



INTENSIVE IN-HOME BEHAVIORAL HEALTH TREATMENT

2022 ANNUAL REPORT



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Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Table of Contents

Annual Summary	3
Demographics	3
Pathway into Program	3
Clinical Presentation.....	4
Discharge Information.....	4
Statistical Analysis	6
Program Length and Reason for Program Closure	8
Major Events During the Program.....	9
Barriers to Care	10
The Hope Scale.....	11
The Ohio Scales	12
Summary	17
Recommendations	19
Appendix A: Methods	20
Binary Outcomes	20
Continuous Outcomes	20
Appendix B: Model Output for Binary Outcomes	21
Reason for Program Closure	21
Major Events During the Program	22
Barriers to Care	23
Appendix C: Model Output for Continuous Outcomes	24
The Hope Scale	24
Ohio: Problem Severity Scale	25
Ohio: Functioning Scale.....	26
Ohio: Restrictiveness of Living Environment Scale (ROLES)	27
Ohio: Satisfaction Scale	28
Ohio: Hopefulness Scale	29
Appendix D: Training Information	30

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Annual Summary

Intensive In-Home Behavioral Health Treatment (IIBHT) has enrolled 240 youth with 118 youth being discharged from IIBHT since its inception in 2021 (Table 1). As of December 31, 2022, there were 122 youth actively enrolled in the program across the state.

Table 1. Number of youth enrolled and discharged by quarter/year

	2021	2022				2022	GRAND TOTAL
	TOTAL	Q1	Q2	Q3	Q4	TOTAL	
Enrolled	62	23	51	58	46	178	240
Discharged	26	17	14	29	32	92	118

The Q4 2022 IIBHT Quarterly Report (submitted to OHA on February 15, 2022), summarizes aggregate data for the 16 agencies reporting in REDCap. The report includes quarterly and cumulative annual data. A number of trends were identified in the report:

Demographics

Age: The average age of youth enrolled in IIBHT is 13 years old, with most youth being 11-15 years old.

Gender Identity and Sexual Orientation: In 2022, IIBHT served more male (50%) and female (40%) youth and fewer non-binary or transgender (8%) youth, compared to 2021 (44%, 37%, 17%, respectively). The number of LGBTQ+ youth served by the program also decreased slightly in 2022 from 34% in 2021 to 25%.

Race and Ethnicity: IIBHT primarily serves White (75%) and Non-Hispanic/Latino/Spanish (76%) youth. However, there has been an increase in the number of youth identifying as Hispanic, Latino, or Spanish over time, from 10% in 2021 to 20% in 2022.

Total Household Income and Average Household Size: An estimated 28%-42% of families report household incomes of less than \$25,000/year. The average household size ranges from 3.32-4.60 people.

Foster Care and Adoption Status: 39% of the youth in IIBHT are currently (at the time of enrollment) or were previously in foster care. 11% of youth in IIBHT are adopted, however, 29% of the data for this question is missing.

Pathway into Program

Referral Source: 47% of IIBHT referrals come from outpatient therapists. The second most common referral source is Wraparound (9%).

Presenting Referral Issue: Almost half of youth in IIBHT present with a condition that significantly affects their functioning (44%) and/or are at high risk of developing a condition of a severe or persistent nature (45%).

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Clinical Presentation

Diagnoses: The most common presenting diagnostic groups for the youth in IIBHT include Trauma and Stressor-Related Disorders (51%), Attention Disorders (48%), Anxiety Disorders (34%), and Depressive Disorders (35%).

Trauma History: Most youth (88%) in IIBHT have a trauma history, which includes emotional abuse or neglect (48%), physical abuse or neglect (44%), sexual abuse (31%), and/or domestic violence (26%).

Suicidality History: 74% of youth in IIBHT have a history of suicidal ideation, non-suicidal self-injury (NSSI), and/or have attempted suicide.

Substance Use History: 28% of youth in IIBHT have a history and/or current use of alcohol and/or drugs.

Discharge Information

Care at Discharge: 52% of youth discharging from IIBHT transition to a lower level of care, with most discharging to outpatient therapy, outpatient psychiatry, and/or Wraparound. Among the youth who did not discharge to a higher level of care, 11% were admitted to a higher level of care, 22% stopped engaging with the program, and 15% discharged for other reasons.

Barriers to Accessing the Recommended Care: The most common barriers to accessing the recommended level of care include the youth being unwilling to engage in further treatment (14%), limited access to an in-network provider (11%), and/or the family deciding to not access the recommended level of care (10%).

Major Events During the Program: The most common major events to occur during IIBHT include the youth having a mental health Emergency Department (ED) visit (20%), the youth self-harming (14%), and/or the youth engaging in problematic substance use (12%). 2022 observed a decrease in the number of youth self-harming during the program (11%), compared to 2021 (27%). 2022 also had fewer youth presenting to EDs while enrolled in the program (16%), compared to 2021 (35%).

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Table 2. IBHT programs reporting inREDCap, 2021-2022

County	Agency	CCO(s)
Baker	New Directions	Eastern Oregon CCO
Benton	Youth Villages	InterCommunity Health Network CCO
Clackamas	Youth Villages	HealthShare of Oregon, OpenCard
Clatsop	Clatsop Behavioral Health	Columbia Pacific CCO
Coos	Coos Health and Wellness	Advanced Health
Crook	Best Care	PacificSource Community Solutions: Central Oregon
Deschutes	Youth Villages, Options for Southern Oregon	PacificSource Community Solutions: Central Oregon, OpenCard, AllCare CCO
Douglas	Adapt	Umpqua Health Alliance
Grant	Community Counseling Solutions	Eastern Oregon CCO
Jackson	Options for Southern Oregon	Jackson Care Connect, AllCare CCO, OpenCard
Jefferson	Youth Villages, Best Care	PacificSource Community Solutions: Central Oregon
Josephine	Options for Southern Oregon	AllCare CCO
Klamath	Youth Villages	PacificSource Community Solutions: Central Oregon
Lane	The Child Center	PacificSource Community Solutions: Lane
Lincoln	Lincoln County Health and Human Services	InterCommunity Health Network CCO
Linn	Youth Villages	InterCommunity Health Network CCO
Malheur	Lifeways	Eastern Oregon CCO
Marion	Youth Villages	PacificSource Community Solutions: Marion/Polk, OpenCard, InterCommunity Health Network CCO
Morrow	Community Counseling Solutions	Eastern Oregon CCO
Multnomah	Youth Villages, Catholic Community Services	HealthShare of Oregon, OpenCard
Polk	Youth Villages	PacificSource Community Solutions: Marion/Polk
Umatilla	Community Counseling Solutions, Lifeways	Eastern Oregon CCO
Union	Center for Human Development	Eastern Oregon CCO, OpenCard
Wallowa	Wallowa Valley Center for Wellness	Eastern Oregon CCO
Washington	Youth Villages, Trillium Family Services	HealthShare of Oregon
Yamhill	Yamhill County Health and Human Services	Yamhill Community Care, OpenCard, AllCare CCO

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Statistical Analysis

A comprehensive statistical analysis was completed on the subset of youth who discharged from IIBHT before December 31, 2022. Data was exported on January 26, 2023 and the final sample included 109 youth from 10 programs representing 9 CCOs in addition to OpenCard, commercial insurance, and uninsured youth (Table 3).

The goal of the analysis is twofold: describe the youth discharged from IIBHT and understand what demographic and clinical factors may impact their experience in the program.

First, the sample's demographics, history, and clinical presentation at intake are described on page 7 in Table 4 (this differs slightly from the summary in the previous section, since only youth who have *completed* the program are included in this statistical analysis). On page 8, an analysis is presented on important program factors related to discharge, including program length, reason for program closure, major events during the program, and barriers to follow-up care. This analysis assesses whether there are any relationships between these discharge factors and youths' demographics, mental health history, and/or clinical characteristics.

