

The University of Chicago

**The Potential Role of Telehealth in Addressing of Mental Healthcare Disparities Among College Students**

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**Abstract**

Before the pandemic, larger institutions with sufficient resources already began expanding treatment access through Telehealth services, but Telehealth services were not widely adopted. Previous studies highlight the challenges Telehealth services targeting college students face, but understanding the core reasons for low engagement and utilization remains unknown. Few research studies have focused on the implementation of Telehealth services within college student populations to address low adoption rates.

This study seeks to address the research-to-practice gap resulting in the underutilization of Telemental Health services in US college student and identify key areas college counseling centers are failing to meet the mental health needs and opportunities for improvement through the integration and adaption of Telehealth services. Results bring clarity to the trade-offs and implications of key policy decisions regarding the implementation and effective use of Telehealth technologies, revealing important implications about how mental health providers and researchers should adapt Telehealth programs and services to better serve student populations on college campuses.

Telehealth technologies offer promising solutions for reducing the number of barriers contributing to mental healthcare disparities by reducing clinical loads of counseling centers, increasing accessibility and efficacy of care, and increasing alternative sources of support. Recommendations from this study include school and center level recommendations to address access-related, cultural, and financial barriers to mental health care in college student populations.

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## Introduction

In recent years, there has been a rapid increase in reported symptoms of depression, anxiety, eating disorders, and other mental illnesses in US college student populations (Lattie, Lipson, and Eisenberg 2019). Despite the increasing treatment and diagnosis rates of mental illnesses and decreasing stigma associated with receiving mental health treatment, the majority of college students with symptoms do not receive treatment with mental health care utilization disparately low among minority students (J. Hunt and Eisenberg 2010; J. B. Hunt et al. 2015; Lipson, Lattie, and Eisenberg 2019). Lack of perceived need, perceived ineffectiveness of treatment, access to care, inconveniency of care are barriers to mental health treatment among the college student population (Lattie, Lipson, and Eisenberg 2019; Eisenberg, Golberstein, and Gollust 2007; Eisenberg et al. 2011; Vidourek et al. 2014). Other barriers to mental health treatment include privacy concerns and financial constraints (J. Hunt and Eisenberg 2010; Megivern, Pellerito, and Mowbray 2003; Givens and Tjia 2002; Mowbray et al. 2006). With little variation in symptom prevalence and despite improved access and nearly universal insurance coverage, students of color experience greater levels of unmet mental health needs relative to their white peers (J. B. Hunt et al. 2015; Lipson et al. 2018).

As college counseling centers and healthcare providers were forced to adopt Telehealth services and discontinue in-person services, my research shows promising areas where the expansion of Telehealth service offerings can reduce barriers to treatment access and utilization. Before the pandemic, larger institutions had some Telehealth capability; However, Telehealth services were limited and not widely adopted. Recent Telehealth policy and regulation flexibilities in response to the COVID-19 Public Health Emergency in interstate licensing, data

confidentiality issues, and reimbursement allowed college counseling centers to rapidly adapt and increase Telemental health offerings to supplement in-person services (“COVID-19 Emergency Declaration Blanket Waivers for Health Care Providers,” 2020). In this paper, I use Bashshur’s definition of Telemental health as a broad term referring to the provision of mental healthcare at a distance (Bashshur et al. 2016). The terms Telemental, digital, online, and virtual mental health services are used interchangeably and refer to any technology-enabled or technology-driven mental health services. Technology-enabled mental health services refer to clinicians using technology to deliver services in place of in-person services such as teleconferencing. Technology-driven mental health services are delivered through a platform, such as apps and online modules, and used as a treatment or a preventative tool at home.

Technology-driven mental health intervention programs and services are largely underutilized on college campuses despite having key advantages to offering and adopting Telehealth services (Lattie, Lipson, and Eisenberg 2019). Students seem likely to adopt Telehealth systems for reasons such as system efficiency, the convenience of service, easier access to health services (Bull et al. 2016). Video-conferencing, online forums, smartphone apps, text messaging, and e-mails have shown high levels of patient satisfaction and almost all forms of Telemental health technologies have demonstrated outcomes as effective to in-person services (Zhou et al. 2020; Wilson 2017). Telemental health services reduce the need for travel for both patients and clinicians and deliver remote services cost-effectively while maintaining the quality of care (Whaibeh, Mahmoud, and Naal 2020). Given college populations’ high comfortability with new technologies, students’ unpredictable schedules, and counseling centers’ limited resources, Telehealth services offer a high potential to expand treatment options, reduce student

barriers to mental health services, and increase mental health treatment rates on college campuses.

In this study, I seek to address the research-to-practice gap resulting in the underutilization of Telemental Health services in US college student and identify key areas college counseling centers are failing to meet the mental health needs and opportunities for improvement through the integration and adaption of Telehealth services. I conducted in-depth interviews with experts and staff members of college mental health centers who have implemented Telemental health services for college students, as well as analyzed annual survey data assessing mental health, health service utilization, and related factors among college and university student populations. The goal of my study is to quantify disparities in mental health utilization, barriers to mental health treatment, variations across school centers, and student satisfaction and preferences for their college's mental healthcare services using Python statistical packages statsmodels and sklearn. Specifically, I seek to uncover significant variations in mental health needs and mental healthcare access, utilization, and quality across student subgroup populations and institutions around the country. Through expert interviews, I aim to understand key pain points and best practices for experiences implementing Telehealth services and addressing mental health disparities on campus. Findings show how policy changes made throughout the pandemic that allowed for the broader rollout of Telehealth services reveal important implications for how mental health providers and researchers should adapt Telehealth programs and services to better serve student populations.

## **Literature Review**

### **Barriers to Mental Healthcare Utilization**

Barriers to mental health service utilization differ among student sociodemographic subgroups and mental health care utilization is disparately low among minority students (J. Hunt and Eisenberg 2010; J. B. Hunt et al. 2015; Horwitz et al. 2020). With little variation in symptom prevalence, college students of color experience greater levels of unmet mental health needs relative to white students as mental health related attitudes vary significantly across race and ethnicity (J. B. Hunt et al. 2015; Lipson et al. 2018). Financial and cultural sensitivity issues are a greater burden for women, sexual and gender minority students, Black and Hispanic students (Horwitz et al. 2020). Privacy concerns and stigma associated with help-seeking are more prominent for men and young undergraduate students, while white students and older undergraduate and graduate students are likely to report time-constraints. International students are less likely to seek help in the way it is often offered in the United States and associated stigma poses a barrier to help-seeking (Katz and Davison 2014; Masuda et al. 2009). Additionally, language differences, low language proficiency, and cultural differences are other barriers to help-seeking for international and students of color (Prieto-Welch 2016).

School variation in mental health service offerings and resources may be exacerbating existing disparities in student populations. The Center for Collegiate Mental Health (CCMH) finds a school center's ability to effectively treat the mental health needs of its college students is dependent on the center's Clinical Load Index (CLI) (LeViness et al.,2019). The CLI provides each counseling center with a comparative score for "clients per standardized counselor" per year of a counseling center (LeViness et al.,2019). CLI scores are beneficial in understanding the difference between students served at a counseling center and the need for mental health services within the student population at a school (LeViness et al.,2019). A tradeoff exists between the number of students enrolled and the center's CLI score showing institutions with larger

enrollments struggle more to maintain the same level of clinical staffing at smaller institutions (LeViness et al.,2019). Schools with have higher CLI scores tend to be larger schools and typically can see a larger number of students, but students at these schools also tend to have a higher need for mental health services. This is important as clients who receive services in centers with higher CLI scores tend to experience less improvement in distress. Understanding of school variation in treatment access, quality, and efficacy is crucial in working towards reducing mental health disparities in student populations.

### **Current Mental Health Service Landscape**

The prevalence of mental health disorders and their serious consequences have not been matched by a commensurate expansion of resources for treatment. With the growing demand for mental health services in the US, the nation is at the threshold of a severe shortage of mental health professionals. Even before the pandemic, almost every school campus in the country was having trouble meeting student demand for their Counseling Services. As of 2016, there were roughly 40,000 psychiatrists in the United States and an estimated shortage of about 10,000 to 20,000 psychiatrists with disproportionately fewer child and adolescent psychiatrists (Bashshur et al. 2016). Shortages of physicians entering primary care lead most patients with mental illnesses to be treated by other mental health professionals, such as psychologists, nurse practitioners, and psychiatric social workers (Bashshur et al. 2016). In 2019, 87.3% of College and University Counseling Center directors reported experiencing an increased demand for counseling services from 2018 (LeViness et al., 2019). On average, directors reported they served 12.2% more clients in 2019 than in 2018 (LeViness et al., 2019). The majority of directors reported more hours of psychiatric services than they currently have is necessary to meet student needs (LeViness et al., 2019). The average wait time for all clients for a first

appointment is 6.1 business days and the time of students' triage appointment to the time of their next clinical appointment is 8.7 days (LeViness et al., 2019). The most common strategies centers used to manage increases in service demands are triaging clients based on urgency (45%), referring more clients off-campus for services (38.1%), and reducing outreach offerings (30.8%) (LeViness et al., 2019). Current mental health trends of college students are a mental health crisis with the increased need for prompt solutions to expand resources for treatment.

### **The Expansion of Telehealth**

Before the pandemic, larger institutions with sufficient resources already began expanding treatment access through Telehealth services, but Telehealth services were not widely adopted. In-person services remained at the core of counseling centers as it seemed difficult to incentivize both patients and providers to adopt Telehealth services. Previous studies have attempted to understand students' interest and engagement with Telehealth services, specifically mental health apps. In one survey of 741 college students, only 7.3% had ever used a mental health app, and only 26.1% are open to the idea of using a mental health app (Kern et al. 2018). Of those who had used a mental health app, only 24% continued to use the app for four weeks or longer (Kern et al. 2018). Recruitment for mental health app use posed the largest obstacle to another study, suggesting serious acceptability concerns for mental health apps among college students (Levin, Hicks, and Krafft 2020). To complicate findings further, one study found attitudes related to mental health treatment and Telehealth services to vary significantly across race and ethnicity (Lipson et al. 2018). While these studies highlight the challenges that mental health apps targeting college students face, understanding the core reasons for low engagement and utilization remains unknown.

Few research studies have focused on the implementation of Telehealth services within college student populations to address low adoption rates. Schools lacked agency to adopt Telehealth services in the past are due to the limited resources of college counseling centers coupled with stringent Telehealth policies and regulation. Over capacitated counseling centers were already struggling to offer core in-person services effectively and, therefore, had little urgency to invest and adopt new technologies. Schools did not understand the true value of Telehealth technologies and how to offer Telehealth services in tandem with other service offerings. Institutions, counseling centers, and health care professionals do not have the resources, funding, or systems in place for a wider rollout of Telehealth services. Colleges and universities, with varying levels of resources and student population makeups, will have different abilities and make varying choices when transitioning and employing virtual services.

With more college counseling centers around the country offering forms of Telehealth services, there are increased opportunities to understand barriers to implementing Telehealth services. Understanding how mental health needs differ across institutions and identifying ways digital tools can satisfy the unmet mental health needs of college students will serve valuable for institutions in making future decisions to effectively and efficiently expanding treatment options on college campuses. Identifying trends in mental health care perceptions and utilization for both in-person and digital services can reveal high-impact opportunities for college counseling centers to increase access and utilization within subgroups that have historically underutilized mental health resources.

## **Methodology**

I use a mixed-methods approach to identify key areas college counseling centers are failing to meet the mental health needs of their student populations and opportunities for improvement through the integration and adaptation of Telehealth services. My approach involved quantitative analysis of existing survey data on assessing the mental health status, mental health service utilization, and related factors affecting both college and university student populations. In addition, I conducted in-depth expert interviews about various experiences transitioning and implementing Telehealth services, the advantages and disadvantages of various service models, and outreach initiatives to address disparities in mental healthcare access and utilization.

### **Healthy Minds Study (HMS) Survey**

I analyzed publicly available anonymized survey data from the Healthy Minds Study (HMS) for the school years 2019-2020 to quantify the extent to which college counseling centers around the US are meeting the mental health needs of their student populations. I studied trends in mental health needs, service access and utilization, service satisfaction, and service preferences across and within institutions to prioritize areas for improvement. Lastly, I identified statistically significant mental health disparities among student subgroup populations and discover key determinants in whether a student seeks or receives mental healthcare, such as a student's demographic, past experiences, financial status, and insurance type. These insights are valuable for college counseling centers around the nation to help inform future decisions to best meet the growing demand and need for mental health care of college students.

The web-based survey focuses on domains such as mental health status, access and barriers to services, utilization of services, social environment, academic environment, academic performance, and health behaviors and specifically focuses on understanding service utilization

and help-seeking behavior. The 2019-2020 survey includes 75 different US colleges and universities and 89,182 unique college students. The mean age of survey participants was 23 years old and the median 21 years old (Appendix Graph 2). About 67.5% of participants Male and 30.6% Female with 1.8% of participants marking others or choosing to respond (Appendix Table 2). The racial and ethnic breakdown of the sample was 66.6% White, 12% Hispanic/Latino/Latina, 11.5% Asian American/Asian, 6.1% African American/Black, 1.6% Middle Eastern, and 2.1% Other (Appendix Table 3). Survey participants included participants 659 students registered with the office of disability on campus and 6,904 international students. The survey has several variants, all with the same basic design and scope, that are used for different cohorts of colleges/universities to investigate questions specific to their student population. It is important to note the HMS Survey is web-based requiring many coding and programming decisions, such as having options to “select all that apply” or mutually exclusive answers such as “None” (Appendix Codebook).

I analyzed bivariate correlations between key variables and variations among and within schools. Key variables included mental health status, treatment status, demographic, nationality, disability status, financial status, insurance coverage type, stigma indicators, current center service satisfaction, experienced barriers to access, other sources of support, and mental health app feature preferences. I identified statistically significant correlations and determinants for needing and receiving services using Python statistical packages statsmodels and sklearn. Using backward selection, I identified the most statistically significant features of an ordinary least squares model to determine whether a student is in therapy currently. Additionally, I fit a logistic (logit) regression model to estimate the influence of key variables in influencing whether a student has accessed school mental health services. I fit a logit model because logistic

regressions are well suited for problems when the predictor variable is binary even when there are multiple independent variables in the problem. A logit model weights each variable to estimate via maximum likelihood estimation the probability of a student is of class membership. When a binary outcome variable is modeled using logistic regression, it is assumed the logit transformation of the outcome variable has a linear relationship with predictor variables. Using a 90% confidence interval, I compared the odds ratio between subgroups of interest for utilizing mental health services.

HMS survey data also included responses from 399 unique students on their attitudes and preferences towards mobile resources. Even though only one school (School ID: 34) elected to do the “Attitudes About Mobile Resources” with 1,130 corresponding college students, there were no statistically significant differences between the school and the total participant population in terms of demographic makeup, financial status, insurance status, and mental health status when using a two-sample t-test to compare group means (statistic=0.155, p-value=0.8768). In this module, students were asked questions to assess their attitudes and preferences towards using mental health illness and wellness apps. Students ranked the importance of features when deciding whether to use a mental health/wellness app. With this data, I uncovered students’ attitudes and preferences towards technology-driven mental health care services, correlations between feature importance and specialized populations, and correlations with app preferences and past experiences with school counseling centers.

## **Interviews**

I supplemented the HMS data with in-depth expert interviews about various experiences transitioning and implementing Telehealth services, the advantages and disadvantages of various

service models, and current outreach initiatives to address mental health disparities. Interviews shed light on ways current implementations of offerings may be contributing to underutilization trends and opportunities to tailor services towards college student subgroups who traditionally underutilize services. Colleges and universities have made very different decisions in response to the growing demand and need for mental health services. Interview data is used to understand center decisions made to meet the growing demand and need for mental health care for their students in the past to inform potential strategies to adopt for future recommendations.

My choice in Telemental Health Platforms to study was guided by Dr. Daniel Eisenberg, an expert in mental health care of University Student populations, specifically focused on barriers to help-seeking and access to mental health care. I sought out College Counseling Centers that use TAO, SilverCloud, Morneau Shepell, or a school's version of a Telemental Health Program. TAO and SilverCloud are two popular Telemental Health Platforms Dr. Eisenberg has conducted studies and pilot programs. TAO Connect is The University of Florida's Counseling and Wellness Center Therapist Assisted Online (TAO) program that delivers therapy to students with anxiety disorders via a computer or smartphone (Benton et al. 2016). TAO is a several-week program that consists of several modules to observe mental health symptoms (Benton et al. 2016). Students also have weekly 10- to 12-minute video conferences with counselors, homework via an app, and text reminders (Benton et al. 2016). Similarly, SilverCloud is a secure, anonymous, and interactive platform made to help students manage feelings and causes of depression, anxiety, or stress (Doherty, Coyle, and Sharry 2012). The free app is available on most devices and consists of interactive modules including mindfulness exercises, interactive journaling, and mood and lifestyle chatting made to be completed over multi-week periods (Doherty, Coyle, and Sharry 2012). Morneau Shepell is a platform designed to complement

existing on-campus services to provide students with support in their native language and cultural context useful focused on providing culturally competent mental health services to international students. Other colleges have their Telehealth TM program that is a completely virtual counseling and therapy clinic that uses online and video technologies to serve a diverse set of students. All offerings allow students to connect with high-quality counseling and therapy providers from the comfort and security of their homes or other private locations (“NCD Mental\_Health\_Report\_508.Pdf,” 2017).

Interviews were semi-structured with questions centered around patient population characteristics, services and resources offered, challenges reaching subgroup populations, technology usage, and opinions on addressing mental health disparities at their institutions. I reached out to 26 counseling centers around the nation via email explaining the purpose of my research and requesting involvement from coordinators or directors who have implemented any version of a Telemental Health program. I received 6 responses and conducted 6 interviews through Zoom and transcribed the audio using the transcription software Ebby (Table. Information gathered from interviews with individuals involved in directing and rolling out Telemental health services for University students helped identify and understand key pain points of increasing service access, strengths and weaknesses of various service models, and various types of mental health programs being implemented around the nation. Moreover, insights gathered help inform policy recommendations for college counseling centers to implement at the center and school level.

Name	Institution	Role

Dr. Daniel Eisenberg	University of Michigan	Principal Investigator of The Healthy Minds Network
Dr. Jacaranda Palmateer	University of Denver	Director of Counseling Services
Dr. James Deegear	University of Texas A&M	Clinical Services Associate Director; Licensed Psychologist
Dr. Angel Enrique Roig	SilverCloud Health	Digital Health Scientist; Member of E-Mental Health Research Group
Dr. Meeta Kumar	University of Chicago	Director of Counseling
Tiffany Howard	University of South Carolina	Licensed Professional Counselor; Coordinator of Web-based Services

## Findings

In this section, survey data and conversations with experts on mental health care for university populations reveal significant disparities in mental health service offerings and satisfaction among and within colleges around the country. The analysis revealed many sources and barriers contributing to disparities in service access and utilization among subgroups of college student populations. Both students and healthcare providers experience many barriers contributing to the underserved mental health needs of college students in the United States.

