

ENGAGEMENT, OUTCOMES, AND TELEHEALTH AT A MENTAL AND BEHAVIORAL HEALTH AGENCY DURING THE COVID-19 PANDEMIC:

A MIXED-METHODS, EXPLORATORY CASE STUDY



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CONFLICT OF INTEREST DISCLOSURE

The first three authors (Edouard, Lattanzi, and Song) certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

The fourth author (Melton) of this project is the spouse of the Executive Director of The Child Center. Therefore, we acknowledge a financial or other interest in the subject matter of the work in which Dr. Melton is involved, which may constitute a potential conflict of interest.

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EXECUTIVE SUMMARY

This report is a mixed-methods case study on the impact of the COVID-19 pandemic on The Child Center's (TCC's) service delivery, client outcomes, and cost-effectiveness. The systematic literature review summarized the potential of telehealth as a modality in behavioral and mental health. Our research used both qualitative and quantitative analyses covering a wide range of available and new data. Our research team talked to practitioners to learn about their perspectives and experiences. Parents and caregivers also provided feedback on their experiences with telehealth. However, there was no singular conclusion on the impact of telehealth on service delivery, client outcomes, and cost-effectiveness. Within these three areas of inquiry, our research demonstrated the varied benefits and limitations of telehealth, with nuanced impacts for clients and healthcare providers.

Some of the important findings of this study are as follows:

- TCC shifted almost all of its services to telehealth at the beginning of the pandemic, resulting in nearly 6,000 telehealth visits in April 2020, up from about 20 monthly visits in the months prior to COVID-19.
- Telehealth accounted for about 40% of all visits in April 2022, demonstrating its sustainability.
- At least 40% of parents and caregivers intend to continue using telehealth in the future.
- Telehealth is not particularly well suited to the needs of high-acuity individuals or younger children.
- Parents/caregivers viewed telehealth as a positive modality.
- Practitioners, parents, and caregivers identified costs associated with transportation, technology, and childcare as the most relevant changes when using telehealth.



As a result of interviews and focus groups with TCC staff as well as feedback on the parent/caregiver survey, this report provides six recommendations for practitioners using telehealth in a behavioral and mental health setting: **(a) plan effective engagement activities online; (b) address barriers to communication; (c) work with clients aged 12 and up; (d) pay attention to the home environment; (e) provide more formal training to practitioners; and (f) ensure reliable technology and connectivity.**

The findings and lessons learned from TCC should contribute to the growing body of research on telehealth as a tool for mental and behavioral health. The results of this particular study may not generalize well to all circumstances, but it has highlighted various avenues for future research. As with all new technologies, telehealth should be researched to understand the nature of its impacts, for whom it can be effective, and how practitioners can use it with fidelity.

INTRODUCTION



INTRODUCTION

The COVID-19 pandemic affected mental health across age groups and presented unique challenges to pediatric mental healthcare (Hopkins & Pedwell, 2021). Specific concerns for pediatric mental health included decreased in-person socialization with peers, the switch to remote learning, and increased economic instability experienced by families (Gotkiewicz & Goldstein, 2021). Due to the inability to have in-person contact during certain parts of the pandemic, these challenges required significant changes to service delivery for behavioral and mental healthcare agencies.

Telehealth has been a major tool in addressing these challenges. Researchers worldwide raced to study telehealth in a variety of contexts. Our literature review addresses recent scholarship on telehealth implementation and outcomes for pediatric mental and behavioral health. Before presenting our findings, we must acknowledge that we conducted this study in a radically different context than the onset of the COVID-19 pandemic or even during its early stages. Before the pandemic, telehealth studies in the United States tended to focus on the technology's potential to facilitate care in rural communities that lacked access to in-person healthcare resources compared to urban and suburban areas (Barnett et al., 2021; Davis et al., 2016; Glueckauf et al., 2002; Pradhan et al., 2019). The COVID-19 pandemic impacted people in all geographic locales, however, and led to increased telehealth usage in urban and suburban settings.

In addition to the shifting needs for telehealth research, the state of telehealth as a practice looked different in the pre-pandemic world. Before the pandemic, healthcare in the United States was less reliant on telehealth to meet care demands (Mahtta et al., 2021). Increases in telehealth use starting in 2020 are directly associated with the COVID-19 pandemic (Curfman et al., 2022). The pandemic was an important component of the story of telehealth delivery and marked a turning point for telehealth. Curfman and colleagues (2022) also caution that it is not yet clear what current telehealth practices should continue when the pandemic eases. Aside from sparking an increased demand for telehealth services (Harju & Neufeld, 2022), the COVID-19 pandemic has been detrimental to pediatric mental health (Listernick & Badawy, 2021). One survey of over 300 parents found significant adverse impacts on the health and well-being of children attributed to the pandemic, such as the upheaval of children's routines and prolonged home confinement (Masi et al., 2021).

With more people relying on telehealth, it is essential to reduce barriers to youth well-being introduced or exacerbated by the COVID-19 pandemic. At a behavioral and mental health agency like The Child Center (TCC), there is a renewed and redoubled need to study the effectiveness, efficiency,

cy, and equitability of telehealth. This report takes up that charge through a mixed-methods analysis of the impact of the COVID-19 pandemic on youth mental and behavioral health. This report begins with an overview of the literature on telehealth effectiveness in treating youth behavioral and mental health. Next, we present the quantitative and qualitative findings from our research. Finally, we conclude with a list of recommendations grounded in our findings that we hope will be helpful for mental and behavioral healthcare providers working around the country.

LITERATURE REVIEW

Procedure for Literature Review

The authors reviewed publications from February to April 2022. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines established by Page and colleagues (2021) to identify relevant studies. The authors used library databases at three universities for the search: Cornell University, Georgetown University, and the University of Minnesota. These three university databases returned all citations from the most frequently-accessed academic databases such as PubMed, PsychINFO, Web of Science, JSTOR, and others. We also screened reference lists from articles that met our inclusion criteria to harvest additional relevant literature. We included original, peer-reviewed research articles that were:

- With school-aged youth populations;
- Randomized control trials (RCT), quasi-experimental design (QED), nonexperimental studies, mixed/qualitative studies, or systematic reviews;
- Published between 2019 and 2022, and;
- Conducted in Organization for Economic Co-operation and Development member countries.

For the purposes of this review and study, we will refer to *youth* as all individuals aged 5 to 18 or “school-aged.” When referring to publications, we used the authors’ language (e.g., child, teen, or adolescent), though we only included publications or findings that fit our definition of youth. Appendix A provides more details about the results of the literature review and decisions about relevant research.

The initial search returned 1,530 relevant citations. Reference screening and personal communications among the research team led to the inclusion of an additional 28 and 15 articles, respectively. After screening the titles and abstracts of the 1,573 total articles and removing duplicates, 114 articles remained. The 114 articles were screened by reviewing the full text against inclusion and exclusion criteria. As a result, we removed 91 articles. After two rounds of screening, reviewers

selected a total of 23 studies, which included three RCTs, one QED study, nine nonexperimental studies (three clinical pilot studies, six correlational), six systematic reviews, three mixed-method studies, and one qualitative study.

Three themes emerged from our research that we discuss in the literature review: (a) efficacy and clinical outcomes of telehealth, (b) accessibility of telehealth, and (c) differences in cost-effectiveness between telehealth and in-person treatment. Below we synthesize the findings for each theme in detail.

Efficacy Outcomes of Telehealth

Patients' Clinical Outcomes

A total of nine studies found telehealth effective in treating a wide range of mental health issues in youth during the COVID-19 pandemic (Ellison et al., 2021; Fleming et al., 2020; Lindgren et al., 2020; Listernick & Badawy, 2021; Maggio et al., 2021; McLean et al., 2021; R. W. Stewart et al., 2020; Wright et al., 2021; Zhou et al., 2021). More specifically, five studies suggested that telehealth could achieve desirable post-treatment clinical outcomes; self-report and behavioral measures showed decreased symptom severity in internalizing issues (Wright et al., 2021), externalizing issues (RCT, Cohen's $d = 1.57$, Fleming et al., 2020), developmental delays (RCT, $d = 2.24$, Lindgren et al., 2020; pre/post, Maggio et al., 2021), and trauma-related disorders (pre/post, $d = 1.68$, Stewart et al., 2020). Four systematic reviews indicated telehealth was a feasible and effective format for Autism Spectrum Disorder (ASD) interventions, cognitive behavioral therapy, family therapy, acceptance commitment therapy, mindfulness, positive psychology, and other combined psychological interventions (Ellison et al., 2021; Listernick & Badawy, 2021; McLean et al., 2021; Zhou et al., 2021).

A few studies, in particular, emphasize the promising role of telehealth in treating a range of mental health and behavioral issues, evidenced by large effect sizes. One particular RCT (Lindgren et al., 2020) found that 38 children with ASD (aged 21–84 months) achieved a mean reduction of 98% in problem behavior ($d = 2.24$) in a 12-week period—highlighting telehealth as an effective and promising format for future ASD treatment. In another RCT, Fleming and colleagues (2020) found that telehealth was as effective as in-person treatment when treating early conduct problems, as indicated by significantly lower behavior problem scores measured immediately post-treatment and during six-months follow up (Cohen's d ranged from -1.2 to -1.7). This result was consistent with a pre-pandemic RCT conducted by Dadds and colleagues (2019) in which the authors observed similar reductions in aggression, impulsivity, and antisocial behavior across in-person and telehealth delivery formats for parent intervention training. Lastly, Stewart and colleagues (2020) investigated

the effectiveness of telepsychotherapy in treating post-traumatic stress disorder (PTSD) and reported that children and adolescents who had been diagnosed with PTSD showed clinically meaningful improvement in symptoms post-treatment, with 96.8% of participants no longer meeting the diagnostic criteria for PTSD after treatment ($d = 1.68$).

The research on telehealth for client outcomes was not universally positive. Telehealth was not effective for certain types of treatment across client populations. Four studies reported telehealth as inadequate in providing the following services: psychotherapy (Hoffnung et al., 2021), neurodevelopmental disabilities interventions (Masi et al., 2021), and eating disorder treatments (Wood et al., 2021). Authors cited the lack of required lab testing, difficulty engaging with patients, and children's loss of intimate personal connections with providers as some of the main concerns. In terms of different modalities, a systematic review (Zhou et al., 2021) found certain formats of online mental health interventions to be more effective than others. Online self-help platforms were the most frequently used modality and yielded the most satisfactory results in managing diverse mental health conditions among youth, while mixed evidence was reported for web-based applications, synchronous text-based chats, and artificial intelligence chatbots (Zhou et al., 2021). Though initial studies provide mixed evidence on the effectiveness of telehealth in treating youth with behavioral and mental health challenges, there remains a glaring lack of literature to replicate these results and how they might be applied across other settings.

Comparing the Effectiveness of Telehealth to In-Person Treatment

With telehealth's proliferation since the beginning of the COVID-19 pandemic, it is important that we understand the effectiveness of telehealth compared to traditional, in-person treatment. In particular, the transition from in-person treatment to telehealth was more difficult for certain patients than others. For example, Listernick and Badawy (2021) noted that the transition to telehealth resulted in children's loss of intimate, personal connection with an established therapist. For those children who had an existing intimate relationship with their therapist, the transition to telehealth services may have been particularly difficult. Additionally, adolescents suffering from higher levels of internalized symptoms, such as anxiety and depression symptoms, experienced greater difficulty in re-establishing a therapeutic alliance with their healthcare providers during the transition from in-person to telehealth sessions (Mekori-Domachevsky et al., 2021). In these instances, the computer was interpreted as an invisible third-party participant in telehealth sessions, stifling adolescents' ability to adjust to the transition to telehealth sessions.

Similarly, the timing at which a child began telehealth sessions influenced their perception of telehealth efficacy compared to in-person sessions. Compared to children who only engaged in virtual appointments, children who began working with a healthcare provider in person and then later

transitioned to telehealth at the start of the COVID-19 pandemic generally reported telehealth as less effective (Stewart et al., 2021). These contextual factors, and others, likely have an impact on the effectiveness of telehealth for all youth. In spite of these difficulties, youth did seem to adjust to telehealth more quickly than providers. Mekori-Domachevsky and colleagues (2021) found that more patients reported establishing a therapeutic relationship (intimacy, security, and comfort) using telehealth than providers using telehealth.

Despite the abrupt transition to telehealth brought on by the pandemic, telehealth can be an effective modality for treating mental and behavioral health. Several studies have found telehealth to be as effective as in-person treatment regardless of when the child transitioned to this modality (McLean et al., 2020; Ellison et al., 2021). The effectiveness of telehealth was noted across a range of mental health disorders, including oppositional defiant disorder, attention-deficit hyperactivity disorder, anxiety disorder, and anorexia nervosa (McLean et al., 2020). In other cases, telehealth was equally or more effective than in-person treatment, as was the case for children with ASD according to a systematic review that included 55 studies (Ellison et al., 2021).

However, there is evidence that suggests the type of therapeutic service and age may impact the efficacy of telehealth compared to in-person treatment. Research has shown that telehealth is preferred less for youth under the age of 18 than for adults, as measured by the rates at which clients terminate services (Hoffnung et al., 2021). According to this study, youth ended services during the COVID-19 pandemic at statistically significantly higher rates than adults, suggesting that youth were less likely to stay in treatment as mental health services transitioned to telehealth (Hoffnung et al., 2021). In addition, when in-person services resumed in May and June of 2020, youth rapidly shifted back to in-person services. Lastly, the authors of this study also found that children engaged in psychiatry used telehealth more than those in psychotherapy. In other words, children attended fewer virtual psychotherapy sessions compared to in-person sessions, while psychiatric treatment was less impacted by the change in delivery format.

Other research indicated that telehealth was less effective for children compared to in-person treatment, though this finding was less common in the literature we reviewed (Chakawa et al., 2021; Hoffnung et al., 2021; Fleming et al., 2020). For example, Chakawa and colleagues (2021) found that the odds of not attending a telehealth session were nearly four times greater than for in-person sessions for a large, inner-city sample. The authors assert that the magnitude of this effect warrants serious consideration of the treatment outcomes of telehealth. More research is needed to determine telehealth's effectiveness, especially as it compares to in-person therapy for all school-aged youth, for different presenting issues, and during the time of the COVID-19 pandemic.

Perceived Quality of Telehealth

An essential part of telehealth service delivery, especially during the COVID-19 pandemic, is the perceptions of patients, their caregivers, and healthcare providers. In our review, five studies reported overall positive experiences with telehealth during the COVID-19 pandemic using surveys of patients and caregivers. Patients using telehealth perceived an improvement in their hopefulness and positivity (Mekori-Domachevsky et al., 2021; Wright et al., 2021); patients also reported high engagement using telehealth (Nicholas et al., 2021; Stewart et al., 2021; Wood et al., 2021; Wright et al., 2021), and both parents and youth perceived telehealth to be easy to access and use (Mekori-Domachevsky et al., 2021; Nicholas et al., 2021; Stewart et al., 2021; Wright et al., 2021). Mental healthcare providers and clinicians also reported positive impressions of telehealth (Nicholas et al., 2021; C. Stewart et al., 2021).

Respondents to these surveys also commented on various concerns about the use of telehealth, including interpersonal connection, privacy, examinations, testing, and ever-present technical difficulties (Stewart et al., 2021; Wood et al., 2021). One study surveyed caregivers of children treated for neurodevelopmental disabilities and reported many negative experiences, with over half of the respondents not satisfied with the telehealth services their children received (Masi et al., 2021). There are notable challenges that come with providing telehealth, especially in school settings. Daftary (2021) interviewed school social workers and highlighted the predominant barriers they encountered when providing social-emotional telehealth interventions, including poor attendance, ineffective group interventions, technology-specific barriers, and concerns for students' privacy.

Another important area of discussion emerging from recent literature on telehealth involves its sustainability and whether patients will want to continue to use telehealth in the future. Two recent studies surveyed patients and providers to determine the potential future need for telehealth. In an Australian study, Nicholas and colleagues (2021) found high interest in continuing telehealth beyond the pandemic, with 65% of providers indicating moderate or extreme interest in continuing telehealth after the pandemic. In a mixed-methods study conducted in the United States, Stewart and colleagues (2021) observed similar sentiments among children and parents, with 48% of children and 55% of adults reporting they would be "happy" with both telehealth or in-person future care and 6% of children and 18% of adults *preferring* telehealth compared to in-person treatment. Since interest in the future use of telehealth seems likely, additional research on the impacts of telehealth is pressing. However, should telehealth continue to be an important tool for behavioral and mental health practitioners, the obvious question will be whether telehealth can produce similar or better results than in-person therapy and whether it can do so cost-effectively.

In summary, recent literature suggests that telehealth as a treatment modality can be effective in some contexts. Researchers have found telehealth to be effective in treating a wide range of mental health issues (Ellison et al., 2021; Fleming et al., 2020; Lindgren et al., 2020; Listernick & Badawy, 2021; Maggio et al., 2021; McLean et al., 2021; R. W. Stewart et al., 2020; Wright et al., 2021; Zhou et al., 2021). In comparison to in-person therapy, some studies reported that telehealth can be as effective (Hoffnung et al., 2021; Listernick & Badawy, 2021; McLean et al., 2020; Ellison et al., 2021). Constituents supporting telehealth services (patients, caregivers, and providers) reported overall positive experiences (Mekori-Domachevsky et al., 2021; Nicholas et al., 2021; Stewart et al., 2021; Wood et al., 2021; Wright et al., 2021) and a willingness to continue to use telehealth in the future (Nicholas et al., 2021; Stewart et al., 2021). There are, however, many barriers to effective implementation of telehealth that should be considered in any study of the modality (Daftary, 2021; Hoffnung et al., 2021; Masi et al., 2021; Mekori-Domachevsky et al., 2021). In spite of the recent research on telehealth in behavioral and mental health settings, there is still a need for studies to add to our collective knowledge and to fill gaps in the literature. Our research addressing the effectiveness of telehealth during the pandemic and how it compares to in-person treatments in pediatric populations will contribute additional information to the body of literature in a unique context (the pandemic), for underserved families (rural populations), and with data from multiple constituents involved in care (caregivers, therapists, support staff, and clients).

Accessibility of Telehealth

Accessibility of telehealth is determined by the extent to which patients and providers are able to successfully access and complete treatment via telehealth, given patient and provider resources and barriers. Historically, rural populations have had less access to the internet. One recent study on the barriers to utilizing telehealth provided more information on broadband internet access. Graves and colleagues (2021) found statistically significant differences in broadband internet access across geographical locations, with 20% of rural participants lacking access to adequate devices for online learning compared to 10% of their urban counterparts. Technological issues also act as barriers to telehealth accessibility. A quarter of surveyed adolescents and young adult patients and nearly one-third of caregivers reported experiencing technical difficulties during telehealth (Wood et al., 2021). Corroborating these results, one literature review identified the lack of access to the internet and/or personal laptops/computers as two notable challenges to implementing telehealth (Listernick & Badawy, 2021). Access to the internet and internet-enabled devices are not the only two barriers to telehealth.

There are more variables associated with inequitable access to telehealth beyond technology, such as race, age, and income (Harju & Neufeld, 2022). A patient's racial identity was associated with differences in telehealth attendance. Specifically, Black patients had lower attendance and more

scheduling issues while engaging with telehealth compared to White patients (Chakawa et al., 2020). In the same study, researchers observed a four-fold increase in the odds of non-attendance for telehealth appointments compared to in-person attendance. However, the reasons behind the increase in non-attendance were not fully explored in the study. More research must be conducted to address the potential systemic barriers that may create inequitable engagement and outcomes for certain youth populations. Luckily, federal and state funding during the pandemic helped ensure all students had access to the internet to facilitate remote instruction. These efforts significantly increased digital infrastructure and, as a result, warrant more research on the accessibility of telehealth for school-aged youth.

Cost-Effectiveness of Telehealth and In-Person Therapy

For behavioral and mental health agencies and practitioners, a necessary consideration beyond a particular treatment's effectiveness is the financial cost associated with delivering telehealth. The required costs associated with each modality may be an important determinant in the future use of telehealth for behavioral and mental healthcare. An important preliminary stage in determining which mode of treatment is more cost-effective is to first consider costs associated with overcoming barriers to accessibility in telehealth. In order to participate in telehealth, families must be able to provide their youth with devices and stable internet at a minimum, which can be a financial barrier for many families.

Geographic location is a major determinant of children's access to reliable internet, as well as in-person healthcare. As mentioned earlier in this review, children living in rural areas tend to face greater barriers in accessing broadband internet technology and connectivity—presenting a major challenge to the provision of telehealth services (Graves et al., 2021; Listernick & Badawy, 2021). Importantly, the lack of access to the internet results in the undertreatment of child mental health disorders, ultimately leading to worsening symptoms (Listernick & Badawy, 2021). However, the use of telehealth services has been found to be more affordable in other ways. In particular, the families of telehealth patients were found to spend less on transportation costs as measured by miles saved and associated travel time (Norman et al., 2022). The authors found that 16% of patients and their families saved up to 10 miles, 39% saved between 11 to 50 miles, 16% saved between 51 to 100 miles, and 28% saved between 101 to 200 miles. Norman and colleagues (2022) also found that financial barriers persist for some clients and healthcare providers, especially as it pertains to working with out-of-state patients. The net effects of these transportation savings results in increases in telehealth accessibility by reducing barriers associated with seeking healthcare across large geographical areas.

Since the beginning of the pandemic, insurance agencies began viewing telehealth services more favorably. Before the COVID-19 pandemic, only one private healthcare insurer and one public healthcare insurer offered reimbursements for home telehealth services. However, as of the time of this publication, all healthcare insurers now provide coverage for telehealth (Norman et al., 2022). This study also found that reimbursement rates for telehealth and in-person services were equivalent. The overall cost-effectiveness of telehealth remains to be determined. Providers and patients each take on different costs to engage in telehealth compared to in-person therapy. The cost-effectiveness of telehealth, especially within the context of the pandemic, remains a critical area of study with few published research studies.

Summary of Literature Review

Our systematic review of the literature on telehealth sought peer-refereed articles on the use of telehealth for the treatment of behavioral and mental health of school-aged youth in the United States since 2019. Our initial search produced 1,573 total articles across several databases and 114 unique publications (see Appendix A, Table A1). After applying a more thorough review of the unique publications, our synthesis includes 23 articles (see Appendix A, Table A2). After our systematic coding and review process, we found the articles could be summarized across the following three themes: (a) effectiveness of telehealth on patient outcomes, (b) accessibility of telehealth, and (c) cost-effectiveness of telehealth compared to in-person treatment.

