with cravings for alcohol above zero.

The table below provides information on the statistical tests for cravings. The column labeled “N” indicates how many individuals treated at Sierra Tucson in Q1 2024 had cravings for different substances. Note that there were statistically significant decreases in substance cravings for all substances, except for heroin and inhalants. This non-significant result was due to only having 6 patients treated for heroin and 4 patients treated for inhalants. The size of the changes for both substances (50% drop in heroin cravings; 93% drop in inhalants cravings) were large.

Substance	N	Pre Avg	Last Avg	Difference	t	df	p	sig
Alcohol Craving	99	61.8	24.3	-37.5	8.61	197	< .001	***
Marijuana Craving	80	48.8	23.9	-24.9	6.96	159	< .001	***
Painkillers Craving	30	50.0	19.0	-31.0	4.56	59	< .001	***
Stimulants Craving	27	53.7	18.5	-35.2	4.22	53	< .001	***
Sedatives Craving	24	52.9	16.7	-36.2	4.58	47	< .001	***
Cocaine Craving	23	57.4	26.5	-30.9	4.20	45	< .001	***
Hallucinogens Craving	20	39.0	19.0	-20.0	3.70	39	< .001	***
Methamphetamine Craving	13	56.9	14.6	-42.3	3.22	25	0.004	**
Club Drugs Craving	9	43.3	18.9	-24.4	2.54	17	0.021	*
Heroin Craving	6	70.0	35.0	-35.0	1.95	11	0.077	n.s.
Inhalants Craving	4	67.5	5.0	-62.5	2.22	7	0.062	n.s.

