Individuals who text crisis text line: Key characteristics and opportunities for suicide prevention

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Abstract
Objective: Text-based crisis services are increasingly prominent, with inclusion in the national 988 crisis number launching in 2022. Yet little is known about who uses them. This study seeks to understand the population served by Crisis Text Line (CTL), the largest crisis text service in the United States.

Methods: Secondary data analysis was conducted on de-identified Crisis Counselor reports, texter post-conversation survey responses, and anonymized text conversation data from 85,877 texters who contacted CTL during a 12-month period. We examined Crisis Counselor’s ratings of suicide ideation severity, texters’ reports of race, gender, sexual orientation, recent mental health symptoms, and additional sources of help, and logs of frequency of contact.

Results: 76% of texters were under 25. 79% were female. 48% identified as other than heterosexual/straight. 64% had only one conversation. 79% were above the clinical cutoff for depression and 80% for anxiety, while 23% had thoughts of suicide. 23% received help from a doctor or therapist, and 28% received help only from CTL.

Conclusions: CTL reaches a highly distressed, young, mostly female population, including typically underserved minorities and a substantial percentage of individuals who do not receive help elsewhere. These findings support the decision to include texting in the forthcoming national 988 implementation.

KEYWORDS
crisis text line, demographics, mental health, suicide prevention, texter survey

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INTRODUCTION

For over 60 years, crisis telephone lines have provided brief, no-cost confidential counseling and referrals for individuals in crisis (Gould et al., 2012, 2021). Crisis lines have a unique place in suicide prevention and mental health care, giving control to the user, who initiates and terminates the interaction (Slem & Cotler, 1973). Crisis lines provide off-hours mental health coverage and anonymous real-time support (Gould & Munfakh, 2012) as well as easily accessible psychosocial support at critical moments of need and customized referrals for mental health services and community agencies. Crisis services figure prominently in the National Strategy for Suicide Prevention (U.S. Surgeon General & National Action Alliance for Suicide Prevention, 2012), and the United States is on the cusp of launching a national three-digit phone number (988) for suicide prevention and mental health and substance use crises. In November 2021, the Federal Communications Commission issued a supplemental order requiring text messaging support for the new crisis response line on the grounds that “texting can be a preferred method of communications for at-risk populations.” Understanding the prevention and intervention opportunities for individuals who text in crisis is thus more important now than ever, with the simplified number and wide scope of 988 expected to dramatically increase usage. To realize the benefits from these investments, effective interventions based on a solid understanding of the needs of service users are required.

Crisis counseling via text messaging has emerged in response to texting becoming the dominant medium of communication for both youth and a growing number of adults (Anderson & Perrin, 2017; Lenhart, 2012). Crisis Text Line (CTL) is the nation’s largest such service. CTL recruits, trains, and supervises volunteer Crisis Counselors (CCs) remotely. CCs receive 30 h of interactive online training in reflective listening skills, risk assessment, collaborative problem solving, and action planning, followed by automated decision support and close supervision by salaried clinical staff who monitor text conversations. Since 2013, CTL has engaged in approximately 7 million crisis text conversations (Crisis Text Line, 2022) with approximately 3 million unique individuals with a variety of needs, including mental health issues such as depression, anxiety, self-harm, and stress; relational issues involving problems with family, friends, and partners; and feelings of isolation. Fewer texters sought help for eating disorders, substance use, bullying, bereavement, LGBTQ+ issues, and physical, sexual, emotional, or domestic abuse or violence (Szlyk et al., 2020).

Research using anonymized CTL data has contributed to knowledge about CTL users presenting with psychosocial issues (Szlyk et al., 2020), geographic trends and correlates of CTL usage (Thompson et al., 2018), and trends of CTL use in relation to Netflix’s 13 Reasons Why (Sugg et al., 2019). The companion article (Gould et al., 2022) addresses texters’ perceptions of the effectiveness of CTL’s crisis intervention. However, no published CTL study has focused on understanding texters’ demographics, sexual identity, suicide and mental health risks, and frequency of use. Furthermore, there has been no study of the extent to which individuals who contacted a suicide prevention crisis line engaged other formal supports for their crises, such as talking to a mental health provider. This information is critical for identifying suicide prevention and treatment linkage opportunities and designing protocols and interventions to promote safety and recovery.

The current study addresses these gaps by examining CCs’ ratings of texters’ suicide ideation severity, texters’ reports of race, gender, sexuality, recent mental health symptoms, and sources of help, and how many times each texter (represented by a unique non-identifiable ID) contacted the service during the year. This information will be vital for understanding the public health need, the population served by crisis text services, and the opportunities that exist for providing support.

METHODS

For this study, a “message” is the unit of text produced when a texter types something and then hits “Send.” A texter can send multiple “messages” before receiving a response from the CC. A “conversation” begins when a texter who initiates contact is connected with a CC and engages or does not. A “conversation” ends when the texter says “stop/quit” or when the CC terminates it because the conversation has concluded or the texter has stopped replying. Conversations with 10 or less messages were removed because these conversations are not expected to be meaningfully engaged with the service.

Immediately following each conversation, CTL asks its CCs to complete a report and a brief, optional survey is automatically sent to all texters except those who required an “active rescue” (intervention of emergency services), which occurs in less than 1% of all conversations. The survey asks: “Would you help us better help others by giving anonymous feedback about your experience today?” Texters who opted in reported demographic information, mental health symptoms from the past 2 weeks (depression, anxiety), and whether they received help from other sources for crises. Texters also answered questions about whether they felt more/less/the same hopeful, depressed, overwhelmed, or suicidal after the conversation; results
from these items are presented in the companion article (Gould et al., 2022).

