



## Sierra Tucson Outcomes Report Q4 2023

2024-01-30

This Quarterly Report provides updated information for October - December 2023 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.

### **Patient Details**

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

- There are people included in this sample.
- The average age was 40 years old, with a range from 18 to 78 years old.
- There were 52 % men, 45 % women, 2 % nonbinary individuals, and 1 % who did not specify their gender.

Data from the C365 program analyzed included data from all people who took at least one measurement during Q4 2023. Below is some information about the C365 data:

- There are 38 people included in this sample.
- The average age was 34 years old, with a range from 21 to 42 years old.
- There were 59 % men, 38 % women, and 3 % who identified as neither male nor female.

## Progress at Sierra Tucson

Residents at Sierra Tucson complete MBC assessments every two weeks while in treatment. The most typical trajectory for assessments 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	207	31.2	20.2	-11.0	5.79	< .001	***
CESD-R Overall Depression	207	58.3	29.6	-28.6	14.09	< .001	***
GAD Anxiety	207	63.3	45.6	-17.7	9.45	< .001	***
PROMIS Sleep	207	69.2	45.3	-23.9	10.40	< .001	***
PSS Stress	207	64.5	41.5	-23.0	13.31	< .001	***
PCL5 Overall PTSD	207	58.3	34.7	-23.6	12.29	< .001	***