### Disparities in Mental Health Services

Mental health service needs and service satisfaction at colleges around the United States seem to vary greatly while there is little variation in the prevalence of mental health illnesses across colleges. Nearly half of all respondents reported symptoms of one type of mental health

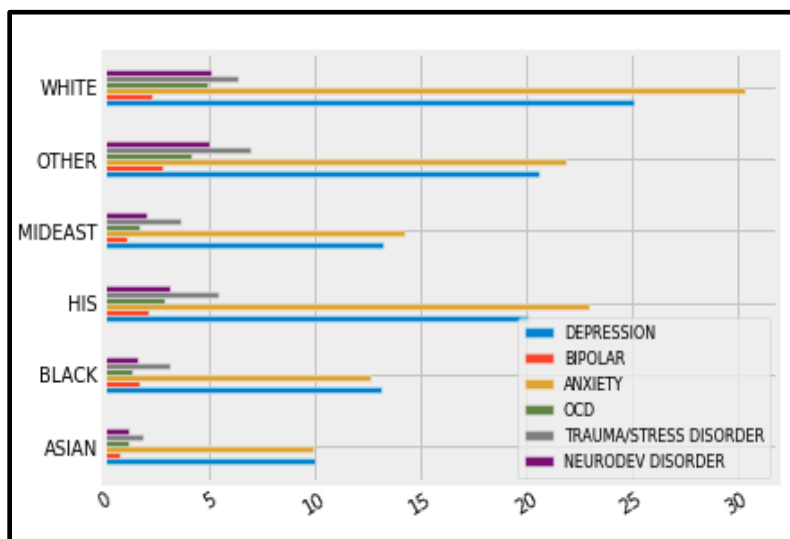


Figure 1

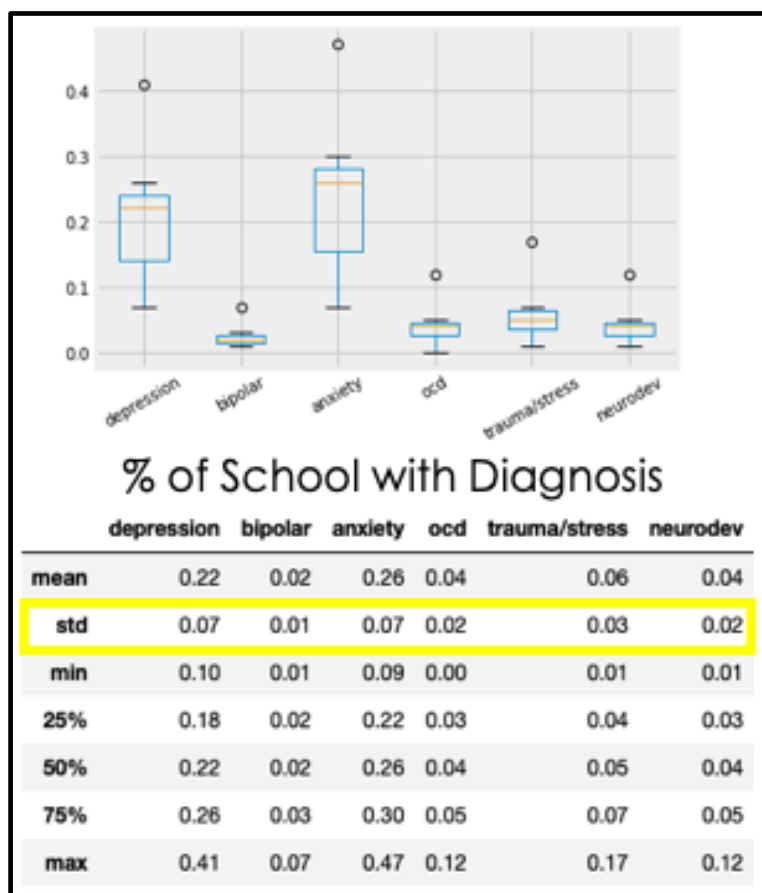


Figure 2

illness with only 52.6% of respondents reporting symptoms of none (Appendix Table 1). Depression and anxiety are the most prevalent mental health illnesses among college students and these trends hold across all races (Appendix Figure 1). Respondents experienced the highest rates of diagnosis in depression and anxiety with 25.6% of respondents diagnosed with anxiety and 21.7% diagnosed with depression (Appendix Figure 2). Looking at the standard deviations for percent diagnosed with depression, anxiety, bipolar disorder, obsessive-compulsive disorder, trauma or stress disorder, and neurodevelopment disorder among schools all fall under .07 (Appendix Figure 2).

Despite experiencing high rates of mental health issues, students utilize their school's mental health resources and services at very low rates across colleges. Only 12.41% of respondents are currently in therapy or using any mental health services whereas 78.4% of students have been taking with other non-clinical sources to meet their mental health needs (Appendix Table 5). The discrepancy between mental health needs and service utilization among college students was explored

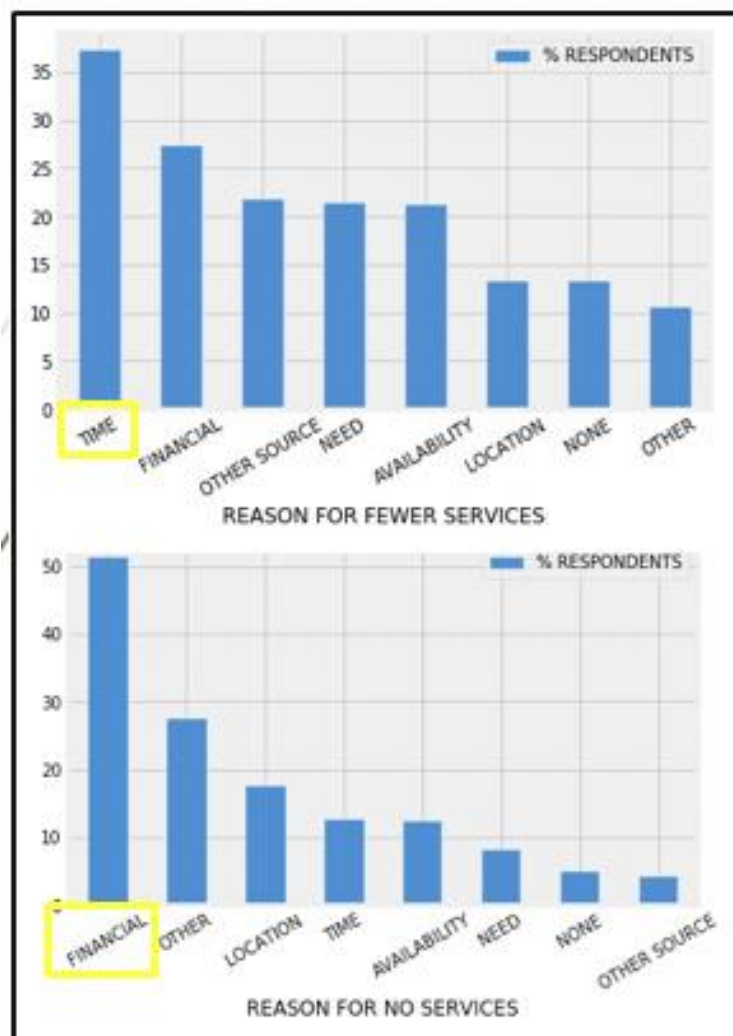


Figure 3

further through analysis of barriers to receiving and seeking mental health services. The Principal Investigator of the Healthy Minds Network, Dr. Daniel Eisenberg recognizes the underutilization of resources stating that “students are not seeking help or not accessing services when they probably would benefit a lot and should.” He has found that a lot of cases of students not accessing services when they should be not because of the negative attitudes or stigma about mental health services, but because students lack urgency. Students do not think their issues are real issues, do not feel they have enough time, plan to but haven't done so yet, or are getting enough support from other sources. Survey

data found students' barriers to utilizing services include not enough time, financial reasons (too expensive, not covered by insurance. e.g.), prefer to deal with issues on their own or with support of family and friends, no need for services, difficulty finding an appointment, not sure where to go, and other reasons.

The largest barrier for students in receiving mental health services is lack of time and the largest barrier to students seeking treatment is financial concerns. 37.7% of students said the reason they received fewer mental health services was due to not having enough time (Appendix Figure 3). Other reasons for receiving fewer services include financial concerns (27.5%), having other sources of support (21.8%), perceived need (21.5%), appointment availability (21.3%), and not knowing where to access (13.4%) (Appendix Figure 3). 51.4% of respondents reported financial concerns to be the reason for not seeking mental health services (Appendix Figure 3). Other reasons for not seeking services are not knowing where to access services (17.7%), time constraints (12.6%), availability issues (12.5%), perceived need (8.2%), and other (27.7%) (Appendix Figure 3). The greatest reason for the underutilization of mental health services is not due to lack of perceived need, but lower rates of service are more attributed to scheduling and financing barriers.

Additionally, financial reasons are the most common reasons students haven't sought mental health services, and financial stress can significantly increase the need for mental health services. Financial stress and the need for mental health services are negatively correlated (-.20) with each level increase in financial stress severity (Appendix Table 14). The strong negative correlation is notable as more than half of students cite financial concerns for not seeking mental health help, and students struggling financially may be in more need of mental health services. The odds for whether a student receive mental health care treatment differs significantly by an

individual's insurance type (Appendix Table 12). The source of current health insurance coverage for the majority of respondents was through their parents or parents' employer (62.58%) (Appendix Figure 5). Other sources of health insurance coverage were student health insurance (10.43%), Medicaid or other government insurance (6.23%), individual health insurance from an insurance carrier (1.9%), and health insurance through an embassy or sponsoring agency for international students (.33%) (Appendix Figure 5). About 4.22% of survey participants were uninsured and 14.3% uncertain about whether they have health insurance (Appendix Figure 4).

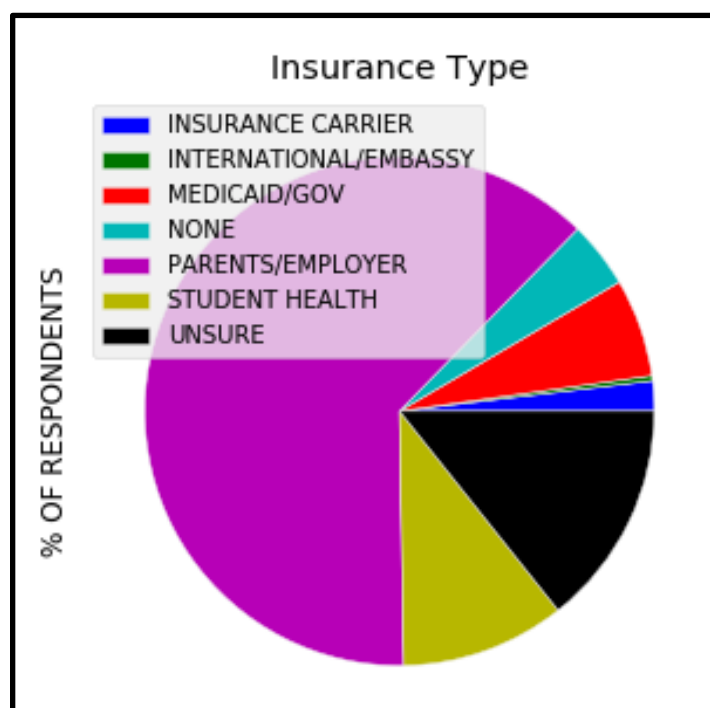


Figure 4

### Barriers to Mental Healthcare Services

Although the distribution of mental health illnesses seems to be similar among race and ethnicity, White students are reported to be diagnosed at higher rates and seek treatment at higher rates as suggested from previous research. There is disparately low mental health service

utilization among minority groups. The percentage of respondents who have been to therapy is lowest for Asian students at 23.8% compared to their White counterparts at 48% (Appendix Table 4). International students have significantly lower rates of mental illness diagnoses and are less likely to be utilizing their school counseling center's mental health resources and talk to other sources for mental or emotional health (Appendix Table 22, 23). An international student is 8.6% less likely to be currently be diagnosed with depression and 11.4% less likely to be diagnosed with anxiety (Appendix Table 2, 23). Additionally, international students are 3.9% less likely to turn to non-clinical sources for emotional and mental health support (Appendix Table 2, 23). The lower utilization for services among these groups is partially due to cultural barriers such as distrust in counseling services and poor cultural matches between the patient and provider.

In addition, survey responses reveal disparities in mental health service utilization between female and male respondents. Female students utilized their school's mental health services at rates almost twice than that of males with 14% of females reporting service use compared to 8% of males (Appendix Table 6). Though, diagnosis rates of mental health illnesses for females are almost twice the rate for males (Appendix Figure 5). Females are more open to reaching out for mental and emotional support both formally and informally. 80% of Females reported having talked to a non-clinical source compared with 75% of Males (Appendix Table 7). Males are more likely on average to access fewer services due to preferring other sources for support (Appendix Table 22, 23). Similarly, 4.1% of females reported talking to a professional compared to 3.8% of Males who reported talking to a professional (Appendix Table 7). It should be noted there may be potential biases at play that result in the under-reporting of help-seeking behavior in Males.

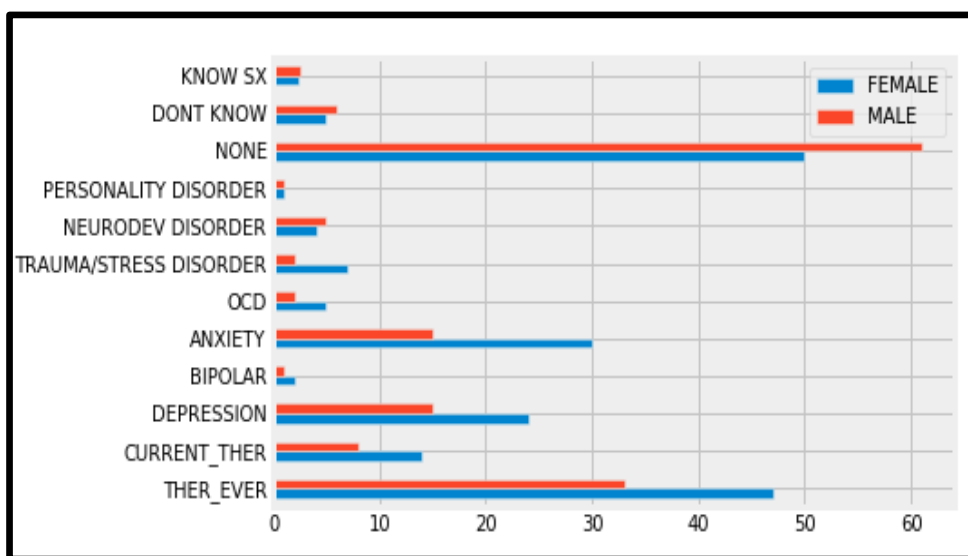


Figure 5

Gender disparities in mental health service utilization could be attributed to differences in the perceived need for services and openness to reaching out for mental and emotional support, rather than the stigma attached. On a scale of 1 (Strongly Agree) to 6 (Strongly Disagree), students were asked to agree or disagree with statements to assess the personal and the perceived stigma of seeking mental health services. The statements were “I would willingly accept someone who has received mental health treatment as a close friend.” and “Most people would willingly accept someone who has received mental health treatment as a close friend.” Males reported less personal and perceived stigma for seeking mental health services. The average response that measured perceived stigma was 5.02 for Males and 5.283 for females whereas the average response for personal stigma was 1.62 for Males and 1.44 for Females (Appendix Figure 6). When asked the reason for not seeking services, 37.7% of males gave no need for service as a reason whereas only was 24.5% of women gave the same reason (Appendix Figure 7).

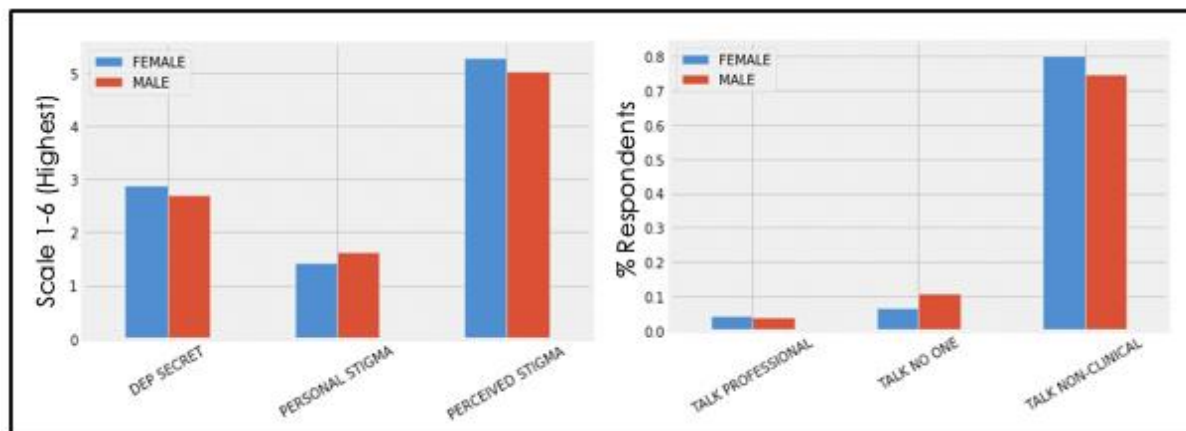


Figure 6

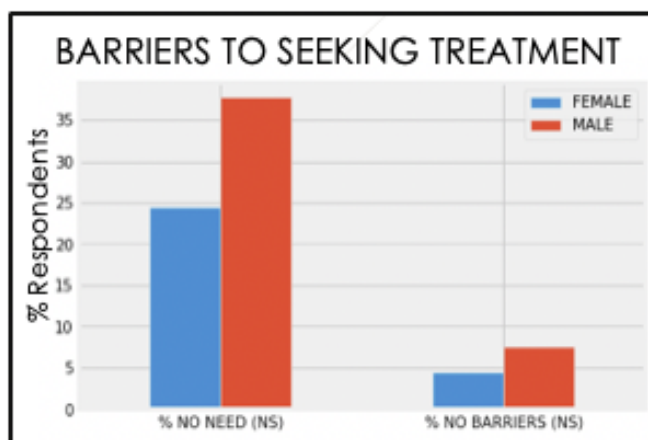


Figure 7

Survey data suggests students are not seeking help or not accessing services at equal rates to the prevalence of mental health illnesses because of time constraints, financial reasons, other sources of support, and perceived need. Students who experienced no barriers to receiving mental health services are 5.291 times more likely to currently be utilizing their school's therapy than those who did (Appendix Figure 9). Furthermore, the reasons subgroups of the student population do not access or receive mental health services are statistically correlated. Students who are International, Asian, Black, and Hispanic students are on average less likely to be utilizing current therapeutic services (Appendix Table 23). White students were the only racial

group negatively correlated (-.038) with not seeking services due to lack of perceived need, while Black, Hispanic, and Asian groups had positive correlations (Appendix Table 22, 23). Financial stress is a large determinant for whether a student deems mental healthcare services necessary. Black, Hispanic, and Asian students on average do not seek services at higher rates than White students due to lack of perceived need. A student not seeking services due to financial reasons is significantly positively correlated with a student being Asian (.073) and International (.054) (Appendix Table 22, 23). Being Hispanic increases the chance the student isn't insured on average of 9% and being Black increases the chance the student is uninsured on average by 4% (Appendix Table 22, 23). Financial stress is lower on average for International, Asian, and White students (Appendix Table 22, 23). Receiving fewer mental health services due to all other reasons but perceived need positively correlated with being male, Asian, and White (Appendix Table 22, 23). In other words, the reasons why males, Asians, and Whites not receiving treatment were not associated with lack of perceived need but associated with time constraints, financial reasons, and having other sources of support. Beyond affordability, documentation status also becomes an important consideration for a student when deciding to seek out healthcare services and especially relevant for international and Hispanic students.

The availability of other sources available for students to talk to for mental or emotional support can significantly decrease the demand for the school's therapy and counseling services. Those who have talked to anyone for mental and emotional support are 5 times less likely to utilizing services than students who have (Figure 9). Those who haven't talked to a non-clinical source are 13% more likely to be currently utilizing mental health services than students who have talked to another source (Appendix Figure 9). With each level increase in the perceived need for mental health services, the odds of the student utilizing their school's therapy services

increases by 1.7211 than those at a level lower in perceived need (Appendix Figure 9). This suggests students may not need a professional source for mental support if other non-clinical sources are made accessible. For students who indicated availability, financial concerns, time constraints as reasons for fewer services, there is an average of .2, .21, and .23 decrease on the perceived need response variable for mental health services (Appendix Figure 9). Students who don't seek mental health services due to lack of perceived need are 10 times less likely to currently be utilizing their school's therapy than those who acknowledge the need for services (Appendix Figure 9). Again, this statistic reinforces time and availability as a key indicator of whether mental health services are accessed.

### **Key Determinants for Mental Healthcare Utilization**

To analyze indicators that increase the likelihood of a student utilizing mental health services, I ran a logistic regression with the outcome variable being whether a student is currently in therapy and the input variables being gender, race, age, disability, experienced barriers, insurance type, financial status, knowledge of mental illness symptoms, and whether they've talked to other sources. Controlling for other variables in the model, a student's financial situation, perceived need, perceived barriers, insurance type, disabilities, other sources of support, knowledge of mental illness symptoms, and whether a student is international made a significant impact on whether they are currently utilizing mental health services. Survey results confirm disparities in utilization of mental health services on college campuses among student subgroup populations. Disabled students are 1.801 times as likely to currently be utilizing their school's therapy than those who aren't disabled while international students are .61 times as likely to be currently utilizing therapy services than students not international (Appendix Figure 9).

	5%	95%	Odds Ratio
<b>C(gender)[T.1]</b>	0.510024	0.715226	0.604
<b>C(gender)[T.2]</b>	0.575811	0.795059	0.677
<b>C(FS)[T.fs_financial]</b>	1.275485	1.761613	1.499
<b>C(FS)[T.fs_no avail]</b>	2.033868	2.956378	2.452
<b>C(FS)[T.fs_no barriers]</b>	4.468331	6.264108	5.291
<b>C(FS)[T.fs_no need]</b>	0.084823	0.117902	0.100
<b>C(FS)[T.fs_no time]</b>	1.199646	1.659289	1.411
<b>C(FS)[T.fs_prefer other source]</b>	0.659057	0.961578	0.796
<b>percneed</b>	0.565896	0.595656	0.581
<b>Ins_parentsemployer</b>	1.654295	1.970914	1.806
<b>Ins_studenthealth</b>	2.305905	2.893966	2.583
<b>Ins_medicaid</b>	2.084688	2.648360	2.350
<b>Disab</b>	1.433681	2.262413	1.801
<b>age</b>	1.012498	1.020568	1.017
<b>Talk_noone</b>	0.174184	0.246028	0.207
<b>Talk_nonclinical</b>	0.812627	0.965653	0.886
<b>international</b>	0.530431	0.709712	0.614
<b>fincur</b>	1.062847	1.116158	1.089

Figure 9

Using backward selection, the most statistically significant features of an ordinary least squares model in predicting whether a student is currently in therapy is reporting no barriers to receiving services, level of perceived need, whether the student has been in therapy before, and having previously been diagnosed with trauma or stress disorder. Perceiving no barriers increased the average likelihood of students currently accessing therapy by 34.4% (Appendix Table 14). For each unit of perceived need increase, the average likelihood the student is accessing therapy increases by 2.5% (Appendix Table 19). The expected probability a student is accessing school therapy services is 8.1% higher for individuals who have been to therapy before

and 10.6% higher for individuals diagnosed with trauma and stress disorders (Appendix Table 20). These variables have the biggest influence on determining whether a student utilizes mental health resources on campus when controlling for all other included variables.

