

ORIGINAL ARTICLE

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

Anthony R. Pisani PhD¹ | Madelyn S. Gould PhD, MPH^{2,3}  | Carlos Gallo PhD⁴ |
Ashkan Ertefaie PhD⁵  | Caroline Kelberman PhD¹ | Donald Harrington MS, MBA⁵ |
Daniel Weller PhD⁵  | Shannon Green MS⁶ 

¹Department of Psychiatry, Center for the Study and Prevention of Suicide, University of Rochester, Rochester, New York, USA

²Department of Psychiatry, Columbia University, New York, New York, USA

³Department of Epidemiology, Columbia University, New York, New York, USA

⁴Department of Psychiatry and Behavioral Science, Northwestern University, Chicago, Illinois, USA

⁵Department of Biostatistics and Computational Biology, University of Rochester, Rochester, New York, USA

⁶Crisis Text Line, New York, New York, USA

Correspondence

Anthony R. Pisani, University of Rochester Medical Center, 300 Crittenden Blvd, BOX PSYCH, Rochester, NY 14642, USA.
Emails: anthony_pisani@urmc.rochester.edu

Funding information

This project was funded by the American Foundation for Suicide Prevention (SRG-0-110-15), the National Institute of Environmental Health Sciences of the National Institutes of Health (T32ES007271), and Crisis Text Line.