Next, on page 11, the IIBHT pre- and post- assessment measures, including the Hope Scale and the Ohio Scales, are evaluated. For each measure, the difference in a youth's score at enrollment and score at closure is calculated. Next, the sample's average difference in scores is compared and tested to see if youth show meaningful improvement over the course of the program. The analysis then introduces the variables in Table 4 to look for any relationships between the pre- and post- scores and the demographic, history, clinical, and/or discharge factors. If any of these variables are found to be associated with changes in scores, it is important to control for those variables when interpreting results to allow for a more accurate comparison across youth. To do so, a secondary analysis re-tests the pre- and post- scores, to determine if there was still significant improvement across the sample while controlling for these factors.

Statistically significant findings are reported. In this report, statistical significance is assumed when $p < 0.05$. When statistical significance is noted, this means that there is statistical support for a relationship between two variables (versus the assumption that a relationship does not exist). Determining statistical significance is the first step in determining practical importance and signals that further investigation is warranted. Each analysis in this report is testing for relationships, or associations, between the factors outlined above, and causation (one factor *causes* the other) cannot be assumed, even if the relationship is statistically significant. A detailed description of the methods used in this analysis can be found in Appendix A and the full model output can be found in Appendix B.

Table 3. Counties represented in the statistical analysis

<u>County</u>
Clackamas
Coos
Crook
Deschutes
Douglas
Grant
Jackson
Jefferson
Josephine
Klamath
Linn
Malheur
Marion
Morrow
Multnomah
Polk
Umatilla
Union
Wallowa
Washington
Yamhill

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Table 4. Description of the sample’s demographic, history, clinical presentation at intake, and discharge information

	n (%)
Age	
Mean (Standard Deviation)	12.7 (2.9)
Median [Min, Max]	13.0 [5.0, 20.0]
Gender	
Male	55 (50.5%)
Female	38 (34.9%)
Trans/Non-Binary/Other	16 (14.7%)
Race and Ethnicity	
White	74 (67.9%)
Hispanic	18 (16.5%)
Non-White	17 (15.6%)
Currently or Previously in Foster Care	
Yes	44 (40.4%)
Number of Mental Health Diagnoses	
Mean (Standard Deviation)	2.34 (0.819)
Median [Min, Max]	2.00 [0, 5.00]
Suic idality ¹	
History of non-suicidal self-injury	41 (37.6%)
Current non-suicidal self-injury at intake	12 (11.0%)
History of suicidal ideation	61 (56.0%)
Current suicidal ideation at intake	21 (19.3%)
Has attempted suicide before	35 (32.1%)
Substance Use ¹	
History of substance use	22 (20.2%)
Substance use at intake	12 (11.0%)
Referral Issues ¹	
Acuity 3: Youth at immediate risk of hospitalization or removal from home	18 (16.5%)
Acuity 2: Youth has severe mental health condition(s) that may require residential treatment (RT), or youth discharging from RT or higher levels of care	26 (23.9%)
Acuity 1: Youth exhibits behavior that indicates high risk of developing conditions of severe or persistent nature	52 (47.7%)
Acuity 0: Youth experiencing mental health condition(s) that affect ability to function in everyday life but not requiring hospitalization or removal from home	58 (53.2%)
Highest Acuity Referral Issue ²	
Mean (SD)	0.761 (0.990)
Median [Min, Max]	0 [0, 3.00]

¹ Notes a multi-select question, options are not mutually exclusive.

² Highest Acuity Referral Issue: As youth can present with multiple referral issues, this variable describes the most acute issue.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Table 4 (continued). Description of the sample’s demographic, history, clinical presentation at intake, and discharge information

	n (%)
Trauma History	
Yes	98 (89.9%)
Number of Types of Trauma Experienced³	
Mean (SD)	2.05 (1.14)
Median [Min, Max]	2.00 [0, 4.00]
Total Services in place at IIBHT Intake	
Mean (SD)	1.95 (1.09)
Median [Min, Max]	2.00 [0, 5.00]

¹ Notes a multi-select question, options are not mutually exclusive.

² Highest Acuity Referral Issue: As youth can present with multiple referral issues, this variable describes the most acute issue.

³ Number of Types of Trauma Experienced: As youth can experience multiple types of trauma, this variable represents the number of types of trauma experienced. Categories are physical abuse or neglect, emotional abuse or neglect, sexual abuse, being witness to domestic violence, and other types of trauma.

Program Length and Reason for Program Closure

Approximately half (51.4%) of the sample transitioned to a lower level of care at program discharge. The average length of services was 124.1 days. Increased program length was associated with increased likelihood of transitioning to a lower level of care upon program completion (p=.004). On the other hand, those with problematic substance use history and lower levels of trauma were more likely to stop engaging with IIBHT prior to program closure (p-values 0.029 and 0.043, respectively). No factors were found to be significantly associated with needing a higher level of care upon program completion (p-values all > .05), suggesting transitions to higher care are likely due to complex individual needs rather than systemic reasons.

Table 5. Reason for program closure

	n (%)
Closure Reason	
Transitioned to lower level of care	56 (51.4%)
Needed a higher level of care	12 (11.0%)
Youth and family stopped engaging	23 (21.1%)
Missing	17 (16.0%)
Program Length (Days)	
Mean (Standard Deviation)	124.1 (65.7)
Median [Min, Max]	116.8 [21.9, 405.15]

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Major Events During the Program

Over half (55%) of the sample experienced at least one major event during the program. Increased program length was associated with increased odds of experiencing any major event during the program ($p=.005$). Those who presented with non-suicidal self-injury (NSSI) at intake had an increased chance of presenting to an ED or being admitted to an inpatient unit for mental health reasons, as well as increased likelihood for self-harm ($p<.001$) during the program. Older youth and those who entered the program with substance use issues were more likely to have problematic substance use during IIBHT (p -values 0.022 and 0.007, respectively).

Table 6. Major events during the program

	n (%)
Youth self-harmed (NSSI)	15 (13.8%)
Youth attempted suicide	*
Youth had problematic substance use	14 (12.8%)
Youth ran away from home	12 (11.0%)
Youth was expelled from school	*
Youth had new interactions with juvenile justice	7 (6.4%) **
Youth had a new foster care placement	8 (7.3%) **
Youth was removed from the home	7 (6.4%) **
Youth had a major family change (family moved, parent divorce)	10 (9.2%) **
Youth had a mental/behavioral health ED visit	24 (22.0%)
Youth had a mental/behavioral health inpatient admission	*
Other traumatic event	13 (11.9%)
Family had new abuse/neglect charges	*
No Major Events	49 (45.0%)
Total Major Event Types	
<i>Mean (SD)</i>	1.09 (1.33)
<i>Median [Min, Max]</i>	1.00 [0, 6.00]

* Data suppressed to maintain confidentiality ($n < 5$)

** Maybe statistically unreliable due to small numbers ($5 \leq n < 12$); interpret with caution

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Barriers to Care

Over half (58.7%) of the sample faced barriers in accessing the recommended level of care at program completion. The total number of barriers per youth ranged from 0-6. Among those with barriers, the most common were: limited access to in-network provider, difficulty finding an outpatient provider willing or able to work with the youth's level of acuity, the family choosing not to access the recommended level of care, and/or the youth being unwilling to engage in further treatment. All barriers can be seen in Table 7 below.

Those with increased program length were less likely to experience barriers in accessing care. No risk factors were found to be associated with increased likelihood of barriers to ideal level of care at program discharge.