### **Variations Across Counseling Centers**

Despite little variation in the prevalence of mental health illnesses across schools in the United States, the satisfaction of counseling center services differs significantly across institutions. Availability to schedule appointments without long delays has the highest variability across schools with a standard deviation of .62, max average school rating of 6.00, and min average rating of 2.89 (Appendix Figure 11). Some schools have extremely high satisfaction in their scheduling practices and some schools have very low satisfaction. The large range in scheduling satisfaction is concerning as students who didn't experience barriers in scheduling appointments without long delays are 2.452 times more likely to currently be utilizing their school's therapy than those who did (Appendix Figure 9). Both convenient hours and quality of therapists had a standard deviation of .38 across schools, showing a substantially smaller spread than scheduling satisfaction (Appendix Figure 11). Average school ratings for all five indicators showed outliers with extremely low satisfaction while the quality of therapists and counselors and privacy had outliers with high satisfaction. Schools around the nation are falling short in all categories when it comes to meeting the mental health needs and preferences of students.

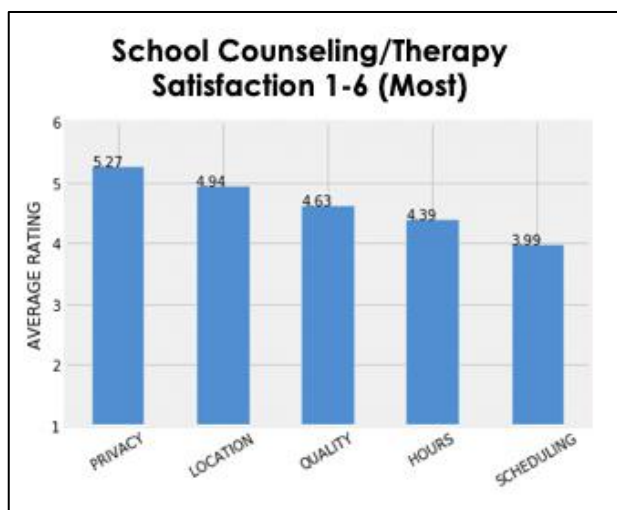


Figure 10

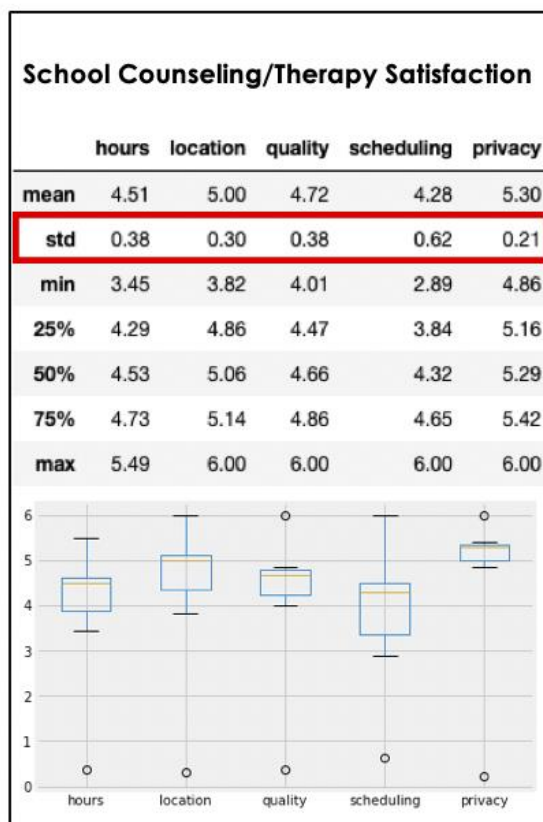


Figure 11

Universally, students were most satisfied with their centers' ability to address privacy concerns and least satisfied with scheduling services. Survey results indicate college counseling centers struggle with offering convenient hours and scheduling appointments without long delays due to a lack of staff and clinical professionals. On a scale from 1 (Very Dissatisfied) to 6 (Very Satisfied), survey participants were asked to rate their college counseling and therapy centers on a variety of aspects. The average satisfaction rating among respondents for their college counseling centers was 5.27 for privacy concern, 4.94 for location, 4.63 quality of therapists and counselors, 4.39 convenient hours, and 3.99 for availability to schedule appointments without long delays (Appendix Figure 10).

Schools' use of different medical record systems and service delivery models may explain differences in service satisfaction as systems affect the ease of scheduling mental health services and transition to virtual services. Electronic Medical Record Systems, being a web-based system, has allowed schools that use them to transition to working remotely essentially seamlessly. Many larger schools around the United States have switched to an electronic medical record system called point-and-click scheduling allowing for an online interface that has facilitated the ease of access for students to be connected to services. Schools who had electronic medical record systems called "point-and-click" scheduling allowed students to connect with services more conveniently through web-interface instead of relying on human interface scheduling during business hours. Counseling centers report a steep learning curve with web-based point-and-click at the moment, however, the system made the scheduling of zoom appointments and creating meeting links especially simple. Dr. James Deegear, the Clinical Services Associate Director at Texas A&M, reports his center's EMR being web-based has allowed their staff to "continue job functions remotely without any hiccups," and making the transition essentially seamless. Similarly, Director of Counseling Services, Dr. Jacaranda Palmateer, attributes the University of Denver counseling center's transition to Telehealth to be "a lot quicker than most places" because of their point-and-click scheduling system. Dr. Palmateer's counseling center saw only a drop of 5 to 7% of clients when the pandemic hit, whereas other centers saw a 30 to 40% drop as they weren't able to transition as quickly. Furthermore, The University of Denver saw an increase in service utilization for retained students as their center experienced a two to three-fold increase in counseling services use during the pandemic.

Similarly, counseling centers' scheduling and service delivery models impact the number of students centers can see and retain. Texas A&M's counseling center saw a drastic spike in first-time appointments when it shifted to a 30-minute model vs a 1-hour model for the initial appointment. The change in service model increased the availability of appointments, allowing more students the opportunity to receive counseling. Although the model increased availability for triage appointments and allowed the center to see more students, Dr. Deegear noted the transition increased the pressure to retain students as their center became less able to see returning students as frequently. As a result, centers have increased outreach efforts and engaged more in preventative education for the campus and educating people about mental health to catch symptoms earlier and teach good self-care practices.

As a result of varying levels of staff and resources available to centers, schools differ in their outreach efforts and diversity and inclusion initiatives to address disparities in their centers' service access and utilization. Dr. Meeta Kumar, the Director of Counseling at the University of Chicago believes the promotional aspect of mental health services to make a difference in how much students utilize mental health resources on campus as "the hardest to reach groups are the ones who have the greatest barrier in reaching out." Campus Outreach and engagement, whether through technology-driven platforms or not, raise mental health awareness to make people realize they need help. Tiffany Howard, a licensed Professional Counselor, recognizes the strengths and weaknesses of counseling centers lie in the center staffs' ability to identify students who need help and get them to access services. Larger schools have the more resources for campus engagement and outreach initiatives such as preventative education to educate individuals on how to identify symptoms of mental illnesses, learning modules to teach individuals how to talk with somebody who is needing mental health or emotional support, and

self-care techniques. These forms of outreach foster additional support sources for individuals that may have only mild symptoms of mental illnesses and do not necessarily need to see a professional.

Additional efforts centers have made to address disparities among the student population include speaking with administrative heads of different academic units, faculty, and staff and internal departments focused on diversity initiatives. Many schools have adopted a version of a “Let’s Talk” program to facilitate conversations between students and counselors with commonalities specifically designed to help international, first-generation, LGBTQ+, and students of color. Schools have utilized partnerships with Morneau Shepell and other Telehealth apps to provide better cultural matches and address language barriers. The University of Denver’s counseling center reported it occasionally had international students utilize Morneau Shepell in Mandarin, but overall, most students used the app in English and the most utilized feature was the 24/7 chat to text a mental health support professional. Telehealth apps proved beneficial not just for international students but for all students in increasing access to immediate support. Another way counseling centers have engaged in campus outreach has been via email including an interactive screening program where surveys are sent to assess students’ moods to identify students who may be at risk for increased stress levels. Proactive initiatives such as screening programs are helpful in identify ad engage students who may not be aware of their symptoms and increase the perceived need for treatment.

The demographic and socioeconomic status makeup of schools differs greatly among schools. From the 75 schools sampled the proportion of White students ranged from 11.4% to 93% (Appendix Table 21). Similarly, Black student populations across schools ranged from .4% Black to 46% Black (Appendix Table 21). There were schools with no international, Asian, and

Middle Eastern survey participants, while other schools reported 46% international, 30% Asian, and 15% Middle Eastern (Appendix Table 21). When asked to rank the current financial situation from 1 (Always stressful) to 5 (Never stressful), the maximum school average rating was 3.29, and the minimum average school rating 2.26 with a standard deviation of .26 (Appendix Table 11). Schools need to consider their student population to be able to provide culturally competent care and reduce financial barriers to treatment. Offering culturally competent care is a large determinant in the strength of the therapeutic alliance between a provider and patient and whether an individual continues mental health treatment. The spread of financial status of students across schools is indicative of the different abilities and willingness to meet the financial needs of mental health treatments. With each level a student's financial status becomes more stressful, the odds the student is currently in therapy decreases by 9% than a student at one level stress higher (Appendix Figure 9).

College counseling centers also need to consider the health insurance coverage of their student body when striving to increase mental health service access and utilization. Insurance coverage of students differs across schools ranging from 0% to 21% uninsured (Appendix Table 11). The percentage of health insurance coverage through parents or parents' employers, student health, and Medicaid differ significantly across schools. The school with the highest percent health insurance coverage through parents or parents' employers is 78% while the school with the lowest is only 28% (Appendix Table 11). Similarly, the school with the highest percent health insurance coverage through student health is 35% while the school with the lowest is none at all (Appendix Table 11). Students who are insured by parents or parent's employer, student health, and Medicaid or other governmental agency are 1.8, 2.58, and 2.35 times more likely to utilize mental health services than those who aren't (Appendix Figure 9). This is relevant to

counseling centers to make sure service offerings align with their students' financial needs as well as making sure students are aware of treatment costs.

### **Attitudes & Preferences Towards Telehealth Services**

Before the pandemic, almost every school campus in the country was having trouble meeting the demand for their Counseling Services urging schools to adopt Telehealth platforms and increase outreach efforts to address rising demands. Larger schools have more resources and a bigger capacity to offer outside resources to students, however, they are unable to see students as frequently as every two or three weeks. Community colleges and regional colleges often do not have a lot of resources per-student and some, not even a counseling center. Schools cannot sustainably keep hiring more staff to meet the accelerating demand for mental health services on campus. Dr. Angel Enrique Roig, a Digital Health Scientist at SilverCloud Health, notes most schools use Telehealth apps as part of a short-term or step-based model. Step-based models operate under the assumption that not every student needs high-intensity treatment to recover from their mental health needs. Apps are utilized mainly to increase rates of access for students not substitute the role of a mental health professional. Dr. Roig's research has found not every student needs to go through face-to-face treatment so the use of technology-driven platforms that allow centers to stratify students' mental health needs by severity and allot different treatment plans are extremely effective. Telehealth apps have been used by schools to serve as a first-line of treatment, and if individuals do not improve, they would be escalated to a higher intensity treatment which may be face-to-face treatment. This type of model has been found to help create a more efficient waiting list and also allows students who are waiting for face-to-face treatment to receive immediate intervention.

Most students were open to using an app for wellness or mental or emotional health. Only 9.5% of students reported they weren't open to using any app while 44.6% of responses indicated yes and 45.9% of responses marked maybe (Appendix Figure 12). A large proportion of respondents believed apps to be somewhat helpful for people their age who were having mental or emotional health problems. When participants were asked to rate how helpful they believed apps to be on a scale of 1 to 4 (4 being not helpful), 28% of students believe apps to be helpful while 50% of students believed apps to be somewhat helpful (Appendix Graph 3). Given that nearly half of students indicated they were unsure of whether they'd be open to using a wellness/mental health app, it is important to understand where students' hesitations lie.

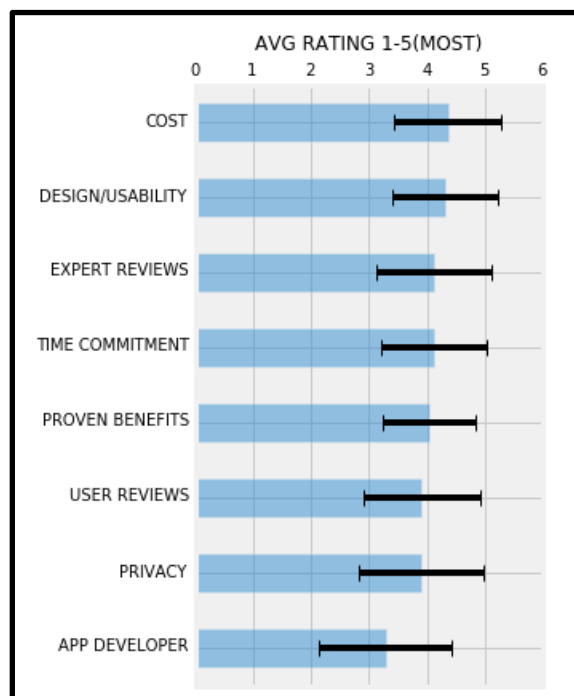


Figure 13

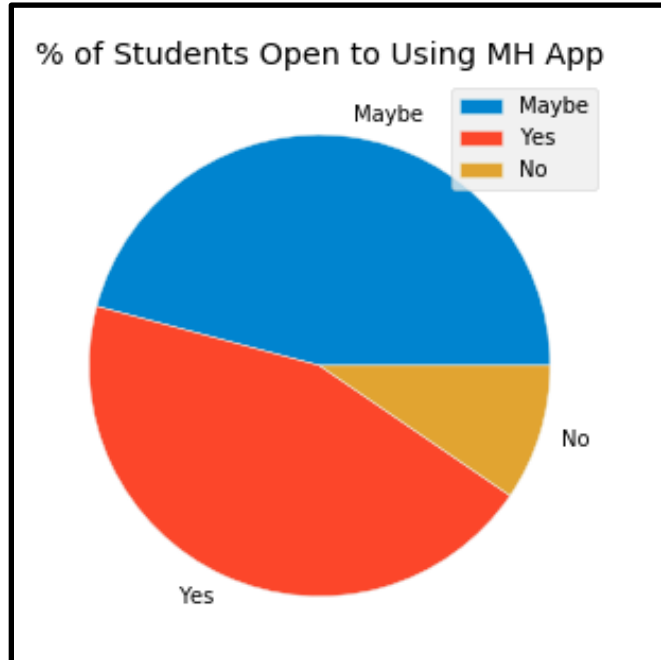


Figure 12

Findings show students place the most emphasis on cost and usability and the least importance on the app developer when deciding on an app to use. Students were asked to rank feature importance from 1 (Not at all important) to 5 (Very Important) to assess feature importance when deciding on which wellness/emotional health app to use. The average response of students who answered was 4.36 for cost, 4.31 for design

and usability, 4.12 for expert reviews, 4.12 for the time commitment required, 4.04 for proven benefits, 3.91 for user reviews, 3.90 for privacy, and 3.28 for the app developer (Appendix Figure 13). This indicates counseling centers should prioritize cost-effective easy-to-use mental health apps, while still considering the reputability of the app.

Study results suggest students are more likely to consider using apps proven to work. Students are most aligned in their ratings for the importance of the app having research showing its benefits with only a standard deviation of .80 (Appendix Figure 13). Students cared least about the app developer in making their decision to utilize a mental health app on average, however, students' answers were most polarized in their importance rating for privacy concerns. Failure to offer an app that meets the privacy concerns of students may result in a large group of students not adapting a mental health app. The app developer importance rating showed the

greatest variation in response with a standard deviation of 1.14, meaning the average difference in response differs by well over one level of perceived importance (Appendix Figure 13). This means the amount of consideration about an app's developer varies greatly from student to student when deciding on which wellness or emotional health app to use.

Studying differing preferences for Telehealth technologies among college students can shed light on best practices for technology design and implementation for targeted outreach efforts. Students' app preferences for mental health and wellness apps were significantly correlated with several experienced barriers to accessing mental health services at school. Students who indicated time constraints or using other sources of support as reasons for receiving fewer mental health services had a .14 higher importance rating for app design and usability (Appendix Figure 15). Those who indicated financial reasons for receiving fewer mental health services are expected to place a .13 increase on average importance rating on app design (Appendix Figure 15). Those who lack time, don't want to use other sources of support, and are cost-conscious may be more ideal candidates to adopt an easy-to-use mental health app. Students who have run into long delays with scheduling in the past are expected to place a .12 decrease in importance rating on app cost (Appendix Figure 15). Students who have been frustrated with scheduling are less likely to care about the cost of an app to receive mental health services. A .12 increase in privacy importance rating can be expected for students who didn't hold other reasons for receiving fewer services (Appendix Figure 15). Addressing privacy concerns regarding help-seeking on apps may indicate an opportunity to reach students who have not sought mental health help in the past due to other reasons.

The importance ratings for features in influencing students' decisions to adopt a mental health app only showed significant correlations with a student's gender. Females had

significantly positive correlations (PCC), placing increased importance on design and usability of the app (.144), expert reviews (1.22), cost of app (.11), and time commitment of app (.156) (Appendix Figure 14). Surprisingly, there were no statistically significant correlations in preferences among other subgroups of the population, such as older populations, international students, or disabled students (Appendix Figure 14). Thus, differences in experienced barriers to access and utilization among subgroups can provide additional considerations for technology developers to inform ways to increase rates of adoption.

It is important to note app preferences may not be generalizable outside of the study, because questions about app preferences on the survey were worded theoretically. Theoretical wording of questions may introduce biases in student responses and reflect what features they feel they *should* weigh more heavily in their decision rather than what they feel at the time of the decision in reality.

