

YEAR 2, PART 2 REPORT | 2022

External Evaluation of the Texas Child Mental Health Care Consortium

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EXECUTIVE SUMMARY

The External Evaluation was originally funded in September 2020 to evaluate the Texas Child Psychiatry Access Network (CPAN), Texas Child Access through Telemedicine (TCHAT), and the Child Psychiatry Workforce Expansion (CPWE) programs. The Year 2 (September 2021-August 2022) External Evaluation report includes two parts. This Part 2 report focuses on:

- 1) An examination of CPAN and TCHAT program reach and services delivered (through analysis of the TCMHCC Trayt-based data management system); and
- 2) Cost analysis of CPAN and TCHAT using the Time-Driven Activity-Based Costing (TDABC) model and collecting implementation costs associated with CPAN and TCHAT for each HRI.

CPAN Trayt Key Findings

- As of August 31, 2022, the CPAN network enrolled 1,798 clinics, representing 10,562 providers, or 66.6% of providers targeted for enrollment across Texas. CPAN is doing well at reaching non-metropolitan and rural geographic areas serving more vulnerable youth and where access to mental health and psychiatric services may be lacking.
 - More CPAN enrolled clinics are in non-metropolitan areas (16.5%) compared with Texas clinics overall in non-metro areas (5.9%)
 - CPAN enrolled slightly more clinics in “low” and “moderate” opportunity areas and fewer clinics in “very high” opportunity areas compared to Texas clinics overall
- Among enrolled clinics, 48.3% completed at least one consultation call between May 1, 2020 and August 31, 2022, for a total of 11,002 calls.
 - 64.5% of callers were physicians, 13.3% were nurse practitioners, and 10.3% were medical directors.
 - Pediatric clinics were proportionately more likely than family medicine clinics to use CPAN services (70% vs. 8.5%; n=11,002).
- The most common reason providers reported for calling CPAN (n=11,002) was for referral assistance (45.5%) or medication management (29.7%) consultations. The least cited reason was for diagnosis (3.3%).
- Psychiatrists were assigned to approximately half (51.5%) of the calls that came in, with resource coordinators assigned to 44.7% of calls.
 - Almost all (93.7%) psychiatrist consult callbacks from May 1, 2020 to August 31, 2022 (n=1,886) occurred within 30 minutes.
 - Callback response time improved from FY 2020-2021 to FY 2021-2022 with more calls returned within 5 minutes (27.1% vs. 38.2%, respectively) in FY 2021-2022.
- CPAN served 11,002 patients from May 1, 2020 to August 31, 2022.
 - Slightly more female than male patients were served (53.8% vs. 45.4%).
 - Almost half (47.1%) of patients were between 13 and 18 years of age, and slightly less (40%) were between 6 and 12 years of age.

- 69.5% of patients were non-Hispanic white, 11.8% were Black, and nearly a third identified as Hispanic.
- Most CPAN consults resulted in a recommended referral (70.4%) and over half (58.8%) resulted in a recommended medication change.
 - The most common referral type was for individual therapy (49.6%), followed by referrals to CAP within the surrounding community (23.9%).

Recommendations

- **Increase utilization of CPAN services among enrolled clinics.** Since the inception of the program, slightly less than half of enrolled clinics have utilized the CPAN service (i.e., called in at least once). This varies by HRI, with 25.7% to 63.0% of enrolled clinics utilizing the service across HRIs.
- **Further examine reasons for low use of CPAN services among family planning clinics.** Overall, approximately 40% of enrolled clinics are pediatric clinics; however, pediatric clinics account for 70% of calls to CPAN. On the other hand, slightly more than a third of enrolled clinics are family medicine, but they only account for 8.5% of calls to CPAN.
- **Continue with current strategies to recruit clinics and providers.** These findings suggest that CPAN is doing well at reaching clinics in rural and remote areas of Texas where access to mental health and psychiatric services may be lacking as well as in geographic areas serving more vulnerable youth.
- **Continue efforts to streamline processes and workflows in order to improve psychiatrist callback response time.** Although this has improved from Year 1 to Year 2, 62% of calls were still being returned in more than 5 minutes in Year 2.

TCHATT Trayt Kay Findings

- As of August 31, 2022, 4,134 school campuses across Texas were enrolled in the TCHATT program.
 - Compared to campuses statewide, fewer campuses enrolled in TCHATT were defined as rural (21% vs. 15%, respectively) and small (i.e., ≤ 500 students) (49% vs. 44%, respectively).
 - Fewer campuses enrolled in TCHATT had a high percentage ($\geq 70\%$) of economically disadvantaged students compared to campuses statewide (39% vs. 51%, respectively).
- As of August 31, 2022, TCHATT served 10,088 students.
 - More female than male students were served (56.8% vs. 42.8%, respectively).
 - Most students were between the ages of 13 and 18 years (51.6%) or 6 and 12 years (46%).
 - Two-thirds of students served were white and half identified as Hispanic.
 - Students were most commonly referred to TCHATT for anxiety/excessive worry (reported by 40.8% of enrolled referrals) and depression (reported by 34.2% of enrolled referrals).

- Through August 2022, there were 32,886 TCHAT sessions, with an average of 3.3 sessions per student served.
 - 76.6% of students who enrolled in TCHAT had completed at least one TCHAT session.
 - Approximately 40% of TCHAT sessions were completed by a Licensed Professional Counselor (LPC) or Licensed Mental Health Counselor (LMHC).
 - The most common intervention types provided in TCHAT sessions were supportive therapy (46.0%) and cognitive behavioral therapy (39.5%).
- Through August 2022, 7,177 students had completed TCHAT services.
 - The most common reason reported for ending TCHAT services was that the student completed the necessary TCHAT sessions and no further treatment was required.
 - Almost one out of four students ended TCHAT services because the patient or parent/guardian was unable to be reached.
- After completing TCHAT services, 4,011 students were referred for additional services.
 - Almost half of these students (46.5%) were referred to individual therapy services and 9% were referred to a psychiatrist in the community.

Recommendations

- 1) **Increase usage of TCHAT services among enrolled campuses.** Overall, only 39.9% of campuses have enrolled at least one student in the program. This varies by HRI, with 10.3% to 59.7% of enrolled campuses utilizing the service across HRIs.
- 2) **Focus recruitment efforts on smaller campuses in rural areas of Texas.** As of August 31, 2021, fewer small campuses (i.e., ≤ 500 students) were enrolled in TCHAT compared to campuses statewide (44% vs. 49%, respectively). In addition, fewer campuses enrolled in TCHAT were defined as rural compared to campuses statewide (15% vs. 21%, respectively).
- 3) **Focus recruitment efforts on campuses in geographic areas characterized by vulnerability.** As of August 31, 2021, fewer campuses enrolled in TCHAT had a high percentage ($\geq 70\%$) of economically disadvantaged students compared to campuses statewide (39% vs. 51%, respectively). This trend was also apparent when we examined vulnerability using the community-level Child Opportunity Index 2.0, a validated tool that quantifies neighborhood conditions in the United States for children, ranking them from lowest to highest opportunity. Compared to all Texas campuses, TCHAT enrolled fewer campuses in “very low” opportunity areas (24% vs. 20%, respectively).

Cost Analysis Key Findings

- The average direct clinical care personnel cost per consult was \$199 across the 12 CPAN programs. The cost per consult ranged from \$277 to \$73. Lower costs per consult were driven by a relatively high number of consults and a lower intensity of CAP staffing.
- The average total cost per consult was \$1,283 for the 12 CPAN programs and ranged from \$20,996 to \$565, corresponding to the programs with the least and most consults, respectively. Thus, costs per consult were inversely related to the number of consults.

- Across all programs, the average direct clinical personnel cost per consult (\$199) only comprises about 16 percent of the total average cost per consult (\$1,283) for CPAN. Therefore, most resources were devoted to other aspects of the program, including planning, marketing, enrollment of clinics, training and education of primary care providers and their staff, and general program administration.
- The average direct clinical care personnel cost per session was \$94 for the 12 TCHATT programs, ranging from \$134 to \$37. The average direct clinical care personnel cost per patient was \$401 for the 12 TCHATT programs, ranging from \$523 to \$223). Lower costs per session and patient were driven by a relatively high number of patients and a somewhat lower intensity of CAP staffing.
- The average total cost per session was \$597 for the 12 TCHATT programs, ranging from \$1,442 to \$286. A relatively high number of patients drove lower costs per session.
- Similar to CPAN, the average direct clinical personnel cost per consult/session (\$94) only comprises about 16 percent of the total average cost per session (\$597) for TCHATT. Therefore, most resources were devoted to other aspects of the program, including planning, marketing, enrollment of schools, training, and education of school counselors and their staff, and general program administration. When total costs are spread over all students enrolled in schools with TCHATT programs, the average cost per student is \$8 and ranges from \$27 to \$4.
- Limitations include self-reporting activity time for direct clinical service and the lack of standardized financial data. The latter limitation required using a large and variable residual cost category for the difference between our estimate of the direct clinical personnel cost plus the identifiable other costs, such as rent and equipment, and the total spending by each HRI. Implementation of standardized cost accounting by type of resource use will aid future program evaluations and reduce the residual cost component of the analysis.

INTRODUCTION

This Year 2 (September 2021-August 2022) Part 2 External Evaluation report presents implementation evaluation results for the Texas Child Mental Health Care Consortium (TCMHCC) funded by the 86th Texas Legislature in Senate Bill 11 to increase youth access to mental health services throughout Texas. TCMHCC comprises five initiatives, including three – the Child Psychiatry Access Network (CPAN), Texas Child Access through Telemedicine (TCHAT), and the Child Psychiatry Workforce Expansion (CPWE) – which are the focus of this external evaluation. The external evaluation was requested as part of this comprehensive effort and funded by the Texas Legislature.

TCMHCC leverages the expertise and capacity of the psychiatry departments affiliated with the health-related institutions (HRIs) of higher education to address the urgent mental health challenges and improve the mental health care system for children and adolescents in the state of Texas. Twelve HRIs act as hub teams and provide mental health consultation and referral services to clinics and providers enrolled in CPAN and provide direct mental health services (e.g., assessment and triage, brief interventions, and connection to community-based providers) to at-risk youth in schools enrolled in TCHAT across the state of Texas.

The Year 2 external evaluation report includes two parts. **Part 1** focused on CPAN, TCHAT and CPWE program implementation and process evaluation results based on External Evaluation survey data. **Part 2** focuses on:

- 1) An examination of CPAN and TCHAT program reach and services delivered (through analysis of the TCMHCC Trayt-based data management system); and
- 2) Cost analysis of CPAN and TCHAT using the Time-Driven Activity-Based Costing (TDABC) model and collecting implementation costs associated with CPAN and TCHAT for each HRI.

Key Terms

This section provides definitions for tables and figures included in the report.

Metric Definitions for Tables and Figures:

- **HRI:** Health-related institution (HRI) responsible for providing CPAN and TCHAT services. The following acronyms are used in this report to reference the health-related institutions:
 - BCM: Baylor College of Medicine
 - TAMUHSC: Texas A&M University / Baylor Scott and White
 - TTUHSC: Texas Tech University Health Science Center
 - TTUHCSEP: Texas Tech University Health Science Center at El Paso
 - UNTHSC: University of North Texas Health Science Center at Fort Worth
 - UTDell: Dell Medical School at the University of Texas at Austin
 - UTHSCH: University of Texas Health Science Center at Houston
 - UTHSCSA: University of Texas Health Science Center at San Antonio
 - UTHSCT: University of Texas Health Science Center at Tyler
 - UTMB: University of Texas Medical Branch at Galveston
 - UTRGV: University of Texas Rio Grande Valley
 - UTSW: University of Texas Southwestern Medical Center

- **Childhood Opportunity Index 2.0 (COI):** This measure comprises 29 childhood indicators of health and economic outcomes across three domains (education, health and environment, social and economic). Detailed description of the COI 2.0 methodology is provided in the Child Opportunity Index 2.0: Technical Documentation. January 15, 2020. By Clemens Noelke, Nancy McArdle, Mikyung Baek, Nick Huntington, Rebecca Huber, Erin Hardy, Dolores Acevedo-Garcia Accessed at [ddk coi2.0 technical documentation 20200212.pdf \(diversitydatakids.org\)](https://diversitydatakids.org/ddk-coi2.0-technical-documentation-20200212.pdf).
- **Rural-Urban Continuum Code (RUCC):** The Rural-Urban Continuum Codes are a classification schema developed by U.S. Department of Agriculture that distinguishes metropolitan (metro) counties by the population size of their metro area, and nonmetropolitan (nonmetro) counties by degree of urbanization and adjacency to a metro area. The codes provided in this report are based on 2013 RUCC codes, the most-recent version available. Counties are classified as follows: urban (RUCC 1-3), nonmetropolitan (RUCC 4-7), and non-metropolitan rural (RUCC 8-9).
- **CPAN Clinic Outreach List:** The Texas overall list of clinics was developed from the list of Texas providers provided by COSH to HRIs. After removing provider-level information, we identified unique clinics as unique locations using latitudes and longitudes. These latitude and longitudes were obtained by running the clinic addresses associated with staff through a Google Geocode API.

CPAN-Specific Definitions for Tables and Figures:

- **Clinic Type:** Clinic classification in Trayt (Family Medicine, Pediatrics, Integrated, or Other).
- **Enrolled Clinic:** Any unique clinic identified in the Trayt Clinic Directory database with an “Active” account status and a “Signed” agreement status.
- **Enrolled Clinic Staff (Providers):** Any provider or clinic staff with an “Active” or “Active-No clinic” clinic staff account status in the Trayt Clinic Directory database.
- **CPAN Reach:** The absolute number and proportion of providers and clinics enrolled in the CPAN network.
- **CPAN Participants Served:** The absolute number and proportion of provider mental health consultation sessions completed for a pediatric patient.
- **CPAN Call/Consult:** A completed provider mental health consultation session with HRI staff for a pediatric patient.

TCHATT-Specific Definitions for Tables and Figures:

- **Enrolled Campus:** Any campus in the internal evaluation team’s list of Texas Education Agency (TEA) campuses whose district has an “MOU in Place” status.
- **Student Referral:** Referral made by school TCHATT liaison to HRI.
- **Covered Lives:** Number of students able to access care. Defined as the number students enrolled in participating school campuses based on current agreements.

CPAN TRAYT DATA

Methods

The TCMHCC CPAN overarching goal is to increase primary care providers' access to consultation services to improve the care of children and adolescents with behavioral health needs. The CPAN process and outcome external evaluation focuses on: (1) CPAN clinic/provider reach in terms of enrollment of clinics and providers serving Texas youth; and (2) CPAN service delivery in terms of numbers and characteristics of consultations, patients served, and HRI recommendations. Quantified analysis of CPAN is based on a secondary analysis of data collected in Trayt between May 1, 2020 and August 31, 2022.

CPAN Reach

Clinic and Provider Enrollment

As of August 31, 2022, the CPAN network enrolled 1,798 clinics, representing 10,562 providers across Texas. Table 1 presents the distribution of clinic enrollment by HRI. Table 2 presents the distribution of primary care provider enrollment by HRI and compares it to the number of providers targeted for enrollment from the initial outreach list obtained by COSH. From May 1, 2020 to August 31, 2022, HRIs enrolled 66.6% of targeted providers across Texas. However, 5 out of the 12 HRIs enrolled more than 100% of targeted providers (Table 2), suggesting that providers outside of the targeted outreach list enrolled in CPAN.

Table 1. Enrolled CPAN Clinics by HRI

	Total Clinic Enrollment ^b n (Column %)
All HRIs	1,798 (100%)
BCM	167 (9.3%)
TAMUHSC	121 (6.7%)
TTUHSC	165 (9.2%)
TTUHSCEP	70 (3.9%)
UNTHSC	131 (7.3%)
UTDell	218 (12.1%)
UTHSCSA	127 (7.1%)
UTHSCH	80 (4.5%)
UTHSCT	175 (9.7%)
UTMB	137 (7.6%)
UTRGV	60 (3.3%)
UTSW	347 (19.3%)

(b) Data source: Trayt CPAN Clinic Directory (May 1, 2020-August 31, 2022). Includes clinics "active" (n=1685) or "pending" (n=113).

Table 2. Comparison of Texas Providers and Providers Enrolled in CPAN by HRI

	Texas Providers on Outreach List ^a n (Column %)	CPAN Provider Enrollment ^b n (Row %)
All HRIs	15,865 (100%)	10,562 (66.6%)
BCM	1,319 (8.3%)	932 (70.7%)
TAMUHSC	720 (4.5%)	1,043 (144.9%)
TTUHSC	891 (5.6%)	938 (105.3%)
TTUHSCEP	418 (2.6%)	432 (103.3%)
UNTHSC	1,162 (7.3%)	782 (67.3%)
UTDell	1,452 (9.2%)	965 (66.5%)
UTHSCSA	1,828 (11.5%)	596 (32.6%)
UTHSCH	3,004 (18.9%)	745 (24.8%)
UTHSCT	571 (3.6%)	1,244 (217.9%)
UTMB	499 (3.1%)	553 (110.8%)
UTRGV	681 (4.3%)	234 (34.4%)
UTSW	3,320 (20.9%)	2,098 (63.2%)

(a) Data source: List of providers (adolescent medicine, family medicine, pediatrics, internal medicine, general practice) in Texas purchased from the Texas Medical Association by COSH.

(b) Data source: Trayt CPAN Clinic Staff Directory (May 1, 2020-August 31, 2022).

Table 3 presents enrolled CPAN clinic characteristics with respect to clinic specialty type. It excludes 11 clinics with missing clinic specialty. The majority of enrolled clinics comprise pediatric clinics (41.4%) or family medicine clinics (35.1%).

Table 3. Enrolled CPAN Clinics by Clinic Type and HRI

	Total Clinic Enrollment ^a n (Column %)	Total Clinic Enrollment with Clinic Type Recorded ^a n (Column 1787%)	Pediatrics ^a n (Row %)	Family Medicine ^a n (Row %)	Integrated (Family & Pediatrics) ^a n (Row %)	Other ^a n (Row %)
All HRIs	1,798 (100%)	1,787 (100%)	740 (41.4%)	627 (35.1%)	350 (19.6%)	70 (3.9%)
BCM	167 (9.3%)	166 (9.3%)	105 (63.3%)	41 (24.7%)	18 (10.8%)	2 (1.2%)
TAMUHSC	121 (6.7%)	121 (6.8%)	21 (17.4%)	67 (55.4%)	30 (24.8%)	3 (2.5%)
TTUHSC	165 (9.2%)	165 (9.2%)	39 (23.6%)	89 (53.9%)	35 (21.2%)	2 (1.2%)
TTUHSCPE	70 (3.9%)	70 (3.9%)	41 (58.6%)	18 (25.7%)	9 (12.9%)	2 (2.9%)
UNTHSC	131 (7.3%)	129 (7.2%)	65 (50.4%)	61 (47.3%)	3 (2.3%)	0 (0.0%)
UTDell	218 (12.1%)	217 (12.1%)	83 (38.3%)	42 (19.4%)	83 (38.3%)	9 (4.2%)
UTHSCSA	127 (7.1%)	127 (7.1%)	65 (51.2%)	37 (29.1%)	19 (15.0%)	6 (4.7%)
UTHSCH	80 (4.4%)	77 (4.3%)	45 (58.4%)	12 (15.6%)	19 (24.7%)	1 (1.3%)
UTHSCT	175 (9.7%)	175 (9.8%)	34 (19.4%)	97 (55.4%)	32 (18.3%)	12 (6.9%)
UTMB	137 (7.6%)	136 (7.6%)	41 (30.2%)	32 (23.5%)	52 (38.2%)	11 (8.1%)
UTRGV	60 (3.3%)	59 (3.3%)	40 (67.8%)	12 (20.3%)	5 (8.5%)	2 (3.4%)
UTSW	347 (19.3%)	345 (19.3%)	161 (46.7%)	119 (34.5%)	45 (13.0%)	20 (5.8%)

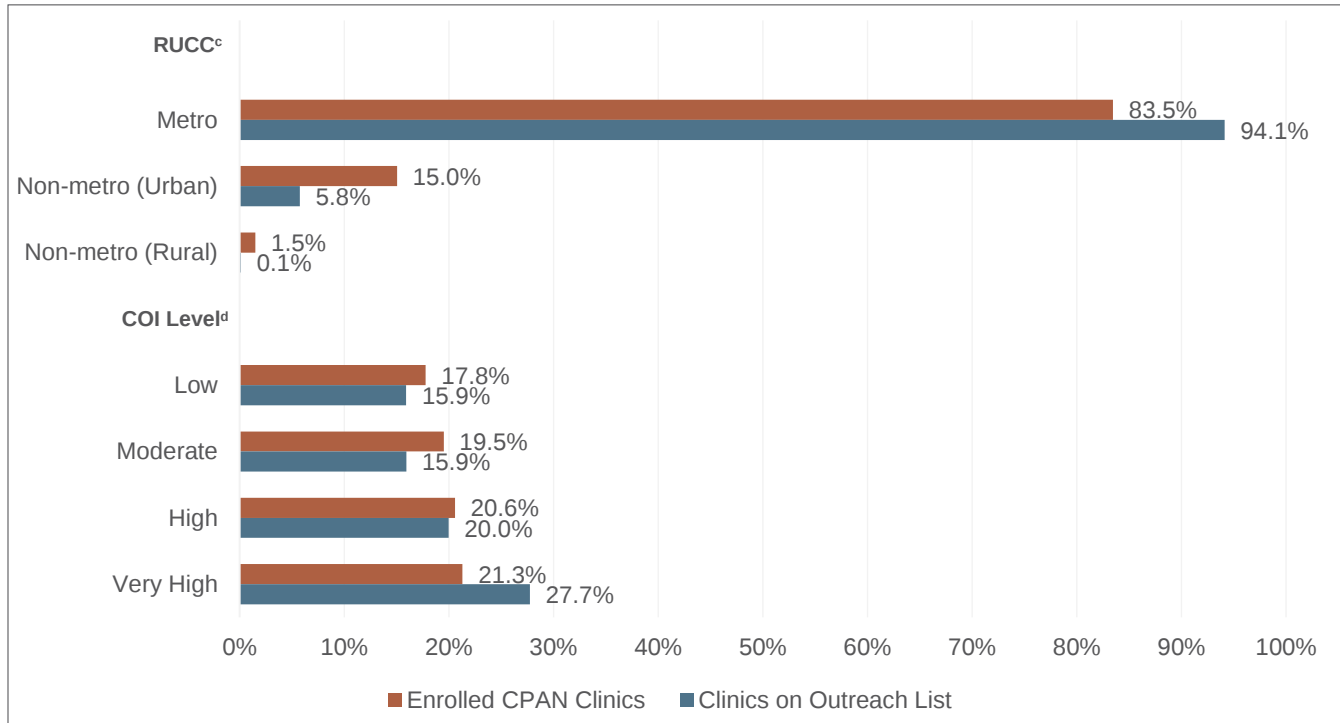
(a) Data source: Trayt CPAN Clinic and Clinic Staff Directory (May 1, 2020-August 31, 2022). Includes clinics “active” (n=1685) or “pending” (n=113). Clinic Type is missing for 11 (0.6%) of enrolled clinics.

