• NATSAP • EVALUATION REPORT

A Summary of Client Outcomes 2017-2023

Message from Derek Daley, Chair, NATSAP Board of Directors

Dear Colleagues,

On behalf of the National Association of Therapeutic Schools and Programs, we are proud to present this Report - a testament to our collective dedication to providing excellent care for our clients. During my term as Vice President, I had the privilege of championing a Task Force that supported this important work - a remarkable milestone for our organization.

The only way we can understand our impact is by measuring it, and I want to congratulate the 51 programs who contributed data to this project. Evaluating the impact of our care holds us accountable to clients, families, supporters, policymakers, and our critics.

The mental health crisis in America continues to grow and the findings here reaffirm what we have long known. Clients improve through our programs, and they sustain these gains after treatment. This report not only validates the effectiveness of our programs but also challenges us to look ahead at how we can refine, improve, and optimize care for our diverse and complex clients. This work urges us to think broadly about how we integrate with the national healthcare system to ensure clients can find the safe and transformative healthcare they need.

In a world where evidence is essential, we cannot rely on hope and anecdote alone to make our case. Through data, transparency, and unwavering dedication, we can secure the trust of those we serve and advance the field of mental health treatment. I strongly encourage all NATSAP programs to engage with evaluating the impact of their care. Together, we can all shape a brighter future for clients, families, and communities.

Sincerely,
Derek Daley
NATSAP Board President

Message from Alec Stone, NATSAP Executive Director

Dear Colleagues,

This Report reflects the impactful work of our programs and schools, as well as the strength of NATSAP as an association committed to supporting and elevating our members. As Executive Director, my focus is on ensuring NATSAP remains a relevant and indispensable resource navigating the challenges of today's mental and behavioral health landscape.

By investing in initiatives like this report, we demonstrate the value that must be placed on accountability and transparency. This work provides a foundation for advocacy with families, policymakers, and stakeholders. These efforts fortify our membership, secure financial sustainability, and keep NATSAP at the forefront of the therapeutic field.

Thank you for the ongoing support and commitment to NATSAP. Together we continue to build an Association that serves its members and emboldens trust and confidence of those we aim to help.

Sincerely,
Alec Stone, MA, MPA
Executive Director, NATSAP

NATSAP EVALUATION REPORT

THIS REPORT summarizes an evaluation of the therapeutic impact of member programs of the National Association of Therapeutic Schools and Programs (NATSAP). Fifty one NATSAP programs collected and contributed data that measured the mental, behavioral, and relationship health of their clients between 2017 and 2023.

THE PROJECT was initiated by NATSAP program leaders who recognized the value in scientifically demonstrating the impact of out-of-home care. Data were collected by programs and housed securely by the software OutcomeTools. Another software company, Petree Consulting Inc., exported and prepared the data for research and evaluation purposes.

THE OUTDOOR Behavioral Healthcare Research Center at University of New Hampshire (UNH) served as a gatekeeper for those interested in accessing the data for scientific studies; this process was approved by UNHs Research Ethics Board.

THE PROJECT collaboration has resulted in dozens of academic manuscripts published in peer-reviewed journals and thus has advanced knowledge on the impact of NATSAP programs, on factors that predict health improvement, and on mechanisms of treatment change.

NATSAP celebrates these accomplishments but saw a need for a publicly available report that summarized the data from all contributing programs . This evaluation report serves this purpose.

THIS WORK is a testament to the work of the programs and to their monumental efforts to collect client health data. The report provides an understanding of treatment impact, validates the work of these programs, and offers suggestions for quality improvement. The results of the report are provided briefly in this executive summary, with details in the full report that follows.

CLIENTS and referrers can use this report to dialogue with programs they are interested in. Through this dialogue, they may get a sense of the nature of change to be expected. They may find comfort in understanding that they are not alone in their level of complexity or that programs honor individual identity. Most notably, prospective clients and referrers can learn whether a program is dedicated to measuring and demonstrating their own success rate — a key indicator of a quality program.

NATSAP PROGRAMS who contributed data for this project can use this report to communicate treatment expectations with prospective clients and families or other referrers. They may also gauge their individual outcomes against the collective. If a program's outcomes are substantially more profound than the collective, it is an opportunity to share and mobilize knowledge that helps to elevate care in the field of behavioral healthcare. Conversely, if outcomes are substantially less profound than the collective, it is a call to invest in targeted professional development.

THE MISSION of NATSAP is to serve as an advocate and resource for behavioral healthcare organizations, their clients, and associated stakeholders. To this end, NATSAP can use the results of this evaluation to share knowledge about the benefits of their member programs on the well-being of the clients they serve. Clients tend to get better and stay better, and that is ultimately the hope for everyone involved in the field of behavioral healthcare.

EXECUTIVE SUMMARY

NATSAP Programs

Clients attended one of four treatment types: Wilderness Therapy (WT), Residential Treatment Center (RTC), Therapeutic Boarding School (TBS), or Young Adult Treatment (YAT).

Demographics

Clients were predominantly adolescents and young adults, just over half of whom identified as male, a third as female, and 10% as gender diverse.

Two-thirds of NATSAP clients reported as heterosexual, the remainder as one of a spectrum of sexual orientations. Adoption rates among NATSAP clients were 3 to 6 times that of the national average.

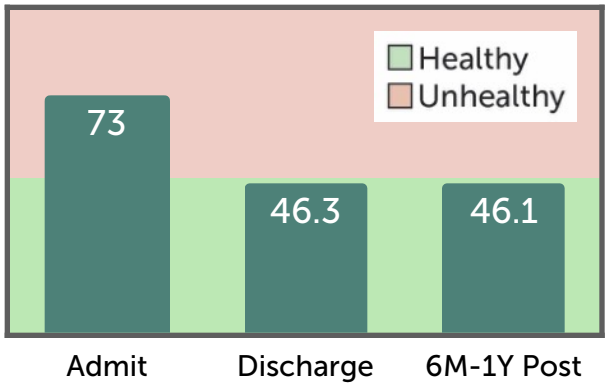
Client Presentation

The global health of clients was considerably acute at the time of program entry. Clients presented as unhealthy across relationship and behavioral health, but global health was driven predominantly by mental health severity.

Treatment Outcomes

For clients in WT and RTC programs, there was a significant and large improvement in client global health, and these improvements were sustained for up to one year. This can be observed by the average self-reported global health scores for all WT and RTC clients at admission, discharge, and post-treatment. Lower scores indicate fewer symptoms; averages in the red are in the unhealthy range of scores, those in the green are in the healthy range.

Adolescent YOQ-SR Total Score Averages at Each Time (WT & RTC)



Comprehensive trajectory analyses of WT and RTC program clients confirmed the large and significant health change, and found that some factors differentiated client outcomes. First, male-identifying clients improve more than female-identifying and gender-diverse clients. Clients of different ages experienced different health trajectories, depending on treatment type. Finally, clients who completed the most surveys also reported the most improved health. Notably, these trajectory findings could only be asserted after statistically accommodating bias due to low post-treatment response rates. There was not enough data to assess the trajectories of health for TBS or YAT clients.

RECOMMENDATIONS

Programs must engage in rigorous efforts to collect post-treatment data.

Programs should honor client voices by ensuring records reflect gender identity.

Programs should explore approaches to help clients sustain treatment benefits.

Programs should explore ways to equalize outcomes across the gender spectrum.

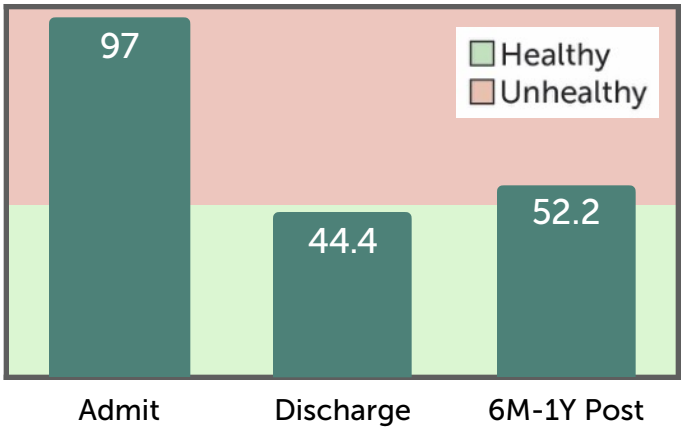
A robust way to measure substance use should be adopted across NATSAP programs.

Future examinations should explore: what works best for whom, the impact of client presenting profile on health outcomes, the significance of caregiver/child discrepancies, and the significance of substance use severity on client outcomes.

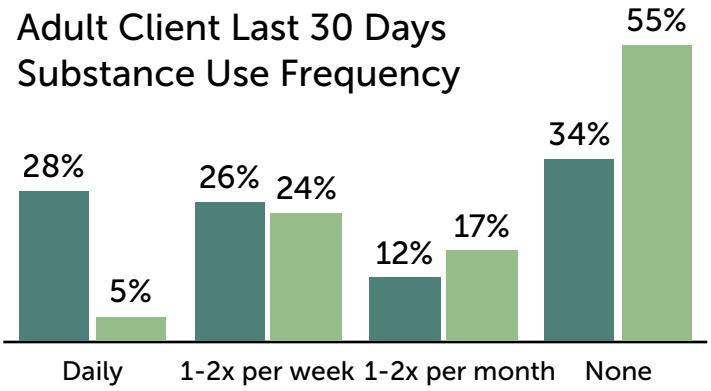
Sustained gains in client health were nuanced by some slight 'upticks' post-departure. Clients remained in the healthy range of scores for relationship and behavioral health. Mental health scores, however, were elevated enough post-departure to just cross the threshold into the clinically problematic range.

Caregivers of adolescents perceive their children as much more acute than the youths themselves report. This disparity is significantly reduced by the end of, and after, their NATSAP program. About two-thirds of NATSAP clients have used substances or alcohol, with marijuana as the most prevalent drug of choice. Of those who reported use, the post-treatment proportions of daily use were reduced and those of abstinence were increased. For example, 28% of adults reported daily substance use at the time of admission and only 5% reported daily use up to one year after the program. These results are preliminary, as the substance use measure presented technical issues.