FEATURE	GENDER		AGE		INT		DISAB	
	PCC	PVAL	PCC	PVAL	PCC	PVAL	PCC	PVAL
PROVEN BENEFITS	0.087	0.092	0.023	0.648	-0.009	0.859	-0.003	0.952
DESIGN/USABILITY	0.144	0.005	0.047	0.358	-0.070	0.170	0.057	0.262
PRIVACY	0.030	0.555	0.054	0.291	0.019	0.708	0.039	0.443
USER REVIEWS	0.061	0.236	-0.024	0.637	0.032	0.534	0.007	0.898
EXPERT REVIEWS	0.122	0.018	-0.025	0.628	-0.054	0.291	-0.009	0.856
APP DEVELOPER	0.004	0.930	0.014	0.790	-0.038	0.451	0.041	0.419
COST	0.110	0.031	-0.020	0.690	-0.054	0.293	0.012	0.820
TIME COMMITMENT	0.156	0.002	-0.025	0.630	-0.028	0.581	0.029	0.572

Figure 14

	NEED (FS)	FINANCIAL (FS)	TIME (FS)	LOCATION (FS)	AVAILABILITY (FS)	OTHER SOURCE (FS)	OTHER (FS)	NONE (FS)	TIME (NS)	NEED (NS)	FINANCIAL (NS)	LOCATION (NS)	AVAILABILITY (NS)	OTHER SOURCE (NS)	OTHER (NS)	NONE (NS)
PROVEN BENEFITS	0.902	0.778	0.1102	0.6269	0.4118	0.3552	0.6933	0.4001	0.778	0.1311	0.7838	0.7699	0.4995	0.0957	0.28	0.9132
DESIGN/USABILITY	0.9436	0.0365	0.0271	0.2189	0.0874	0.0272	0.2547	0.8338	0.1866	0.1612	0.2007	0.892	0.9798	0.1175	0.5716	0.3503
PRIVACY	0.64	0.47	0.4656	0.225	0.9732	0.3347	0.0431	0.3689	0.9941	0.0764	0.9894	0.1608	0.9831	0.7594	0.3446	0.1784
USER REVIEWS	0.5036	0.0793	0.277	0.2633	0.3025	0.1035	0.9331	0.4336	0.8431	0.5308	0.8416	0.6031	0.9511	0.7434	0.2993	0.3537
EXPERT REVIEWS	0.1565	0.0586	0.1843	0.3593	0.7584	0.2441	0.7059	0.6894	0.2762	0.1145	0.3801	0.3231	0.3213	0.6433	0.297	0.5038
APP DEVELOPER	0.6597	0.9005	0.8404	0.9479	0.6506	0.4952	0.0788	0.9343	0.964	0.0251	0.888	0.5308	0.728	0.5033	0.4583	0.05
COST	0.5454	0.3619	0.4299	0.3332	0.0457	0.7735	0.134	0.48	0.2708	0.4714	0.8108	0.5615	0.328	0.2846	0.4566	0.919
TIME COMMITMENT	0.8127	0.2513	0.4598	0.5249	0.3484	0.4963	0.2663	0.7991	0.7443	0.3343	0.4655	0.9003	0.8681	0.2663	0.7844	0.8593
	NEED (FS)	FINANCIAL (FS)	TIME (FS)	LOCATION (FS)	AVAILABILITY (FS)	OTHER SOURCE (FS)	OTHER (FS)	NONE (FS)	TIME (NS)	NEED (NS)	FINANCIAL (NS)	LOCATION (NS)	AVAILABILITY (NS)	OTHER SOURCE (NS)	OTHER (NS)	NONE (NS)
PROVEN BENEFITS	0.0079	0.0181	-0.1023	-0.0312	-0.0527	0.0593	-0.0253	-0.0540	0.0181	0.0967	-0.0176	0.0188	0.0433	0.1067	0.0693	-0.0070
DESIGN/USABILITY	-0.0045	0.1337	0.1412	0.0788	0.1094	0.1412	0.0730	-0.0135	-0.0847	0.0898	-0.0820	-0.0087	0.0016	0.1003	-0.0363	-0.0599
PRIVACY	-0.0300	0.0464	-0.0468	-0.0778	0.0022	0.0619	-0.1294	-0.0577	-0.0005	0.1134	-0.0008	0.0899	-0.0014	0.0197	0.0606	-0.0862
USER REVIEWS	0.0429	0.1123	0.0697	0.0717	0.0661	0.1043	0.0054	-0.0502	0.0127	0.0402	-0.0128	0.0334	0.0039	-0.0210	-0.0666	-0.0595
EXPERT REVIEWS	0.0908	0.1210	0.0851	0.0588	0.0198	0.0747	-0.0242	-0.0257	-0.0698	0.1011	-0.0563	-0.0634	-0.0636	0.0297	-0.0669	-0.0429
APP DEVELOPER	-0.0283	0.0080	-0.0129	0.0042	-0.0291	0.0438	-0.1125	0.0053	-0.0029	0.1431	-0.0090	0.0402	-0.0223	-0.0430	0.0476	-0.1254
COST	0.0388	0.0585	0.0507	0.0621	-0.1278	0.0185	0.0960	-0.0453	-0.0706	0.0462	-0.0154	-0.0373	0.0628	0.0686	0.0478	0.0065
TIME COMMITMENT	0.0152	0.0736	0.0474	0.0408	-0.0602	0.0437	0.0713	-0.0163	-0.0209	0.0619	-0.0468	0.0080	-0.0107	0.0713	0.0176	-0.0114

Figure 15

## Implementing Telehealth Programs Before and Throughout COVID-19

College counseling centers around the country have utilized Telemental health services in various ways, employing both technology-enabled services to substitute in-person services and technology-driven services to complement other offerings. Schools around the country have used technology-enabled services for the first time to offer as close an approximation as they can to replicate in-person options in the remote environment. Some schools, such as The University of South Carolina, have turned to solely providing teletherapy and online counseling throughout the pandemic. Dr. Eisenberg notes that “Almost every university or large 4-year institution with a fair amount of resources are offering some type of Telemental health service and around half of them are now offering some kind of Online Therapy Program in addition to core services during the pandemic.” Schools have found the convenience of accessing services on the phone increases access for students throughout the pandemic. One example of this can be seen at The University

of Chicago where clinicians began tapping into mobile workshop offerings to have asynchronous use for students in different time zones.

Since the start of the pandemic, counseling centers around the country reported overwhelmingly positive experiences with virtual service offerings as they facilitate the ease of access to students to get connected with their center's services. In particular, centers have found Telehealth appointments might distinctively benefit subgroups within the student population as The University of Denver's center reported their graduate students found Telehealth appointments a lot more convenient than traditional in-person appointments. Licensed Professional Counselor at the University of South Carolina reports "if anything it is a little bit easier for some students because they don't have to come to campus or find parking." With mostly positive experiences, every interviewee I spoke to predicted their center would offer some type of combination of in-person and virtual services post-pandemic.

Despite overall positive experiences with the shift to virtual offerings, care-providers did notice several drawbacks to transitioning to solely virtual service offerings. One notable observation a center observed was that students who began face-to-face meetings and transitioned into zoom were more satisfied with students who started in the zoom environment. The University of Chicago's counseling center found some services to be difficult to replicate online such as therapy groups due to the complicated emotional relationship dynamic that needs to form in virtual environments. Privacy issues include making sure students were appropriately informed about what they were consenting to and what confidentiality looks like when using Telehealth services. Schools had to work closely with legal to develop new consent forms and procedures. For example, specific consent forms in case of emergencies were needed to make sure clinicians were able to provide adequate care to a student who's in a crisis when you get

disconnected from a call. The University of South Carolina has addressed the portion of students who may not have access to a confidential space and have made therapy rooms available in the counseling center to use for teletherapy. Dr. Kumar reported Zoom fatigue to be a factor to consider as clinicians risk a potential burnout being on zoom back-to-back all day.

Both patients and clinicians are susceptible to zoom fatigue and technology-enabled interfaces introduce challenges as it creates a less personal feel. A tradeoff between increasing accessibility and service quality when utilizing and employing Telehealth services.

### **Policy Recommendations**

In this section, I focus on policy recommendations to address access-related, cultural, and financial barriers to mental health care in college student populations. Recommendations discussed are designed to be implemented at the school level. Counseling center and school level recommendations are directed primarily to center directors, coordinators, clinicians, and any other party involved in implementing mental healthcare services, programs, and initiatives. State-level and national-level legislation such as interstate licensing, data confidentiality, and reimbursement policies are considered in providing recommendations as they limit the extent to which healthcare providers can implement Telehealth technologies.

### **Expanding Mental Health Treatment Access Through Telehealth Programs in Service Delivery Models**

The adoption of Telehealth services by counseling centers can expand treatment resources through the use of self-guided programs and other Telehealth platforms to increase non-clinical sources of support, lightening clinical loads of over-capacitated counseling centers and increasing efficacy of care. Because larger institutions struggle to maintain the same level of

clinical staffing at smaller institutions, utilizing technology-driven services in lower levels of a step-care model would lighten the clinical load of centers while maintaining quality of treatment outcomes. Larger schools have longer wait times and higher demands for mental health services to where technology-driven interventions that are immediately available would have a large impact on increasing treatment availability. Given the majority of students who express the need for mental health services experience mild to moderate symptoms, utilizing Telehealth programs to treat less severe cases of mental illnesses would increase the availability of in-person appointments for more severe cases. Self-guided programs aid college counseling centers in serving a greater proportion of their campus by reserving in-person services for individuals more suited for face-to-face treatment. Individuals such as individuals with higher severity mental health cases or marginalized clients with physical and cognitive disabilities who are unable to use the equipment properly. Telehealth apps can be used by schools to serve as a first-line of treatment, and if individuals do not improve, they would be escalated to a higher intensity treatment which may be face-to-face treatment. Technology-driven platforms can streamline the process of identifying severe cases of mental illnesses that should be escalated to in-person higher-intensive treatment rather than rely on an in-person referral. This type of model helps create a more efficient waiting list and also allows students who are waiting for face-to-face treatment to receive immediate intervention. Besides, a virtual offering option would serve a subgroup of the population that needs support but doesn't necessarily want to come into the center and be used for maintenance throughout periods in between appointments for better treatment outcomes.

Telehealth platforms and technologies can be used to increase the accessibility of services to reach students who lack time and experience other barriers to receiving treatment. Dr.

Eisenberg attributes the main reason students don't seek treatment is an insufficient sense of urgency. He believes "if (healthcare providers) can make something more convenient so that at that moment when the student feels a bit of urgency, they can and would immediately access services as they can with online services." Student populations can benefit greatly from the availability of a round-the-clock mental health service, such as a 24/7-hour app platform for students to reach a health care professional. This type of service offering alleviates the need for help-seeking behavior to be as intentional and scheduled as traditional in-person services. Plus, digital services hold a promising first contact point with mental health treatment with no previous experience of in-person treatment as it may be less daunting than in-person treatment (Dunbar et al. 2018). Having an initial first session can be especially impactful as students are more likely to utilize school therapy services if they have before and readily available Telehealth services can encourage help-seeking behavior for individuals down the road. It is important to note apps are only as effective as its level of user engagement. User retention and engagement are major challenges for technology-enabled mental health services, even more so than for traditional in-person service. Therefore, counseling centers must couple service offerings with sufficient campus outreach to incentivize user engagement. Technology providers can reduce barriers by marketing technology effectiveness and focusing on minimizing service delivery pain points on platforms such as more convenient scheduling.

In other ways, Telehealth programs can increase sources for emotional and mental support available to students and decrease a center's clinical load. The implementation of virtual learning modules to teach students and other non-clinical sources how to talk with somebody who has mental health issues can help larger schools provide support for their students experiencing emotional distress. Self-help features of apps allow students to learn coping skills at

their convenience when unable to come into a counseling center. Findings show the availability of other sources available for students to talk to for mental or emotional support can significantly decrease the demand for school's therapy and counseling services and lighten a center's clinical load. Larger institutions typically have more resources and a bigger capacity to offer outside resources to students making self-guided Telehealth programs relatively low cost and easy to scale up for large 4-year institutions. The effectiveness of Telehealth offerings in expanding mental healthcare access can be evaluated by monitoring the number of new and return patients utilizing Telehealth programs and administering patient surveys to understand core reasons for using Telehealth programs over traditional in-person services.

Schools with higher Telehealth capacity should consider adopting service delivery models to increase availability, such as switching from 1-hour model to a 30-minute model for triage appointments. Adopting a model with shorter first sessions would allow centers to see more patients, and with a larger higher Telehealth capacity, allow centers to adequately supplement follow-up appointments with virtual services. Dr. Deegear noticed "students who began with face-to-face and then transitioned into doing Zoom were much more satisfied than students who started in the zoom environment and continued getting counseling through zoom environment," suggesting centers should also explore adopting a service delivery model that starts in-person then transitions to online for greater client retention. With this model, Telehealth appointments can greatly increase access by increasing availability, convenience, and satisfaction of services for returning patients.

Smaller schools should also consider adopting Telehealth services, such as virtual therapy, to increase access to mental health treatment to students. Community colleges and regional colleges often do not have a lot of resources per-student and some, not even a

counseling center. Despite fewer institutional mental health resources than traditional university students, community college students have more severe psychological concerns and higher rates of depression (Katz and Davison 2014). Community colleges consist of higher percentages of minority students and students with part-time and/or full-time jobs than traditional universities. Community college students may be ideal targets for technology-enabled mental health care services to provide an initial point of contact with mental health treatment due to the low costs and high convenience of services (Cohen & Brawer, 2008; Horn & Nevil, 2006; Miller et al., 2005; National Center for Education Statistics, 2009). The availability of online therapy and services offerings available to community college student populations could exponentially increase mental health care access to college students as these institutions as students would be essentially going from no access to services to comparably good services to traditional in-person services. The addition of an online or virtual therapy offering in smaller institutions would expand service access and be less costly than hiring more clinical staff making it a practical addition for smaller institutions.

### **Providing Culturally Competent Care**

Although expanding Telehealth offerings increases access to care, counseling centers should adapt campus outreach efforts to further expand access to hard-to-reach and underserved populations. Given the uniqueness of college students, there is a need to outline critical issues to consider when working with this population. Schools need to consider and understand the makeup of their student populations while providing services as they vary greatly among schools and there exists significant disparities in mental health needs and experienced barriers. Outreach initiatives can increase help-seeking behavior by increasing recognition for symptoms of mental illnesses, reducing attitudinal barriers to seeking mental health treatment, and identifying high-

risk individuals. Campus outreach efforts and Telehealth services should be tailored to a school's population to reduce cultural and attitudinal barriers to seeking mental health treatment.

Outreach initiatives are beneficial in combating general distrust of counseling and addressing cultural barriers related to seeking mental health help, while Telehealth capabilities help in providing culturally competent care. Most campuses with counseling centers already participate in campus outreach efforts and could benefit greatly from reallocating resources to reach high-risk and hard-to-reach individuals.

The shortage of mental health professionals and limited funding of counseling centers reaffirms the need for centers to focus more on on-campus engagement and preventative approaches. Schools should utilize preventative approaches such as screening programs and education modules to identify and provide support to vulnerable and hard-to-reach populations. Counseling centers can utilize online screening tools to identify and build peer-to-peer support networks where students help others with mental health needs. About half of the public universities and 80% of community colleges do not have a robust online screening tool to assess the mental health of students and directly connect them with services (McGee, 2020). Many screening tools, such as a survey sent via email, can be relatively inexpensive. Centers should allocate responsibility to a portion of their department to focus on diversity initiatives focused on issues of diversity and creating opportunities to have more diverse staff members. Partnerships between counseling centers with student groups on campus can be extremely beneficial in reaching and educating traditionally under-served portions of the student population. Centers should seek out high-risk individuals by utilizing online screening tools and building campus awareness through education modules for faculty, staff, and student groups to educate individuals on how to catch early signs of mental illnesses. Centers can incentivize the

reallocation of existing resources by including outreach initiatives to count as part of the 24-hours a week of direct service for individuals working towards licensure. Direct service is traditionally defined as providing mental health intervention in doing training activities. Dr. Deegear reports the inclusion of outreach as part of direct service has made a large impact on the success of their center's outreach programs and other centers typically haven't included outreach in the calculation of 24-hours a week. In general, on-campus engagement and other outreach that mental awareness bolsters help-seeking behaviors and decreases stigma of help-seeking.

Online therapy can be employed to address cultural barriers to mental health-seeking that are difficult to address on campus by providing better cultural and identity matches between patient and provider. Telemental health platforms can provide better patient-provider therapeutic alliances by increasing shared experiences. Dr. Eisenberg discusses ways one Telehealth platform, Morneau Shepell, has been leveraged to address the cultural factors of mental health care.

Asian international students, in particular, are the lowest users of mental health services in our data, and obviously, there are cultural factors and it's not something that the campus can necessarily address itself. Probably one place to start would be to leverage the online access to services to create better cultural matches for students so that they know a service is available from people who share some of their backgrounds and then it (Teletherapy session) might relate to them better than what's available in the campus.

Morneau Shepell is a virtual therapy program designed for international students allowing students to easily find a therapist that speaks the same language and comes from the same country. Similarly, Telemental health platforms can be used to provide better patient-provider matching in many areas such as race, ethnicity, sexuality, and other important factors to student identities. Forming stronger patient-provider therapeutic alliances would increase treatment outcomes, patient satisfaction, and patient retention rates.

## **Improving Telehealth Implementation by Investing in School Counseling Centers, Compatible Medical Record Systems and Care-Provider Training**

From a public health perspective, it is important to prioritize the allocation of public and private funding and resources to expand and improve the implementation of Telemental Health in both the near-term and long-term. Funneling funding in this direction would enhance preparedness and management of current and future similar public health crises. Center funding should be allocated to making mental health services more financially accessible to students, investing in systems compatible with Telehealth offerings, and re-training health providers.

Colleges and Universities should shift from business models reliant on individual insurance and additional fees for counseling and other mental health services to fund counseling centers and move towards a model that includes services in school tuition or in a one-time student life fee. In support of this type of business model, schools should promote their free services through outreach and promotional efforts as many students do not take the time to research services on their own. Campuses should boost awareness of mental health resources during freshmen orientation, on their website, and during high-stress points of the semester as adoption of services is heavily influenced by social pressures and peer influence. With financial status and insurance-type inextricably bound to ability and willingness to pay for mental health treatments, lower-cost services and transparent service costs would reduce financial barriers and increase treatment-seeking and treatment rates. Schools that have shifted to this type found the inclusion of services in school tuition or a student-life fee resulted in increased utilization of school services. A drawback to adopting this type of business model is that counseling centers need to project service demands in advance and follow a strict budget with each calendar year.

Funding should also be complemented by training clinicians and familiarizing patients with the use of Telemental Health to maintain the efficacy of care. With the pandemics, a vast majority of schools forced counselors to shift online without any extensive procedural training. Healthcare providers need to be trained on best-practices when offering virtual services when they aren't entirely translatable. For example, counselors should be trained on techniques for building therapeutic alliance through a technology platform as centers have found it may take a longer time to form the initial connection in a virtual setting. Additionally, centers should work closely with legal to develop new consent forms and procedures. In the event of a technology breakdown, caregivers should have backup mechanisms, such as telephone access, to reach back and connect with students. Clinicians need to be trained to provide adequate care to a student in a crisis in case a virtual session is disconnected. On the other hand, health professionals must be able to communicate procedures and consent clearly and ensure patients are appropriately informed. Providers should select videoconferencing applications with appropriate to identify verification, confidentiality, and security parameters to maintain appropriate (Shore et al. 2018). During a Telemental health session, both locations shall be considered a patient examination room regardless of a room's intended use. If possible, centers should provide private spaces available to students as many students do not have readily available confidential spaces (Shore et al. 2018). A potential barrier to effective care-provider training is the lack of research done on effective Telehealth care and the rapid growth and adoption of new Telehealth technologies. As a result, care providers and designers of Telehealth technologies need to continuously evaluate the quality of care given using such technologies for better implementation.

Counseling centers should invest in medical record systems, scheduling systems, and other technologies that are compatible with Telehealth platforms to offer Telehealth services at

scale. The adoption of Electronic Medical Record Systems universally would facilitate more convenient scheduling of appointments and allow centers to effortlessly integrate Telehealth services into their offerings. Besides, counseling centers should adopt web-based scheduling systems to increase the convenience of services as not having enough time and difficulty scheduling appointments are key reasons students do not receive treatment. Web-based scheduling systems and Electronic Medical Record Systems allow students to conveniently schedule and cancel appointments without reliance on any human resources. It is important to note a barrier to adopting the point-and-click system is cost as it may make sense for only integrated counseling centers with medical centers due to their larger client base and budget. However, the widespread adoption of these systems plays a key role in reducing observed disparities in scheduling capabilities among counseling centers. As many clinicians reported technology-related issues, it is essential to facilitate setting the infrastructural landscape for Telemental Health in terms of hardware and software in preparation. This includes enhancing connectivity and expanding access to broadband high-speed Internet across the country so health professionals are equipped to provide services at bandwidth and with sufficient resolutions to ensure that the quality of the image and/or audio received is appropriate to the services being delivered.

## **Conclusion**

Even with the decreasing stigma associated with receiving mental health treatment, many other barriers contribute to the low mental health service utilization rates among colleges. The top reasons for students not seeking help or not accessing services at equal rates to the prevalence of mental health illnesses are due to time constraints, financial reasons, other sources

of support, and perceived need. Specific subgroups of students within the college student population experience financial, attitudinal, and other access-related barriers at higher rates. School variation in mental health service offerings and resources exacerbate existing mental health disparities in student populations as schools with fewer resources struggle more to expand access to care for hard-to-reach and underserved populations.

Findings from this study reveal key areas college counseling centers around the nation are failing to meet the mental health needs of their student populations and opportunities for improvement through the integration and adaptation of Telehealth services. Telehealth technologies offer promising solutions for reducing the number of barriers contributing to mental healthcare disparities by reducing clinical loads of counseling centers, increasing accessibility and efficacy of care, and increasing alternative sources of support. Some schools initially struggled to continue serving their student population through virtual service offerings while others found the transition relatively easy with the proper systems and procedures in place. Most counseling centers had positive experiences implementing Telehealth services and plan to continue offering services post-pandemic.

Moving forward, the integration of Telemental health should not be seen as a temporary fix in times of emergency; rather, it is a safe, effective, convenient, scalable, and sustainable method of healthcare delivery that is as crucial. Future research is needed for a large-scale rollout of Telehealth services on college campuses. Efforts should be focused on maximizing user retention and engagement through Telehealth technologies, strengthening interpersonal relationships through technology-enabled platforms, and maintaining privacy and confidentiality.