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

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, time-stamps) 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	
		<i>n</i>	Row %	<i>n</i>	Row %	<i>n</i>	Row %
Total (All)	<i>n</i> = 85,877	54,780	63.79	29,479	34.33	1618	1.88
Age	13 or younger (<i>n</i> = 8379, 10%)	4254	50.77	3923	46.82	202	2.41
Total <i>n</i> = 81,056	14–24 (<i>n</i> = 53,144, 66%)	33,556	63.14	18,630	35.06	958	1.80
	25–44 (<i>n</i> = 16,065, 20%)	11,628	72.38	4179	26.01	258	1.61
	45–64 (<i>n</i> = 3316, 4%)	2410	72.68	833	25.12	73	2.20
	65+ (<i>n</i> = 152, 0%)	107	70.39	43	28.29	2	1.32
Race	Prefer not to answer (<i>n</i> = 3987, 5.6%)	2390	59.94	1474	36.97	123	3.09
Total <i>n</i> = 71,252	American Indian/Alaska Native (<i>n</i> = 753, 1.1%)	456	60.56	280	37.18	17	2.26
	Asian (<i>n</i> = 2462, 3.5%)	1550	62.96	874	35.50	38	1.54
	Black or African American (<i>n</i> = 5842, 8.2%)	3884	66.48	1840	31.50	118	2.02
	Hispanic, Latino, or Spanish (<i>n</i> = 9348, 13.1%)	6234	66.69	3002	32.11	112	1.20
	Middle Eastern, North African, Arab (<i>n</i> = 453, 0.6%)	290	64.02	156	34.44	7	1.55
	Native Hawaiian, Other Pacific Islander (<i>n</i> = 276, 0.4%)	180	65.22	93	33.70	3	1.09
	White (<i>n</i> = 37,979, 53.3%)	23,876	62.87	13,326	35.09	777	2.05
	More than one race (<i>n</i> = 8469, 11.9%)	5305	62.64	3026	35.73	138	1.63
	Other-Write In (<i>n</i> = 1683, 2.4%)	1040	61.79	607	36.07	36	2.14
Gender	Female (<i>n</i> = 55,835, 78.5%)	35,469	63.52	19,347	34.65	1019	1.83
Total <i>n</i> = 71,125	Male (<i>n</i> = 9671, 13.6%)	6527	67.49	2926	30.26	218	2.25
	Gender minority (<i>n</i> = 5619, 7.9%)	3136	55.81	2360	42.00	123	2.19
Sexual orientation	Heterosexual (<i>n</i> = 37,331, 52.2%)	24,718	66.21	11,998	32.14	615	1.65
Total <i>n</i> = 71,484	All other sexual identities (<i>n</i> = 34,153, 47.8%)	20,605	60.33	12,788	37.44	760	2.23
Depression	Above cutoff (<i>n</i> = 60,403, 79%)	38,264	63.35	21,079	34.90	1060	1.75
Total <i>n</i> = 76,424	Below cutoff (<i>n</i> = 16,021, 21%)	10,766	67.20	5008	31.26	247	1.54
Anxiety	Above Anxiety scale cutoff (<i>n</i> = 61,634, 80.4%)	39,132	63.49	21,426	34.76	1076	1.75
Total <i>n</i> = 76,688	Below cutoff (<i>n</i> = 15,054, 19.6%)	10,078	66.95	4738	31.47	238	1.58
Suicide risk ladder	None (<i>n</i> = 66,159, 77%)	42,812	64.71	22,207	33.57	1140	1.72
Total <i>n</i> = 85,877	Suicidal Thoughts (<i>n</i> = 11,338, 13.2%)	7175	63.28	3918	34.56	245	2.16
	Plan (<i>n</i> = 2809, 3.3%)	1678	59.74	1077	38.34	54	1.92
	Accessible Means (<i>n</i> = 4358, 5.1%)	2497	57.30	1724	39.56	137	3.14
	Timeframe within 24 h (<i>n</i> = 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	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total										
All (<i>n</i> = 85,877)	66,159	77	11,338	13	2809	3	4358	5	1213	1
Age										
13 or younger (<i>n</i> = 8379)	6081	72.6	1123	13.4	378	4.5	599	7.1	198	2.4
14–24 (<i>n</i> = 53,144)	40,915	77	7077	13.3	1732	3.3	2665	5	755	1.4
25–44 (<i>n</i> = 16,065)	12,514	77.9	2216	13.8	459	2.9	723	4.5	153	1
45–64 (<i>n</i> = 3316)	2642	79.7	401	12.1	90	2.7	148	4.5	35	1.1
65+ (<i>n</i> = 152)	126	82.9	12	7.9	4	2.6	9	5.9	1	0.7
Race										
Prefer not to answer (<i>n</i> = 3987)	3115	78.1	494	12.4	143	3.6	180	4.5	55	1.1
American Indian/ Alaska Native (<i>n</i> = 753)	558	74.1	118	15.7	21	2.8	42	5.6	14	1.9
Asian (<i>n</i> = 2462)	1879	76.3	336	13.6	91	3.7	124	5	32	1.3
Black or African American (<i>n</i> = 5842)	4497	77	732	12.5	226	3.9	289	4.9	98	1.7
Hispanic, Latino, or Spanish origin (<i>n</i> = 9348)	7416	79.3	1124	12.0	303	3.2	383	4.1	122	1.3
Middle Eastern, North African, or Arab (<i>n</i> = 453)	371	81.9	56	12.4	9	2	16	3.5	1	0.2
Native Hawaiian, Other Pacific Islander (<i>n</i> = 276)	213	77.2	36	13	8	2.9	16	5.8	3	1.1
White (<i>n</i> = 37,979)	29,231	77	5058	13.3	1175	3.1	2001	5.3	514	1.4
More than one (<i>n</i> = 8469)	6392	75.5	1169	13.8	280	3.3	485	5.7	143	1.7
Other-Write In (<i>n</i> = 1683)	1269	75.4	223	13.3	65	3.9	100	5.9	26	1.5
Gender										
Female (<i>n</i> = 55,835)	43,750	78.4	7010	12.6	1662	3	2688	4.8	725	1.3
Male (<i>n</i> = 9671)	7177	74.2	1423	14.7	407	4.2	537	5.6	127	1.3
Gender minority (<i>n</i> = 5619)	3925	69.9	890	15.8	237	4.2	408	7.3	159	2.8
Sexual Orientation										
Heterosexual (<i>n</i> = 37,331)	29,662	79.5	4570	12.2	1096	2.9	1612	4.3	391	1
All other sexual identities (<i>n</i> = 34,153)	25,445	74.5	4819	14.1	1230	3.6	2038	6	621	1.8

TABLE 2 (Continued)