Changes in Cravings by Week of Treatment

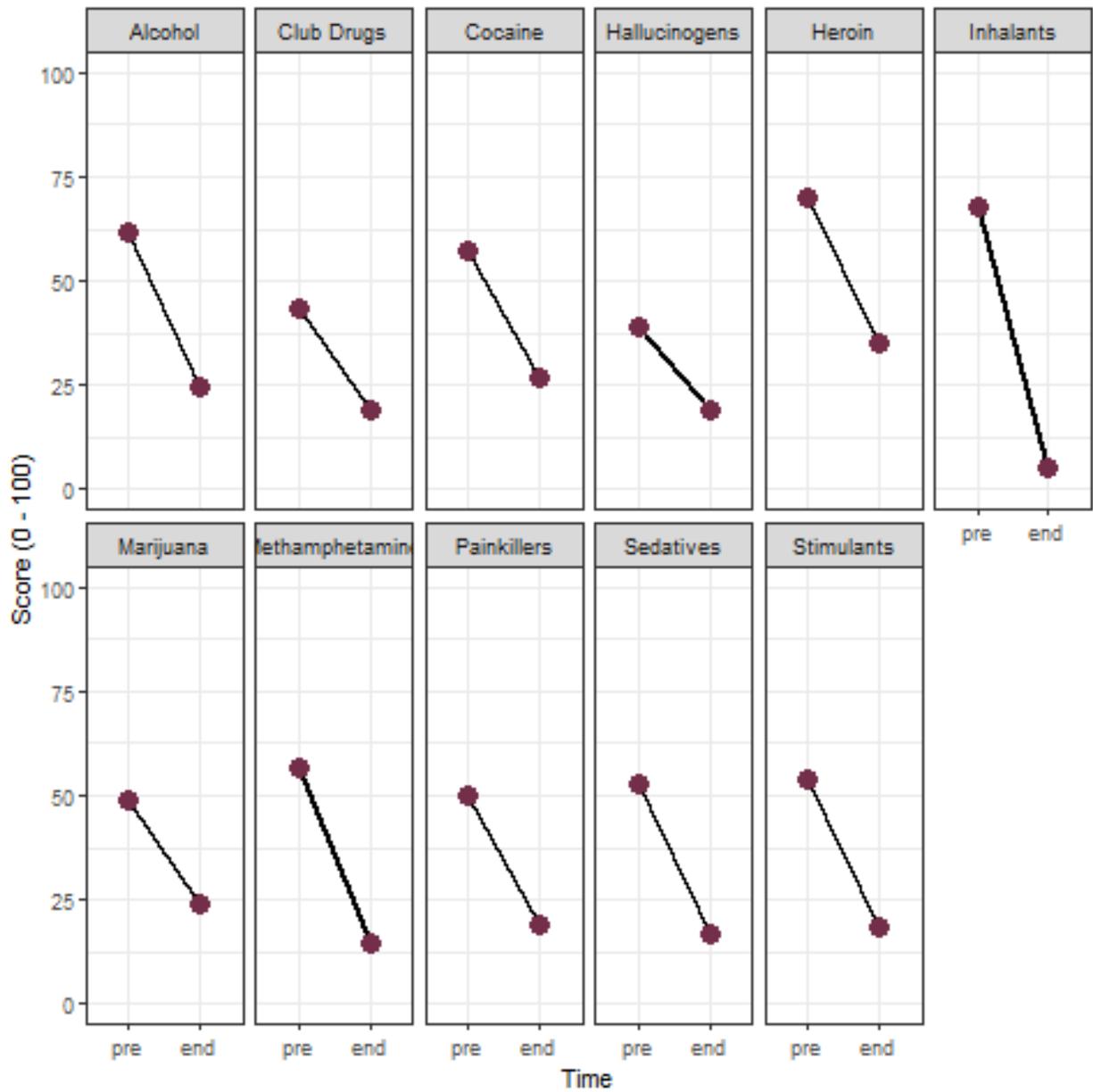


Figure 2: Average Changes in Craving

Changes in Indicators of Positive Functioning

Average changes in indicators of positive functioning from pre-treatment to mid-treatment are displayed below.

Note that there were statistically significant improvements in all these measures over the course of treatment. This means that people felt all aspects of their Quality of Life was improving, their confidence in different ways of coping was improving, and that their attachment styles were becoming more secure.

Measure	N	Pre Avg	Last Avg	Difference	t	p	sig
QOL Physical	158	45.2	69.9	24.6	-12.22	< .001	***
QOL Psychological	158	34.4	57.0	22.7	-12.05	< .001	***
QOL Social	158	41.4	59.7	18.3	-9.04	< .001	***
QOL Environmental	158	61.1	70.8	9.7	-5.48	< .001	***
Coping: Problems	244	52.9	63.8	10.9	-8.82	< .001	***
Coping: Emotions	244	39.7	53.3	13.6	-9.87	< .001	***
Coping: Community	244	50.5	61.5	11.0	-7.93	< .001	***
Attachment Close	158	52.5	58.9	6.4	-3.85	< .001	***
Attachment Depend	244	48.0	53.1	5.1	-4.39	< .001	***
Attachment Anxiety	244	58.7	51.1	-7.6	5.35	< .001	***