Geographic Characteristics of Enrolled Clinics

A priority of CPAN is to serve at-risk and underserved children and adolescents. To do this, we examined providers reached and served by geographic location and population-level vulnerability indicators. Rural-Urban Continuum Codes (RUCC) is a classification schema developed by the U.S. Department of Agriculture that distinguishes metropolitan (metro) counties by the population size of their metro area, and non-metropolitan (non-metro) counties by degree of urbanization and adjacency to a metro area. When compared to the geographic spread of all clinics serving Texas youth identified on the COSH outreach list, the general trend is that there are more CPAN enrolled clinics in non-metropolitan areas (16.5%) compared with Texas clinics overall in non-metro areas (5.9%) (Figure 1). This suggests that CPAN is doing well at reaching clinics in rural and remote areas of Texas where access to mental health and psychiatric services may be lacking.

To examine inclusion of clinics serving geographic areas characterized by vulnerability, we examined the distribution of clinics by community-level Child Opportunity Index 2.0 (COI 2.0) scores. The COI is a validated tool that quantifies neighborhood conditions in the United States for children, ranking them from lowest to highest opportunity. This index includes 29 indicators in three domains: (1) education, (2) health and environment and (3) social and economic. When compared to Texas clinics on the COSH outreach list, CPAN enrolled slightly more clinics in “low” and “moderate” opportunity areas and fewer clinics in “very high” opportunity areas (Figure 1). This suggests that CPAN is doing well at reaching clinics in geographic areas serving more vulnerable youth.

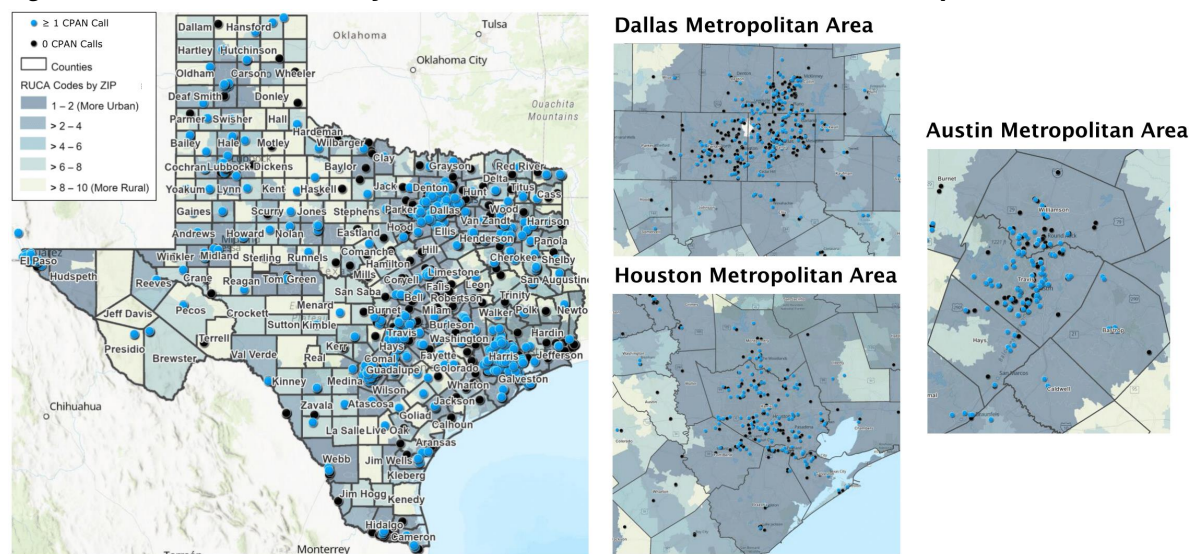
Figure 1. Enrolled CPAN Clinics by County-Level Characteristics



(a) Data source: Trayt CPAN Clinic and Clinic Staff Directory Data (May 1, 2020-August 31, 2022). Includes clinics “active” (n=1685) or “pending” (n=113). (b) Data source: List of clinics (adolescent medicine, family medicine, pediatrics, internal medicine, general practice) in Texas purchased from the Texas Medical Association by COSH. (c) 2013 Rural-Urban Continuum Codes (RUCC), USDA Economic Research Service, U.S. Department of Agriculture. RUCC Codes 1-3 = Metro; 4-7 = Nonmetro; 8-9 = Nonmetro, completely rural. (d) Data source: 2022 Child Opportunity Index 2.0 database (<https://www.diversitydatakids.org/>).

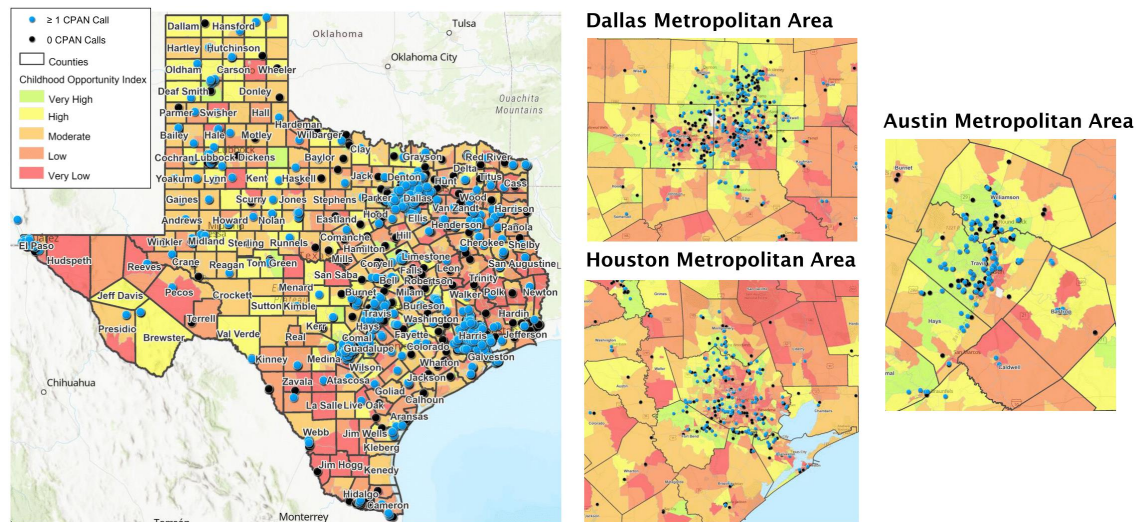
Below, we present maps of the geographic distribution of clinics enrolled in CPAN across Texas with regards to RUCC designations (Figure 2) and COI levels (Figure 3). Maps of the Dallas, Austin and Houston metropolitan areas are also included to help demonstrate the variability of RUCC and COI characteristics within the most densely populated urban areas.

Figure 2. Enrolled CPAN Clinics by Rural-Urban Continuum at the Census Block Group Level



(a) Data source: Trayt CPAN Clinic and Clinic Staff Directory Data (May 1 2020-August 31, 2022). Includes clinics “active” (n=1685) or “pending” (n=113). (b) Data source: 2013 Rural-Urban Continuum Codes (RUCC), USDA Economic Research Service, U.S. Department of Agriculture. RUCC Codes 1-3 = Metro; RUCC Codes 4-7 = Nonmetro; RUCC Codes 8-9 = Nonmetro, completely rural.

Figure 3. Enrolled CPAN Clinics^a by Child Opportunity Index^b at the Census Block Group Level



(a) Data source: Trayt CPAN Clinic and Clinic Staff Directory Data (May 1 2020-August 31, 2022). Includes clinics “active” (n=1685) or “pending” (n=113). (b) Data source: 2022 Child Opportunity Index 2.0 database (<https://www.diversitydatakids.org/>).

CPAN Program Usage Among Enrolled Clinics

Table 4 presents the number of enrolled clinics with at least one CPAN consultation call by HRI. As of August 31, 2022, almost half (48.3%) of enrolled clinics had called CPAN at least once. Usage varied by HRI, ranging from 26.7% to 63.0%.

Table 4. Enrolled CPAN Clinics by HRI and Call Status

HRI	Total Enrolled Clinics n (Column %) ^a	Clinics with No Calls ^b n (Row %)	Clinics with At Least One Call ^b n (Row %)
BCM	167 (9.3%)	64 (38.3%)	103 (61.7%)
TAMUHSC	121 (6.7%)	72 (59.5%)	49 (40.5%)
TTUHSC	165 (9.2%)	71 (43%)	94 (57%)
TTUHSCPE	70 (3.9%)	31 (44.3%)	39 (55.7%)
UNTHSC	131 (7.3%)	84 (64.1%)	47 (35.9%)
UTDeI	218 (12.1%)	93 (42.7%)	125 (57.3%)
UTHSCSA	127 (7.1%)	47 (37%)	80 (63.0%)
UTHSCH	80 (4.5%)	41 (51.3%)	39 (48.8%)
UTHSCT	175 (9.7%)	87 (49.7%)	88 (50.3%)
UTMB	137 (7.6%)	97 (70.8%)	40 (29.2%)
UTRGV	60 (3.3%)	44 (73.3%)	16 (26.7%)
UTSW	347 (19.3%)	199 (57.3%)	148 (42.7%)

(a) Data Source: Trayt CPAN Clinic and Clinic Staff Directory (May 1, 2020-August 31, 2022). Includes clinics “active” (n=1685) or “pending” (n=113). (b) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022).

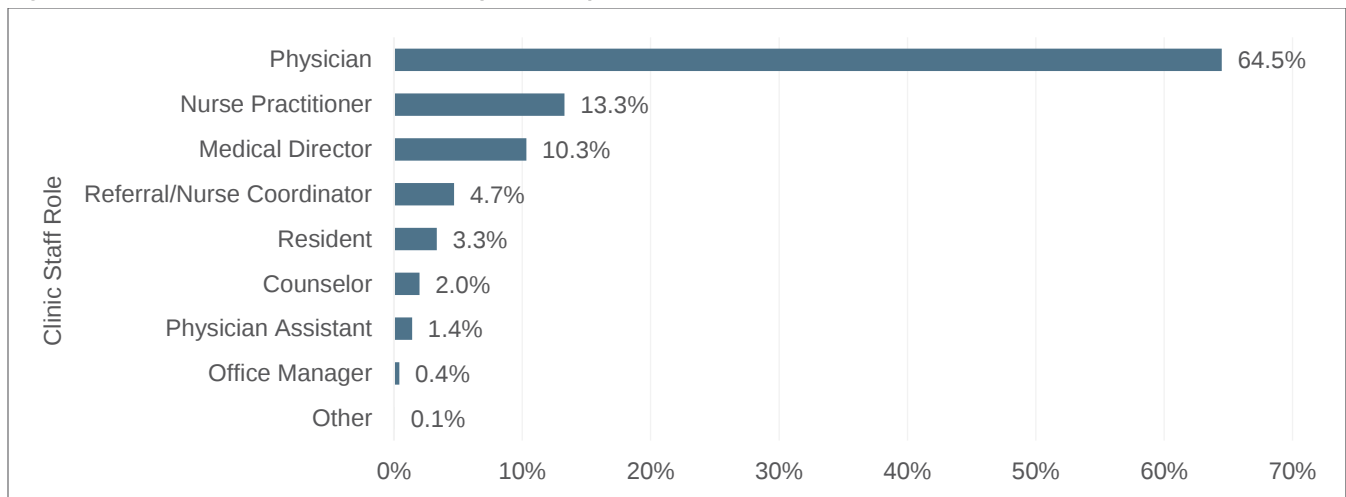
Between August 16, 2020 and August 31, 2022, 11,002 CPAN calls were completed across all HRIs, with a general pattern of call volume increasing over time (Figure 4). Nearly two-thirds of callers were physicians (Figure 5). The majority of calls (70%) came from pediatric clinics with only 8.5% of calls from family medicine clinics (Figure 6). Further examination is needed to understand this difference in use. Although family medicine providers have fewer encounters with children than pediatric providers, there may also be a need for more engagement with family medicine providers to increase awareness and use of the program.

Figure 4. CPAN Calls by Month^a (n=11,002)



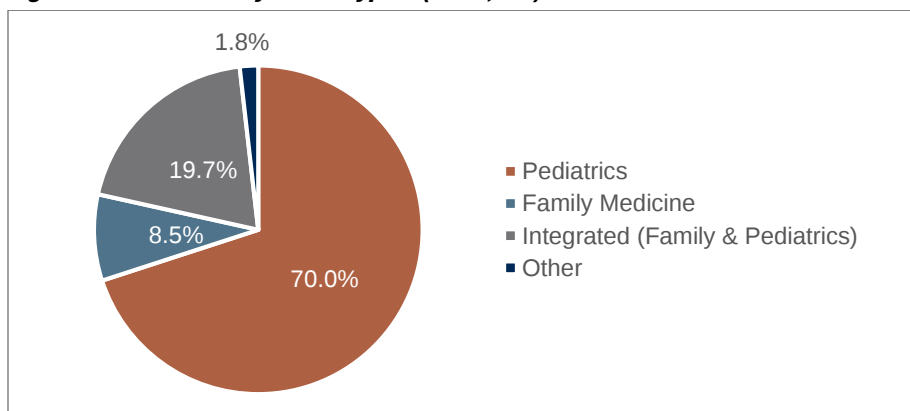
(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022).

Figure 5. CPAN Calls by Clinic Staff Role^{a,b} (n=11,002)



(a) Data Source: Trayt CPAN Clinic Staff Directory (May 1, 2020-August 31, 2022). (b) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022).

Figure 6. CPAN Calls by Clinic Type^{a,b} (n=11,002)



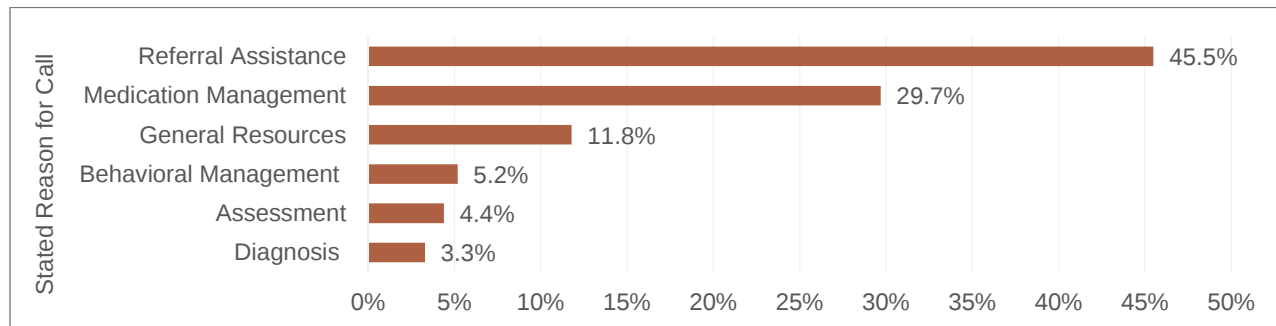
(a) Data Source: Trayt CPAN Clinic Directory (May 1, 2020-August 31, 2022). Includes clinics "active" (n=1685) or "pending" (n=113). Clinic type missing for 15 calls. (b) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022).

CPAN Service Delivery

Consultation Call Characteristics

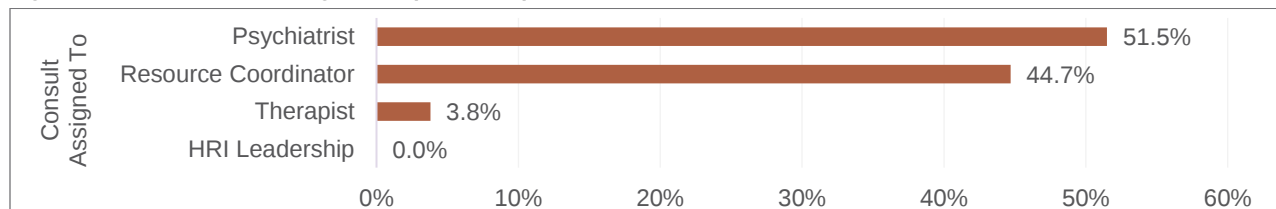
This next section describes characteristics of HRI assistance to providers calling for consultation services. Between August 16, 2020 and August 31, 2022, the most common reason providers reported for calling CPAN was for referral assistance (45.5%) or medication management (29.7%) consultations (Figure 7). Psychiatrists were assigned to approximately half (51.5%) of the calls that came in (Figure 8).

Figure 7. Reasons for CPAN Consults^a (n=11,002)



(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). A PCP may report more than one reason for calling; results will not sum up to 100%.

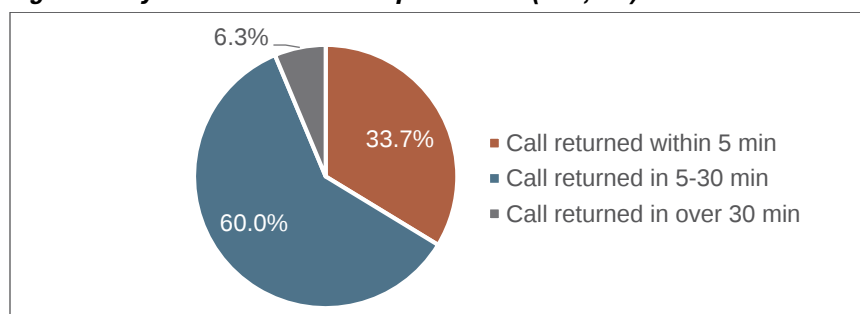
Figure 8. CPAN Consult Assignment (n=11,002)^a



(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). More than one type of CPAN staff may be assigned to a consultation.

Through August 31, 2022, 3,165 calls were assigned to a psychiatrist and subject to a 30-minute callback window. Most of these calls were returned either within 5 minutes (33.7%) or within 5-30 minutes (60%) of the initial call (Figure 9). Callback response time improved from FY 2020-2021 to FY 2021-2022 with more calls being returned within 5 minutes (27.1% vs. 38.2%, respectively) and fewer calls being returned in over 30 minutes (12% vs. 2.4%, respectively) in FY 2021-2022 (Table 5).