Table 7. Barriers to accessing ideal level of care at discharge

Limited access to an in-network provider	13 (11.9%)
Difficulty finding outpatient provider willing or able to work with youth's level of acuity	10 (9.2%)**
Insurance did not approve/does not cover recommended services	*
No insurance/ out-of-area coverage	*
Dual diagnosis preventing acceptance to level of care	*
Developmental disability preventing acceptance to level of care	*
Financial concerns related to cost of ongoing treatment	*
Family concerned about system involvement	8 (7.3%)**
Family feels natural supports are adequate support at this time	5 (4.6%)**
Family is unable to take time off work/school to access services	8 (7.3%)**
Family is unable to access transportation to services	*
Family is seeking a specific type of provider and has been unable to find one	*
Family intends to make an appointment but is choosing not to do so before closing	*
Family not prioritizing or having difficulty accessing MH treatment and services	10 (9.2%)**
Family chose not to access recommended care level	11 (10.1%)**
Youth unwilling to engage further	16 (14.7%)
Other barrier	25 (22.9%)
No barriers for obtaining ideal level of care	45 (41.3%)
Total Barriers	
<i>Mean (SD)</i>	1.09 (1.31)
<i>Median [Min, Max]</i>	1.00 [0, 6.00]

* Data suppressed to maintain confidentiality (n < 5)

** Maybe statistically unreliable due to small numbers (5 ≤ n < 12); interpret with caution

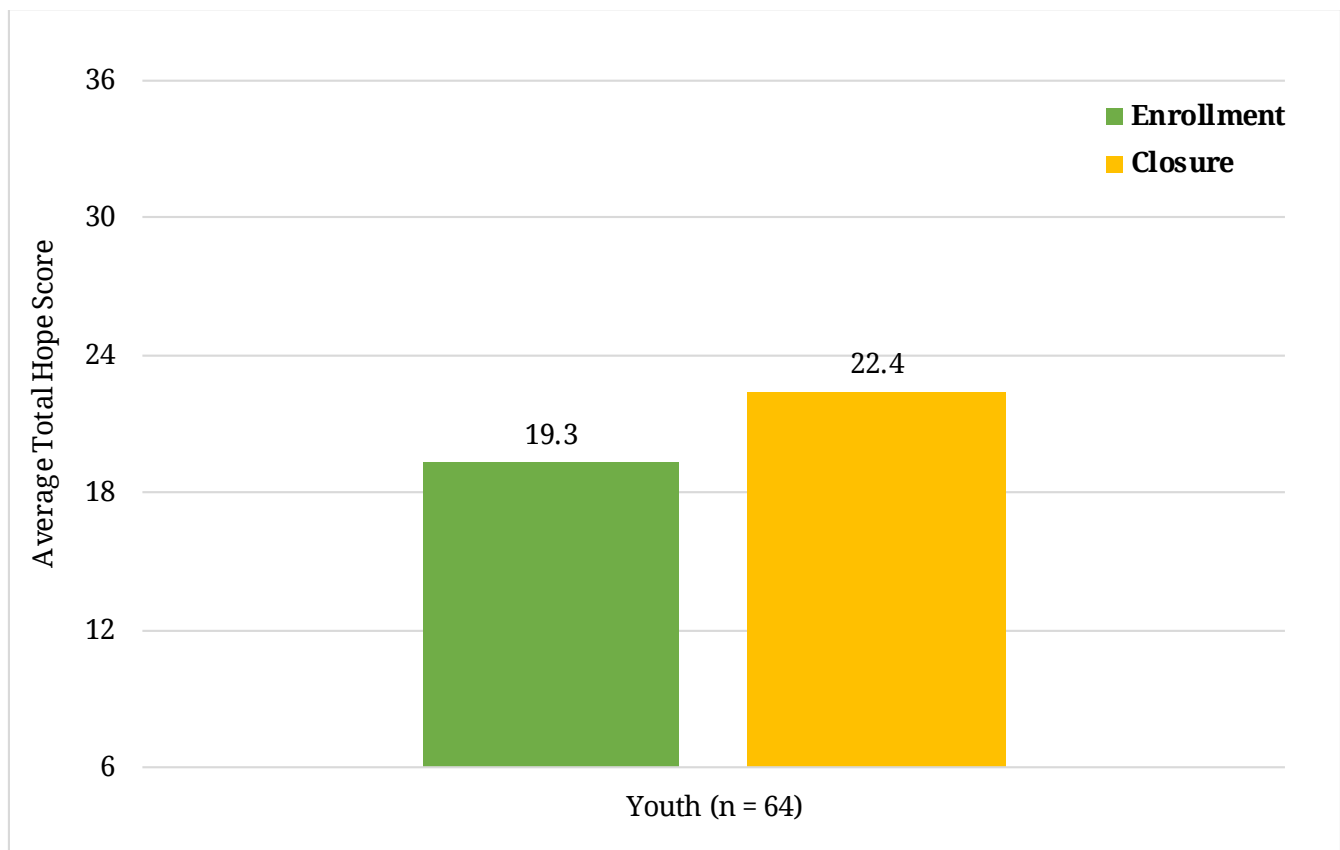
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The Hope Scale

The Hope Scale is filled out by youth at enrollment and closure. The measure provides two subscores, Pathways and Agency, that range from 3-18, and a Total Hope Score that ranges from 6-36. Pathways represents a youth's perceived ability to set goals and identify concrete steps to achieve them. Agency is a youth's confidence, motivation, and belief that they can follow Pathways to achieve their goals. Together, these two sub-scores provide a Total Hope Score, with **higher scores indicating more hope** (Snyder et al. 1997).

Average total hope scores significantly improved at IIBHT closure by 3.13 points. Gender identity, total types of trauma experience, and program length were all found to be associated with changes in Hope Scale scores. After controlling for these factors, this relationship remained significant with a mean increase of 10.62 points at program closure.

Figure 1. Hope Scale average pre- and post-total scores (before controlling for confounding variables)



Snyder et al. (1997). The Development and Validation of the Children's Hope Scale. *Journal of Pediatric Psychology*, 22(3), 399-421.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