Changes in Positive Functioning by Week

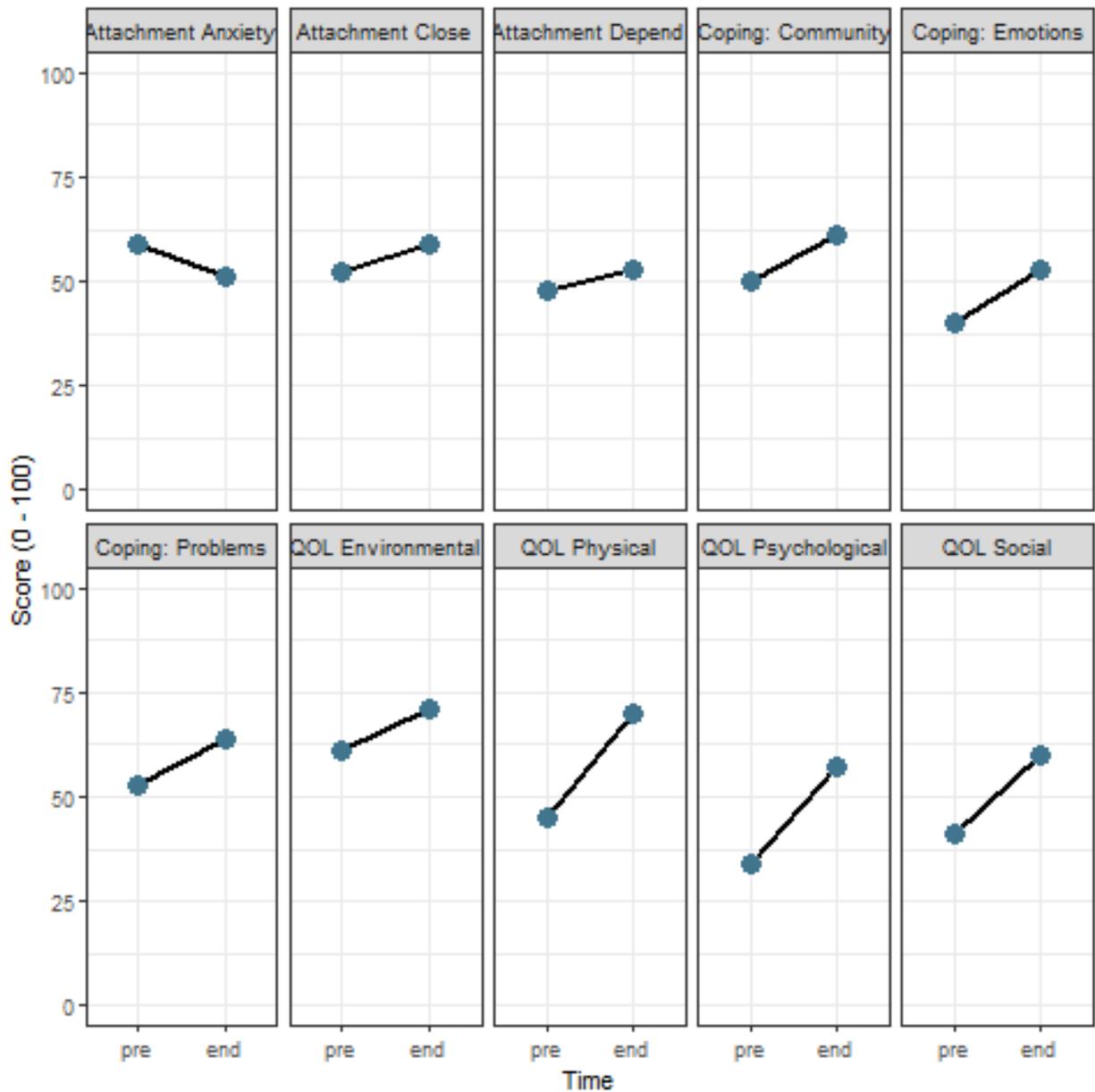


Figure 3: Average Changes in Positive Functioning

Progress in the First Year After Care at Sierra Tucson

Progress after discharge from Sierra Tucson is tracked through the Connect 365 program. This program is free to all residents for the first year after discharge, and involves regular contact from Recovery Coaches who help patients meet their treatment goals after leaving. This helps Sierra Tucson alumni maintain the gains they make while in residential treatment. As part of this program, the Recovery Coaches ask alumni to report on a series of treatment outcomes at Months 1, 3, 6, and 12 post-discharge. For this report, data from all individuals who responded to any survey (1, 3, 6, or 12 month follow-up) in Q1 2024 were included.

After individuals leave Sierra Tucson, our goal is for them to maintain the gains that they have made in treatment. In the graphs below, the lines indicate change in a measure according to number of days since a person has discharged from residential treatment. In general, a straight line on these graphs indicate a positive outcome: gains made in treatment were maintained over time.

Changes in Subjective Indicators of Mental Health

Three self-report questions are used to assess subjective mental health. Each is rated on a scale from 1 to 5. These are:

- Your overall quality of life
- Your ability to manage stress
- Your satisfaction with your primary relationships

In the graph below, there are trends in the change in subjective indicators. Right after leaving treatment, self-reported ability to handle stress and quality of life were at or above a 4 out of 5. There was a downward trend in ability to handle stress the more days since a resident had discharged. This suggested that residents were not maintaining gains in coping with stress as well as we wanted. However, the decline was from approximately 4 out of 5 to approximately 3.5 out of 5, suggesting people were still doing well on average. Results on the next page break this down by program, and illustrate that this decline was stronger in the Addictions and Trauma programs, but that the trend was to maintain gains in the Mood Program.

Gains in Quality of Life were maintained, and there was even improvement over time in the strength of close relationships. These results indicate positive outcomes for residents in their first year after leaving treatment.