Figure 9. Psychiatrist Callback Response Time (n=3,165)



(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). Includes consults assigned to a psychiatrist and subject to 30-minute callback window.

Table 5. Psychiatrist Callback Response Time by Year

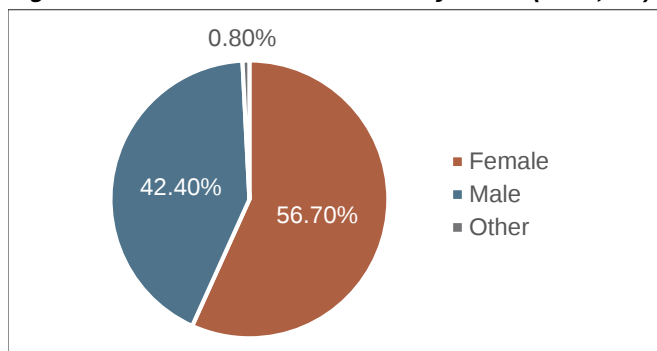
	CPAN Calls Assigned to a Psychiatrist	
	FY 2020-2021 ^a (n=1279)	FY 2021-2022 ^b (n=1886)
	n (Column %)	n (Column %)
Call Back Time		
Call returned within 5 min	346 (27.1%)	720 (38.2%)
Call returned in 5-30 min	780 (61.0%)	1120 (59.4%)
Call returned in over 30 min	153 (12.0%)	46 (2.4%)

(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2021). Includes consults assigned to a psychiatrist and subject to 30-minute callback window. (b) Data Source: Trayt CPAN Encounter-level Extract (September 1, 2021-August 31, 2022). Includes consults assigned to a psychiatrist and subject to 30-minute callback window.

Patient Characteristics

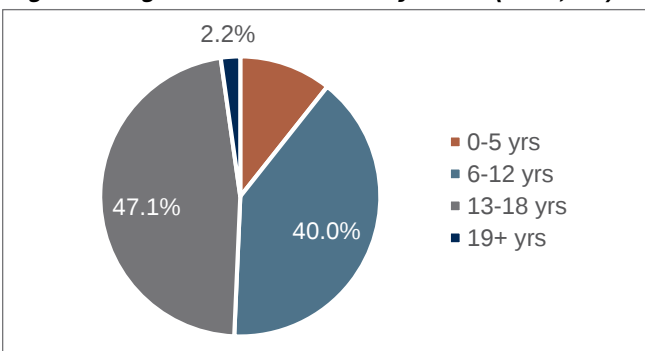
Slightly more female than male patients were served by CPAN between August 16, 2020 and August 31, 2022 (53.8% vs. 45.4%, respectively) (Figure 10). Almost half (47.1%) of patients were between 13 and 18 years of age, and 40% were between 6 and 12 years of age (Figure 11). About 70% were non-Hispanic white, 12% were Black, 3.5% were Asian, and 15% declined providing their race (Figure 12). Nearly a third of patients identified as Hispanic (Figure 13).

Figure 10. Gender of Patients Served by CPAN[®] (n=10,768)



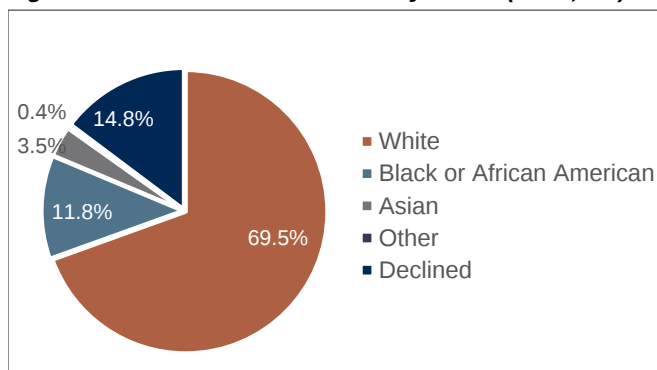
(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). Gender missing from 234 patients.

Figure 11. Age of Patients Served by CPAN[®] (n=10,714)



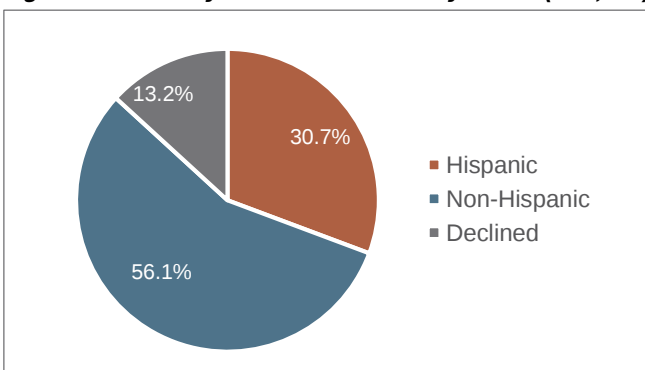
(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). Age missing from 288 patients.

Figure 12. Race of Patients Served by CPAN[®] (n=10,070)



(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). Includes calls that were about a specific patient. Race missing from 932 patients.

Figure 13. Ethnicity of Patients Served by CPAN[®] (n=9,952)



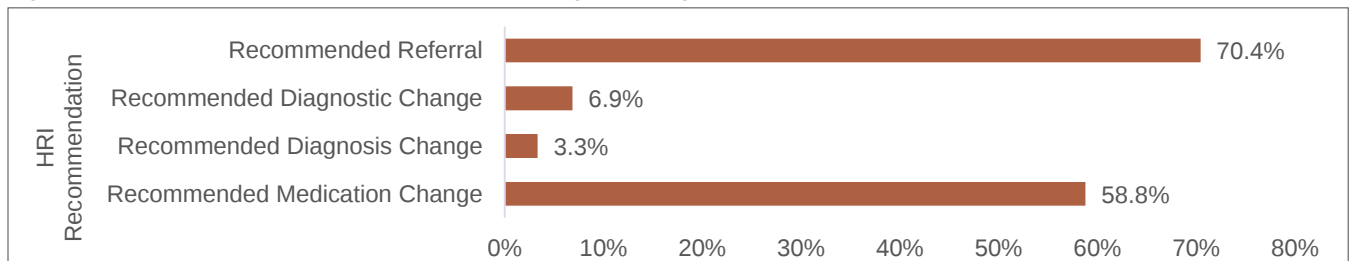
(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). Includes calls that were about a specific patient. Ethnicity missing from 1,050 patients.

Outcomes of CPAN Consults

Most calls (70.4%) resulted in a recommended referral (Figure 14). The most common change recommendation was for medication change, which occurred in over half (58.8%) of calls. Diagnostic and diagnosis changes were recommended in less than 10% of calls.

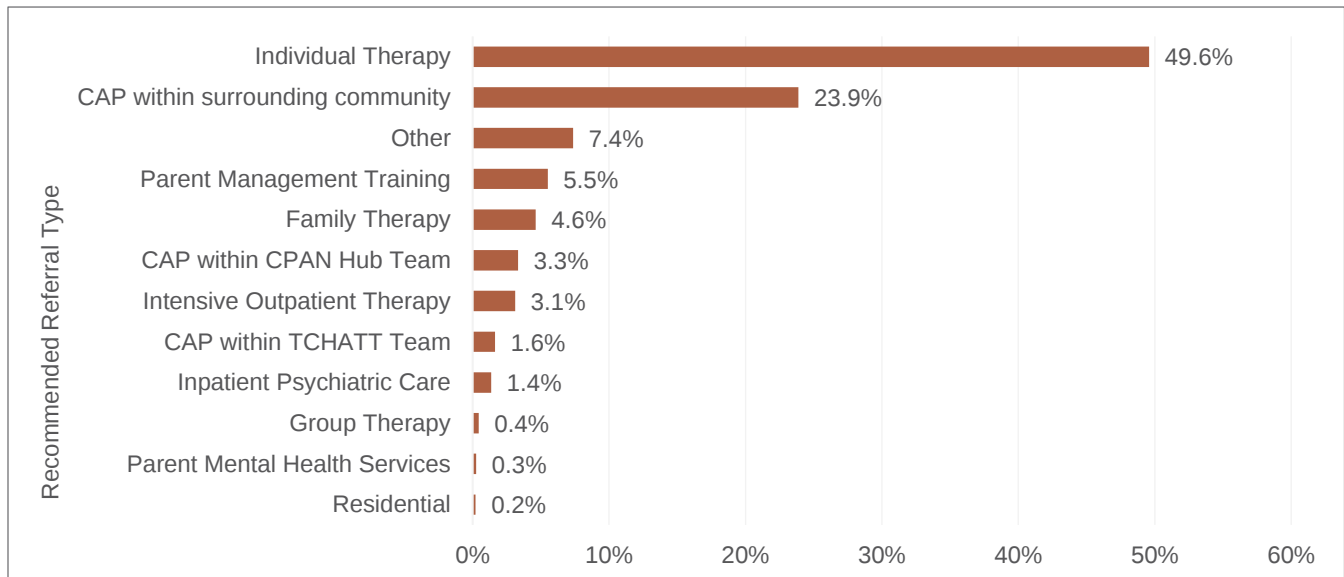
The most common referral type was for individual therapy (49.6% of calls), followed by referrals to a child and adolescent psychiatrist within the surrounding community (23.9% of calls) (Figure 15).

Figure 14. CPAN HRI Recommendations to Callers^a (n=11,002)



(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). More than one recommendation may be provided, so results will not sum to 100%.

Figure 15. Recommended Referral Types^a (n=7,750)



(a) Data Source: Trayt CPAN Encounter-level Extract (August 16, 2020-August 31, 2022). More than one referral types can be selected so results will not sum to 100%.

Recommendations

- 1) Increase utilization of CPAN services among enrolled clinics.** Overall, slightly less than half of enrolled clinics have called in at least once since the inception of the program. This varies by HRI, with 25.7% to 63.0% of enrolled clinics utilizing the service across HRIs.
- 2) Focus recruitment efforts on pediatric clinics.** Overall, approximately 40% of enrolled clinics are pediatric clinics; however, pediatric clinics account for 70% of calls to CPAN. On the other

hand, slightly more than a third of enrolled clinics are family medicine, but they only account for 8.5% of calls to CPAN. Another reason for low call volume from family medicine clinics may

- 3) **Continue with current strategies to recruit clinics and providers.** Our findings suggest that CPAN is doing well at reaching clinics in rural and remote areas of Texas where access to mental health and psychiatric services may be lacking as well as in geographic areas serving more vulnerable youth.
- 4) **Continue efforts to streamline processes and workflows in order to improve psychiatrist callback response time.** Although this has improved from Year 1 to Year 2, 62% of calls were still being returned in more than 5 minutes in Year 2.

Limitations

The following limitations were noted in the Year 1 External Evaluation Report. While there was substantial progress in addressing Trayt data limitations in Year 2, more work is still needed in the following areas:

- 1) **Documentation:** There is a need for centralized documentation covering both the system and the data the Trayt system generates, including linking variable names, description, and applicability. Other documentation around the general data procedures prior or in addition to the Trayt data is also needed. This limitation was noted in the External Evaluation Year 1 report. While there was substantial progress in this area in Year 2, there is still room for work to ensure data pulled from the Trayt system is clearly defined, labeled, and interpreted correctly and in the same way by all analysts/evaluators.
- 2) **Increased accurate data entry:** To ensure quality of data, additional data programming rules can help to minimize data entry errors (e.g., impossible dates not allowed; warnings to the user for unusual values) and to minimize missing data. Staff and user training to promote accurate data entry (e.g., to minimize duplicate records, incomplete data entry, or missing data) will also promote cleaner datasets.
- 3) **Data cleaning:** Extensive data cleaning and validation checks were necessary by the External Evaluation analysts in order to improve quality of data before conducting analyses. Because not all data entry is amenable to programing solutions and based on the extensive data cleaning that was required, we recommend routine data cleaning checks to minimize the time needed to clean datasets at a later stage.

TCHATT TRAYT DATA

Methods

The TCMHCC TCHATT overarching goal is to increase access to child and adolescent behavioral health assessments among underserved communities by developing a network of school districts and corresponding school campuses enrolled throughout the state to connect students with mental health providers based in one of the 12 HRIs. The TCHATT process and outcome external evaluation focuses on: (1) TCHATT reach in terms of enrollment of school districts and campuses throughout Texas; and (2) TCHATT service delivery in terms of numbers and characteristics of student referrals and encounters, students served, and HRI recommendations. Quantified analysis of TCHATT is based on a secondary analysis of data collected in Trayt between through August 31, 2022.

TCHATT Reach

Campus Enrollment

As of August 31, 2022, 4,134 school campuses were enrolled in the TCHATT program, with the number of enrolled campuses varying by HRI (Table 6). The majority of campuses were small to mid-size with 44% having 500 or fewer students and 41% having between 501 and 1,000 students.

Table 6. Enrolled TCHATT Campuses by HRI and Campus Size

	Total Enrolled Campuses ^a n (Column %)	Campus Size ^b			
		≤ 500 n (Row %)	501 - 1000 n (Row %)	1001 - 1500 n (Row %)	1500 + n (Row %)
All HRIs	4,134 (100.0%)	1,814 (43.9%)	1,692 (41.0%)	317 (7.7%)	307 (7.4%)
BCM	377 (9.1%)	85 (22.5%)	224 (59.4%)	31 (8.2%)	37 (9.8%)
TAMUHSC	261 (6.3%)	135 (51.7%)	101 (38.7%)	10 (3.8%)	15 (5.7%)
TTUHSC	574 (13.9%)	408 (71.1%)	131 (22.8%)	18 (3.1%)	17 (3.0%)
TTUHSCPE	146 (3.5%)	66 (45.2%)	61 (41.8%)	11 (7.5%)	8 (5.5%)
UNTHSC	424 (10.3%)	204 (48.1%)	171 (40.3%)	23 (5.4%)	26 (6.1%)
UTDell	310 (7.5%)	86 (27.7%)	167 (53.9%)	26 (8.4%)	31 (10.0%)
UTHSCSA	631 (15.3%)	333 (52.9%)	221 (35.1%)	38 (6.0%)	37 (5.9%)
UTHSCH	548 (13.3%)	96 (17.5%)	280 (51.1%)	106 (19.3%)	66 (12.0%)
UTHSCT	146 (3.5%)	106 (73.1%)	29 (20.0%)	7 (4.8%)	3 (2.1%)
UTMB	157 (3.8%)	81 (51.9%)	63 (40.4%)	6 (3.8%)	6 (3.8%)
UTRGV	223 (5.4%)	87 (39.0%)	101 (45.3%)	12 (5.4%)	23 (10.3%)
UTSW	337 (8.2%)	127 (37.7%)	143 (42.4%)	29 (8.6%)	38 (11.3%)

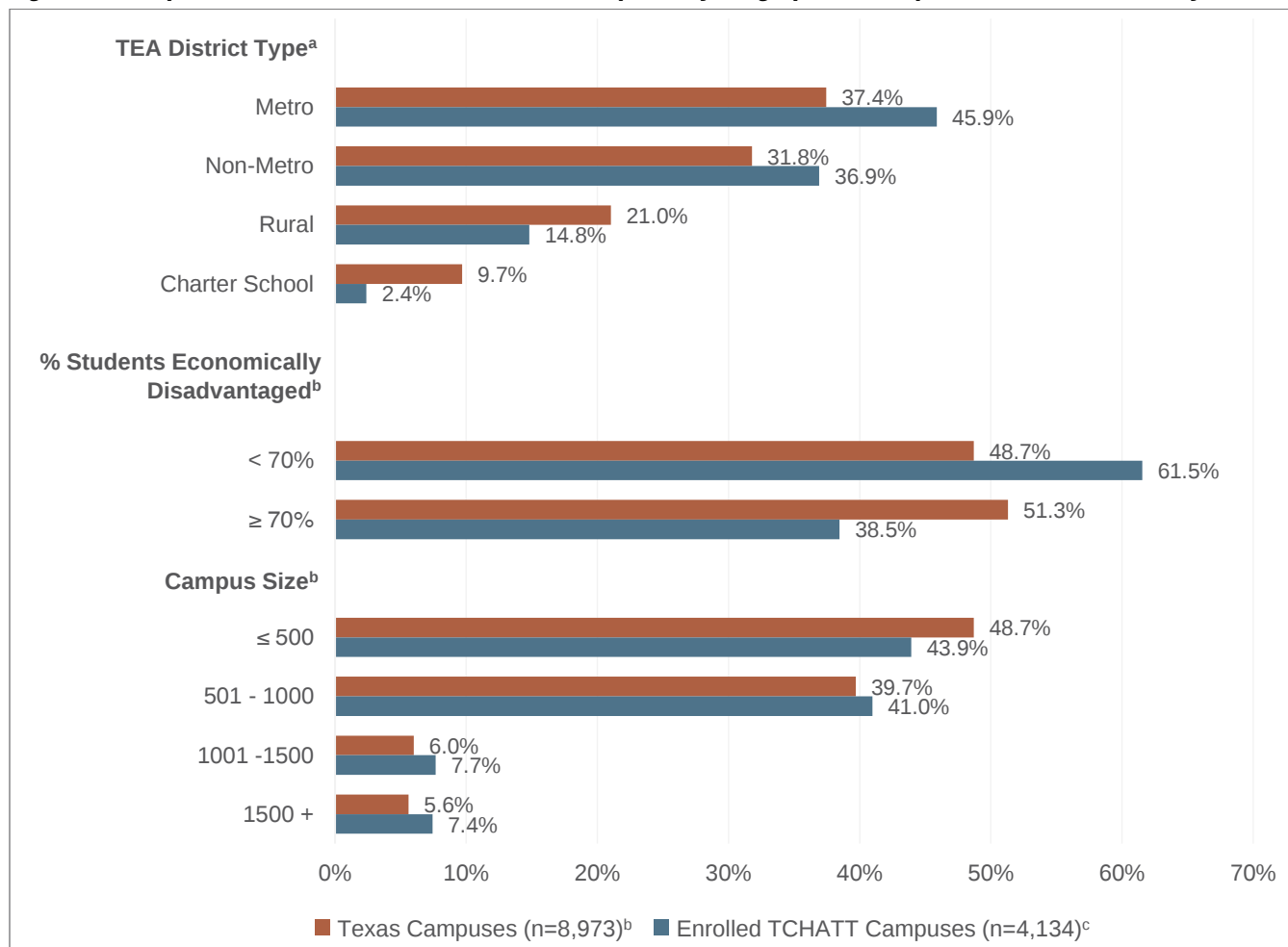
(a) Data Source: TCHATT Campus List (through August 31, 2022). Includes campuses with MOU status of "In Place", "In Progress", or "Onboarding." (b) Data Source: Texas Education Agency Campus Data, provided by COSH. Campus size missing for 4 enrolled campuses.

Geographic Characteristics of Enrolled Campuses

A priority of TCHATT is to serve at-risk and underserved children and adolescents. Figure 16 describes school campuses enrolled in TCHATT by geographic reach and reach to vulnerable communities. More campuses enrolled in TCHATT were defined as metro or non-metro compared to campuses statewide (46% vs. 37% and 37% vs. 32%, respectively), and charter schools were underrepresented in TCHATT compared to campuses statewide (2% vs. 10%, respectively). Fewer campuses enrolled in TCHATT had

a high percentage ($\geq 70\%$) of economically disadvantaged students compared to campuses statewide (39% vs. 51%, respectively). Overall, the size of campuses enrolled in TCHATT mirror the size of campuses statewide; although fewer small campuses (i.e., ≤ 500 students) were enrolled in TCHATT compared to campuses statewide (44% vs. 49%, respectively) (Figure 16). Therefore, future TCHATT recruitment efforts should target smaller campuses in rural areas of Texas, as well as campuses with a greater population of economically disadvantaged students.