### Changes in Symptoms by Week of Treatment

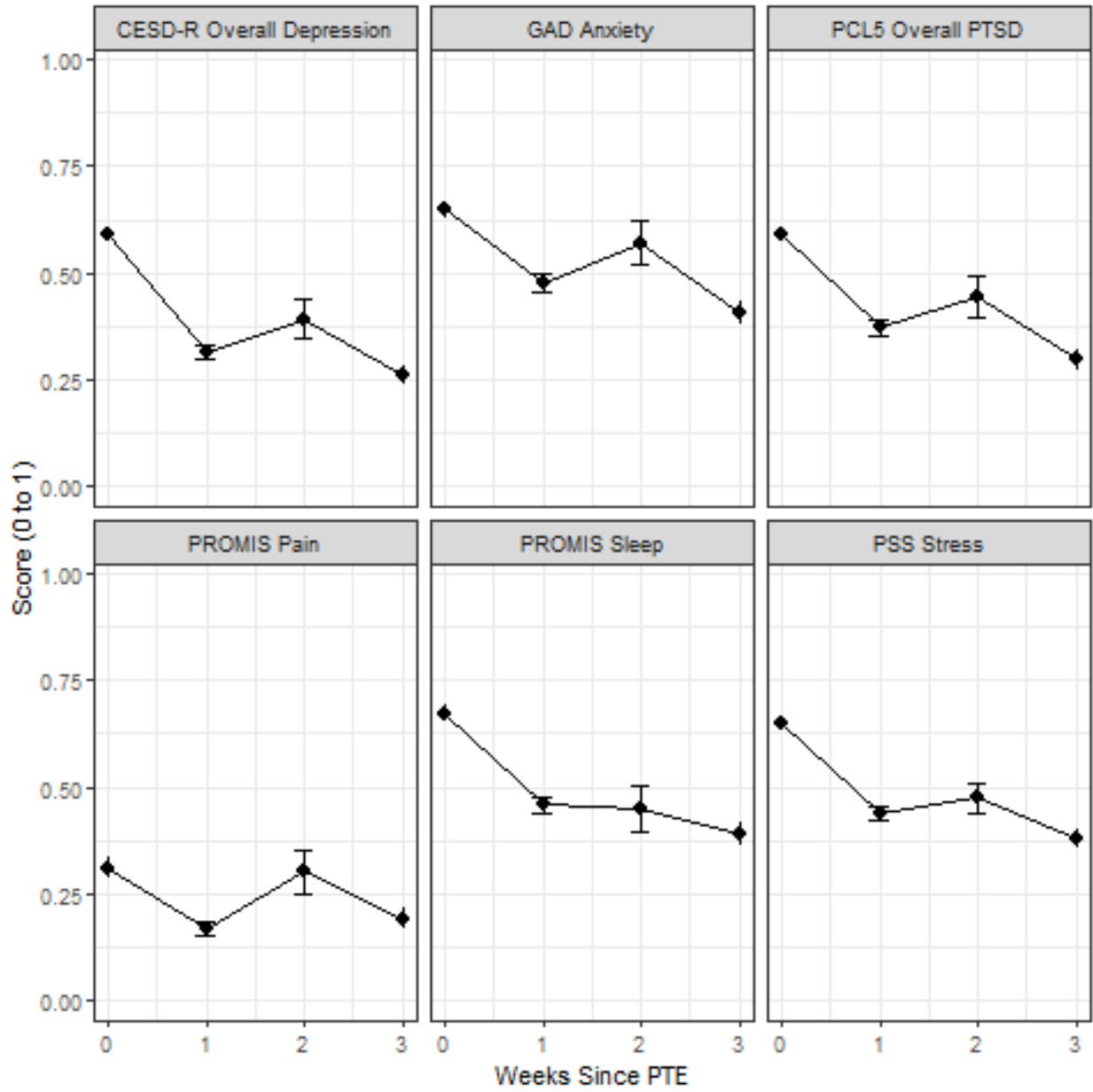


Figure 1: Average Changes in Symptoms

## 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 Q4 2023 had cravings for different substances. Note that there were statistically significant decreases in substance cravings for all substances, except for inhalants. This non-significant result was due to only having 4 patients treated for inhalants. The size of the change was large (average craving dropped from 53 to 0 out of 100).

Substance	N	Pre Avg	Last Avg	Difference	t	df	p	sig
Overall Craving	152	9.5	4.1	-5.4	8.00	303	< .001	***
Alcohol Craving	119	55.6	17.5	-38.2	9.71	237	< .001	***
Marijuana Craving	81	44.7	16.3	-28.4	6.73	161	< .001	***
Cocaine Craving	29	55.5	20.7	-34.8	4.27	57	< .001	***
Sedatives Craving	25	44.0	19.6	-24.4	2.81	49	0.007	**
Painkillers Craving	18	48.3	11.1	-37.2	3.70	35	< .001	***
Stimulants Craving	14	45.7	27.1	-18.6	2.35	27	0.026	*
Hallucinogens Craving	10	33.0	13.0	-20.0	2.81	19	0.011	*
Club Drugs Craving	7	35.7	18.6	-17.1	1.45	13	0.171	n.s.
Methamphetamine Craving	7	72.9	20.0	-52.9	3.00	13	0.01	*
Inhalants Craving	5	56.0	4.0	-52.0	2.23	9	0.053	n.s.
Heroin Craving	4	30.0	2.5	-27.5	2.11	7	0.073	n.s.