Following carefully developed procedures to ensure privacy, appropriate data use, and other protections for texters (Pisani et al., 2019), CTL provided de-identified CC reports, texter surveys, and metadata (e.g., state, timestamps) and frequency of word sequences (starting with single word counts up to five word sequence counts) gathered from conversations initiated by texters between October 12, 2017, and October 11, 2018. CTL anonymized the data by removing personally identifiable information using natural language processing (NLP). We later verified this anonymization by using R scripts to perform a machine-based search (Nissen, 2022) of all messages for first and last names recorded by the Census Bureau (United States Census Bureau, 1990).

Measures

Texter characteristics (texter reported)

Texters were invited to report on their age (“How old are you?”) by selected broad age brackets, a decision made by CTL to decrease the chance that texters could ever be identified from their responses. Age bands offered as response options changed during the period of the study, so have been elided for this evaluation to include “Prefer not to answer, 13 or younger, 14–24, 25–44, 45–64, 65+”). Texters reported on race (“What is your race or origin? [Select all that apply] Prefer not to answer, American Indian/Alaska Native, Asian, Black or African American, Hispanic/Latino or Spanish origin, Middle Eastern/North African or Arab, Native Hawaiian or Other Pacific Islander, White, Other - Write In”); gender (“Do you consider yourself to be: Prefer not to answer, agender, female, genderqueer, male, trans, Other - Write In”); sexual orientation (“Do you consider yourself to be: Prefer not to answer, asexual, gay or lesbian, heterosexual or straight, pansexual, bisexual, Other - Write In”).

Mental health symptoms (texter reported)

Depressive symptoms were measured with the PHQ-2 (“Little interest in doing things”, “Feeling down, depressed or hopeless”) (Kroenke et al., 2003). Anxiety symptoms were measured with the GAD-2 (“Feeling nervous, anxious or on edge,” “Not being able to stop or control worrying”) (Kroenke et al., 2009). Each item was rated on a four-point scale labeled in the survey from “Not at all” = 0 to “Nearly every day” = 3 for the past two weeks. Both measures have established clinical cutoffs (≥3 for 0 to 6 range) indicating a high likelihood of clinical conditions (Plummer et al., 2016; Staples et al., 2019).

Help from other sources when in crisis (texter reported)

Texters were asked: “Besides Crisis Text Line, who do you talk to in a crisis?” Texters could select all that applied from a list of personal and professional relationships: “‘No one’, ‘a friend or roommate’, ‘parent(s)’, ‘spouse or partner’, ‘boyfriend/girlfriend’, ‘other family member’, ‘doctor’, ‘counselor or therapist’, ‘(if in school) faculty, staff or counselor at school’.” Texters were also asked, “Besides texting us, how else do you get help when in crisis? (Select all that apply) ‘I talk to someone’, ‘I see a therapist or doctor in person’, ‘I use an app or website for emotional support’, ‘I use a telephone or chat crisis line’, Other - Write In, or ‘I haven’t asked for help elsewhere.’” From responses to these questions, we created two groups that would enable us to better understand the proportion of individuals who receive professional help in addition to texting CTL. For one group, we selected individuals who indicated on either item that they spoke to a doctor, counselor, or therapist. For the other, we selected individuals who indicated that they had not asked for help elsewhere.

Ladder-up suicide risk assessment (crisis counselor rated risk ladder)

CCs selected all options that applied to determine the texter’s place on a suicide risk “ladder.” The ladder consisted of Thoughts of Suicide, Plan, Accessible Means, and Timeframe of Plan is within 24 h. These items form a Guttman scale (Perez, 2005), with each additional step including all preceding steps (e.g., someone who endorses Timeframe of Plan is within 24 h had to endorse Thoughts of Suicide, Plan, and Accessible Means as well). The texter’s highest score (i.e., most serious suicide risk level) was employed in the analyses. CTL recruits, trains, and supports volunteer CCs as they participate in 30 h of interactive training, with 5 h devoted to assessing and addressing suicide risk.

Text metadata (logged and provided by CTL)

CTL provided information about conversations derived from the database of incoming and outgoing messages preserved by the texting platform. These data included the
following: timestamps, CC ID, and Texter ID—a unique alphanumeric code that represented a unique phone number (not available to the evaluation team). From this information, we derived the number of conversations each texter (represented by a Texter ID code) had with the service using three frequency groupings: 1 conversation, 2 to 10 conversations, more than 10 conversations.

Analysis

Data preparation and statistical analyses were conducted using SAS 9.4 (SAS Institute Inc, 2013) and R version 3.6.3 (R Core Team, 2020).

Data preparation

We received information from 682,059 anonymized crisis conversations. We excluded 42,794 because they were labeled in the dataset as “prank” (texter sent lewd or absurd messages, n = 4088), “third party” (someone texting for help for another person, n = 27,199), or “testing” (texter was testing the service before referring it to others, n = 12,507). The remaining dataset included 638,265 anonymized conversations from 380,850 unique de-identified texters. Of these, 85,877 texters (22.5% of all texters) responded to at least the first item of the texter survey: “Did you find this conversation helpful?”

We then selected one conversation for each unique texter by identifying the first conversation in which the texter completed at least the first item of the texter survey, if they started the survey in any conversation, or their first conversation, if they did not complete any survey items. This yielded a dataset in which each unique texter was represented by one conversation.

Given the survey response rate of 22.5%, we explored using inverse probability weighting to adjust for survey missingness. The point estimates produced were very close to the unweighted estimates, signaling that the weights did not add meaningfully to our understanding of the population. Thus, unweighted descriptive statistics were generated and reported for all survey variables. Please see Appendix A for details of the variables and analyses used to explore weighting.

The study’s protocol involving secondary analysis of de-identified data without access to information that would link IDs to texters was considered to meet Federal and University criteria for exemption by the University of Rochester Institutional Review Board (IRB) and not to meet the definition of Human Subjects research requiring review by the New York State Psychiatric Institute/Columbia University Department of Psychiatry IRB.

RESULTS

Survey data presented in the results tables reflect responses of the 85,877 texters who completed at least the first item of the texter survey. The number of responses on survey items other than the first will differ from this number because of skipped items. Thus, “missing” responses reflect missingness among those who completed at least the first item of the survey.