Telehealth was an essential solution for behavioral and mental health practitioners during the COVID-19 pandemic when in-person therapy was not possible. Our review of the recent literature highlights some of the advantages and challenges of delivering and engaging in telehealth. While many studies found telehealth to be a useful and practical tool for delivering care, more research is needed to reconcile areas of mixed or contradictory findings. For example, Norman and colleagues (2022) found telehealth reduced transportation costs and travel time for many families. However, rural families may still face barriers to accessing telehealth, such as stable internet or access to technology, which may reduce access and use (Graves et al., 2021; Listernick & Badawy, 2021). The literature lacks consensus on telehealth accessibility, especially within the context of the pandemic. Accessibility remains, nonetheless, an important precursor to receiving telehealth for all youth. Our study can help reconcile the gaps in the literature by providing more evidence on telehealth access and use, particularly for families in rural geographical locations.

Most of the recent research on telehealth focused on its effectiveness across youth outcomes. In general, telehealth was an effective tool in improving child behavioral health and mental health outcomes, especially in terms of reducing problem behaviors and improving social communication (Ellison et al., 2021; Lindgren et al., 2020; McLean et al., 2021); reducing early conduct problems

(Fleming et al., 2020); reducing anxiety and depression in youth and parents (Listernick & Badawy, 2021; McLean et al., 2021; Wright et al., 2021; Zhou et al., 2021); improving cognitive functions (Maggio et al., 2021); and reducing PTSD symptoms (Stewart et al., 2020). However, telehealth was a less effective solution for treating neurodevelopmental disabilities (Masi et al., 2021) and eating disorders (Wood et al., 2021). Though the field of research on telehealth dates back 30 years, it is important to consider evidence for its effectiveness with more recent technology and in the context of the COVID-19 pandemic. Much of the evidence in recent research showed the potential for telehealth to be an effective mode of delivery for behavioral and mental health services, though not for all youth. There is a great need for additional research on telehealth effectiveness, especially given the unique context of the pandemic.

Telehealth existed as a modality for delivering mental and behavioral health treatment prior to the pandemic, and it became the primary modality for a time at the outset of the pandemic. Telehealth will likely continue as a treatment modality in the future. Clients report being highly interested in using telehealth in the future (Nicholas et al., 2021; Stewart et al., 2021). The extent to which telehealth may be used in the future remains unknown, especially among youth. One study showed that youth ended psychotherapy treatment at a higher rate than adults (Hoffnung et al., 2021), and children were also less likely to report being interested in using telehealth in the future than adults (Nicholas et al., 2021; Stewart et al., 2021). Sustainability of access and effectiveness is another important consideration for studies of telehealth, though cost will likely be an important factor.

The most influential factor in the sustainability of telehealth for behavioral and mental health practitioners might be cost-effectiveness. It is entirely possible that the different effects of delivering treatment in-person and via telehealth might be offset by the cost-savings of one modality compared to the other. This question is especially relevant for practitioners who depend upon billing insurance carriers for telehealth services. Due to the COVID-19 pandemic, many, if not all, insurers cover the costs of providing telehealth (Norman et al., 2022). Early indications show that telehealth may provide some cost savings to clients and their families (Norman et al., 2022). There was only one study that looked specifically at the cost-effectiveness of telehealth and how it compares to in-person treatment. Our study will contribute to the literature on telehealth by adding findings on accessibility, patient outcomes, and cost-effectiveness during the pandemic, especially for rural and adolescent populations. In addition, our research will contribute to the literature by providing feedback from practitioners and parents/caregivers about their experiences with telehealth. The section that follows will lay out our research questions, design, and methodological approach for analyzing each question.

METHODS



METHODS

This mixed-methods case study used both quantitative and qualitative analyses to investigate the COVID-19 pandemic's impact on the delivery, efficacy, and cost-effectiveness of telehealth at The Child Center (TCC). The quantitative portion of our analysis included a range of study designs, such as a quasi-experimental, longitudinal growth model, non-experimental, and descriptive statistics. The qualitative data collected from the interviews and focus groups provided first-hand accounts of healthcare providers' experiences switching to telehealth in March 2020. In addition, their stories helped contextualize findings from our quantitative analysis.

In the sections below, we discuss in more detail the methodologies of both the quantitative and qualitative analyses of our case study. Our methods are organized by the four central research questions guiding our case study.

Qualitative Data



The research team used qualitative analyses to better understand how the transition to telehealth in March 2020 impacted TCC's ability to provide services and achieve client outcomes in a cost-effective way. The qualitative data substantiated, contextualized, and complemented our quantitative findings in order to identify best practices and lessons learned that can be shared with healthcare providers nationwide.

Our case study used three types of qualitative research: focus groups, one-on-one interviews, and surveys. We conducted focus groups via Zoom, a video conferencing platform, from June to July 2022 for the three programs at TCC with the most staff members. They included Day Treatment (DayTx), Intensive Outpatient Support Services (IOSS), and Outpatient (OP).

At least two members of the research team attended each focus group, performing the roles of moderator and notetaker. Moderators served as the lead focus group facilitator and were responsible for guiding the discussion and soliciting participant input. The notetaker recorded participants' responses into the protocol during the focus group. Afterward, they listened to the audio recording of the focus group, if one was available, and used the recording to fill in any gaps in their notes. Additionally, the notetaker asked follow-up questions during the focus group to ensure participants addressed all pertinent questions in the protocol. The two qualitative researchers alternated between serving as moderator and notetaker.

Focus groups lasted about 90 minutes. The researchers asked each program director to provide a list of five potential participants they believed represented their programs. Program directors were asked to supply names that, in their totality, comprised a diverse set of experiences in terms of, but not limited to, work experience, treatment modality used, and other relevant characteristics. Once identified, the research team contacted participants and invited them to participate in a voluntary focus group. A copy of the protocol was shared with participants ahead of the call. The research team also conducted five interviews with staff from smaller TCC programs, including Assessment, Crisis Response, Education, Parent Education, and Wellness. Interviews occurred during the same time period as the focus groups. Interviews lasted 60 minutes and took place over Zoom. The research team followed the same outreach and communication strategy used for conducting focus groups. The full protocols and communication templates can be found in Appendix E.

Participants in the interviews and focus groups provided consent to record the meetings, and the text transcripts were coded using NVivo (Version 12). The qualitative researchers then worked independently to group similar codes from NVivo and rename the broader constructs. The two researchers reviewed each other's independent coding and worked together to reconcile differences and finalize the coding themes.

Quantitative Data



Research Question 1: How has the COVID-19 pandemic impacted delivery of services at TCC? How has the delivery of services been impacted by state policies on masking and in-person gatherings?

Attendance data was collected from TCC's online database, *Credible*, for 3,633 clients across all programs (Assessment, Crisis Response, DayTx, Education, IOSS, OP, Parent Education, and Wellness). Descriptive statistics showed the change in overall agency visits from January 2019 (pre-pandemic) through December 2021 (mid-pandemic). Further delineating attendance between scheduled visits, reschedules, or no-shows, we used a logistic regression to provide additional information about whether client attendance is associated with client demographics, timing within the pandemic, or the use of telehealth according to the following equation:

$$\log(\text{Attendance})_i = \beta_0 + \beta_{1,i}(\text{Demos})_i + \beta_{2,i}(\text{EarlyCOVID})_i + \beta_{3,i}(\text{OnGoingCOVID})_i + \beta_{4,i}(\text{Telehealth})_i + r_i$$

The model compared attendance rates pre-pandemic (January 2019 through February 2020) to early pandemic (March through August 2020) and through September 2020 and after. We com-

pleted two logistic regression analyses: the first outcome modeled attendance (dichotomous; re-schedules and no-shows counted as non-attendance), and the second was the likelihood of attending rescheduled sessions (dichotomous). *Telehealth* was a dichotomous indicator of whether or not a particular session was completed via telehealth, and *Demos* controlled for client background variables (race, ethnicity, gender, age, family income, and houselessness).

For clients in DayTx, additional engagement data from the work completion portion of their daily *Points Card* provided another measure. Rated daily on a scale of 0 to 4, clients receiving a 3 (“majority of work”) and 4 (“all work completed”) were considered to be adequately completing their work. We analyzed and compared the proportion of time clients completed at least a majority of their work in January and February of 2020 compared to their completion rate in March, April, and May of 2020. The pre-pandemic completion rate of work (January/February 2020) was also compared to the average work completion rate for clients in the fall of the next academic year (September through November 2020) to determine if there were any distal changes during the ongoing phase of the pandemic.

TCC staff provided their feedback on the delivery of service during the COVID-19 pandemic either through our focus groups or interviews. The protocol (see Appendix E) includes five questions (Q3 to Q7) devoted specifically to this topic. The overall themes were obtained according to the procedures outlined earlier in this report.

Parents/caregivers ($N = 107$) provided additional feedback about the delivery and use of TCC’s services during the pandemic via a satisfaction survey. The 20-question survey can be reviewed in Appendix F. Specifically, seven questions (Q2 to Q8) were designed to receive feedback on attendance and engagement with TCC’s services before and during the pandemic.

All quantitative data analyses were performed in RStudio Version 2022.02.3 (R Core Team, 2022). All qualitative thematic coding was completed using NVivo Version 12 (2018).

Research Question 2: How have client outcomes changed as a result of the COVID-19 pandemic? Were client outcomes impacted by the use of telemedicine?

Each program at TCC has a unique set of outcomes for its clients. For this reason, multiple, separate analyses were conducted to examine the efficacy of each program, especially with regard to telemedicine.

For DayTx and IOSS, the daily client *Point Card* data provided outcome data for behavioral, social, and emotional regulation skills. Like the prior analysis of work completion in RQ1, we ran a series of ANOVAs and looked at the clients' rates of demonstrating satisfactory skills (scores of 3 or 4) pre-pandemic (January/February 2020) compared to their ratings during the early pandemic (March to May 2020). We also ran an analysis of distal outcomes (September to November 2020) of rates of client performance to determine ongoing impacts of the pandemic.

For OP, we used notes entered by therapists in our data management system, *Credible*, to track clients' progress towards their treatment goals. We ran logistic regressions to look at the correlation between growth toward treatment goals and the amount of telehealth services clients received. Data were collected from January 2021 through January 2022, and the specific analyses included overall progress (*OverallProgress*, Equation 2) as a function of the percentage of client's telehealth visits and progress rating (*Progress*; Equation 3) per session compared to mode of delivery (telehealth or in-person). The detailed analysis equations are as follows:

$$\log(\text{OverallProgress})_i = \beta_0 + \beta_{1,i}(\text{Demos})_i + \beta_{2,i}(\text{PctTelehealth})_i + r_i$$

$$\log(\text{Progress})_i = \beta_0 + \beta_{1,i}(\text{Demos})_i + \beta_{2,i}(\text{Telehealth})_i + r_i$$

The Ohio Scales assessment (Ogles et al., 2000) provided additional data for the impact of telehealth dosage on changes in scale scores for OP clients. The Ohio Scales worker assessment (Ogles et al., 2000) was filled out by therapists every three months for problem severity and functioning. Both scales combined scores on 20 items to create a range of scores from 0 to 80. Scores below 20 on problem severity were considered low, whereas scores above 50 on functioning were considered high. An improvement of 10 points on problem severity and 8 points on functioning represent statistically significant progress within a year (Ogles et al., 2000). This analysis looked at the association between the number of telehealth sessions that clients received and changes in problem severity and functioning scale scores on the Ohio Scales. We collected data from June 2021 through April 2022 and ran a linear growth model to examine the changes in the scale scores over time. Individual-level demographics were used as control variables, and a predictor variable for telehealth determined if changes in scale scores were associated with the amount of telehealth a client received (versus in-person therapy). Equation 4 shows the linear growth model for the analysis.

$$\text{OhioScale}_{ti} = \pi_{0i} + \pi_{1i}(\text{Time}_{ti}) + e_{ti}$$

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Demos}_{0i}) + \beta_{02}(\text{InPersonSessions}_{0i}) + \beta_{03}(\text{Telehealth}_{0i}) + r_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Demos}_{1i}) + \beta_{12}(\text{InPersonSessions}_{1i}) + \beta_{13}(\text{Telehealth}_{1i}) + r_{1i}$$

For the Crisis program, *Credible* contained the data for the number of emergency department (ED) visits, number of crisis calls, and severity of crisis calls. We ran a series of ANOVAs to compare monthly totals across years from before the COVID-19 pandemic (2018 and 2019) to months during the early pandemic (March to May 2020) to determine differences in all three outcomes. Our analyses also included month-to-month comparisons during the pandemic (e.g., April 2020 to April 2021). We controlled for potential client differences using individual-level demographics.

For Parent Education, content knowledge and usage measures came from the *Collaborative Problem Solving (CPS) Parent Survey*, administered at the beginning and end of the course. The classes were held in-person and virtually prior to the COVID-19 pandemic but transitioned to fully online in March 2020. Our analyses looked at parent/caregiver responses on their feedback survey to questions about knowledge of the CPS curriculum and use of CPS strategies with their children. We compared average responses before and during the COVID-19 pandemic, controlling for individual characteristics and mode of delivery.

For our Education Program, we analyzed attendance, persistence, work completion, and grades from data provided by the school district and *Credible*. The Education Program provided at-risk students with a small classroom environment, as well as individualized instruction and group and individual therapy, to support them in completing their high school diplomas. State test data was not included due to its cancellation as a result of the COVID-19 pandemic. We presented only descriptive statistics for this program. Group comparisons were not possible due to the low number of students in this program.

As with the prior research questions, three questions included in the focus group and interview protocol provided insights from staff. Parents and caregivers provided their perceptions on eight questions related to client outcomes on the survey.

Research Question 3: As a tool for therapy treatment, how cost-effective was telemedicine compared to in-person treatments during the COVID-19 pandemic?

In practice, the costs associated with producing outcomes are of vital importance to agencies like TCC that rely on income from the government and insurance companies. This information is critical in negotiating contracts in fee-for-service models. Based on the prior outcomes of our programs, this analysis connected the costs associated with each set of outcomes outlined in Research Questions 1 and 2. This analysis included outcomes from each of the following programs: DayTx, OP, IOSS, Education, and Parent Education. Of particular interest was the comparison between in-person and telehealth within each program.

In addition to the quantitative calculations of cost-effectiveness, several questions sought qualitative feedback from staff during the focus groups and interviews (Questions 11 and 12) along with from caregivers on the feedback survey (Questions 17-20). The analysis of these qualitative data followed the aforementioned procedures.

Research Question 4: What were the important lessons learned at TCC (strengths, weaknesses, unintended consequences, etc.) in response to the COVID-19 pandemic that will likely remain in the future?

The final research question sought to identify important lessons learned and areas for improvement at TCC in response to the COVID-19 pandemic that will likely remain in the future. The goal is to provide these lessons learned directly from staff, therapists, and families to be shared with other behavioral and mental health practitioners so they may learn from our experiences. To explore this question, we gathered perceptions during focus groups and interviews (Questions 13-16) along with the open-response questions (Questions 8, 16, and 20) on the feedback survey. Analyses of qualitative data followed the qualitative data procedures mentioned previously in this report. The protocols for the focus groups and interviews can be found in Appendix E. The feedback survey can be viewed in Appendix F.

RESULTS

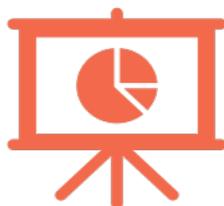


RESULTS

Overview of TCC Service Delivery

TCC operates seven different psychiatric, therapeutic, and special education programs for children, adolescents, and parents/caregivers, which include:

- 1. Mental Health Assessments:** Offers comprehensive assessments by a Qualified Mental Health Practitioner for youth and adults facing difficulty at home, school, or work.
- 2. Day Treatment (DayTx):** Provides full-day, comprehensive care for children and adolescents in preschool through high school with acute mental health disorder diagnoses. Clients in the DayTx program receive mental and behavioral health support, as well as academic programming to meet educational goals and outcomes.
- 3. Intensive Outpatient Services and Supports (IOSS):** TCC operated two intensive outpatient programs, an IOSS Day Treatment and IOSS community-based program (IOSS Unit). Broadly, IOSS provides in-home and community-based psychiatric, individual, and group therapy, as well as crisis response, skills building, and personalized academic programming services to children and adolescents experiencing acute mental health diagnoses.
- 4. Outpatient Counseling Services:** Offers mental and behavioral therapy for children and adolescents either in the school or community location. Outpatient therapy may include individual or family therapy.
- 5. Parent Education:** Offers education classes for parents, caregivers, and professionals using the Think:Kids Collaborative Problem Solving curriculum. Parent Education teaches parents/caregivers the skills they need to promote healthy relationships and communication with their children.
- 6. Wellness:** Assists children and their families in accessing resources that promote the mental and physical well-being of children and their families. This program helps connect clients to food, housing, healthcare, transportation, educational resources, and job training resources.
- 7. Crisis Response Program:** Provides immediate support for youth and their families during a mental health crisis. This program operates a hotline that is accessible to families 24 hours a day, 365 days a year. Crisis response services can be accessed directly by youth or by a family member.

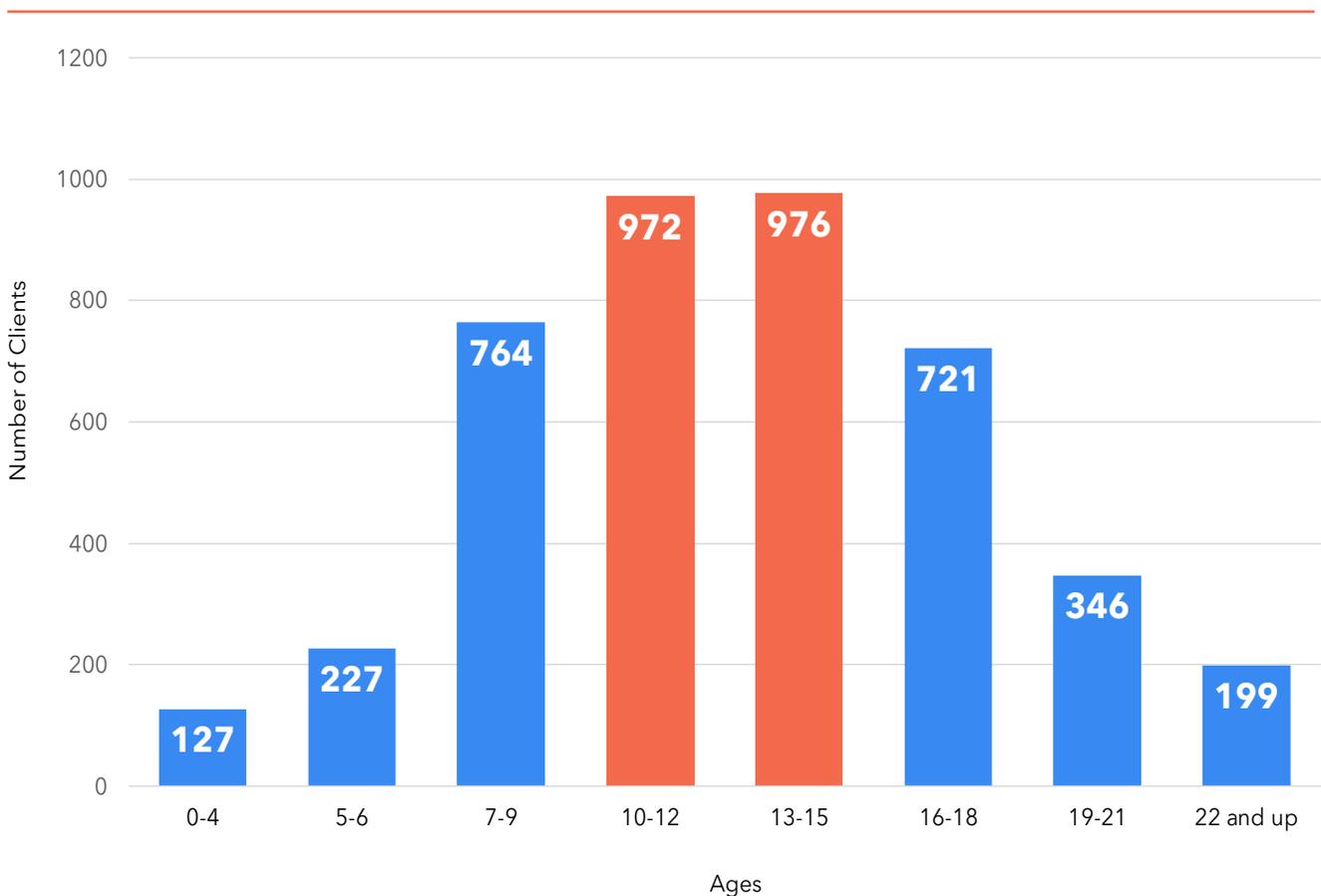


Research Question 1: Delivery of Services

Client Demographics

Between January 2019 and April 2022, TCC provided services to 4,322 clients, including children and caretakers, aged between 0 and 75 years (Average = 13.6 years). Figure 1 provides a breakdown of clients by age group. Of the 1,109 clients who reported their gender identity, 525 (47.2%) identified as female, and 510 (45.9%) identified as male. A smaller number of clients ($n = 77$, 5%) identified as either non-binary, agender, transgender, or gender fluid.

Figure 1: Age distribution of TCC clients from January 2019 through April 2022 ($n = 4,322$)



A total of 3,628 (83%) clients reported their race, the majority ($n = 2,898$, 67%) of whom identified as White. Clients who identified with two or more races comprised 10% ($n = 451$) of TCC clientele. In addition, 1.3% ($n = 56$) of clients identified as Black, 0.3% ($n = 12$) as Asian, 4% ($n = 152$) as other single race, and 1.4% ($n = 59$) as either American Indian, Alaska Native, Native Hawaiian, or other Pacific Islander. Figure 2 provides a breakdown of the racial demographics of TCC clients. Figure 3 shows client ethnicity ($n = 3,024$), 13.7% of whom are Hispanic/Latino/Latina. Of those, the largest, specified ethnicity is Mexican ($n = 102$, 3.4%).