## Changes in Cravings by Week of Treatment

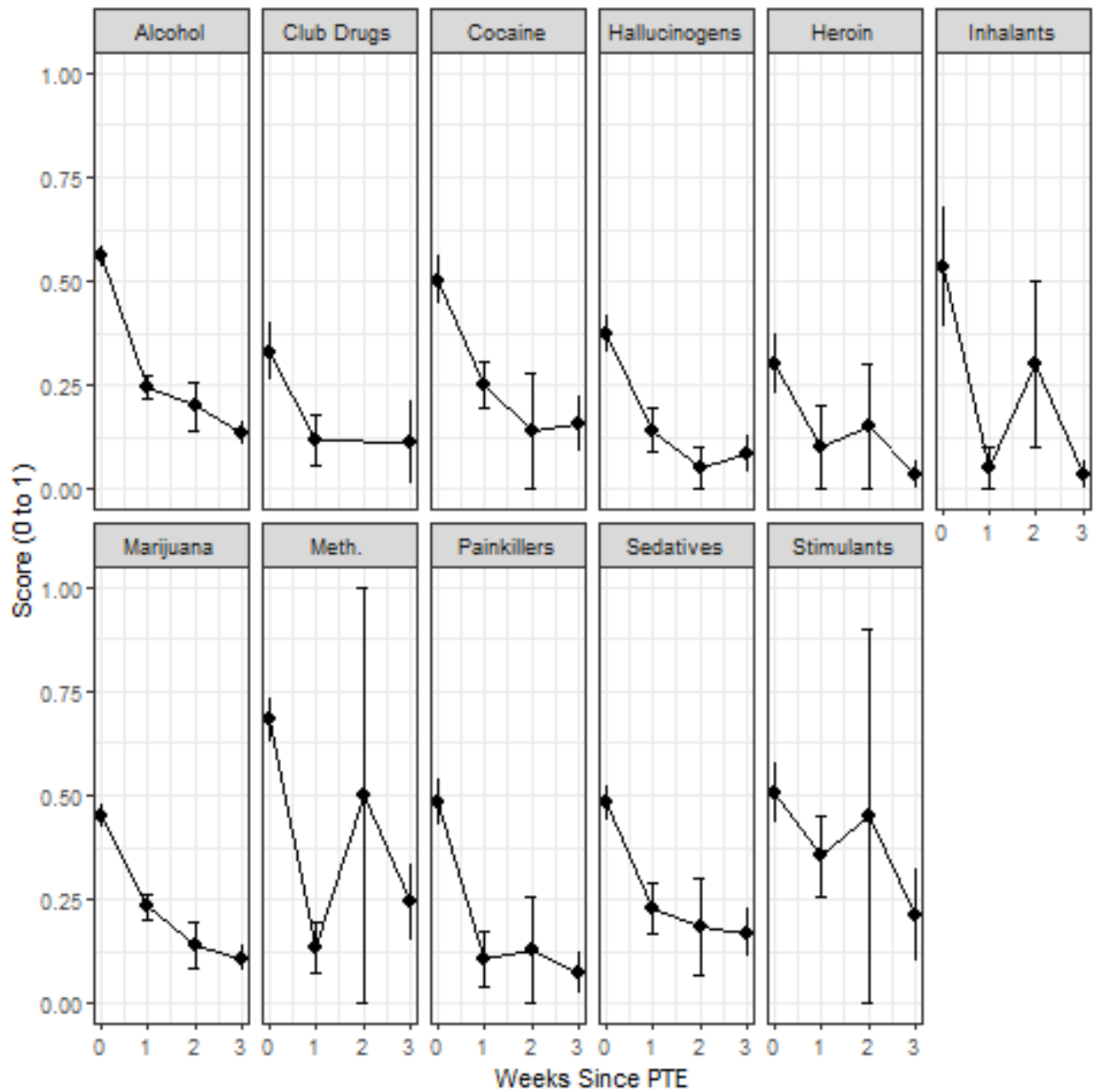


Figure 2: Average Changes in Craving

## 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 except for comfort with closeness in attachment style.

Attachment style has typically been regarded as a relatively stable trait, but testing at Sierra Tucson consistently finds that people's attachment becomes more secure over time. In this case, attachment anxiety reduced (on average), people's willingness to depend on others increased (on average), and people's comfort with closeness also increased (on average)—just not enough to be statistically significant. In 2022 and Q1 of 2023 this change was significant, so it may just be that people's attachments improved slightly less than usual in this last quarter.

Measure	N	Pre Avg	Last Avg	Difference	t	p	sig
QOL Physical	207	47.0	69.2	22.2	-12.98	< .001	***
QOL Psychological	207	32.0	56.8	24.8	-13.53	< .001	***
QOL Social	207	41.2	58.1	16.9	-9.63	< .001	***
QOL Environmental	207	62.0	69.5	7.5	-5.40	< .001	***
Problem Focused Coping	207	47.4	60.2	12.9	-9.06	< .001	***
Emotion Focused Coping	207	39.3	53.7	14.4	-9.48	< .001	***
Social Support Coping	207	43.3	58.7	15.4	-9.01	< .001	***
Attachment Close	207	53.5	56.4	2.9	-2.34	0.02	*
Attachment Depend	207	42.5	45.9	3.4	-2.59	0.01	**
Attachment Anxiety	207	56.1	50.4	-5.8	3.27	0.001	**