Age, race, gender, sexuality

Distributions of age, race/ethnicity, gender, and sexuality reported by texters are presented in Table 1. The majority of texters were under the age of 25, and the vast majority of these fell into the 14–24-year-old group. Nearly half identified as belonging to minority races/ethnicities (i.e., as other than non-Hispanic White). Just over three-quarters of texters were female, while 7.7% identified as gender minority (i.e., not male or female), including 2.7% trans-male or trans-female. Nearly half of texters identified as other than heterosexual/straight, including approximately a quarter who identified as bisexual or pansexual.

Conversation frequency

Table 1 shows frequency of conversations across age, race, gender, sexuality, depression, anxiety, and suicide risk groups. About two-thirds of texters had only one conversation during the year we studied, while approximately a third had 2–10 conversations. 2% had more than 10 conversations. This pattern remained consistent across ages, with slightly more of those 13 or under and slightly fewer of those aged 25 or over texting more frequently. There was very little variation by race, gender, or sexuality, although a smaller proportion of those identifying as belonging to a gender minority texted only once and a slightly larger proportion texted 2–10 times. At every step up on the suicide risk ladder, a greater proportion of texters engaged in more conversations than those at lower risk levels.

Suicide risk ladder

Table 2 shows the distribution of suicide risk ladder options across age, gender, race, and sexuality. CCs indicated some suicide ideation for 23% of texters. As expected based on the progression of the scale from less to more severe ideation, the distribution broadly tapered from higher to
| TABLE 1 | Number of crisis text conversations during one-year period by texters’ reports of demographic, sexuality, and mental health characteristics |
| --- | --- |
| | 1 Conversation (only) | 2–10 Conversations | >10 Conversations |
| | n | Row % | n | Row % | n | Row % |
| Total (All) | n = 85,877 | | | | | |
| Age | | | | | | |
| Total n = 81,056 | | | | | | |
| 13 or younger (n = 8379, 10%) | 4254 | 50.77 | 3923 | 46.82 | 202 | 2.41 |
| 14–24 (n = 53,144, 66%) | 33,556 | 63.14 | 18,630 | 35.06 | 958 | 1.80 |
| 25–44 (n = 16,065, 20%) | 11,628 | 72.38 | 4179 | 26.01 | 258 | 1.61 |
| 45–64 (n = 3316, 4%) | 2410 | 72.68 | 833 | 25.12 | 73 | 2.20 |
| 65+ (n = 152, 0%) | 107 | 70.39 | 43 | 28.29 | 2 | 1.32 |
| Race | | | | | | |
| Total n = 71,252 | | | | | | |
| Prefer not to answer (n = 3987, 5.6%) | 2390 | 59.94 | 1474 | 36.97 | 123 | 3.09 |
| American Indian/Alaska Native (n = 753, 1.1%) | 456 | 60.56 | 280 | 37.18 | 17 | 2.26 |
| Asian (n = 2462, 3.5%) | 1550 | 62.96 | 874 | 35.50 | 38 | 1.54 |
| Black or African American (n = 5842, 8.2%) | 3884 | 66.48 | 1840 | 31.50 | 118 | 2.02 |
| Hispanic, Latino, or Spanish (n = 9348, 13.1%) | 6234 | 66.69 | 3002 | 32.11 | 112 | 1.20 |
| Middle Eastern, North African, Arab (n = 453, 0.6%) | 290 | 66.90 | 156 | 34.44 | 7 | 1.55 |
| Native Hawaiian, Other Pacific Islander (n = 276, 0.4%) | 180 | 65.22 | 93 | 33.70 | 3 | 1.09 |
| White (n = 37,979, 53.3%) | 23,876 | 62.87 | 13,326 | 35.09 | 777 | 2.05 |
| More than one race (n = 8469, 11.9%) | 5305 | 62.64 | 3026 | 35.73 | 138 | 1.63 |
| Other-Write In (n = 1683, 2.4%) | 1040 | 61.79 | 607 | 36.07 | 36 | 2.14 |
| Gender | | | | | | |
| Total n = 71,125 | | | | | | |
| Female (n = 55,835, 78.5%) | 35,469 | 63.52 | 19,347 | 34.65 | 1019 | 1.83 |
| Male (n = 9671, 13.6%) | 6527 | 67.49 | 2926 | 30.26 | 218 | 2.25 |
| Gender minority (n = 5619, 7.9%) | 3136 | 55.81 | 2360 | 42.00 | 123 | 2.19 |
| Sexual orientation | | | | | | |
| Total n = 71,484 | | | | | | |
| Heterosexual (n = 37,331, 52.2%) | 24,718 | 66.21 | 11,998 | 32.14 | 615 | 1.65 |
| All other sexual identities (n = 34,153, 47.8%) | 20,605 | 60.33 | 12,788 | 37.44 | 760 | 2.23 |
| Depression | | | | | | |
| Total n = 76,424 | | | | | | |
| Above cutoff (n = 60,403, 79%) | 38,264 | 63.35 | 21,079 | 34.90 | 1060 | 1.75 |
| Below cutoff (n = 16,021, 21%) | 10,766 | 67.20 | 5008 | 31.26 | 247 | 1.54 |
| Anxiety | | | | | | |
| Total n = 76,688 | | | | | | |
| Above Anxiety scale cutoff (n = 61,634, 80.4%) | 39,132 | 63.49 | 21,426 | 34.76 | 1076 | 1.75 |
| Below cutoff (n = 15,054, 19.6%) | 10,078 | 66.95 | 4738 | 31.47 | 238 | 1.58 |
| Suicide risk ladder | | | | | | |
| Total n = 85,877 | | | | | | |
| None (n = 66,159, 77%) | 42,812 | 64.71 | 22,207 | 33.57 | 1140 | 1.72 |
| Suicidal Thoughts (n = 11,338, 13.2%) | 7175 | 63.28 | 3918 | 34.56 | 245 | 2.16 |
| Plan (n = 2809, 3.3%) | 1678 | 59.74 | 1077 | 38.34 | 54 | 1.92 |
| Accessible Means (n = 4358, 5.1%) | 2497 | 57.30 | 1724 | 39.56 | 137 | 3.14 |
| Timeframe within 24 h (n = 1213, 1.4%) | 618 | 50.95 | 553 | 45.59 | 42 | 3.46 |
Table 2  Counselor-reported severity levels of suicide ideation and plans by texter reports of demographic, sexuality, and mental health characteristics