Caregiver YOQ 2.01 Total Score Averages at Each Time (WT & RTC)



Adult Client Last 30 Days Substance Use Frequency



NATSAP PROGRAMS

NATSAP Programs in this Report

Fifty-one programs contributed data for the project. The programs span Wilderness Therapy (WT), Residential Treatment Centers (RTC), Therapeutic Boarding Schools (TBS), and Young Adult Transition (YAT). Each NATSAP program may be unique in myriad ways, from admission protocol through therapeutic approach, to duration and post-treatment care. Information about program types can be found on the NATSAP website (https://natsap.org/natsap-program-definitions/) and specific information about each NATSAP program is available (https://natsap.org/selecting-a-program/).

Program Data Contribution

We provide information about data contribution based on surveys completed. It may be the case that clients entered NATSAP programs but never completed a survey, but we did not have this 'census' data. Since the program names were encrypted, we were blind to the programs in the data and could not follow up to obtain census data. As such, we don't know the proportion of *all* clients from the 51 programs that are represented in this report.

Data contribution varied across the 51 treatment programs. For example, one program's data comprise 11% of all clients, another 10.7%, others 5%, while others have less than 1%. Data for all programs was included in this report. Where possible, we will conduct analyses such that the data from any particular program does not over-influence the findings in this report.

Program Type

The data includes information from **8079**[1] clients, their caregivers, and program staff. The program types and the number of clients in each type that are included in this report are shown in the table.

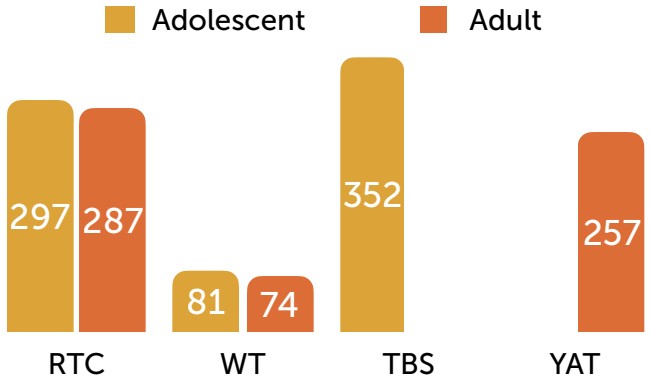
Type of Program	Number of Clients in DataSet	% of Clients in DataSet
Wilderness Therapy (WT)	5323	63%
Residential Treatment Center (RTC)	2671	32%
Therapeutic Boarding School (TBS)	319	4%
Young Adult Transition (YAT)	154	2%

[1]The original *n*=8474 included 117 outpatient clients and 320 with no outcome data; they were excluded from this report.

Program Length of Stay

Of the 8079 clients in the data, 7778 had completed their program; 301 were still in programs but were included in all appropriate analyses for this report. Data on length of stay included clients who had completed their program by the end of the data collection period. The number of days clients stayed in each program varied by type of program[2]. The figure shows the length of stay by program and age group.

Number of Days in Treatment by Program Type and Age Group



Wilderness Therapy

Clients in WT stayed an average of 2.5 months. Most (⅔) of WT clients stayed between 1.3 - 3.9 months.

1.3 -3.9 MONTHS

Residential Treatment Center

Clients in RTC tended to stay an average of ten months. There was high variability for length of stay; ⅔ of RTC clients stayed between 3.3 - 16 months.

3.3 - 16 MONTHS

Therapeutic Boarding School

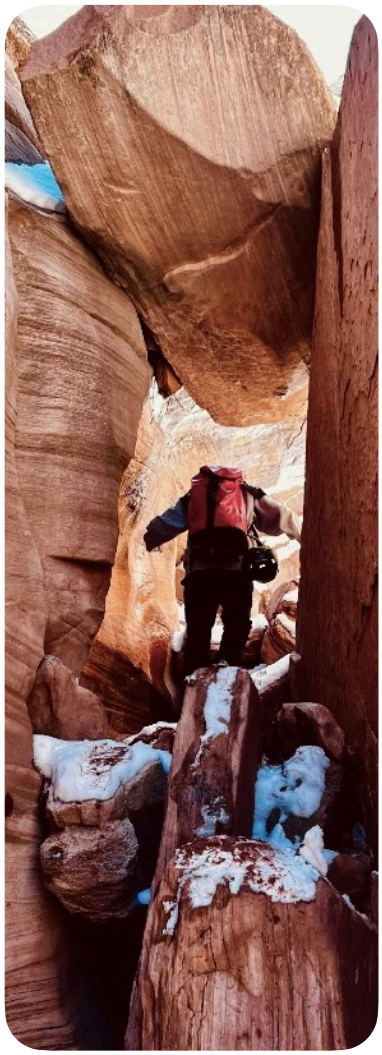
Adolescent clients in TBS programs had an average stay of almost a year. Most (⅔) of TBS clients stayed between 5 and 25 months.

5 - 25 MONTHS

Young Adult Transition

Adult clients in YAT programs stayed an average of 253 days.

253 DAYS



[2]Difference across program type ($F_{(3,7771)} = 691.1$, $p < .001$; $\eta^2 = .21$).

CLIENT CHARACTERISTICS

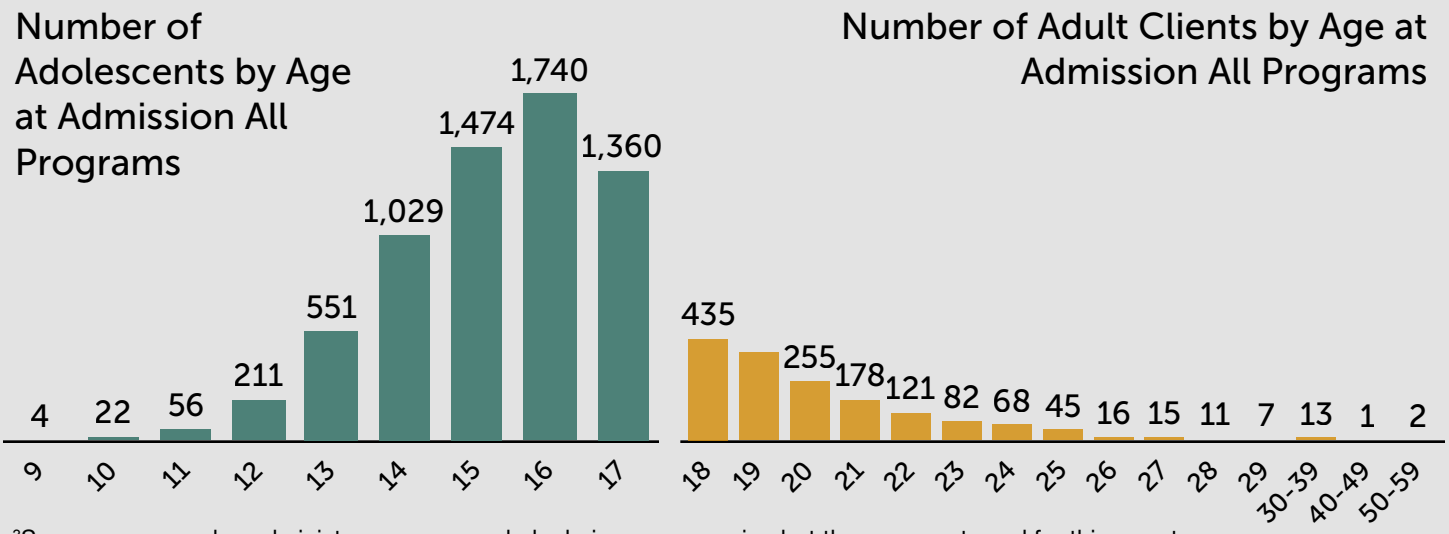
How Client Characteristics were Measured

Clients fill out **NATSAP FORMS** at admission, discharge, and six and/or twelve months post-discharge[3]: These are questionnaires that were developed by NATSAP to target clinically relevant client factors such as gender identity, demographics, and substance use.

Staff. Program administrative or clinical staff enter information into an electronic client record management system on: date of admission, date of departure, date of birth, and birth sex. Staff also complete forms developed by NATSAP that include indicators such as demographics and presenting issue(s).

Age

Clients were categorized as adolescents (under 18 years old) or adults (18 and older) at the time of admission to a program. Most clients (*n*=6447; 80%) were adolescents whose average age was 15 (SD=1.45; range=9:17); 1632 were adults whose average age was 20 (SD=2.75; range=18:54). The distributions of ages demonstrate that adolescents tended to be 14 and older; adult clients tended to be in their late teens and early twenties.



[3]Some programs also administer surveys regularly during programming but they were not used for this report.

Age varied by type of program. Adolescent clients in WT were older than those in RTC and TBS[4], a small but statistically significant difference. Adults clients in RTCs were younger than those in WT and YAT[5], again, a small but significant difference.

Age of Client by Treatment Type

Type of Program	Average Adolescent Age of Admit	Number of Adolescent Clients	Average Adult Age of Admit	Number of Adult Clients
WT	15.4	3893	20.4	1247
RTC	14.9	2261	19.8	227
TBS	15.0	287	18.3	9
YAT	15.2	6	20.6	149

Adoption

The Adoption Network reports that about one in every 25 (4%) of families with children have adopted (www.adoptionnetwork.com). For clients who attend NATSAP programs, adoption rates are three to six times this typical American adoption rate.

About 1 in 7 (14.5%) of **adult** clients reported being adopted.

Only 77% of caregivers reported on the adoption status for their adolescent child. Of those, almost 1 in 4 (23.6%) reported that their child was adopted. If we look at the total sample including those without adoption information, 18% were noted by a caregiver as adopted. Some of these adoptions may have been by a stepparent.

Of the adopted youths, 39% were adopted when the child was less than 3 months old (often at birth), 16% at 3-12 months, 17% in the second year, 14% between 2 and 5 years old, 11% between 6 and 10 years old, and 3% when the client was older than 11.

[4]Significant difference ($F_{(2,6438)} = 84.7$, $p < .001$ $\eta^2 = .03$). Adolescent YAT clients excluded from analysis due to low group size.
[5]Significant difference ($F_{(2,1620)} = 3.8$, $p = .02$; $\eta^2 = .01$). Adults in TBS were excluded from analysis due to low group size.

Sex and Gender Identity

Birth sex information was collected by program staff as a part of the intake process and categorized as male, female, and unknown. Staff-reported gender proportions were 58.5% male, 39% female, and 2.5% unknown.

Client self-reported gender was more varied than staff-reported. Almost all (n = 7273; 90%) clients reported gender identity on a NATSAP survey, which asks, 'Which of the following choice [sic] best describe your gender identity?', with options: *male*, *female*, *transgender*, *gender fluid*, *I identify as* ____ (*please specify*), and *I am not sure*[6].