	No suicidal thoughts		Suicidal Thoughts		Plan		Accessible Means		Timeframe within 24 h	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Depression cutoff										
Above Depression scale cutoff (<i>n</i> = 60,403)	44,752	74.1	8856	14.7	2277	3.8	3545	5.9	973	1.6
Below Depression scale cutoff (<i>n</i> = 16,021)	14,049	87.7	1298	8.1	232	1.4	353	2.2	89	0.6
Depression Score										
Depression score M (SD) (4.22 ± 1.75)	4.05 ± 1.79		4.67 ± 1.54		4.89 ± 1.43		4.89 ± 1.41		4.95 ± 1.40	
Anxiety cutoff										
Above Anxiety scale cutoff (<i>n</i> = 61,634)	46,482	75.4	8651	14	2180	3.5	3392	5.5	929	1.5
Below Anxiety scale cutoff (<i>n</i> = 15,054)	12,567	83.5	1506	10	327	2.2	515	3.4	139	0.9
Anxiety score										
Anxiety score M (SD) (4.46 ± 1.73)	4.37 ± 1.76		4.73 ± 1.61		4.81 ± 1.58		4.81 ± 1.58		4.84 ± 1.59	

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

or doctor was highest among White texters (27.2%) and lower among Hispanic (15.8%), Black (16.3%), and Native Hawaiian or Other Pacific Islander (14.4%) texters. A smaller proportion of males (18.7%) received help from a doctor or therapist than either females (23.2%) or gender minority individuals (28.6%). Approximately 30% of those who texted once and 27% of those who texted between 2 and 10 times had not asked for help anywhere else, while this was the case for only 17.5% of those who texted more than 10 times. A higher proportion of those who texted 10 or more times reported receiving help from a doctor or a therapist (29.1%) than did those who texted 2–10 times (24.3%) or just once (22%). Additionally, a higher proportion of texters above the depression cutoff reported seeking help elsewhere than did those below the cutoff. There was a similar difference for those above and below the anxiety cutoff, although the variation was smaller. The proportion of texters receiving help did not appear to differ by level of suicidal severity.

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 conversation 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

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

^aTwo Ns are provided because the Ns for each subgroup that answered the questions about depression (first number) and anxiety (second number) differ slightly.

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 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"	
	<i>n</i>	%	<i>n</i>	%
Total				
All (<i>n</i> = 78,408)	17,966	22.9	22,271	28.4
Age				
13 or younger (<i>n</i> = 7532)	973	12.9	2350	31.2
14–24 (<i>n</i> = 49,931)	10,398	20.8	14,414	28.9
25–44 (<i>n</i> = 14,833)	5019	33.8	3915	26.4
45–64 (<i>n</i> = 2974)	1040	35	680	22.9
65+ (<i>n</i> = 134)	33	24.6	28	20.9
Race				
Prefer not to answer (<i>n</i> = 3796)	747	19.7	1136	29.9
American Indian/Alaska Native (<i>n</i> = 729)	141	19.3	215	29.5
Asian (<i>n</i> = 2400)	466	19.4	654	27.3
Black or African American (<i>n</i> = 5670)	924	16.3	2073	36.6
Hispanic, Latino, or Spanish origin (<i>n</i> = 9101)	1436	15.8	3215	35.3
Middle Eastern, North African, or Arab (<i>n</i> = 438)	74	16.9	169	38.6
Native Hawaiian or Other Pacific Islander (<i>n</i> = 271)	39	14.4	80	29.5
White (<i>n</i> = 37,004)	10,076	27.2	9358	25.3
More than one (<i>n</i> = 8225)	1710	20.8	2378	28.9
Other-Write In (<i>n</i> = 1464)	297	20.3	473	32.3
Gender				
Female (<i>n</i> = 54,016)	12,531	23.2	15,613	28.9
Male (<i>n</i> = 9302)	1740	18.7	2790	30
Gender Minority (<i>n</i> = 5299)	1515	28.6	1165	22
Sexual orientation				
Heterosexual (<i>n</i> = 36,194)	7906	21.8	10,790	29.8
All other sexual identities (<i>n</i> = 32,903)	8010	24.3	8935	27.2
Conversation frequency				
1 Conversation (<i>n</i> = 50,098)	11,018	22	14,823	29.6
2 to 10 Conversations (<i>n</i> = 26,864)	6527	24.3	7195	26.8
More than 10 Conversations (<i>n</i> = 1446)	421	29.1	253	17.5
Mental health symptoms				
Above cutoff on Depression scale (<i>n</i> = 60,260)	14,119	23.4	18,521	30.7
Below cutoff on Depression scale (<i>n</i> = 15,944)	3758	23.6	3629	22.8
Above cutoff on Anxiety scale (<i>n</i> = 61,334)	14,729	24	18,267	29.8
Below cutoff on Anxiety scale (<i>n</i> = 14,903)	3144	21.1	3885	26.1
Suicide risk ladder				
None (<i>n</i> = 60,358)	13,563	22.5	16,868	27.9
Suicidal Thoughts (<i>n</i> = 10,404)	2605	25.0	3068	29.5
Plan (<i>n</i> = 2577)	595	23.1	789	30.6
Accessible Means (<i>n</i> = 3981)	944	23.7	1233	31.0
Timeframe within 24 h (<i>n</i> = 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 source. 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 evaluation, 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.