|                      | No suicidal thoughts | Suicidal Thoughts | Plan | Accessible Means | Timeframe within 24 h |
|----------------------|----------------------|-------------------|------|------------------|----------------------|
|                      | n  | %   | n   | %   | n   | %   | n   | %   | n   | %   |
| Total                | 66,159 | 77   | 11,338 | 13   | 2809 | 3   | 4358 | 5   | 1213 | 1   |
| Age                  |      |      |      |      |      |      |      |      |      |      |
| 13 or younger        | 6081 | 72.6 | 1123 | 13.4 | 378  | 4.5 | 599  | 7.1 | 198  | 2.4 |
| 14–24 (n = 53,144)   | 40,915 | 77   | 7077 | 13.3 | 1732 | 3.3 | 2665 | 5   | 755  | 1.4 |
| 25–44 (n = 16,065)   | 12,514 | 77.9 | 2216 | 13.8 | 459  | 2.9 | 723  | 4.5 | 153  | 1   |
| 45–64 (n = 3316)     | 2642 | 79.7 | 401  | 12.1 | 90   | 2.7 | 148  | 4.5 | 35   | 1.1 |
| 65+ (n = 152)        | 126  | 82.9 | 12   | 7.9  | 4    | 2.6 | 9    | 5.9  | 1    | 0.7 |
| Race                 |      |      |      |      |      |      |      |      |      |      |
| Prefer not to answer | 3115 | 78.1 | 494  | 12.4 | 143  | 3.6 | 180  | 4.5 | 55   | 1.1 |
| American Indian/     | 558  | 74.1 | 118  | 15.7 | 21   | 2.8 | 42   | 5.6  | 14   | 1.9 |
| Alaska Native (n = 753) |      |      |      |      |      |      |      |      |      |      |
| Asian (n = 2462)     | 1879 | 76.3 | 336  | 13.6 | 91   | 3.7 | 124  | 5    | 32   | 1.3 |
| Black or African     | 4497 | 77   | 732  | 12.5 | 226  | 3.9 | 289  | 4.9  | 98   | 1.7 |
| American            |      |      |      |      |      |      |      |      |      |      |
| Hispanic, Latino, or| 7416 | 79.3 | 1124 | 12.0 | 303  | 3.2 | 383  | 4.1  | 122  | 1.3 |
| Spanish origin (n = 9348) |      |      |      |      |      |      |      |      |      |      |
| Middle Eastern, North | 371  | 81.9 | 56   | 12.4 | 9    | 2   | 16   | 3.5  | 1    | 0.2 |
| African, or Arab     |      |      |      |      |      |      |      |      |      |      |
| Native Hawaiian, Other | 213  | 77.2 | 36   | 13   | 8    | 2.9 | 16   | 5.8  | 3    | 1.1 |
| Pacific Islander (n = 276) |      |      |      |      |      |      |      |      |      |      |
| White (n = 37,979)   | 29,231 | 77   | 5058 | 13.3 | 1175 | 3.1 | 2001 | 5.3  | 514  | 1.4 |
| More than one        | 6392 | 75.5 | 1169 | 13.8 | 280  | 3.3 | 485  | 5.7  | 143  | 1.7 |
| (n = 8469)           |      |      |      |      |      |      |      |      |      |      |
| Other-Write In       | 1269 | 75.4 | 223  | 13.3 | 65   | 3.9 | 100  | 5.9  | 26   | 1.5 |
| (n = 1683)           |      |      |      |      |      |      |      |      |      |      |
| Gender               |      |      |      |      |      |      |      |      |      |      |
| Female (n = 55,835)  | 43,750 | 78.4 | 7010 | 12.6 | 1662 | 3   | 2688 | 4.8  | 725  | 1.3 |
| Male (n = 9671)      | 7177 | 74.2 | 1423 | 14.7 | 407  | 4.2 | 537  | 5.6  | 127  | 1.3 |
| Gender minority (n = 5619) | 3925 | 69.9 | 890  | 15.8 | 237  | 4.2 | 408  | 7.3  | 159  | 2.8 |
| Sexual Orientation   |      |      |      |      |      |      |      |      |      |      |
| Heterosexual         | 29,662 | 79.5 | 4570 | 12.2 | 1096 | 2.9 | 1612 | 4.3  | 391  | 1   |
| (n = 37,331)         |      |      |      |      |      |      |      |      |      |      |
| All other sexual     | 25,445 | 74.5 | 4819 | 14.1 | 1230 | 3.6 | 2038 | 6    | 621  | 1.8 |
| identities (n = 34,153) |      |      |      |      |      |      |      |      |      |      |
lower proportions as the risk level increased (13% had Suicidal thoughts only, with no Plan, Accessible Means, or Timeframe within 24 h; 3% had Suicidal Thoughts plus Plan; 5% had Suicidal Thoughts, Plan, and Accessible Means; 1% had Suicidal Thoughts, a Plan, Accessible Means, and a Timeframe within 24 h). CCs selected more severe ideation categories for a slightly greater proportion of texters aged 13 and under than for other age groups. Both proportion of those at risk and severity of risk remained broadly similar for all ages from 14 to 64. A greater proportion of those over 65 had no thoughts of suicide (82.9%). However, among those over 65, a larger proportion of those with suicide risk had higher levels of risk. There was little variation by race, either in the proportion of the population with suicidal thoughts or the severity of those thoughts. The proportions of males and females who had no thoughts of suicide were similar. However, a slightly higher proportion of those identifying as belonging to a gender minority had thoughts of suicide, and among those who did a higher proportion had greater severity of risk. The proportion of those at risk and the levels of risk were broadly consistent across sexualities. Approximately a quarter of those above the cutoff for depression or anxiety were at risk for suicide. Nearly twice as many respondents above the cutoff for depression reported having thoughts of suicide than did those below the cutoff and approximately 2.5 times as many had more severe risk. Approximately 50% more of those above the cutoff on the anxiety scale reported having both suicidal thoughts and each of the more severe categories of risk than did those below the cutoff.