The table depicts the gender identity as reported by all clients. Over half of all clients reported as male and almost a third as female. The other 723 (9.9%) identified as gender diverse[7]

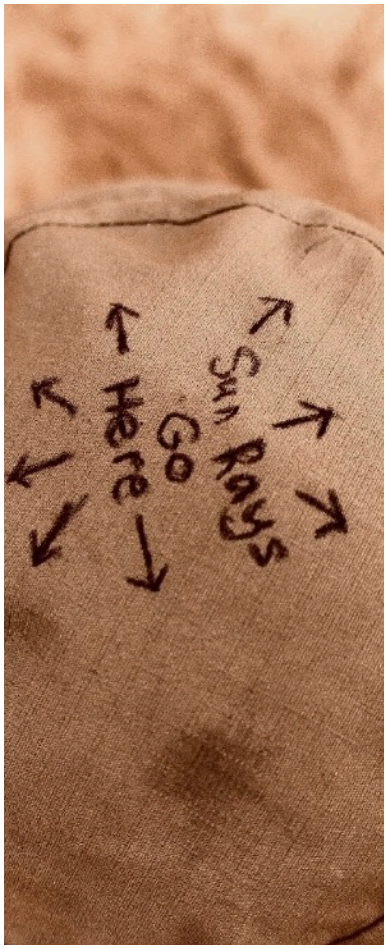
	ALL CLIENTS	ADOLESCENT	ADULT
Male	**56.2%**	55.2%	59.6%
Female	**33.9%**	34.6%	31.3%
GenderFluid	**2.4%**	2.6%	1.9%
Trans	**2.3%**	2.3%	2.1%
Not Sure	**2.2%**	2.1%	2.4%
Nonbinary	**1.5%**	1.5%	1.6%
Other	**0.7%**	0.8%	0.5%
Agender	**0.3%**	0.2%	0.4%
Demi	**0.2%**	0.2%	0.0%
Nonconforming	**0.2%**	0.2%	0.1%
GenderQueer	**0.2%**	0.1%	0.1%
GenderNeutral (n=2)	**0.0%**	0.0%	0.0%

[6] In a few cases, clients would choose a response option other than '*I identify as* ___' but still specify a gender identity in the 'other' text field. In those cases, the text response was retained.
[7]In some cases, client-reported gender identity changed from the time of admission to post-discharge. We report gender as reported at admission, and if admission data were missing, gender was recorded as reported from discharge and post-discharge surveys (in that order). Finally, the only time an admission gender was changed was if a client answered '*not sure*' at admission, and indicated a specific gender post-admission.

Sexual Orientation

On NATSAP admission, discharge, and post-discharge surveys, clients were asked, 'Which of the following choices best describe your sexual orientation?'. Response options were: *heterosexual (straight), homosexual (gay or lesbian), bi-sexual, I identify as ___ (please specify)*, and *I am not sure*. The proportion of clients' responses are below[8].

	ALL CLIENTS	ADOLESCENT	ADULT
Heterosexual	**64.9%**	64.4%	66.7%
Bisexual	**17.5%**	17.6%	17.2%
Not Sure	**5.8%**	6.2%	4.2%
Homosexual	**5.1%**	4.9%	5.5%
Pansexual	**4.5%**	4.7%	3.9%
Queer	**0.7%**	0.6%	0.8%
Other	**0.6%**	0.6%	0.7%
Asexual	**0.5%**	0.4%	0.8%
Omnisexual	**0.3%**	0.4%	0.0%
Demisexual	**0.1%**	0.1%	0.1%
Gay	**0.1%**	0.1%	0.0%
Nonbinary (n=1)	**0.0%**	0.0%	0.0%
Abrosexual (n=1)	**0.0%**	0.0%	0.0%
Fluid (n=1)	**0.0%**	0.0%	0.0%
Polysexual (n=1)	**0.0%**	0.0%	0.0%



[8] As with gender identity, sexual orientation for some clients changed during or after therapy. Admission reports were recorded, but when missing, post-admission information was used. Only if a client chose '*not sure*' at admission and identified a sexual orientation after admission was sexual orientation changed from the admission response.

Client Arrival & Feeling of Belonging at Program

TRANSPORT

Adolescent clients and their caregivers responded to a question about whether the youth arrived at the program by transport service. Among adolescents, 40% indicated that they had arrived by transport service; 43% of caregivers reported using a service. The use of transport has declined over time. In 2019, half (50%), in 2020 44%, in 2021 40%, in 2022 35%, and in 2023 34% reported using a service.

The reasons for using a service were varied, but most caregivers (64%) feared the youth would not get to the program without the service (i.e., youth refusal, safety). Some (30%) reported that the upcoming program recommended using a service. The remainder cited inconvenience or COVID restrictions as reasons for using transport services.

FEELING OF BELONGING

At admission, adolescents rate their agreement from 1 - 10, with, '*It makes sense for me to be in this therapeutic program*'. The average score for all youths who answered this question (n=5371) was **5.5** (SD = 3.7). There was a small but significant difference on '*makes sense*' across treatment types; adolescents in TBS (6.3) and RTC (6.0) had higher scores than those in WT (5.1). There was a small but significant difference across genders; youths who were gender diverse had higher averages (5.9) than males (5.4) and females (5.4). Clients who were brought to their program by a transport service had lower averages on *'makes sense'* (4.3) than those who did not use transport (6.2) (a significant, moderately sized difference).

Adults coming to NATSAP programs reported average scores of 7.0 (SD = 2.6) on '*makes sense'*. There was a significant difference on '*makes sense*' across treatment types; those in YAT had higher scores (7.6) than those in RTC (7.0) or WT (7.0). There was also a small but significant difference across genders; those who identified as gender diverse had higher scores (7.6) than those who were female (7.1) or male (6.9). Adult clients typically do not use transport services.

[9]Significant difference of transport use by year of admit ($^2_{(4, 4101)}$ = 42.7; Φ = .10; p < .001)
[10]Information on the impact of transport services on treatment outcomes can be found in Tucker, A. R., Bettmann, J. E., Norton, C. L., Comart, C. (2015). The role of transport use in adolescent wilderness treatment: Its relationship to readiness to change and outcomes. *Child & Youth Care Forum*, DOI 10.10007/s10566-015-9301-6.
[11]Difference by treatment type ($F_{(3,5362)}$ = 42.4, p < .001 η^2 = .02)
[12]Significant difference by gender identity: adolescents ($F_{(2,5368)}$ = 5.2, p = .005 η^2 = .002).
[13]Significant difference by transport ($F_{(3729)}$ = 246.6, p < .001 η^2 = .06)
[14]Difference by treatment type ($F_{(3,1364)}$ = 4.1, p = .02 η^2 = .06)
[15]Significant difference by gender identity: adults ($F_{(2,1365)}$ = 4.7, p = .01 η^2 = .01).

Staff-Reported Reasons for Referral

Program staff completed a NATSAP form at client admission that asks '*What, if any, is the client's primary reason for referral*', '*...secondary reason*', and '*...tertiary reason*'. These were collapsed into one category that indicates whether a reason for referral was endorsed by staff, irrespective of order.

For each type of reason for referral, information about prevalence in the U.S. is provided. It should be noted that metrics are different between US and NATSAP data. For example, in the U.S., 19% of U.S. adults had an anxiety disorder; 39% of NATSAP-attending adults were reported by staff as having anxiety as a primary reason for referral. This information is thus for context, not direct comparison.

Reasons for Referral: Mental Health

ANXIETY

The NIMH[16] reports that 32% of adolescents in the U.S. had an anxiety disorder, with a higher prevalence among females (38%) than males (26%). Among adults, 19% (23% females; 14% males) had an anxiety disorder within the previous year; 31% experienced an anxiety disorder at some time in their lives.

Among NATSAP clients, 32% of adolescents and 39% of adults were reported by staff with Anxiety as a reason for referral. At WT 36% were reported with Anxiety as a reason for referral, at RTC and TBS 30%, and at YAT 17%. Staff reported anxiety as a reason for referral for 31% of male-identifying clients, 36% of female-identifying clients, and 38% of gender-diverse clients.

DEPRESSION

The NIMH[17] reports that 20% of adolescents aged 12-17 (29% females, 12% males) had a major depressive episode in the most recent year. Among adults, 8% had a major episode in the previous year (10% females, 6% males). A scientific study[18] explored lifetime rates and found that 21% of adults reported major depressive disorder sometime in their life.

NATSAP program staff reported that 41% of adolescents and 44% of adults had depression as a reason for referral. The proportion at WT was 43%, at RTC 41%, TBS 30%, and YAT 23%. Half (51%) of gender-diverse clients were reported with depression as a reason for referral, 47 % female-identifying clients, and 37% male-identifying clients.

[16] https://www.nimh.nih.gov/health/statistics/any-anxiety-disorder
[17] https://www.nimh.nih.gov/health/statistics/major-depression
[18] Hasin, D. S. Sarvet, A. L., Meyers, J., et al. (2018). Epidemiology of Adult *DSM-5* major depressive disorder and its specifiers in the United States. *JAMA Psychiatry, 75,* 336-346.

Reasons for Referral: Learning Differences

ATTENTION ISSUES / ADHD OR ADD

The CDC reports that about 11% of U.S. children aged 3-17 have been diagnosed with ADHD[19]; more prevalent among males (15%) than females (8%). Among adults, the prevalence is 4.4% (5.4% males; 3.2% females)[20].

Other Learning Challenges

The prevalence of staff indicating that 'learning disability' was a reason for referral was 2%. Notably, many clients may have presented to treatment with a learning challenge but it may not have been identified as a reason for referral.

Among clients attending data-contributing NATSAP programs, 14% of adolescents and 10% of adults were identified by staff Attention Issues being a reason for referral. Male-identifying clients had the highest prevalence (18%), gender diverse the next highest (12%), and female-identifying clients the lowest (6%). Across treatment types, Attention Issues as a reason for referral was consistent across RTC (14%), TBS (16%), and WT (13%), with fewer at YAT (5%). It is important to note that NATSAP clients may have been diagnosed with ADD/ADHD, but was not recorded as a reason for referral.

AUTISM SPECTRUM (ASD)

The prevalence of ASD in the U.S. is about 1 in 36 children (3%) and 1 in 45 adults (2%). Prevalence is four times higher among males (4%) than females (1%)[21].