Figure 2: Racial representation of TCC clients (n = 3,628)

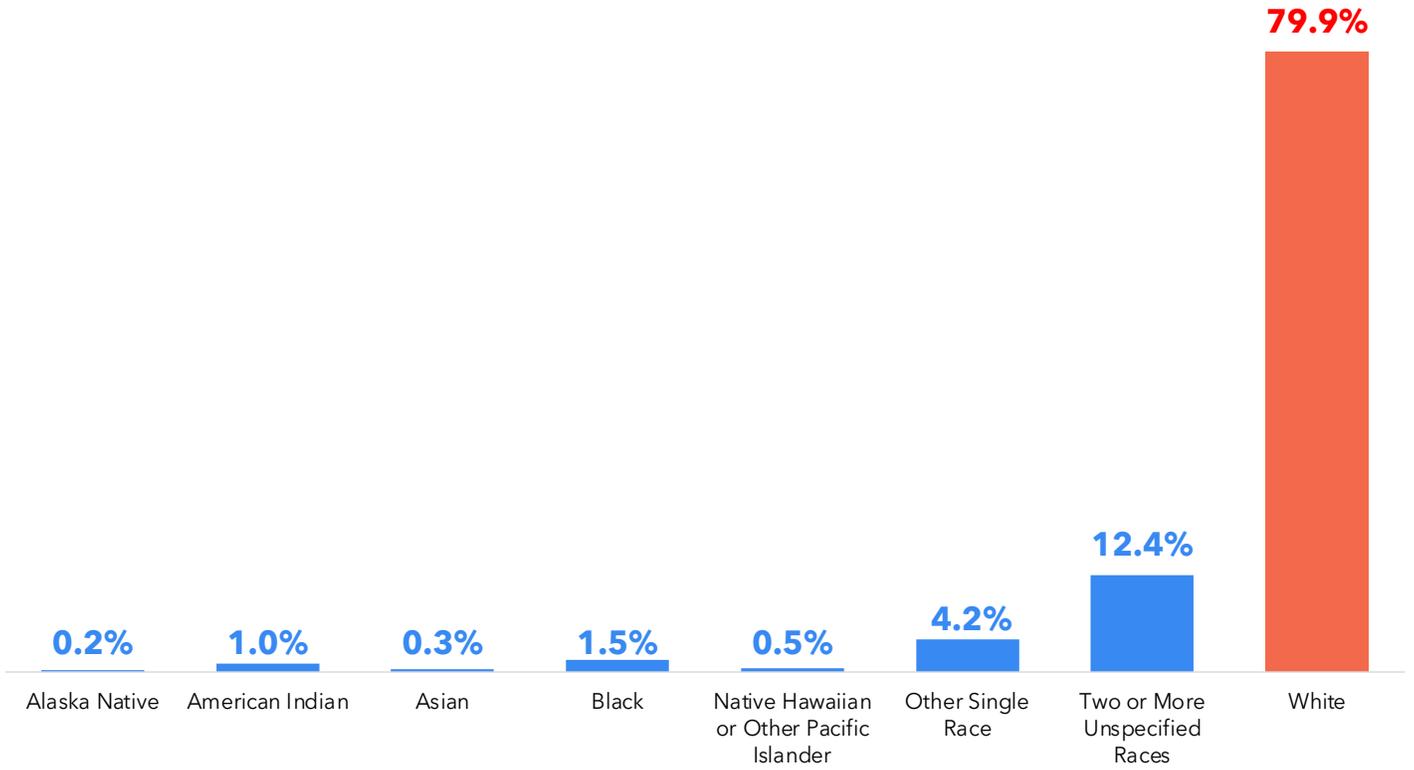
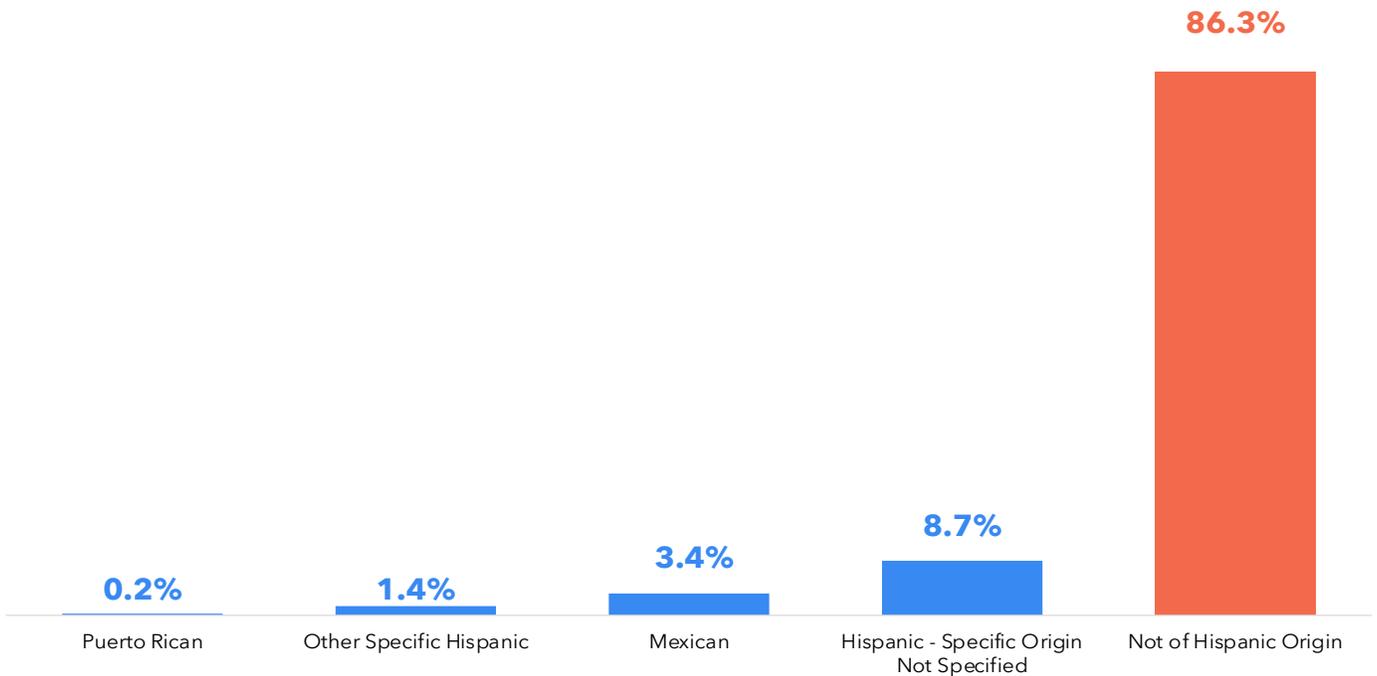


Figure 3: Ethnic composition of TCC clients (n = 3,024)



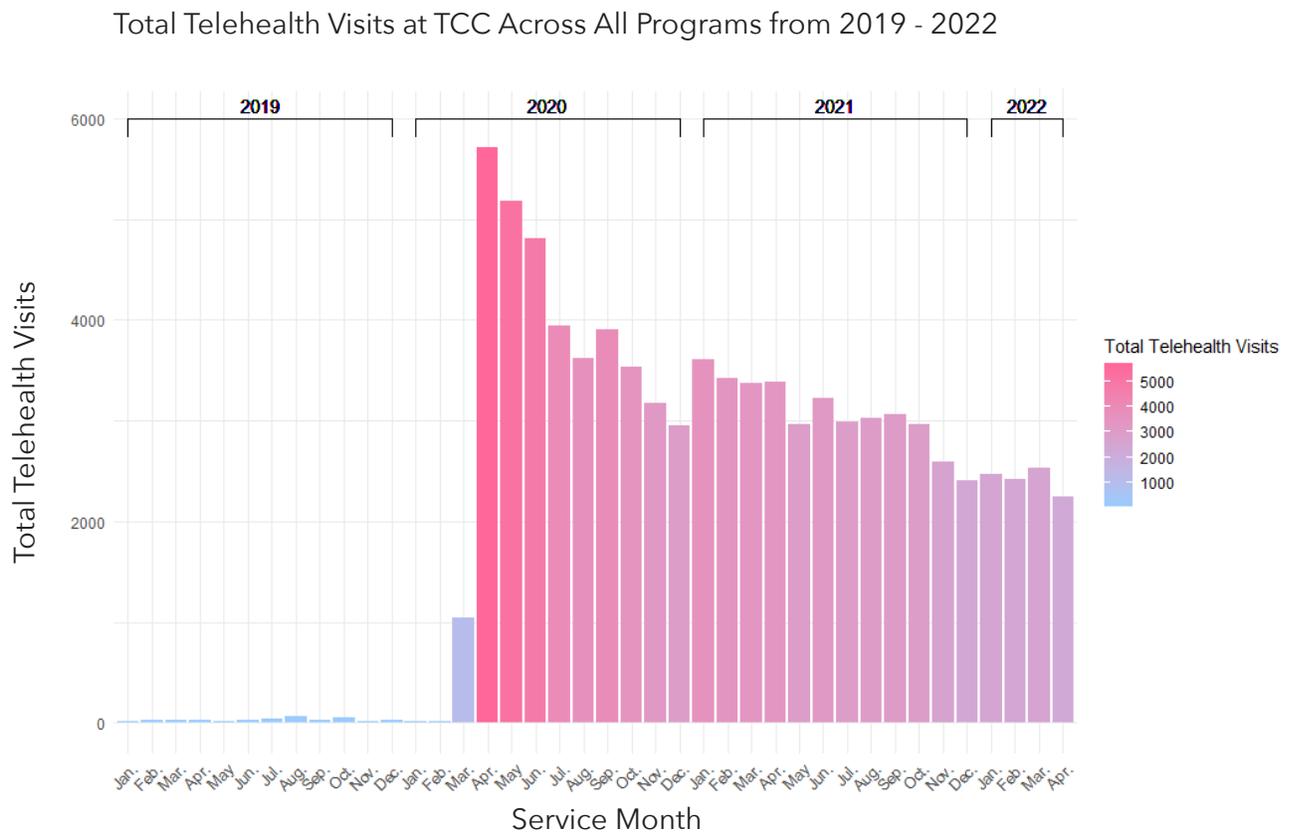
Agency Services

Prior to the onset of the COVID-19 pandemic, TCC offered 97% of services to children, adolescents, and parents/caregivers in person at either the Springfield campus, local schools, clients' homes, or locations in the community. Starting in March 2020, the demand for telehealth services skyrocketed due to the onset of the COVID-19 pandemic. However, of the 10 staff the research team spoke with, only one provider had experience delivering telehealth services before March 2020. With the government-mandated lockdown order in place as of March 12, 2020, TCC began operating entirely online—which it sustained from mid-March to June 2020. From that point forward, TCC offered both in-person and telehealth appointments to clients. In June 2020, TCC provided 73% of all billable services using telehealth.

The research team analyzed trends in the demand for telehealth services from January 1, 2010, to April 30, 2022. Based on the data presented in Figure 4, the majority of services provided by TCC took place in person, with the first noticeable uptick in telehealth services taking place between February and March 2020. At the time of the government-mandated lockdown in mid-March, there was a 5,500% increase in the number of telehealth services provided at TCC, from 19 telehealth appointments in February 2020 to 1,047 appointments in March 2020. In April 2020, telehealth visits accounted for nearly 6,000 appointments out of 7,291 total visits (in-person and telehealth combined).

From late 2020 to 2022, this number has slowly declined, largely due to the availability of hybrid and in-person services for select programs. TCC provided an average of 3,084 monthly telehealth appointments in 2021 and 2,415 monthly telehealth appointments in early 2022. This figure also highlights the slight increase in the use of telehealth appointments between December 2020 and January 2021 as a result of subsequent COVID-19 variant waves, such as the Delta and Omicron variants.

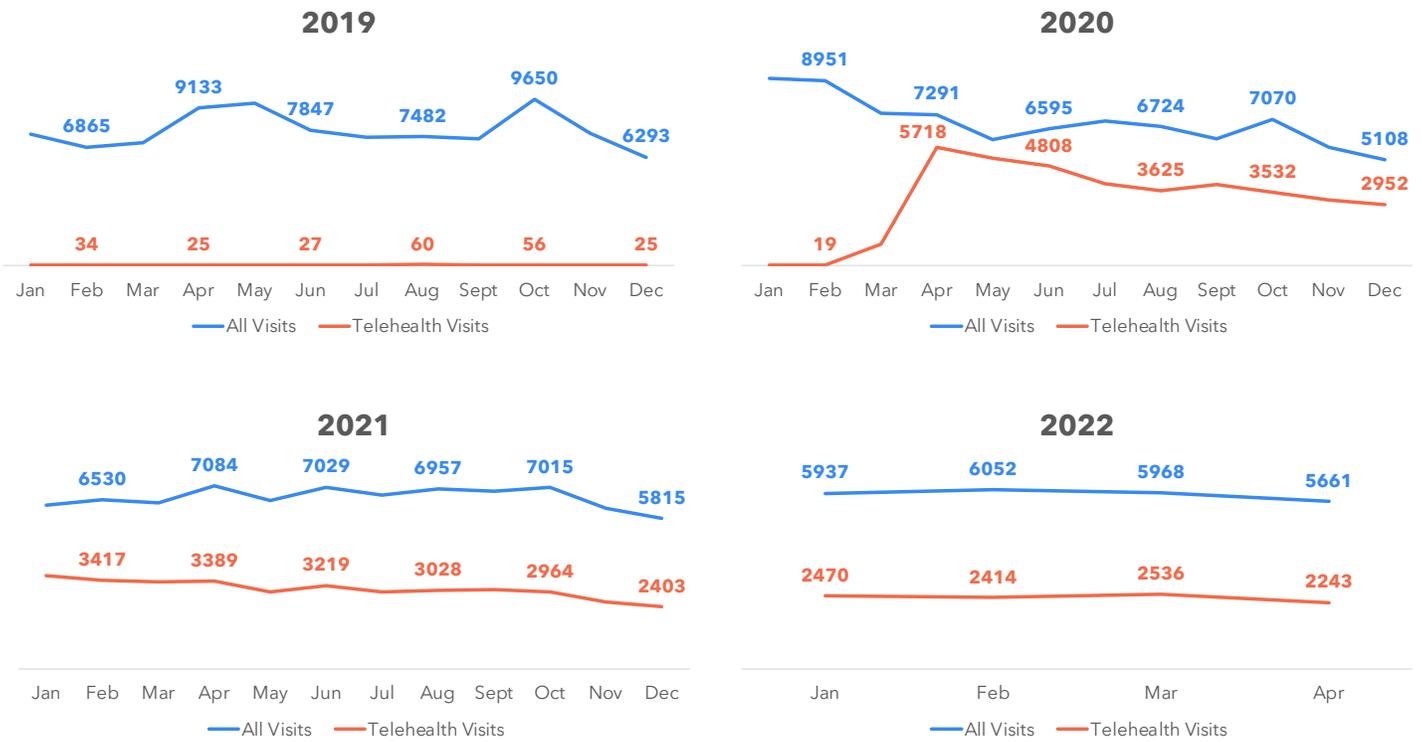
Figure 4: Total telehealth visits at TCC across all programs from January 2019 to April 2022



Additionally, Figure 5 details the total number of telehealth appointments as they relate to the total number of appointments agency-wide. Before the pandemic (January 2019 to February 2020), only 3% of client visits took place over telehealth, far below the 15% limit of approved telehealth service coverage set by health insurance companies. Immediately after the U.S. government-mandated shutdown took effect on March 15, 2020, the difference between the total number of appointments and the number of telehealth appointments decreased to the point that the two values were almost equivalent.

By June 2020, the number of telehealth appointments steadily but slowly declined. However, these trends were consistent with decreases in the total number of visits overall, specifically between March and November 2020. Since then, the number of telehealth appointments in relation to the total number of visits has generally remained constant. Since April 2022 and at the time of this report’s publication, 40% of TCC’s billable services have been on telehealth.

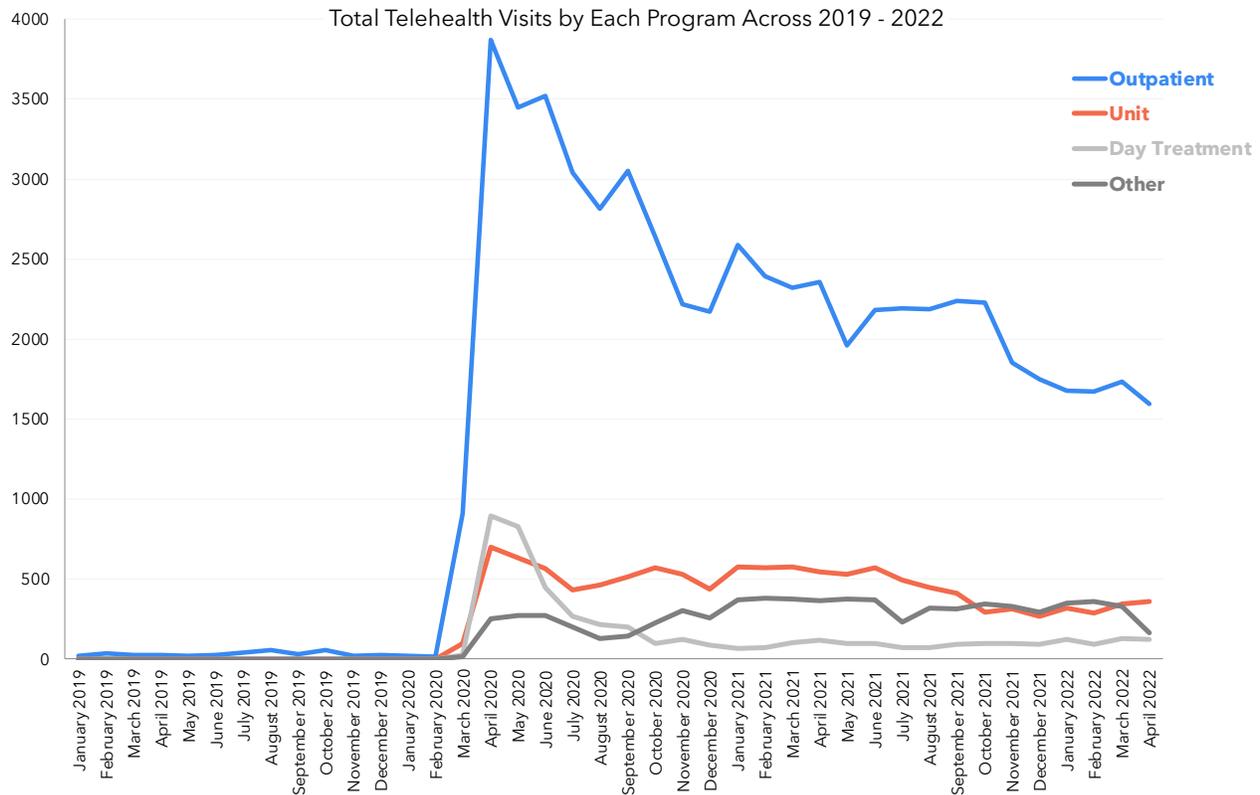
Figure 5: Total monthly visits and telehealth visits at TCC from January 2019 to April 2022



Trends in the number of telehealth appointments varied by TCC program. Figure 6 depicts telehealth trends by program from 2019 to 2022. Among all TCC programs, Outpatient provided the most telehealth services, with close to 4,000 telehealth appointments in April 2020 alone. Although demand for telehealth services in OP has not returned to its March 2020 peak, demand has remained the strongest compared to all other TCC programs. The IOSS Unit also experienced an increase in demand for telehealth appointments around April 2020, and this demand has remained relatively constant throughout 2020-2022, averaging between 200 and 400 telehealth visits per month.

According to this graph, the IOSS Unit only experienced a slight decrease in demand for telehealth appointments around October 2021, one month before the Omicron variant was identified. Furthermore, Day Tx was forced to transition to telehealth during the start of the pandemic like all other programs and services but quickly returned to in-person programming around June 2020. One exception to dominant downward trends in telehealth appointment demand at TCC is Assessment, which experienced a slower transition to telehealth during 2020 and gradually provided more telehealth appointments. On average, Assessment provided around 104 telehealth visits per month in 2020, 270 in 2021, and 197 from January to April 2022.

Figure 6: Total monthly telehealth visits by program at TCC from January 2019 to April 2022



Transitioning to Telehealth

Following the government shutdown in March 2020, staff faced a myriad of challenges in transitioning to telehealth. To navigate this transition period, staff sought out formal and informal training as a key resource to help improve their level of preparedness. Four interviewees (40%) had participated in formal training related to telehealth service delivery; however, staff did not attend the same training sessions, resulting in a discrepancy in staff members' level of preparedness to provide telehealth. One participant took part in a two-day, 16-hour virtual training on telehealth, which was taught by a practitioner with extensive experience in the modality. Another staff member paid for a private training on the technical aspects of telehealth. A third staff member completed training on how to provide Eye Movement Desensitization and Reprocessing (EMDR) therapy virtually. Lastly, one participant who was enrolled as a graduate student at the beginning of the COVID-19 pandemic was trained in telehealth service delivery through their coursework, which had been modified to include telehealth topics.

The remaining six participants (60%) had not partaken in formal telehealth training. Following the sudden shift to using telehealth, some staff made efforts to learn on the job to address their lack of preparedness to provide services remotely. For one participant, this meant learning how to use technologies like Zoom video conferencing through online tutorials. A second participant learned about Zoom from their supervisor. Two staff members collaborated with their colleagues to share

resources on telehealth with the goal of increasing TCC’s capacity to provide care in virtual settings. As a part of their effort, staff circulated a collaborative online document, which included hyperlinks to resources on telehealth service delivery. Individuals also shared resources and training opportunities via email.

Providers whose therapeutic work involves teaching did not share this need for formal training. Staff from one program articulated that virtual learning had such a negative impact on their clients’ education outcomes that more training on telehealth would not solve the problem. One provider described academic progress during virtual learning as a “standstill,” and when asked if more training on telehealth would have been beneficial to their experience, replied, “Honestly, not really for my age group.”

Providers agency-wide unanimously agreed that the initial switch to telehealth at the onset of the COVID-19 pandemic was turbulent and distressing. They indicated feeling “disoriented,” “caught off-guard,” and like they were “winging it” in their work with clients. As one provider stated, “My initial impression was chaos.” Reflecting on this, they connected the chaos to their inability to implement their usual “tools” for providing therapy, stating, “None of the tools that I had built I could do through Zoom, so it felt very disorienting and-I would say-chaotic.”