**Depression and anxiety symptom severity (past 2 weeks)**

Table 3 shows the proportion of the sample across age, gender, and sexuality who reported symptoms of depression and anxiety in the prior 2 weeks that fell above and below clinical cutoffs. Approximately 80% of texters were above the cutoff for each scale. Overall, the mean score for depressive and anxiety symptoms was $4.22$ (SD $= 1.75$, range 1–5) and $4.46$ (SD $= 1.73$, range 1–5), respectively. There was little variation across age, race, gender, or sexuality, although a slightly lower proportion of those aged over 65 reported depressive symptoms above the cutoff and a slightly lower proportion of those who identified as Black or African American were above the anxiety cutoff.

**Received help elsewhere**

Table 4 shows the proportion of texters who received help from a doctor or a therapist and the proportion who said they had not sought help anywhere other than CTL when in crisis. About a quarter (23%) of texters reported receiving help from a therapist or doctor when in a crisis and more than a quarter (28%) reported that they had no additional sources of help (including informal supports) for their current crisis other than CTL. The proportion of texters without help from any other source decreased by age, from the youngest (31.2%) to the oldest (20.9%). The proportion who reported getting help from a therapist
DISCUSSION

This is the first study to describe key characteristics of the people who text CTL, which is currently the nation’s largest provider of crisis text intervention. CTL texters are predominantly young, with 76% under the age of 25 and 66% between 14 and 24. These numbers are very similar to those using an Internet chat service in a recent study of the National Suicide Prevention Lifeline (Gould et al., 2021), in which 71.4% of texters were 24 years old or younger. Our previous work showed that youth tended to use crisis telephone services at a lower rate than adults, partly due to over-self-reliance and feelings of shame (Gould et al., 2006). Text messaging, the dominant mode of communication for adolescents (Lenhart, 2012), may be overcoming these barriers, at least for females, who make up more than three-quarters of texters in the present study. When compared to the age of callers to crisis telephone lines (Mishara et al., 2007), it is clear that text-based services reach young people previously not served. This might be because text-based communication offers protection from emotional exposure and vulnerability (Mohr et al., 2011). These data support the decision to include text intervention in the new National Suicide Prevention Lifeline’s 988 number, as we can expect this provision to significantly improve its reach among young people in crisis.

Additional efforts are required to understand the needs and preferences of middle age and older adults, who currently make up only a small percentage of texters (less than 5% of CTL texters were over the age of 45). CTL has its origins in an organization for youth volunteers (Dosomething.org) and has largely been marketed to young people, which might account for the smaller proportion of older people who use CTL’s service. Older adults may also be seeking crisis help through other channels in higher proportions. However, since cell phone ownership is now commonplace and technology adoption is accelerating in this age group (Anderson & Perrin, 2017), there may be untapped opportunities that can be met by text services. It should be noted that the results of our evaluation (Gould et al., 2022) indicate that older texters (>age 25) reported less benefit from their conversations than younger texters. While it is not expected that every texter will benefit the same way, the proportions and evaluation results together suggest that further investigation is needed to understand this older cohort and ensure that the service is suitable for all ages.

Providing crisis support for males, who account for the vast majority of suicide deaths (Control, 2021), remains a challenge for the field, including for text-based crisis interventions. Approximately three-quarters of CTL texters were females. This finding mirrors those in other studies of crisis lines (Abdullah et al., 2021; Arias et al., 2015; Busby et al., 2020; Gould et al., 2016; Kerner et al., 2021; Ramchand et al., 2016; Roth & Szlyk, 2021) and several studies of mental health service utilization (Cook et al., 2017; Derr, 2016; Hunt et al., 2015). More research is needed on how crisis services can appeal to and serve males across the lifespan.

CTL texters were racially diverse and CTL was the sole source of crisis help for many across all ethnic groups, but especially for ethnic minority groups. Approximately half of texters identified as non-Hispanic White. The proportion of those who identified as Black (8.2%) was lower than the national Figure (13.4%), and the same was true for those who identified as Hispanic, Latino, or of Spanish Origin (13.9% compared to a national level of 18.5%) or Asian (3.5% compared to 5.9%). However, this difference might be accounted for by the number of those who identified as more than one race (11.9%), which is much higher than the national level (2.8%). There was little evidence of variation in service usage by race. However, many more White respondents reported having professional support for crises from a therapist or doctor than did Black, Hispanic, or Native American texters. This is consistent with other literature showing under-representation of ethnic minorities in mental health services (Broman, 2012; Nestor et al., 2016; Rawal et al., 2004). The fact that minorities, especially those reporting more than one race, appear to be seeking help via text may present an opportunity to address service use disparities with specific interventions designed to support linkage to mental health services.

The high proportions of CTL texters identifying as belonging to sexual and gender minorities presents an
important opportunity to serve these populations, who have higher rates of mental health and suicide risk, and are underrepresented in mental health services (Busby et al., 2020; Hatzenbuehler et al., 2013; Hottes et al., 2016; Marshall et al., 2016; Nock et al., 2008). The proportion of CTL texters identifying as belonging to a gender minority (7.9%) was far greater than for the general population (Goodman et al., 2019). These numbers are strikingly similar to those in Gould et al. (2021), in which 7.5% selected a gender identity other than male or female. CTL texters were highly diverse in terms of sexual identity as well, with nearly half of texters identifying as other than heterosexual. This is drastically different from the U.S. population at large, among whom 79% of 19–24-year-olds (Jones, 2021) and approximately 84% of youth (Control, 2019) report being heterosexual or straight. The willingness of these individuals to utilize crisis text counseling together with findings that they benefit from the service and sense genuine CC concern (Gould et al., 2022) might mean that mental health referrals would be more readily accepted if provided by a CC.