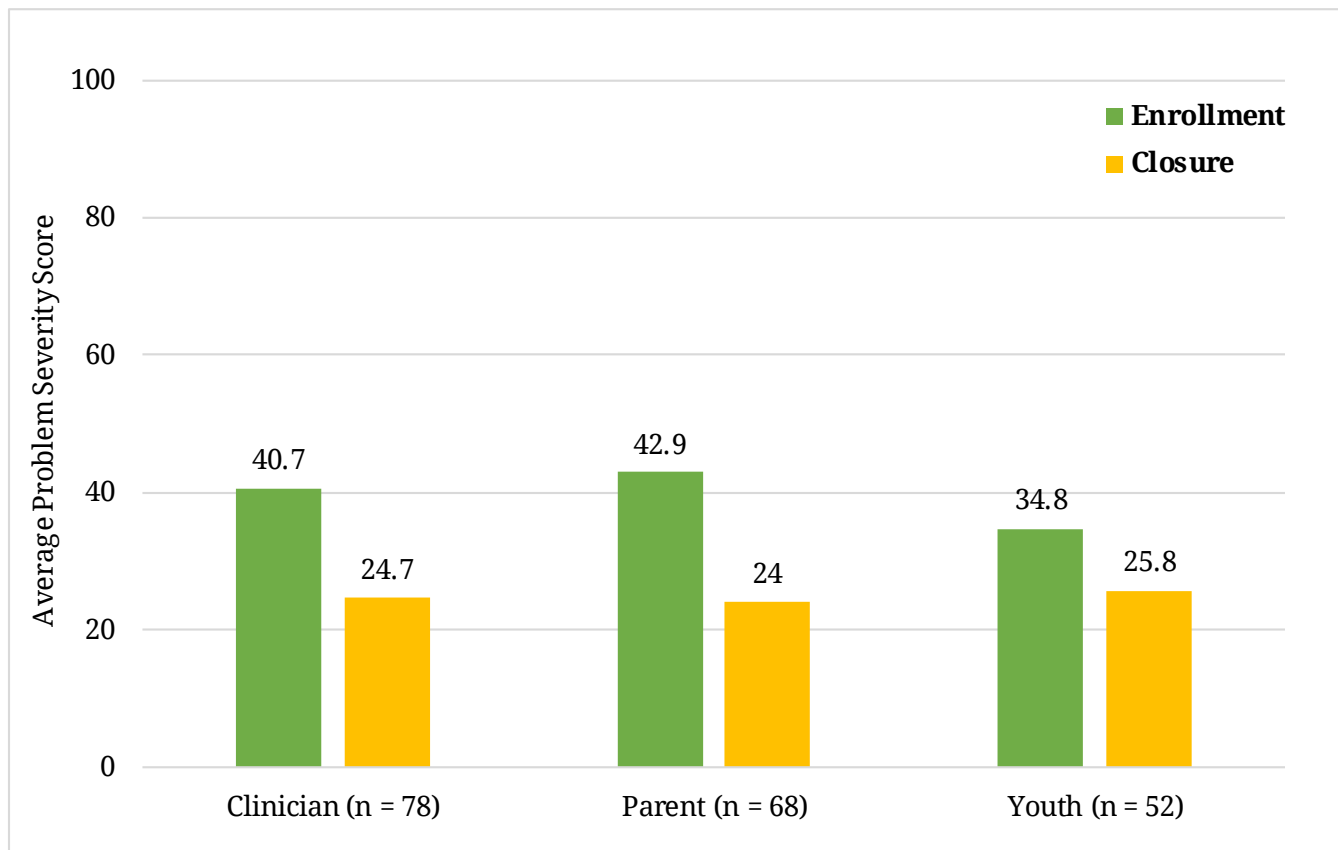
The Ohio Scales

The Ohio Scales are filled out by the clinician, parent, and youth and include five different subscales: The Problem Severity Scale, the Functioning Scale, the Restrictiveness of Living Environment (ROLES) Scale, the Hopefulness Scale, and the Satisfaction Scale.

The **Problem Severity Scale** measures the severity of the youth's mental health symptoms. The clinician, parent, and youth complete this scale. Scores on this scale range from 0-100 with **higher scores indicating more severe challenges**.

The mean difference from intake to closure showed significant improvement across all raters. Difference scores ranged from 15.97 for the clinician report, 18.88 for the parent report, and 8.98 for the youth report. For clinician ratings, after controlling for total diagnoses and youth gender, the change in severity was no longer significant. In contrast, the differences in severity pre- and post-scores remained significant for both the parent and youth ratings after controlling for program length and highest acuity referral issue.

Figure 2. Ohio Problem Severity Scale average pre- and post- scores (before controlling for confounding variables)



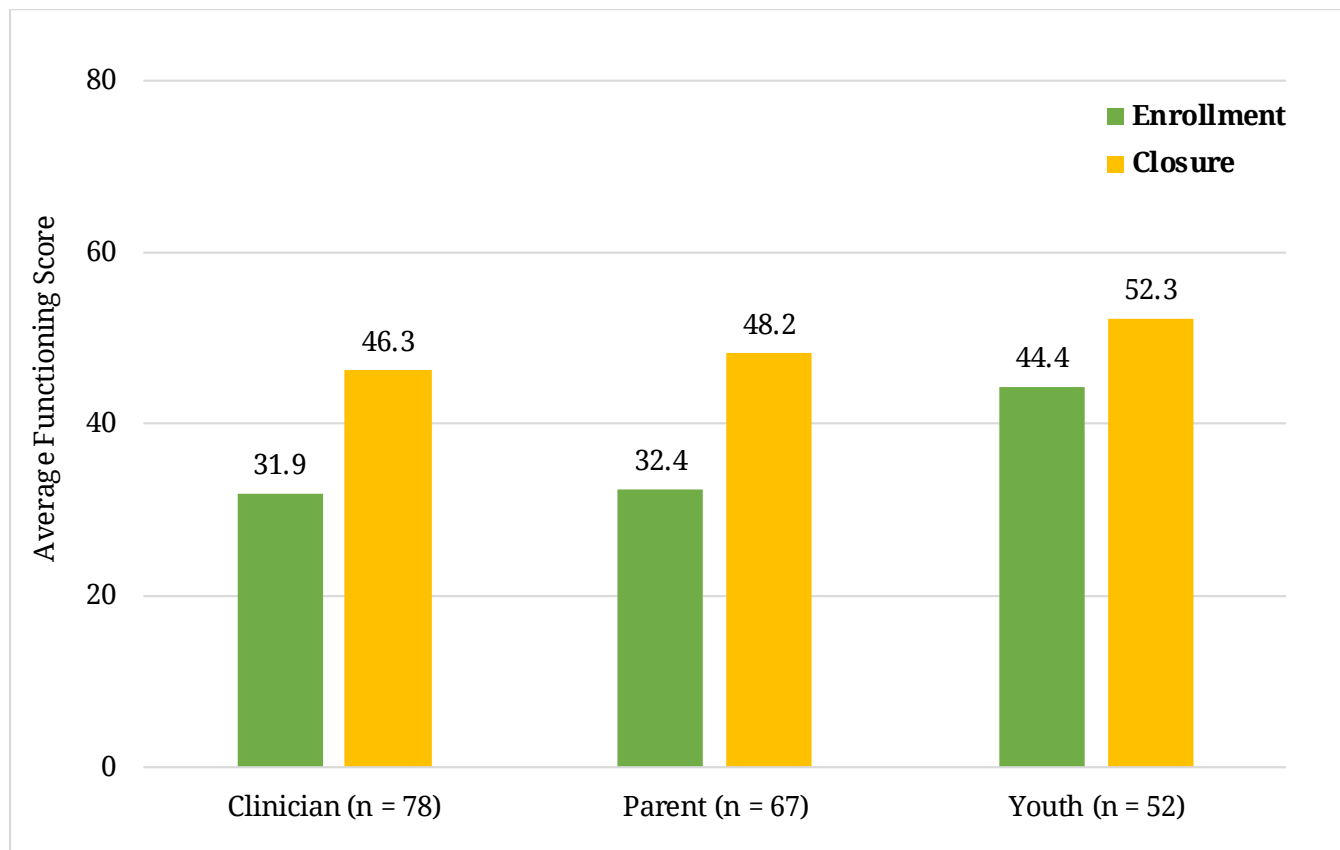
Ogles et al. (2001). The Ohio Scales: Practical Outcome Assessment. Human Science Press, Inc.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

The **Functioning Scale** measures the youth’s functional strengths and needs in areas of daily life. The clinician, parent, and youth complete this scale. Scores on this scale range from 0-80 with **higher scores indicating better functioning**.

The mean difference in score for improvement in child functioning was 14.41 for clinician ratings, 15.81 for parent ratings, and 7.92 for youth ratings. Interestingly, **only the clinician-rated functioning scales had statistically significant improvements** in average score after controlling for suicidal ideation, problematic substance use history, and program length. In comparison, neither youth- nor parent-rated scales had significant changes in functioning at closure after controlling for other variables. The discrepancy in clinician reported improvement vs lived experience by youth and their caregivers warrants further study.

Figure 3. Ohio Functioning Scale average pre- and post- scores (before controlling for confounding variables)