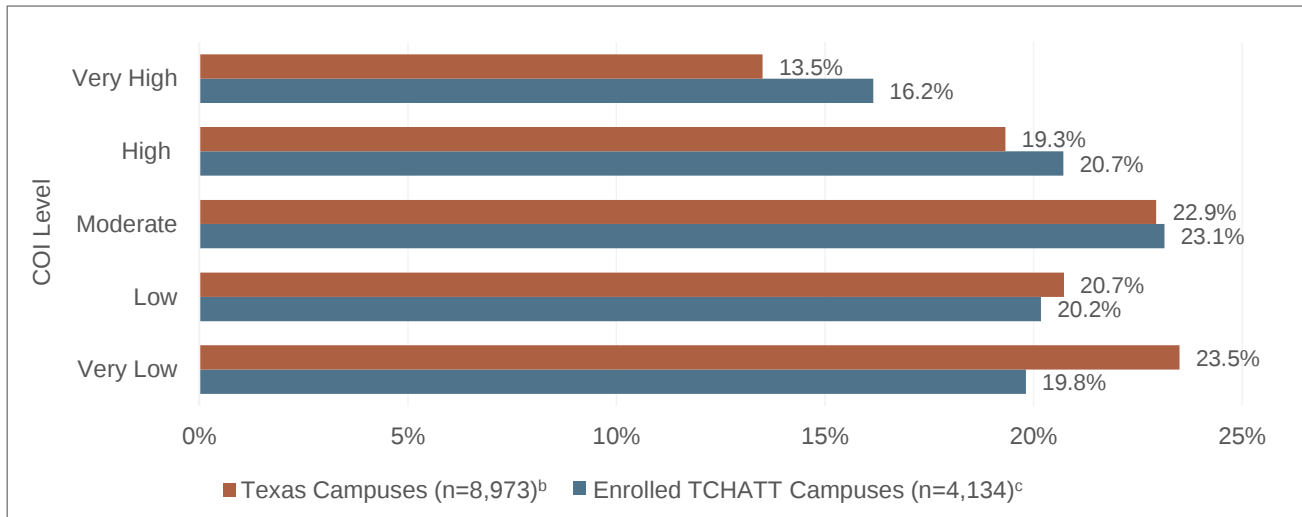
Figure 16. Comparison of Texas and Enrolled TCHATT Campuses by Geographic and Population-level Vulnerability Indicators



(a) Data Source: Texas Education Agency 2020-2021 District Type Data; Metro: major urban, major suburban; Non-Metro: other central city, other central city suburban, independent town; Rural: non-metropolitan fast growing, non-metropolitan stable, rural. District type missing for 3 enrolled campuses. (b) Data Source: Texas Education Agency PEIMS Data 2021-2022. Campus size and percentage of students considered economically disadvantaged missing for 3 enrolled campuses. (c) Data Source: TCHATT Campus List (through August 31, 2022).

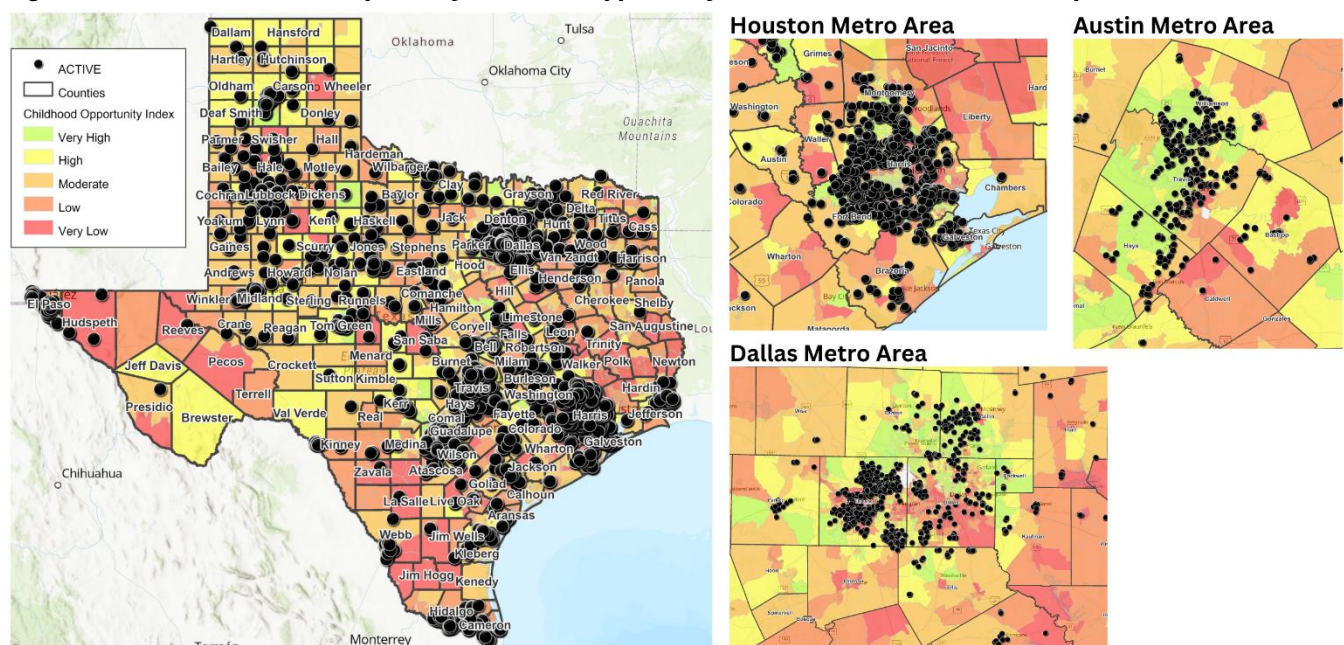
To further assess the inclusion of campuses in geographic areas characterized by vulnerability, we examined the distribution of campuses by community-level Child Opportunity Index 2.0 (COI 2.0) scores. The COI is a validated tool that quantifies neighborhood conditions in the United States for children, ranking them from lowest to highest opportunity. This index includes 29 indicators in three domains: (1) education, (2) health and environment and (3) social and economic. When compared to all Texas campuses, TCHATT enrolled fewer campuses in “very low” opportunity areas (Figure 17). Figure 18 presents maps of the geographic distribution of campuses enrolled in TCHATT across Texas with regards to COI levels. Maps of the Dallas, Austin and Houston metropolitan areas are included to help demonstrate the variability of COI characteristics within the most densely populated urban areas.

Figure 17. Enrolled TCHATT Campuses by Neighborhood-Level Indicators: The Childhood Opportunity Index (COI)



(a) Data source: 2022 Child Opportunity Index 2.0 database (<https://www.diversitydatakids.org/>). COI level missing for 17 Texas Campuses (6 enrolled TCHATT campuses). (b) Data Source: Texas Education Agency PEIMS Data 2021-2022. (c) Data Source: TCHATT Campus List as of August 31, 2022.

Figure 18. Enrolled TCHATT Campuses by Childhood Opportunity Index at the Census Block Group Level^{a,b}

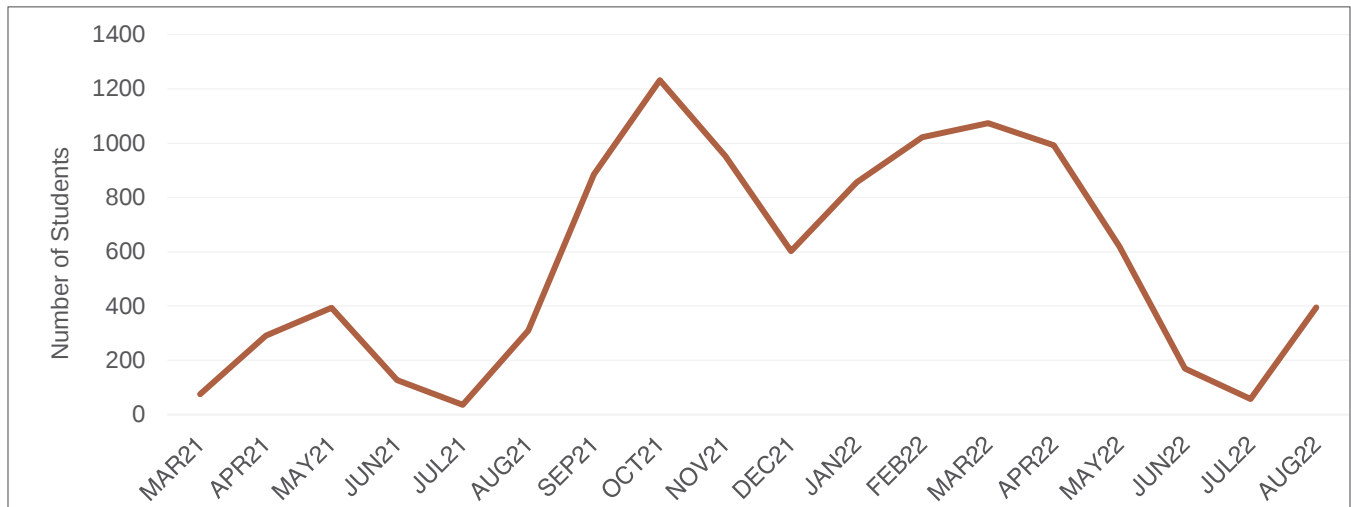


(a) Data Source: TCHATT Campus List as of August 31, 2022. (b) Data source: 2022 Child Opportunity Index 2.0 database (<https://diversitydatakids.org/>). COI level missing for 17 Texas Campuses (7 enrolled TCHATT campuses).

TCHATT Student Enrollment

At the end of August 2022, 10,088 students had enrolled in the TCHATT program. Figure 19 shows the number of students who enrolled in TCHATT by month. The enrollment in TCHATT peaked in October 2021 and again in March 2022. As expected, enrollment declined somewhat in December 2021 and January 2022 (likely, due to the winter break) and reached a nadir in July of both years. More data is needed to identify other trends in enrollment over time.

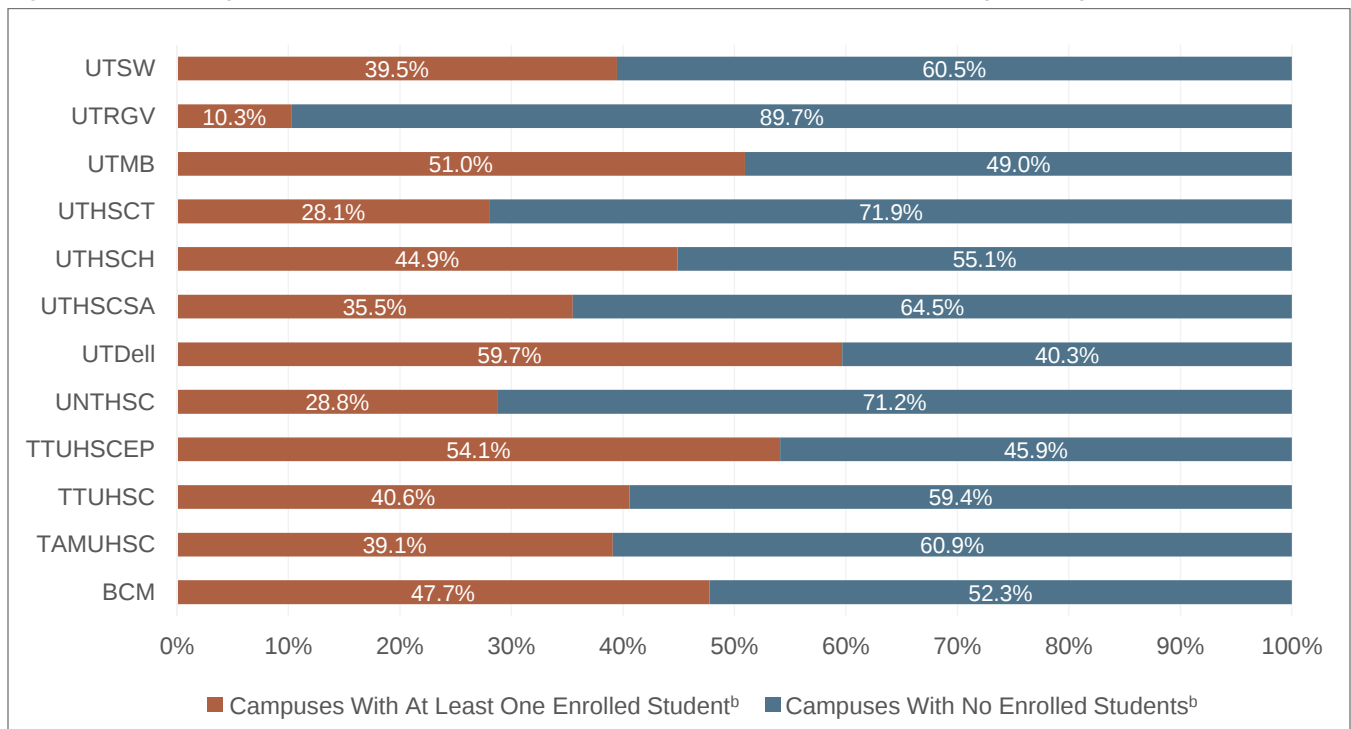
Figure 19. Students Enrolled in TCHAT by Month^a (n=10,088)



(a) Data Source: TCHAT Referral-level Extract, Trayt (March 24, 2021-August 31, 2022).

To better understand program usage among TCHAT campuses, we examined student enrollment in TCHAT by campus. Figure 20 presents the percentage of campuses with at least one student enrolled in TCHAT by HRI. Overall, 39.9% of TCHAT campuses had enrolled at least one student in TCHAT. Enrollment varied by HRI, ranging from 10.3% of campuses with at least one student enrolled in TCHAT (UTRGV) to 59.7% of campuses with at least one student enrolled in TCHAT (UTDell).

Figure 20. Percentage of TCHAT Campuses With At Least One Enrolled Student by HRI^a (n=4,134)

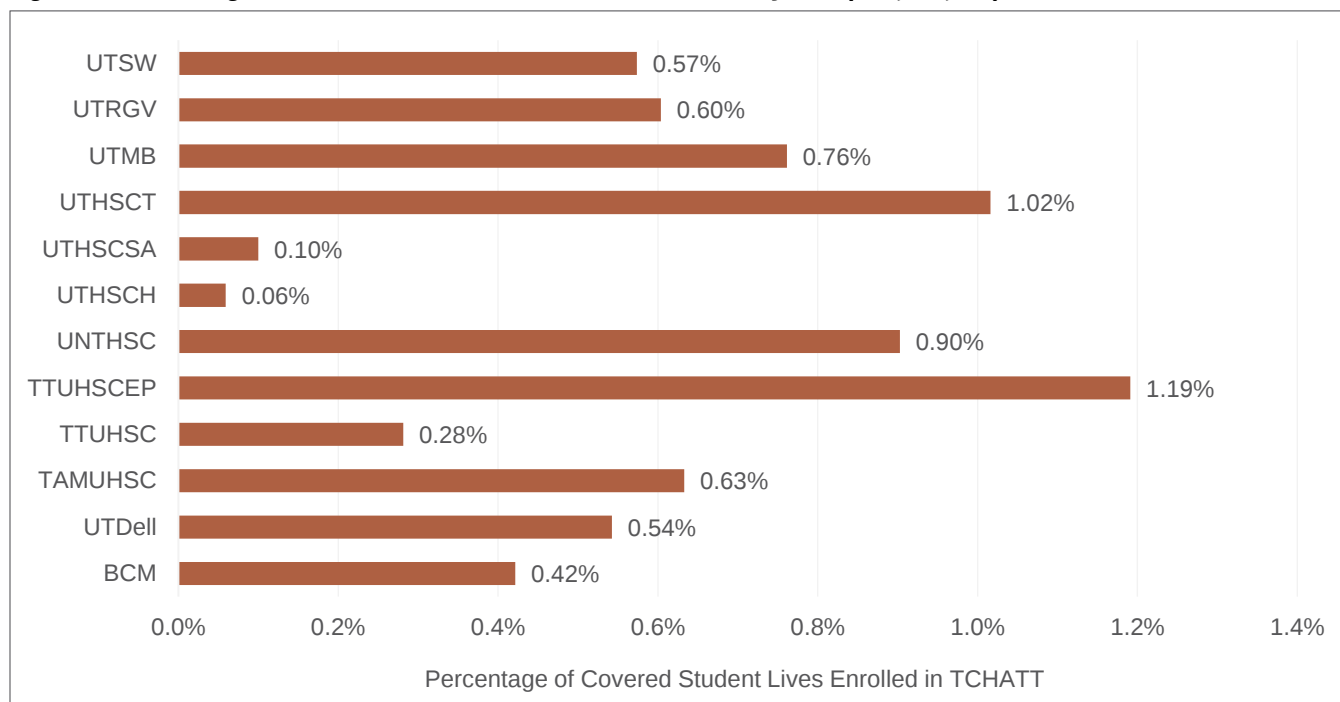


(a) Data source: TCHAT Campus List as of August 31, 2022. (b) Data source: TCHAT Referral-level Extract, Trayt (March 24, 2021-August 31, 2022).

To adjust for the variance in the number of students able to access TCHAT across HRIs, we looked at program enrollment by covered student lives (Figure 21). Covered lives includes the total number of

students enrolled in school campuses with an active an active memorandum of understanding (MOU) for TCHAT services. The percentage of covered student lives that enrolled in the TCHAT program varies by HRI, ranging from 0.06% (UTHSCH) to 1.19% (TTUHSCEP).

Figure 21. Percentage of Covered Student Lives Enrolled in TCHAT by HRI^a (n=2,352,840)

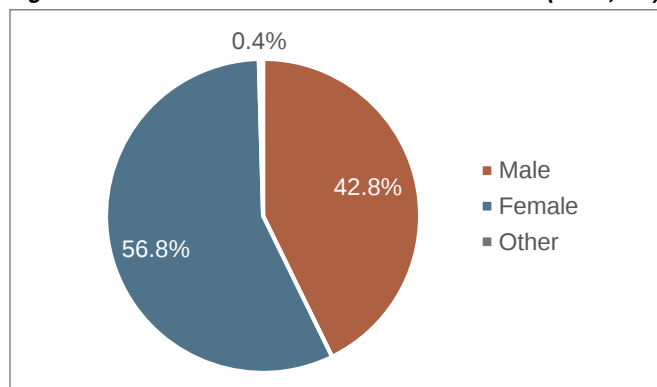


(a) Data source: TCHAT Campus List as of August 31, 2022. (b) Data source: TCHAT Referral-level Extract, Trayt (March 24, 2021-August 31, 2022).

Characteristics of Enrolled Students

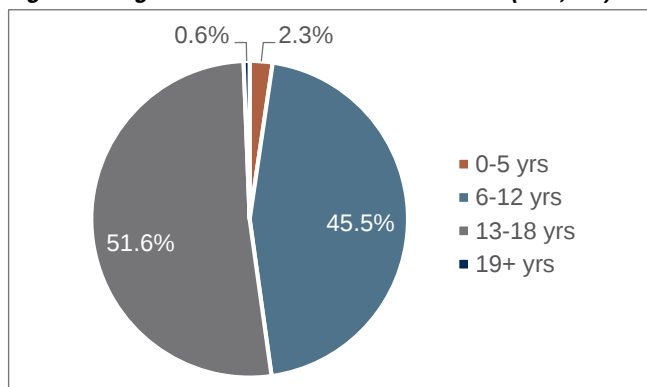
The following figures present characteristics of students who enrolled in TCHAT between March 24, 2021 and August 31, 2022. More female than male students enrolled (56.8% vs. 42.8%, respectively) (Figure 22). Slightly more than half (51.6%) of students were between 13 and 18 years of age, and 46% were between 6 and 12 years of age (Figure 23). Two-thirds were white and half identified as Hispanic (Figure 24-Figure 25).

Figure 22. Gender of Students Enrolled in TCHAT^a (n=10,088)



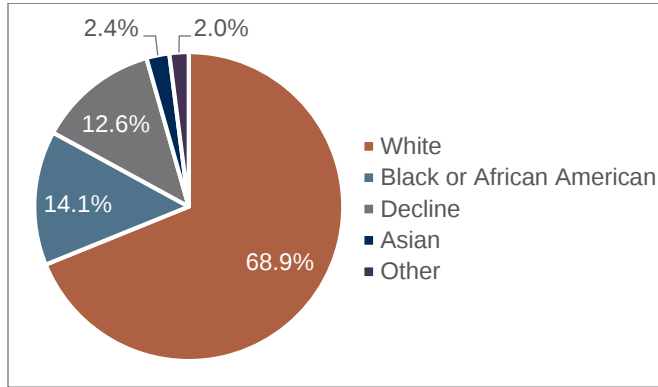
(a) Data Source: Trayt TCHAT Referral-level Extract (March 24, 2021-August 31, 2022).

Figure 23. Age of Students Enrolled in TCHAT^a (n=9,986)



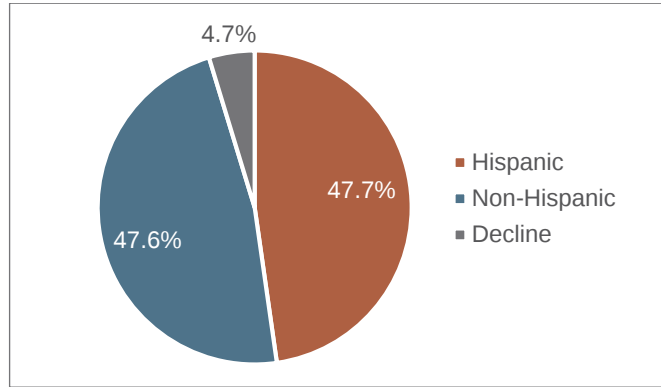
(a) Data Source: Trayt TCHAT Referral-level Extract (March 24, 2021-August 31, 2022). Age missing for 102 students.