While this study sheds some light on repeat texters, more work is needed to understand their needs, especially the 2% who engaged in more than 10 conversations during the year. Most texters (64.1%) had only one conversation with a CC, but more than a third returned for multiple conversations. These numbers are slightly higher than the proportions found in past crisis hotline studies, in which 14% and 35% of those studied had contacted the service in the past (Abdullah et al., 2021; Gould et al., 2016; Ramchand et al., 2016; Rasmussen et al., 2017; Szlyk et al., 2020); however, the target populations of these services differ greatly and some of the increased repeat contact at CTL can probably be explained by how convenient

| TABLE 3 Depression (PHQ-2) and Anxiety (GAD-2) scores above clinical cutoff points by texter reports of demographic, sexuality, and suicide risk |
|---------------------------|---------------------------|
| Above depression cutoff   | Above anxiety cutoff      |
| n                        | %                        | n                        | %                        |
| **Age**                  |                           |                           |
| 13 or younger (n = 7361/7388)* | 5868 79.72 | 5784 78.29 |
| 14–24 (n = 48,799/48,924) | 38,929 79.77 | 39,381 80.49 |
| 25–44 (n = 14,402/14,463) | 11,195 77.73 | 11,818 81.71 |
| 45–64 (n = 2844/2857)     | 2191 77.04  | 2327 81.45  |
| 65+ (n = 124/125)         | 90 72.58    | 96 76.80    |
| Total (All ages) (n = 73,530/73,757) | 58,273 79.25 | 59,406 80.54 |
| **Race**                 |                           |                           |
| Prefer not to answer (n = 3697/3725) | 2804 75.85 | 2898 77.80 |
| American Indian/Alaska Native (n = 713/715) | 575 80.65 | 565 79.02 |
| Asian (n = 2341/2341)     | 1790 76.46 | 1786 76.29 |
| Black or African American (n = 5537/5560) | 4288 77.44 | 4087 73.51 |
| Hispanic, Latino, or Spanish origin (n = 8904/8934) | 6860 77.04 | 6780 75.89 |
| Middle Eastern, North African, or Arab (n = 431/433) | 337 78.19 | 346 79.91 |
| Native Hawaiian, Other Pacific Islander (n = 266/267) | 220 82.71 | 222 83.15 |
| White (n = 36,277/36324) | 28,947 79.79 | 29,974 82.52 |
| More than one (n = 8061/8071) | 6480 80.39 | 6537 80.99 |
| Other-Write In (n = 1420/1426) | 1130 79.58 | 1156 81.07 |
| **Gender**               |                           |                           |
| Female (n = 52,869/52,984) | 41,562 78.61 | 42,491 80.20 |
| Male (n = 9097/9121)      | 7075 77.77 | 7002 76.77 |
| Gender minority (n = 5196/5204) | 4437 85.39 | 4474 85.97 |
| **Sexuality**            |                           |                           |
| Heterosexual (n = 35,416/35,517) | 27,076 76.45 | 27,851 78.42 |
| All other sexual identities (n = 32,225/32,274) | 26,378 81.86 | 26,522 82.18 |

*Two Ns are provided because the Ns for each subgroup that answered the questions about depression (first number) and anxiety (second number) differ slightly.
TABLE 4  Texter reports about other sources of crisis help by texter reports of demographic, sexuality, conversation frequency, mental health characteristics, and suicide risk