ACKNOWLEDGMENTS

The authors acknowledge the assistance of Paul Scade in preparing this manuscript. We also wish to acknowledge the contributions of University of Rochester programmer Joanne Janicuras and former Crisis Text Line data scientists, Bob Filbin and Jaclyn Weiser.

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.

ORCID

Madelyn S. Gould  <https://orcid.org/0000-0002-2881-9152>

Ashkan Ertefaie  <https://orcid.org/0000-0003-2611-9512>

Daniel Weller  <https://orcid.org/0000-0001-7259-6331>

Shannon Green  <https://orcid.org/0000-0003-3446-5183>

REFERENCES

- Abdullah, H., Lynch, S., Aftab, S., Shahar, S., Klepacz, L., Cristofano, P., Rahmat, S., Save-Mundra, J., Dornbush, R., Lerman, A., Berger, K., Bartell, A., & Ferrando, S. J. (2021). Characteristics of calls to a COVID-19 mental health hotline in the first wave of the pandemic in New York. *Community Mental Health Journal*, *57*(7), 1252–1254. <https://doi.org/10.1007/s10597-021-00868-9>
- Anderson, M., & Perrin, A. (2017). *Tech adoption climbs among older adults: Technology use among seniors*. Pew Research Center. <https://www.pewresearch.org/internet/2017/05/17/technology-use-among-seniors/>
- Arias, S. A., Sullivan, A. F., Miller, I., Camargo, C. A., & Boudreaux, E. D. (2015). Implementation and use of a crisis hotline during the treatment as usual and universal screening phases of a suicide intervention study. *Contemporary Clinical Trials*, *45*, 147–150. <https://doi.org/10.1016/j.cct.2015.08.015>
- Austin, P. C. (2009). Using the standardized difference to compare the prevalence of a binary variable between two groups in observational research. *Communications in statistics-simulation and computation*, *38*(6), 1228–1234.
- Bayer, J. K., & Peay, M. Y. (1997). Predicting intentions to seek help from professional mental health services. *Australian and New Zealand Journal of Psychiatry*, *31*(4), 504–513.
- Broman, C. L. (2012). Race differences in the receipt of mental health services among young adults. *Psychological Services*, *9*(1), 38–48.
- Busby, D. R., Horwitz, A. G., Zheng, K., Eisenberg, D., Harper, G. W., Albucher, R. C., Roberts, L. W., Coryell, W., Pistorello, J., & King, C. A. (2020). Suicide risk among gender and sexual minority college students: The roles of victimization, discrimination, connectedness, and identity affirmation. *Journal of Psychiatric Research*, *121*, 182–188.
- Control, C. F. D. (2019). *Youth Risk Behavior Survey Questionnaire*. https://www.cdc.gov/healthyyouth/data/yrbs/2019_tables/students_by_sexual_identity.htm
- Control, C. f. D. C.-N. C. f. I. P. a. (2021). *Web-based Injury Statistics Query and Reporting System (WISQARS)*. <https://www.cdc.gov/injury/wisqars/>
- Cook, B. L., Trinh, N.-H., Li, Z., Hou, S. S.-Y., & Progovac, A. M. (2017). Trends in racial-ethnic disparities in access to mental health care, 2004–2012. *Psychiatric Services*, *68*(1), 9–16.
- Crisis Text Line. (2022). *Crisis trends*. <https://crisistrends.org/>
- Derr, A. S. (2016). Mental health service use among immigrants in the United States: A systematic review. *Psychiatric Services*, *67*(3), 265–274.
- Edlund, M. J., Unützer, J., & Curran, G. M. (2006). Perceived need for alcohol, drug, and mental health treatment. *Social Psychiatry and Psychiatric Epidemiology*, *41*(6), 480–487.
- Goodman, M., Adams, N., Corneil, T., Kreukels, B., Motmans, J., & Coleman, E. (2019). Size and distribution of transgender and gender nonconforming populations: A narrative review. *Endocrinology and Metabolism Clinics*, *48*(2), 303–321.
- Gould, M. S., Chowdhury, S., Lake, A. M., Galfalvy, H., Kleinman, M., Kuchuk, M., & McKeon, R. (2021). National suicide prevention lifeline crisis chat interventions: Evaluation of chaters' perceptions of effectiveness. *Suicide and Life-Threatening Behavior*, *51*, 1126–1137.
- Gould, M. S., Greenberg, T., Munfakh, J. L., Kleinman, M., & Lubell, K. (2006). Teenagers' attitudes about seeking help from telephone crisis services (hotlines). *Suicide and Life-Threatening Behavior*, *36*(6), 601–613. <https://doi.org/10.1521/suli.2006.36.6.601>
- Gould, M. S., Lake, A. M., Munfakh, J. L., Galfalvy, H., Kleinman, M., Williams, C., Glass, A., & McKeon, R. (2016). Helping callers to the National Suicide Prevention Lifeline who are at imminent risk of suicide: Evaluation of caller risk profiles and interventions implemented. *Suicide and Life-Threatening Behavior*, *46*(2), 172–190.
- Gould, M. S., Munfakh, J. L., Kleinman, M., & Lake, A. M. (2012). National suicide prevention lifeline: Enhancing mental health care for suicidal individuals and other people in crisis. *Suicide and Life-Threatening Behavior*, *42*, 22–35.
- Gould, M., Pisani, A., Gallo, C., Ertefaie, A., Harrington, D., Kelberman, C., & Green, S. (2022). Crisis text line interventions: Evaluation of Texters' perceptions of effectiveness (companion paper under review).
- Hatzenbuehler, M. L., Phelan, J. C., & Link, B. G. (2013). Stigma as a fundamental cause of population health inequalities. *American Journal of Public Health*, *103*(5), 813–821.
- Hottes, T. S., Bogaert, L., Rhodes, A. E., Brennan, D. J., & Gesink, D. (2016). Lifetime prevalence of suicide attempts among sexual minority adults by study sampling strategies: A systematic