## Appendix

### Codebook

Item	Question	Response Categories	Notes
Current_ther	Are you currently receiving counseling or therapy?	1=Yes  0=No	
Ther_ever	Have you ever received counseling or therapy for mental health concerns?	1=No, never 2=Yes, prior to starting college 3=Yes, since starting college 4=Yes, both of the above (prior to college and since starting college)	2,3,4 = 'yes' 1= 'no'
Insurance	What is the source of your current health insurance coverage? (Select all that apply)	1=I do not have any health insurance coverage (uncovered). [mutually exclusive] 2=I have health insurance through my parent(s) or their employer. 3=I have health insurance through my employer.  4=I have health insurance through my spouse's employer. 5=I have a student health insurance plan. 6=I have health insurance through an embassy or sponsoring agency for international students. 7=I have individual health insurance purchased directly from an insurance carrier. 8=I have Medicaid or other governmental insurance. 9=I am uncertain about whether I have health insurance.  10=I have health insurance but am uncertain about where it is from.	9,10 = 'unsure' 2,3,4 = 'parents/employer'
Reason for Fewer Services	In the past 12 months, which of the following factors have caused you to receive fewer services (counseling, therapy, or medications) for your mental or emotional health than you would have otherwise received?  (Select all that apply)	1 =No need for services 2=Financial reasons (too expensive, not covered by insurance) 3=Not enough time 4=Not sure where to go 5=Difficulty finding an available appointment 6=Prefer to deal with issues on my own or with support from family/friends 7=Other (please specify) 8=No barriers [mutually exclusive]	
Reason for No Services	In the past 12 months which of the following explain why you have not received medication or therapy for your mental or emotional health? (Select all that apply)	1=I haven't had the chance to go but I plan to. 2=No need for services 3=Financial reasons (too expensive, not covered by insurance)	

		<p>4=Not enough time 5=Not sure where to go 6=Difficulty finding an available appointment</p> <p>7=Prefer to deal with issues on my own or with support from family/friends 8=Other (please specify) 9=No barriers[mutually exclusive]</p>	
Hours	<p>How satisfied/dissatisfied are you with the following aspects of your therapy or counseling that you received in the past 12 months at [pipe in selected options from: "From which of the following places did you receive counseling or therapy?"]?:</p> <p>Convenient hours</p>	<p>1=Very dissatisfied</p> <p>2=Dissatisfied</p> <p>3=Somewhat dissatisfied 4=Somewhat satisfied</p> <p>5=Satisfied</p> <p>6=Very satisfied</p>	
Location	<p>How satisfied/dissatisfied are you with the following aspects of your therapy or counseling that you received in the past 12 months at [pipe in selected options from: "From which of the following places did you receive counseling or therapy?"]?:</p> <p>Location</p>	<p>1=Very dissatisfied</p> <p>2=Dissatisfied</p> <p>3=Somewhat dissatisfied 4=Somewhat satisfied</p> <p>5=Satisfied</p> <p>6=Very satisfied</p>	
Quality	<p>How satisfied/dissatisfied are you with the following aspects of your therapy or counseling that you received in the past 12 months at [pipe in selected options from: "From which of the following places did you receive counseling or therapy?"]?:</p> <p>Quality of therapists/counselors</p>	<p>1=Very dissatisfied</p> <p>2=Dissatisfied</p> <p>3=Somewhat dissatisfied 4=Somewhat satisfied</p> <p>5=Satisfied</p> <p>6=Very satisfied</p>	
Scheduling	<p>How satisfied/dissatisfied are you with the following aspects of your therapy or counseling that you received in the past 12 months at [pipe in selected options from: "From which of the following places did you receive counseling or therapy?"]?:</p> <p>Ability to schedule appointments without long delays</p>	<p>1=Very dissatisfied</p> <p>2=Dissatisfied</p> <p>3=Somewhat dissatisfied 4=Somewhat satisfied</p> <p>5=Satisfied</p> <p>6=Very satisfied</p>	

Privacy	How satisfied/dissatisfied are you with the following aspects of your therapy or counseling that you received in the past 12 months at [pipe in selected options from: "From which of the following places did you receive counseling or therapy?"]?:  Respect for your privacy concerns	1=Very dissatisfied  2=Dissatisfied  3=Somewhat dissatisfied 4=Somewhat satisfied  5=Satisfied  6=Very satisfied	
Mental Health Status	Have you ever been diagnosed with any of the following conditions by a health professional (e.g., primary care doctor, psychiatrist, psychologist, etc.)? (Select all that apply)	1=Depression (e.g., major depressive disorder, persistent depressive disorder) 2=Bipolar (e.g., bipolar I or II, cyclothymia)  3=Anxiety (e.g., generalized anxiety disorder, phobias)  4=Obsessive-compulsive or related disorders (e.g., obsessive-compulsive disorder, body dysmorphia)  5=Trauma and Stressor Related Disorders (e.g., posttraumatic stress disorder), 6=Neurodevelopmental disorder or intellectual disability (e.g., attention deficit disorder, attention deficit hyperactivity disorder, intellectual disability, autism spectrum disorder)  7=Eating disorder (e.g., anorexia nervosa, bulimia nervosa) 8=Psychosis (e.g., schizophrenia, schizoaffective disorder)  9=Personality disorder (e.g., antisocial personality disorder, paranoid personality disorder, schizoid personality disorder) 10=Substance use disorder (e.g., alcohol abuse, abuse of other drugs)  11=No, none of these [mutually exclusive]  12=Don't know	
Fincur	How would you describe your financial situation right now?	1=Always stressful 2=Often stressful 3=Sometimes stressful 4=Rarely stressful 5=Never stressful	
Race	What is your race/ethnicity? (Select all that apply)	1=African American/Black 2=American Indian or Alaskan Native  3=Asian American/Asian 4=Hispanic/Latino/a 5=Native Hawaiian or Pacific Islander 6=Middle Eastern, Arab, or Arab American 7=White 8=Self-identify (please specify)	3,5,8 = 'other'
Gender	What is your gender identity?	1=Male 2=Female 3=Trans male/Trans man	3, 4 ,6 response = 'Other'

		4=Trans female/Trans woman 5=Genderqueer/Gender non-conforming  6=Self-identify (please specify)	
Dep Secret	How much do you agree with the following statement?: Sometimes I keep my mental illness a secret.	1=Strongly agree  2=Agree  3=Somewhat agree  4=Somewhat disagree  5=Disagree  6=Strongly disagree	
Personal Stigma	How much do you agree with the following statement? I would think less of a person who has received mental health treatment.	1=Strongly agree  2=Agree  3=Somewhat agree  4=Somewhat disagree  5=Disagree  6=Strongly disagree	
Perceived Stigma	How much do you agree with the following statement?: Most people think less of a person who has received mental health treatment.	1=Strongly agree  2=Agree  3=Somewhat agree  4=Somewhat disagree 5=Disagree  6=Strongly disagree	
Talk	If you were experiencing serious emotional distress, whom would you talk to about this? (Select all that apply)	1=Professional clinician (e.g., psychologist, counselor, or psychiatrist) 2=Roommate 3=Friend (who is not a roommate) 4=Significant other  5=Family member 6=Religious counselor or other religious contact  7=Support group 8=Other non-clinical source (please specify)  9=No one [mutually exclusive]	2,3,4,5,6 = non-clinical source
Percneed	How much do you agree with the following statement? In the past 12 months, I needed help for emotional or mental health	1=Strongly agree	

	problems such as feeling sad, blue, anxious or nervous.	2=Agree 3=Somewhat agree 4=Somewhat disagree 5=Disagree 6=Strongly disagree	
Disab	Are you registered, with the office for disability services on this campus, as having a documented and diagnosed disability?	1 = yes 0 = no	
International	Are you an international student?	1 = yes 0 = no	
relship	How would you characterize your current relationship status?	1=Single 2=In a relationship 3=Married, in a domestic partnership, or engaged 4=Divorced or separated 5=Widowed 6=Other (please specify)	
App_open	Would you be open to using an app for wellness or mental/emotional health?	1=Yes 2=Maybe 3=No	
Design and Usability	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The app is well designed and easy to use	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	
Expert Reviews	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The app has reviews from experts in the field (e.g. psychologist)	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	
Time Commitment	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?:	1= Not at all important 2=Slightly important	

	The time commitment required by the app seems manageable to me	3=Moderately important 4=Important 5=Very important	
Proven Benefits	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The app has research supporting it's benefits	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	
User Reviews	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The app has reviews from users	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	
Privacy	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The app has information about data privacy and storage policies	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	
Cost	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The cost of the app	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	
App Developer	Now imagine you are trying to decide which wellness or mental/emotional health app to use. How important would each of the following features be in your decision?: The app developer	1= Not at all important 2=Slightly important 3=Moderately important 4=Important 5=Very important	

Table 1

<b>MENTAL HEALTH STATUS</b>	<b>% OF RESPONDENTS</b>
NONE	52.6
ANXIETY	25.6
DEPRESSION	21.7
TRAUMA/STRESS DISORDER	5.4
DK	5.1
NEURODEV DISORDER	4.2
OCD	4.0
BIPOLAR	2.0
PERSONALITY DISORDER	0.8

Table 2

<b>GENDER</b>	<b># OF RESPONDENTS</b>
FEMALE	60,222
MALE	27,311
UNKNOWN	1,137
OTHER	512

Table 3

<b>RACE/ETHNICITY</b>	<b># OF RESPONDENTS</b>	<b>AVG SCHOOL %</b>
MIDDLE EASTERN	1,398	1.3
OTHER	1,905	2.2
AFRICAN AMERICAN/BLACK	5,424	7.8
ASIAN AMERICAN/ASIAN	10,278	9.4
HISPANIC/LATINO/A	10,731	13.1
WHITE	59,446	65.5

Table 4

RACE	THER_EVER	CURRENT_THER	DEPRESSION	BIPOLAR	ANXIETY	OCD	TRAUMA/STRESS DISORDER	NEURODEV DISORDER	PERSONALITY DISORDER
ASIAN	23.8	6.3	10.0	0.7	9.9	1.2	1.8	1.2	0.4
BLACK	30.2	8.6	13.1	1.7	12.6	1.3	3.1	1.6	0.5
HIS	41.5	11.1	20.1	2.1	23.0	2.9	5.4	3.1	0.7
MIDEAST	25.6	8.2	13.2	1.1	14.2	1.7	3.6	2.0	0.1
OTHER	40.7	12.4	20.6	2.8	21.9	4.1	6.9	5.0	1.1
WHITE	48.0	14.2	25.1	2.3	30.4	4.9	6.3	5.1	0.9

Table 5

	RESPONDENT AVG	SCHOOL AVG
CURRENT THERAPY	12.41	12.58
THERAPY EVER	42.88	42.16
TALK NON-CLINICAL	78.40	78.62

Table 6

GENDER	THER_EVER	CURRENT_THER	DEPRESSION	BIPOLAR	ANXIETY	OCD	TRAUMA/STRESS DISORDER	NEURODEV DISORDER	PERSONALITY DISORDER	NONE	DONT KNOW	KNOW SX
MALE	33.0	8.0	15.0	1.0	15.0	2.0	2.0	5.0	1.0	61.0	6.0	2.56
FEMALE	47.0	14.0	24.0	2.0	30.0	5.0	7.0	4.0	1.0	50.0	5.0	2.40

Table 7

GENDER	DEP SECRET	PERSONAL STIGMA	PERCEIVED STIGMA	TALK PROFESSIONAL	TALK NO ONE	TALK NON- CLINICAL	% NO NEED (NS)	% NO BARRIERS (NS)
MALE	2.691	1.623	5.021	0.038	0.107	0.747	37.7	7.5
FEMALE	2.891	1.437	5.283	0.041	0.066	0.802	24.5	4.4

REASON FOR NO SERVICES	COUNT	% RESPONDENTS
FINANCIAL	25,224	51.4
OTHER	13,587	27.7
LOCATION	8,667	17.7
TIME	6,186	12.6
AVAILABILITY	6,126	12.5
NEED	4,015	8.2
NONE	2,489	5.1
OTHER SOURCE	2,135	4.3

REASON FOR FEWER SERVICES	COUNT	% RESPONDENTS
TIME	11,358	37.3
FINANCIAL	8,376	27.5
OTHER SOURCE	6,644	21.8
NEED	6,547	21.5
AVAILABILITY	6,482	21.3
LOCATION	4,072	13.4
NONE	4,085	13.4
OTHER	3,260	10.7

Table 9

Table 8

Table 10

<b>Insurance Type</b>	<b>% OF RESPONDENTS</b>
INSURANCE CARRIER	1.90
INTERNATIONAL/EMBASSY	0.33
MEDICAID/GOV	6.23
NONE	4.22
PARENTS/EMPLOYER	62.58
STUDENT HEALTH	10.43
UNSURE	14.30

Table 11

	<b>fincur</b>	<b>Ins_none</b>	<b>Ins_parents/employer</b>	<b>Ins_student health</b>
<b>mean</b>	2.73	0.05	0.62	0.10
<b>std</b>	0.26	0.04	0.11	0.09
<b>min</b>	2.26	0.00	0.28	0.00
<b>25%</b>	2.52	0.01	0.55	0.02
<b>50%</b>	2.71	0.03	0.63	0.06
<b>75%</b>	2.89	0.06	0.69	0.14
<b>max</b>	3.29	0.21	0.78	0.35

Table 12

Logit Regression Results							
<b>Dep. Variable:</b>	current_ther	<b>No. Observations:</b>	82860				
<b>Model:</b>	Logit	<b>Df Residuals:</b>	82834				
<b>Method:</b>	MLE	<b>Df Model:</b>	25				
<b>Date:</b>	Tue, 02 Feb 2021	<b>Pseudo R-squ.:</b>	0.3903				
<b>Time:</b>	19:55:09	<b>Log-Likelihood:</b>	-19186.				
<b>converged:</b>	True	<b>LL-Null:</b>	-31470.				
<b>Covariance Type:</b>	nonrobust	<b>LLR p-value:</b>	0.000				
	<b>coef</b>	<b>std err</b>	<b>z</b>	<b>P&gt; z </b>	<b>[0.025</b>	<b>0.975]</b>	
<b>Intercept</b>	-0.7605	0.143	-5.315	0.000	-1.041	-0.480	
<b>C(gender)[T.1]</b>	-0.5042	0.086	-5.845	0.000	-0.673	-0.335	
<b>C(gender)[T.2]</b>	-0.3907	0.082	-4.746	0.000	-0.552	-0.229	
<b>C(gender)[T.6]</b>	-0.0541	0.152	-0.357	0.721	-0.351	0.243	
<b>C(Race)[T.race_black]</b>	-0.0437	0.082	-0.533	0.594	-0.204	0.117	
<b>C(Race)[T.race_his]</b>	0.0131	0.066	0.198	0.843	-0.116	0.143	
<b>C(Race)[T.race_mideast]</b>	-0.0999	0.135	-0.739	0.460	-0.365	0.165	
<b>C(Race)[T.race_other]</b>	0.1015	0.104	0.972	0.331	-0.103	0.306	
<b>C(Race)[T.race_white]</b>	0.1018	0.057	1.792	0.073	-0.010	0.213	
<b>C(FS)[T.fs_financial]</b>	0.4048	0.082	4.914	0.000	0.243	0.566	
<b>C(FS)[T.fs_no avail]</b>	0.8970	0.095	9.400	0.000	0.710	1.084	
<b>C(FS)[T.fs_no barriers]</b>	1.6659	0.086	19.331	0.000	1.497	1.835	
<b>C(FS)[T.fs_no need]</b>	-2.3025	0.084	-27.410	0.000	-2.467	-2.138	
<b>C(FS)[T.fs_no time]</b>	0.3442	0.083	4.160	0.000	0.182	0.506	
<b>C(FS)[T.fs_other]</b>	-0.0258	0.100	-0.259	0.796	-0.221	0.170	
<b>C(FS)[T.fs_prefer other source]</b>	-0.2281	0.096	-2.367	0.018	-0.417	-0.039	
<b>percneed</b>	-0.5437	0.013	-41.584	0.000	-0.569	-0.518	
<b>Ins_parentsemployer</b>	0.5909	0.045	13.227	0.000	0.503	0.678	
<b>Ins_studenthealth</b>	0.9491	0.058	16.377	0.000	0.835	1.063	
<b>Ins_medicaid</b>	0.8543	0.061	13.993	0.000	0.735	0.974	
<b>Disab</b>	0.5883	0.116	5.055	0.000	0.360	0.816	
<b>age</b>	0.0164	0.002	8.093	0.000	0.012	0.020	
<b>Talk_noone</b>	-1.5750	0.088	-17.878	0.000	-1.748	-1.402	
<b>Talk_nonclinical</b>	-0.1212	0.044	-2.754	0.006	-0.207	-0.035	
<b>international</b>	-0.4885	0.074	-6.576	0.000	-0.634	-0.343	
<b>fincur</b>	0.0854	0.012	6.842	0.000	0.061	0.110	

Table 13

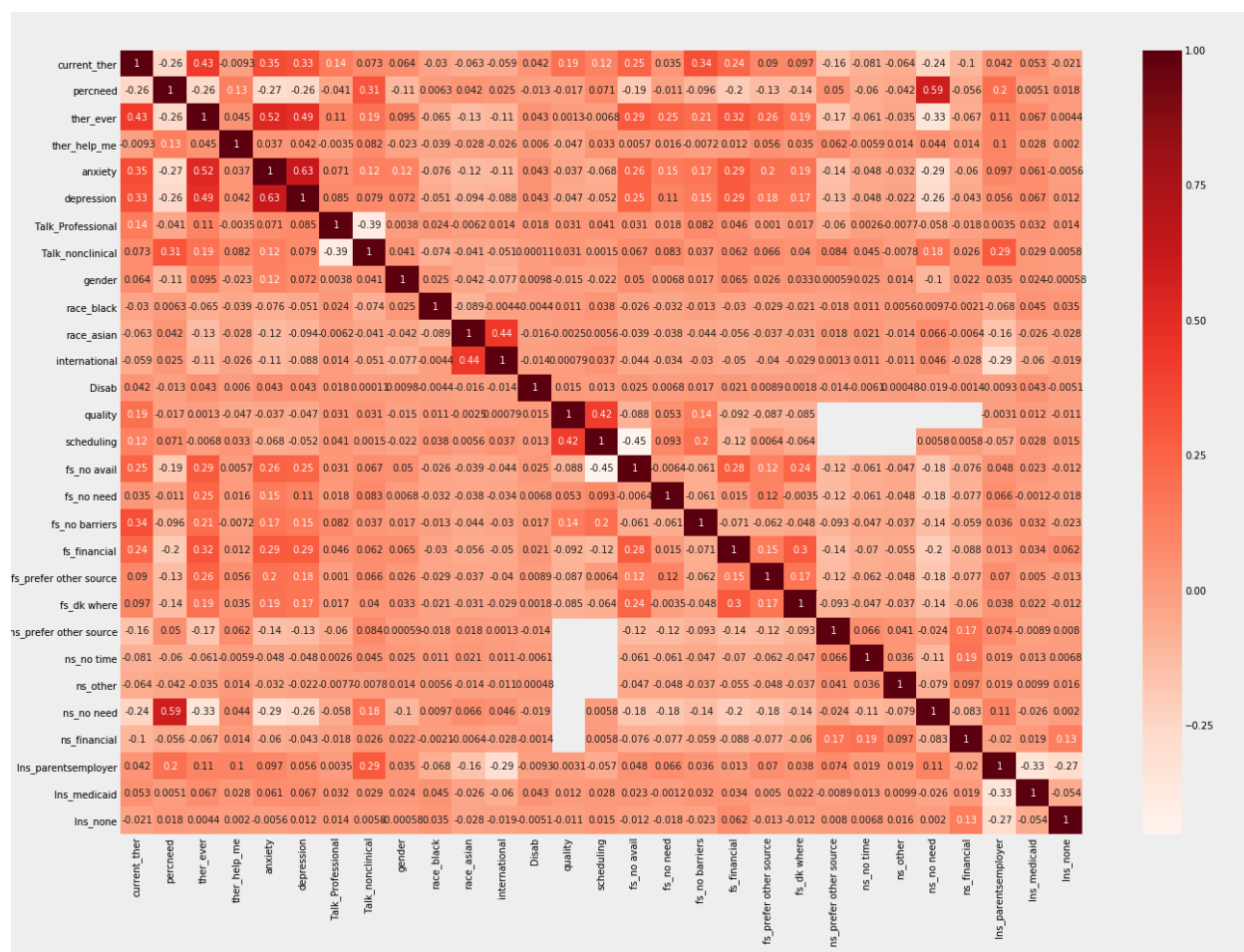
	5%	95%	Odds Ratio
<b>C(gender)[T.1]</b>	0.510024	0.715226	0.604
<b>C(gender)[T.2]</b>	0.575811	0.795059	0.677
<b>C(FS)[T.fs_financial]</b>	1.275485	1.761613	1.499
<b>C(FS)[T.fs_no avail]</b>	2.033868	2.956378	2.452
<b>C(FS)[T.fs_no barriers]</b>	4.468331	6.264108	5.291
<b>C(FS)[T.fs_no need]</b>	0.084823	0.117902	0.100
<b>C(FS)[T.fs_no time]</b>	1.199646	1.659289	1.411
<b>C(FS)[T.fs_prefer other source]</b>	0.659057	0.961578	0.796
<b>percneed</b>	0.565896	0.595656	0.581
<b>Ins_parentsemployer</b>	1.654295	1.970914	1.806
<b>Ins_studenthealth</b>	2.305905	2.893966	2.583
<b>Ins_medicaid</b>	2.084688	2.648360	2.350
<b>Disab</b>	1.433681	2.262413	1.801
<b>age</b>	1.012498	1.020568	1.017
<b>Talk_noone</b>	0.174184	0.246028	0.207
<b>Talk_nonclinical</b>	0.812627	0.965653	0.886
<b>international</b>	0.530431	0.709712	0.614
<b>fincur</b>	1.062847	1.116158	1.089