## Changes in Positive Functioning by Week

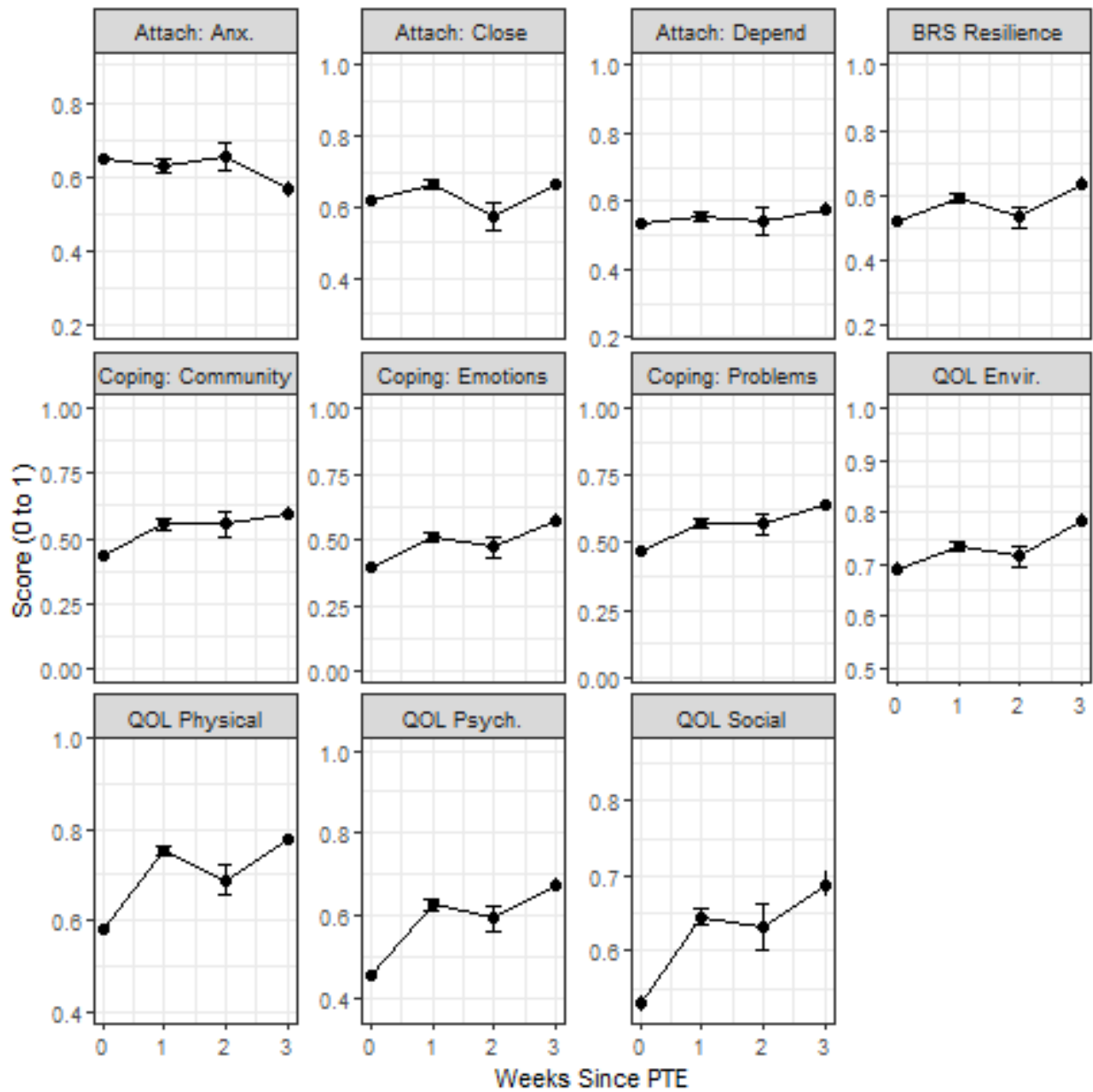


Figure 3: Average Changes in Positive Functioning

## 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, 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 eight 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 Q4 2023 were included.

The data was analyzed by considering the number of days since an individual left treatment. After individuals leave Sierra Tucson, our goal is for them to maintain the gains that they have made in treatment. In the graphs below, that means a straight line is a good outcome—it indicates that gains are maintained. In the statistical analyses, a result that is not statistically significant is also a good outcome, for the same reason: it indicates no change in gains.

A line tilted down (reading left to right) is a poorer outcome, because it indicates that gains are slowly eroding over time. Note, however, that there are a few cases where this is flipped (e.g., a line tilted up for days using substances of abuse is a worse outcome, because it indicates increasing number of days using substances).

## 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 are at or above a 4 out of 5, and then they decline a bit to an average of just over 3.5 during the course of the next year. On the other hand, quality of relationships start with an average just above 3.5 and end just below 4.5 a year later. However, none of these trends are statistically significant. This suggests that they are not strong enough to be reliable trends in the data.