- review and meta-analysis. *American Journal of Public Health*, 106(5), e1–e12.
- Hunt, J. B., Eisenberg, D., Lu, L., & Gathright, M. (2015). Racial/ethnic disparities in mental health care utilization among US college students: Applying the institution of medicine definition of health care disparities. *Academic Psychiatry*, 39(5), 520–526.
- Jones, J. M. (2021). *LGBT identification rises to 5.6% in latest U.S. Estimate*. Gallup. <https://news.gallup.com/poll/329708/lgbt-identification-rises-latest-estimate.aspx>
- Kerner, B., Carlson, M., Eskin, C. K., Tseng, C. H., Ho, J. M. G. Y., Zima, B., & Leader, E. (2021). Trends in the utilization of a peer-supported youth hotline. *Child and Adolescent Mental Health*, 26(1), 65–72.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2003). The Patient Health Questionnaire-2: Validity of a two-item depression screener. *Medical Care*, 41, 1284–1292.
- Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B. (2009). An ultra-brief screening scale for anxiety and depression: The PHQ-4. *Psychosomatics*, 50(6), 613–621.
- Lenhart, A. (2012). *Teens, smartphones & texting*. <http://pewinternet.org/Reports/2012/Teens-and-smartphones.aspx>
- Marshall, E., Claes, L., Bouman, W. P., Witcomb, G. L., & Arcelus, J. (2016). Non-suicidal self-injury and suicidality in trans people: A systematic review of the literature. *International Review of Psychiatry*, 28(1), 58–69.
- Mishara, B. L., Chagnon, F., Daigle, M., Balan, B., Raymond, S., Marcoux, I., Bardon, C., Campbell, J. K., & Berman, A. (2007). Comparing models of helper behavior to actual practice in telephone crisis intervention: A silent monitoring study of calls to the US 1-800-SUICIDE network. *Suicide and Life-threatening Behavior*, 37(3), 291–307.
- Mohr, D. C., Cuijpers, P., & Lehman, K. (2011). Supportive accountability: A model for providing human support to enhance adherence to eHealth interventions. *Journal of Medical Internet Research*, 13(1), e30. <https://doi.org/10.2196/jmir.1602>
- Mojtabai, R. (2005). Trends in contacts with mental health professionals and cost barriers to mental health care among adults with significant psychological distress in the United States: 1997–2002. *American Journal of Public Health*, 95(11), 2009–2014.
- Mojtabai, R., Olfson, M., & Mechanic, D. (2002). Perceived need and help-seeking in adults with mood, anxiety, or substance use disorders. *Archives of General Psychiatry*, 59(1), 77–84.
- Mojtabai, R., Olfson, M., Sampson, N. A., Jin, R., Druss, B., Wang, P. S., Wells, K. B., Pincus, H. A., & Kessler, R. C. (2011). Barriers to mental health treatment: Results from the National Comorbidity Survey Replication. *Psychological Medicine*, 41(8), 1751–1761.
- National Action Alliance for Suicide Prevention: Crisis Services Task Force. (2016). *Crisis now: Transforming services is within our reach*. Education Development Center, Inc. <https://theactionalliance.org/sites/default/files/crisisnow.pdf>
- Nestor, B. A., Cheek, S. M., & Liu, R. T. (2016). Ethnic and racial differences in mental health service utilization for suicidal ideation and behavior in a nationally representative sample of adolescents. *Journal of Affective Disorders*, 202, 197–202.
- Nissen, C. (2022). *R script for Cook County Dashboard - find names*. GitHub. <https://web.archive.org/web/20220408014958/https://github.com/corynissen/cook-county-tweet-dashboard/blob/master/cctweets/findNames.R>
- Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A., Bruffaerts, R., Chiu, W. T., De Girolamo, G., & Gluzman, S. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry*, 192(2), 98–105.
- Perez, V. W. (2005). The relationship between seriously considering, planning, and attempting suicide in the youth risk behavior survey. *Suicide and Life-threatening Behavior*, 35(1), 35–49. <https://doi.org/10.1521/suli.35.1.35.59267>
- Pisani, A. R., Kanuri, N., Filbin, B., Gallo, C., Gould, M., Lehmann, L. S., Levine, R., Marcotte, J. E., Pascal, B., & Rousseau, D. (2019). Protecting user privacy and rights in academic data-sharing partnerships: Principles from a pilot program at crisis text line. *Journal of Medical Internet Research*, 21(1), e11507.
- Plummer, F., Manea, L., Trepel, D., & McMillan, D. (2016). Screening for anxiety disorders with the GAD-7 and GAD-2: A systematic review and diagnostic metaanalysis. *General Hospital Psychiatry*, 39, 24–31.
- Price, J. H., & Khubchandani, J. (2022). Childhood suicide trends in the United States, 2010–2019. *Journal of Community Health*, 47(2), 232–236.
- R Core Team. (2020). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. <https://www.r-project.org/>
- Ramchand, R., Jaycox, L., Ebener, P., Gilbert, M. L., Barnes-Proby, D., & Goutam, P. (2016). Characteristics and proximal outcomes of calls made to suicide crisis hotlines in California. *Crisis*, 38, 26–35.
- Rasmussen, K. A., King, D. A., Gould, M. S., Cross, W., Tang, W., Kaukeinen, K., Tu, X., & Knox, K. L. (2017). Concerns of older veteran callers to the veterans crisis line. *Suicide and Life-threatening Behavior*, 47(4), 387–397.
- Rawal, P., Romansky, J., Jenuwine, M., & Lyons, J. S. (2004). Racial differences in the mental health needs and service utilization of youth in the juvenile justice system. *The Journal of Behavioral Health Services & Research*, 31(3), 242–254.
- Roth, K. B., & Szlyk, H. S. (2021). Hotline use in the United States: Results from the collaborative psychiatric epidemiology surveys. *Administration and Policy in Mental Health and Mental Health Services Research*, 48(3), 564–578.
- Ruch, D. A., Heck, K. M., Sheftall, A. H., Fontanella, C. A., Stevens, J., Zhu, M., Horowitz, L. M., Campo, J. V., & Bridge, J. A. (2021). Characteristics and precipitating circumstances of suicide among children aged 5 to 11 years in the United States, 2013–2017. *JAMA Network Open*, 4(7), e2115683.
- SAMHSA. (2020). *National guidelines for behavioral health crisis care: Best practice toolkit*. <https://www.samhsa.gov/sites/default/files/national-guidelines-for-behavioral-health-crisis-care-02242020.pdf>
- Sareen, J., Jagdeo, A., Cox, B. J., Clara, I., ten Have, M., Belik, S.-L., de Graaf, R., & Stein, M. B. (2007). Perceived barriers to mental health service utilization in the United States, Ontario, and The Netherlands. *Psychiatric Services*, 58(3), 357–364.
- SAS Institute Inc. (2013). *SAS/ACCESS® 9.4 Interface to ADABAS: Reference*. SAS Institute.
- Slem, C. M., & Cotler, S. (1973). Crisis phone services: Evaluation of a hotline program. *American Journal of Community Psychology*, 1(3), 219–227.
- Staples, L. G., Dear, B. F., Gandy, M., Fogliati, V., Fogliati, R., Karin, E., Nielssen, O., & Titov, N. (2019). Psychometric properties