OLS Regression Results

<b>Dep. Variable:</b>	percneed	<b>R-squared:</b>	0.437
<b>Model:</b>	OLS	<b>Adj. R-squared:</b>	0.437
<b>Method:</b>	Least Squares	<b>F-statistic:</b>	5771.
<b>Date:</b>	Mon, 01 Feb 2021	<b>Prob (F-statistic):</b>	0.00
<b>Time:</b>	22:02:22	<b>Log-Likelihood:</b>	-1.6127e+05
<b>No. Observations:</b>	89182	<b>AIC:</b>	3.226e+05
<b>Df Residuals:</b>	89169	<b>BIC:</b>	3.227e+05
<b>Df Model:</b>	12		
<b>Covariance Type:</b>	nonrobust		

Table 14

FEATURE	PCC		
ns_financial	0.589797		
none	0.502242		
dep_secret	0.274035		
Talk_nonclinical	0.259746		
app_open	0.229990		
know_sp	0.204991		
fincur	0.204217		
fs_no avail	-0.202198		
fs_financial	-0.212309		
fs_no time	-0.234606		
current_ther	-0.276813		
depression	-0.283744	<b>FEATURE</b>	<b>PCC PVAL</b>
Ins_unsure	-0.289342	fs_no barriers	0.000000e+00
anxiety	-0.299503	percneed	1.978805e-264
ther_ever	-0.303462	ther_ever	3.802217e-184
app_help	-0.305121	trauma/stress disorder	4.520116e-139
		Talk_Professional	5.863717e-137



Graph 1

Table 15

	NEED (FS)	FINANCIAL (FS)	TIME (FS)	LOCATION (FS)	AVAILABILITY (FS)	OTHER SOURCE (FS)	OTHER (FS)	NONE (FS)	TIME (NS)	NEED (NS)	FINANCIAL (NS)	LOCATION (NS)	AVAILABILITY (NS)	OTHER SOURCE (NS)	OTHER (NS)	NONE (NS)
PROVEN BENEFITS	0.902	0.778	0.1102	0.6269	0.4118	0.3552	0.6933	0.4001	0.778	0.1311	0.7838	0.7699	0.4995	0.0957	0.28	0.9132
DESIGN/USABILITY	0.9436	0.0365	0.0271	0.2189	0.0874	0.0272	0.2547	0.8338	0.1866	0.1612	0.2007	0.892	0.9798	0.1175	0.5716	0.3503
PRIVACY	0.64	0.47	0.4656	0.225	0.9732	0.3347	0.0431	0.3689	0.9941	0.0764	0.9894	0.1608	0.9831	0.7594	0.3446	0.1784
USER REVIEWS	0.5036	0.0793	0.277	0.2633	0.3025	0.1035	0.9331	0.4336	0.8431	0.5308	0.8416	0.6031	0.9511	0.7434	0.2993	0.3537
EXPERT REVIEWS	0.1565	0.0586	0.1843	0.3593	0.7584	0.2441	0.7059	0.6894	0.2762	0.1145	0.3801	0.3231	0.3213	0.6433	0.297	0.5038
APP DEVELOPER	0.6597	0.9005	0.8404	0.9479	0.6506	0.4952	0.0788	0.9343	0.964	0.0251	0.888	0.5308	0.728	0.5033	0.4583	0.05
COST	0.5454	0.3619	0.4299	0.3332	0.0457	0.7735	0.134	0.48	0.2708	0.4714	0.8108	0.5615	0.328	0.2846	0.4566	0.919
TIME COMMITMENT	0.8127	0.2513	0.4598	0.5249	0.3484	0.4963	0.2663	0.7991	0.7443	0.3343	0.4655	0.9003	0.8681	0.2663	0.7844	0.8593
	NEED (FS)	FINANCIAL (FS)	TIME (FS)	LOCATION (FS)	AVAILABILITY (FS)	OTHER SOURCE (FS)	OTHER (FS)	NONE (FS)	TIME (NS)	NEED (NS)	FINANCIAL (NS)	LOCATION (NS)	AVAILABILITY (NS)	OTHER SOURCE (NS)	OTHER (NS)	NONE (NS)
PROVEN BENEFITS	0.0079	0.0181	-0.1023	-0.0312	-0.0527	0.0593	-0.0253	-0.0540	0.0181	0.0967	-0.0176	0.0188	0.0433	0.1067	0.0693	-0.0070
DESIGN/USABILITY	-0.0045	0.1337	0.1412	0.0788	0.1094	0.1412	0.0730	-0.0135	-0.0847	0.0898	-0.0820	-0.0087	0.0016	0.1003	-0.0363	-0.0599
PRIVACY	-0.0300	0.0464	-0.0468	-0.0778	0.0022	0.0619	-0.1294	-0.0577	-0.0005	0.1134	-0.0008	0.0899	-0.0014	0.0197	0.0606	-0.0862
USER REVIEWS	0.0429	0.1123	0.0697	0.0717	0.0661	0.1043	0.0054	-0.0502	0.0127	0.0402	-0.0128	0.0334	0.0039	-0.0210	-0.0666	-0.0595
EXPERT REVIEWS	0.0908	0.1210	0.0851	0.0588	0.0198	0.0747	-0.0242	-0.0257	-0.0698	0.1011	-0.0563	-0.0634	-0.0636	0.0297	-0.0669	-0.0429
APP DEVELOPER	-0.0283	0.0080	-0.0129	0.0042	-0.0291	0.0438	-0.1125	0.0053	-0.0029	0.1431	-0.0090	0.0402	-0.0223	-0.0430	0.0476	-0.1254
COST	0.0388	0.0585	0.0507	0.0621	-0.1278	0.0185	0.0960	-0.0453	-0.0706	0.0462	-0.0154	-0.0373	0.0628	0.0686	0.0478	0.0065
TIME COMMITMENT	0.0152	0.0736	0.0474	0.0408	-0.0602	0.0437	0.0713	-0.0163	-0.0209	0.0619	-0.0468	0.0080	-0.0107	0.0713	0.0176	-0.0114

Table 16

	PROVEN BENEFITS	DESIGN/USABILITY	PRIVACY	USER REVIEWS	EXPERT REVIEWS	APP DEVELOPER	COST	TIME COMMITMENT
mean	3.46	4.09	3.53	3.63	3.82	2.98	4.27	3.92
std	0.80	0.90	1.07	1.00	0.98	1.14	0.93	0.92
min	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
25%	3.00	4.00	3.00	3.00	3.00	2.00	4.00	4.00
50%	4.00	4.00	4.00	4.00	4.00	3.00	4.00	4.00
75%	4.00	5.00	4.00	4.00	4.00	4.00	5.00	5.00
max	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

Table 18

FEATURE	IMPORTANCE
COST	4.36
DESIGN/USABILITY	4.31
EXPERT REVIEWS	4.12
TIME COMMITMENT	4.12
PROVEN BENEFITS	4.04
USER REVIEWS	3.91
PRIVACY	3.90
APP DEVELOPER	3.28

Table 17

app_open	
count	399.00
mean	1.65
std	0.65
min	1.00
25%	1.00
50%	2.00
75%	2.00
max	3.00

Table 19

	age	international	Disab	percneed	current_ther	fincur	depression	anxiety
age	NaN	0.092752	0.029384	0.082933	0.039884	-0.045429	0.053257	0.017292
international	0.092752	NaN	-0.013724	0.038884	-0.058682	0.052902	-0.086593	-0.111450
Disab	0.029384	-0.013724	1.000000	-0.016474	0.042005	-0.019237	0.042591	0.043368
percneed	0.082933	0.038884	-0.016474	1.000000	-0.275900	0.204217	-0.283744	-0.299503
current_ther	0.039884	-0.058682	0.042005	-0.275900	1.000000	-0.054530	0.323131	0.347114
fincur	-0.045429	0.052902	-0.019237	0.204217	-0.054530	1.000000	-0.149366	-0.136268
depression	0.053257	-0.086593	0.042591	-0.283744	0.323131	-0.149366	NaN	0.622188
anxiety	0.017292	-0.111450	0.043368	-0.299503	0.347114	-0.136268	0.622188	1.000000
trauma/stress disorder	0.077187	-0.047978	0.075255	-0.149647	0.245428	-0.121782	0.314158	0.302918
none	-0.019357	0.068824	-0.044318	0.502242	-0.287752	0.152239	-0.555208	-0.643506
gender	-0.008934	-0.077839	0.010416	-0.119882	0.062639	-0.070706	0.070465	0.117007
race_asian	0.000403	0.442132	-0.015566	0.054423	-0.062478	0.084735	-0.092800	-0.124189
race_black	0.058132	-0.003852	-0.003843	0.011296	-0.029274	-0.077915	-0.051828	-0.077449
race_his	0.007855	0.000915	-0.004999	-0.018459	-0.014923	-0.084739	-0.015261	-0.023625
race_white	-0.057901	-0.330587	0.012551	-0.026289	0.070810	0.055838	0.106096	0.150008
Talk_Professional	0.079287	0.014977	0.017027	-0.050111	0.141448	-0.025135	0.083966	0.068261
Talk_no one	-0.018496	0.014159	-0.003927	0.029600	-0.086270	-0.062741	-0.020958	-0.052715
Talk_non-clinical source	-0.005422	-0.038780	-0.003554	0.259746	0.056275	0.056953	0.057097	0.100904
Ins_medicaid/gov	0.113656	-0.060236	0.042776	-0.004787	0.051886	-0.140028	0.065315	0.057949
Ins_none	0.048566	-0.018166	-0.005518	0.012062	-0.023738	-0.111488	0.008848	-0.009371
Ins_parents/employer	-0.134752	-0.298207	-0.011979	0.157356	0.030114	0.130399	0.040728	0.080538
Ins_student health	0.108068	0.446276	-0.007088	0.041046	0.026315	0.009591	-0.015124	-0.029750
fs_no need	0.004923	-0.032010	0.005917	-0.020857	0.031100	0.037482	0.104810	0.143095
fs_financial	0.051475	-0.049290	0.020871	-0.212309	0.234908	-0.186265	0.283573	0.290347
fs_no time	-0.000331	-0.061188	0.024194	-0.234606	0.246041	-0.107921	0.294236	0.327331
fs_no avail	-0.009659	-0.043731	0.024400	-0.202198	0.251541	-0.069368	0.243794	0.257823
fs_prefer other source	-0.050573	-0.037849	0.007499	-0.142797	0.088395	-0.028369	0.176881	0.194461
fs_no barriers	0.051248	-0.029723	0.017133	-0.107709	0.341476	0.013844	0.147273	0.171269
ns_no need	-0.030091	0.012342	-0.006764	-0.069056	-0.083261	-0.039231	-0.050547	-0.050650
ns_financial	0.006484	0.053637	-0.020412	0.589797	-0.242326	0.172137	-0.269492	-0.303681

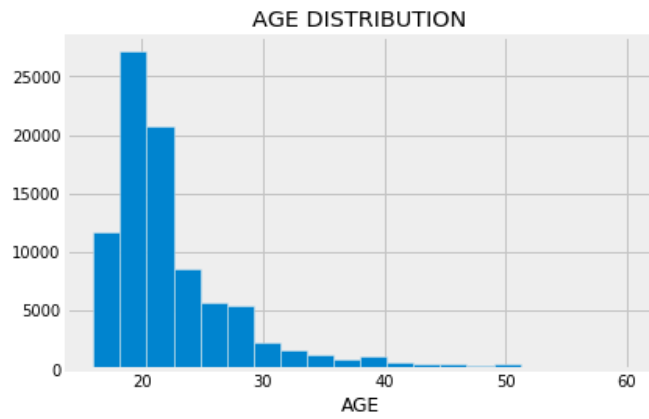
Table 20

	<b>coef</b>	<b>std err</b>	<b>t</b>	<b>P&gt; t </b>	<b>[0.025</b>	<b>0.975]</b>
<b>const</b>	0.0057	0.011	0.494	0.621	-0.017	0.028
<b>schoolnum</b>	-0.0001	3.89e-05	-2.806	0.005	-0.000	-3.29e-05
<b>age</b>	0.0008	0.000	5.064	0.000	0.000	0.001
<b>relship</b>	-0.0043	0.001	-3.683	0.000	-0.007	-0.002
<b>international</b>	-0.0270	0.004	-6.531	0.000	-0.035	-0.019
<b>straight</b>	4.523e-16	2.69e-16	1.684	0.092	-7.4e-17	9.79e-16
<b>Disab</b>	0.0302	0.010	2.940	0.003	0.010	0.050
<b>percneed</b>	-0.0239	0.001	-34.084	0.000	-0.025	-0.023
<b>ther_ever</b>	0.0815	0.003	31.054	0.000	0.076	0.087
<b>hours</b>	0.0003	0.003	0.130	0.897	-0.005	0.005
<b>location</b>	0.0006	0.003	0.241	0.810	-0.004	0.006
<b>quality</b>	0.0484	0.002	20.206	0.000	0.044	0.053
<b>privacy</b>	-0.0257	0.003	-9.178	0.000	-0.031	-0.020
<b>scheduling</b>	0.0212	0.002	10.701	0.000	0.017	0.025
<b>meds_help_me</b>	0.0048	0.002	3.137	0.002	0.002	0.008
<b>ther_help_me</b>	-0.0281	0.002	-15.219	0.000	-0.032	-0.024
<b>dep_secret</b>	0.0096	0.001	8.914	0.000	0.008	0.012
<b>personal stigma1</b>	0.0089	0.002	4.505	0.000	0.005	0.013
<b>perceived stigma1</b>	0.0040	0.001	4.460	0.000	0.002	0.006
<b>informal help</b>	-0.0027	0.001	-2.867	0.004	-0.004	-0.001
<b>app_open</b>	0.0314	0.017	1.816	0.069	-0.002	0.065
<b>know_sp</b>	-0.0059	0.002	-3.910	0.000	-0.009	-0.003
<b>app_when_beforesch</b>	0.0381	0.067	0.569	0.570	-0.093	0.169
<b>fincur</b>	0.0049	0.001	6.793	0.000	0.004	0.006
<b>hours_work_paid</b>	-7.45e-06	1.19e-05	-0.625	0.532	-3.08e-05	1.59e-05
<b>depression</b>	0.0298	0.003	10.136	0.000	0.024	0.036
<b>bipolar</b>	0.0861	0.006	13.682	0.000	0.074	0.098
<b>anxiety</b>	0.0478	0.003	13.869	0.000	0.041	0.055
<b>ocd</b>	0.0392	0.005	8.289	0.000	0.030	0.048
<b>trauma/stress disorder</b>	0.1068	0.004	25.187	0.000	0.099	0.115
<b>neurodev disorder</b>	0.0311	0.005	6.717	0.000	0.022	0.040
<b>personality disorder</b>	0.0811	0.010	7.918	0.000	0.061	0.101
<b>none</b>	0.0217	0.004	5.913	0.000	0.015	0.029
<b>dk</b>	0.0178	0.005	3.517	0.000	0.008	0.028
<b>gender</b>	-0.0008	0.002	-0.505	0.613	-0.004	0.002

Table 21

	race_asian	race_black	race_his	race_mideast	race_other	race_white
<b>mean</b>	0.09	0.08	0.13	0.01	0.02	0.66
<b>std</b>	0.08	0.09	0.11	0.02	0.01	0.20
<b>min</b>	0.00	0.00	0.02	0.00	0.01	0.11
<b>25%</b>	0.03	0.03	0.06	0.00	0.01	0.54
<b>50%</b>	0.05	0.04	0.09	0.01	0.02	0.69
<b>75%</b>	0.15	0.09	0.14	0.02	0.03	0.82
<b>max</b>	0.31	0.46	0.48	0.16	0.07	0.93

Graph 2



Graph 3

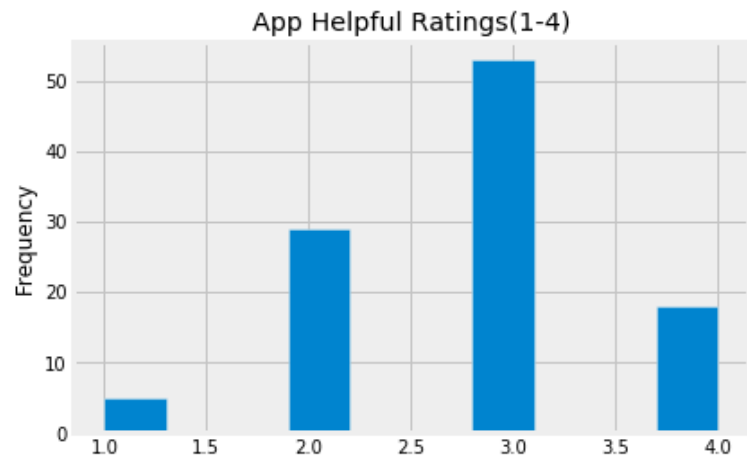


Table 22 &amp; 22 (Pairwise Correlations)

	age	international	Disab	gender	race_asian	race_black	race_his	race_white
percneed	0.082933	0.038884	-0.016474	-0.119882	0.054423	0.011296	-0.018459	-0.026289
current_ther	0.039884	-0.058682	0.042005	0.062639	-0.062478	-0.029274	-0.014923	0.070810
fincur	-0.045429	0.052902	-0.019237	-0.070706	0.084735	-0.077915	-0.084739	0.055838
depression	0.053257	-0.086593	0.042591	0.070465	-0.092800	-0.051828	-0.015261	0.106096
anxiety	0.017292	-0.111450	0.043368	0.117007	-0.124189	-0.077449	-0.023625	0.150008
trauma/stress disorder	0.077187	-0.047978	0.075255	0.064300	-0.055158	-0.026725	-0.000824	0.050626
none	-0.019357	0.068824	-0.044318	-0.088193	0.087921	0.054886	0.005146	-0.091365
Talk_Professional	0.079287	0.014977	0.017027	0.004185	-0.005218	0.025526	0.023825	-0.029845
Talk_no one	-0.018496	0.014159	-0.003927	-0.052315	0.018587	0.054005	0.019623	-0.066753
Talk_non-clinical source	-0.005422	-0.038780	-0.003554	0.036492	-0.030090	-0.074149	-0.028735	0.094145
Ins_medicaid/gov	0.113656	-0.060236	0.042776	0.023026	-0.026925	0.047170	0.067389	-0.070733
Ins_none	0.048566	-0.018166	-0.005518	-0.001421	-0.027444	0.036725	0.090892	-0.072174
Ins_parents/employer	-0.134752	-0.298207	-0.011979	0.032075	-0.160155	-0.066416	-0.089404	0.235979
Ins_student health	0.108068	0.446276	-0.007088	-0.040230	0.243405	-0.014865	-0.005244	-0.163818
fs_no need	0.004923	-0.032010	0.005917	0.006311	-0.036845	-0.032554	-0.019634	0.062450
fs_financial	0.051475	-0.049290	0.020871	0.064979	-0.054980	-0.030471	0.003760	0.052321
fs_no time	-0.000331	-0.061188	0.024194	0.066487	-0.055985	-0.039937	-0.008818	0.068298
fs_no avail	-0.009659	-0.043731	0.024400	0.048567	-0.037504	-0.026127	-0.013961	0.052168
fs_prefer other source	-0.050573	-0.037849	0.007499	0.025122	-0.035073	-0.029978	-0.010917	0.051847
fs_no barriers	0.051248	-0.029723	0.017133	0.017295	-0.043976	-0.013138	-0.017855	0.050235
ns_no need	-0.030091	0.012342	-0.006764	0.024214	0.021541	0.012430	0.021586	-0.038174
ns_financial	0.006484	0.053637	-0.020412	-0.105784	0.073138	0.012952	-0.011498	-0.045366