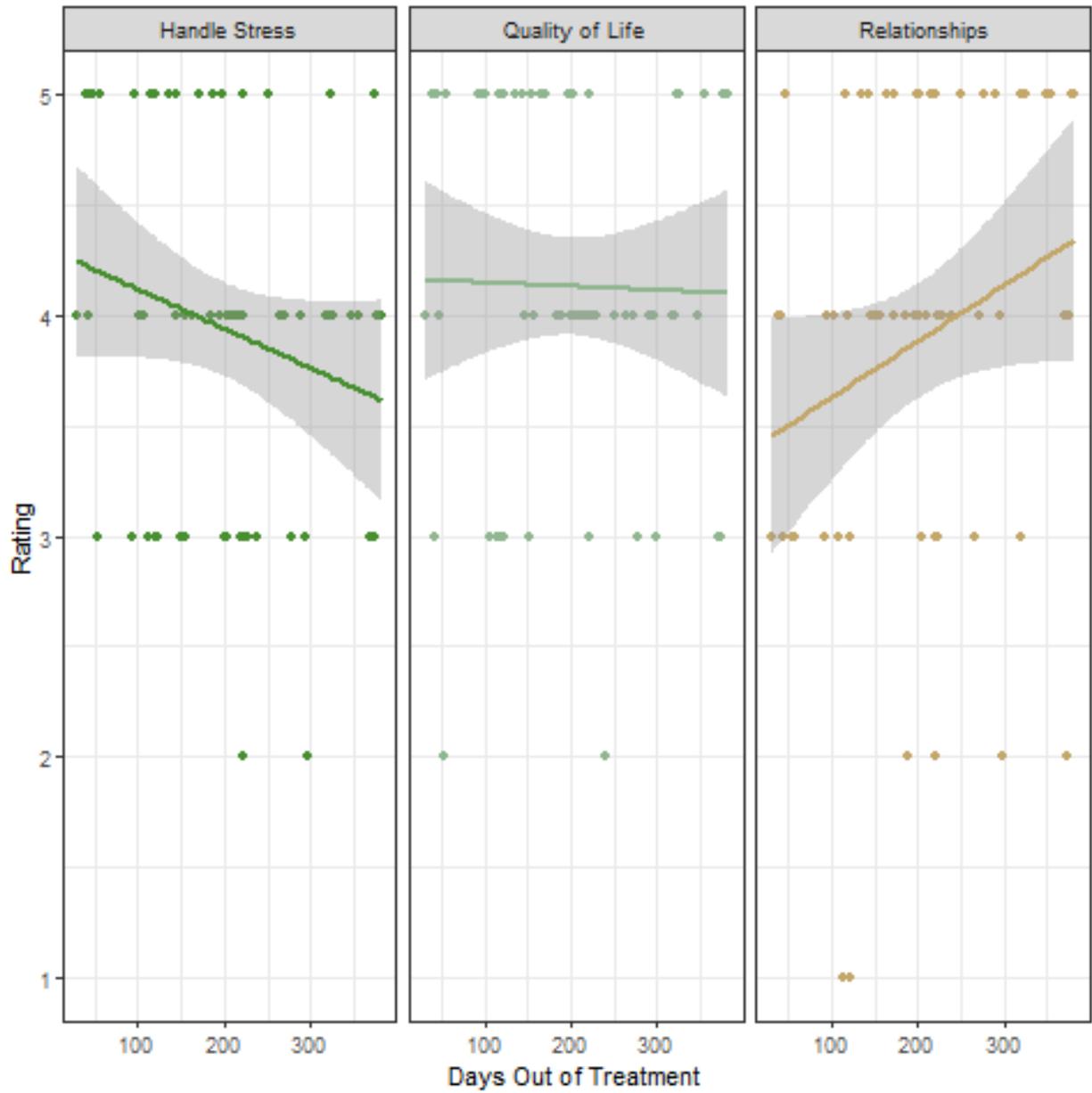


Figure 4: Changes in Subjective Measures

In the figure below, one year follow up data is divided out by program. The largest differences between programs were seen in self-reported abilities to handle stress. Right after leaving treatment, patients in the Addictions and Trauma programs rated their abilities very high (average 5 out of 5). In the subsequent year, this number fell to approximately 3.5 out of 5, or just above average. On the other hand, residents leaving the Mood Program rated their abilities to handle stress at 3.5 consistently, throughout the year. This suggests that residents in all programs felt like they had above-average abilities to handle stress one year after leaving, but those in the Addictions and Trauma Programs had particularly high confidence right after leaving. None of the other differences in trends were statistically significant.