Prior to the switch to telehealth, staff utilized a variety of games, strategies, and toys to engage clients. However, these strategies did not easily translate into tools providers could use when interacting with clients via video calls. Instead, staff reported learning how to use a host of digital tools, such as whiteboards and virtual sandboxes, to engage clients. Speaking further to this experience, one provider recalled asking themselves,



“How do I do what I did in person in this tiny little square?”

When providers first transitioned their practice to telehealth, they faced several challenges related to technology. Agency-wide, technological difficulties were associated with internet connectivity issues, as well as a lack of knowledge among clients and providers on how to use the technologies needed to conduct telehealth. Other difficulties that staff faced included completing intake paperwork online or providing technical support for families in spite of providers’ own lack of comfort with technologies like Zoom and DocuSign.

Some staff perceptions of telehealth became more positive as they gained experience working in virtual settings. Four staff members who regularly conducted individual therapy with clients via

telehealth expressed favorable attitudes towards the modality for that activity, with one staff member equating telehealth to “having a comfort blanket.” Alternatively, one staff member admitted to having become “resigned” to their difficulty in using telehealth, given the advantages it provides to families.

Providers from four programs observed detrimental effects on their own well-being after switching exclusively to telehealth in March 2020. Providers expressed during interviews and focus groups feelings of isolation, as well as anxiety around delivering services competently on telehealth. Speaking on their feelings of isolation during lockdown, one provider recalled thinking to themselves,

 ***“I just did 8-hours of teletherapy, and I don’t have that group to process it with.”***

Three participants felt they had to expend more mental energy and effort to engage clients over telehealth compared to in-person treatment. For at least two staff, this necessitated spending more time planning for telehealth sessions compared to in-person. Additionally, staff reported experiencing more distractions during telehealth sessions, which negatively affected engagement. Staff framed distractions as an inevitable consequence of using telehealth, citing routine interruptions by family members, pets, and mobile devices.

Client Attendance

We wanted to understand how different COVID-19 periods, as well as other demographic factors, affected the probability that a client attended a regular session. Using data from 2018 through 2022, we fitted a mixed-effect logistic regression to model the likelihood of attending a session controlling for the different pandemic time periods (pre-COVID-19, January 2018 through February 2020; early COVID-19, March 2020 through August 2020; ongoing pandemic, September 2020 and after) along whether the session was telehealth or not. Our model included individual-level demographic controls (gender, age, race, and family income) as predictor variables that might be associated with attendance. All analyses were completed in R (Version 4.1.0; R Core Team, 2021), and all syntax can be found in Appendix C. To improve the accessibility of results, we converted all log odds estimates to probabilities using ($p = e^{\log \text{ odds}} / (1 + e^{\log \text{ odds}})$).

The statistical control in our analysis was a female client, less than 10 years old, whose family did not fall under the Federal Poverty Line (FPL). These clients averaged 90% attendance (log odds = 2.23) to regular in-person therapy during early COVID-19. Most factors were statistically associat-

ed ($p < .05$) with session attendance rates for our clients, including time period, session modality (in-person or telehealth), client age (teenager or not), client's gender according to insurer (binary), and family income (FPL eligibility). All model estimates are shown in Appendix C.

Holding all other predictors constant, the COVID-19 time period significantly predicted the probability of attendance increasing to 92% (95% CI [91%, 92%]) during ongoing COVID-19 when compared to early COVID-19. However, the model estimated lower average attendance of 89% (95% CI [89%, 90%]) for clients before the pandemic compared to the early months of COVID-19.

The effect of service modality, telehealth, was also statistically significant. When holding other predictors constant, the probability of attending a telehealth session was 86% (95% CI [85%, 87%]) when the service was delivered via telehealth compared to in-person therapy during early COVID-19. There was a significant interaction between telehealth and ongoing COVID-19, indicating an 89% average attendance (95% CI [88%, 90%]) when the client's session was on telehealth during ongoing COVID-19. The opposite was true for telehealth services delivered before COVID-19, with the model estimating a 96% (95% CI [95%, 97%]) average probability of attending a session higher than in-person sessions during the same time period.

Client's gender (according to their insurer and not identified gender), age, and family income were also significant predictors for attendance. Holding all other predictors constant, the model estimated male clients' average probability of attendance was 91% (95% CI [91%, 92%]), a statistically significant difference compared to female clients. Older clients (ages 10 and older) averaged an 88% attendance probability (95% [CI 87%, 89%]), lower compared to clients under the age of 10. Clients living in families with incomes lower than the FPL attended sessions with greater regularity, 91% probability (95% CI [90%, 92%]) on average, compared to clients whose families had higher income all else the same. There were no statistically significant interactions between the aforementioned demographic predictors and telehealth.

Client Engagement

Six staff provided insights related to client engagement and telemedicine during the pandemic. Participants rated the quality of caregivers' engagement during in-person sessions before the COVID-19 pandemic on a scale from one (lowest engagement) to five (highest engagement); the average answer was 4.67. Similarly, four of the participants rated youth clients' in-person engagement at a 3.60 average on the same scale. Six of the 10 TCC staff participants (60%) observed that the quality of client engagement improved during in-person sessions compared to telehealth during the pandemic, especially for children 12 and under. One staff member held a different opinion, believing that engagement was consistent between both modalities.

Providers unanimously agreed that children, especially younger children, could not sustain the same level of engagement in telehealth sessions compared to in-person treatment. The majority (85%) of TCC clients are between the ages of 5 and 18, and one-third are 12 and younger. Four participants, each working in different TCC programs, observed their younger clients struggle to maintain attention longer than 30 minutes and consequently planned shorter appointments with these clients when using telehealth. This was especially true for children, who were often and easily distracted by online games, videos, and their home environments. As one staff member quipped, “How do I do what I did in-person in this tiny little square,” referring to telemedicine.

Another staff member remarked that while in-person client sessions typically lasted 90 minutes, telemedicine appointments run closer to 60 minutes. This same staff member also noted that in addition to having to ask more probing questions to children, their responses over telemedicine tended to be shorter and less detailed. As this challenge became clearer over time, staff continued to take measures to accommodate decreased focus among younger clients, such as working with the child for the first half of a session and then shifting focus to parents and caregivers for the second half of a session.

Teenage clients did not seem to have the same overall issues with engagement. Three providers shared the perception that telehealth was effective and, in one case, “pretty *darn* effective” for teens. Another participant remarked that teenagers can engage providers on telehealth with “no problem.” Based on data collected from the parents/caregivers feedback survey, approximately 80% of parents/caregivers, as well as 60% of their children, reported feeling engaged during telehealth sessions. Importantly, survey data suggests strong interest among parents, caregivers, and their children to continue using telehealth in the future. When asked if telehealth use was part of their plans going forward, 64% of parents and caregivers and 44% of their children affirmed their interest in continuing to use telehealth in the future.

Telehealth Limitations on Service Delivery

Engagement was not the only facet of service delivery adversely impacted by telehealth. More specifically, virtual plans used to facilitate telehealth appointments cannot recreate the social environments conducive to community-based skills building. Staff from one program experienced significant limitations working via telehealth because it failed to offer sufficient social contexts necessary for clients to engage providers as they practiced essential skills-building, including emotional regulation, problem-solving, and communication skills. This limitation, along with findings from our quantitative analysis, suggest that therapeutic services should not be exclusively delivered virtually.

Secondly, staff from another program encountered setbacks when conducting virtual assessments. For one staff member, telehealth limited their ability to conduct the requisite observations to make confident diagnoses. This staff member further indicated they had more confidence in their ability to make diagnoses in person. Limitations on observations of client behavior have implications beyond initial diagnoses and also affect clients' treatment plans, as providers highlighted the importance of assessing clients' progress throughout treatment. Overall, telehealth hampered this effort.

Finally, the home environment was an additional limitation of telemedicine. Staff had a limited ability to control the therapeutic environment during telehealth appointments compared to in-person sessions, which they attributed to less effective therapy. Staff in three programs connected a client's outcomes (and even general satisfaction with treatment) to their ability to access a safe, private, and confidential space to use telemedicine. This is more than a concern for privacy. Multiple staff across three different programs identified the risk of parents/caregivers surreptitiously monitoring their children's telemedicine appointments—posing major concerns for child-provider privacy. One staff member reported that on several occasions, parents remained out of sight from providers, but could be heard correcting their child's response to providers or interjecting in the middle of their child's response. Another staff member from a different program controlled for this problem by setting ground rules with parents and requesting that their children have a private place to talk with providers. Moreover, the home environment poses severe limitations on TCC's ability to provide services to children. As indicated in one interview, some children may reside in households where family members have sexually abused or assaulted them. The presence of such relatives precluded children from talking openly with providers about their emotional and physical well-being. Providers were unable to ensure confidentiality over telehealth to the same extent as in-person care.

Interestingly, the technological requirements to conduct telemedicine acted as both an obstacle and facilitator, according to our staff. Technology problems such as poor connectivity acted as a barrier to service delivery. For example, one provider recounted an instance when a technical glitch required a child to repeat their account of traumatic experiences because the provider was unable to hear or see them. On the other hand, technology facilitates service delivery by allowing providers to connect with more rural clients than they otherwise would have been able to in person. As one provider mentioned, many clients live in rural areas and do not have consistent access to transportation. Working in a virtual setting allows rural clients to access services in spite of such barriers.

Advantages of Telehealth for Service Delivery

In spite of these shortcomings, staff identified several advantages to using telehealth. The switch to telehealth was simultaneously a switch to working from home instead of TCC facilities, clients'

homes, schools, or community spaces. After the initial adjustment period in spring 2020, which some interviewees described as “chaotic,” some providers associated moderate increases in their levels of productivity with the new modality. Outpatient and IOSS staff attributed this to their newfound ability to meet with more clients because of the time saved commuting. Another provider appreciated the ability to integrate household tasks like switching laundry into the workday.

Staff voiced appreciation for the newfound flexibility telehealth afforded them. One provider appreciated the option to schedule work at most any time throughout the day, even outside business hours, adding that “The flexibility in being able to work in this setting has been wonderful.” This flexibility extended beyond scheduling individual tasks and into working with clients. Telehealth enabled therapists to intervene with children and families during moments of crisis instead of responding after-the-fact as is typical with in-person services. One participant described this benefit stating,



“I am able to do some in-the-moment work because it is happening right on the screen, right in front of me.”

Participants across the agency saw the value of these “spur of the moment meetings” on the overall quality of their therapeutic work with clients.

Another benefit of telehealth for service delivery involves more opportunities for providers to generate informed insights into client behavior based on interacting with clients in real-world contexts at home and with family. One participant marveled, “What a different picture I get of their family life... There are some real benefits in the insights I get into their lives that I might not otherwise get.”

Furthermore, providers perceived that telehealth removed barriers for clients to access care. This was especially beneficial for TCC’s clients who live in rural communities or reside in areas located more than an hour away by car. One participant observed a drop in cancellations among clients who reside in rural communities after transitioning to telehealth. Telehealth expanded access for clients and their families, which benefited all of TCC’s programs. Similarly, staff noted the benefits of telehealth regarding the continuity of care. Even if only used irregularly or as a backup, telehealth enabled clients to attend regular sessions without interference due to sickness, travel, or living in multiple households.

Staff from four different programs asserted that, by diminishing barriers to treatment, telehealth made it easier for parents and caregivers to integrate TCC services into their work and family lives. Two providers also observed family members *more* actively engaged in the therapeutic process over telehealth.

As reported by staff from four TCC programs, telehealth seemed to make it easier for parents to integrate TCC services into their daily lives. Some providers even observed parents more actively engaged in the therapeutic process over telemedicine. Telemedicine also created novel ways for providers to engage with clients. For example, providers in two programs highlighted their ability to observe clients in their homes and evaluate family dynamics. One staff member remarked, “When you have a view into their household, you’re like, ‘Oh! I can see all the generational trauma, I’m seeing grandma and mom and everybody in this one little snapshot.’”

Summary of Service Delivery and Engagement

This section addresses how the COVID-19 pandemic and the associated switch to the telehealth modality impacted the delivery of services at TCC. After an overview of TCC's services and programs prior to the pandemic, we discuss the tumultuous transition to telehealth in March 2020 when providers navigated significant challenges around service delivery, including technical difficulties, the loss of material aids in treatment, and lack of training in the telehealth modality. Though some staff perceptions grew more positive over time, telehealth adversely impacted client engagement, especially for children 10 and younger, which forced some staff to shorten telehealth sessions. Staff encountered less difficulty engaging teenage clients on telehealth, though this varied by program. Drawing from staff experience, we identify notable shortcomings of telehealth; it cannot recreate social environments necessary for community-based treatment, and it complicates providers' abilities to assess clients' needs and progress in treatment. Advantages to providing services accompanied these shortcomings. Some staff reported increased productivity while working on telehealth. Others spoke to the flexibility afforded by telehealth for immediate crisis intervention and novel observations into clients' homes and family lives. Telehealth removes barriers to care, especially for clients in rural communities, and aids providers in maintaining the continuity of services when clients may not be available in person.

Qualitative Findings: Research Question 2

This section of the report will discuss trends in client outcomes from the start of the COVID-19 pandemic through August 2022, the benefits and limitations of telemedicine, and future areas of research.

Interview and focus group data indicate the use of telemedicine adversely impacted clients' mental, behavioral, and academic outcomes. Staff from four of the seven TCC programs reported worse client outcomes after switching to telemedicine, particularly in terms of adjustment disorders; severity of mental and behavioral health symptoms, such as suicidal ideation; and decreased academic attainment and graduation rates. Of note, staff reported young clients, ages 3 to 12, experienced worse outcomes partly due to a lack of peer support and challenges within the home environment. In several cases, staff noted that child clients received telehealth sessions while other family members were present in the room, which forced children to eschew sensitive but essential discussions. This was especially detrimental for children who lived in the same home as a parent or sibling who either neglected, abused, or otherwise perpetrated them. The lack of a safe and confidential environment for children to talk privately with providers, as well as the lack of in-person peer support, contributed to lower levels of therapeutic engagement, school engagement, family cohesion, graduation, and general motivation. Children with higher acuity mental health diagnoses

and those who lost social connections due to the pandemic were particularly vulnerable. Many of the adverse client outcomes staff observed at the start of the COVID-19 pandemic either persisted or worsened over time. In one instance, staff reported that as lockdown restrictions eased, they observed child client symptoms become markedly more acute. Staff saw an uptick in trauma-related symptoms and referrals, as well as increases in reports of parental abuse and neglect. The increased cases of acute, trauma-related symptoms did not seem to relate to a child's pre-existing mental health diagnosis. In other words, acute, trauma-related symptoms rose for all children as a result of the pandemic.

Academic Outcomes for High-Acuity Clients

Clients' school performance was also negatively impacted by the use of telehealth. For children with higher acuity diagnoses, virtual learning resulted in lower levels of student engagement and motivation. Staff highlighted the difficulty teachers faced in conducting lessons that could keep students focused, stating, "Honestly, we could barely get [students] to do anything, and most of the kids would say that as well." As a result, staff noticed more students were not making the same academic progress (e.g., on-time graduation) as they would usually make during in-person settings. This effect was not universal. Staff noticed that some students were still able to make academic progress in spite of the transition to virtual learning and that the negative effects of virtual learning were slightly correlated with a child's age: older clients (ages 12 and older) fared better with virtual learning compared to younger clients (ages 3 to 12). Overall, however, staff argued that academic gains realized by a small subset of students, the majority of students did not progress academically or, worse, regressed.

The deterioration of students' academic performance in school-based therapy was symptomatic of other trends within this program. More specifically, child outcomes had deteriorated to such a degree that there were at least five instances in which parents/caregivers removed their children from treatment altogether. On other occasions, children had become so violent towards TCC staff that they were discharged from treatment.

As one staff member articulated, "[The children] are now too acute for us even though we are the most acute program, and so there were a lot of kids that were lost during that transition."

Though staff reported worsening outcomes for clients during the pandemic, most of the daily classroom data does not corroborate these conclusions. Clients in the DayTx program receive daily assessments using a monitoring checklist of academic, behavioral, and social skills called the *Points Card* filled out by their teachers. Scores of 3 (“majority”) and 4 (“all”) indicate satisfactory scores for each of the measures on the Points Card: work completion, emotional regulation, classroom behaviors, and social skills. To investigate if client performance differed based upon the different phases of the COVID-19 pandemic, the average percentage of satisfactory performance was compared before COVID-19 (January to February 2020), during early COVID-19 (March, April, and May 2020), during the following summer (June, July, and August 2020), and during the following school year (after September 2020). Figure 7 shows that, on average, 69% of the clients completed satisfactory work before COVID-19, 65% during early COVID-19, 71% during summer 2020, and 79% in the next school year. However, a one-way repeated measure ANOVA revealed that the differences were not statistically significant ($F(2, 42) = 2.26, p = .12$) from one another.

Similarly, for social skills, the average percentage of satisfactory performance by clients was 62% before COVID-19, 57% during early COVID-19, 56% during the summer of 2020, and 65% during fall of 2020, as shown in Figure 8. A one-way repeated-measure ANOVA indicated that proportions of satisfactory work were not significantly different ($F(2, 47) = 0.87, p = .43$).

For emotional regulation skills, the average percentage of satisfactory performance by clients was 62% before COVID-19, 57% during early COVID-19, 56% during the summer of 2020 summer, and 65% during fall 2020, as shown in Figure 9. Again, a one-way repeated-measure ANOVA indicated that proportions of satisfactory work were not significantly different ($F(3, 66) = 1.78, p = .16$).

The average percentage of satisfactory performance on classroom behavior skills by clients was 59% before COVID-19, 53% during early COVID-19, 64% during summer 2020, and 70% during fall 2020, as shown in Figure 10. A one-way repeated-measure ANOVA indicated that there were statistically significant differences ($F(2, 46) = 5.16, p = .01$) in behavioral skills based on the different time periods. An additional mixed-effect, linear regression also returned a statistically significant estimate for the COVID-19 time period ($p < .05$). A post hoc analysis on the mixed-effect linear regression using the Tukey post hoc criterion for significance revealed that the average percentage of satisfactory work completed by clients was significantly higher in fall 2020 ($M = 0.70, SD = 0.29$) than pre-COVID-19 ($M = 0.59, SD = 0.28$) and early COVID-19 ($M = 0.55, SD = 0.36$).

These results show that for TCC’s highest acuity clients, daily performance may have seemed lower during the pandemic, but these differences were not statistically significant. The only statistical difference observed for this program was for classroom behaviors during the subsequent school year, a full 18 months from the beginning of the pandemic.