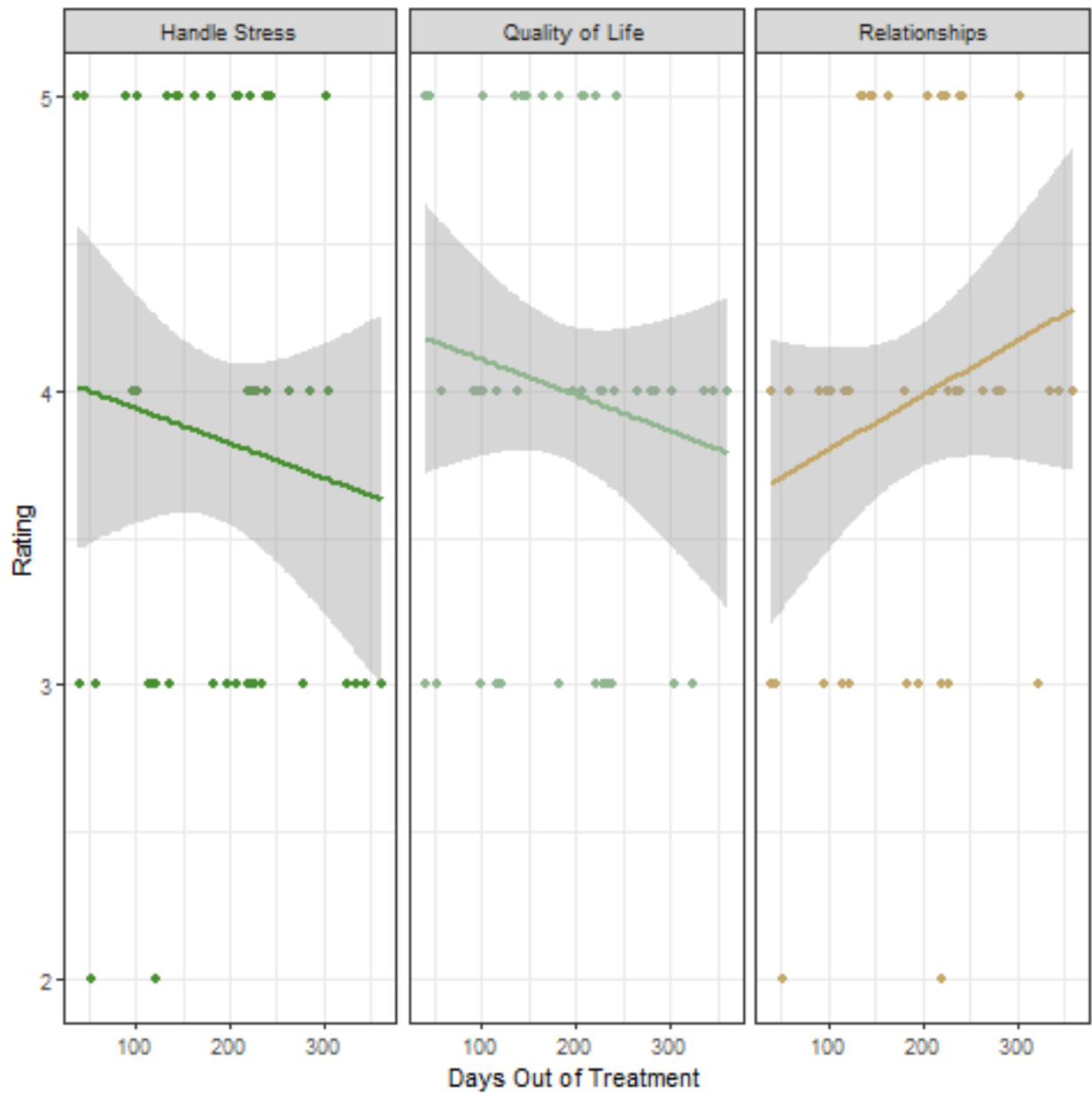


Figure 4: Changes in Subjective Measures

In the figure below, one year follow up data is divided out by program. One trend is worth noticing here: there were declines in the ability to **handle stress** and in **quality of life** for patients in the **trauma program**, but not the other two programs. The first result was just statistically significant, and the second was close to statistical significance. This suggests that the downward trends seen above were due to a handful of patients in the trauma recovery program feeling worse 6+ months after leaving residential treatment.