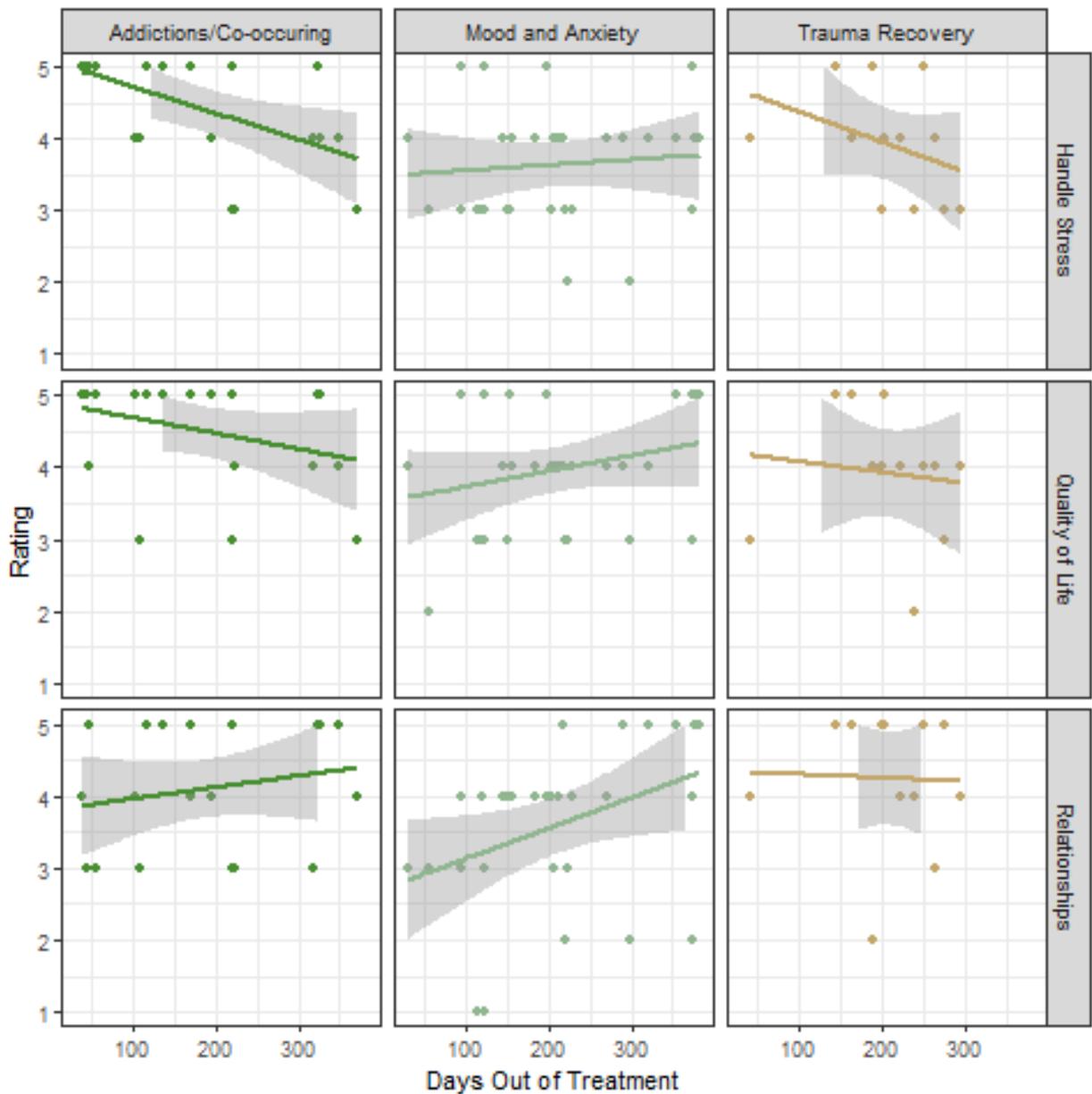


Figure 5: Changes in Subjective Measures by Program

Changes in Objective Indicators of Mental Health

Another set of self-report questions are used to assess objective indicators of mental health. These questions are objective in the sense that they involve reporting on concrete events, such as the number of days you went to the hospital or ER in a month. Since they are self-reported, they do rely on the patients' ability to accurately recall and report their experiences. These questions ask:

In the last 30 days, how many days have you:

- Attended self-help groups for support?
- Received medical treatment at a hospital/ER?
- Gotten paid for working?
- Used alcohol or other non-medical drugs?

Results of statistical analyses revealed only one significant trend in the data: people tended to go to less support group meetings the longer that they had been out of residential treatment. Just after leaving treatment, patients went to an average of 13 days of support groups a month. By the end of the year, they averaged around 4 days of support groups a month. This suggests that patients were not continuing to attend support groups, such as AA, a year after discharge—even though continuing to participate in these groups might have been helpful.

The fact that use of medical services and use of substances remained low and did not significantly increase throughout the year are positive results. They indicate that gains in treatment were maintained.

Ideally we would see a statistically significant increase in the number of days getting paid, as more people return to full time work over the year. However, this flat trend is the result of a mix of outcomes, with several people from each program going back to work full time, while others did not.

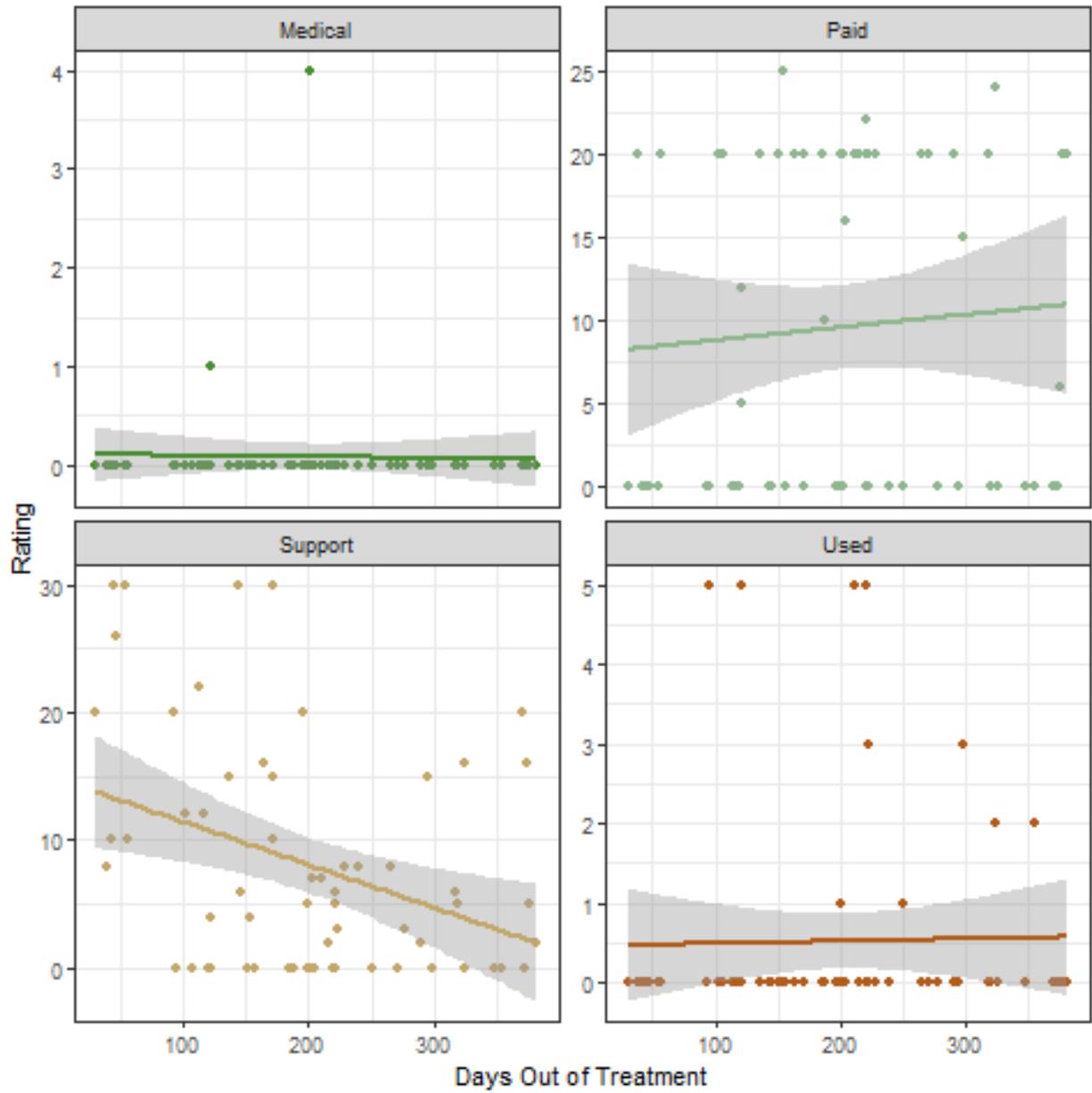


Figure 6: Changes in Objective Measures

The figure below illustrates trends in the objective report data split out by program. There were no statistically significant differences in trends by program in these measures. However, it can be seen that individual who were in the Mood Program did appear to be more likely to move into full time work the longer the year went on.