Figure 7: Average work completion for DayTx clients

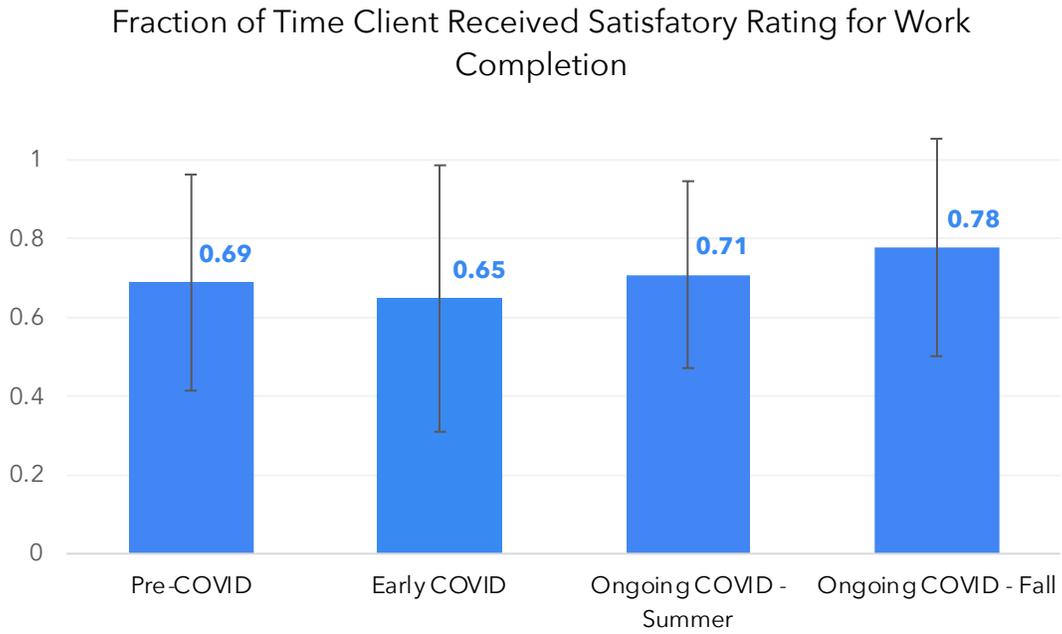


Figure 8: Average rating on social skills for DayTx clients

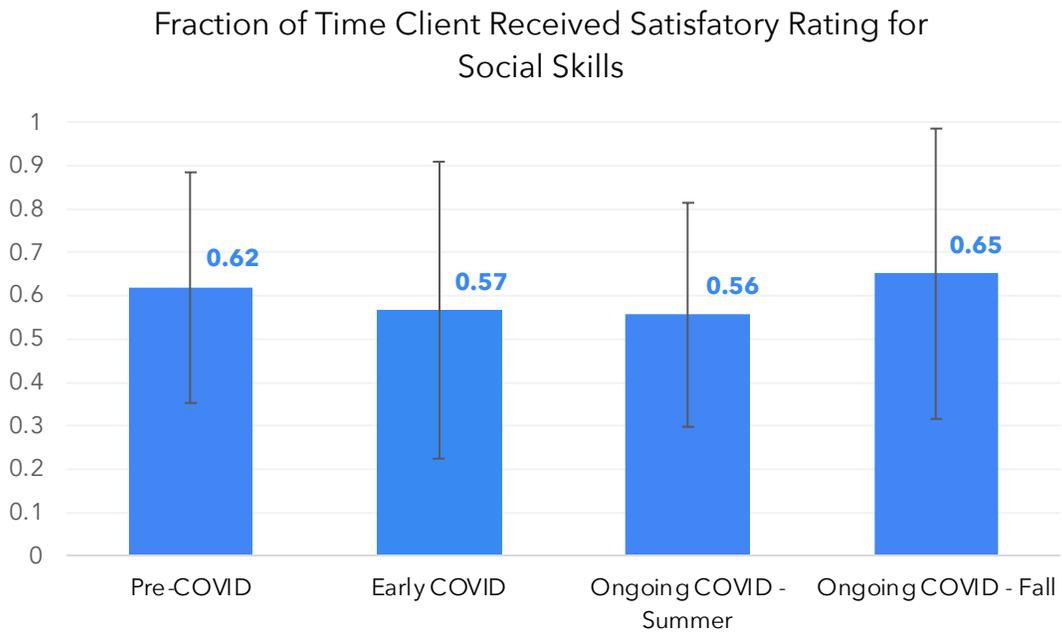


Figure 9: Average ratings for emotional regulations for DayTx clients

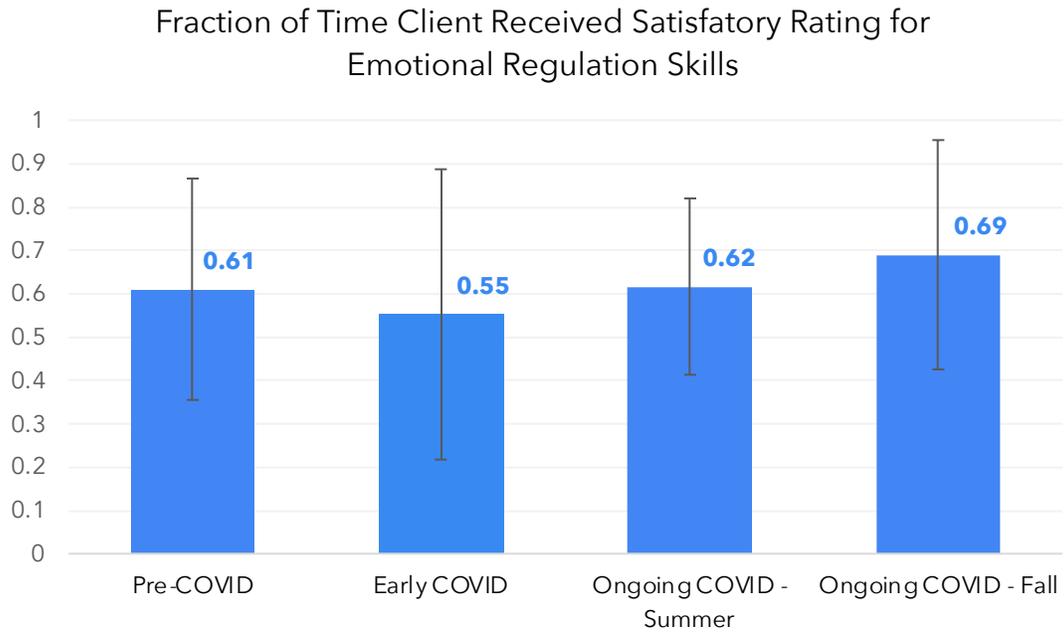
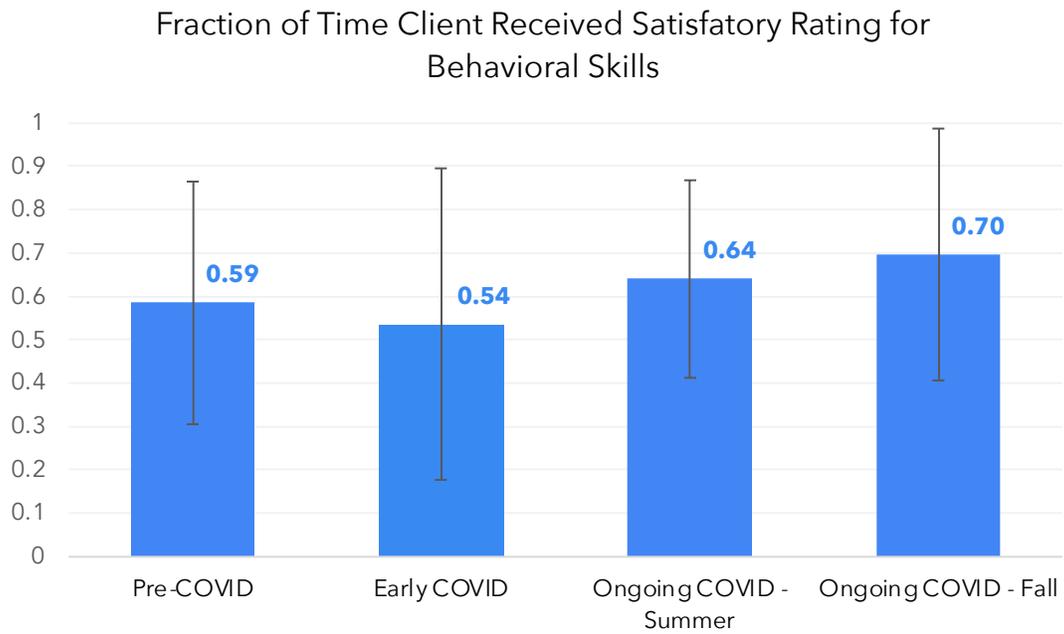


Figure 10: Average ratings of behavioral skills for DayTx clients



Client Problem Severity and Functioning Outcomes on the Ohio Scales

Starting in January 2021, TCC began collecting data from the Ohio Scales worker version (Ogles et al., 1999). Between then and April 2022, TCC staff completed Ohio Scales assessments for 505 clients. Only 106 clients had three administrations of the Ohio Scales, a minimum to build a linear growth model. The sample included clients aged 6 to 20 (Average = 12.3 years), 43% female (46 females and 60 males), and 84% FPL eligible. Among the 106 clients with three data points, 70 were Outpatient clients, 25 were in the IOSS Unit, and 14 were from DayTx.

The longitudinal models for problem severity and functioning were developed separately but similarly. Both growth models included random intercepts, random slope, and two client-level predictors: percentage of telehealth and program. Appendix D shows the model estimates and fit statistics for problem severity (Table D1). We will report based on the third model, the conditional growth model, because it provided the best model fit and illustrated a substantive difference between programs. This model, however, was unable to converge when telehealth was included as a predictor of slope; thus, it was left out of the final model. In this model, 99% of the variations in problem severity scores were within clients. For problem severity, a conditional growth model produced statistically significant estimates for the intercept for DayTx clients with no telehealth ($\beta = 32.3, SE = 3.0, p < .001$) but did not estimate a slope different from zero. This means that, for TCC clients, on average, their problem severity score remained consistent with their first recorded score. Over nine or more months, problem severity did not get better for clients, but it also did not get worse. The only program difference was that clients in Outpatient did have a statistically lower intercept ($\beta = -9.7, SE = 3.6, p = .007$) compared to DayTx and IOSS Unit clients. Figure 11 shows the scatter plot of actual Ohio Scales data across time, by program. Outpatient (in green) clients, on average, start with a lower problem severity than DayTx and IOSS Unit clients, but clients in all three programs exhibit no growth in problem severity over the first nine months of their treatment.

The model for functioning also estimated 99% of the variance within clients, and the slope was not statistically significant. This means that, on average, clients did not demonstrate any change in functioning on the Ohio Scales from their first recorded score. The unconditional and conditional growth models were not statistical improvements upon the null model. The average starting score on functioning for all clients was 46.1 ($SE = 0.97, p < .001$), and it did not differ across programs. Figure 12 shows the scatter plots of the data by program as well as the regression lines of best fit for the conditional growth model. Though slight differences are observed in the visual on the intercept as well as the slope (DayTx shows a slight upward slope), these differences were not statistically significant. This means that, overall, TCC clients in the three programs started treatment with non-distinguishable functioning scores, and those scores did not change over time. The amount of telehealth did not have a statistically significant correlation to clients' intercepts or slopes.

Figure 11: Ohio Scales Problem Severity (PS) subscale over time (months) by program

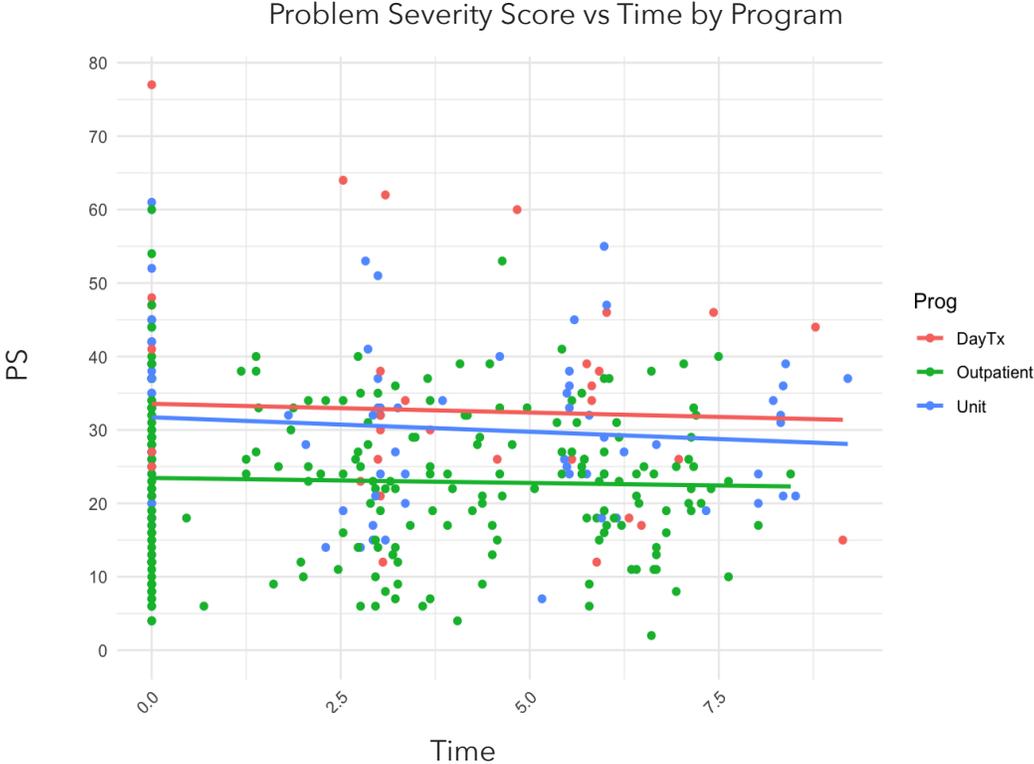
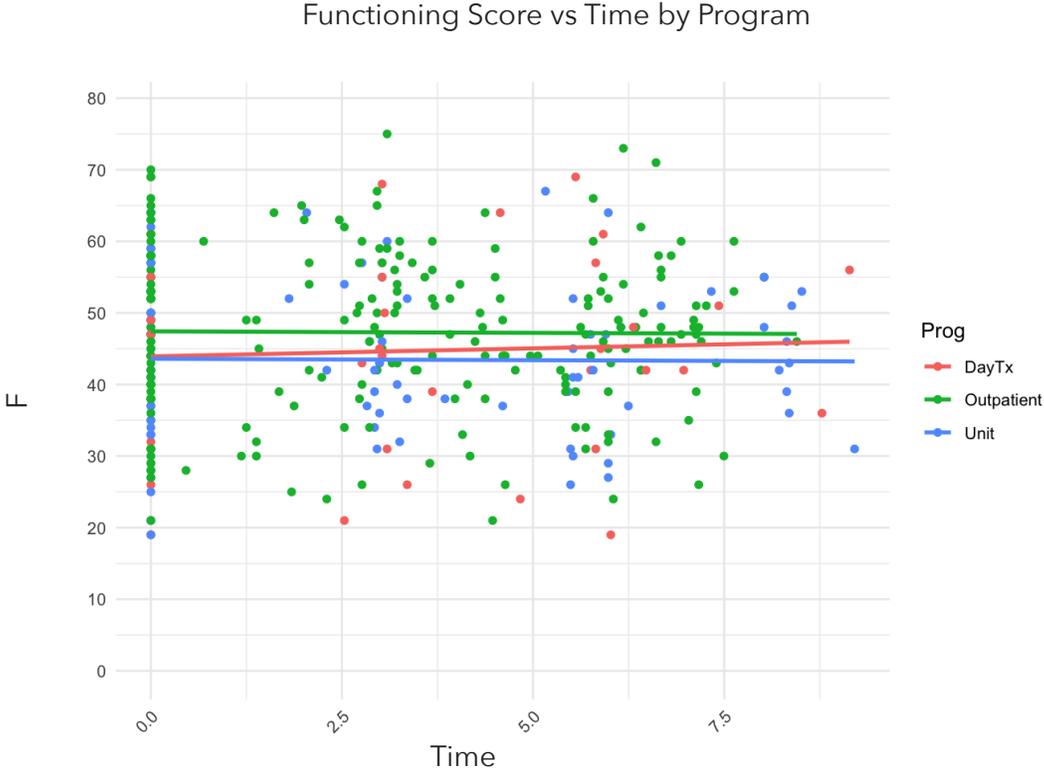


Figure 12: Ohio Scales Functioning subscale over time (months) by program



Outcomes During Crisis

In addition to the increased understanding of a child's home and family dynamic, telehealth increased TCC's capacity for immediate intervention for clients in crisis. Instead of working through crises when clients report them in sessions, telehealth affords therapists the ability to intervene with families at moments of peak crisis. In such moments, providers were able to better understand the crisis for later treatment, deliver immediate emotional relief, and coach parents and children on how to navigate through a crisis.

Figure 13 shows the total number of monthly crisis visits from July 2018 to April 2022. TCC received a monthly average of 123 crisis visits in 2018 and 134 in 2019. In April 2020, at the beginning of the COVID-19 pandemic, the Crisis Response Program at TCC observed a drastic decrease in crisis visits (43 visits). The monthly total crisis visits remained low throughout the remaining months of 2020 (monthly average = 42 from April to December) and the first three quarters of 2021 (monthly average = 55). The total number of crisis visits increased in September 2021, coinciding with the start of school and the return of increased in-person services in Oregon. The average crisis visits in 2021 and 2022 remained much lower than the pre-COVID period, with three exceptions (September 2021, March 2022, and April 2022).

To determine if there were statistically significant changes in crisis calls, months were grouped by COVID-19 time periods: pre-COVID-19 (July 2018 to February 2020), early COVID-19 (March 2020 to August 2020), 2020-2021 school year (September 2020 to May 2021), 2021 summer (June 2021 to August 2021), and 2021-2022 school year (September 2021 to April 2022). These groupings allowed for the comparison of rates across summer and the school year. A one-way ANOVA indicated a significant difference in monthly average crisis visits for the five COVID-19 time periods ($F(4,41) = 52.04, p < 0.01$). Post hoc analyses using the Tukey HSD test revealed that the monthly average crisis calls for pre-COVID-19 ($M = 121.0$) were significantly higher than all the following months (see Table 1). No significant differences were found between the monthly average crisis calls among the four other COVID-19 periods.

Table 1: Average number of crisis calls by time period

Time Period	Mean	Std. Dev.
pre-COVID	121.0*	15.3
Early COVID	53.8	23.1
2020-2021 school year	45.9	6.43
Summer 2021	50.7	4.73
2021-2022 school year	61.5	20.8

* $p < .05$

Often, calls received by the crisis team result in an in-person visit with a client. We wanted to determine if the COVID-19 pandemic impacted the frequency of these in-person visits. A client is at a higher risk for negative outcomes when they require an in-person visit by the crisis team. As shown in Figure 14, most crisis calls were resolved over the phone. On average, 29% of crisis calls resulted in sending out a crisis team from 2018 to 2022. A one-way ANOVA determined if the monthly averages during the different COVID-19 time periods were statistically different from one another. A one-way ANOVA indicated that the relative percentage of in-person visits by the crisis team statistically differed by COVID-19 time period ($F(4,38) = 5.68, p = .01$). A post hoc Tukey HSD test revealed that the percentages of a team sent in the 2020-2021 school year ($M = 0.19, SD = 0.07$) were significantly lower than pre-COVID-19 ($M = 0.31, SD = 0.08$) or the 2021-2022 school year ($M = 0.35, SD = 0.10$). No significant differences existed for the percentages of a team sent in the 2020-2021 school year and early COVID-19 ($p = 0.19$). In other words, a relatively smaller portion of crisis calls resulted in the agency sending out a crisis team during the 2020-2021 school year.

Figure 13: Total monthly crisis calls by situation type from July 2018 to April 2022

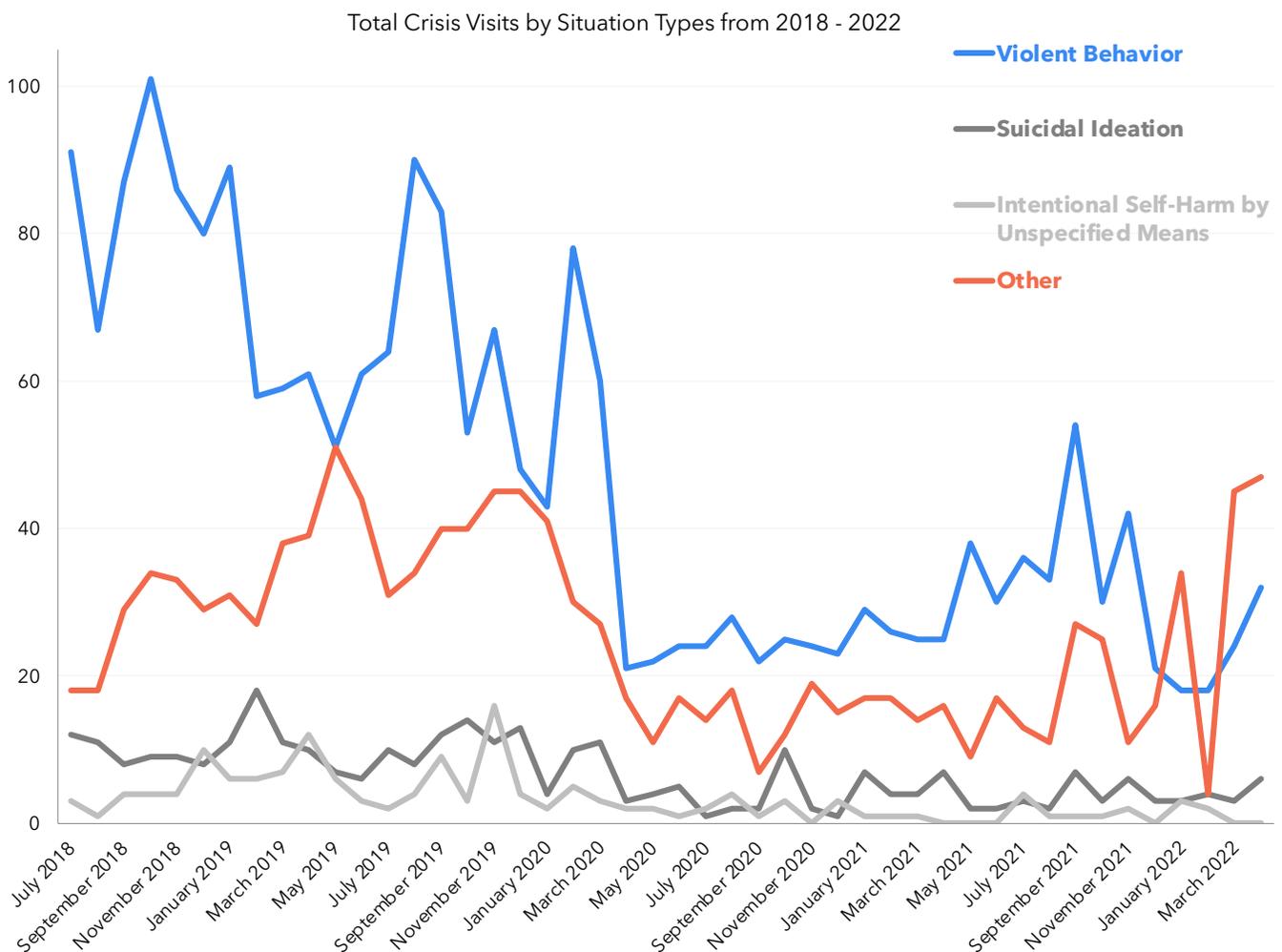
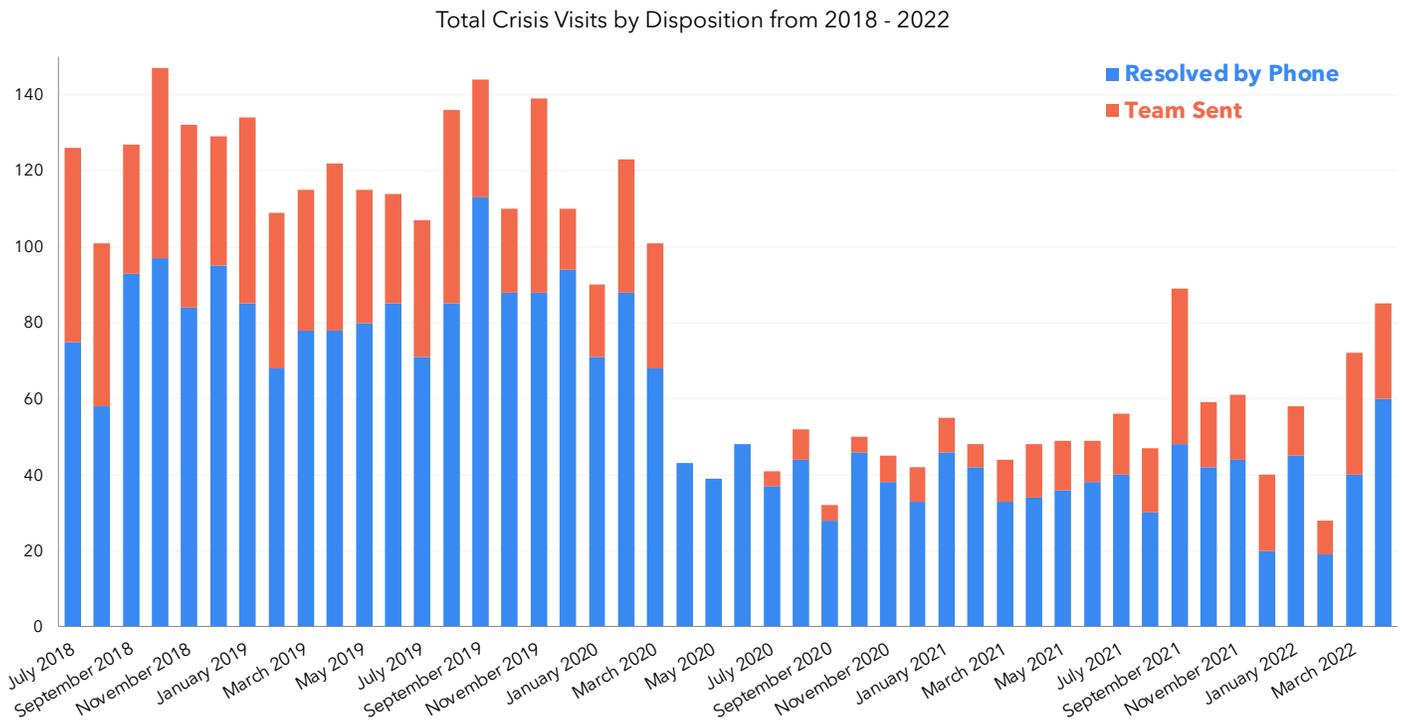
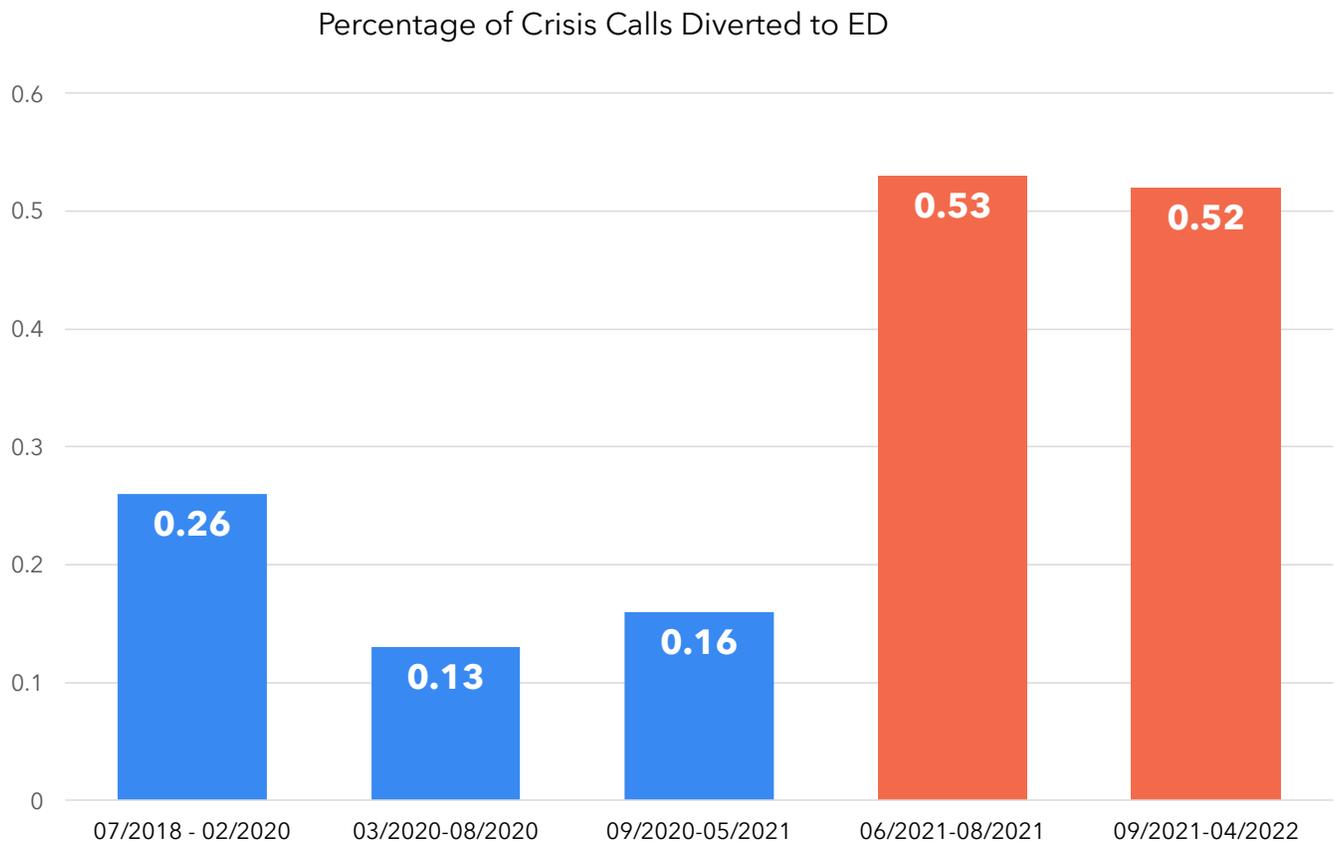