Figure 24. Race of Students Enrolled in TCHATTa,b (n=10,088)



(a) Data Source: Trayt TCHATT Referral-level Extract (March 24, 2021-August 31, 2022). (b) More than one race may be selected.

Figure 25. Ethnicity of Students Enrolled in TCHATTa (n=10,084)

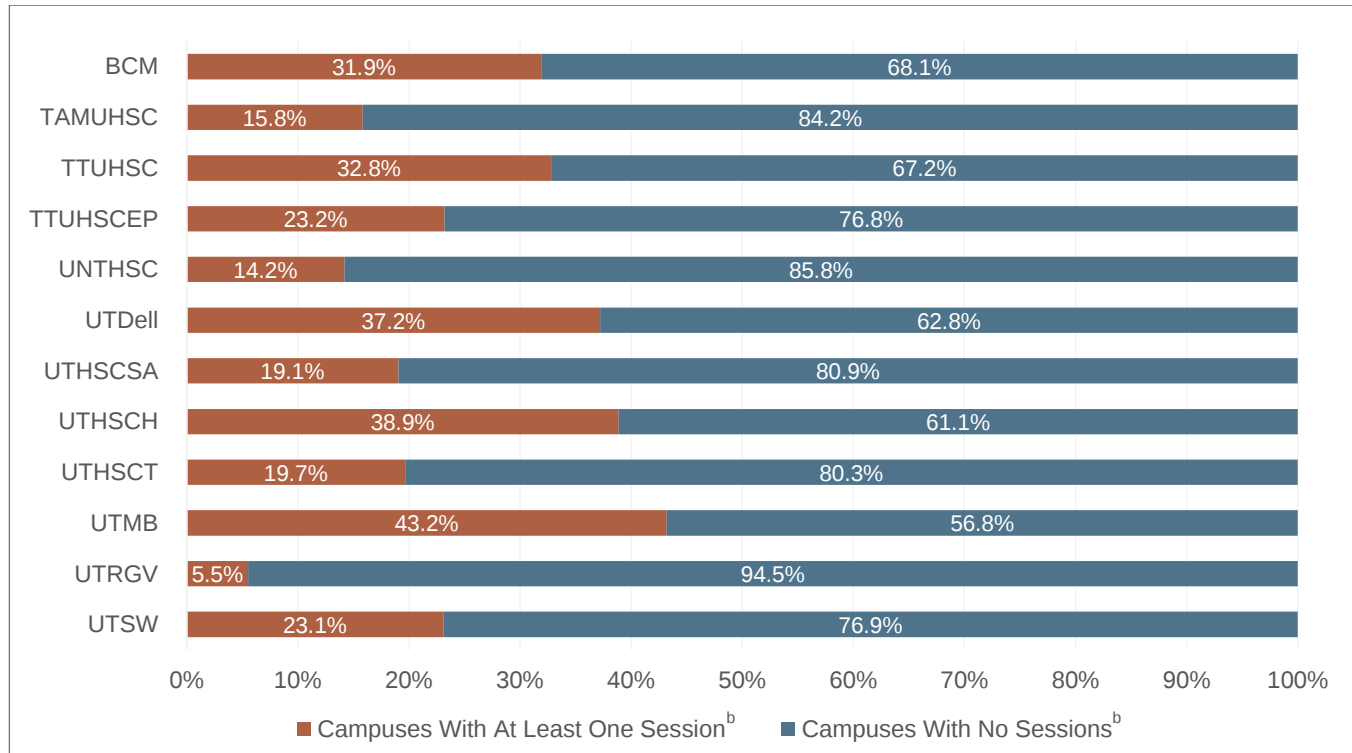


(a) Data Source: Trayt TCHATT Referral-level Extract (March 24, 2021-August 31, 2022). Ethnicity missing for 4 students.

TCHATT Service Delivery

As of August 31, 2022, at least one student at 36.5% of enrolled campuses had completed a TCHATT session. Figure 26 presents the percentage of enrolled campuses with at least one session across HRIs. UT Dell had the highest percentage of enrolled campuses with at least one TCHATT session (57.4%), and UTRGV had the lowest percentages of enrolled campuses with at least one TCHATT session (9.4%).

Figure 26. Enrolled Campuses with at Least One Session by HRIa (n=4,134)



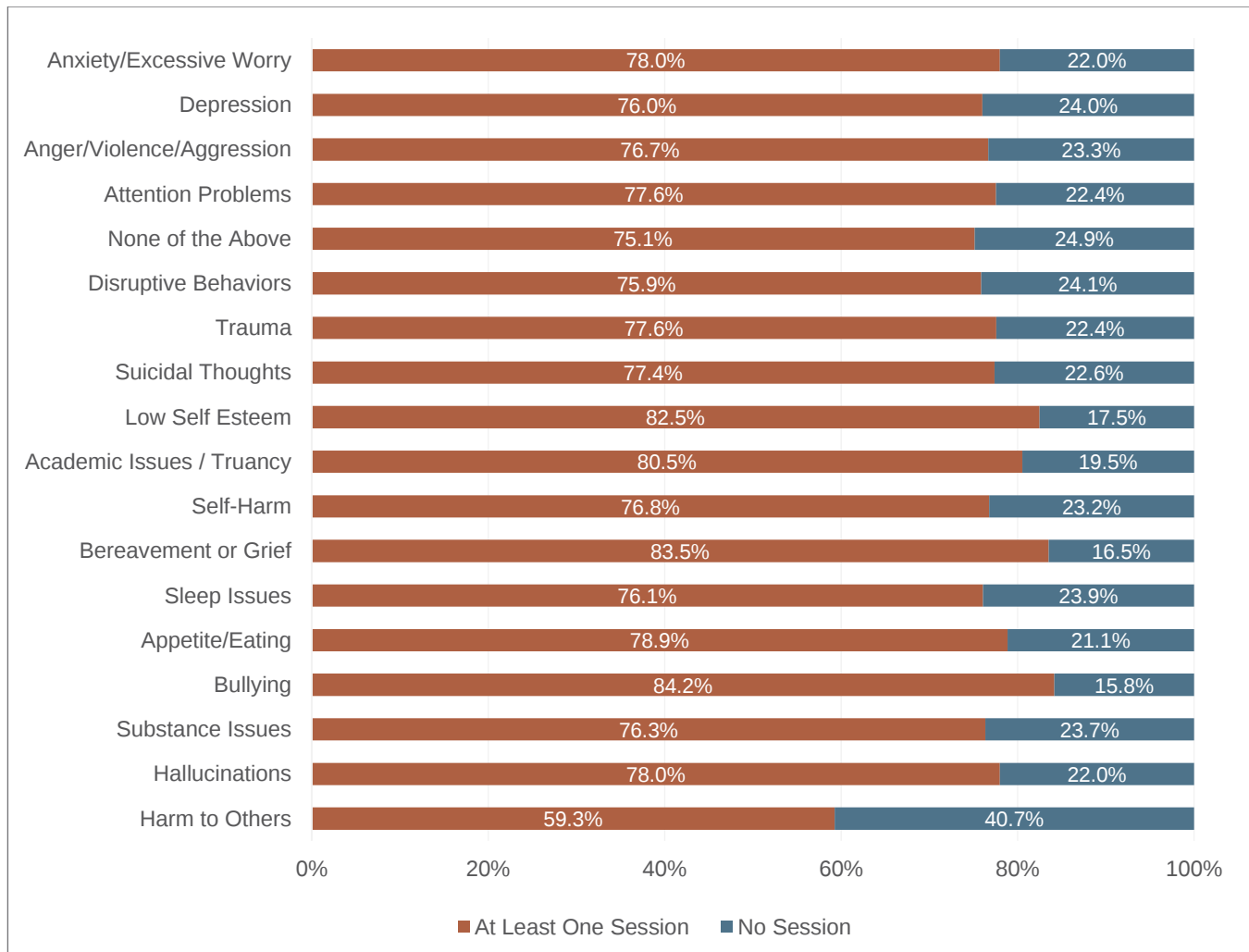
(a) TCHATT Campus List as of August 31, 2022. Includes campuses with MOU status of "In Place", "In Progress", or "Onboarding." (b) Data source: Trayt TCHATT Session-level Extract (July 1, 2021-August 31, 2022).

Characteristics of TCHAT Sessions

This next section describes characteristics of TCHAT sessions and students served. As of August 31, 2022, 76.6% of students who enrolled in TCHAT had completed at least one TCHAT session. Figure 27 presents TCHAT usage among enrolled students (i.e., at least one TCHAT session vs. no TCHAT sessions) by referral reason reported at enrollment. Referral reasons in Figure 27 are listed in decreasing order with the most-commonly reported reason being anxiety/excessive worry (reported by 40.8% of enrolled referrals) followed by depression (reported by 34.2% of enrolled referrals).

There was some variation in session status (i.e., at least one TCHAT session vs. no TCHAT sessions) by referral reason. At least 80% of enrolled students who were referred for bullying, bereavement/grief, low self-esteem, and academic issues/truancy had completed at least one TCHAT session. The lowest usage was found among enrolled students who were referred for harm to others, with only 59% of those students completing at least one TCHAT session.

Figure 27. TCHAT Referral Reasons for Enrolled Students by Session Status (n=10,088)^{a,b}



(a) Data Source: Trayt TCHAT Referral-level Extract (March 24, 2021-August 31, 2022). (b) Referrals may have more than one reason listed.
(c) Data Source: Trayt TCHAT Session-level Extract (March 24, 2021-August 31, 2022)

Between July 1, 2021 and August 31, 2022, 10,088 students were served through TCHAT. There were 32,886 TCHAT sessions, with an average of 3.3 sessions per student served. Table 7 presents a breakdown of the number of sessions and students served by HRI.

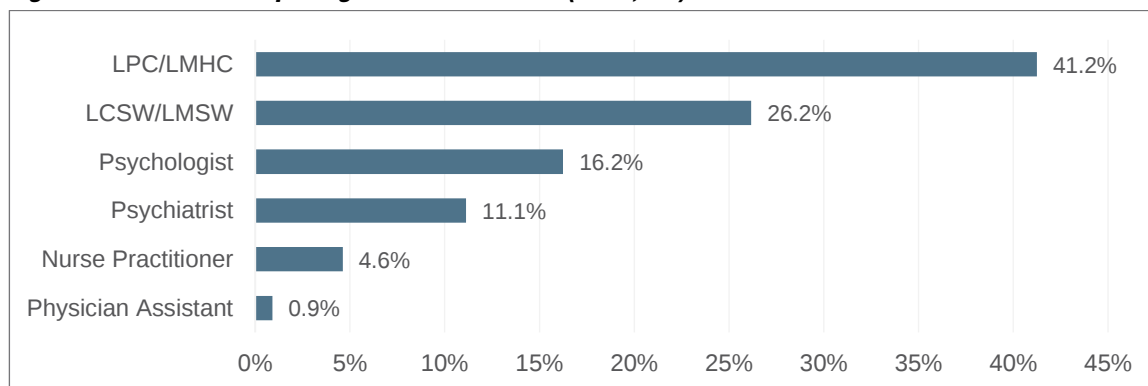
Table 7. TCHAT Students Served and Number of Sessions by HRI

	Number of Students Served ^a (n=10,088) n (%)	Number of Sessions ^a (n=32,886) n (%)	Sessions per Student Served Mean
HRI			
BCM	1049	2995	2.9
TAMUHSC	754	3186	4.2
TTUHSC	1041	3431	3.3
TTUHSCPE	700	1689	2.4
UNTHSC	455	1751	3.8
UTDell	1205	3270	2.7
UTHSCSA	1256	5886	4.7
UTHSCH	1561	4090	2.6
UTHSCT	300	910	3.0
UTMB	627	1986	3.2
UTRGV	255	995	3.9
UTSW	885	2697	3.0

(a) Data source: Trayt TCHAT Session-level Extract (July 1, 2021-August 31, 2022).

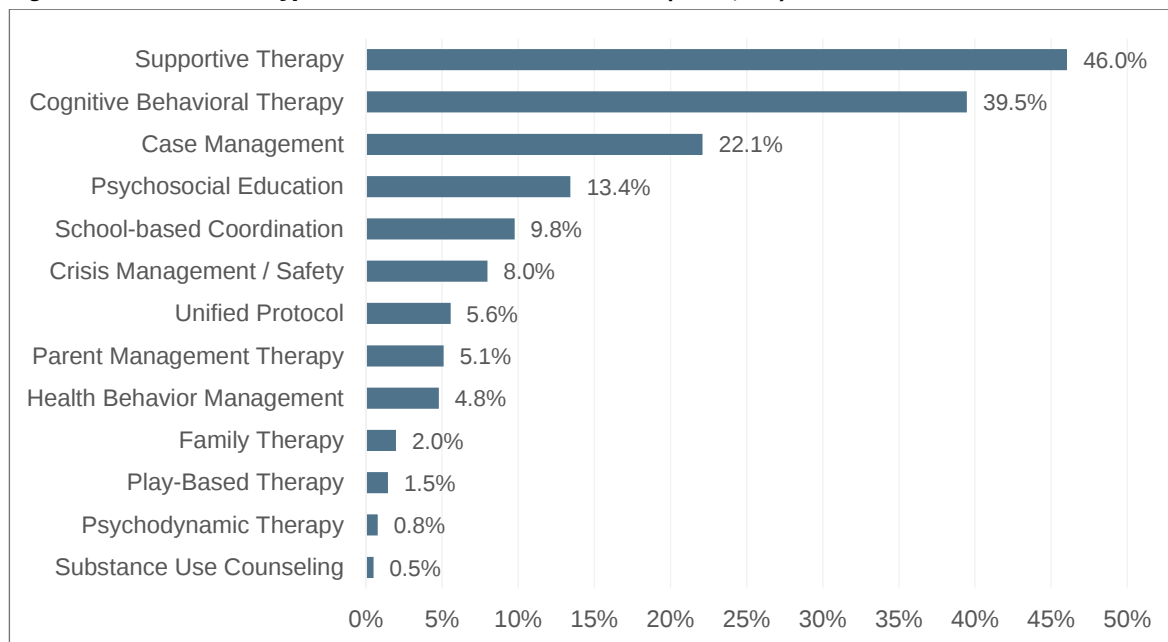
Approximately 40% of TCHAT sessions were completed by a Licensed Professional Counselor (LPC) or Licensed Mental Health Counselor (LMHC) (Figure 28). The most common intervention types provided in TCHAT sessions were supportive therapy (46.0%) and cognitive behavioral therapy (39.5%) (Figure 29). Approximately one out of five sessions involved case management.

Figure 28. Provider Completing TCHAT Sessions^a (n=32,820)



(a) Data Source: Trayt TCHAT Session-level Extract (July 1, 2021-August 31, 2022). Provider type is indicated by the provider completing session notes. Provider can indicate multiple role types.

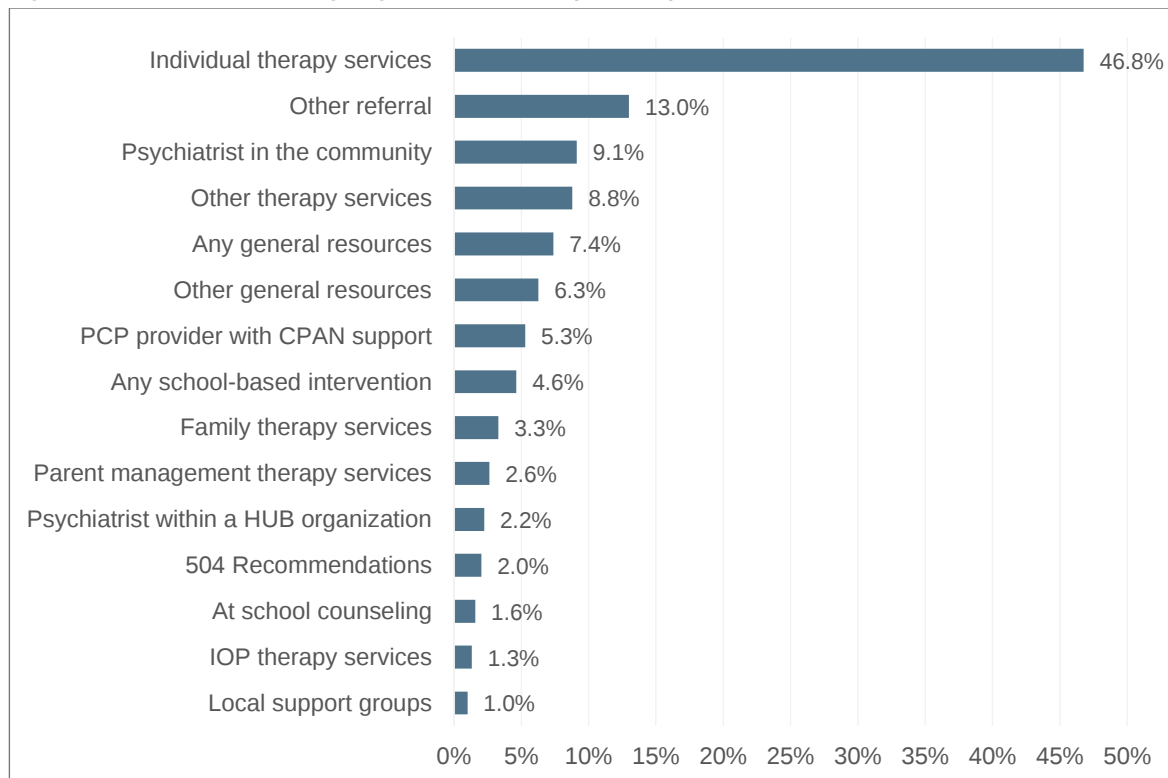
Figure 29. Intervention Type Provided in TCHAT Sessions^a (N=32,820)



(a) Data Source: Trayt TCHAT Session-level Extract (July 1, 2021-August 31, 2022). TCHAT Sessions may include more than one intervention type.

Following TCHAT, 4,011 students were referred for additional services. Almost half of these students (46.5%) were referred to individual therapy services and 9% were referred to a psychiatrist in the community (Figure 30).

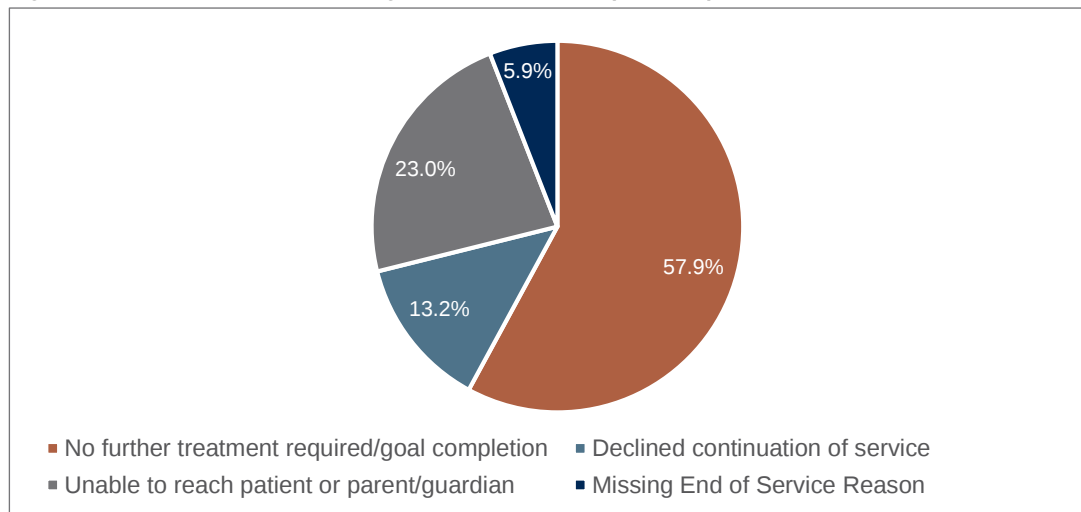
Figure 30. Recommended Ongoing Care Referrals^a (n=4,011)



(a) Data source: Trayt TCHAT Session-level Extract (July 1, 2021-August 31, 2022).

Through the end of August 2022, 7,177 students had completed TCHAT services. The most common reason reported for ending TCHAT services was that the student completed the necessary TCHAT sessions and no further treatment was required (Figure 31). However, almost one out of four students ended TCHAT services because the patient or parent/guardian was unable to be reached.