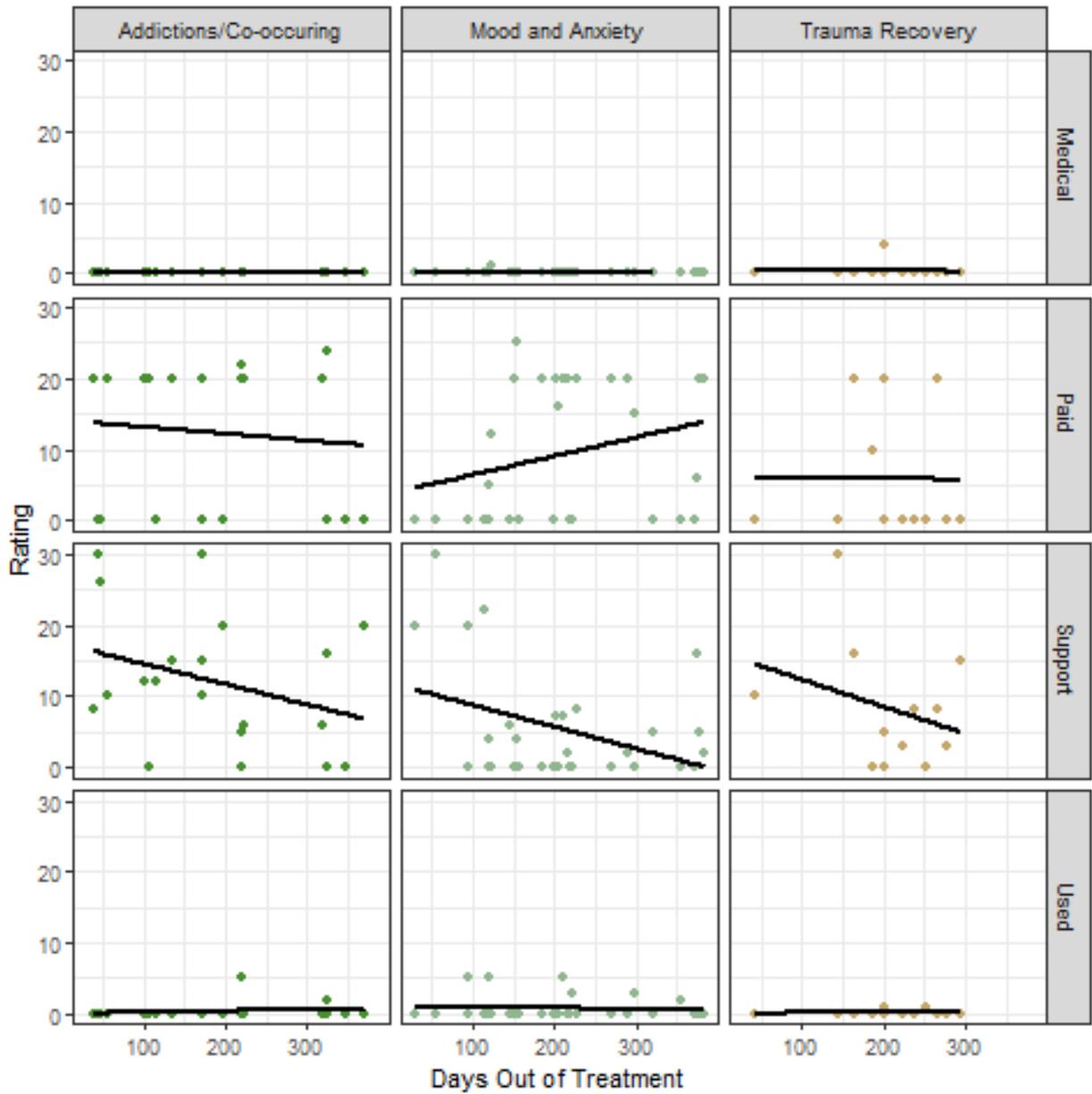


Figure 7: changes in objective measures by program

Conclusions

The overall analyses of outcome data for Sierra Tucson for Q1 2024 indicate that patients' mental health and psychological functioning improve significantly while in residential treatment. There were statistically significant changes in all of the measures we provided.

Among individuals who had already discharged, our ongoing outcomes data collection revealed gains being maintained after discharge.

Several highlights from this report stand out:

Although all mental health symptoms assessed declined over the course of residential treatment, there were particularly dramatic drops in depression, PTSD symptoms, and sleep disturbances:

- Average depression scores dropped by 41%
- Average PTSD scores dropped by 36%
- Average sleep disturbance scores dropped by 31%

There were statistically significant declines in cravings for all substances of abuse during the course of residential treatment, except those where only a handful of residents had the issue. Drops in the most commonly seen substance cravings in the last quarter were:

- Average cravings for alcohol declined by 61%
- Average cravings for marijuana declined by 51%
- Average cravings for painkillers declined by 62%

In the course of residential treatment, large gains were seen in three domains of Quality of Life:

- Psychological Quality of Life increased by 66%
- Physical Quality of Life increased by 54%
- Social Quality of Life increased by 44%

Gains in all subjective measures of mental health were maintained after patients left treatment. Average scores for quality of life, ability to handle stress, and satisfaction with relationships was at or above the mid-point on each scale at discharge, and stayed that way for the first full year after leaving.