Figure 14 : Number of monthly crisis calls resolved by phone or requiring a team to be sent



TCC’s Crisis Response Program also tracks client visits to the emergency department (ED) with the goal of reducing unnecessary visits to the ED. Figure 15 shows the percentage of crisis calls that resulted in a visit to the ED by COVID-19 time period. During the pre-COVID-19 period, an average of 26% of crisis calls were directed to the ED ($n = 632$). The percentage dropped to 13% ($n = 41$) during the early-COVID-19 period and increased slightly to 16% ($n = 67$) in the 2020-2021 school year. Compared to pre-COVID-19, the number of crisis calls diverted to the ED doubled during summer 2021 to 53% ($n = 80$) and remained at 52% ($n = 258$) during the 2021-2022 school year.

Figure 15: Percent of crisis calls diverted to the emergency department by time period



Clients in crisis may need respite care if phone resolution or in-person visits are not sufficient. Figure 16 shows the percentages of clients who required respite stays by month. Clients may stay longer than 3 days in respite care but are only recorded as 3 days due to insurance requirements. From July 2018 to March 2020, around 6.5% of clients who had crisis calls ended up in respite, with the highest percentages of about 11% in February 2019, July 2019, and March 2020. During the early parts of the COVID-19 pandemic, there were no beds for respite due to local restrictions. These gaps can be seen in both Figure 16 and Figure 17 from April 2020 to July 2021.

Figure 17 shows the total number of clients who spent any days in respite care, broken down by the duration. From July 2018 to March 2020, 63% of clients who ended up in respite stayed at least 3 days. From April 2020 to July 2021, 59% of clients who ended up in respite stayed at least 3 days, though the total number of bed days was lower than prior to the COVID-19 pandemic.

Figure 16: Percentage of crisis clients requiring respite care by month

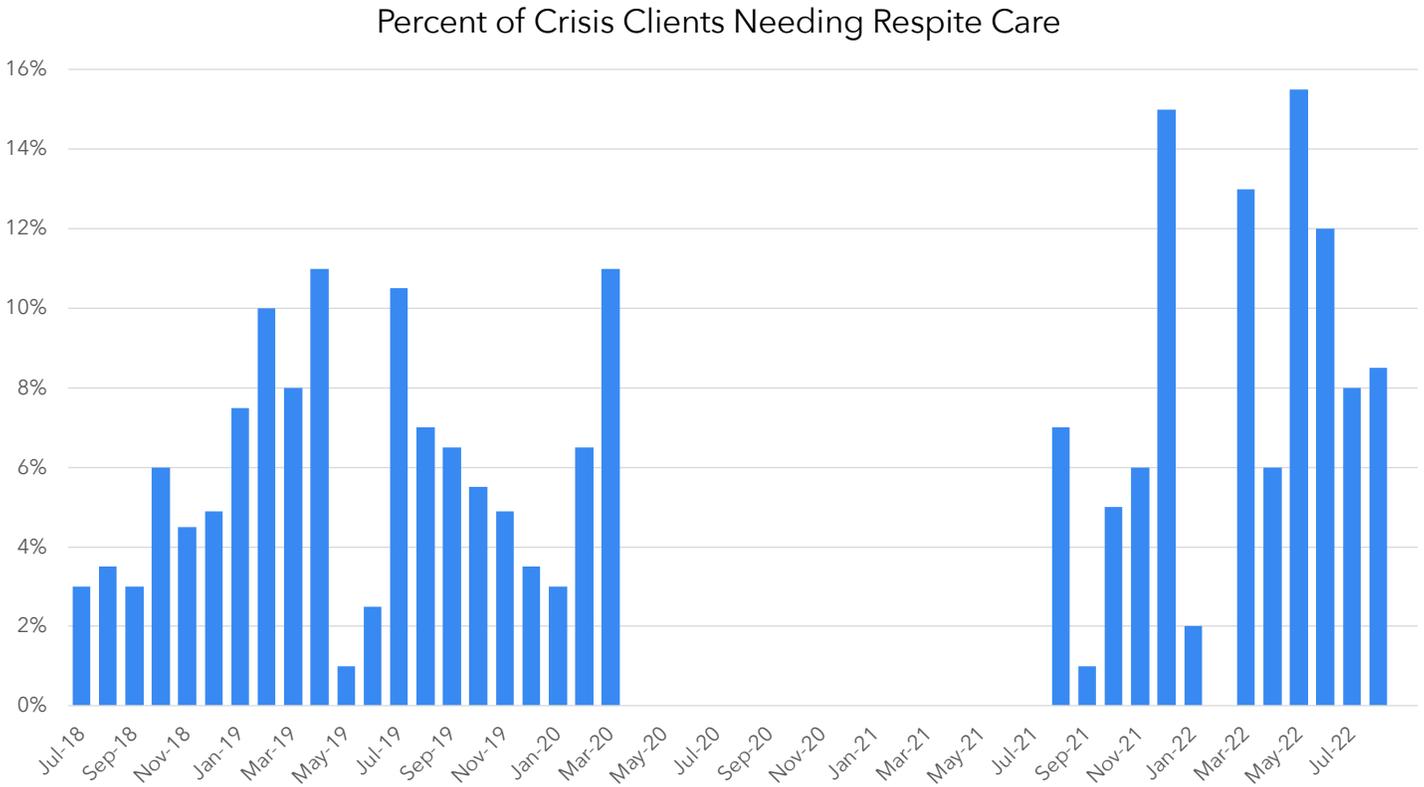
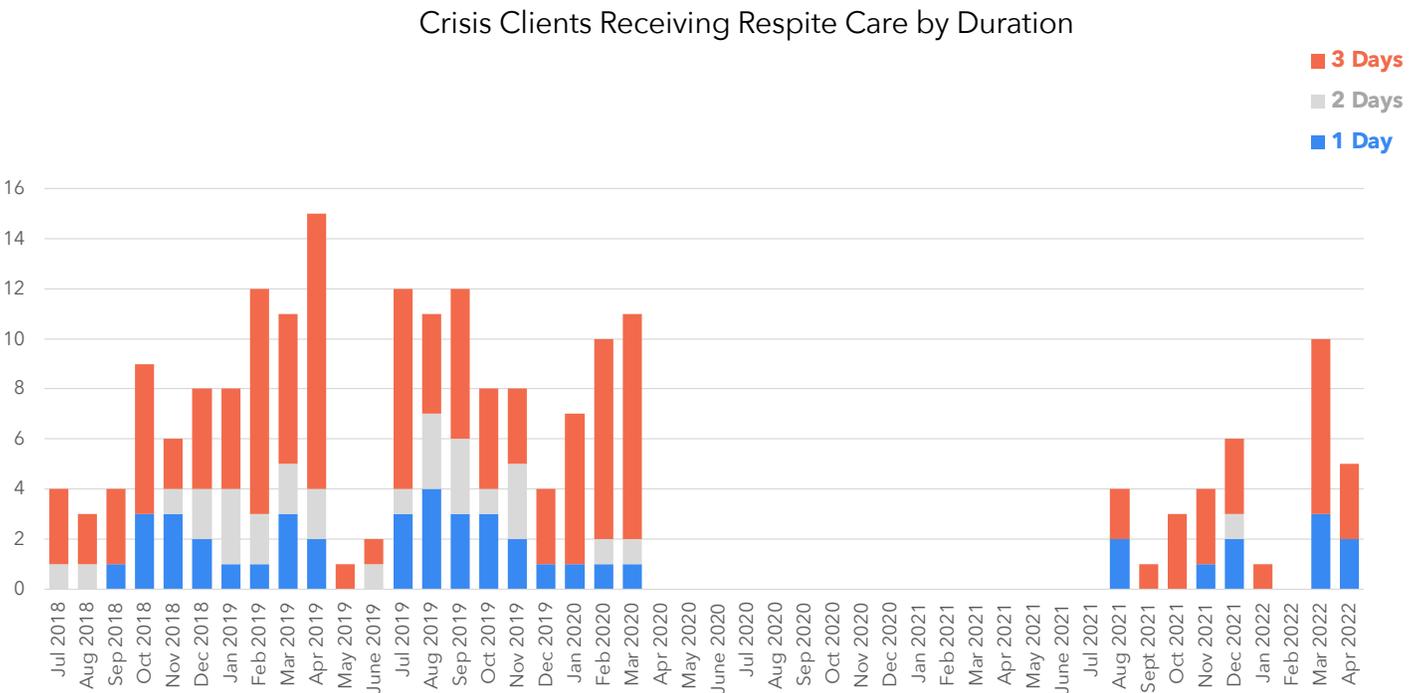


Figure 17: Number of crisis clients receiving respite care by duration of stay



Outcomes for Parents/Caregivers

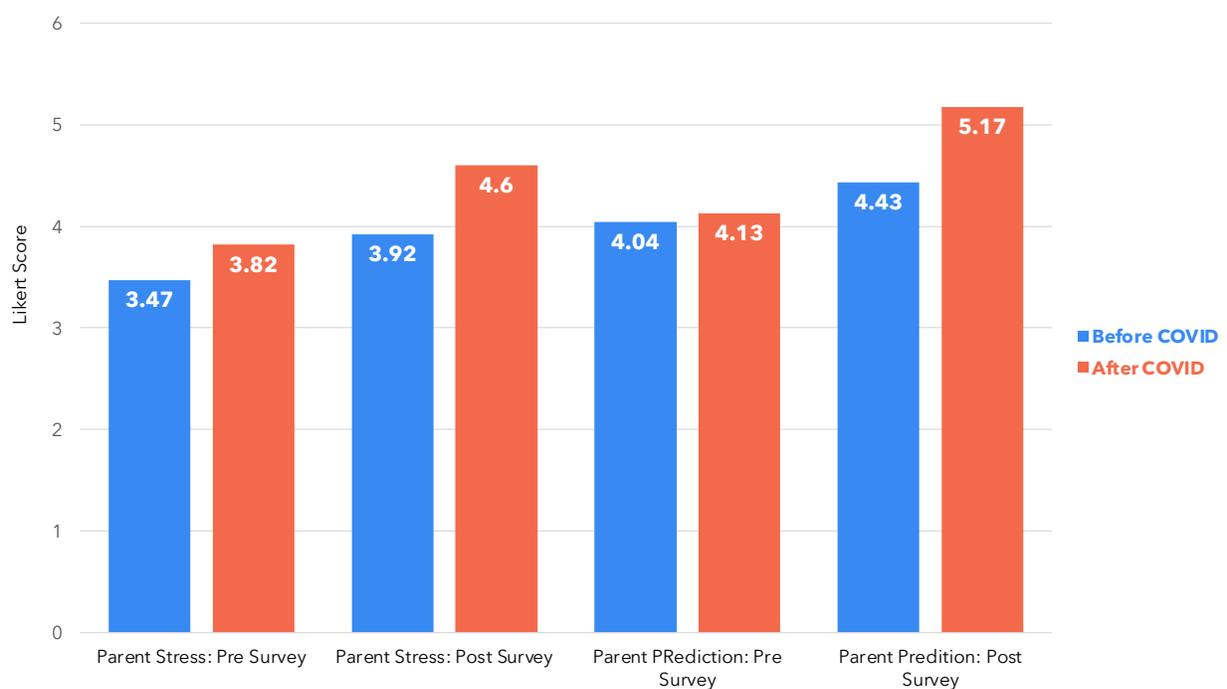
Parents and caregivers enrolled in the Parent Education program (Parent Ed) were invited to take a feedback survey multiple times throughout the program. Of interest was whether parents'/caregivers' perceptions of their knowledge of the curriculum and strategies differed before and after COVID-19. Similarly, the analysis looks at parent and caregiver perceptions of overall satisfaction with Parent Ed before and after COVID-19. The pre-surveys were administered before the Parent Ed class or during Week 1. The post-survey occurred during Week 8 or shortly after completing the class.

First, we determined if parent/caregiver stress or their children's behaviors changed as a result of COVID-19 prior to coming to class. In other words, we wanted to assess if parents/caregivers came to class with a different stress level or if their children demonstrated more unpredictable behavior after COVID-19 compared to before. A Chi-square test of independence was performed to examine the relationship between stress/prediction level and COVID-19 periods. The relation between these stress levels and COVID-19 time was not significant ($(1, n = 212) = 0.63, p = 0.42$). Similarly, the prediction of children's behavior was not significantly associated with COVID-19 time periods ($(1, n = 212) = 1.54, p = 0.22$). Based on this result, parents/caregivers came to this class reporting the same stress levels or challenging behaviors as they did before the COVID-19 pandemic began.

Second, we analyzed changes in parent/caregiver perceptions of their own stress levels as well as the ability to predict their children's behaviors from the beginning of the class to the end and compared that change across COVID-19 time periods. Parents/caregivers rated their stress levels as well as their ability to predict their children's behaviors on a 7-point Likert scale, with a higher score indicating more positive responses (less stressed, more predictable behaviors) and lower scores indicating more negative responses (more stressed, more unpredictable behaviors). We compared the average stress and prediction scores on pre- and post-surveys for each individual participant to examine if the changes in stress/prediction scores were statistically significant. A mixed-effects linear regression controlling for individual random effects indicated that parents/caregivers reported being significantly less stressed ($p < .01$) in post-survey ($M = 3.94, SD = 1.47, n = 92$) compared to the pre-survey ($M = 3.47, SD = 1.58, n = 140$), suggesting that completing at least 5 or more weeks of the Parent Ed class was strongly associated with reduced parental stress. Similarly, a mixed-effect linear regression revealed that parents/caregivers reported their children's behaviors to be significantly more predictable ($p < .01$) in post-survey ($M = 4.43, SD = 1.45, n = 92$) compared to pre-survey ($M = 4.04, SD = 1.53, n = 140$). Thus, after completing at least 5 Parent Ed classes, parents/caregivers feel less stress about parenting and can better predict their children's behaviors.

Similarly, these positive changes in stress level ($M_{pre} = 3.82, SD_{pre} = 1.72, n = 99; M_{post} = 4.60, SD_{post} = 1.72, n = 36, p < .05$) as well as in parents' prediction of child's behaviors ($M_{pre} = 4.13, SD_{pre} = 1.67, n = 99; M_{post} = 5.17, SD_{post} = 1.61, n = 36, p < .01$) remained significant after COVID-19 ($p < .01$), as shown in Figure 18. The effect sizes of the positive changes in both were about double after COVID-19 compared to before. The results suggest that taking 5 or more weeks of Parent Ed classes were effective in reducing parent stress and improving children's behaviors, even after COVID-19, when classes were all conducted via telehealth.

Figure 18: Average parent/caregiver rating of stress and prediction before and after COVID-19 in TCC's Parent Ed classes



One staff member spoke about observations they made regarding parents/caregivers. They found that switching to telemedicine was more advantageous for parents, especially those living in rural areas. Prior to the COVID-19 pandemic, they argued, parents were able to complete more errands, such as paying bills and finishing household chores, while their children were attending school. However, during the lockdown, many parents had to redirect more of their attention to their children who were attending school virtually and, as a result, had less time to complete errands. This produced high levels of stress for many parents, which also negatively impacted their children. Staff observed that parents who could use telemedicine found a moment of respite, where they were able to connect with other parents and caregivers about their experiences during the pandemic. In this instance, telemedicine was an invaluable resource for many parents' mental well-being.

Lastly, data collected from the parent/caregiver feedback survey further suggest that telehealth was beneficial to them and their children. Approximately 72% of parents and caregivers felt tele-

health benefited them, and 63% felt it was helpful for their child(ren). Additionally, 44% of respondents reported that telehealth was significantly more effective than no treatment at all, and 28% of respondents felt it was somewhat more effective than receiving no treatment. However, over half of respondents (51%) believed in-person treatment was more effective than telehealth.

Summary of Outcomes

In the above discussion of Research Question 2, we began with the adverse impacts on client mental, behavioral, and academic outcomes observed in the telehealth modality. After initial pandemic-related lockdowns, providers observed increased trauma-related symptoms, decreased client engagement, and a near halt of progress toward academic outcomes in school-based programs. However, the quantitative data do not corroborate their opinions. Outcomes for DayTx and Outpatient clients were stable; they did not improve, but they did not regress. The sentiments expressed by staff may be a function of clients not making progress at the same rate that they were used to prior to the pandemic. Our programs may have been a stabilizing factor for clients against all the challenges of the pandemic. Our study does not provide a rigorous enough test to make this conclusion, though the qualitative and quantitative data do not agree.

A major limitation of telehealth was decreased client engagement. The introduction of the home environment was also a critical factor in the efficacy of telehealth. In many cases, a client's home environment did not afford the sense of privacy, safety, and confidentiality that in-person services can.

Telehealth can be an asset to service delivery, as clients are more able to incorporate TCC services into their family lives, which was particularly pronounced for the Parent Ed program. Parents and caregivers entered the class with the same level of stress and child predictability during COVID-19 compared to prior. However, though parents and caregivers experienced positive changes to both measures as a result of the classes, the changes during the pandemic were larger. These gains were realized when all Parent Ed classes were exclusively online. Telehealth also benefits service delivery by enabling providers to intervene in moments of crisis and observe a client's home environment more directly. This benefit may have been particularly useful during the COVID-19 pandemic, when hospitals were full and respite stays were not available.

Client outcomes during the COVID-19 pandemic were mixed. Collectively, there were some positives, especially outcomes pertaining to telehealth. However, there were also challenges and negative impacts of using telehealth. These findings varied by program and relative time to the pandemic's beginning. More research is needed to determine the actual effects of telehealth on clients' mental and behavioral health outcomes.

Qualitative Findings: Research Question 3

We examined the cost-effectiveness of in-person treatment compared to telehealth for three stakeholder groups: agency, staff, and clients. To determine the cost-effectiveness for each of these groups, we collected both qualitative and quantitative data. For the qualitative portion of this analysis, the research team conducted interviews and focus groups with TCC staff. Parents and caregivers provided additional feedback on cost-effectiveness on the telehealth feedback survey. Perceptions of cost were then compared to outcomes achieved across the various programs at TCC.