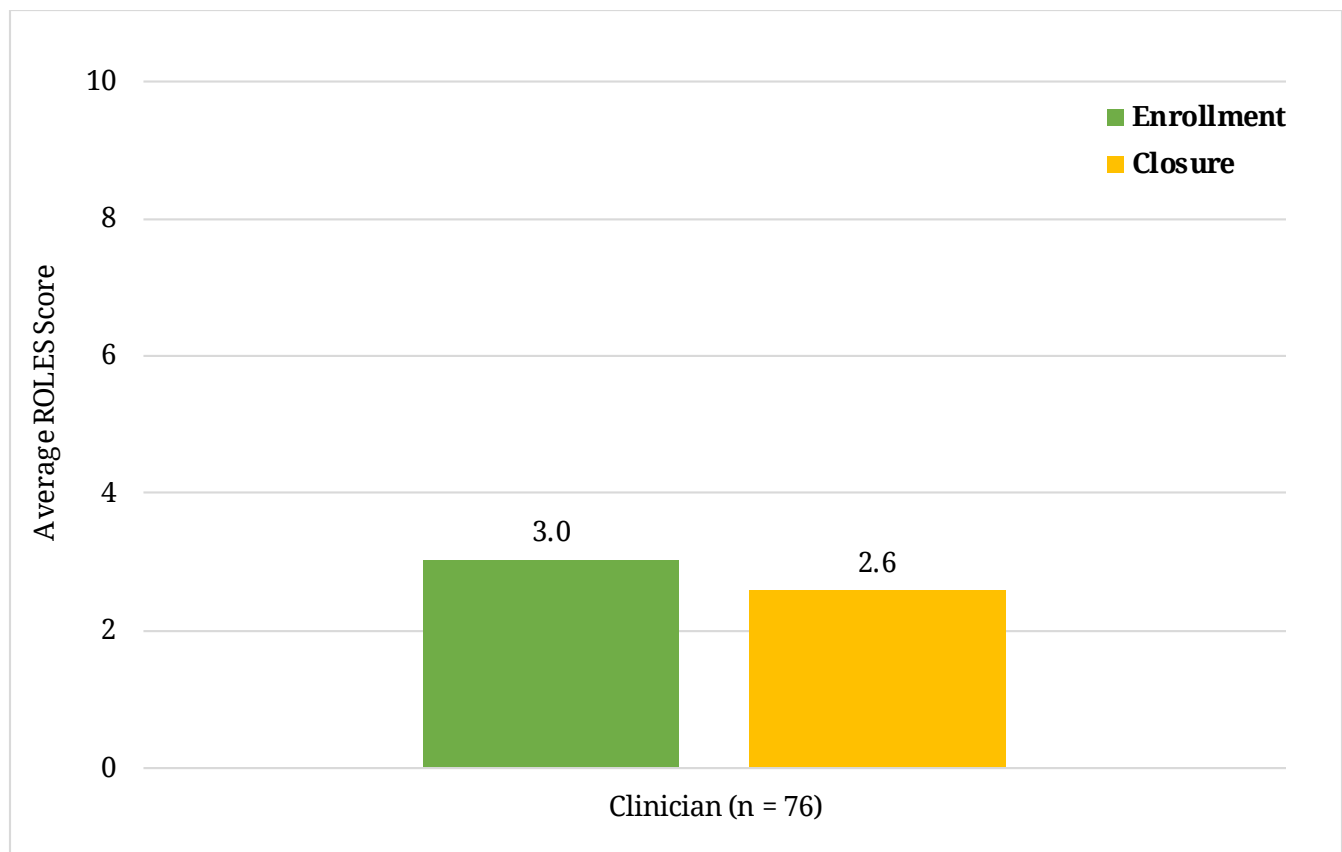
Ogles et al. (2001). The Ohio Scales: Practical Outcome Assessment. Human Science Press, Inc.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

The **Restrictiveness of Living Environments Scale (ROLES)** assesses the level of restriction in the youth's living environment over the past 90 days. The clinician completes this scale. Scores range from 0.5 to 10, with **higher scores reflecting more restriction in the youth's living environment**.

The mean intake ROLES score was 3.03 and the mean closure score was 2.57. Maximum ROLES score decreased from 8.50 at intake to 5.86 at closure. Only a slight mean decrease in score, 0.46, was seen. After controlling for program length, total diagnoses and total types of trauma experienced there was no longer a significant change in score, suggesting **restrictiveness of living environments was not strongly associated with a youth's experience in IIBHT**.

Figure 4. Ohio ROLES Scale average pre- and post-scores (before controlling for confounding variables)



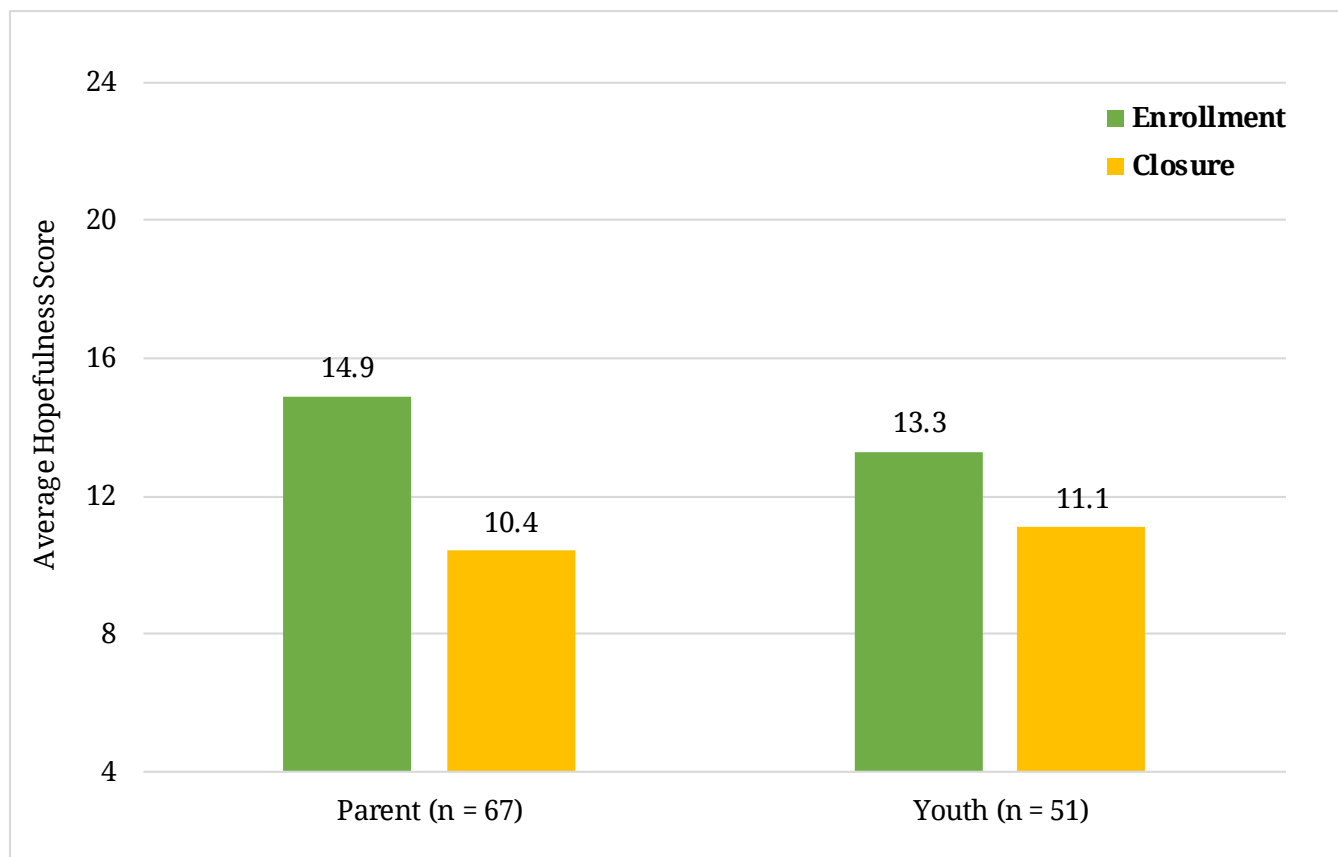
Ogles et al. (2001). The Ohio Scales: Practical Outcome Assessment. Human Science Press, Inc.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

The **Hopefulness Scale** measures hopefulness and well-being. The parent and youth complete this scale about themselves, and scores reflect the parent's self-reported hopefulness and well-being and the youth's self-reported hopefulness and well-being. Scores on this scale range from 4-24 with **lower scores indicating more hopefulness and well-being**.

Improvement in hopefulness was seen for both youth and parents' ratings, with average changes in score being -2.20 for youth and -4.5 for parents. This relationship remained highly significant for parents after controlling for youth age and youth problematic substance use at IIBHT enrollment. On the other hand, for youth, there was no longer a significant change in hopefulness and well-being after controlling for gender identity.