Gains in all objective measures of mental health were maintained after patients left treatment, except for days attending support groups. On average residents spent more days per month attending support groups right after leaving treatment, and these steadily declined over the next year.

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2024-04-09

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Methodological Notes

Immediate Treatment Response

In the old Comprehensive Psychological Profile (CPP), used in January and February of 2024, the following measures were used:

1. PROMIS Pain Interference (PIQ 6b)
2. Center for Disease Epidemiological Depression Scale-Revised (CESD-R)
3. Anxiety (GAD-Q-IV)
4. The PROMIS Sleep Questionnaire
5. Perceived Stress Scale (PSS)
6. Post-Traumatic Stress Disorder Checklist (PCL-5)
7. World Health Organization, Brief Quality of Life survey (WHOQOL-BREF)
8. Confidence in Coping Skills Scales
9. Revised Adult Attachment Style questionnaire (RAAS)
10. Brief Resilience Scale (BRS)

In the new Comprehensive Psychological Profile (CPP), used in March of 2024, the following measures were used:

1. PROMIS Pain Interference (PIQ 6b)
2. Patient Health Questionnaire (PHQ9)
3. Generalized Anxiety Disorder - 7 Item Scale (GAD7)
4. Insomnia Severity Index (ISI)
5. Post-Traumatic Stress Disorder Checklist (PCL-5)
6. Confidence in Coping Skills Scales
7. Experience in Close Relationships - Relationship Structures (ECR-RS)
8. Brief Resilience Scale (BRS)

Post-Discharge Treatment Response

At both pre-treatment and post-discharge, several questions from the Substance Abuse and Mental Health Services Administration (SAMHSA) National Outcome Measures (NOM) scale were assessed. These questions are the source of data for the pre-treatment to post-discharge comparisons.