Figure 31. Reasons for Terminating TCHAT Services^a (n=7,177)



(a) Data Source: Trayt TCHAT Session-level Extract (July 1, 2021-August 31, 2022).

Recommendations

- 4) **Increase usage of TCHAT services among enrolled campuses.** Overall, only 39.9% of campuses have enrolled at least one student in the program. This varies by HRI, with 10.3% to 59.7% of enrolled campuses utilizing the service across HRIs.
- 5) **Focus recruitment efforts on smaller campuses in rural areas of Texas.** As of August 31, 2021, fewer small campuses (i.e., ≤ 500 students) were enrolled in TCHAT compared to campuses statewide (44% vs. 49%, respectively). In addition, fewer campuses enrolled in TCHAT were defined as rural compared to campuses statewide (15% vs. 21%, respectively).
- 6) **Focus recruitment efforts on campuses in geographic areas characterized by vulnerability.** As of August 31, 2021, fewer campuses enrolled in TCHAT had a high percentage ($\geq 70\%$) of economically disadvantaged students compared to campuses statewide (39% vs. 51%, respectively). This trend was also apparent when we examined vulnerability using the community-level Child Opportunity Index 2.0, a validated tool that quantifies neighborhood conditions in the United States for children, ranking them from lowest to highest opportunity. Compared to all Texas campuses, TCHAT enrolled fewer campuses in “very low” opportunity areas (24% vs. 20%, respectively).

Limitations

The following limitations were noted in the Year 1 External Evaluation Report. While there was substantial progress in addressing Trayt data limitations in Year 2, more work is still needed in the following areas:

- 1) **Lack of standardized protocol for submitting referrals and obtaining parental consent among HRIs.** The order and process for submitting referrals and obtaining parental consent varies by HRI, making it difficult to evaluate the referral process, including the number of students identified for TCHAT service, how many families are unable to be reached, and the reasons that families provide for declining the service.
- 2) **Underreporting of TCHAT data:** TCHAT student referral and served data are limited to the time period in which HRIs started to enter TCHAT enrollment and referral data in the Trayt TCHAT tracking system; therefore, data prior to March 2021 are not included in these analyses, resulting in underreporting of TCHAT service delivery. In addition, the External Evaluation team had limited TCHAT session/encounter level data in Year 1. While HRIs tracked referrals and recorded demographic information about students, Trayt did not track who was served (e.g., who had sessions), nor were data recorded to quantify how many sessions or extensions youth completed until July 2021.
- 3) **Documentation:** There is a need for centralized documentation covering both the system and the data the Trayt system generates, including linking variable names, description, and applicability. Other documentation around the general data procedures prior or in addition to the Trayt data is also needed. This limitation was noted in the External Evaluation Year 1 report. While there was substantial progress in this area in Year 2, there is still room for work to ensure data pulled from the Trayt system is clearly defined, labeled, and interpreted correctly and in the same way by all analysts/evaluators.
- 4) **Increased accurate data entry:** To ensure quality of data, additional data programming rules can help to minimize data entry errors (e.g., impossible dates not allowed; warnings to the user for unusual values) and to minimize missing data. Staff and user training to promote accurate data entry (e.g., to minimize duplicate records, incomplete data entry, or missing data) will also promote cleaner datasets.
- 5) **Data cleaning:** Extensive data cleaning and validation checks were necessary by the External Evaluation analysts in order to improve quality of data before conducting analyses. Because not all data entry is amenable to programming solutions and based on the extensive data cleaning that was required, we recommend routine data cleaning checks to minimize the time needed to clean datasets at a later stage.

COST ANALYSIS

Background

The year one cost evaluation focused on developing time-driven activity-based cost (TDABC) models for estimating the cost of the pre-implementation phase of CPAN and TCHAT for each HRI, prior to “going live,” with the provision of services. The outcome measure was the number of PC clinics enrolled in CPAN, and the number of Schools enrolled for TCHAT. This second-year report focuses on the development and preliminary application of a TDABC cost model for the estimation of the direct clinical personnel costs of implementing the CPAN and TCHAT programs. Given the lack of data on the direct effects of improved access to mental health services on patient mental health or provider treatment quality indicators, the number of consults served as the primary intermediate outcome metric for the cost analyses. Research supports the link between access to peer-to-peer consultation and school-based tele-mental health services and quality of pharmacy prescribing, reduced health care utilization, and cost.¹⁻⁴ During year two, programs continued efforts to increase scale by recruiting additional PC clinics to CPAN and additional Schools to TCHAT. Thus, substantial resources were devoted to recruiting, onboarding, and training healthcare providers and school counselors on how to gain the greatest value from the programs. All of this effort was aimed at increasing access to quality mental health services for adolescents.

As the programs learn, adapt, and gain scale in year three, we will refine the direct clinical care cost models and include the administrative overhead and other non-personnel costs required for service delivery, and estimate the cost-effectiveness of alternative strategies for providing CPAN and TCHAT services. The TDABC values (wage rates, average activity times, mix of activities, and personnel) will serve as key parameters in decision analytic models for assessing uncertainty in the cost-per-consult estimates and exploring the efficiency of alternative staffing patterns and other service delivery strategies. We will update our literature search to document the link between improving access to mental health services and quality of mental health care, patient health status, healthcare utilization, and healthcare cost. We will collaborate with the UTHealth School of Public Health Center for Health Care Data to determine the feasibility of assessing the impact of the TCMHCC programs on population-based self-harm rates and other mental health problems suffered by Texas adolescents. Finally, we will examine the feasibility of linking Texas Education Agency data on school-level absence rates to whether the school has instituted the TCHAT program compared to similar schools that have not instituted the program.

Key Findings & Limitations

CPAN

The average direct clinical care personnel cost per consult was \$199 across the 12 CPAN programs. The cost per consult ranged from \$277 to \$73. Lower costs per consult were driven by a relatively high number of consults and a somewhat lower intensity of CAP staffing. BCM was a low-cost HRI with the lowest direct clinical cost per consult (\$73) and a low non-personnel cost. Other programs with relatively low direct clinical personnel costs per consult were UTHSCH (\$95), UTHSCSA (\$110), and UTHSCT (\$134). Programs with higher-direct clinical personnel costs per consult were UTSW (\$277), DELL (\$249), TTUHSC-EP (\$237), and UTMB (\$212). These programs had a relatively low number of consults and relatively high non-personnel and other costs.

The average total cost per consult was \$1,283 for the 12 CPAN programs and ranged from \$20,996 to \$565, corresponding to the programs with the least and most consults, respectively. Thus, costs per consult were inversely related to the number of consults. UTSW (\$277/consult), Dell (\$565/consult), and UTMB (\$721/consult) were lower-cost HRIs due to the relatively high level of CPAN consults, ranging from 1,063 to 1,925. Programs with higher-total costs per consult were UTRGV (\$20,996), UTHSCH (\$3,695), TAMU (\$3,338), and TTUHSC-EP (\$3,211). These programs had a relatively low number of consults, ranging from 44 to 261. A similar trend is also detected by comparing the total budget spending per enrolled CPAN provider, programs with a lower number of enrolled CPAN providers had higher unit budget spending per enrolled provider. Across HRIs, the average direct clinical personnel cost per consult (\$199) only comprises about 16% of the total average cost per consult (\$1,283) for CPAN. Therefore, the bulk of resources were devoted to other aspects of the program, including planning, marketing, enrollment of clinics, training, and education of primary care providers and their staff, and general program administration.

TCHATT

The average direct clinical care personnel cost per session was \$94 for the 12 TCHATT programs and ranged from \$134 to \$37. The average direct clinical care personnel cost per patient was \$401 for the 12 TCHATT programs and ranged from \$523 to \$223). Lower costs per session and per patient were driven by a relatively high number of patients and a somewhat lower intensity of CAP staffing, at least for the two lowest-cost programs. UTHSCSA was the lowest-cost program with the lowest direct clinical cost per patient (\$223) due largely to low CAP utilization and a high consulting load of 5,801 sessions. Higher-cost HRIs had a relatively low number of patients, and in UNTHSC (\$495/patient), a relatively high total non-personnel and other costs.

The average total cost per session was \$597 for the 12 TCHATT programs and ranged from \$1,442 to \$286. Lower costs per session were driven by a relatively high number of patients. UTHSCSA was the lowest-cost program with the lowest total cost per session (\$286) due largely to a high consulting load of 5,801 sessions, which was more than double the average number of sessions across the 12 HRIs. Higher-cost HRIs provided a relatively low number of sessions. The same trend is also detected by comparing the total budget spending per enrolled student, programs with a lower number of enrolled students had higher unit budget spending. Similar to CPAN, the average direct clinical personnel cost per consult/session (\$94) only comprises about 16 percent of the total average cost per session (\$597) for TCHATT. Therefore, the bulk of resources were devoted to other aspects of the program, including planning, marketing, enrollment of schools, training, and education of school counselors and their staff, and general program administration. When total costs are spread over all students enrolled in schools with TCHATT programs, the average cost per student was \$8 and ranged from \$27 to \$4.

Limitations were the self report of activity time for direct clinical service and the lack of standardized financial data. The latter limitation required use of a large and variable residual cost category for the difference between our estimate of the direct clinical personnel cost plus the identifiable other cost such as rent and equipment and the total spending by each HRI. Implementation of standardized cost accounting by type of resource use will aid future program evaluations and reduce the residual cost component of the analysis.

Methods

Data Sources

The following analyses incorporate data from CPAN and TCHATT Trayt Encounter Data, the CPAN/TCHATT HRI implementation time survey, and HRI monthly expenditure and financial reports. The clinical cost was based on the CPAN/TCHATT implementation time surveys and Trayt encounter records. The non-personnel cost – including facilities, supplies, travel, maintenance and operations, subscriptions/books – was collected from the HRI monthly expenditure and financial reports.

Cost Model and Activity Time

The TDABC model of direct clinical care personnel time for service implementation was based on detailed process maps describing the mental healthcare delivery cycle developed by our multidisciplinary team (see Appendix A for Process Map examples for HRIs, clinics, and schools). The detailed process maps guided the development of the time survey instruments (see Appendix B for examples of time surveys). Two HRI time surveys were used for estimating the average times per consult; one for program managers to cover the time required by support staff and CAPs and one for each of the two CAPs per HRI that focused on their activities. Program manager time estimates for CAPs were not utilized for CAP times if responses were available from the CAPs. The mid-point between the two CAP time estimates was utilized for the cost analysis. Respondents were asked to modify the personnel and activity descriptions if necessary to fit their staffing mix and approach to service delivery. The surveys allowed for the capture of variability in processes used across the HRIs. Generally, program managers provided the same average time estimate for all staff carrying out the same activity. Cost methods are illustrated in Appendix C (Figure 43-Figure 44) showing activity times by associated personnel and cost rates derived from surveys of support staff and CAPs.

Unit Values for Personnel

The adjusted cost per hour for all personnel involved in direct clinical care for the programs was derived from program budget data on annual salaries, fringe benefit rates, and University policies on annual holidays and vacation days. The hourly rates were further adjusted for the personnel's expected productivity (90%).^{5,6} Table 8 provides an example of the adjusted salary plus fringe benefits per hour for one HRI providing CPAN consults. The adjustment increases the nominal hourly cost rate plus the fringe benefit rate (25-30%) by adjusting for the actual time available for work tasks during the year.

Cost per Consult

Direct clinical personnel times were converted to costs by multiplying the time per activity within a typical consult by the adjusted cost rate for the type of personnel providing the service and summing costs for all personnel/activities. Figure 43-Figure 44 show examples of the TDABC model personnel cost estimates for a CPAN and TCHATT program, respectively. Column 1 describes the activities and associated staff levels for a typical consult. Column 2 shows the probability that a given staff level provides the consult, Columns 3-5 show values for computing the cost of the activity, Column 6 shows the probability that the activity is done for a typical consult, and Column 7 is the expected cost of the activity which is derived by multiplying the cost (Column 5) by the two probabilities. The sum of the last column provides the expected direct clinical personnel cost of the typical consult, which is approximately \$73 for CPAN and \$512 for TCHATT for the example HRI.

Table 8. Adjusted Salary per Hour (CCR) example for one CPAN HRI

Title	Responsibility	Base Salary (\$000)	Fringe Benefit %	Annual Salary + Fringe (\$000)	Hourly Salary + Fringe \$	Vacation & Holiday Hours	Annual Hours at Work	Annual Hours Available for Tasks*	Proportion Paid Time Available for Tasks**	Adjusted Salary per Hour \$***
Asst/Assoc	Psychiatrists	\$250	25	312.5	150.24	216	1864	1677.6	0.807	186.28
Division Head	Psychiatrists	\$275	25	343.75	165.26	216	1864	1677.6	0.807	204.91
Instructor	LCSW	\$65	30	84.5	40.63	216	1864	1677.6	0.807	50.37
Administrator	Gen Admin	\$140	30	182.0	87.50	216	1864	1677.6	0.807	108.49
Grant Admin	Gen Admin	\$100	30	130.0	62.50	216	1864	1677.6	0.807	77.49
Coordinator	Gen Admin	\$65	30	84.5	40.63	216	1864	1677.6	0.807	50.37
Data Manager	Gen Admin	\$90	30	117.0	56.25	216	1864	1677.6	0.807	69.74
HR	Gen Admin	\$60	30	78.0	37.50	216	1864	1677.6	0.807	46.49
Accounting	Gen Admin	\$65	30	84.5	40.63	216	1864	1677.6	0.807	50.37

*Annual Hours Available for Tasks = Annual Hours at Work * Productivity Rate (0.90).

**Proportion of Paid Time Available for Tasks = Annual Hours Available for Tasks / Total Hours per Year (2080 hours).

***Adjusted Salary (CCR) = Salary per Hour / Proportion of Paid Time Available for Tasks

Results

CPAN

Table 9 and Figure 32-Figure 34 summarize the costs of implementing the CPAN programs for 12 HRIs for the fiscal year 2021 (September 1, 2021, thru August 31, 2022). The average direct clinical personnel cost per consult for the 12 programs was \$199, with a range from \$73 to \$277. Figure 32 shows how the staffing patterns in a program affect the direct clinical personnel costs per consult. The correlation between the use of CAPs and direct clinical personnel cost per consult is not linear, although several of the highest-cost programs have a high proportion of the direct clinical personnel cost devoted to CAPs. However, CAP use is also high in the second-lowest-cost program, UTHSCH (\$95 per consult). The average non-personnel cost per consult was \$226, with a range from \$41 for DELL, which had the highest number of consults (1,925), to over \$5,000 for UTRGV, which had only 44 consults. UNTHSC was an outlier at \$2,351 of non-personnel cost per consult, which was driven by contract costs for 278 consults, a relatively low number compared to the mean average of 719 consults per HRI across the 12 HRIs. The average total cost per consult, excluding system-level COSH costs was \$1,283 per consult, with a range of \$565 at DELL to over \$20,000 for UTRGV.

In summary, lower costs per consult were driven by a relatively high number of consults and a somewhat lower intensity of CAP staffing. BCM was a low-cost HRI with the lowest direct clinical cost per consult (\$73), 669 consults performed, and a low non-personnel cost per consult (\$83). Other relatively low-cost programs included DELL (\$565 total cost per consult), UTMB (\$721 per consult), UTSW (\$739 per consult), and UTHSCT (\$1290 per consult). Higher-cost HRIs such as UTRGV (\$20,996 total cost per consult), and UNTHSC (\$2,503 per consult) had a relatively low number of consults and relatively high non-personnel and other costs.

Table 9. Cost Per Consult and Enrolled Provider By HRI, CPAN Program

Program	Direct Clinical Personnel Cost (\$)*	Non-personnel Cost from Budget Spend (\$)**	Direct Clinical Personnel Cost + Non-personnel Budget Spend (\$)	Residual--Total Budget Spend Minus (Direct Clinical Personnel Cost+ Non-personnel Budget Spend) (\$)**	Number of Consults**	Direct Clinical Personnel Cost Per Consult (\$)	Total Estimated Cost Per Consult (\$)	Total Budget Spend	CPAN Provider Enrollment (N)***	Total Budget Spending Per Enrolled CPAN Provider
UNTHSC+	49,120	653,456	702,576	-6,786	278	177	2,503	\$695,790	782	890
UTSW	505,014	135,703	640,717	707,990	1,826	277	739	\$1,348,707	2,098	643
DELL	479,217	78,285	557,502	530,955	1,925	249	565	\$1,088,457	965	1,128
UTRGV	8,557	233,267	241,824	682,018	44	194	20,996	\$923,842	234	3,948
UTMB	236,245	59,905	296,150	470,163	1,063	222	721	\$766,313	553	1,386
TAMU	43,146	285,529	328,675	465,842	238	181	3,338	\$794,517	1,043	762
TTUHSC	76,347	182,869	259,216	804,241	546	140	1,948	\$1,063,457	938	1,134
UTHSCSA	108,490	87,396	195,886	1,012,297	984	110	1,228	\$1,208,183	596	2,027
TTUHSC-EP	61,849	131,481	193,330	644,722	261	237	3,211	\$838,052	432	1,940
UTHSCT	75,615	34,742	110,357	617,280	564	134	1,290	\$727,637	1,244	585
BCM	48,608	55,597	104,205	685,212	669	73	1,180	\$789,417	932	847
UTHSCH	21,194	14,333	35,527	783,115	224	95	3,655	\$818,642	745	1,099
Total	1,713,402	1,952,563	3,665,965	7,397,049	8,622	199	1,283	\$11,063,014	10,562	1,047

*Estimated based on Survey Data. Adjusted productivity rate = 0.9

**Based on non-personnel spending details provided by the HRI

***All spending that could not be identified from spending data or attributed to direct personnel cost for delivering consults.

+Including SubAward(Grants). HSC subcontracts with Acclaim Physician Group for CPAN and TCHATT, the projects are staffed and operational. **Based on Trayt data.