	age	international	Disab	gender	race_asian	race_black	race_his	race_white
percneed	2.2119e-126	4.21516e-29	2.1112e-06	8.07158e-263	2.16496e-55	0.00114695	1.07281e-07	3.77225e-14
current_ther	1.56886e-30	4.06002e-64	1.10151e-33	8.14984e-73	1.88834e-72	3.50595e-17	1.73943e-05	1.40951e-92
fincur	4.09725e-39	1.96571e-52	3.0619e-08	2.60963e-92	7.29074e-132	9.80344e-112	7.08862e-132	3.2228e-58
depression	4.8063e-53	1.21334e-137	1.39026e-34	1.07846e-91	7.17907e-158	2.14666e-50	1.11755e-05	5.51113e-206
anxiety	6.42874e-07	3.24915e-227	8.54798e-36	2.20708e-250	4.90378e-282	2.00662e-110	1.03576e-11	nan
trauma/stress disorder	1.09285e-109	1.97247e-43	2.40084e-104	1.23036e-76	7.50539e-57	1.42323e-14	0.812417	3.66157e-48
none	2.51025e-08	1.50365e-87	2.62916e-37	1.00972e-142	7.4846e-142	2.6198e-56	0.13855	4.56811e-153
Talk_Professional	1.19384e-115	1.62337e-05	9.50151e-07	0.228363	0.133109	2.00033e-13	6.93512e-12	8.49706e-18
Talk_no one	1.01264e-07	4.58178e-05	0.258358	2.58638e-51	8.76411e-08	1.4365e-54	1.61254e-08	1.84248e-82
Talk_non-clinical source	0.118591	5.92191e-29	0.306354	7.95518e-26	4.57917e-18	2.3781e-101	1.30471e-16	1.92902e-162
Ins_medicaid/gov	2.83469e-236	1.81677e-67	7.19317e-35	3.38175e-11	9.06215e-15	4.88073e-42	5.22641e-84	2.22331e-92
Ins_none	1.84653e-44	1.69921e-07	0.112234	0.682573	2.76299e-15	3.90067e-26	1.68148e-151	4.12895e-96
Ins_parents/employer	nan	nan	0.000563922	2.57907e-20	nan	1.19435e-81	1.25697e-146	nan
Ins_student health	1.11245e-213	nan	0.0413064	4.92254e-31	nan	1.87625e-05	0.131156	nan
fs_no need	0.156494	3.07219e-20	0.0885254	0.0692587	2.69553e-26	7.03309e-21	1.58301e-08	2.17994e-72
fs_financial	9.83123e-50	9.58048e-46	1.87493e-09	3.16321e-78	1.70296e-56	1.73887e-18	0.279065	2.51395e-51
fs_no time	0.924035	1.46289e-69	3.28066e-12	8.08703e-82	1.62644e-58	1.31238e-30	0.0111398	3.04126e-86
fs_no avail	0.00542736	2.2823e-36	2.1488e-12	1.83726e-44	3.46743e-27	5.40069e-14	5.85071e-05	4.91146e-51
fs_prefer other source	4.57926e-48	1.16926e-27	0.0308793	4.74356e-13	5.5828e-24	6.0693e-18	0.00167513	1.97451e-50
fs_no barriers	2.59509e-49	1.1522e-17	8.13606e-07	6.40372e-07	9.27523e-37	0.00015564	2.748e-07	1.89403e-47
ns_no need	4.57195e-18	0.000381292	0.0515459	3.14528e-12	5.60374e-10	0.000345998	5.15823e-10	4.16358e-28
ns_financial	0.0619744	7.47671e-54	4.20029e-09	8.7846e-205	1.18778e-98	0.000192622	0.000933425	5.18741e-39