Figure 5. Ohio Hopefulness Scale average pre- and post-scores (before controlling for confounding variables)



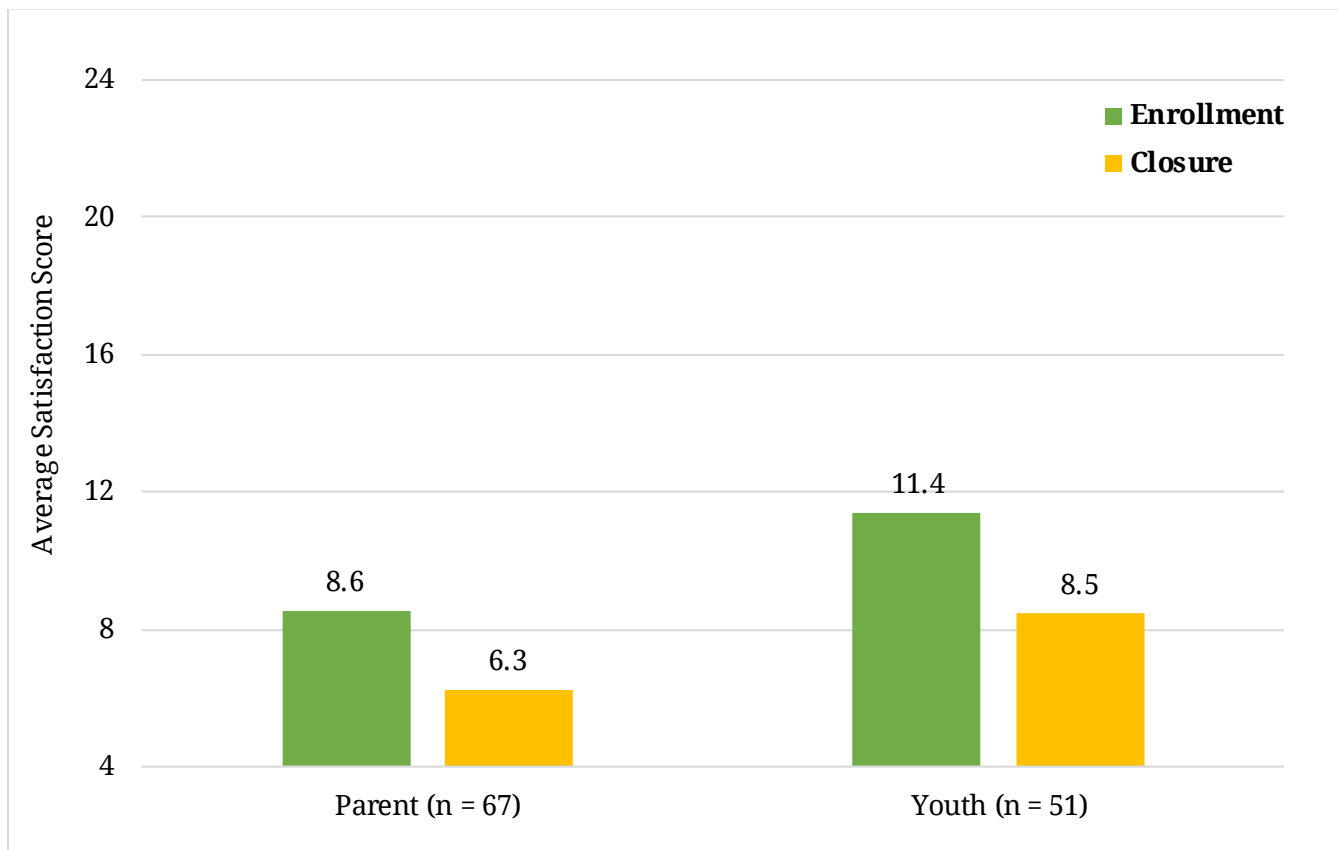
Ogles et al. (2001). The Ohio Scales: Practical Outcome Assessment. Human Science Press, Inc.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

The **Satisfaction Scale** measures satisfaction with services. The parent and youth both complete this scale; scores reflect the parent’s satisfaction with services and the youth’s satisfaction with services. Enrollment scores are likely to reflect experiences with past providers, while closure scores should reflect the family’s experience with IIBHT. Scores on this scale range from 4-24 with **lower scores indicating better satisfaction**.

Improvement in satisfaction with services was seen for both youth and parents in IIBHT with average changes of -2.94 for youth and -2.30 for parents. This relationship remained highly significant for both parents and youth after adjusting for program length, problematic substance use history, and NSSI history, suggesting that IIBHT was successfully able to increase satisfaction for youth enrolled in IIBHT and their caregivers.

Figure 6. Ohio Satisfaction Scale average pre- and post-scores (before controlling for confounding variables)



Ogles et al. (2001). The Ohio Scales: Practical Outcome Assessment. Human Science Press, Inc.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Summary

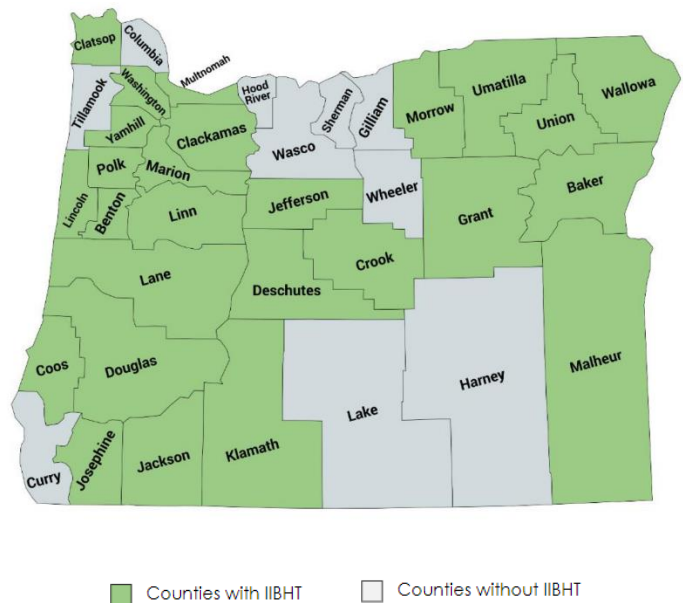
Youth in IIBHT services statewide are a high-risk group in terms of behavioral health. Almost 90% of participants have a trauma history; 39% have previously been or are currently in foster care; almost half (44%) of youth enrolled in IIBHT are identified as significantly impaired due to mental health challenges, and 74% have a history of suicidality or self-harm. IIBHT was developed to serve the behavioral health of a high-needs population, due to gaps and barriers that were preventing them from receiving this care. The data presented in this report confirms that IIBHT is providing services to the population it was intended to serve; however, this data also suggests that IIBHT is not providing services to the number of youth and families originally projected to need this level of care.

While IIBHT has expanded over the last two years, statewide access remains limited. As of December 31, 2022, IIBHT was not available in 10 counties (Figure 7). When the program was initially proposed to the legislature, the Oregon Health Authority (OHA) estimated a potential 1,500 youth to be enrolled in IIBHT per year ([2019-2021 Policy Option Package](#)).

This estimate varies dramatically from actual enrollment numbers. In the first two years of IIBHT, a total of 240 youth were reported to have been enrolled, although it should be noted that enrollment in 2022 almost tripled compared to 2021. It should also be acknowledged that the numbers presented in this report may be underestimates of the actual number of youth served, as these numbers rely on accurate data entry by programs, and some programs have reported that data entry has been limited by staff shortages. Finally, even in counties where IIBHT has been implemented, access may be limited: some programs have limited intake spots and waiting lists for intakes, rather than immediate access.

Limits to IIBHT access and overall enrollment can be attributed to a number of factors, but most notably workforce shortages. The global pandemic disrupted community-based programs' ability to serve youth and families. Overall workforce shortages across both clinical and peer mental health professions worsened, particularly in community-based programs. [Coordinated Care Organizations \(CCOs\)](#), who are responsible for providing IIBHT to their members, report that workforce shortages, particularly in rural areas, are hard to overcome. The state has tasked CCOs with identifying and addressing barriers to IIBHT access and expansion for their regions, however this has not successfully occurred in all areas.