Agency-Wide Cost-Effectiveness

Staff perceived telehealth to be less cost-effective than providing in-person treatment. Staff in two of six programs noted that using telehealth was less cost-effective than in-person treatment due to reimbursement procedures required by health insurance companies. According to existing health insurance guidelines for reimbursements, staff were obligated to bill per service for telehealth appointments. Prior to the COVID-19 pandemic, however, staff billed a fixed daily rate for in-person treatment. The change from billing a daily rate to billing per telehealth appointment resulted in TCC having to spend more money to offer telehealth appointments for certain programs. Moreover, staff in one program received petty cash from TCC to meet with clients in public, typically at a cafe or diner—an additional expense incurred by the agency.

Telehealth was also less cost-effective for TCC, given the increase in agency-wide expenses on technology needed for staff to work from home. Staff in four out of six programs indicated that TCC supplied necessary equipment, such as computer monitors, headsets, internet connectivity devices (e.g., broadband internet), and work phones. In only one instance did staff report there being no impact on cost-effectiveness for TCC since their program was funded through an external grant. Staff also indicated needing paid subscriptions for productivity tools, such as e-signature programs that allowed clients to sign consent forms remotely.

Much of the data we collected from staff about cost-effectiveness for TCC was consistent with our baseline assumptions. That is, when TCC closed to in-person services at the start of the COVID-19 pandemic, it was expected that the agency would incur additional expenses to support staff in working from home.

Staff Cost-Effectiveness

Secondly, we examined the cost-effectiveness of switching to telehealth for TCC staff. During interviews and focus groups, staff were asked to identify specific areas they may or may not have experienced cost savings following the switch to telehealth in March 2020. Staff in three of six TCC programs cited transportation costs as a reason telehealth was more cost-effective than in-person treatment. Staff from only one program mentioned receiving gas mileage reimbursement from TCC. As one person stated, they had previously been driving, on average, 200 miles per week to meet with clients. The provider noted, “Telehealth is more cost-effective. Because I drive, now I don’t have to pay [for] the gas, and TCC doesn’t have to pay me the mileage.” For staff who provide home visits or meet with clients in the community, savings on transportation costs proved significant. These savings extend beyond fuel costs but also include expenses incurred from wear and tear on their vehicles—maintenance expenses that are not covered or reimbursed by TCC. During one interview, another staff member commented that, prior to the start of the COVID-19 pandemic, they typically drove to three different locations around the county in a single day.

In addition to savings on transportation costs, staff also recuperated time they otherwise would have spent commuting, allowing them to schedule more therapy sessions with clients. One participant remarked, “I can now schedule myself more since I don’t have those blocks saved for driving, [as a result] I was able to fill those in with additional therapy sessions.” Staff noted during interviews that they were able to schedule, on average, 4-5 clients in person and 6-7 clients via telehealth. Another staff member in a separate program echoed these comments, noting they experienced increased productivity since switching to telehealth because they are now able to complete more tasks in a given day because of the time saved by not commuting. Nevertheless, staff noted that, despite seeing more clients in telehealth rather than in-person settings, many experienced higher rates of fatigue, burnout, and exhaustion due to their increased workload.

Lastly, staff incurred some costs following the switch to telehealth. Two staff reported having to purchase equipment to work from home, such as headsets, web cameras, and desks. One staff member also reported increased spending on home internet plans to accommodate increases in internet usage. In general, however, staff suggested that the costs incurred to provide telehealth paled in comparison to the cost savings.

Cost-Effectiveness for Clients and Their Families

Lastly, the research team evaluated the cost-effectiveness of switching to telemedicine for TCC clients. In general, the findings were mixed. Staff primarily discussed cost-effectiveness for clients in terms of savings on transportation costs, childcare, and wages. Regarding transportation, clients in

most TCC programs experienced cost-savings on transportation while using telemedicine because they are not spending as much money on fuel expenses or as much time away from work to access care during business hours. This proved especially beneficial for families in rural areas. In that sense, as one staff member remarked, “[Telemedicine] has expanded access for a lot of our families in a lot of ways - [families] don’t need transportation.”

This staff member also commented on savings in childcare. They continued, “[Clients] don’t pay for childcare for [the] rest of [the] family.” In fact, staff from two programs observed cost-savings in childcare expenses for clients. In an interview with a different staff member, they expressed, “Parents don’t have to pay for childcare, they can just sit in their homes and take a class, they don’t have to drive anywhere—no costs for gas.” They continued that telehealth, although not their preferred modality, proved advantageous for the program they worked in. These findings suggest that in many circumstances, though not all, cost-savings for transportation and childcare were interlinked and a twofold benefit of telehealth.

In other instances, clients experienced increases in childcare expenses when forced to use telemedicine. Two staff from the same program spoke about how the switch to telemedicine resulted in higher childcare costs for clients because parents who otherwise could send their children to treatment for several hours—or, in some cases, the entire school day—now had to find childcare for their children who were doing treatment virtually from home. For such clients, parents also experienced higher expenses in clothing and food, as they were unable to access the TCC meal pantry and clothing donation, which provides essential needs for families enrolled in the program. The switch to telemedicine carried a financial burden on many families.

Moreover, families enrolled in certain TCC programs experienced a decrease in wage earnings. One staff member, speaking about the closure of in-person treatment options, stated,

 ***“You can’t just take two weeks off work if you’re working at a store.”***

For these families, having to be home more to supervise their children caused them financial hardship when they otherwise could have sent their children to programming during the day while at work. Staff in another program mentioned that although families saved money on fuel and transportation expenses, they were forced to take more time off of work to be home with their children. As such, the situation was so challenging that staff quipped on two occasions that “[The parents] couldn’t wait to get [their children] back in-person.”

Clients also experienced higher expenditures in a variety of other areas. In one program, staff spoke about families needing to upgrade their home internet bandwidth to accommodate increased wireless internet usage for telemedicine. In other instances, families had to purchase art supplies that they otherwise would have received during in-person treatment at TCC. However, many of the costs associated with these expenses were, at least partially, offset by support they received from their children’s schools. At the start of the COVID-19 lockdown, many schools provided families with free internet hotspots, laptops, and other forms of emergency assistance.

Much of the qualitative findings were substantiated in the questions in the parent/caregiver feedback survey on cost-effectiveness. First, approximately 71% of parents and caregivers reported reduced costs associated with driving or commuting due to receiving telehealth services (see Figure 19). Other costs, such as internet, computer supplies, cell phones, food, and art supplies, did not seem to be all that different with telehealth compared to in-person therapy, as seen in Figure 19. Second, almost half (49%) of the surveyed parents and caregivers feel that telehealth is at least slightly more cost-effective than in-person therapy, with another 31% indicating they felt it was at least equally as cost-effective as seen in Figure 20. Only 20% of respondents felt telehealth was less cost-effective than in-person therapy (see Figure 20).

Figure 19: Change in costs by parents/caregivers as a result of moving to telehealth

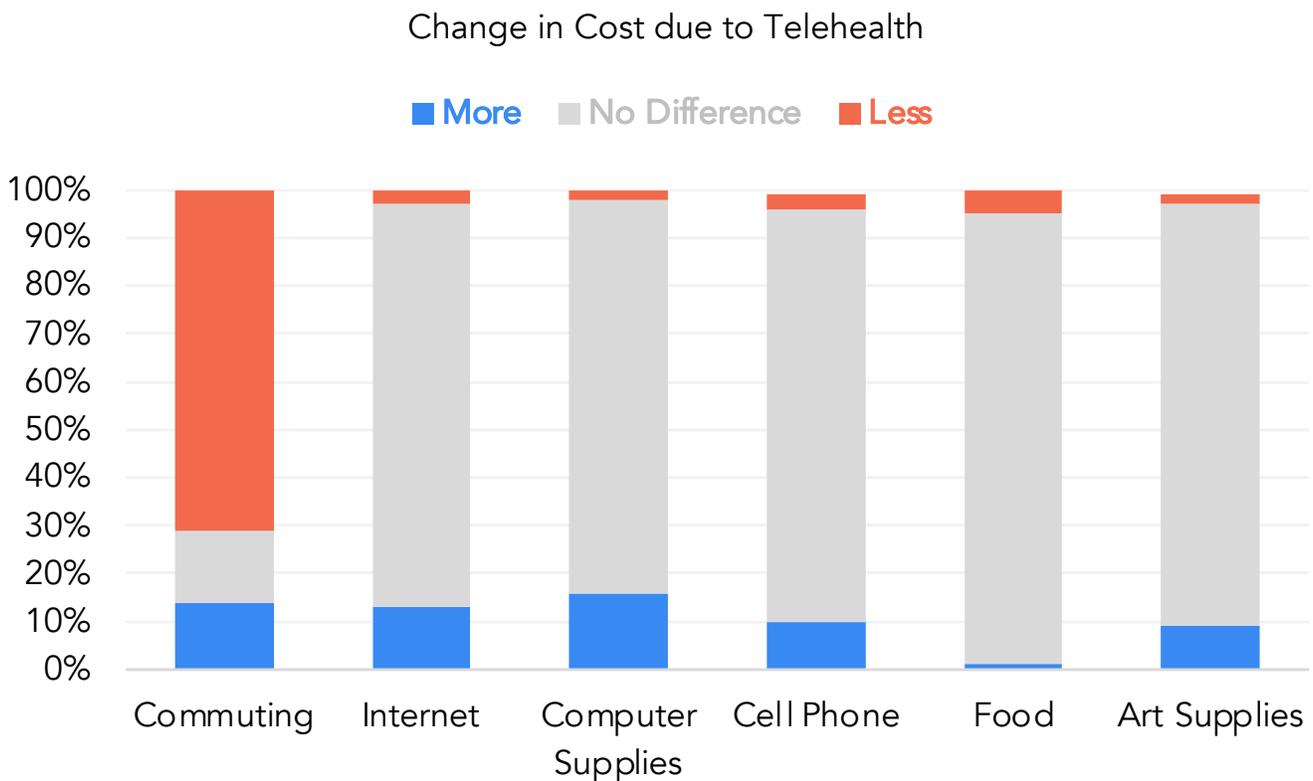


Figure 20: Perception of telehealth's cost-effectiveness by parents/caregivers (n = 107)



Telehealth is _____ cost effective than in-person therapy.

As a follow up question, parents and caregivers were able to expand on their cost effectiveness rating using an open-response question, which received 14 responses. An analysis of these comments resulted in two primary themes: transportation and time. The comments on transportation and time echoed other parts of this survey and did not provide any new or unique insights. Of the five responses not falling into one of the two aforementioned themes, three responses indicated savings associated with childcare, and two pointed to an increase in costs associated with household supplies. In general, the cost-effectiveness in providing telemedicine varied significantly across stakeholder groups and TCC programs.

Summary of Cost-Effectiveness

Here we have discussed the cost-effectiveness of telehealth TCC for three stakeholder groups: the agency, staff, and clients/families. The cost-effectiveness of telehealth for TCC as an agency varied by program, with some finding it less cost-effective and others observing no difference. Staff indicated lower costs associated with transportation and commuting, including fuel, vehicle wear and tear, and time. With the time saved by working remotely, staff were able to see two or three more clients in a day. Telehealth introduced some costs for staff, particularly for devices like second monitors and headsets. Clients and their families also saved costs around transportation but encountered increased costs by losing access to TCC as a provider of childcare, meals, and other services. Clients also experienced material needs, including technology to access services, but these were addressed by local school districts and miscellaneous TCC initiatives to provide supplies. Client savings on transportation were strongly corroborated by parent/caregiver survey data, where 71% of respondents reported saving costs around transportation when using telehealth. Though a de-

tailed report of costs and savings in dollars was beyond the scope of this report, it is important that agencies, staff, clients, and their families consider both the costs and benefits of behavioral health-care in a virtual setting.

Qualitative Findings: Research Question 4

During interviews and focus groups, staff identified strategies and tools they utilized during telehealth sessions that improved their ability to deliver services to clients. In this section, we present six lessons learned and associated best practices based on our qualitative findings. We hope that these strategies will be useful for staff working in other child mental and behavioral health agencies.

LESSONS LEARNED



LESSONS LEARNED

Lesson 1: Client engagement during telehealth sessions improved when providers engaged a variety of online tools, games, and resources.

In response to dwindling client engagement during telehealth sessions, providers at TCC incorporated various strategies to boost engagement. This often involved staff researching and testing out different online tools, games, and resources as potential strategies to boost client engagement. Two staff members commented on the utility of more structured sessions on telehealth. As one provider stated, “Kids don’t just talk. You need activities prepared and on the computer before each session.” Another provider from a different program reiterated this point in a separate interview, remarking that more structured meetings also benefited clients participating in group teletherapy.

Providers working with youth and adolescent clients in telehealth settings might consider incorporating virtual games such as chess, Scrabble, and Yahtzee or tools, such as virtual whiteboards found on platforms like Zoom or Miro to boost client engagement.

Lesson 2: Providers experienced barriers in communication with clients over telehealth.

Creating a positive therapeutic environment on telehealth was a challenge that impacted communication between providers and clients. One provider stated they felt better equipped to leverage their social presence in person to create a therapeutic environment that enabled them to communicate fluidly and confidently with clients. This was due, in large part, to providers’ ability to better read clients’ body language, dispositions, and facial expressions during in-person sessions compared to telehealth sessions, enabling providers to respond quickly and effectively through conversation and through the use of props and toys. Another provider voiced they struggled to establish a productive environment altogether during telehealth sessions because of the challenges of communicating virtually.

Whenever possible, providers might consider working with clients in-person before switching to telehealth to build rapport. In instances where that is not possible, providers should engage some of the best practices outlined under Lesson 1 of this section.

Lesson 3: Telehealth sessions with younger clients lasted shorter than in-person sessions.

Providers were often only able to engage younger clients on telehealth for an average of 15 to 30 minutes, which required several therapists to plan shorter sessions when on telehealth. Younger children, especially those of elementary school age, possess shorter attention spans than their high school counterparts and adult parents and caregivers. In-person sessions, in comparison, lasted 45 to 60 minutes. During telehealth sessions, providers reported younger clients increasingly lost focus, provided shorter responses to questions, or were too distracted by people and pets present in the home environment to engage meaningfully. Telehealth sessions were found to work well for clients 12 years of age and older, as they were able to engage with providers for longer periods of time.

Providers working with young clients or with persons of any age who experience attention-related disorders might consider scheduling telehealth sessions lasting less than one hour. Session lengths of 30 minutes may be an advantageous place to begin, with the expectation that providers and clients would work up to longer sessions. Alternatively, providers might consider scheduling hour-long telehealth appointments with clients in which they spend the first 15 to 20 minutes working with the child and the remaining time working with parents and caregivers.

Lesson 4: Clients' home environment greatly impacts the quality of telehealth sessions.

Providers agency-wide spoke about the impact clients' home environment had on the quality of telehealth sessions. In some instances, clients lacked privacy when talking with providers, as siblings or parents were often nearby or in the same room. The proximity of relatives in the home affected some clients' ability to discuss the challenges they were experiencing openly with providers, particularly when these challenges involved someone living in the home. In other instances, relatives were not only listening to clients' conversations with providers during telehealth sessions but also interjecting in these conversations to correct clients' versions of a story or experience.

Where possible, providers should speak with parents and caregivers about the importance and possibility of creating a private, quiet space for clients to participate in telehealth. This might include allowing a child to take a telehealth appointment from their or a parent or caregiver's bedroom where a door can be closed. In instances where that is not feasible, providers may talk with parents about having relatives engage in an activity, either in the home or outside, away from the child engaged in telehealth to create a degree of privacy. Ideal home environments include those

that allow for a spatial separation between clients and other members of the household when conducting individual therapy.

Unlike in-person therapy, where providers can organically create these barriers of separation between clients and their families, providers may need to play more of an active role in curating a client's home environment such that they are able to have confidential conversations in a private, safe space.

Lesson 5: Therapists need more formal training in telehealth.

Five providers (50%) said they would benefit from formal training in telehealth. In contrast, two providers (20%) said they would not benefit from telehealth training due to the nature of their work in the agency being primarily education oriented. Staff indicated that additional training would benefit their practice in the following ways:

- Perform logistical tasks, such as onboarding paperwork in a remote format;
- Engage clients across different age groups during telehealth sessions;
- Convert in-person therapy curricula into content that can be used on telehealth; and
- Access telehealth policy updates and newly published research on telehealth for mental/behavioral health treatment.

Lesson 6: Reliable internet connectivity and technological capabilities greatly impacted clients' ability to use telehealth.

A reliable internet connection and home broadband are important aspects of facilitating a client's access to telehealth. The lack of these capabilities results in disruptions to the telemedicine appointment and shortens the amount of time providers have to work with clients. To remedy this problem, providers might try to allocate sufficient time in advance of telehealth meetings to troubleshoot technical difficulties with parents and caregivers before a remote session commences.

The six lessons learned highlight important considerations of telemedicine service delivery when compared to in-person services. Across these lessons, providers demonstrated awareness that the fundamentals of interaction they had leveraged to deliver therapy in person take different shapes when working via telehealth. This introduced barriers when communicating with clients and often necessitated shorter sessions. Client-provider interaction aside, the home environment of clients substantially impacts the quality of telehealth sessions. Like other important decisions in mental health treatment, the telemedicine modality should be considered in light of individual clients' circumstances and needs.

LIMITATIONS + CONCLUSION



LIMITATIONS

The conclusions generated from this study should be interpreted in context. As is the nature of a case study, the results presented do not represent causation, nor may they be generalizable to other agencies. TCC may differ in fundamental ways from other agencies, especially with regard to programming, implementation, organizational structure, and service population. Similarly, most of the results presented here are exploratory and serve as beginning information as mental/behavioral health researchers begin to build a body of literature around telehealth used in behavioral health, especially during the COVID-19 pandemic.

Providers' perceptions of telehealth informed a good portion of this study. Interviews with clients could conceivably lead to different conclusions. Future work could involve interviewing clients, families/caregivers, and providers from multiple sites. Further, future qualitative work could provide a more representative sample, given that the Outpatient program makes up for about half of our agency's operations, but they were not represented at an equivalent percentage in the interviews. Other future possibilities might be to create a document of best practices in providing behavioral and mental health through telehealth.

There are also several limitations to the results of the quantitative analyses in this report. All analyses were descriptive, meaning there is no counterfactual to compare results against. For example, with no growth on the Ohio Scales, we cannot determine if this is a negative result, meaning that our programs did not promote positive change, or if holding steady (stabilization) was the positive impact given the unique circumstances of the pandemic. At best, these results represent correlations. Future research could create a more rigorous experimental design around outcomes to determine the precise effects of telehealth on behavioral and mental health. The parent/caregiver feedback survey had a very low response rate, meaning these results may not represent the true perceptions of all parents/caregivers of the agency. More attention could be paid to the implementation of various measures to ensure fidelity. This case study represents the beginning analysis that may lay the groundwork for future studies. There are a host of interesting potential future studies based on the results of the quantitative analyses, including ones that could contribute to the causal understanding of mental and behavioral health and/or telehealth.



CONCLUSION

Beginning in January 2022, we set out to investigate the impact COVID-19 had on TCC's ability to deliver services, client outcomes, and cost-effectiveness. Our research process began with an overview of the literature on the relationship between telehealth effectiveness and child mental and behavioral health outcomes. Next, we conducted both qualitative and quantitative analyses using data sourced from staff interviews and focus groups, a parent and caregiver feedback survey, as well as internal data from the daily Point Cards, quarterly Ohio Scales, and other regular client data.

One central theme emerged across all our findings in the literature review and qualitative and quantitative analyses: there is no singular conclusion on the impact of telehealth on service delivery, client outcomes, and cost-effectiveness. Within each of these three areas of inquiry, our research on telehealth demonstrated the varied benefits and limitations of telehealth with nuanced impacts for clients and healthcare providers.

Access and Engagement

Our first Research Question addressed TCC's ability to provide services and the resulting client attendance during the pandemic, especially with the sudden switch to telehealth. Our data illustrated an obvious, significant shift from in-person services to telehealth at the onset of the pandemic (see Figures 4, 5, and 6).

Several studies showed that children had difficulty switching to telehealth from in-person therapy (Listernick & Badawy, 2021; Mekori-Domachevsky et al., 2021; Stewart et al., 2021; Wright et al., 2021), which is in line with the findings from our therapists and families. TCC staff reported difficulties with the transition in the early stages of the pandemic, including making a social connection, struggling to control the therapeutic environment (**Lesson 4**), and having a decreased ability to comfortably diagnose clients. In addition, **Lesson 2** highlights the usual problems with access associated with technology and connectivity mentioned by several prior studies (Graves et al., 2021; Listernick & Badawy, 2021; Wood et al., 2021). One therapist noted an unfortunate incident where a client had to recount a traumatic experience twice due to connectivity issues. **Lesson 6** highlights the importance of technology and connectivity in helping families access telehealth.

Our research found attendance rates on telehealth to be better prior to the pandemic. Likewise, staff reported that young children could not stay engaged in therapy as long as they could during in-person sessions, limiting telehealth sessions to 15 to 30 minutes. This finding supports findings from Hoffnung and colleagues (2021) about differential engagement in telehealth by younger

children. Aside from age, attendance at telehealth sessions differed by gender and income, corroborating findings by Chakawa and colleagues (2021). The therapists also felt engagement in therapy was stronger in person compared to telehealth, especially among clients ages 13 and older. Though age may be one factor associated with differential attendance to telehealth sessions, **Lesson 3** emphasizes the shorter duration of telehealth for younger clients.

Since the pandemic's beginning, many studies, including a couple in our literature review (Nicholas et al., 2021; Stewart et al., 2021), attempted to predict the sustainability of telehealth as a part of a client's treatment plan. Our study found that 64% of parents and 44% of children were interested in retaining telehealth as a part of their treatment after the pandemic. This finding is within the ranges reported in our literature review, along with several studies published since our review.

The results are clear—telehealth is here to stay!

As the pandemic wore on, the therapists in this study reported growing more comfortable with telehealth, though they did not view telehealth as favorably as two studies in our literature review (Nicholas et al., 2021; C. Stewart et al., 2021). Telehealth provided several benefits to our clients, including maintaining continuity of care during COVID-19 when in-person therapy was expressly prohibited. As participants noted, telehealth has become an important tool in continuity of care because clients may not be able to make in-person appointments but can easily pivot to a telehealth appointment. Like prior research, telehealth allowed TCC to reach more clients, especially those in rural or frontier locations. Therapists reported being able to gain more insights into the home lives of their clients as well as work “in time” with clients in certain circumstances (**Lesson 4**). An additional benefit of telehealth is more job flexibility for practitioners, improving their work-life balance. We discovered that a select few clients would only engage in therapy through telehealth and would not engage with therapy in-person. Thus, telehealth provides access to many clients who would not otherwise have behavioral and mental healthcare.