Among NATSAP programs, 9% of clients were reported by staff as ASD being a reason for referral. This was similar among adolescents and adults, and across program types. Staff reported 12% of male-identifying and gender diverse clients, and 5% of female-identifying clients admitted with ASD as one of the top three reasons for referral.

Reasons for Referral: Trauma History

Among clients attending NATSAP programs, 14% of adolescents and 10% of adults were reported by staff as having a trauma-related issue as a reason for referral. This was most prevalent among clients at RTC (16%), then WT (12%), YAT (9%) then WT (6%). Female-identifying clients (19%) and gender-diverse clients (17%) were most likely to be identified by staff as having a trauma-related referral; males (9%) the least.

[19]https://www.cdc.gov/adhd/data/index.html
[20]NIMH Statistics
[21]https://www.autismspeaks.org/autism-statistics-asd

Reasons for Referral: Behavioral Health

SUBSTANCE USE

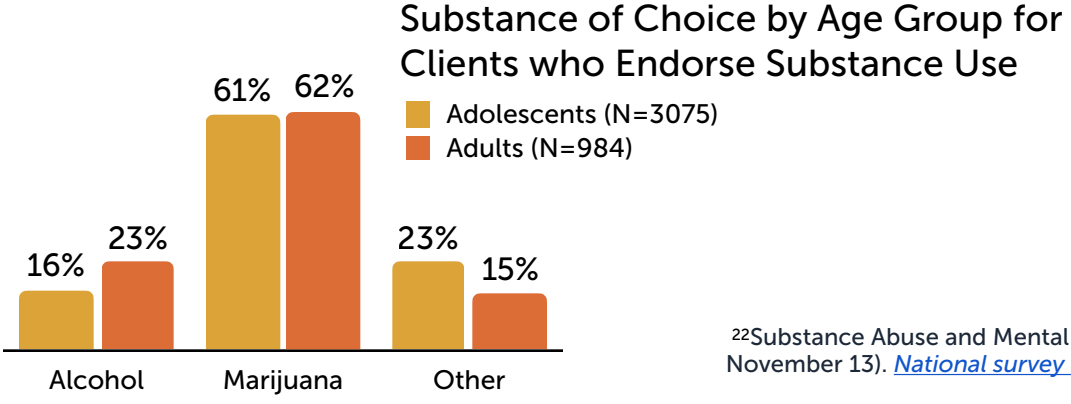
The 2023 United States National Survey on Drug Use and Health (NSDUH)[22] stated that about 17% of Americans aged 12 and older (20% males, 14% females) reported a substance use disorder and about 10% reported an alcohol use disorder in the previous year. Among adolescents (aged 12-17), 8% reported a substance use disorder and 3% reported an alcohol use disorder. For young adults (18-25), 27% battled with a substance use disorder and 15% with alcohol use.

On staff NATSAP admission forms, 17% of clients were reported to have substance abuse as one of the top three reasons for referral (17% adolescents and 18% adults). This was most prevalent among clients at WT (21%), then YAT (10%), RTC (9%); lower at TBS (4%). Male-identifying clients were most likely (22%) to be reported by staff as having substance abuse as a reason for referral, doubling the prevalence of female-identifying clients (11%). Among gender-diverse clients, 6% were identified by staff as having substance abuse as a reason for referral.

SUBSTANCE OF CHOICE

The category of 'other' included many responses that indicated clients had more than one drug of choice. For example, some adult 'other' responses were: 'meth and cocaine', 'weed, alcohol, cocaine', and 'xanax and opiates'. Similarly, among adolescents, the 'other' category was primarily populated with multiple responses such as, 'alcohol, marijuana, opioids', and 'all of the drugs. No alcohol'. Additional responses in the 'other' category included (but were not limited to): nicotine, vaping, bleach, benadryl, cough syrup, juul, K2, lean, nutmeg, and spice.

One question on the NATSAP forms asked clients to '*please identify your drug of choice*' with several options, such as alcohol, marijuana / cannabis, cocaine, opioids, etc., as well as an option for 'I did not use' and one for 'other'. Over 80% of clients responded to this question. Of those, 41% of adolescents and 37% of adults indicated that they did not use substances in the most recent 30 days. Most clients that did indicate drug use reported that marijuana / cannabis was their drug of choice.



[22]Substance Abuse and Mental Health Services Admin (2023, November 13). *National survey on drug use and health*.

Reasons for Referral: Behavioral Health

CONDUCT DISORDER

Yale Medicine[23] reports that up to 3% of children and teens in the U.S. have conduct disorder; twice as many males than females.

Among clients attending data-contributing NATSAP programs, 12% of adolescents and 2% of adults were identified by staff as having Conduct Disorder as a reason for referral. This proportion was similar for RTC and WT (11%), and lower at TBS (2%) and YAT (1%). Male-identifing clients had the highest prevalence (13%), then female-identifying clients (7%), and gender-diverse clients (6%).

OTHER REASONS FOR REFERRAL

Less than 3% of clients were identified by staff as having personality disorders, bipolar disorder, any eating disorder, obsessive compulsive disorder, or gender dysphoria as a reason for referral.

Staff had the option to choose 'other' as a reason for referral, with a text box to specify. Some of the more prevalent themes from this 'other' category included academic issues, adjustment disorder, attachment disorder, anger issues, inappropriate sexual behavior, pornography addiction, internet / gaming addiction, oppositional defiance, dysfunctional relationships, suicidality and non-suicidal self-injury.

[23] Yale Medicine on Conduct Disorder Prevalence

CLIENT OUTCOMES

Overview of Outcomes

This overview is presented in non-scientific language to summarize the findings of a comprehensive statistical approach (available in Appendix A). YAT and TBS programs were significantly underrepresented in the data, with only 6% of the clients contributing data. The results for YAT and TBS are presented separately from WT and RTC clients.

MENTAL HEALTH, RELATIONSHIPS & BEHAVIOR

At admission, discharge, and 6 and/or 12 months post-dischargeAdolescent clients fill out the **Youth Outcome Self-Report Questionnaire** YOQ-SR and adult clients complete the **Outcome Questionnaire** OQ-45.2. These instruments are valid, reliable, standardized, normed assessment of mental, relationship, and behavioral health. The youth version (YOQ-SR) includes 64 questions; the adult version (OQ-45.2) 45.

Caregivers of adolescents complete the YOQ 2.01[24]: **Youth Outcome Parent-Report Questionnaire** at admission, discharge, and 6 and/or 12 months post-discharge. The YOQ 2.01 is an assessment of a caregiver's perception of their child's health. The YOQ 2.01 includes 64 questions and has established reliability and validity.

Up to four caregivers completed surveys on behalf of their child, but we used only information from the primary responding caregiver because response rate for other caregivers was lower, and the scores across caregiver respondents were fundamentally the same.

[24]Burlingame, G. M., Wells, M. G., Lambert, M. J., & Cox, J. C. (2004). Youth Outcome Questionnaire (Y-OQ). In M. E. Maruish (Ed.), The use of psychological testing for treatment planning and outcomes assessment: Instruments for children and adolescents (3rd ed., pp. 235–273). Lawrence Erlbaum Associates Publishers.
[25]Lambert, M. J., Gregersen, A. T., & Burlingame, G. M. (2004). The Outcome Questionnaire-45. In M. E. Maruish (Ed.), The use of psychological testing for treatment planning and outcomes assessment: Instruments for adults (3rd ed., pp. 191–234). Lawrence Erlbaum Associates Publishers.
[26]Ridge, N. W., Warren, J. S., Burlingame, G. M., & Wells, M. G. (2009). Reliability and validity of the Youth Outcome Questionnaire Self-Report, Journal of Clinical Psychology, 65, 1115-26.
[27]Lambert, M.J., Burlingame, G. M., Umphress, V., Vermeersch, D. A., Clouse, G. C., & Yanchar, S. (1996). The reliability and validity of the outcome questionnaire. Clinical Psychology and Psychotherapy, 3, 249-258.
[28]Primary caregiver n=6322 (62% mother, 33% father, 1% parent unspecified, and 5% guardian), 2nd caregiver n=2942 (44% mother, 50% father, 1% parent, 5% guardian). 3rd Caregiver' n=15 4th caregiver n=1.
[29]To compare responses from Relative 1 and 2, we adopted Schuirmann equivalence tests with a .25 SD threshold. (Schuirmann, D. (1987) A comparison of the Two One-Sided Tests Procedure and the Power Approach for Assessing the Equivalence of Average Bioavailability. Journal of Pharmacokinetics and Biopharmaceutics, 15, 657-680.). Across family functioning and child health, relative 1 and 2 scores were equivalent

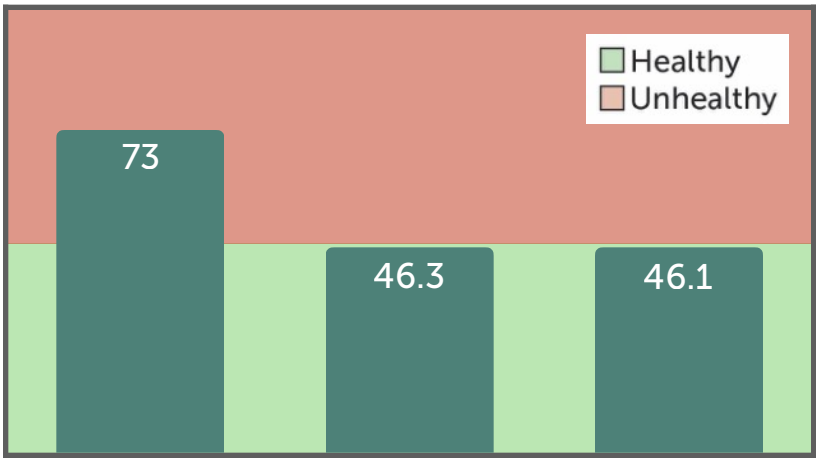
Describing Treatment Outcomes

AVERAGE TOTAL SCORES

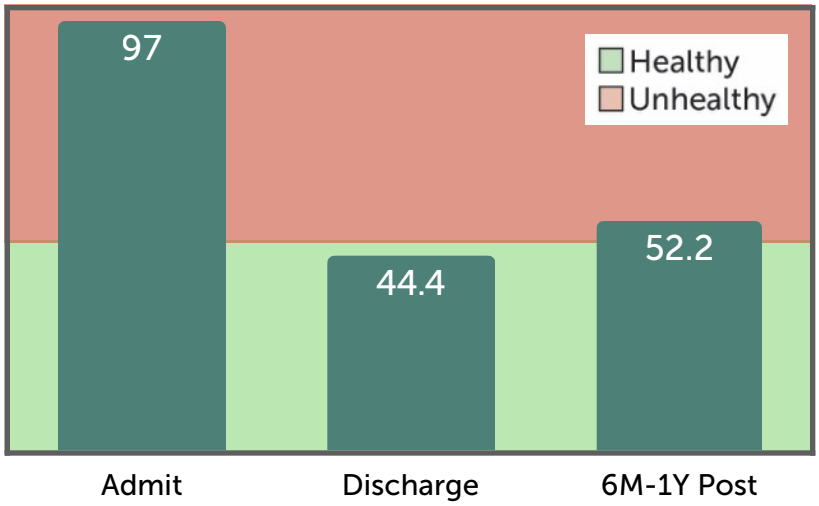
The Total score of the YOQ and OQ instruments provide a measure of global health across mental, relationship, and behavioral domains. The average scores of the Total YOQ-SR, YOQ2.01 and the OQ-45 are provided. These are descriptives; the averages for every person who completed an assessment at any time. Change trajectory analyses follow these descriptives.