|                          | “Besides texting CTL, I get help from a therapist or doctor when in crisis” | “I have not asked for help elsewhere” |
|--------------------------|------------------------------------------------------------------------------|---------------------------------------|
|                          | \( n \) | %      | \( n \) | %      |
| **Total**                |        |        |        |        |
| All (\( n = 78,408 \))   | 17,966 | 22.9   | 22,271 | 28.4   |
| **Age**                  |        |        |        |        |
| 13 or younger (\( n = 7532 \)) | 973    | 12.9   | 2350   | 31.2   |
| 14–24 (\( n = 49,931 \)) | 10,398 | 20.8   | 14,414 | 28.9   |
| 25–44 (\( n = 14,833 \)) | 5019   | 33.8   | 3915   | 26.4   |
| 45–64 (\( n = 2974 \))   | 1040   | 35     | 680    | 22.9   |
| 65+ (\( n = 134 \))      | 33     | 24.6   | 28     | 20.9   |
| **Race**                 |        |        |        |        |
| Prefer not to answer (\( n = 3796 \)) | 747    | 19.7   | 1136   | 29.9   |
| American Indian/Alaska Native (\( n = 729 \)) | 141    | 19.3   | 215    | 29.5   |
| Asian (\( n = 2400 \))   | 466    | 19.4   | 654    | 27.3   |
| Black or African American (\( n = 5670 \)) | 924    | 16.3   | 2073   | 36.6   |
| Hispanic, Latino, or Spanish origin (\( n = 9101 \)) | 1436   | 15.8   | 3215   | 35.3   |
| Middle Eastern, North African, or Arab (\( n = 438 \)) | 74     | 16.9   | 169    | 38.6   |
| Native Hawaiian or Other Pacific Islander (\( n = 271 \)) | 39     | 14.4   | 80     | 29.5   |
| White (\( n = 37,004 \)) | 10,076 | 27.2   | 9358   | 25.3   |
| More than one (\( n = 8225 \)) | 1710   | 20.8   | 2378   | 28.9   |
| Other-Write In (\( n = 1464 \)) | 297    | 20.3   | 473    | 32.3   |
| **Gender**               |        |        |        |        |
| Female (\( n = 54,016 \)) | 12,531 | 23.2   | 15,613 | 28.9   |
| Male (\( n = 9302 \))    | 1740   | 18.7   | 2790   | 30     |
| Gender Minority (\( n = 5299 \)) | 1515   | 28.6   | 1165   | 22     |
| **Sexual orientation**   |        |        |        |        |
| Heterosexual (\( n = 36,194 \)) | 7906   | 21.8   | 10,790 | 29.8   |
| All other sexual identities (\( n = 32,903 \)) | 8010   | 24.3   | 8935   | 27.2   |
| **Conversation frequency**|        |        |        |        |
| 1 Conversation (\( n = 50,098 \)) | 11,018 | 22     | 14,823 | 29.6   |
| 2 to 10 Conversations (\( n = 26,864 \)) | 6527   | 24.3   | 7195   | 26.8   |
| More than 10 Conversations (\( n = 1446 \)) | 421    | 29.1   | 253    | 17.5   |
| **Mental health symptoms**|        |        |        |        |
| Above cutoff on Depression scale (\( n = 60,260 \)) | 14,119 | 23.4   | 18,521 | 30.7   |
| Below cutoff on Depression scale (\( n = 15,944 \)) | 3758   | 23.6   | 3629   | 22.8   |
| Above cutoff on Anxiety scale (\( n = 61,334 \)) | 14,729 | 24     | 18,267 | 29.8   |
| Below cutoff on Anxiety scale (\( n = 14,903 \)) | 3144   | 21.1   | 3885   | 26.1   |
| **Suicide risk ladder**  |        |        |        |        |
| None (\( n = 60,358 \))   | 13,563 | 22.5   | 16,868 | 27.9   |
| Suicidal Thoughts (\( n = 10,404 \)) | 2605   | 25.0   | 3068   | 29.5   |
| Plan (\( n = 2577 \))     | 595    | 23.1   | 789    | 30.6   |
| Accessible Means (\( n = 3981 \)) | 944    | 23.7   | 1233   | 31.0   |
| Timeframe within 24h (\( n = 1088 \)) | 259    | 23.8   | 313    | 28.8   |
it is to text, especially to a number previously contacted. Remarkably, there were few dramatic differences regarding the variables we investigated between one-time texters and those who texted more than once. Being above the cutoff for reported depression (past 2 weeks) did not correlate with more frequent conversations, and nor did being above the cutoff for anxiety. However, a higher proportion of those who reported receiving help nowhere else texted in crisis multiple times during the year we analyzed. The tendency to text more than once also did not appear to differ based on demographic factors. The one important exception is that approximately a third of the very youngest callers (13 and below) contacted CTL for multiple conversations. This finding is notable because death rates in this group are increasing but very little is known about suicide risk among younger children (Price & Khubchandani, 2022; Ruch et al., 2021). In addition, at every step up on the suicide risk ladder, a greater proportion of texters engaged in more conversations than those at lower risk levels.

Several findings in this study are consistent with the movement in the field toward greater focus on linking callers and texters to hotlines with other crisis care services and interventions in a seamless continuum of care (National Action Alliance for Suicide Prevention: Crisis Services Task Force, 2016; SAMHSA, 2020). Most people who text (77%) do not receive help from a doctor or therapist when in crisis and more than a quarter do not ask for help from any other person. People who identify as other than White are much less likely to receive formal help from another source. We also found that people without other sources of help texted back more frequently in crisis. Further research on what motivates people to seek out mental health care may be helpful in the identification of targets for these future developments. As Mojtabai et al. (2011) have pointed out, people can be held back from seeking treatment by stigma (Van Voorhees et al., 2005; Wrigley et al., 2005; Wynaden et al., 2005), their perception that treatment is unnecessary (Edlund et al., 2006; Mojtabai et al., 2002; Sareen et al., 2007), pessimism about outcomes (Bayer & Peay, 1997), and financial and structural barriers to access (Mojtabai, 2005; Sareen et al., 2007). Work is needed to develop and test interventions that effectively and efficiently address these barriers and can be fitted comfortably into crisis text conversations or planned follow-up interventions. For instance, text lines might increase their emphasis on helping people see beyond their immediate crisis toward a future in which recovery is the goal or develop interventions that help texters see a moment of crisis as an opportunity for growth and change, with the aim of securing commitment from the person to follow-up with specific resources.

The success of CTL in reaching many groups who do not otherwise receive the help they need suggests that texting may have qualities that can inform other suicide prevention efforts. Texting is not only a convenient mode of communication but for some people, texting feels more socially and emotionally protected. Texters reveal as much or little of their feelings as they wish and often have more control over the flow of the conversation (Mohr et al., 2011). If these features appeal to groups that have been marginalized, then this may have lessons for other areas of the care continuum. For instance, it may be the case that those who prefer to use text services would prefer after-care services that also provide greater privacy and anonymity. More work is needed to understand the needs and preferences of such individuals.

This study has several limitations. First, only approximately 22.5% of all text conversations had a post-conversation survey. The survey weighting strategy we explored did not add meaningfully to our understanding of the population. Nevertheless, there may be other factors, not measured in this study, that are associated with the completion of the post-conversation survey, which could introduce unknown bias. Second, for the purposes of this evaluation we defined our sample based on whether they answered the first item in the survey. While this choice produced the largest sample size, it introduced a great deal of item-level missingness. Third, this evaluation focused on post-conversation surveys with texters who exchanged at least 10 messages in their conversation. Thus, we do not know anything about individuals who failed to reach a CC or abandoned the conversation prior to the tenth message. We also did not examine the impact of wait times, triaging algorithms, time between responses, and other service delivery variables. Finally, like any study, our findings reflect texter responses during the period examined. We recommend future study of these characteristics to examine changes over time.