***Based on Trayt CPAN Clinic Staff Directory (May 1, 2020 – August 31, 2022).

Figure 32. Direct Clinical Personnel Cost Per Consult By HRI, CPAN Program

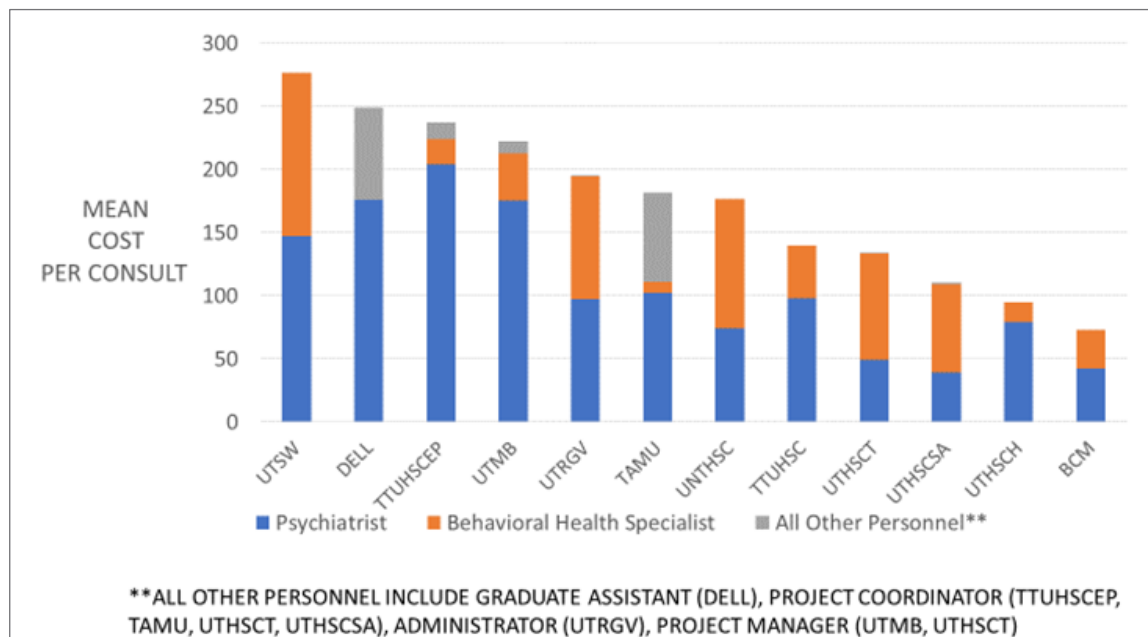


Figure 33. Direct Clinical Personnel Cost, Non-Personnel & Other Cost By HRI, CPAN Program

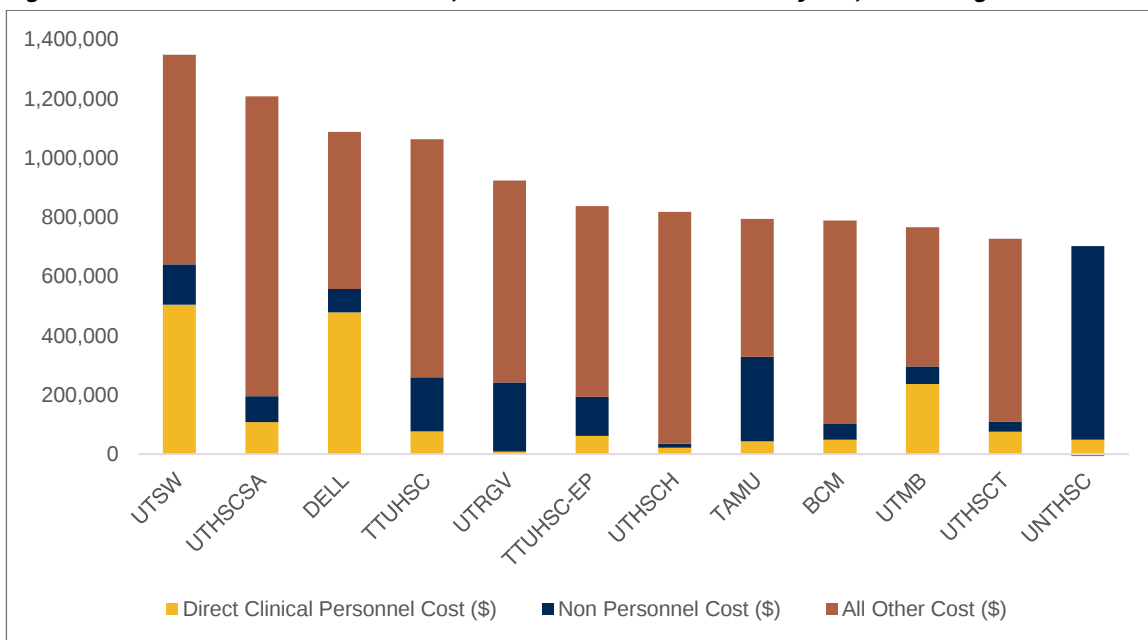
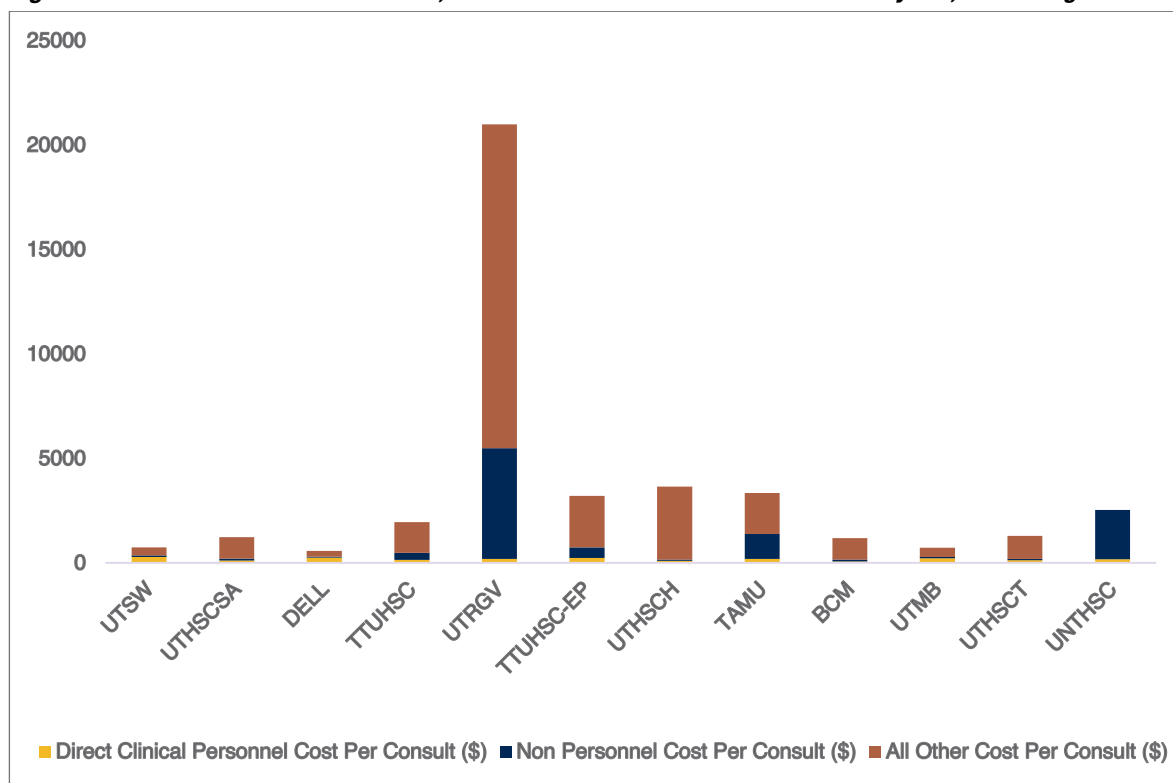


Figure 34. Direct Clinical Personnel Cost, Non-Personnel & Other Cost Per Consult By HRI, CPAN Program



TCHATT

Table 10 and Figure 35-Figure 38 summarize the costs of implementing the TCHATT programs for 12 HRIs for the fiscal year 2021 (September 1, 2021, thru August 31, 2022). Since a given patient may interact with program staff multiple times to address their mental health concerns, patients serve as the unit of cost analysis for TCHATT. Highlighted cells indicate factors driving the cost per patient for relatively high-cost programs. The average direct clinical personnel costs per patient for the 12 programs was \$401, ranging from \$223 for UTHSCSA to \$523 BCM. Figure 35 shows how the staffing patterns in a program affect the direct clinical personnel costs per patient. There is no direct correlation between the use of CAPs and direct clinical personnel cost per patient. However, UTHSCSA, the lowest-cost program (\$223 per consult), reported the least CAP time cost for direct clinical activities. The average non-personnel cost per patient was \$446, ranging from \$40 for UTHSCH, which had the highest number of patients (1,148), to \$3,084 for UNTHSC, which had 334 patients and had a very high-cost total reported in this category for contracts which may not directly serve TCHATT. UTRGV had a high non-personnel per patient of \$2,184 per patient, which was driven by a relatively low number of 193 consults compared to the mean average of 633 consults seen per HRI across the 12 HRIs. The average total cost per patient, excluding system-level COSH costs, was \$2,557 per patient, with a range of \$1,108 at DELL to \$7,432 at UTRGV.

In summary, lower costs per patient were driven by a relatively high number of patients and a somewhat lower intensity of CAP staffing, at least for the two lowest-cost programs. UTHSCSA was the lowest-cost program with the lowest direct clinical cost per patient (\$223) due largely to low CAP utilization and a consult volume of 954 patients to spread the costs of administration and other fixed costs. Higher-cost HRIs had a relatively low number of patients, and in UNTHSC, there was a relatively high total non-personnel and other costs.

Table 10. Cost Per Patient, Per Session, and Per Student in Enrolled Schools By HRI, TCHAT Program

Program	Direct Clinical Personnel Cost (\$)*	Non-personnel Cost from Budget Spend (\$)**	Direct Clinical Personnel Cost+ Non-personnel Budget Spend (\$)	Residual--Total Budget Spend Minus (Direct Clinical Personnel Cost+ Non-personnel Budget Spend) (\$)***	Number of Patients**	Direct Clinical Personnel Cost Per Patient (\$)	Total Estimated Cost Per Patient (\$)	Number of Sessions ***	Direct Clinical Personnel Cost Per Session (\$)	Total Estimated Cost Per Session (\$)	Number of Covered Students on Campus	Total Budget Spend	Total Budget Spending Per Student in Enrolled Schools (\$)
UNTHSC+	165,174	1,029,988	1,195,162	22,046	334	495	3,644	1,736	95	701	170,795	\$1,217,208	7
TTUHSC	317,290	487,016	804,306	1,062,462	771	412	2,421	3,416	93	546	251,309	\$1,866,768	7
DELL	335,813	416,640	752,453	319,903	968	347	1,108	3,268	103	328	227,753	\$1,072,356	5
UTHSCH	466,990	45,944	512,934	1,624,278	1,148	407	1,862	4,040	116	529	511,094	\$2,137,212	4
TAMU	339,895	147,742	487,637	1,381,435	710	479	2,632	3,168	107	590	119,149	\$1,869,072	16
UTSW	312,304	129,124	441,428	1,118,812	750	416	2,080	2,674	117	583	191,236	\$1,560,240	8
UTMB	196,003	234,021	430,025	1,126,219	463	423	3,361	1,972	99	789	78,136	\$1,556,244	20
UTRGV+	79,781	421,517	501,298	933,134	193	413	7,432	995	80	1,442	147,112	\$1,434,432	10
BCM	336,333	103,591	439,924	1,475,468	643	523	2,979	2,949	114	650	236,609	\$1,915,392	8
TTUHSCEP	163,923	190,874	354,797	1,658,563	429	382	4,693	1,637	100	1,230	87,410	\$2,013,360	23
UTHSCSA	212,515	116,548	329,063	1,332,133	954	223	1,741	5,801	37	286	256,253	\$1,661,196	6
UTHSCT	121,363	66,458	187,821	945,087	237	512	4,780	909	134	1,246	41,764	\$1,132,908	27
Total	3,047,383	3,389,463	6,436,846	12,999,542	7,600	401	2,557	32,565	94	597	2,318,620	\$19,436,388	8

*Estimated based on Survey Data. Adjusted productivity rate = 0.9

** Based on non-personnel spending details provided by the HRI

*** All spending that could not be identified from spending data or attributed to direct personnel cost for delivering consults.

+ Including SubAward(Grants). HSC subcontracts with Acclaim Physician Group for CPAN and TCHAT, the projects are staffed and operational.

**Based on Trayt data.

***Based on TCHAT Campus List (through August 31, 2022), includes campuses with "MOU in progress" only.

Figure 35. Direct Clinical Personnel Cost Per Student/Patient By HRI, TCHAT Program

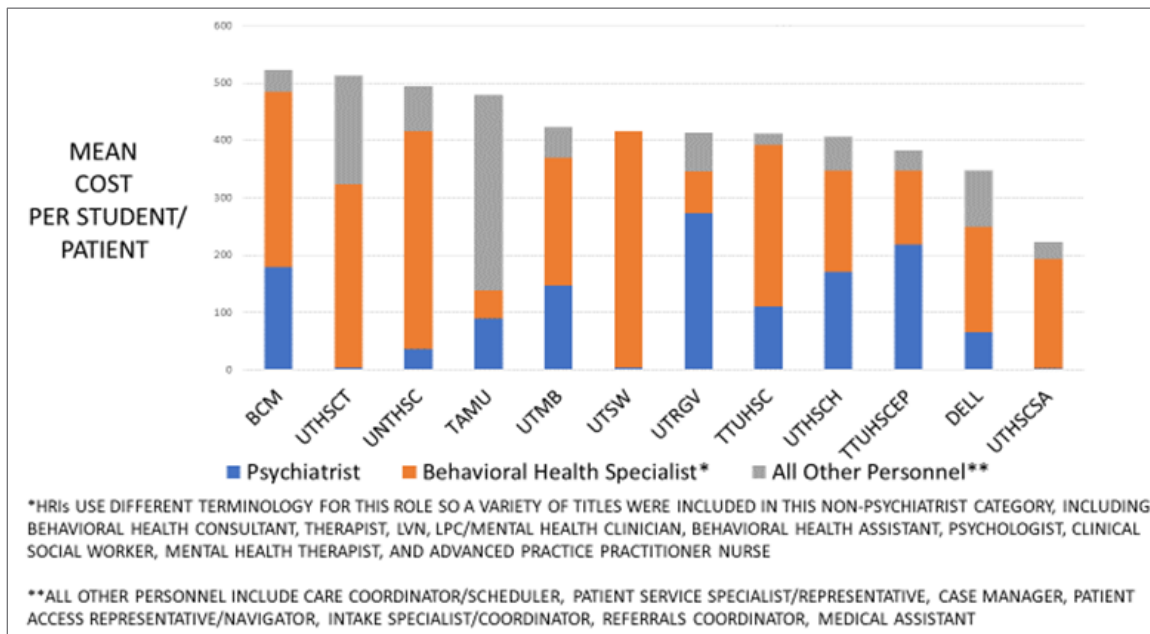


Figure 36. Direct Clinical Cost, Non-Personnel & Other Cost By HRI, TCHAT Program

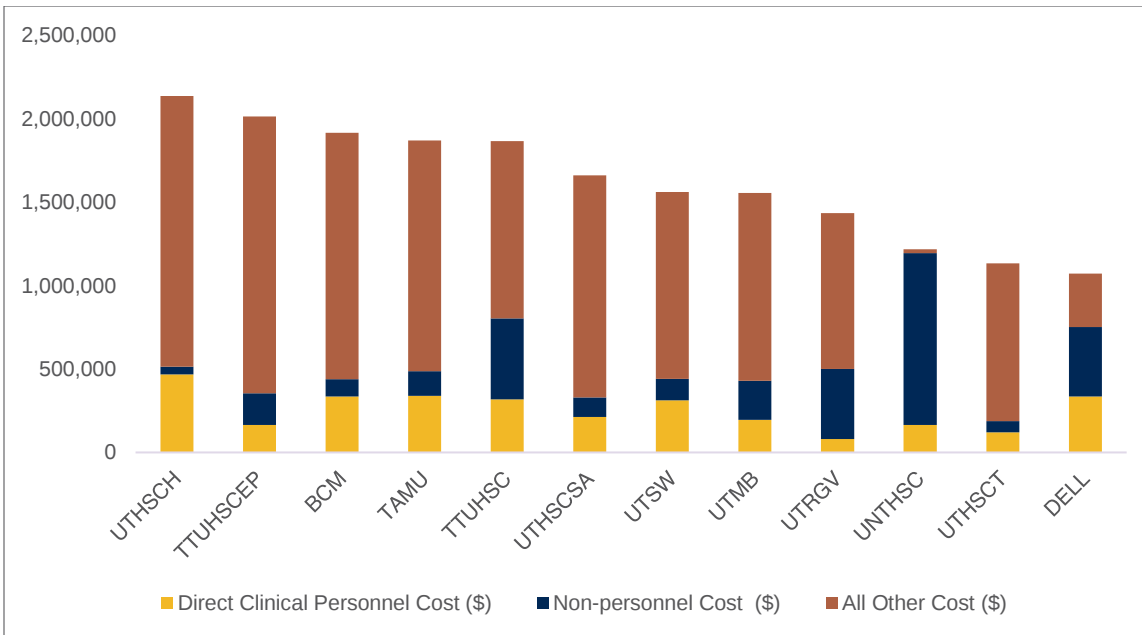


Figure 37. Direct Clinical Cost, Non-Personnel & Other Cost Per Session By HRI, TCHAT Program

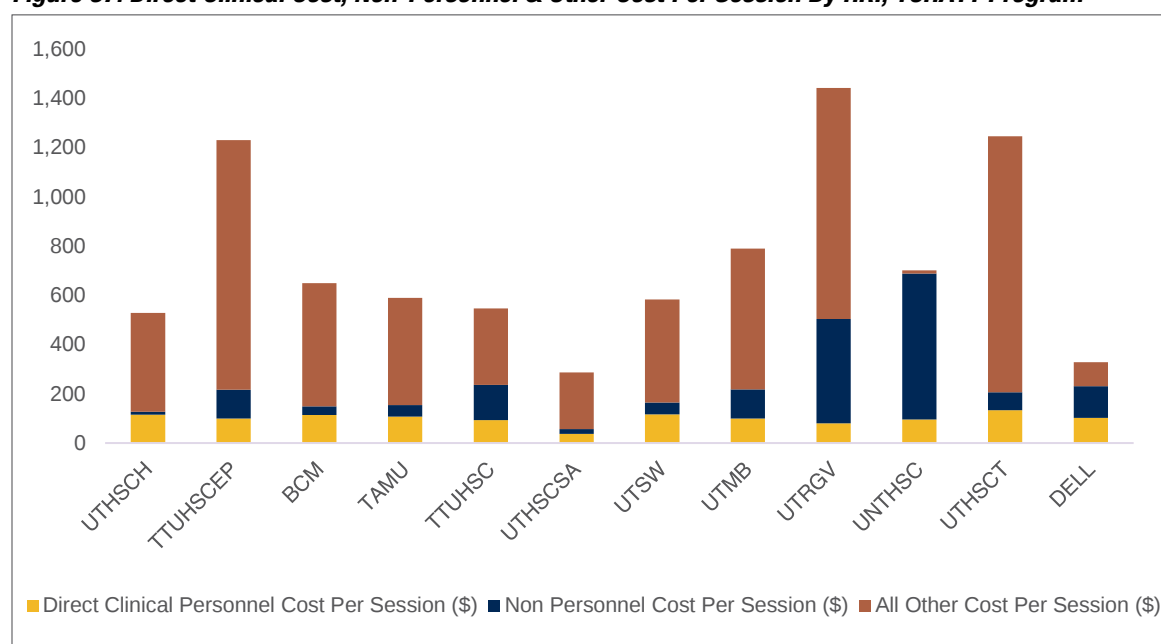
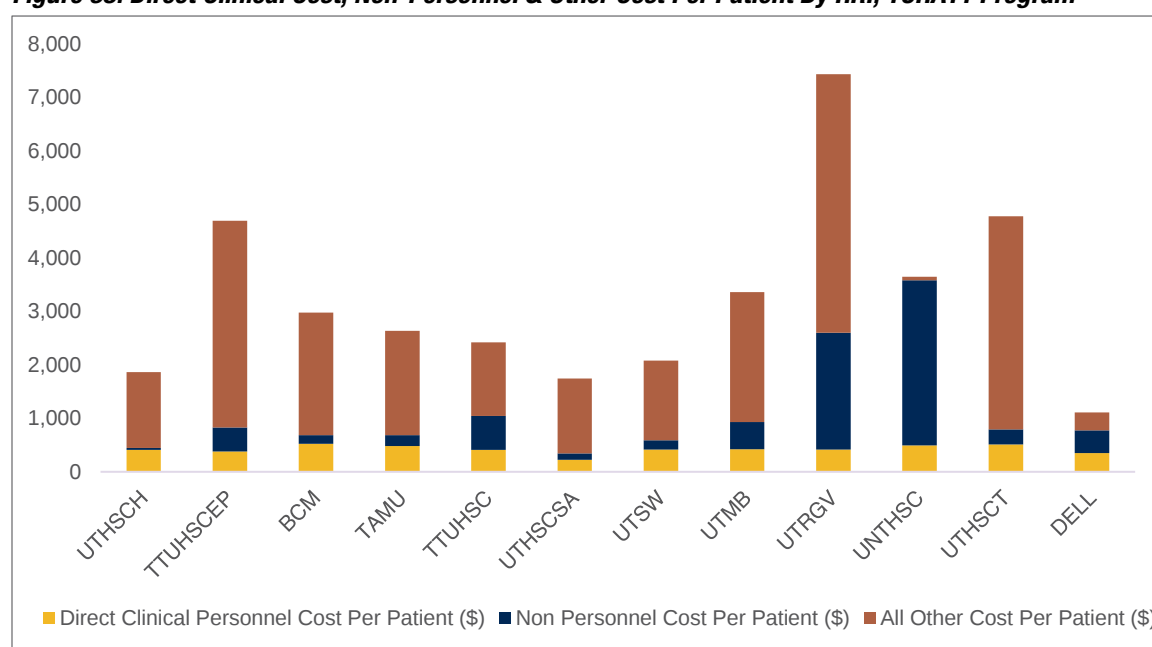


Figure 38. Direct Clinical Cost, Non-Personnel & Other Cost Per Patient By HRI, TCHAT Program



Discussion and Next Steps

Time estimates for the TDABC model are self-reported best estimates of time per activity. CAPs reported their own times. When a few CAPs failed to respond, program manager time estimates were utilized for the few CAP non-respondents. Program managers provided time estimates for the non-CAP staff. The manager generally reported an average time estimate for the same activity completed by different non-CAP staff. In most cases, CAPs filled out their own times; therefore,

there was variation between the CAPs in their time estimates for the activities. While time measures among staff within HRIs have limited variance, there was a variance between the programs in staffing patterns and times, illustrating how the intensity of CAP deployment affects the cost measures. The cost of equipment, software, rent, and supplies was obtained from monthly spending reports. The non-direct administration personnel and other non-personnel fixed costs were allocated to the CPAN and TCHAT programs. These non-direct costs substantially increase the cost per service, especially for programs with low service volume. For example, in a CPAN program with a relatively low annual volume of 669 consults, non-direct costs (excluding COSH costs) amounted to \$1,107 per consult compared to \$73 per consult for the direct clinical time cost. For UNTHSC, the relatively high non-direct personnel and other costs were embedded in a contract cost category in the spending reports without detailed subcategories in their monthly financial report to allow us to specifically limit our cost data to only CPAN and TCHAT-direct clinical-related activities for this HRI; therefore, their monthly expenditure likely contained spending on other contracted group and/or TCMHCC programs resulting in the highest cost estimate for TCHAT programs and one of the high-cost programs for CPAN. This cost allocation issue will be investigated and corrected in next year's report if necessary. Another important issue to address in the next report is whether to allocate COSH and other system-level costs to the multi-dimensional outputs of the HRIs. The system-level non-direct costs will increase the estimated cost per consult, especially prior to fully scaling up the programs. Finally, clinic and school recruiting activities were still in process during year two. Clinic recruitment will increase the service volume and spread the fixed costs across more consults.