Threshold scores distinguish healthy from unhealthy functioning. The threshold for the Total score for YOQ-SR and YOQ 2.01 is 47, for OQ-45 is 63. The range of scores in red are above the threshold and in the unhealthy range. Scores in green are in the healthy range.

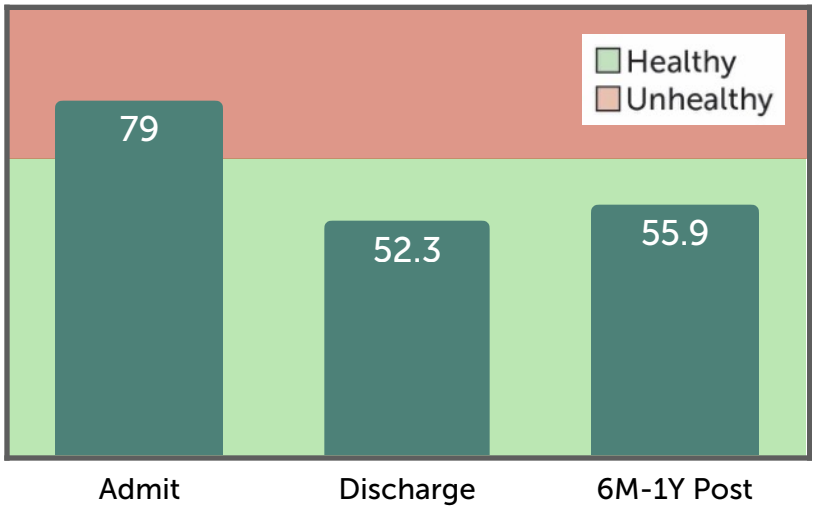
Adolescent YOQ-SR Total Score Averages at Each Time (WT & RTC)



Caregiver YOQ 2.01 Total Score Averages at Each Time (WT & RTC)



Adult OQ-45 Total Score Averages at Each Time (WT & RTC)



Scores in the red zones are in the unhealthy range; those in green are healthy. Lower scores indicate fewer symptoms. Score changes of 18 or more for adolescents or 14 or more for adults indicate clinically meaningful improvement.

YOQ-SR & Y 2.0 Subscale Health Domains

ADOLESCENTS

Six domains of adolescent mental, relationship, and behavioral health comprise the YOQ-SR and the YOQ 2.01. These are called SubScales, and are:

Mental Health Distress	depression, anxiety, fearfulness
Somatic Problems	aches, pains or sickness without medical reason
Interpersonal Relations	difficulty with relationships
Social Problems	aggression, defiance, and conflict
Behavioral Dysfunction	difficulty with concentration, attention, or impulsivity
Critical Items	suicidal ideation, self-harm, hallucinations

ADULTS

Three Subscales of the OQ-45 measure comprise global health. They are:

Mental Health Distress	depression, anxiety
Relationship Distress	loneliness, conflict with others, family difficulties
Social Role Distress	difficulties with responsibilities at work, school or home

YOQ-SR & YOQ 2.0 Subscale Descriptives for WT & RTC Clients

The average score for each subscale, by time and respondent, are provided for clients who attended RTC and WT programs. Threshold values are on the right in red. This is not an assessment of health trajectories, simply of the averages from every possible respondent at every time.

Average YOQ-SR, YOQ 2.01, and OQ-45 SubScale Scores at Each Time by Respondent for RTC & WT

	ADMIT	DISCHARGE	6M-1Y POST	THRESHOLD
Adolescent YQO-SR Mental Health Distress	**27.5**	17.6	19.2	**17**
Adolescent YQO-SR Somatic Distress	**8.6**	6.2	6.3	**6**
Adolescent YQO-SR Relationship Distress	**5.3**	2.0	1.9	**3**
Adolescent YQO-SR Social Problems	**6.4**	3.0	2.4	**3**
Adolescent YQO-SR Behavioral Dysfunction	**15.6**	11.2	10.7	**11**
Adolescent YQO-SR Critical Items	**9.4**	6.2	5.7	**6**
Caregiver YOQ 2.01 Mental Health Distress	**34.8**	17.8	20.2	**17**
Caregiver YOQ 2.01 Somatic Distress	**8.4**	4.4	5.1	**6**
Caregiver YOQ 2.01 Relationship Distress	**12.8**	3.7	5.1	**5**
Caregiver YOQ 2.01 Social Problems	**10.2**	2.9	4.1	**4**
Caregiver YOQ 2.01 Behavioral Dysfunction	**21.6**	11.0	12.7	**13**
Caregiver YOQ 2.01 Critical Items	**9.1**	4.6	5.0	**6**
Adult OQ-45 Mental Health Distress	**46.5**	29.8	33.4	**36**
Adult OQ-45 Relationship Distress	**17.5**	12.3	12.8	**15**
Adult OQ-45 Social Role Distress	**15.0**	10.3	9.7	**12**

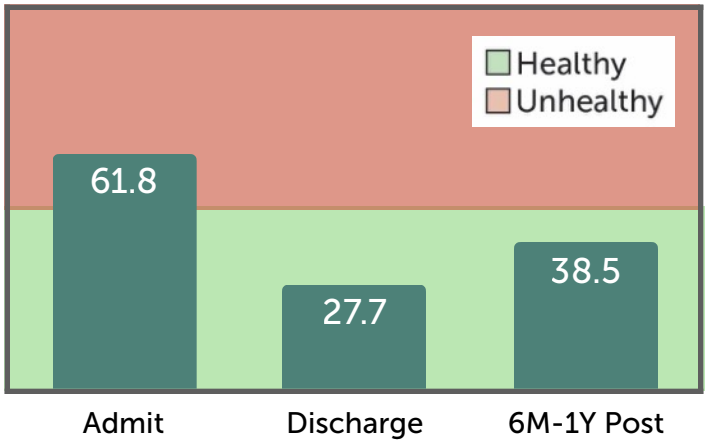
Therapeutic Boarding Schools & Young Adult Treatment

TOTAL AVERAGE SCORES

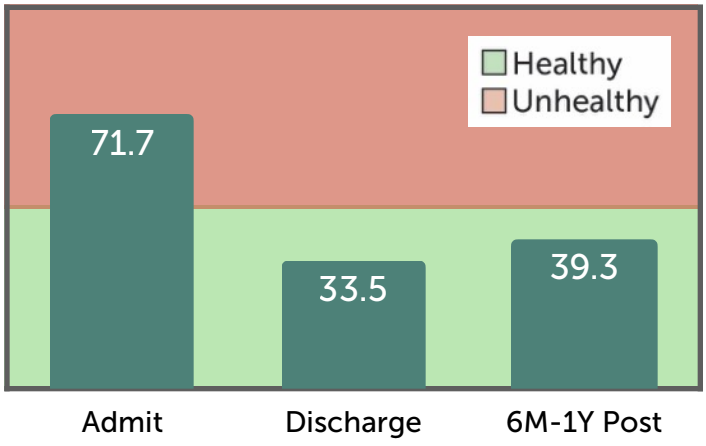
We provide descriptives (averages) for TBS and YAT clients here. This is not an assessment of health trajectories, simply the averages from every possible respondent at each time.

Average Total YOQ-SR, YOQ 2.01, and OQ-45 Total Score at Each Time for YAT & TBS

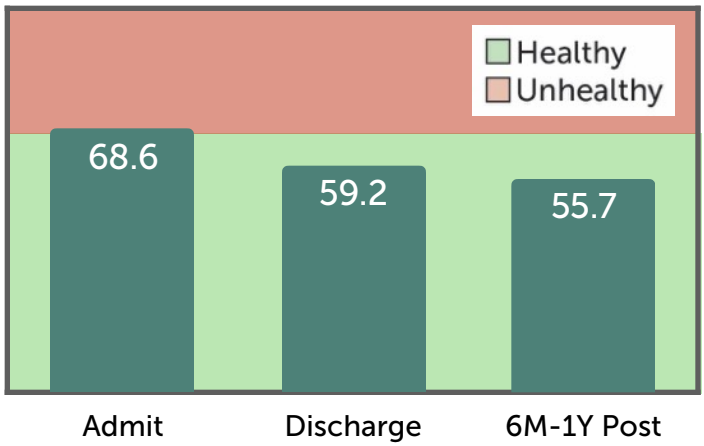
Adolescent YOQ-SR Total Score Averages at Each Time (TBS)



Caregiver YOQ 2.01 Total Score Averages at Each Time (TBS)



Adult OQ-45 Total Score Averages at Each Time (TBS)



YOQ-SR & YOQ 2.0 Subscale Descriptives for TBS & YAT

The average score for each subscale, by time and respondent, are provided for clients who attended TBS and YAT programs. Threshold values are on the right in red. This is not an assessment of health trajectories, simply of the averages from every possible respondent at every time.