Figure 1

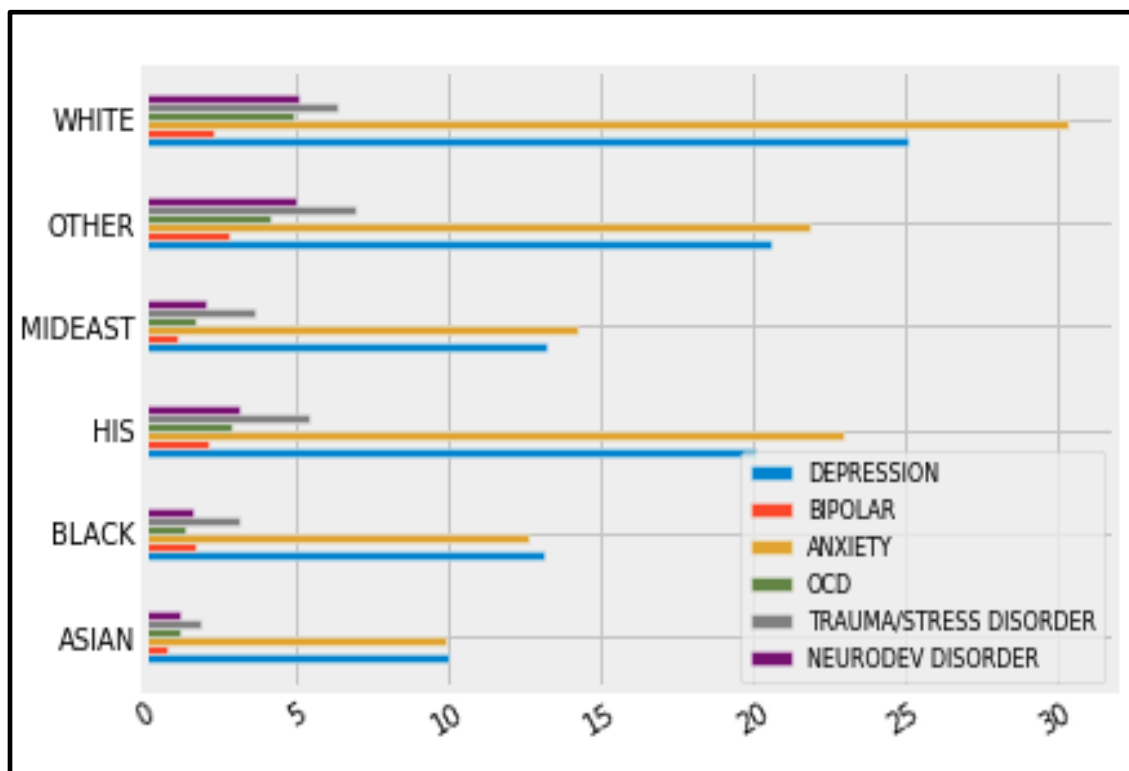


Figure 2

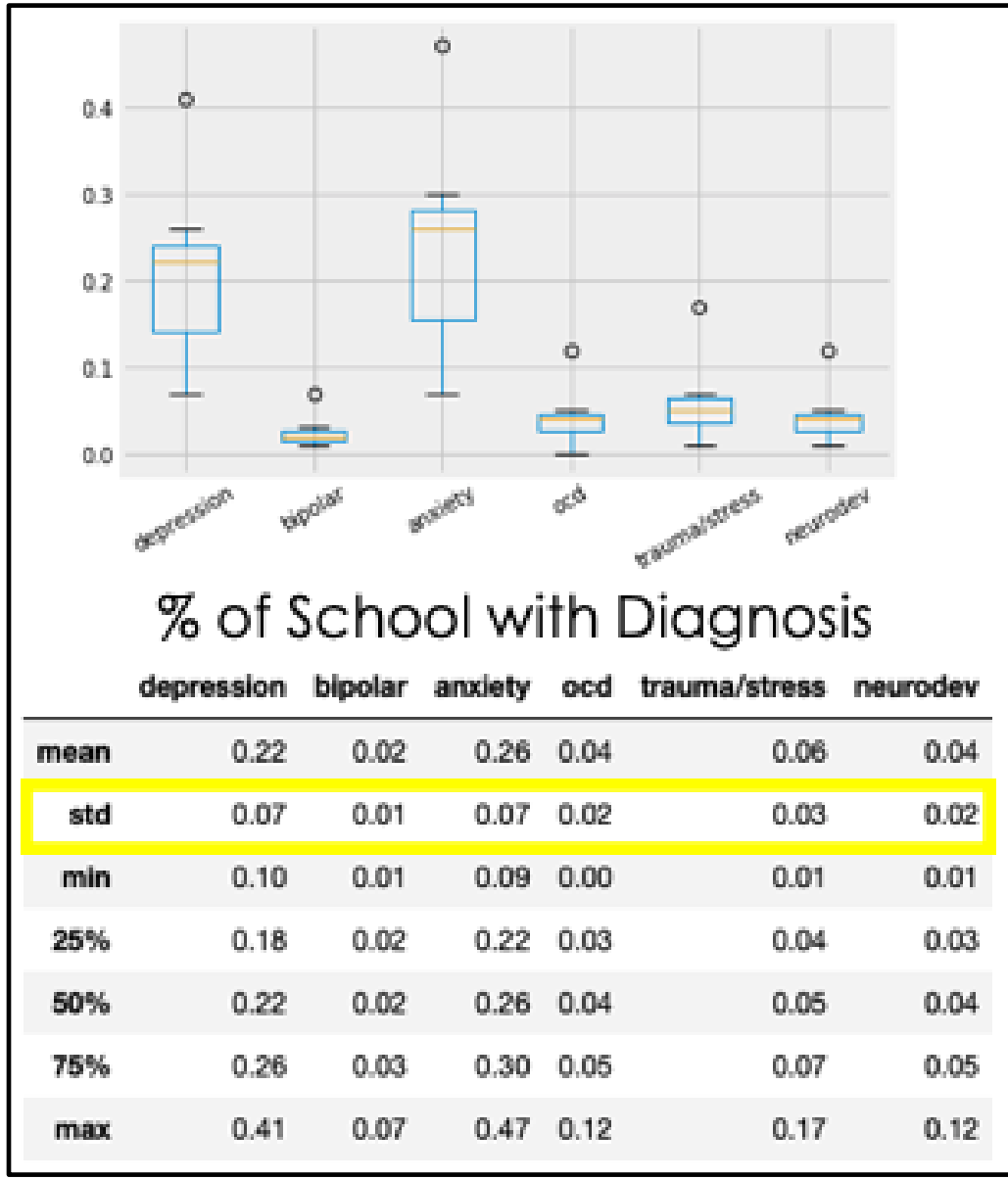


Figure 3

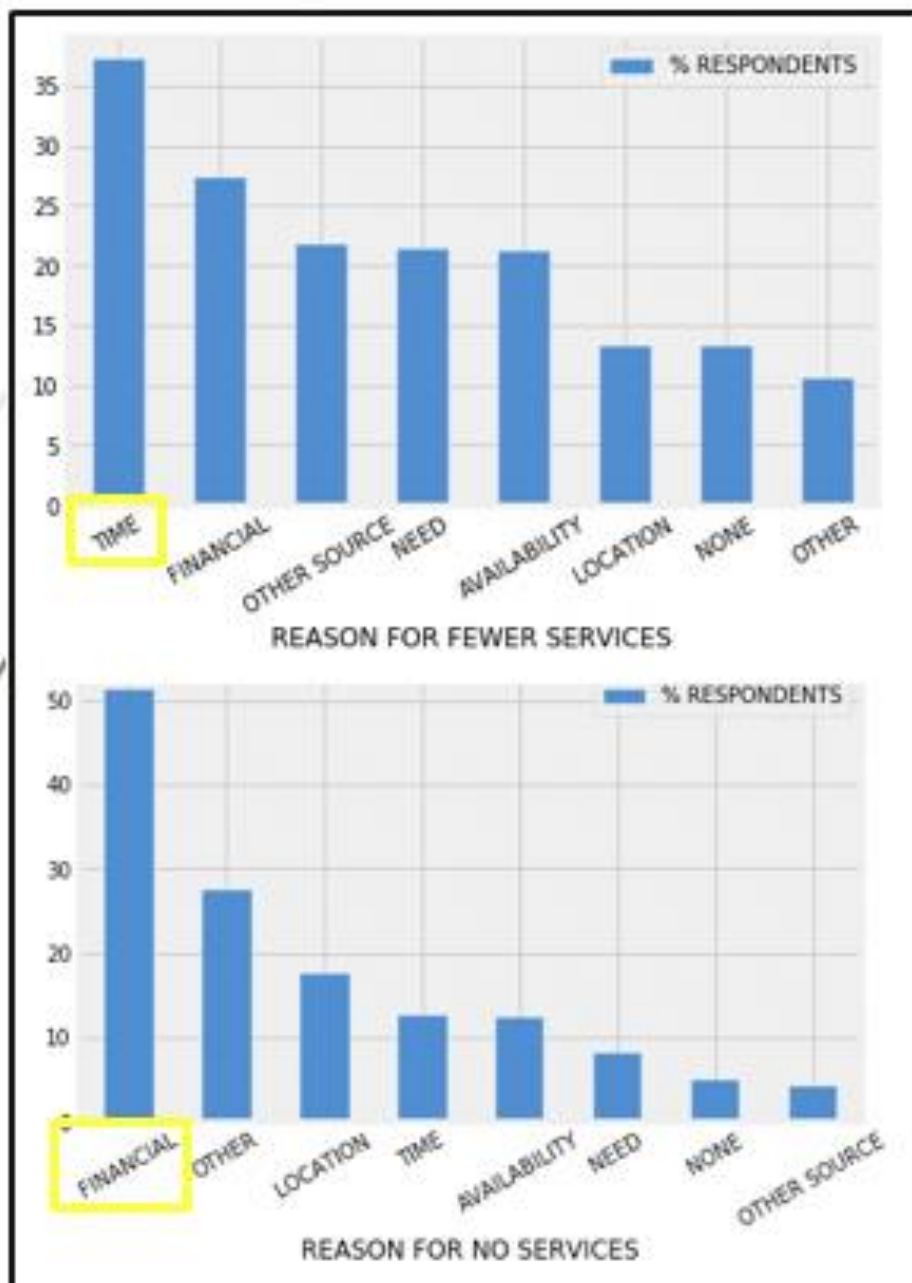


Figure 4

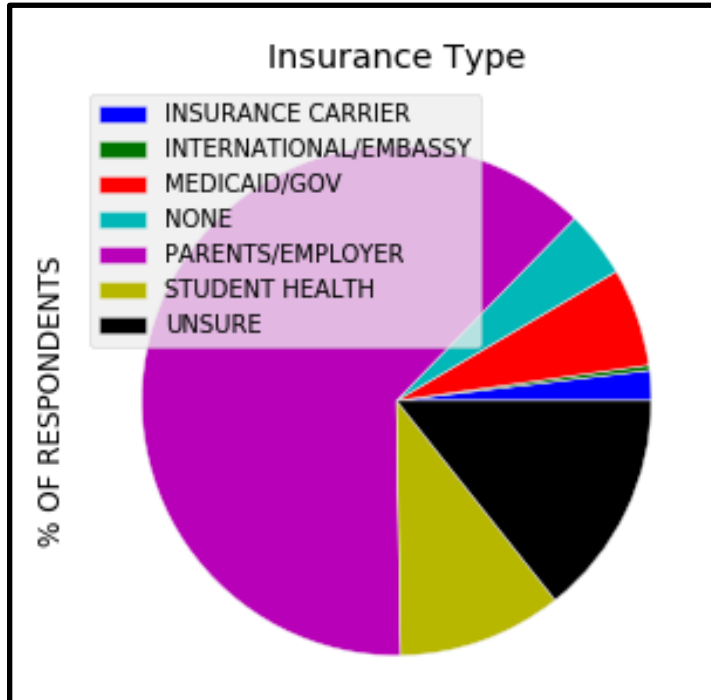


Figure 5

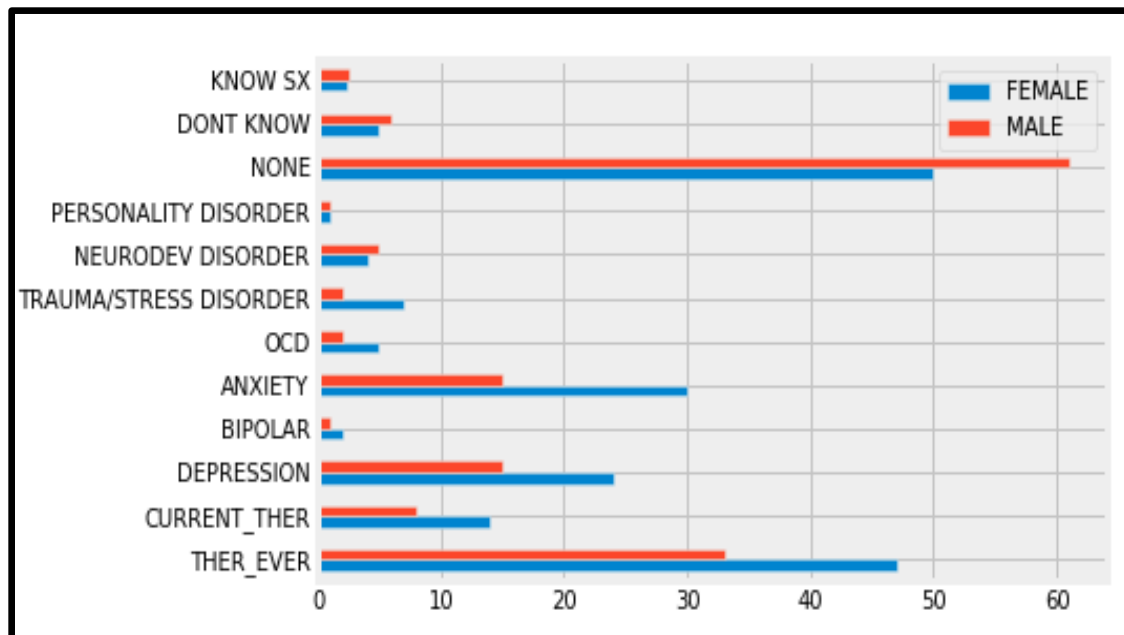


Figure 6

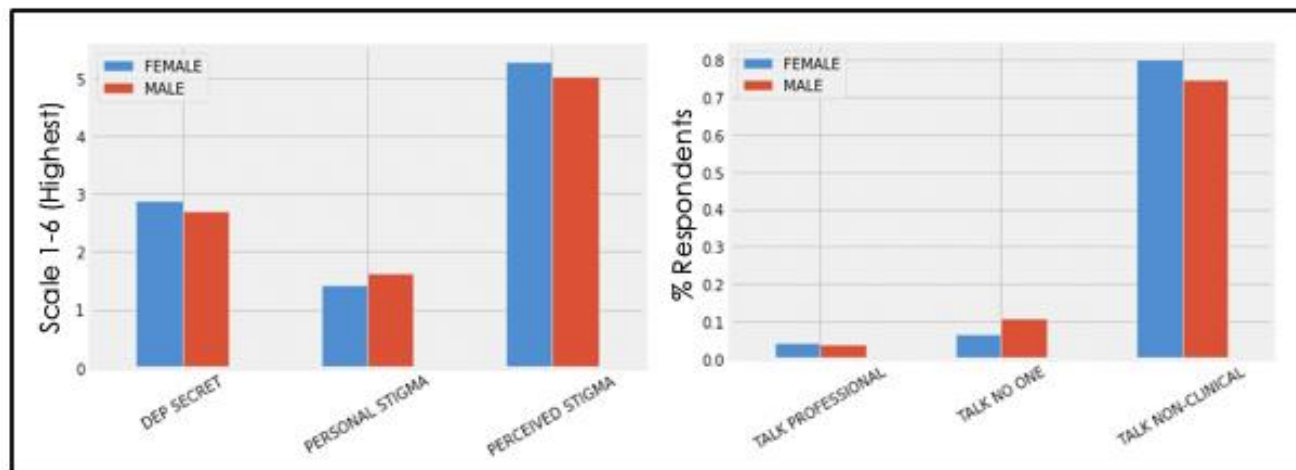


Figure 7

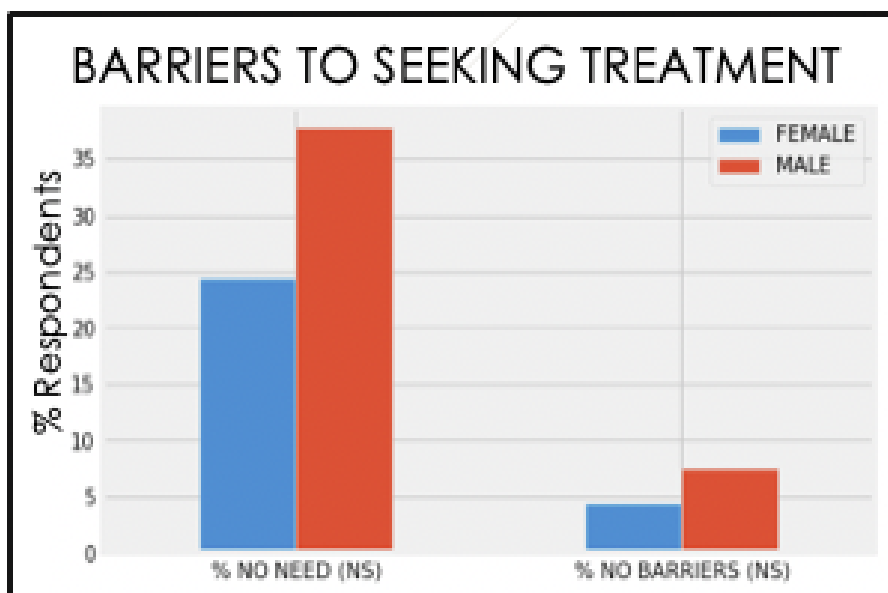


Figure 8

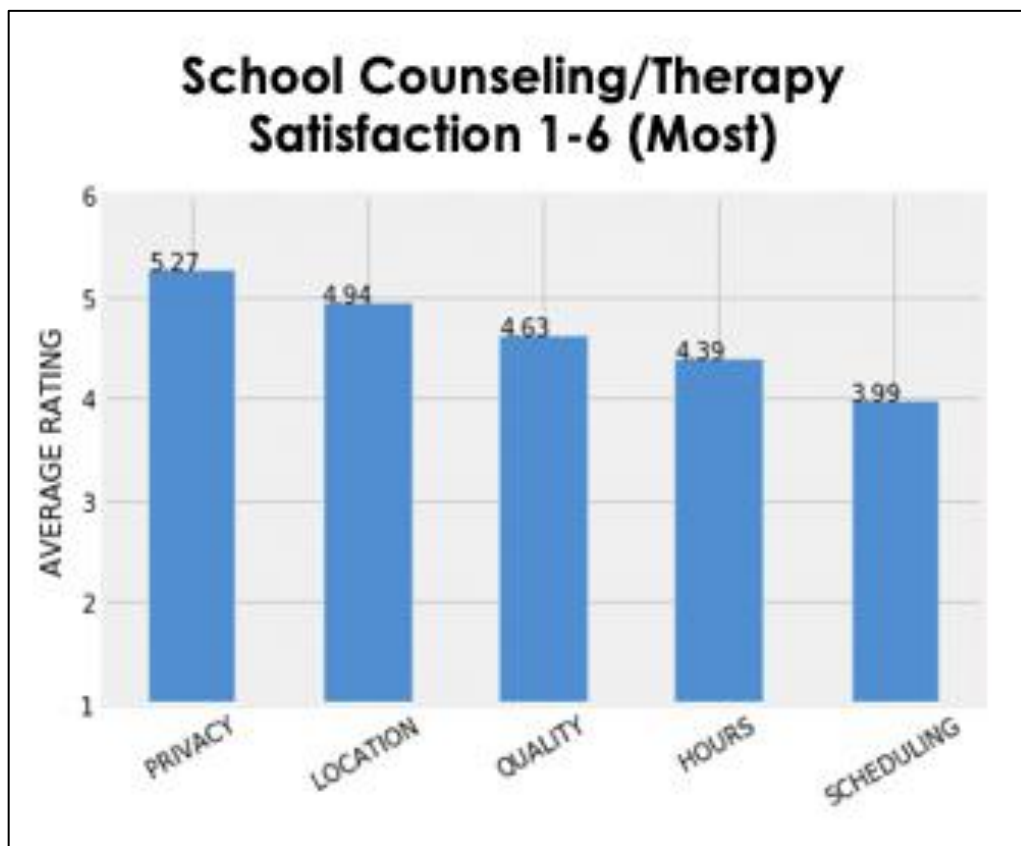


Figure 9

	5%	95%	Odds Ratio
<b>C(gender)[T.1]</b>	0.510024	0.715226	0.604
<b>C(gender)[T.2]</b>	0.575811	0.795059	0.677
<b>C(FS)[T.fs_financial]</b>	1.275485	1.761613	1.499
<b>C(FS)[T.fs_no avail]</b>	2.033868	2.956378	2.452
<b>C(FS)[T.fs_no barriers]</b>	4.468331	6.264108	5.291
<b>C(FS)[T.fs_no need]</b>	0.084823	0.117902	0.100
<b>C(FS)[T.fs_no time]</b>	1.199646	1.659289	1.411
<b>C(FS)[T.fs_prefer other source]</b>	0.659057	0.961578	0.796
<b>percneed</b>	0.565896	0.595656	0.581
<b>Ins_parentsemployer</b>	1.654295	1.970914	1.806
<b>Ins_studenthealth</b>	2.305905	2.893966	2.583
<b>Ins_medicaid</b>	2.084688	2.648360	2.350
<b>Disab</b>	1.433681	2.262413	1.801
<b>age</b>	1.012498	1.020568	1.017
<b>Talk_noone</b>	0.174184	0.246028	0.207
<b>Talk_nonclinical</b>	0.812627	0.965653	0.886
<b>international</b>	0.530431	0.709712	0.614
<b>fincur</b>	1.062847	1.116158	1.089

Figure 10

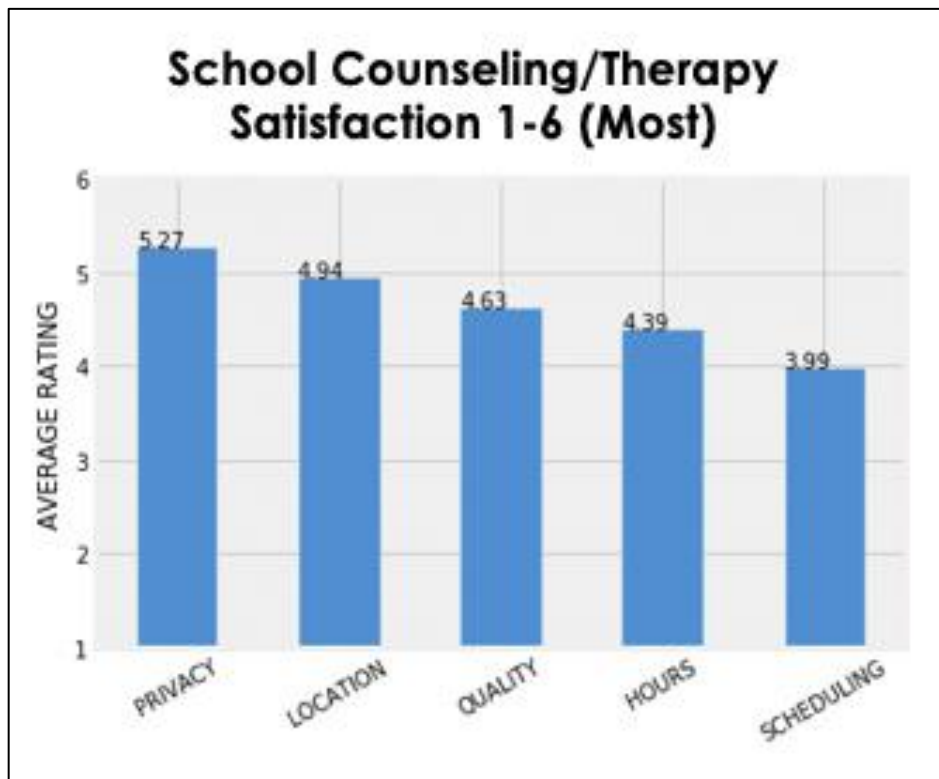


Figure 11

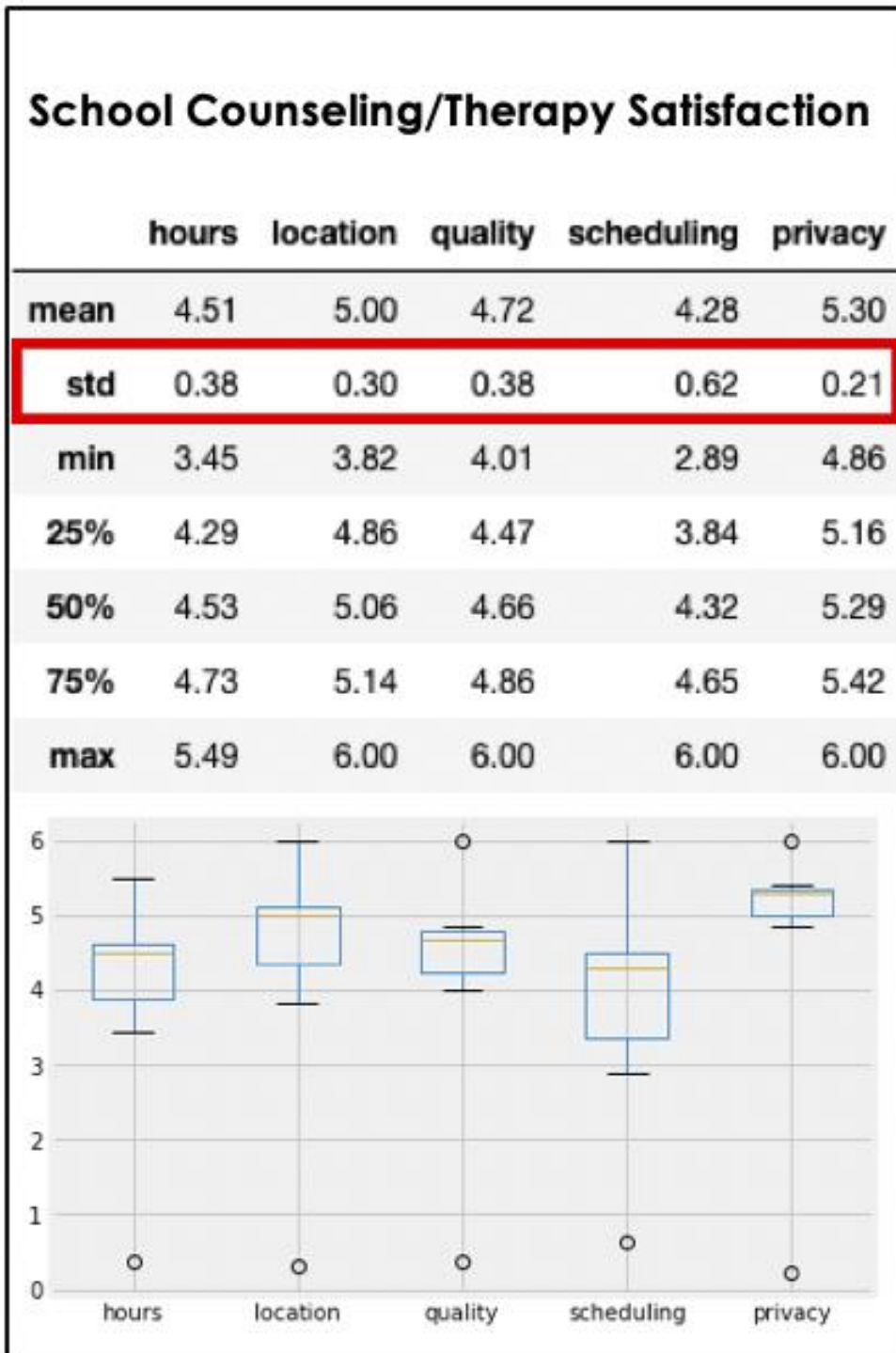


Figure 12

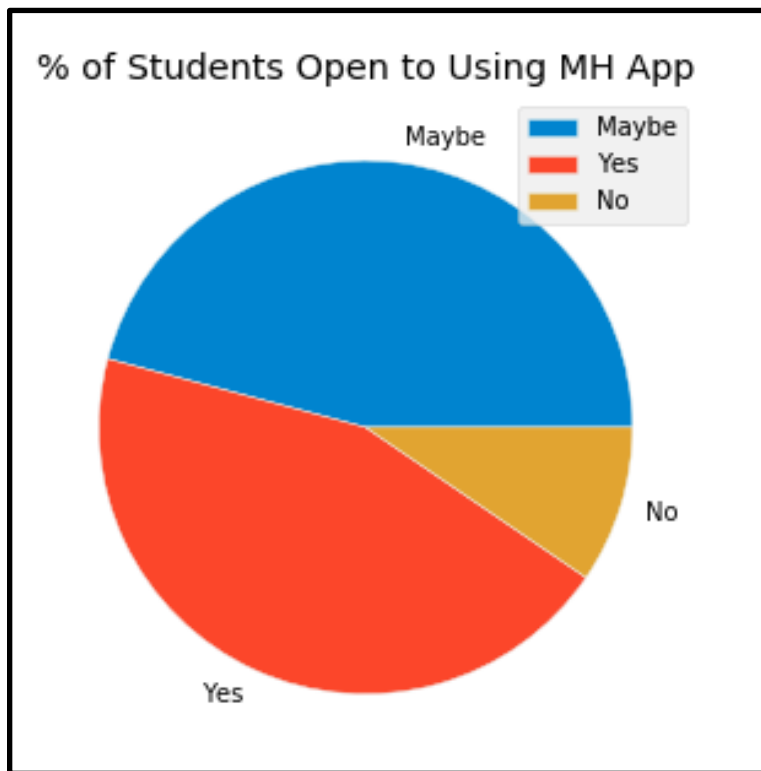


Figure 13

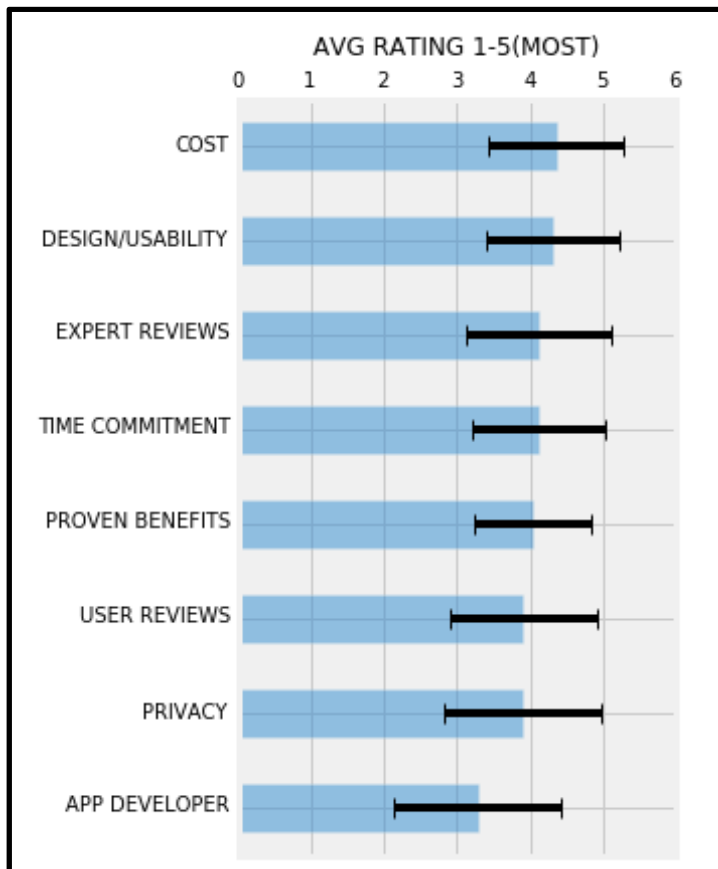


Figure 14

FEATURE	GENDER		AGE		INT		DISAB	
	PCC	PVAL	PCC	PVAL	PCC	PVAL	PCC	PVAL
PROVEN BENEFITS	0.087	0.092	0.023	0.648	-0.009	0.859	-0.003	0.952
DESIGN/USABILITY	0.144	0.005	0.047	0.358	-0.070	0.170	0.057	0.262
PRIVACY	0.030	0.555	0.054	0.291	0.019	0.708	0.039	0.443
USER REVIEWS	0.061	0.236	-0.024	0.637	0.032	0.534	0.007	0.898
EXPERT REVIEWS	0.122	0.018	-0.025	0.628	-0.054	0.291	-0.009	0.856
APP DEVELOPER	0.004	0.930	0.014	0.790	-0.038	0.451	0.041	0.419
COST	0.110	0.031	-0.020	0.690	-0.054	0.293	0.012	0.820
TIME COMMITMENT	0.156	0.002	-0.025	0.630	-0.028	0.581	0.029	0.572

Figure 15

	NEED (FS)	FINANCIAL (FS)	TIME (FS)	LOCATION (FS)	AVAILABILITY (FS)	OTHER SOURCE (FS)	OTHER (FS)	NONE (FS)	TIME (NS)	NEED (NS)	FINANCIAL (NS)	LOCATION (NS)	AVAILABILITY (NS)	OTHER SOURCE (NS)	OTHER (NS)	NONE (NS)
PROVEN BENEFITS	0.902	0.778	0.1102	0.6269	0.4118	0.3552	0.6933	0.4001	0.778	0.1311	0.7838	0.7699	0.4995	0.0957	0.28	0.9132
DESIGN/USABILITY	0.9436	0.0965	0.0271	0.2189	0.0874	0.0272	0.2547	0.8338	0.1866	0.1612	0.2007	0.892	0.9798	0.1175	0.5716	0.3503
PRIVACY	0.64	0.47	0.4656	0.225	0.9732	0.3347	0.0431	0.3689	0.9941	0.0764	0.9894	0.1608	0.9831	0.7594	0.3446	0.1784
USER REVIEWS	0.5036	0.0793	0.277	0.2633	0.3025	0.1035	0.9331	0.4336	0.8431	0.5308	0.8416	0.6031	0.9511	0.7434	0.2993	0.3537
EXPERT REVIEWS	0.1565	0.0586	0.1843	0.3593	0.7584	0.2441	0.7059	0.6894	0.2762	0.1145	0.3801	0.3231	0.3213	0.6433	0.297	0.5038
APP DEVELOPER	0.6597	0.9005	0.8404	0.9479	0.6506	0.4952	0.0788	0.9343	0.964	0.0251	0.888	0.5308	0.728	0.5033	0.4583	0.05
COST	0.5454	0.3619	0.4299	0.3332	0.0457	0.7735	0.134	0.48	0.2708	0.4714	0.8108	0.5615	0.328	0.2846	0.4566	0.919
TIME COMMITMENT	0.8127	0.2513	0.4598	0.5249	0.3484	0.4963	0.2863	0.7991	0.7443	0.3343	0.4655	0.9003	0.8681	0.2663	0.7844	0.8593
PROVEN BENEFITS	0.0079	0.0181	-0.1023	-0.0312	-0.0527	0.0593	-0.0253	-0.0540	0.0181	0.0967	-0.0176	0.0188	0.0433	0.1067	0.0693	-0.0070
DESIGN/USABILITY	-0.0045	0.1337	0.1412	0.0788	0.1094	0.1412	0.0730	-0.0135	-0.0847	0.0898	-0.0820	-0.0087	0.0016	0.1003	-0.0363	-0.0599
PRIVACY	-0.0300	0.0464	-0.0468	-0.0778	0.0022	0.0619	-0.1294	-0.0577	-0.0005	0.1134	-0.0008	0.0899	-0.0014	0.0197	0.0606	-0.0862
USER REVIEWS	0.0429	0.1123	0.0697	0.0717	0.0661	0.1043	0.0054	-0.0502	0.0127	0.0402	-0.0128	0.0334	0.0039	-0.0210	-0.0666	-0.0595
EXPERT REVIEWS	0.0908	0.1210	0.0851	0.0588	0.0198	0.0747	-0.0242	-0.0257	-0.0698	0.1011	-0.0563	-0.0634	-0.0636	0.0297	-0.0669	-0.0429
APP DEVELOPER	-0.0283	0.0080	-0.0129	0.0042	-0.0291	0.0438	-0.1125	0.0053	-0.0029	0.1431	-0.0090	0.0402	-0.0223	-0.0430	0.0476	-0.1254
COST	0.0388	0.0585	0.0507	0.0621	-0.1278	0.0185	0.0960	-0.0453	-0.0706	0.0462	-0.0154	-0.0373	0.0628	0.0686	0.0478	0.0065
TIME COMMITMENT	0.0152	0.0736	0.0474	0.0408	-0.0602	0.0437	0.0713	-0.0163	-0.0209	0.0619	-0.0468	0.0080	-0.0107	0.0713	0.0176	-0.0114

**Preliminary Interview Protocol:**

These questions are intended for open-ended qualitative interviews, so I will begin with the questions listed below and then follow-up on relevant portions of the interviewee's response

1. Will you consent to including your name when referencing your quotes, recordings, in publications and presentations?  
  
Y or N
2. Describe how your service/program/platform works, costs of your services, and your patient population?
3. Compare your services to those of your competitors and in-person services, what makes you different? Why do you believe patients use your services?
4. In your opinion, what are the strengths and weaknesses of your program/service/platform and why?
5. How have recent policy and regulation flexibilities in response to the national Public Health Emergency COVID-19 outbreak impacted your program offerings?
6. What are trends you've been seeing in your patient base over the past 5-years?

7. How/why do you think college students would be attracted to digital mental health service offerings?
8. Are there groups within the college student population harder to reach? What initiatives are you taking to address disparities in access and utilization in mental health care services?
9. What do you believe is the biggest barrier campus mental health providers face and can technology help remove some of these barriers or address disparities in the population?
10. What do you believe is the single biggest opportunities to make a potential difference in mental health of college students by implementing telehealth services or technology-enabled/driven services?
11. How do you anticipate Telemental health services to evolve post-pandemic and how do you see your program/platform will evolve and grow in the future?
12. What do you see to be culturally competent care? How does your platform address cultural and language differences?

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