The literature on 3rd party payment and the cost of providing comparable mental health services is sparse. No peer-reviewed studies were found on peer-to-peer consults for adolescent mental health. Naslund et al.⁷ published a systematic review of studies on the cost-effectiveness of telepsychiatry services. They found that the mean cost per telepsychiatry session across various studies was about US \$100 to \$200 per session in 2019 dollars for general psychiatric conditions. Spaulding et al.⁸ found that performing 250 telepsychiatry consultations for 132 unique children and adolescents across rural Southeast Kansas over a 6-month period cost an average of USD \$168 (\$252 in current USD), which includes personnel costs, administrative costs, line charges, equipment, and office space. Dooley et al.⁹ estimated the cost of pediatric clinic-based telehealth for cases with "low medical complexity" using time-dependent activity-based micro-costing (TDABC). Their cost estimate included a brief check-in time for administrative staff (3 minutes) and an 18.35-minute encounter by the provider. Their **overall labor cost estimate** for a telehealth MD visit was \$51.03 per visit (SD: \$7.56). Long et al.¹⁰ found that a 15-minute **nurse** visit via telehealth was about \$15.06 in labor costs alone. The authors estimated a value of \$57.11 per patient absence from the perspective of the school. Furthermore, the cost per missed school day to parents- including the need to provide childcare and miss a full day of work- was \$263 per absence. Teacher time to account for patient absences was about two additional hours of managing make-up work, leading to a total cumulative cost of \$405 per day of a patient absence. Telehealth led to a reduction of absences of 7-8%. While this study was not focused on mental health services, it provides an indication of telehealth's impact on student absences and the cost of these absences to the schools and parents, highlighting an aspect of the societal benefit of CPAN and TCHAT.

There is a wide range of reimbursement for telepsychiatry services by public and private payers in the U.S. There is very limited payment for peer-to-peer consults via telehealthcare, similar to the CPAN service. In May 2022, the Center for Medicaid and Medicare Services (CMS) listed payment rates for Interprofessional consults that ranged from \$18.69 for 5-10 minutes (code 99446) to \$73.71 for 30 minutes or greater (code 99449). The requesting physician must obtain consent: “I’d like to have consulting psychiatrist look at your record and give you some advice.” A large Houston mental health clinic anonymously provided information on their charge and payer reimbursement for tele-mental health delivered psychiatric evaluation and Rx management (code 99214). The clinic charges \$210 for the service, but reimbursement ranges from \$47.68 from Texas Medicaid to \$104.83 from Medicare Part B and \$106.43 from a large private insurance company. The clinic does not provide peer-to-peer consults due to low reimbursement. Limited reimbursement for mental health services has historically been a limiting factor in increasing the availability of mental health services, which is the basic rationale for the TCMHCC programs. Given the cost of providing the services and without a substantial increase in payment levels, the TCMHCC programs are critical to increasing mental healthcare access for children and adolescents in Texas. To provide the greatest possible access for adolescents in need of mental health care at the state-wide level, it is important to run the programs in the most cost-efficient manner. Comparison of the costs and service outcomes across the programs can help identify efficient strategies for personnel staffing and the use of non-personnel resources.

As the HRI programs learn, adapt, and gain scale in year three, we will refine the direct clinical care cost models and the administrative personnel overhead, and other non-personnel costs required for service delivery, and estimate the cost-effectiveness of alternative strategies for providing CPAN and TCHAT services. The TDABC values (wage rates, activity average times, mix of activities, and personnel) will serve as key parameters in decision analytic models for assessing uncertainty in the cost per consult estimates and exploring the cost-effectiveness of alternative staffing patterns and other service delivery strategies¹⁶. We will update our literature search by comparing the cost estimates to other peer-reviewed studies, examining the link between improving access to mental health services and quality of mental health care, patient health status, healthcare utilization, and healthcare cost. We will collaborate with the UTHealth School of Public Health Center for Health Care Data to determine the feasibility of assessing the impact of the TCMHCC programs on population-based self-harm rates and other mental health problems suffered by Texas adolescents. Finally, we will examine the feasibility of linking Texas Education Agency data on school-level absence rates to whether the school has instituted the TCHAT program compared to similar schools that have not instituted the program. Credible links to reductions in school absenteeism and mental health conditions would provide a basis for estimates of return on investment for the CPAN and TCHAT programs.

Key Challenges Identified and Solutions

Below are key challenges that we encountered as part of the external evaluation. Possible solutions are discussed when available.

No centralized database of the TCHAT program school district and school users exist. There is a lack of a centralized database of contacts across the TCHAT districts and campus

sites delayed surveys with school-site implementers. To compile a directory, our team reached out to main contacts from each of the 12 HRIs and requested complete lists of district-level and campus-level contacts for the districts selected in our survey sample. Only 5 of the 12 HRIs had a main contact for the districts selected in our planned sample. To obtain complete lists for these HRIs, we reached out individually to main contacts from 42 school districts and asked for a list of district and school personnel involved in the TCHAT program from their respective districts. Approximately half of HRI contacts responded (20 of the 42 districts). For the remaining 22 districts, we sent the survey to the main district contact identified by the HRI.

Duplicate CPAN provider information. Although we obtained a database of CPAN providers, we experienced challenges due to a lack of procedures for data validation. We identified duplicates, including cases where the same people work at multiple campuses, or have multiple roles. We spent a significant amount of time communicating with Trayt managers to determine a process to resolve these cases. This experience led to establishing the data workgroup meetings to discuss data inconsistencies with Trayt encounter and directory extracts.

Furthermore, there are limitations of codebooks for existing data collection systems. Due to the early phase of the Trayt-based data collection system development, we did not have access to a Trayt data dictionary, or codebook required to understand the Trayt data collection system, including to understand available data collected and to interpret Trayt's data count summaries provided. The external evaluation database planning, data extractions, and survey development (to design surveys that complement existing data) was subsequently delayed. We are now engaged with data governance and Trayt stakeholders to streamline our evaluation processes based on existing data.

Patient-level vulnerability data is limited. Due to the vulnerability of the studied population, there are current limits in the data able to be garnered and assessed in regards to patient-specific indicators of vulnerability (e.g., demographic, sex and gender, socio-demographic factors, as well as specific exposure factors of potential interest to the Consortium, e.g., COVID-19 pandemic-related trauma).

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APPENDICES

Appendix A. Detailed Process Maps

Figure 39. HRI CPAN Process Flow (UTHSCT)

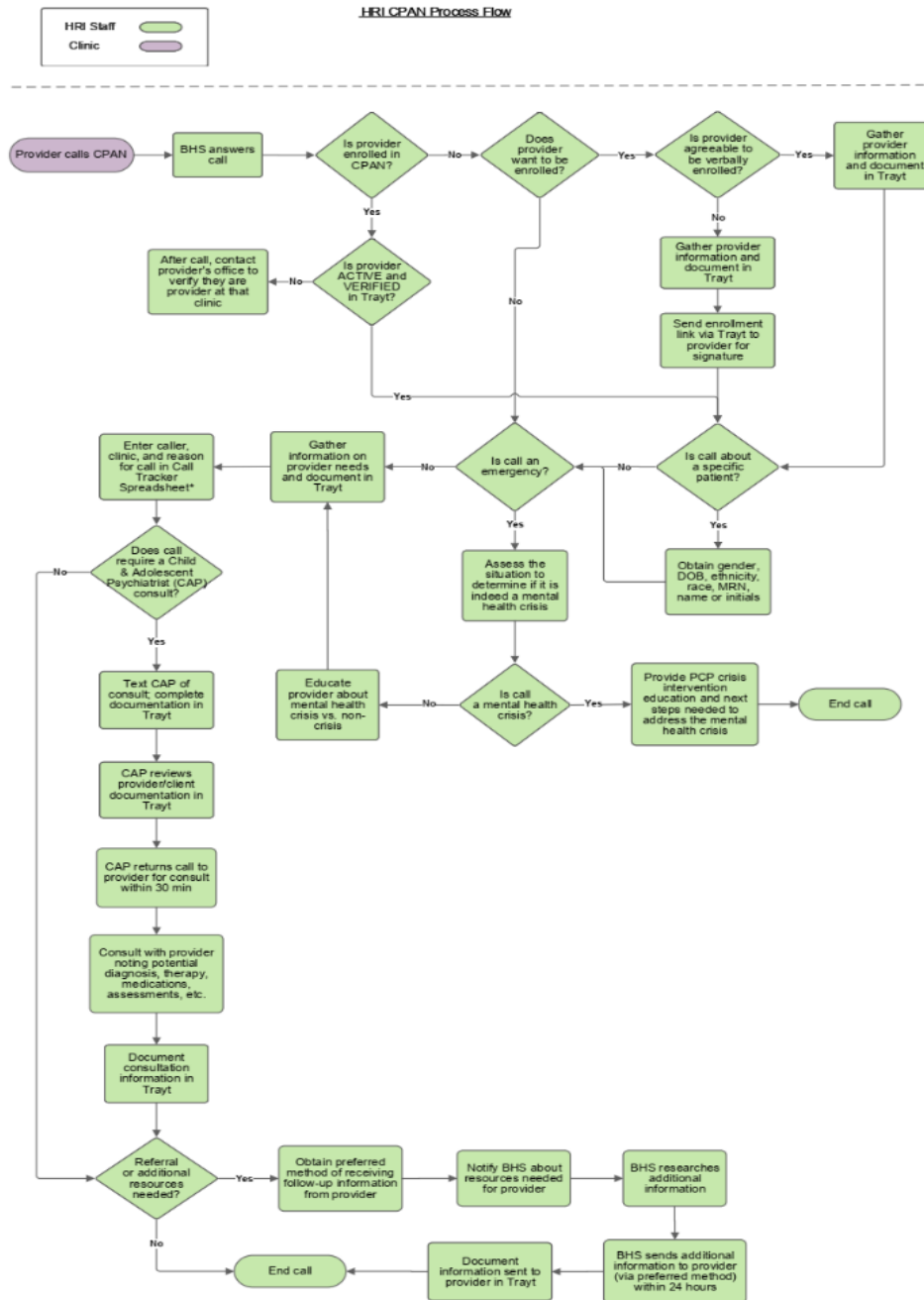


Figure 40. HRI TCHATT Process Flow (BCM)



Appendix B. Example of Time Survey Results, CAPS and Program Managers

Figure 41. CPAN (BCM) IMPLEMENTATION CAP SURVEY OF TIME PER CONSULT

Instructions: Below are a set of consults and related activities provided by CPAN staff. **Please insert the average amount of time per consult/activity (in minutes) for all personnel listed below.** Please think back over the work **in the previous month** for the estimates. If there are multiple personnel with the same job title, please average their time. If there are additional staff (defined by job title), excluding any PeriPAN or newly hired staff that are ARPA funded, that are not listed and conduct these consults/activities, please add a new column with their job title.

Consults/Activities	CAP Name	CAP Name	CAP Name	CAP Name	CAP Name	CAP Name
	Please enter your best estimate of the <u>average amount of time per consult/activity (in minutes)</u>					
Answer PCP call and collect PCP and patient information and reason for call; enter into Trayt	5	5	5	5	5	5
Review patient notes in Trayt prior to consultation (if PCP has called about the patient before)	5	5	5	5	5	5
Contact CAP (Child & Adolescent Psychiatrist) on-call; transfer call to CAP, or set up a callback time	5	5	5	5	5	5
Review case information in Trayt; call and obtain information from PCP about the patient; provide feedback to PCP; and document visit notes in Trayt regarding the diagnosis, therapy, and medications, etc.	20	20	20	20	20	20
Identify a referral if requested by PCP or recommended by CAP.	N/A	N/A	N/A	N/A	N/A	N/A
Call providers and update the referral database.	N/A	N/A	N/A	N/A	N/A	N/A
Provide consultation for calls requiring general information (e.g., regarding community resources or behavioral interventions) and document consult notes in Trayt. Include the time required to conduct research.	N/A	N/A	N/A	N/A	N/A	N/A
(Please insert any additional activities below for each staff member, including a brief description of the activity and estimated time in the appropriate column)						

Figure 42. CPAN (BCM) IMPLEMENTATION STAFF SURVEY OF TIME PER CONSULT

Instructions: Below are a set of consults and related activities provided by CPAN staff. **Please insert the average amount of time per consult/activity (in minutes) for all personnel listed below.** Please think back over the work **in the previous month** for the estimates. If there are multiple personnel with the same job title, please average their time. If there are additional staff (defined by job title), excluding any PeriPAN or newly hired staff that are ARPA funded, that are not listed and conduct these consults/activities, please add a new column with their job title.

Consults/Activities	Name, Behavioral Health Specialist	Name, Behavioral Health Specialist	Name, Behavioral Health Specialist	Name, Behavioral Health Specialist	Name, Behavioral Health Specialist	Name, Senior Medical Social Worker
Please enter your best estimate of the <u>average amount of time per consult/activity</u> (in minutes)						
Answer PCP call and collect PCP and patient information and reason for call; enter into Tragt	5	5	5	5	5	5
Review patient notes in Tragt prior to consultation (if PCP has called about the patient before)	N/A	N/A	N/A	N/A	N/A	N/A
Contact CAP (Child & Adolescent Psychiatrist) on-call; transfer call to CAP, or set up a callback time	10	10	10	10	10	10
Review case information in Tragt; call and obtain information from PCP about the patient; provide feedback to PCP; and document visit notes in Tragt regarding the diagnosis, therapy, and medications, etc.	15	15	15	15	15	15
Identify a referral if requested by PCP or recommended by CAP.	37.5	37.5	37.5	37.5	37.5	37.5
Call providers and update the referral database.	5	5	5	5	5	5
Provide consultation for calls requiring general information (e.g., regarding community resources or behavioral interventions) and document consult notes in Tragt. Include the time required to conduct research.	18.5	18.5	18.5	18.5	18.5	18.5
(Please insert any additional activities below for each staff member, including a brief description of the activity and estimated time in the appropriate column)						

Appendix C. Examples of TDABC Model Personnel Cost Estimates

Figure 43. Direct Clinical Care Cost Per CPAN Consult/Activity

Probability of Staff Present	Probability of Staff Present	CCR \$ (hour)	Time (min)	Time (hour)	Cost \$	Probability of Occurrence	Expected Cost \$
Answer PCP call and collect PCP and patient information and reason for call; enter into Tract							
Psychiatrist	0.044843049	186.278016	5	0.083333	15.52310592	1	0.696103405
Behavioral Health Specialist	0.955156951	50.3695756	5	0.083333	4.197447843	1	4.009221483
Review patient notes in Tract prior to consultation (if PCP has called about the patient before)							
Psychiatrist	1	186.278016	5	0.083333	15.52310592	0.082	1.272894686
Contact CAP (Child & Adolescent Psychiatrist) on-call; transfer call to CAP, or set up a callback time							
Psychiatrist	0.749295775	186.278016	5	0.083333	15.52310592	1	11.63139768
Behavioral Health Specialist	0.250704225	50.3695756	10	0.166667	8.394946057	1	2.104648448
Review case information in Tract; call and obtain information from PCP about the patient; provide feedback to PCP; and document visit notes in Tract regarding the diagnosis, therapy, and medications, etc.							
Psychiatrist	0.467862481	186.278016	20	0.333333	62.09260997	1	29.05080257
Behavioral Health Specialist	0.532137519	50.3695756	15	0.25	12.5923939	1	6.700885244
Identify a referral if requested by PCP or recommended by CAP							
Behavioral Health Specialist	1	50.3695756	37.5	0.625	31.48098475	0.46038864	14.49348775
Call providers and update the referral database							
Behavioral Health Specialist	1	50.3695756	5	0.083333	4.197447843	0.46038864	1.932457303
Provide consultation for calls requiring general information (e.g., regarding community resources or behavioral interventions) and document consult notes in Tract. Include the time required to conduct research							
Behavioral Health Specialist	1	50.3695756	18.5	0.308333	15.53060235	0.049327354	0.766083524
(Please insert any additional activities below for each staff member, including a brief description of the activity and estimated time in the appropriate column)							
Total Personnel Cost							72.65798209

Figure 44. Direct Clinical Care Cost Per TCHAT Consult/Activity

HRI Activities	Probability of Staff Present	CCR \$ (hour)	Average Time (min)	Average Time (hour)	Cost \$	Probability of Occurrence	Expected Cost \$
Initial Contact							
Review and process completed referral forms of students in need of TCHAT services							
Referral Coordinator	1	53.40963	30	0.5	26.7048164	1	26.7048164
Follow up with school counselors to obtain missing or additional information on students							
Referral Coordinator	1	53.40963	20	0.3333333	17.8032109	1	17.80321094
Consent to Care & Scheduling							
Reach out to families to provide more information on TCHAT services							
Referral Coordinator	1	53.40963	60	1	53.4096328	1	53.40963281
Obtain written consent for care from families							
Referral Coordinator	1	53.40963	30	0.5	26.7048164	1	26.7048164
Enroll student into Trayt/EMR							
Referral Coordinator	1	53.40963	60	1	53.4096328	1	53.40963281
Work with schools and/or families to schedule initial TCHAT session; conduct reminder calls for initial TCHAT session							
Referral Coordinator	0.003370787	53.40963	30	0.5	26.7048164	1	0.090016235
Behavioral Health Specialist	0.996629213	49.59466	20	0.3333333	16.531553	1	16.47582868
Providing TCHAT Services							
Assign assessments and questionnaires to students/families							
Psychiatrist	0.019889503	57.22461	30	0.5	28.6123033	1	0.569084485
Referral Coordinator	0	53.40963	15	0.25	13.3524082	1	0
Behavioral Health Specialist	0.980110497	49.59466	15	0.25	12.3986648	1	12.15206148
Conduct intake and initial assessment with students/families; document visit in EMR/Trayt; develop treatment plan for students							
Psychiatrist	0.019889503	57.22461	90	1.5	85.8369099	1	1.707253456
Behavioral Health Consultant	0.980110497	49.59466	135	2.25	111.587983	1	109.3685533
Schedule follow-up sessions for students; conduct reminder calls for follow-up sessions							
Behavioral Health Consultant	1	49.59466	15	0.25	12.3986648	1	12.39866476
Conduct follow-up TCHAT sessions with students/families; document visit in EMR/Trayt							
Psychiatrist	0.019889503	57.22461	60	1	57.2246066	1	1.138168971
Behavioral Health Consultant	0.980110497	49.59466	110	1.8333333	90.9235416	1	89.11511754
Communicate with school counselors; provide status updates on students receiving TCHAT services							
Behavioral Health Consultant	1	49.59466	60	1	49.594659	1	49.59465904
Determine ongoing care recommendations for students; document recommendations and care type in EMR/Trayt; communicate recommendations to students/families							
Psychiatrist	0.01980198	57.22461	30	0.5	28.6123033	1	0.566580263
Behavioral Health Consultant	0.97579758	49.59466	30	0.5	24.7973295	1	24.19717413
Care Coordinator	0.00330033	38.14974	60	1	38.1497377	1	0.125906725
Identify referral for students (if needed); assist in getting the referral processed and student established							
Behavioral Health Consultant	1	49.59466	30	0.5	24.7973295	0.2629263	6.519869917
Other Activities (Please specify below and enter times)							
Research appropriate referral options and vetting those options.							
Care Coordinator	1	38.14974	60	1	38.1497377	0.2629263	10.0305691
Subtotal							512.0816175