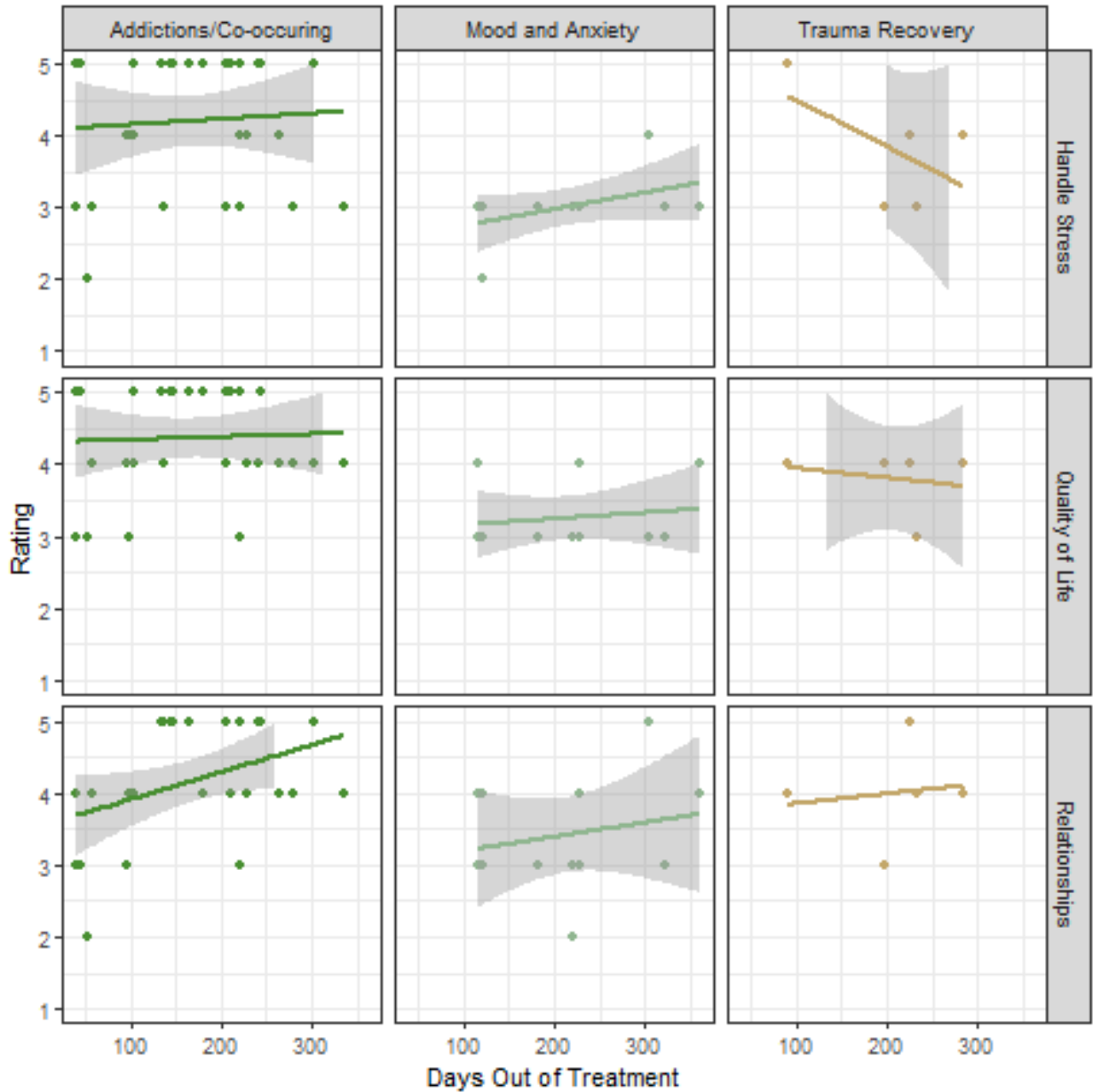


Figure 5: Changes in Subjective Measures by Program

## Changes in Objective Indicators of Mental Health

Five 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 are:

- Have you been compliant with your continuing care plans?

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 11 days of support groups a month. By the end of the year, they averaged 0 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, the trend in this quarter was not quite as strong as in previous quarters. In figures presented below, it can be seen this is being driven by patients in the Mood Program.