- and clinical utility of brief measures of depression, anxiety, and general distress: The PHQ-2, GAD-2, and K-6. *General Hospital Psychiatry*, 56, 13–18.
- Sugg, M. M., Michael, K. D., Stevens, S. E., Filbin, R., Weiser, J., & Runkle, J. D. (2019). Crisis text patterns in youth following the release of 13 reasons why season 2 and celebrity suicides: A case study of summer 2018. *Preventive Medicine Reports*, 16, 100999.
- Szlyk, H. S., Roth, K. B., & García-Perdomo, V. (2020). Engagement with crisis text line among subgroups of users who reported suicidality. *Psychiatric Services*, 71(4), 319–327.
- Thompson, L. K., Sugg, M. M., & Runkle, J. R. (2018). Adolescents in crisis: A geographic exploration of help-seeking behavior using data from Crisis Text Line. *Social Science & Medicine*, 215, 69–79.
- U.S. Surgeon General, & National Action Alliance for Suicide Prevention. (2012). *2012 National Strategy for Suicide Prevention: Goals and objectives for action*.
- United States Census Bureau. (1990). *List of first and last names in the USA*. United States Census Bureau. <http://web.archive.org/web/20220323202252/http://www2.census.gov/topics/genealogy/1990surnames/dist.all.last>, <https://web.archive.org/web/20220120115454/http://www2.census.gov:80/topics/genealogy/1990surnames/dist.female.first>, <https://web.archive.org/web/20220120151636/https://www2.census.gov/topics/genealogy/1990surnames/dist.male.first>
- Van Voorhees, B. W., Fogel, J., Houston, T. K., Cooper, L. A., Wang, N.-Y., & Ford, D. E. (2005). Beliefs and attitudes associated with the intention to not accept the diagnosis of depression among young adults. *The Annals of Family Medicine*, 3(1), 38–46.
- Wrigley, S., Jackson, H., Judd, F., & Komiti, A. (2005). Role of stigma and attitudes toward help-seeking from a general practitioner for mental health problems in a rural town. *Australian & New Zealand Journal of Psychiatry*, 39(6), 514–521.
- Wynaden, D., Chapman, R., Orb, A., McGowan, S., Zeeman, Z., & Yeak, S. (2005). Factors that influence Asian communities' access to mental health care. *International Journal of Mental Health Nursing*, 14(2), 88–95.

How to cite this article: Pisani, A. R., Gould, M. S., Gallo, C., Ertefaie, A., Kelberman, C., Harrington, D., Weller, D., & Green, S. (2022). Individuals who text crisis text line: Key characteristics and opportunities for suicide prevention. *Suicide and Life-Threatening Behavior*, 52, 567–582. <https://doi.org/10.1111/sltb.12872>

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}.

abuse-emotional
 abuse-physical
 abuse-sexual
 anxiety
 depressed
 isolated
 family
 bereavement
 stress
 relationship
 financial
 medical
 suicide
 sexual assault
 other
 friend
 military
 eating
 mental
 substance
 homicide
 Self-harm
 school
 medication
 bully
 domestic violence
 gender
 Therapist psychiatrist
 homeless
 psychiatric hospitalization
 election
 active rescue

2. Conversation metadata

Total time of conversation
 Day of the week (7 dichotomous variables)
 Month of the year (12 dichotomous variables)
 Time of Call (4 dichotomous variables, 6 am–11:59 am, 12 pm–5:59 pm, 6 pm–11:59 pm, 12 am–5:59 am)

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, fourgrams, and fivegrams. 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