Figure 7. Map of counties with IIBHT programs



Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Many IIBHT programs have demonstrated strengths in addressing the challenges they faced in starting up this new program. Several programs implemented creative strategies to recruit, train, and maintain staff. Some programs took advantage of state supports that enabled them to offer signing bonuses, child care and housing assistance, and scholarships ([HB 2949](#), [HB 4071](#)). Individual providers have shown notable commitment and creativity in identifying ways to support youth particularly in remote areas.

In addition to allocating more funds to help agencies with their challenges in launching IIBHT services, OHA provided additional supportive activities. The OHA-led IIBHT Learning Collaborative was fortified with timely topics and engagement of national experts, as well as adding a space dedicated to the challenges faced by rural and remote areas of the state. The OHSU DAETA Team presented quarterly data and outcomes to the Learning Collaborative to help inform decision-making around program development and improvement, effectively creating a feedback loop. OHA also worked with the OHSU DAETA Team to maintain a rigorous schedule of training opportunities for agency staff that included offering the IIBHT Foundations, IIBHT Data Collection & REDCap, IIBHT Peer-Delivered Services & Skills Training, and IIBHT Clinical modules on a monthly basis and adjusting the schedule according to demand (Appendix D). Finally, in addition to the IIBHT Learning Collaborative and training opportunities, OHA has worked with the Wraparound Evaluation and Research Team (WERT) at the University of Washington to develop fidelity monitoring tools for IIBHT.

It is also worth noting that over half of all participants in IIBHT faced barriers in accessing the recommended level of care at program completion; common barriers included not being able to access an in-network provider or inability to find a provider willing to work with the youth. These barriers to appropriate care are reflected across the system of care for youth in Oregon. Importantly, these barriers are reported by the programs, therefore the family perspective may be different.

The outcomes presented in this report demonstrate that youth served in the program show significant improvement in a variety of domains. Small sample sizes and missing data, due to the factors outlined above, limit our ability to draw definitive conclusions, however early results indicate that meaningful improvement is occurring during the program. As IIBHT programs continue to expand and gain experience, we anticipate that these positive outcomes will become even more pronounced.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Recommendations

The following actions are recommended to move strategic initiatives and program improvements forward:

1. OHA should convene a workgroup with mandatory participation by CCOs and county programs, to:
 - a. Identify and address barriers to launching IIBHT in counties where it has not launched.
 - b. Identify and address barriers to adequate and timely coverage in counties where it has launched.
 - c. Clarify the responsibility of CCOs in supporting the effective operation of IIBHT.
 - d. Work with CCOs to estimate current need by region, to identify who is accessing and not accessing IIBHT services, as well as alternatives utilized by those not accessing IIBHT
 - e. Clarify and improve pathways to care for youth eligible for IIBHT services who are not being referred or otherwise getting access to the program.
2. OHA should continue to strengthen the youth behavioral health workforce overall and for IIBHT in particular, including:
 - a. Developing and supporting the clinical and peer workforce. This may include consultation from national experts; establishing a Center of Excellence, e.g., the EASA Center of Excellence, to strengthen workforce and supervisory capacity; further workforce incentives; and other strategies.
 - b. With the peer workforce in particular, efforts should be embedded in the broader need to support peer worker retention and workforce expansion that spans all community-based services that include peers in the service array.
3. For more accurate and meaningful data to drive systems improvement, OHA and OHSU should:
 - a. Continue to highlight the importance of data collection to programs, and to identify barriers to timely and accurate data reporting;
 - b. Develop a mechanism to track referrals to IIBHT that are not accepted or delayed due to capacity issues, and to track the barriers preventing prompt enrollment;
 - c. Develop mechanisms to integrate data about youth mental health programs and services, including IIBHT, across the behavioral health continuum of care, to create a more comprehensive picture of needs as well as strengths in the system.
4. OHSU should work with OHA to develop a follow-up family survey to obtain family perspectives on IIBHT services, including barriers to care following IIBHT.
5. Taking note of high trauma rates in this population, we recommend that OHA partner with other child-serving agencies to identify avenues for prevention, as well as expanding early evidence-based treatment; these efforts should be incorporated into IIBHT programs.
6. Given the high percentage of youth in foster care in IIBHT, ODHS should be invited to regular reviews of IIBHT to ensure that the needs of this population are being understood and addressed in IIBHT programs.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Appendix A: Methods

Binary Outcomes

Logistic regression was used to determine which demographic and clinical factors were associated with program outcomes and barriers to care. Hosmer Lemeshow goodness of fit tests were performed to ensure overall model fit for final adjusted models. Adjusted odds ratios for associated variables are presented in the following pages.

Continuous Outcomes

Three standardized measures are completed at IIBHT program intake and closure: The Hope Scale, the Ohio Scales, and the DSM-5 Level 1 and 2 Self-Rated Substance Use Scale. The DSM-5 Substance Use Scale was not analyzed due to low completion rates.

Linear regression was used to test the hypothesis that all domains of the Ohio Scales and the total score on the Hope Scale would show significant improvement from IIBHT enrollment to closure. To identify potential confounding variables, best subset selection along with an exploratory analysis was used to test for significant associations between demographic and clinical factors (Table 4) and the measure results. For all regression models, the outcomes measured were divided by 100. Model output for all outcomes (Appendix C), were back-transformed to be consistent with the original scale of each measure. The unadjusted models in Table 8 show the results of the regression model without controlling for confounding variables. The model intercept assesses if the mean change in domain score is different than 0. The adjusted models show the regression results when controlling for confounding variables. The Likelihood Ratio Test (LRT) p-value assesses the model fit of the adjusted model in comparison to the unadjusted model. To ensure model validity for continuous outcomes, model diagnostics included examining residual plots and performing Breusch-Pagan Test for constant variance. Detailed model output can be found in Appendix C. Due to missing data, there is potential for selection bias as only youth with both pre and post scores were included for analysis. When examining crude associations, the mean difference among all perspectives and all domains of the Ohio Scale and the Total Hope Scale score demonstrated significant improvement at IIBHT closure compared to intake. The differences in model estimates and significance for the same domains support the importance of including multiple perspectives when working with youth with complex needs. Individual scale results are presented in the following pages.

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Appendix B: Model Output for Binary Outcomes

Reason for Program Closure

Closure Reason: Stopped Engagement			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.01	0.00 – 0.07	<0.001
Substance Abuse History	3.52	1.13 – 11.10	0.029
Total Traumas	1.64	1.04 – 2.72	0.043
Log(ProgramLength)	0.25	0.10 – 0.60	0.003

Observations 108
R² Tjur 0.154

Closure Reason: Transition to Lower Care			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	3.33	1.08 – 11.00	0.041
Log(ProgramLength)	3.32	1.51 – 7.97	0.004
All Ohio's complete	2.35	1.02 – 5.54	0.047

Observations 108
R² Tjur 0.145

Closure Reason: Need Higher level of Care			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.14	0.03 – 0.65	0.015
Gender [Cis-Female]	0.16	0.01 – 0.94	0.093
Gender [Trans/NB/Other]	1.50	0.29 – 6.23	0.590
Log(ProgramLength)	0.88	0.31 – 2.60	0.804

Observations 108
R² Tjur 0.043

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Major Events During the Program

AnyMajor Event (Yes/No)			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	4.01	1.22 – 14.30	0.026
Log(ProgramLength)	3.17	1.47 – 7.42	0.005
Foster Care	2.18	0.93 – 5.28	0.075
Current Problematic Substance Use	3.50	0.88 – 18.00	0.095
Current NSSI	3.73	0.93 – 19.35	0.081
All Ohio's complete	0.45	0.18 – 1.05	0.070

Observations 109
R² Tjur 0.152

ED Mental Health Visit or Inpatient Admission (Yes/No)			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.49	0.16 – 1.48	0.211
Log(ProgramLength)	1.83	0.78 – 4.62	0.180
Current NSSI	6.04	1.72 – 23.00	0.006