**CONCLUSION**

Overall, CTL served a highly distressed population of texters. Nearly 80% of texters reported symptom level and frequency above established cutoffs for depression and anxiety. CCs identified thoughts of suicide in 23% of text conversations, with nearly 10% having a plan. Unfortunately, fewer than a quarter of texters received assistance from a doctor or a therapist when in crisis, and more than a quarter had not asked for help from any other source, with the situation being even worse for younger texters. Given high rates of depression and anxiety, as well as significant suicide risk, this is both concerning and
indicative of a potential opportunity. While crisis interventions have understandably and appropriately focused on mitigating short-term distress and external referrals are often provided, a broader category of interventions designed to link text lines to other services is also needed. Finally, the fact that most crises did not explicitly involve suicidal thoughts supports the decision to frame the scope of the new 988 platform as addressing mental health and substance use crises, not just suicide prevention.

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CONFLICT OF INTEREST
MSG is an uncompensated member of Crisis Text Lines’ Clinical Advisory Board. AP and CG are uncompensated members of Crisis Text Lines’ Data Advisory Board. AE, DH, and CK have no conflicts to declare. SG is employed by the Crisis Text Line.

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APPENDIX A

Variables and analysis used to explore use of weights

In light of the 21% response rate to the texter survey (as defined in the body of this paper), we explored the use of weights to determine whether weights would contribute to a better estimate the population from the sample. Weights generated from this strategy did not add meaningfully to the presentation of sample data, so unweighted descriptive statistics are reported throughout the paper. However, we provide here a description of variables used in this exploration for the purposes of replicability:

The weighting strategy drew on 237 variables attainable for all texters, regardless of whether they took the survey or not. These included counselor-coded variables, conversation metadata, and linguistic features extracted from texter and counselor messages for each conversation (see below). First, we calculated and examined standardized differences for each of the variables across texters with and without a post-conversation survey. Twenty-one of the 237 variables had an absolute standardized difference greater than 0.20, indicating that those who answered the post-conversation survey differed on these variables from those who did not (Austin, 2009). Next, we fitted a generalized linear model with these same 237 variables as the independent variables, and the survey response indicator as the dependent variable. Using weights generated by this procedure, we explored an inverse probability weighting to adjust for differences for each of the responses to items on the text survey. The point estimates produced were very close to the unweighted estimates, signaling that the weights did not add meaningfully to our understanding of the population. Thus, unweighted descriptive statistics are reported throughout the paper, and analyses unweighted for texter survey response are conducted in the companion article (Gould et al., 2022).

List of variables included in weighting

1. Crisis counselor-generated variables

   Homicide risk. Counselors selected all options that applied to determine the texter’s place on the Homicidal Risk Ladder from among the following four options: Thoughts of Homicide, Plan, Available Means, and Timeframe of Plans is within 24 h.

   Suicide risk. As described in the body of this article, counselors selected all options that applied to determine the texter’s place on the Suicide Risk ladder: Thoughts of Suicide, Plan, Accessible Means, and Timeframe of Plan is within 24 h.
Issue tags. Crisis Counselors identified issues discussed in the text conversation from a list of topics (“issue tags”) related to mental health (e.g., anxiety, depression, eating problems, and substance problems), physical health (e.g., medical concern, injury), interpersonal issues (e.g., emotional abuse, bullying), external life factors (e.g., finances, veteran status), health factors, and treatments mentioned (e.g., medication, psychiatric hospitalization). Although the reliability of counselor topic coding has not been examined, counselor-coded issue tags have been used in previous research to characterize topics discussed in crisis conversations [Szlyk, 2020 #4742].

Active Rescue (CTL system-coded variable added to conversation if counselor contacted emergency services to support immediate safety)

3. Linguistic variables

Crisis Text Line provided counts of word combinations (up to five words in a row, ngrams = 1 through 5) for each conversation (represented by a conversation ID). Language models were built based on the use of these N-grams in five sequence sizes: unigrams (frequency of single words), bigrams (frequency of two-word sequences), trigrams, four-grams, and five-grams. Each set of N-grams was linked to a conversation ID that was used to aggregate information from the N-gram level to the conversation level. As is to be expected from typical language models, higher order N-grams are sparse, with low frequencies, while lower-level N-grams are quite frequent. Linguistic features were extracted automatically at the word and phrase level using pattern recognition with LIWC (Pennebaker, 2015 #4619) and scripts in R language. The counts of linguistic markers were added, and the total number assigned to the conversation ID to which the markers belong. These features included counts of function and content words. Function words describe syntactic relationships such as pronouns (1st person, 2nd person, 3rd person), articles, and prepositions. Content words describe semantic relationships such as positive emotions, negative emotions, anxiety, anger, and sadness. The full list of automatically extracted features is shown below. Each of these linguistic features were calculated for both the texter and counselor.

Analytical thinking
• Clout
• Authentic
• Emotional tone
• Words/sentence
• Words >6 letters
• Dictionary words

Syntax related markers
• Total function words
• Total pronouns
• Personal pronouns
• 1st pers singular
• 1st pers plural
• 2nd person
• 3rd person singular
• 3rd person plural
• Impersonal pronouns
• Articles
• Prepositions
• Auxiliary verbs
Common Adverbs
Conjunctions
Negations

Other Grammar markers
Common verbs
Common adjectives
Comparisons
Interrogatives
Numbers
Quantifiers

Psychological processes
Affective processes
Positive emotion
Negative emotion
Anxiety
Anger
Sadness

Social processes
Family
Friends
Female references
Male references

Cognitive processes
Insight
Causation
Discrepancy
Tentative
Certainty
Differentiation

Perceptual processes
See
Hear
Feel

Biological processes
Body
Health
Ingestion
Sexual
Ingestion

Drives
Affiliation
Achievement
Power
Reward
Risk

Time orientations
Past focus
Present focus
Future focus

Relativity
Motion
Space
Time

Personal concerns
Work
Leisure
Home
Money
Religion
Death

Informal language
Swear words
Netspeak
Assent
Nonfluencies
Fillers