Client Outcomes

The positive impacts of telehealth observed in several cited studies (Dadds et al., 2019; Fleming et al., 2020; Stewart et al., 2021) were not realized in this study. Staff reported worse outcomes socially, emotionally, and academically for students as a result of the COVID-19 pandemic. However, the qualitative data did not seem to corroborate those conclusions. In all TCC programs, outcomes for clients or caregivers were not different after the pandemic compared to the time prior. The lack of difference is a positive result for Parent Ed, showing that teaching parents and caregivers virtually can be as effective as in-person classes. The null finding represents a negative conclusion for high-acuity clients whose therapists observe worsening symptoms, but whose daily Points Card

and quarterly Ohio Scales scores do not reflect this observation. It is possible that continued care via telehealth allowed clients' Ohio Scales scores to stabilize versus worsen, but that is not a conclusion we are able to make based on our research design. Then, there are changes in outcomes that are externally influenced, such as the lack of availability of respite beds for the Crisis Program due to COVID-19 restrictions. These varied outcomes required a more nuanced view of telehealth's role in achieving client outcomes.

The differential outcomes of telehealth seem to be informed by, though not limited to, type of mental or behavioral health concern; clients' age, geographical location, and home environment; length of time clients have worked with a provider; and healthcare providers' familiarity with and training using virtual platforms such as Zoom. Our results seem to fall in line with results differing by program and client characteristics (Hoffnung et al., 2021; Masi et al., 2021; Wood et al., 2021; Zhou et al., 2021). Both the staff participants and parents/caregivers felt strongly that telehealth was not effective with high-acuity clients or younger clients. Like Masi and colleagues (2021), some parents and caregivers reported negative experiences with telehealth, though that was associated with the aforementioned client groups. The efficacy of telehealth in the case of TCC varied widely based on contextual factors specific to each individual.

The majority (51%) of surveyed parents/caregivers felt that in-person therapy was more effective than telehealth in contrast with the findings of two studies (McLean et al., 2020; Ellison et al., 2021). However, telehealth was the only option for services during the early part of the COVID-19 pandemic. Many clients and healthcare providers agreed that telehealth was better than receiving no treatment at all, even if it was less preferred than in-person therapy. Forty-four percent of parents/caregivers felt telehealth was significantly more effective than no therapy, and another 28% felt it was somewhat more effective—a total of 72% of parents. Echoing that sentiment, many staff and 40–60% of families intend to continue using telehealth in the future. Future rigorous research should focus on the specific ability of telehealth to facilitate client progress toward outcomes, as well as provide explicit guidelines for implementing effective telehealth in behavioral and mental health settings.

Costs of Telehealth

Though many, if not all, insurers began reimbursing fully for telehealth (Norman et al., 2022), the logistics may have important implications for agencies like TCC. Participants in our study noted that telehealth was less cost-effective than in-person treatment due to these changes in procedures, notably that daily rates pre-COVID-19 became hourly charges. This created pressure on staff to bill for a full day's treatment with clients who could not complete a full day on telehealth. The overall effect was a loss in revenue for the agency. Additional costs for the agency include those associated with internet and devices to ensure all staff had the necessary equipment to conduct telehealth sessions.

For staff and families, telehealth's cost-effectiveness was mixed. Echoing the findings of Norman and colleagues (2022), the biggest savings were associated with transportation. In our study, 71% of caregivers noted savings associated with transportation. One practitioner saved 200 miles of driving in a week, and another did not have to travel to three locations within the county. Staff reported needing to spend more on technology, but these expenditures were outweighed by savings from transportation. Likewise, caregivers reported mixed results for childcare expenses. Some families did not have to pay for childcare like they would with in-person visits. However, some felt that telehealth then required additional childcare costs, for example, if the caregiver was involved with the therapy of one of their children and the other siblings were not able to care for themselves on their own. In a similar tradeoff, telehealth allowed staff to schedule more meetings in a day, but this increased output by staff led many to feel higher levels of burnout. TCC staff seemed to feel telehealth was less cost-effective than in-person therapy. More parents and caregivers (49%) felt telehealth was more cost-effective than in-person therapy, compared to 20% who felt the opposite.

More research is needed on the cost-effectiveness of telehealth. Our study offers some insights into a few of the issues experienced by our constituents. However, thorough research can highlight the exact tradeoffs and efficacy of this modality. Of particular importance would be figuring out the exact costs associated with certain outcomes and comparing that to in-person treatment.

RECOMMENDATIONS FOR PRACTITIONERS



Until more research becomes available, we hope the lessons learned by TCC practitioners provide useful tips and strategies on how to improve service delivery and client outcomes for mental and behavioral healthcare providers who use telehealth.

Created from firsthand accounts of TCC providers, the recommendations include:

- Using a variety of online tools, games, and resources increased client engagement during telehealth sessions;
- Anticipate communication barriers with clients over telehealth;
- Plan for shorter session duration on telehealth with younger clients compared to in-person sessions;
- Create procedures around clients' home environment on telehealth to improve session quality;
- Seek more formal training in telehealth, and;
- Ensure both staff and clients have reliable internet connectivity and adequate technological capabilities when using telehealth.



The COVID-19 pandemic accelerated telehealth's prevalence in the field of mental and behavioral health. At the onset of the pandemic, there was a lack of research on the modality and a lack of guidance on best practices. Since that time, much research has been completed. **Telehealth, it seems, will now be an essential part of treatment for most clients receiving mental and behavioral health treatment. The value of telehealth seems to be its ability to reach more clients, such as those living far from physical offices or those who will only seek treatment via telehealth. However, as this study also shows, telehealth may not be effective for younger clients or high-acuity clients.** This report serves to contribute to the understanding of telehealth for mental and behavioral health, especially how the modality facilitates client engagement and leads to client outcomes. This report also offered beginning insights into the cost-effectiveness of telehealth compared to in-person treatment. We hope that this mixed-methods case study helps practitioners and researchers alike with the shared goal of providing the best care to our clients.

APPENDIX A

Systematic Literature Review Results

Table A1

Search strategies for each database

Database	Advanced Search Criteria	Total	Relevant	Unique
HOYASearch (Georgetown University Library Database) ^a	Date of publication: 2019-2022; peer-reviewed Title contains "Telehealth" AND "Therapy"	272	12	12
Cornell University Library Database ^b	Date of publication: 2019-2022; peer-reviewed Title contains "telehealth," "mental health," AND "youth"; & Abstract contains: telehealth OR telemedicine AND mental health AND youth OR adolescents OR young people OR teen OR young adults	608	26	15
UMN Library Database ^c	Date of publication: 2019-2022; peer-reviewed Any field contains "Telehealth" AND "COVID" AND "youth"; and Subject contains "Telemedicine" AND "Mental" AND "Youth"; and Government documents	604	39	34
Communication and Media Studies: A SAGE Full-Text Collection	Date of publication: Jan. 2021-Jan. 2022 Abstract contains "telehealth" AND "mental"	46	10	10
Reference list screening		28	28	28
Personal communications		15	15	15
Summary		1573	130	114
Final articles screened-in		114	114	114

^a Includes 918 databases (PSYCHInfo, EBSCOHost, ERIC, JSTOR, etc.)

^b Includes over 9,000,000 resources (PSYCHInfo, EBSCOHost, ERIC, JSTOR, etc.)

^c Includes over 32,000,000 resources and 1,000 databases

Screening Process

All identified articles were downloaded to Zotero, an online reference manager, and divided into three sections grouped by authors' last names. Three authors (KME, GL, and XS) independently performed title and abstract screening for each section against the inclusion/exclusion criteria. The authors then cross-screened each other's section, and disagreements were resolved through discussions.

Table A2

Final list of 23 references from literature review

Chakawa et al., 2021	Fairchild et al., 2020*	Lindgren et al., 2020	Mekori-Domachevsky et al., 2021	Wood et al., 2021
Curfman et al., 2021	Fleming et al., 2020	Listernick & Badawy, 2021	Nicholas et al., 2021	Wright et al., 2021
Dadds et al., 2019	Graves et al., 2021	Maggio et al., 2021	Norman et al., 2022	Zhou et al., 2021
Daftary, 2022	Harju & Neufeld, 2022	Masi et al., 2021	Stewart et al., 2020	
Ellison et al., 2021	Hoffnung et al., 2021	McLean et al., 2021	Stewart et al., 2021	

* Article was not cited in manuscript.

APPENDIX B

Focus Group/Interview Participant Recruitment Procedure

Participants for focus groups and interviews were recruited internally at TCC. We asked program managers at TCC to identify potential participants for the research team. We invited participants via email to participate in a focus group with their colleagues from their respective programs of DayTx, OP, and IOSS. Practitioners from the other, smaller TCC programs were invited to interview individually about their experience transitioning to telehealth. Following the initial recruitment and scheduling emails, participants were granted access to digital copies of interview and/or focus group protocols and encouraged to familiarize themselves with the questions they will be asked during the focus group. After the research team completed the transcription, coding, and analysis of the data, participants reviewed the write up to ensure its accuracy.

APPENDIX C

Logistic Regression Model for Client Attendance Using R

Generalized linear mixed model fit by maximum likelihood (Laplace Approximation) [‘glmerMod’]

Family: binomial (logit)

Formula: regular_sessions_attend ~ Covid_time * Telehealth + Gender.ID.w.Insurance + Age_range + Race + FPL + (1 | Client.ID)

Data: attendance_data

Control: glmerControl(optimizer = “bobyqa”)

AIC	BIC	logLik	deviance	df.resid
156918.8	157108.4	-78441.4	156882.8	277651

Scaled residuals:

Min	1Q	Median	3Q	Max
-16.6515	0.1462	0.2487	0.3692	1.0158

Random effects:

Groups	Name	Variance	Std.Dev.
Client.ID	(Intercept)	0.6834	0.8267

Number of obs: 277669, groups: Client.ID, 3633

Fixed effects:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	2.230679	0.226436	9.851	< 2e-16 ***
Covid_timeonging_Covid	0.190893	0.039434	4.841	1.29e-06 ***
Covid_timepreCovid	-0.110133	0.035004	-3.146	0.001654 **
Telehealth	-0.434191	0.038017	-11.421	< 2e-16 ***
Gender.ID.w.InsuranceMale	0.103350	0.035372	2.922	0.003480 **
Age_rangeteen	-0.207390	0.043082	-4.814	1.48e-06 ***
RaceAlaska Native	-0.517963	0.400478	-1.293	0.195887
RaceAmerican Indian	-0.102119	0.280677	-0.364	0.715984
RaceAsian	0.311664	0.358843	0.869	0.385108
RaceBlack	0.085773	0.261982	0.327	0.743366
RaceNative Hawaiian or Other Pacific Islander	-0.226220	0.338921	-0.667	0.504472
RaceOther Single Race	0.009348	0.234863	0.040	0.968250
RaceTwo or More Unspecified Races	0.094897	0.222671	0.426	0.669978
RaceWhite	0.154991	0.218563	0.709	0.478241
FPL	0.098148	0.046927	2.091	0.036484 *
Covid_timeonging_Covid:Telehealth	-0.152571	0.044810	-3.405	0.000662 ***
Covid_timepreCovid:Telehealth	1.002964	0.193326	5.188	2.13e-07 ***

 Signif. codes: < .001 '***' .001 '**' .01 '*' .05 '.' .1 '.' 1

APPENDIX D

Model of Ohio Scales Outcomes

Table D1

Model estimates for Problem Severity

Factor	Unconditional Model		Unconditional Growth Model		Conditional Growth Model	
	Estimate (SE)	p	Estimate (SE)	p	Estimate (SE)	p
Intercept	25.9 (0.98)	< .001	26.4 (1.2)	< .001	32.3 (3.0)	< .001
Outpatient					0.21 (0.50)	.674
Unit					-0.29 (0.55)	.598
Telehealth			-0.18 (0.16)	.285	-0.25 (0.45)	.590
Slope					0.99 (1.3)	.452
Outpatient					-9.7 (3.6)	.007
Unit					-0.001 (3.7)	.999
<u>Variance (SD)</u>						
Level-1 (Time)	83.8 (9.2)		129 (11.4)		110 (10.5)	
Residual-L1 (Eij)	57.4 (7.6)		51.5 (7.2)		51.1 (7.1)	
Level-2 (Client)			0.48 (0.70)		0.53 (0.73)	
<u>Fit Statistics</u>						
AIC	2502.8		2491.9		2484.9	
BIC	2514.2		2514.8		2526.9	
Chi-squared (df)			16.858 (3)	< .001	17.011 (5)	.004

Table D2

Model estimates for Functioning

Factor	Unconditional Model		Unconditional Growth Model		Conditional Growth Model	
	Estimate (SE)	p	Estimate (SE)	p	Estimate (SE)	p
Intercept	46.1 (0.97)	< .001	46.4 (1.2)	< .001	42.4 (2.9)	< .001
Outpatient					4.09 (3.4)	.226
Unit					0.60 (3.5)	.865
Telehealth					1.84 (1.3)	.144
Slope			-0.09 (0.16)	.562	0.51 (0.42)	.235
Outpatient					-0.67 (4.6)	.152
Unit					-0.61 (0.51)	.243
<u>Variance (SD)</u>						
Level-1 (Time)	83.8 (9.2)		110 (10.5)		106 (10.3)	
Residual-L1 (Eij)	47.5 (6.9)		40.5 (6.4)		42.4 (6.5)	
Level-2 (Client)			0.72 (0.85)		0.38 (0.62)	
<u>Fit Statistics</u>						
AIC	2456.4		2456.2		2458.5	
BIC	2467.8		2479.1		2500.4	
Chi-squared (df)			6.120 (3)	.106	7.785 (5)	.169

APPENDIX E

Focus Group and Interview Protocols

TCC Focus Group Protocols - Costs of Telehealth

Background/Warm-up Questions

1. Can you tell me what your role is at TCC and how long you have been working in this capacity?
2. Have you ever received training on how to provide telehealth services?

Cost-Effectiveness

Now, I would like to ask several questions related to the cost-effectiveness of your work in person versus digitally during the COVID-19 pandemic.

3. What were some of the additional and unexpected costs associated with using telehealth?
4. In your opinion, is in-person therapy or telehealth more cost-effective?
 - a. Probe: What evidence supports your perspective?
 - b. Probe: Do you have the materials and supports you need to work from home? Were all necessary expenses covered? Were there financial trade offs compared to working in the office/at a site?
5. Has telehealth allowed you to be more or less productive?

Lessons Learned/Wrap-up

Thank you for all of the information you have shared so far. We are just about ready to wrap-up. The last section we will go through is on lessons learned.

6. What have you learned about working with clients during the pandemic?
7. Is there anything The Child Center could do to better support you as you work with telehealth clients?
8. Do you feel differently about your work when working remotely?
9. Is there anything that we didn't discuss that you'd like to share with us?

TCC Interview Protocols

Background/Warm-up Questions

1. Can you tell me what your role is at TCC and how long you have been working in this capacity?
2. Have you ever received training on how to provide telehealth services?

Pre-COVID-19 Service Delivery

Next, I am going to ask you a few questions about service delivery in the months leading up to the COVID-19 pandemic from January to March 2020.

3. What types of services did you provide to clients in person?
 - a. How much of your client service was through telehealth or virtually?
4. On a scale of 1 to 5, with 1 being least engaged and 5 being most engaged, how would you rate client engagement during your in-person sessions? Why?
 - a. Probe: How would you rate client attentiveness?
 - b. Probe: How would you rate client attendance? How often did clients request to re-schedule or cancel an appointment? Were no-shows a frequent problem?

Service Delivery during the early COVID-19 pandemic from March to December 2020

Now, I am going to ask you some questions about your experience switching to telehealth services at the start of the COVID-19 pandemic from March to December 2020.

5. Can you briefly describe your experiences in switching to telehealth at the start of the COVID-19 pandemic in March 2020?
 - a. Probe: What were some of your initial impressions of providing telehealth services? How, if at all, have your feelings changed about providing telehealth services?
6. Have you noticed a difference in client engagement since switching to telehealth at the start of the pandemic?
 - a. Probe: Has client engagement changed throughout the pandemic?
 - b. Probe: Has client attendance (i.e., client-requested reschedules, cancellations, or no shows) changed during the pandemic?
 - c. Probe: Have you noticed shifts in client attentiveness?

Service Delivery During COVID-19 from January to December 2021

Next, I would like to ask you a few questions on how the ongoing pandemic, including the COVID-19 variants, impacted your ability to provide services to clients. We will discuss your experiences from January 2021 to December 2021.

7. Did the Delta or Omicron variant outbreaks pose any challenges to your ability to provide services to clients?

Outcomes

Now, I would like to turn our attention to client outcomes during the COVID-19 pandemic.

8. Do you believe client outcomes/growth was different as a result of telehealth?

- a. Probe: How have they improved? How have they stalled?
 - b. Probe: Is assessing client growth easier or harder using telehealth?
9. In your opinion, is in-person therapy more effective than telehealth? Why or why not?
10. Program-Specific Questions
- a. (For Crisis) Has the lack of long-term respite care impacted the severity of crisis calls or emergency department visits?
 - b. (For CPS) Has the change to fully virtual learning impacted parents'/caregivers' ability to learn the Collaborative Problem Solving curriculum?
 - c. (For Education) How successful have students been with Comprehensive Distance Learning?
 - i. Probe: How do you feel about your preparedness for implementing Comprehensive Distance Learning?
 - d. (For Assessment) Are telehealth assessments as effective as in-person assessments? Why or why not?
 - e. (For Wellness) Has Peer Support been able to effectively serve clients and their families through telehealth?

Cost-Effectiveness

Now, I would like to ask a couple questions related to the cost-effectiveness of your work in person versus digitally during the COVID-19 pandemic.

11. In your opinion, is in-person therapy or telehealth more cost-effective?
- a. Probe: What evidence supports your perspective?
 - b. Probe: Do you have materials and supports you need to work from home? Were all necessary expenses covered? Were there financial trade offs compared to working in the office/at a site?
12. Has telehealth allowed you to be more or less productive?

Lessons Learned/Wrap-up

Thank you for all of the information you have shared so far. We are just about ready to wrap-up. The last section we will go through is on lessons learned.

13. What have you learned about working with clients during the pandemic?
14. Is there anything The Child Center could do to better support you as you work with telehealth clients?
15. Do you feel differently about your work when working remotely?
16. Is there anything that we didn't discuss that you'd like to share with us?

APPENDIX F

Parent/Caregiver Feedback Survey

Background Information

1. From which program(s) at The Child Center does your child receive services?
 - a. Multiple checkboxes
 - i. Campus Day Treatment, School-Based Day Treatment, High School Day Treatment, Outpatient

Service and Engagement

These questions seek your feedback regarding The Child Center's ability to provide telehealth as well as engagement with this kind of therapy/treatment.

2. Since the beginning of the COVID-19 pandemic, how much telehealth has/have
 - a. your child received (choose the answer that most closely approximates your experience)?
 - b. you received (choose the answer that most closely approximates your experience)?
 - i. None (0), A few total (1-3 / yr), every so often (6 / yr), monthly (12 / yr), weekly (52 / yr), multiple sessions per week (78+ / yr)
 - a. *Note: If answer is "None" to both questions then respondent will be taken to the final page of the survey.*
3. Due to the use of telehealth visits,
 - a. my child's attendance for therapy _____.
 - b. my attendance for therapy _____.
 - i. significantly improved/slightly improved/did not change/slightly reduced/significantly reduced/NA
4. My child was engaged during their telehealth sessions.
 - i. SA/A/No difference/D/SD/NA
5. I was engaged during their telehealth sessions.
 - i. SA/A/No difference/D/SD/NA
6. It was easier for my child to attend telehealth appointments compared to in-person appointments.
 - i. SA/A/No difference/D/SD/NA
7. It was easier for me to attend telehealth appointments compared to in-person appointments.
 - i. SA/A/No difference/D/SD/NA
8. (Open) Has the use of telehealth since the beginning of the pandemic influenced you or your child's ability to receive care? If so, why? If not, why not?

Impact on Outcomes

These questions seek your feedback on your perception of how telehealth impacted your child's outcomes according to their treatment plan.

9. Telehealth helped my child.
 - i. SA/A/No difference/D/SD/NA
10. Telehealth helped me.
 - i. SA/A/No difference/D/SD/NA

11. Telehealth helped my child to achieve their treatment goals.
 - i. SA/A/No difference/D/SD
12. My child plans to continue to use telehealth as a part of their treatment in the future.
 - i. SA/A/D/SD/Not sure
13. I plan to continue to use telehealth to support my child in the future.
 - i. SA/A/D/SD/Not sure
14. Telehealth is _____ than not having therapy/treatment.
 - i. Significantly more effective, somewhat more effective, no different, somewhat less effective, significantly less effective
15. Telehealth is _____ than in-person therapy/treatment.
 - i. Significantly more effective, somewhat more effective, no different, somewhat less effective, significantly less effective
16. (Open) How (if at all) has the use of telehealth since the beginning of the pandemic affected your child's progress toward treatment goals or your ability to support them?

Cost-Effectiveness

These questions seek your thoughts on the costs of telehealth and in-person therapy/treatment.

17. Overall, using telehealth costs my family less.
 - i. SA/A/No difference/D/SD
18. Please determine whether telehealth has resulted in more or less costs for each of the following considerations:
 - a. Driving/commuting: more costs to you, no difference, less costs to you, provided for you;
 - b. Internet: more costs to you, no difference, less costs to you, provided for you;
 - c. Computer supplies (for example, headphones, webcams, microphones, etc.): more costs to you, no difference, less costs to you, provided for you;
 - d. Cellular phone service/supplies: more costs to you, no difference, less costs to you, provided for you;
 - e. Food: more costs, no difference, less costs, provided for you;
 - f. Art Supplies: more costs to you, no difference, less costs to you, provided for you;
 - g. Other: please list
19. Considering all costs, telehealth is _____ cost-effective compared to in-person therapy/treatment.
 - i. Significantly more, slightly more, equally, slightly less, significantly less
20. (Open) Do you have other thoughts regarding the cost-effectiveness of telehealth compared to in-person therapy/treatment?

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