Observations 109
R² Tjur 0.097

Non-Suicidal Self Injury (Yes/No)			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.08	0.02 – 0.22	<0.001
Current NSSI	20.45	3.82 – 142.99	0.001
Suicide Attempt	7.15	1.96 – 30.18	0.004
NSSI History	0.27	0.05 – 1.14	0.099

Observations 109
R² Tjur 0.260

Problem Substance Use (Yes/No)			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.00	0.00 – 0.05	0.001
Age	1.51	1.11 – 2.27	0.022
Current Problematic Substance Use	6.87	1.66 – 28.99	0.007

Observations 109
R² Tjur 0.211

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Barriers to Care

Barriers to Care (Yes/No)			
<i>Predictors</i>	<i>Odds Ratios</i>	<i>CI</i>	<i>p</i>
(Intercept)	1.93	0.75 – 5.20	0.181
Log (ProgramLength)	2.31	1.13 – 5.08	0.028

Observations 109
R² Tjur 0.046

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Appendix C: Model Output for Continuous Outcomes

Table 8. Exploratory analysis and linear regression model results testing if true change in score is different than 0 for continuous outcomes

	Regression Analysis			n	Exploratory Analysis		
	Unadjusted Intercept (SD)	Adjusted Intercept (SD)	LRT p-value		Mean Difference	95% Confidence Interval	
Difference in Ohio Severity Score							
Clinician	-15.98***(1.78)	-0.96(5.58)	0.019	78	-15.97	-19.53	-12.42
Youth	-8.98***(2.35)	-18.77** (5.75)	0.069	52	-8.98	-13.70	-4.26
Parent	-18.88***(2.30)	-14.93***(2.83)	0.027	68	-18.88	-23.47	-14.29
Difference in Ohio Functioning Score							
Clinician	14.41***(2.00)	22.89*** (4.91)	0.016	78	14.41	10.44	18.38
Youth	7.92***(2.29)	7.76 (9.18)	0.009	52	7.92	3.32	12.52
Parent	15.81***(2.02)	1.53(6.10)	0.012	67	15.81	11.78	19.83
Difference in Ohio ROLES Score							
Clinician	-0.46*(0.21)	1.21 (0.92)	0.001	76	-0.46	-0.88	-0.04
Difference in Ohio Hopefulness Score							
Youth	-2.20** (0.67)	-1.04(0.95)	0.106	51	-2.20	-3.54	-0.85
Parent	-4.45***(0.53)	-8.39***(1.60)	0.002	67	-4.45	-5.51	-3.39
Difference in Ohio Satisfaction Score							
Youth	-2.94***(0.71)	-2.28*(0.91)	0.254	51	-2.94	-4.37	-1.51
Parent	-2.30***(0.61)	-6.56***(1.62)	0.018	67	-2.30	-3.53	-1.07
Difference in Total Hope Scale Score							
Total	3.13***(0.88)	10.62***(2.76)	0.002	64	3.13	1.36	4.89

Footnote: * $p < .05$ ** $p < .01$ *** $p < .001$ (Two-Sided Test)

The Hope Scale

Change in Total Children Hope Scale Score			
Predictors	Estimates	CI	p
(Intercept)	0.11	0.05 – 0.16	<0.001
Gender [Cis-Female]	0.05	0.01 – 0.08	0.012
Gender [Trans/NB/Other]	0.00	-0.05 – 0.05	0.936
Total Traumas	-0.02	-0.04 – -0.01	0.004
Log(Program Length)	0.04	0.00 – 0.08	0.027

Observations 64
 R^2 / R^2 adjusted 0.252 / 0.201

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Ohio: Problem Severity Scale

<i>Predictors</i>	Change in Clinician Severity Score		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.01	-0.12 – 0.10	0.864
Gender [Cis-Female]	-0.08	-0.16 – -0.01	0.029
Gender [Trans/NB/Other]	-0.01	-0.11 – 0.10	0.883
Total Diagnoses	-0.05	-0.09 – -0.01	0.022

Observations 78
R² / R² adjusted 0.125 / 0.089

<i>Predictors</i>	Change in Youth Severity Score		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.19	-0.30 – -0.07	0.002
Log(Program Length)	-0.09	-0.19 – 0.01	0.069

Observations 52
R² / R² adjusted 0.065 / 0.046

<i>Predictors</i>	Change in Parent Severity Score		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.15	-0.21 – -0.09	<0.001
Maximum Issue Acuity	-0.05	-0.09 – -0.01	0.027

Observations 68
R² / R² adjusted 0.072 / 0.058

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Ohio: Functioning Scale

Change in Clinician Functioning Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.23	0.13 – 0.33	<0.001
Current Suicidal Ideation	0.10	0.01 – 0.20	0.036
Substance Use History	-0.10	-0.20 – 0.00	0.052
Log(ProgramLength)	0.08	-0.00 – 0.16	0.051

Observations 78
R² / R² adjusted 0.129 / 0.094

Change in Youth Functioning Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.08	-0.11 – 0.26	0.402
Current NSSI	-0.16	-0.29 – -0.04	0.013
Current Suicidal Ideation	0.17	0.05 – 0.29	0.005
Foster Care	-0.07	-0.16 – 0.01	0.099
Total Diagnoses	0.04	-0.01 – 0.09	0.101
Log(ProgramLength)	0.08	-0.01 – 0.17	0.092

Observations 52
R² / R² adjusted 0.276 / 0.198

Change in Parent Functioning Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.02	-0.11 – 0.14	0.803
Gender [Cis-Female]	0.09	0.00 – 0.17	0.044
Gender [Trans/NB/Other]	-0.04	-0.16 – 0.08	0.481
Total Diagnoses	0.03	-0.01 – 0.08	0.126
Maximum Issue Acuity	0.04	0.00 – 0.08	0.030

Observations 67
R² / R² adjusted 0.184 / 0.131

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Ohio: Restrictiveness of Living Environment Scale (ROLES)

<i>Predictors</i>	Change in ROLES Score		
	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	0.01	-0.01 – 0.03	0.194
Total Diagnoses	-0.01	-0.01 – -0.00	0.004
Total Traumas	0.00	0.00 – 0.01	0.009
Log(ProgramLength)	0.01	0.00 – 0.02	0.046

Observations 76
R² / R² adjusted 0.206 / 0.173

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Ohio: Satisfaction Scale

Change in Youth Satisfaction Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.02	-0.04 – -0.00	0.016
Maximum Issue Acuity	-0.01	-0.02 – 0.01	0.254

Observations 51
R² / R² adjusted 0.026 / 0.007

Change in Parent Satisfaction Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.07	-0.10 – -0.03	<0.001
NSSI History	0.02	0.00 – -0.05	0.113
Substance Abuse History	0.04	0.00 – 0.07	0.031
Log(ProgramLength)	-0.03	-0.06 – 0.00	0.032

Observations 67
R² / R² adjusted 0.147 / 0.106

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Ohio: Hopefulness Scale

Change in Youth Hopefulness Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.01	-0.03 – 0.01	0.278
Gender [Cis-Female]	-0.03	-0.06 – -0.00	0.038
Gender [Trans/NB/Other]	-0.01	-0.04 – 0.03	0.687

Observations 51
R² / R² adjusted 0.089 / 0.051

Change in Parent Hopefulness Score			
<i>Predictors</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>
(Intercept)	-0.08	-0.12 – -0.05	<0.001
Age	0.01	0.00 – 0.01	0.005
Current Problematic Substance Use	-0.05	-0.08 – -0.02	0.004

Observations 67
R² / R² adjusted 0.180 / 0.154

Intensive In-Home Behavioral Health Treatment 2022 Annual Report

Appendix D: Training Information

OHA and OHSU jointly offered four recurring trainings: IIBHT Foundations, IIBHT Data Collection & REDCap, IIBHT Peer-Delivered Services & Skills Training, and IIBHT Clinical. The total number of training attendees per year by training is below.

Total Number of Training Attendees per Year

Training	2021	2022	Total
Foundations	172	92	264
Data Collection & REDCap	97	47	144
Peer-Delivered Services & Skills Training	61	44	105
Clinical	60	23	83