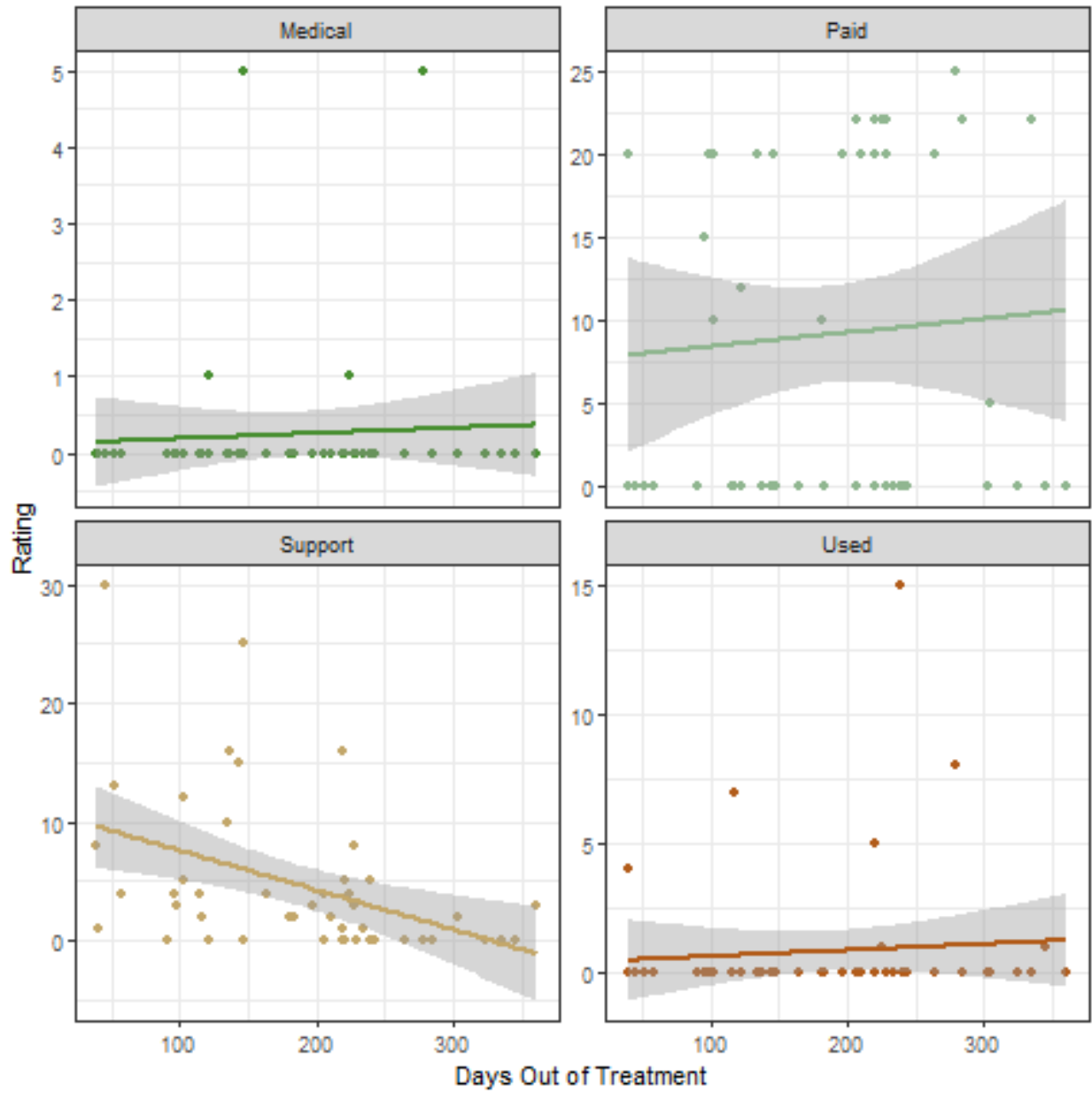


Figure 6: Changes in Objective Measures

The figure below illustrates trends in the objective report data split out by program. A few differences between programs are worth noting:

- Only patients in the Mood Program failed to increase the number of days worked over time.
- Only patients in the Addiction Program used support groups frequently after leaving treatment. This reflects the reality that there are many more support groups for substance use (such as AA or NA) than for mood disorders or trauma recovery.