Average YOQ-SR, YOQ 2.01, and OQ-45 SubScale Scores at Each Time by Respondent for YAT & TBS

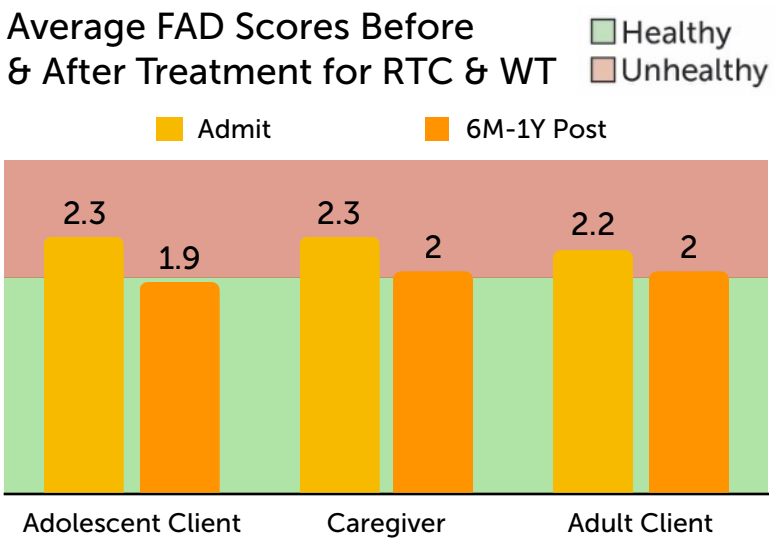
	ADMIT	DISCHARGE	6M-1Y POST	THRESHOLD
Adolescent YQO-SR Mental Health Distress	**25.6**	12.8	17.7	**17**
Adolescent YQO-SR Somatic Distress	**7.4**	4.6	5.8	**6**
Adolescent YQO-SR Relationship Distress	**3.1**	-0.7	0.1	**3**
Adolescent YQO-SR Social Problems	**3.2**	0.2	1.4	**3**
Adolescent YQO-SR Behavioral Dysfunction	**13.9**	7.3	8.8	**11**
Adolescent YQO-SR Critical Items	**7.9**	3.6	4.2	**6**
Caregiver YOQ 2.01 Mental Health Distress	**29.1**	14.8	17.3	**17**
Caregiver YOQ 2.01 Somatic Distress	**6.6**	4.1	5.1	**6**
Caregiver YOQ 2.01 Relationship Distress	**7.6**	1.6	2.2	**5**
Caregiver YOQ 2.01 Social Problems	**5.3**	1.4	2.0	**4**
Caregiver YOQ 2.01 Behavioral Dysfunction	**16.5**	8.8	9.4	**13**
Caregiver YOQ 2.01 Critical Items	**6.7**	3.4	3.3	**6**
Adult OQ-45 Mental Health Distress	**40.4**	35.4	34.4	**36**
Adult OQ-45 Relationship Distress	**15.3**	13.6	12.9	**15**
Adult OQ-45 Social Role Distress	**12.8**	10.4	9.7	**12**

Client Outcomes: Family Functioning

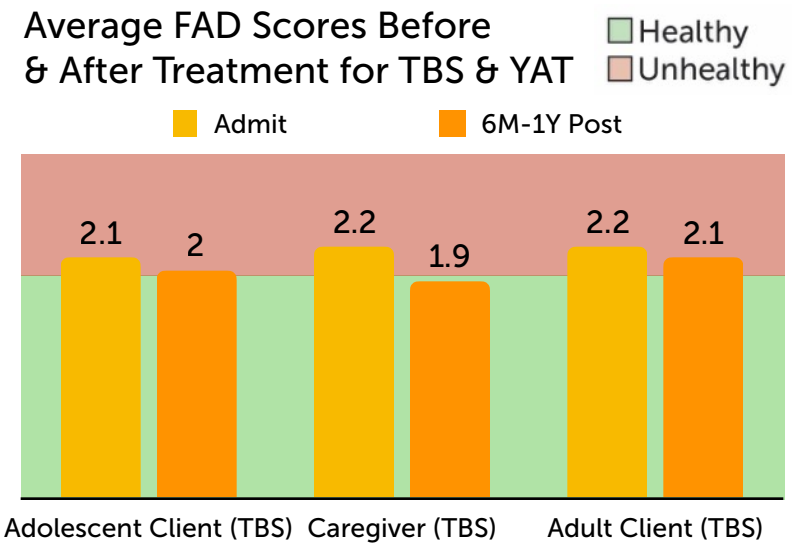
The McMaster Family Assessment Device, General Functioning Subscale (FAD) is a 12-item widely-used reliable and valid[30] assessment of acceptance and agreeableness among family members. The North American "healthy" family scores range from 0 to 2, with higher scores indicating greater *dys*function.

The FAD was administered to respondents at admission, discharge, and post-discharge. We excluded discharge scores as the time a family spent together during treatment may have been minimal.

Average RTC & WT FAD scores before and after treatment are shown. All respondent averages are lower post-treatment than at admission, typically by about a half of a standard deviation. Comprehensive analyses (Appendix B) confirm that the change is significant. Further, males improve more than females; gender diverse clients improve less than females. In WT programs, older clients improved more than younger.



The average scores for TBS & YAT clients are shown here. They are slightly different from RTC and WT, and the different scores at pre and post-treatment are less profound. The group sizes for these clients was too small for trajectory analyses.



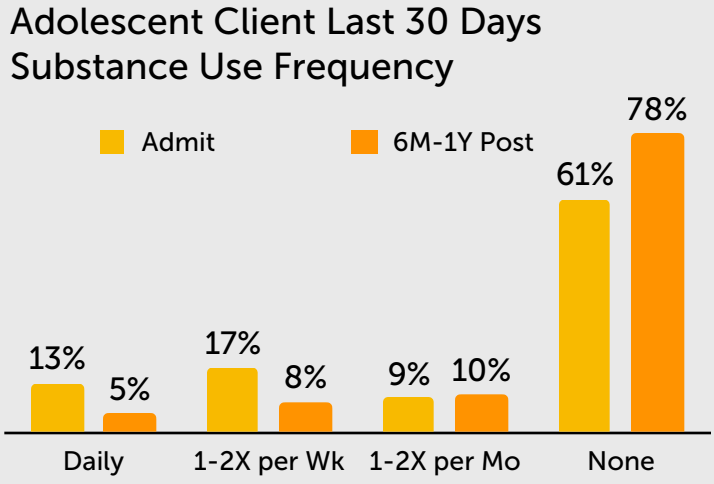
[30] Miller, I. W., Epstein, N. B., Bishop, D. S., & Keitner, G. I. (1985). The McMaster Family Assessment Device: Reliability and validity. Journal of Marital and Family Therapy, 11(4), 345–356. https://doi.org/10.1111/j.1752-0606.1985.tb00028.x

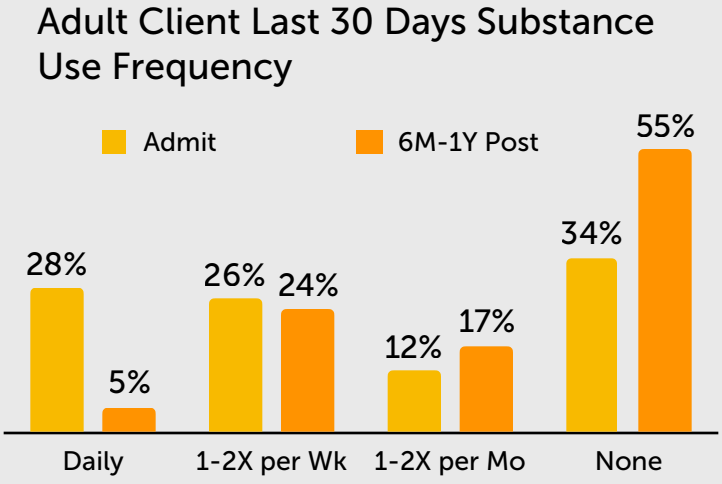
Client Outcomes: Substance Use for RTC & WT Clients

The NATSAP forms included a question that asked about frequency of alcohol and/or substance use. For adolescents at intake, the question was, '*During the 30 days* ***prior to enrolling in this program****, how many times did you use any drugs or alcohol?*' and for adults, '*During the 30 days* ***prior to any inpatient treatment****, how many days did you use any drug or alcohol?*'. Post-discharge, all clients were asked, '*During the past 30 days, how many times did you use any drug or alcohol?*'.

Response options were: *daily, a couple of times a week, once a week, a couple of times a month, once a month, less than once a month, not at all*. To simplify, we collapsed the seven frequency options into four categories: daily, 1-2x per week, 1-2x per month, none.

For technical reasons[31], we did not conduct analyses on the change trajectories of substance use. We instead report the proportion of client responses by time and age group. Higher proportions of clients endorsed daily substance use at admission than at post-treatment, and the proportions of clients endorsing no use was higher post-treatment than at admission. This *suggests* substance use reduction associated with treatment, but future research is required to explore this robustly.





[31]We did not conduct trajectory analyses on substance use, as doing so on a single question, whose response options were non-equivalent, is statistically problematic.

What This Report Tells Us

The findings from the evaluation of 51 NATSAP programs reinforces the results of dozens of published articles; clients tend to get better and stay better. There are, of course, nuances to these findings. These nuances are summarized here, along with recommendations of how to use this information toward continuous quality improvement for client outcomes at NATSAP RTC and WT programs.

FINDINGS

Clients in NATSAP programs present for treatment with a complex array of health and behavior challenges.

Clients report more diverse gender than traditional health record systems capture.

RTC and WT clients reported significant health improvements from admit to discharge.

Clinical improvement was generally sustained for up to one year post-program, with slight 'upticks' in symptoms at follow-up.

Caregivers reported more acute symptoms for their child than adolescents self-reported.

Male-identifying clients in almost all cases reported more profound health improvements than female-identifying clients.

The impact of age on trajectories varies by treatment respondent.

The more surveys a client completed, the more likely they were to report greater improvement.

Client and caregiver family functioning improves from admission to post-treatment.

Clients report reduced substance use up to one year after treatment.

RECOMMENDATIONS

Future work should explore the impact of client profile on treatment outcomes to inform optimal care for clients of all levels of complexity.

Reporting systems should honor client voice with appropriate gender identity capture.

Research should explore what works best for whom.

Post-treatment evaluation of NATSAP programs should be rigorously pursued, to best understand how to maximize long-term impact of programs.

Caregiver - child discrepancy research should examine the impact of improved alignment.

Gender disparity research is required, to inform professional development and knowledge mobilization to equalize treatment outcomes.

Research should focus on understanding the association between age and client outcomes.

Post-treatment data collection is strongly encouraged, to understand sustained impact of treatment and minimize bias.

Research should explore associations between family functioning and treatment outcomes.

A more robust measure of substance use frequency, recency, and life impact should be implemented across NATSAP programs.

What These Analyses Couldn't Tell Us

1. Would clients have improved without going to treatment?

These analyses were conducted on data from treatment-engaged clients and caregivers. There was no comparison group - a group of similar clients with whom we could compare health over time. This means that we can't answer the question, '*would clients get better over time without having attended a NATSAP program*'. Comparison groups are ethically challenging - they typically require a group of clients in distress to forego treatment, at least for some time. There are novel ethical comparison group approaches, however, that NATSAP members should consider in the future.

2. Can we expect similar outcomes from all NATSAP member programs?

The data included information from 51 NATSAP programs. With over 100 program members in the organization, the results can't be generalized to clients at all NATSAP programs. The results only represent data-contributing NATSAP programs. The researchers were blind to which programs were included, thus they cannot be named in this report. Prospective referrers, clients, and other stakeholders should determine whether a program they are interested in engages in outcome evaluation, which should be a standard practice for all NATSAP treatment programs.

3. Can we expect similar outcomes for other adults or adolescents in distress?

NATSAP programs may be unique from other treatment programs. NATSAP programs are typically fee-for-service, located in remote settings, and offer long-term out-of-home care. Clients and families are thus likely also unique in that they gravitate to the treatment location, approach, and duration, and can afford the program. As such, the results for NATSAP program clients cannot be generalized to all adolescents and adults in distress - only to those who engaged with a NATSAP program.

4. What about clients who didn't complete surveys?

Our data included only survey respondents, and there is no way to know how many clients attended these 51 programs but did not complete any surveys. Since we did not have census data, we could not know the actual survey response rate. As such, the results should be tempered to understand that they represent clients who completed at least one outcome-oriented survey.

Next Steps

NATSAP's mission is to serve as an advocate and resource for behavioral healthcare. This report helps foster this mission by demonstrating the impact of member programs on the wellbeing of their clients. This resource can be shared with treatment-seeking clients and families, programs, referrers, and other stakeholders.

The findings from this evaluation are promising. NATSAP clients get better and stay better. The results account for biases inherent in missing data and program differences. These methods were a step forward in understanding how we can understand clinical data with rigor and transparency.

This report is a call to action. Future work needs to explore how to equalize outcomes across gender and age spectrums. Targeted professional development and rigorous research can help understand this disparity and move toward a system of care that optimizes outcomes for every client.

The most profound call to action is the need for member programs to engage with evaluation. It should be standard practice of every program to measure and demonstrate their impact. Evaluation and outcomes reporting are key indicators of a quality program, offering transparency and accountability to all stakeholders.

NATSAP is actively working on strategies to elevate the field of behavioral healthcare, with a focus on evaluation capacity. The NATSAP Task Force is developing short and long term strategies aimed at increasing the capacity of member programs to measure and demonstrate their effectiveness. One of the outcroppings of the Task Force is the launch of the Michael Gass awards; funding that recognizes existing research work and bolsters resources for existing projects. Information about these awards can be found on the back cover of this document or at (https://natsap.org/Michael-gass-research-award/). NATSAP member programs are strongly encouraged to engage with this opportunity.

A final congratulations to the 51 NATSAP member programs who contributed data to this project. These programs leaned into the profound challenges of data collection and the results highlight their excellence in delivering effective behavioral healthcare.

This report was prepared by Laura Mills, the Director of Evaluation Services at BestNotes. Laura is happy to address questions, concerns, or comments. Email her at Laura@bestnotes.com.

APPENDIX A: YOQ & OQ TRAJECTORY ANALYSES

Client Health

To understand the impact of NATSAP programs, we examined the trajectories of health change and whether those trajectories were influenced by gender identity and age. First, however, we had to accommodate factors that may have biased the results[32]. Bias may stem from many factors - we were able to explore and accommodate *missing data* and *program differences*. YAT and TBS programs were significantly underrepresented in the data, with only 6% of the clients contributing any data at any time[33]; they were excluded from trajectory analyses.

Bias From Missing Data

7628 WT and RTC clients and caregivers contributed data at admission, discharge, or post-discharge. Not every client or caregiver completed an assessment at every time point. Of the 6154 adolescent clients and their caregivers, and 1474 adult clients in the dataset, the completion rates were:

YOQ-SR	90% @ admit	75% @ discharge	23% 6-Mo - 1Yr Post-Discharge.
YOQ 2.01	82% @ admit	61% @discharge	47% 6-Mo - 1Yr Post-Discharge.
OQ-45	91%@ admit	76% @discharge	29% 6-Mo - 1Yr Post-Discharge.

Missing data means scores may be biased in favor of a particular subset of clients. For example, post-treatment data might be over-represented with people who had a great experience at their program or with people who just really enjoy doing surveys. Over-representation might also stem from clients whose programs invested considerable resources into data collection.

The only way to avoid bias is for all survey respondents to complete all questionnaires at all measurement times. This is unrealistic in clinical practice; clients and families disengage with or refuse the survey process for many reasons. There is no way to *eliminate* bias that results from missing data. We have, however, taken steps to account for bias. Our objective was to demonstrate the impact of NATSAP programs on client health based on a fair representation of NATSAP clients.

[32]A three-level, random-intercepts multi-level regression modeling (MSEM) was estimated using Full Information Maximum Likelihood to accommodate missing data. The first level was time (Admit, Discharge, 6M Post, and 1Y Post). The second was client ID, and the third was facility ID. The analyses were performed in the statistical software MPlus (MPlus Version 8, Muthen & Muthen 1998 - 2017)

[33]One of the preliminary tests used to mitigate bias is called equivalence testing, which requires larger sample sizes than was available from YAT and TBS clients.

Bias Consideration 1: Are Clients Similar No Matter How Many Surveys They Completed?

Client Health. Using equivalence tests[34], we examined whether clients were similar irrespective of the number of times they contributed data. Equivalence tests assess two groups to determine if they can practically be considered the same, taking into account scores, size, and variability. Our outcomes of interest were the Total scores on the YOQ-SR, YOQ2.01, and OQ-45 for each program type and survey respondent. We looked at whether groups were equivalent whether data were contributed 1, 2, or 3 times[35,36]. Almost all adolescent and caregiver respondents were similar irrespective of the number of times they contributed data, with only one exception out of 36 tests. Conversely, more than ⅔ of the equivalence tests on adult clients showed non-equivalence. In other words, adult clients who did more surveys were not the same as those who did fewer surveys[37]. Given these results, we accounted for the variability that was attributable to data contribution in our analyses.

Gender & Age. There were similar proportions of each gender at each timepoint irrespective of the number of times surveys were completed[38]. The average age at admission was similar for adolescent and adult age groups, irrespective of the number of times they contributed data[39].

Bias Consideration 2: Are Clients Similar No Matter Which Program They Attended?

Programs varied in the number of clients each had in the data. We also examined the amount of influence that could be attributed to which program clients attended based on client health scores. To do this, we used intraclass correlation analyses[40,41]. The amount of variability of client health that could be attributed to program differences ranged from 1% to 20%[42]. Intraclass correlations of 5% or more are considered substantial, and so to reduce bias arising from program differences, we accounted for 'program attended' in our final analyses.

[34]Schuirmann, D. J. (1987). A comparison of the two-sided tests procedure and the power approach for assigning equivalence of average bioavailability. *Journal of Pharmacokinetics and Biopharmaceutics*, *15*, 657–680. doi:10.1007/BF01068419
[35]A range of scores within which differences are too small to be considered meaningful is called an equivalence interval. Our equivalence interval was set to 0.5 standard deviation of the raw score.
[36]For each respondent at each treatment type and timepoint, 3 pairs of equivalence analyses were conducted: groups that contributed 1 v 2 times, 1 v 3 times, and 2 v 3 times.
[37]Full information on equivalence test results is available on request
[38]Using a 0.2 correlation threshold
[39]Based on a 1-year equivalence interval
[40]Shrout, P.E. & Fleiss, J.L. (1979) Intraclass Correlations: Uses in Assessing Rater Reliability. *Psychological Bulletin, 2*, 420-428.
[41]Program was indicated by a variable 'Facility ID', a 33-digit alphanumeric code. The researchers blind to program names
[42]Intraclass Correlations and residuals available on request.

Analyses

A two-level, random-intercepts (fixed slopes) multi-level regression modeling (MSEM) was estimated using Full Information Maximum Likelihood. The first level was client ID, to capture each client's score at each time. The second level was program ID (an encrypted alphanumeric code) to control for the variability attributable to program differences. As such, client ID was nested within Program ID.

We analyzed score change over time, controlling for age at admission, gender, and data contribution. This was achieved by simultaneously including all four predictors (time, age, gender, and data contribution) in the model. The analyses were performed in the statistical software MPlus[43].

We analyzed six models - one for each respondent type and each treatment type. All models converged and in all models, the standard error was substantially smaller than the coefficient, suggesting the models were well structured.

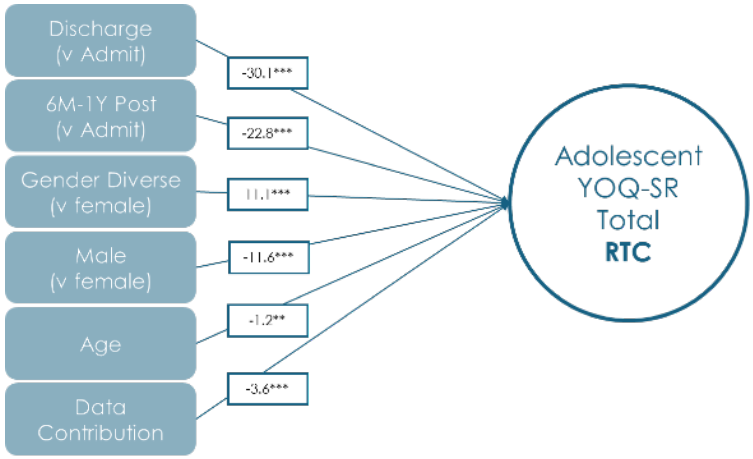
The coefficients for each predictor in each model are displayed. The interpretation of the models are such that for time and gender, the coefficients estimate the change expected compared to the anchor level of the variable. For example, for adolescent YOQ-SR Total for RTC, one can estimate a 30-point reduction in score compared to score at admission (holding program differences constant and controlling for gender, age, and data contribution). The gender coefficients are compared against the 'anchor' female.