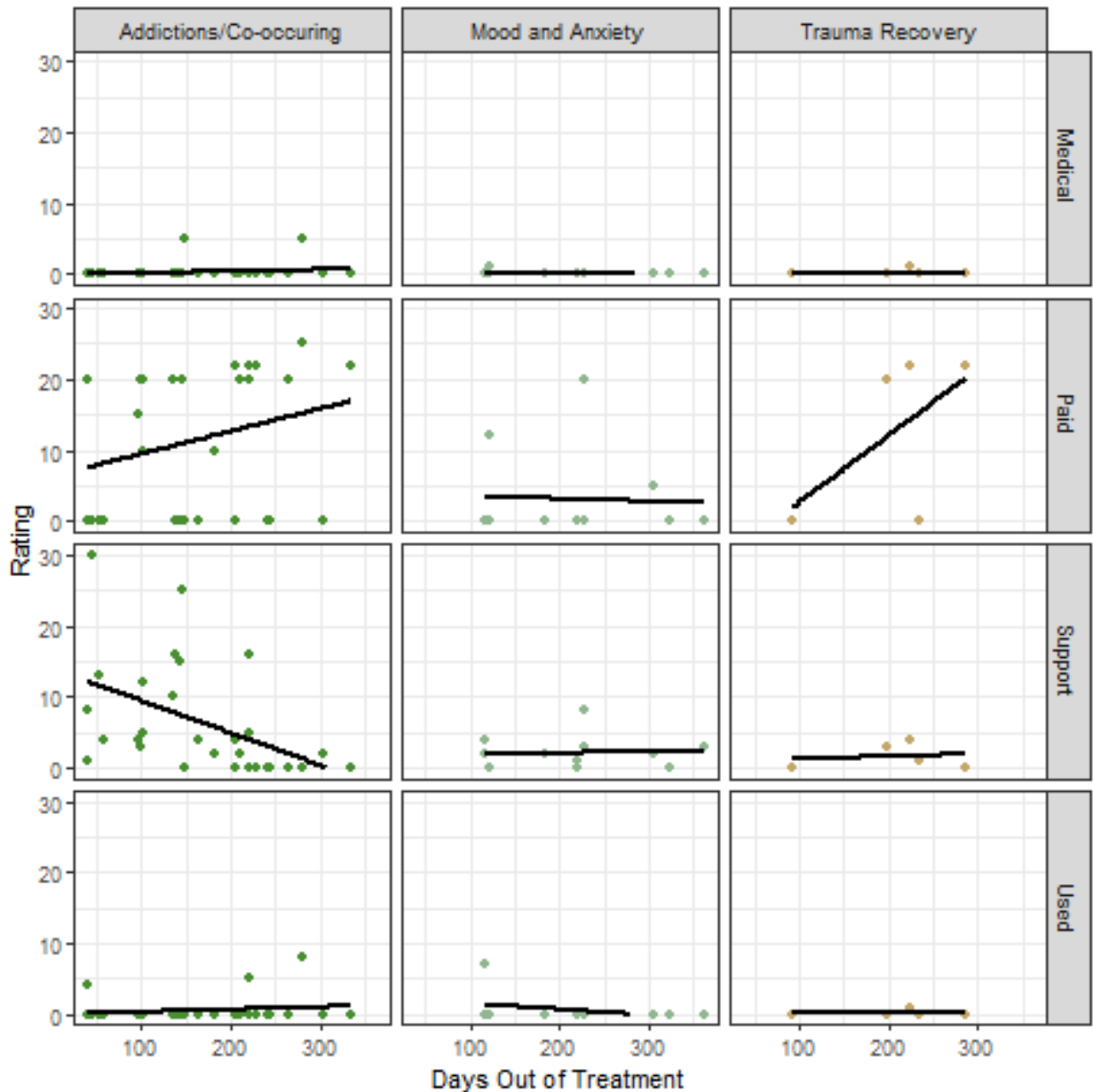


Figure 7: changes in objective measures by program

## Conclusions

The overall analyses of outcome data for Sierra Tucson for Q4 2023 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, chronic pain, and PTSD symptoms:

- Average depression scores dropped by 49%
- Average PTSD scores dropped by 41%
- Average stress scores dropped by 36%

There were statistically significant declines in cravings for all substances of abuse during the course of residential treatment. Several particularly large drops were seen:

- Average cravings for alcohol declined by 69%
- Average cravings for marijuana declined by 64%
- Average cravings for cocaine declined by 63%

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

- Psychological Quality of Life increased by 78%
- Physical Quality of Life increased by 47%
- Social Quality of Life increased by 41%

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.

*Alex Danvers PhD*

2024-01-30

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Director of Treatment Outcomes

## **Methodological Notes**

### **Immediate Treatment Response**

As part of the Comprehensive Psychological Profile (CPP) given at pre-treatment and mid-treatment, 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)

### **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.