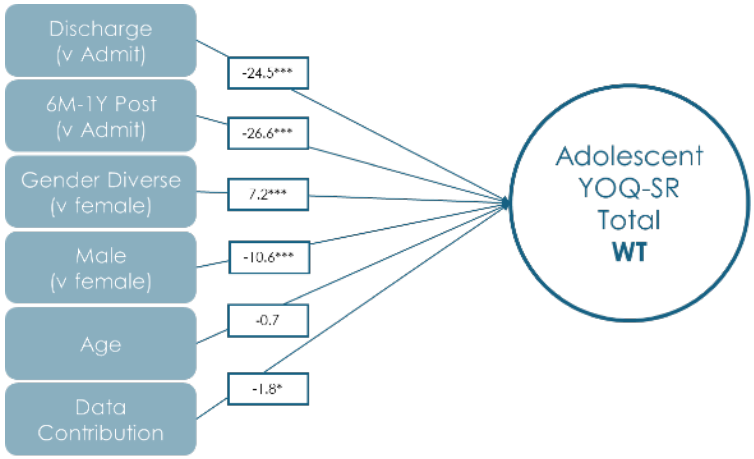
Interpretations for the predictors of age and data contribution, which were treated as continuous variables, are similar to any regression: for every one unit increase in the predictor, predict X change in the outcome. So, for Adolescent YOQ-SR, for every one year increase in age, predict a 1.2 additional improvement in outcome (holding program differences constant and controlling for time, gender, and data contribution).

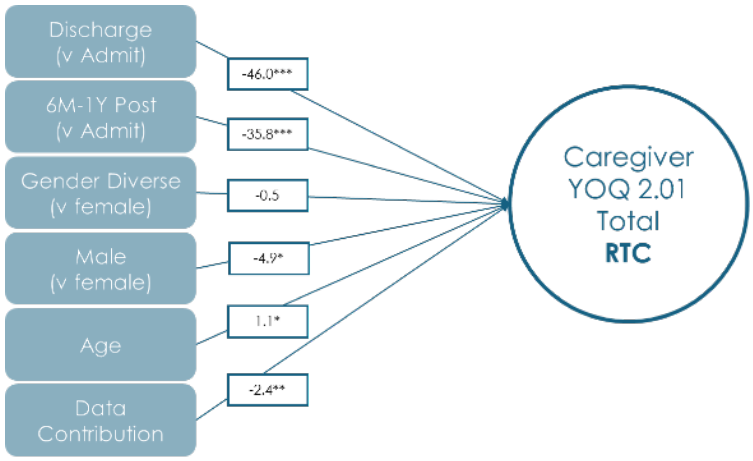
These analyses are beyond the scope of a typical evaluation report. We were committed, however, to addressing concerns of data attrition and the influence of program differences. We do not detail each of the findings for each of the models but summarize the predominant themes earlier in the report.

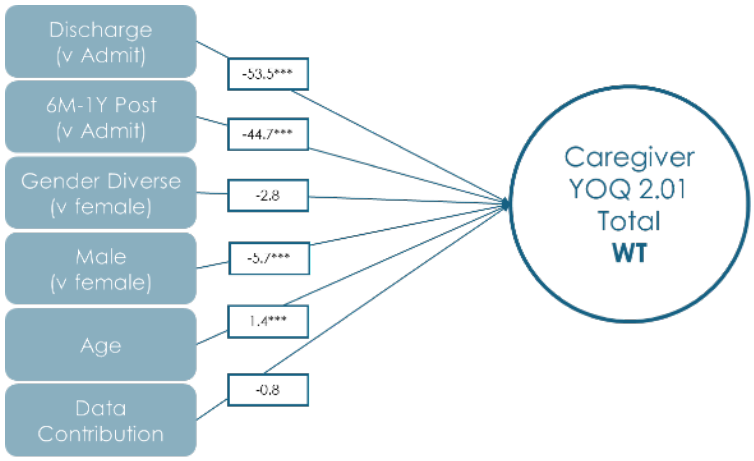
[43]MPlus Version 8, Muthen & Muthen 1998 - 2017.

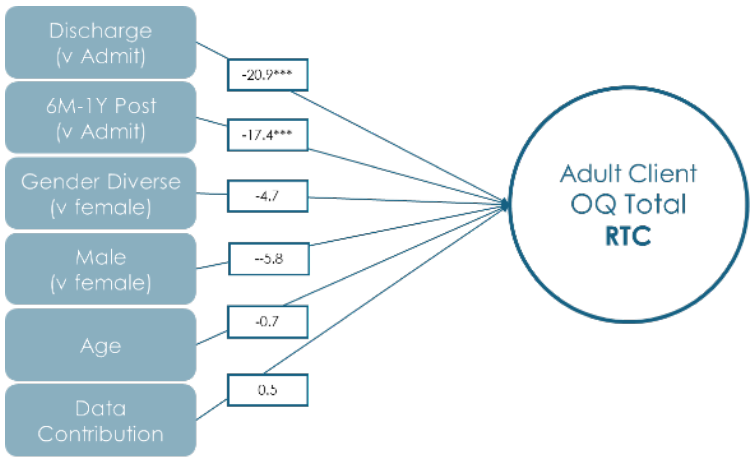
Health Trajectories by Treatment Type and Respondent, Predicted by Time, Gender, Age, and Data Contribution

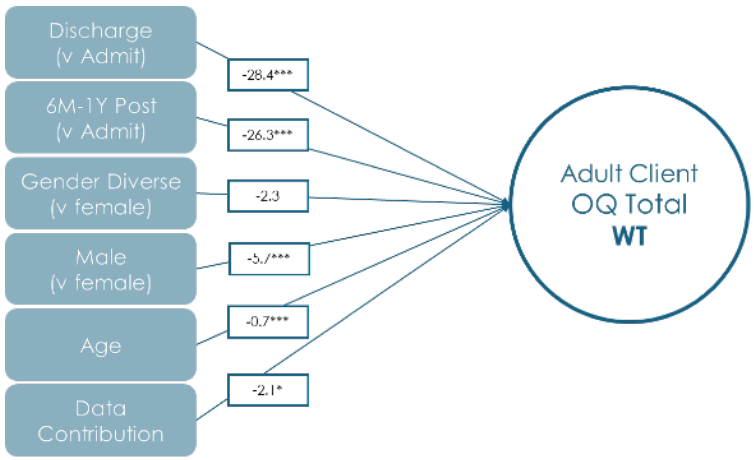










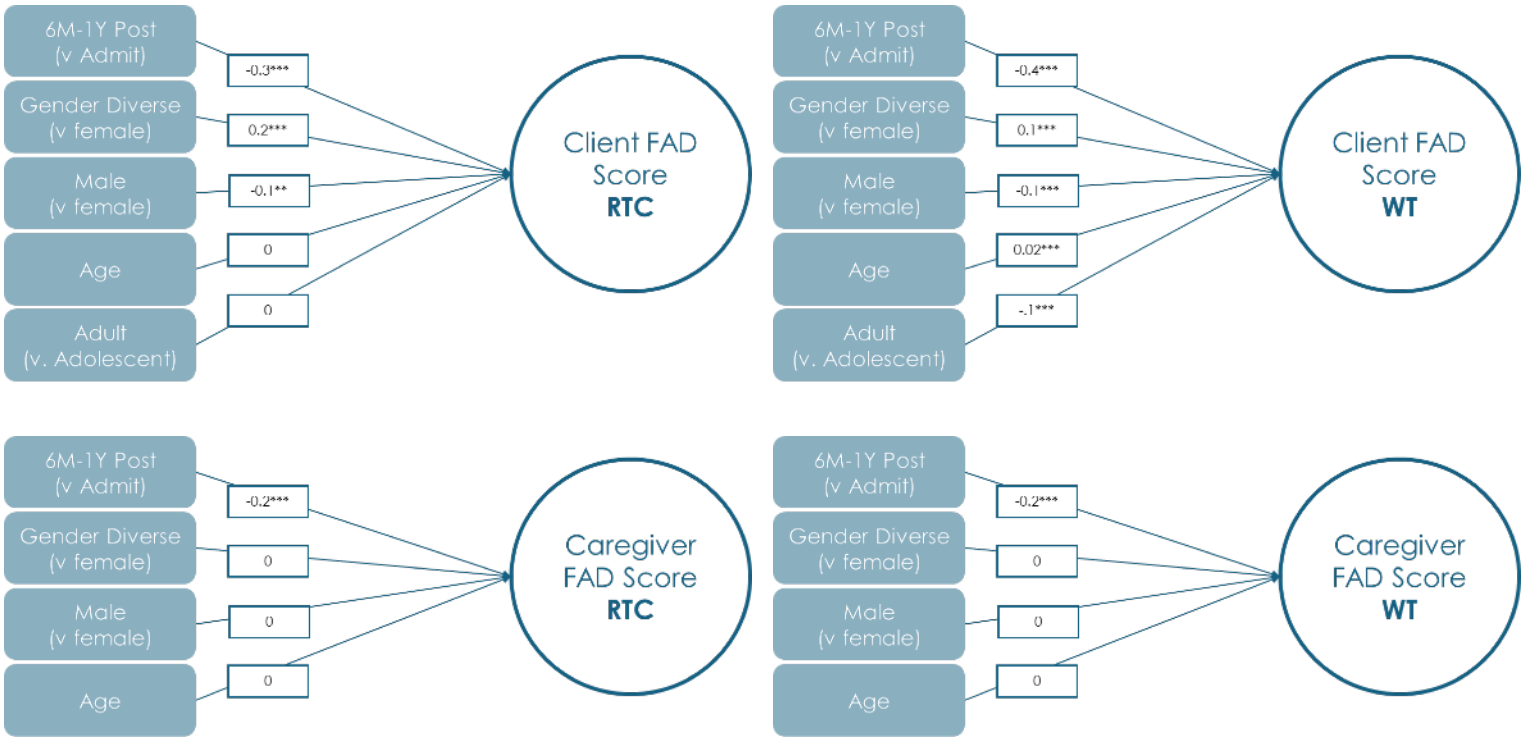


APPENDIX B: FAD TRAJECTORY ANALYSES

Analyses for changes on FAD followed the protocol for those of the YOQ-SR, YOQ 2.01, and the OQ-45. Equivalence tests revealed no differences across respondents based on data contribution and thus the analyses controlled only for gender and age, within the two-level model.

In all cases, time was a significant predictor of change. For RTC and WT client self-reports, gender and age also impacted the trajectories of FAD scores, which varied slightly by treatment type, as seen in the figures. Males improve more than females; gender diverse clients improve less than females. In WT programs, older clients improved more than younger.

FAD Trajectories by Treatment Type and Respondent, Predicted by Time, Gender, and Age



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