

Distress and Anxiety during the COVID-19 Pandemic as Revealed through Helpline Calls

Marius Brülhart (✉ marius.brulhart@unil.ch)

University of Lausanne <https://orcid.org/0000-0001-5483-0219>

Valentin Klotzbücher

University of Freiburg <https://orcid.org/0000-0001-9382-6757>

Rafael Lalive

University of Lausanne

Stephanie Reich

University of Freiburg

Social Sciences - Article

Keywords: COVID-19, lockdown measures, mental health, anxiety

Posted Date: May 25th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-538751/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published at Nature on November 17th, 2021. See the published version at <https://doi.org/10.1038/s41586-021-04099-6>.

1 Distress and Anxiety during the COVID-19 Pandemic as 2 Revealed through Helpline Calls

3

4 Marius Brühlhart¹, Valentin Klotzbücher², Rafael Lalive¹, and Stephanie K. Reich²

5 May 19, 2021

6

7 **The COVID-19 crisis affects mental health. We use helpline calls to quantify this effect. Helpline**
8 **calls offer a real-time measure of ‘revealed’ anxiety across a range of topics. We have collected**
9 **data on 7 million calls from from 19 countries. We find that calls peaked at 35% above pre-pandemic**
10 **levels, six weeks after the initial outbreak. The increase was mainly driven by fear (including fear**
11 **of infection), loneliness, and, later in the pandemic, physical-health concerns. Relationship is-**
12 **ssues, economic problems, violence, and suicidal ideation, however, were less prevalent than be-**
13 **fore the pandemic. This pattern is apparent both during the first wave and during subsequent**
14 **waves of the pandemic. Issues directly tied to COVID-19 therefore seem to have substituted rather**
15 **than exacerbated underlying anxieties. Conditional on infection rates, suicide-related calls in-**
16 **creased when containment policies became more stringent and decreased when income support**
17 **was extended. This implies that financial relief can allay the distress triggered by lockdown mea-**
18 **sures.**

19

20 The COVID-19 pandemic has affected the physical, economic, and mental health of nations.
21 While the evolution of epidemiological and economic indicators can be tracked at high frequency
22 and with short time lags, measurement of populations’ mental health is more difficult. This statistical
23 blind spot could lead to policymakers neglecting mental health issues, to the extent that they attribute
24 more weight to aspects that can be measured well.

25 We seek to narrow this measurement gap by providing quantitative evidence on the state of
26 mental health under COVID-19. Our approach is to document the growth and composition of calls
27 to helplines across multiple countries. This indicator has two main advantages. First, helpline calls
28 can be considered as a manifestation of revealed anxiety. Unlike choosing between different options
29 when answering a survey question, calling a helpline involves an unprompted incurrence of a mental
30 and time cost. In that respect, helpline calls represent an unfiltered measure of mental distress,

¹University of Lausanne and CEPR (London)

²University of Freiburg

31 unaffected by researchers' study design. A second major advantage is coverage: information about
32 helpline calls is digitally recorded with daily frequency in numerous countries and across a wide range
33 of conversation topics. A major challenge for research – and a first-order issue for policymakers – is
34 to distinguish the differential impact of, on the one hand, the pandemic itself and, on the other hand,
35 policy choices in the form of non-pharmaceutical interventions (NPIs) and economic compensation
36 measures. In the pandemic, fear of infection with SARS-CoV-2 is an important potential source of
37 mental distress. Non-pharmaceutical interventions designed to contain infections through social
38 distancing might also affect mental health, as they potentially exacerbate unemployment, financial
39 stress, loneliness, relationship problems, and pre-existing mental vulnerabilities. Those are in turn
40 well-recognized risk factors for suicide [1–8]. Comparable helpline data across multiple different
41 jurisdictions (countries and U.S. states), allow us to exploit differences in the timing of the pandemic
42 and of policy measures to statistically isolate the effect of each of those variables on mental health
43 outcomes.

44 Telephone helplines are well-established institutions for mental health protection and suicide
45 prevention in many countries, and they offer support immediately, anonymously, cheaply, and
46 accessibly for all members of the population [9, 10]. Some helplines specialize on particular issues
47 such as suicide, children, or violence against women. Suicide helplines, for example, have been
48 shown to reduce suicide rates [11], and calls to suicide helplines have been shown to predict variations
49 in suicide rates [12]. Helplines can be expected to be particularly relevant in the pandemic, when
50 face-to-face contacts carry infection risks and may even be impossible due to NPIs such as stay-at-
51 home orders. This has been shown previously: Google searches for the U.S. Disaster Distress helpline
52 increased significantly in spring 2020 [13], as did the frequency of calls by repeat callers [14]. To our
53 knowledge, no other scientific study of helpline calls in the pandemic has as yet been attempted,
54 apart from our two pilot analyses of helpline calls in Germany and Switzerland during the first half of
55 2020 [15, 16].

56 We have collected call data from 23 helplines operating in 19 countries, together covering approxi-
57 mately 7 million individual calls. Data are available for 2019, 2020, and, in some cases, early 2021. The
58 comprehensive availability of data for 2019 allows us to partial out seasonal effects unrelated to the

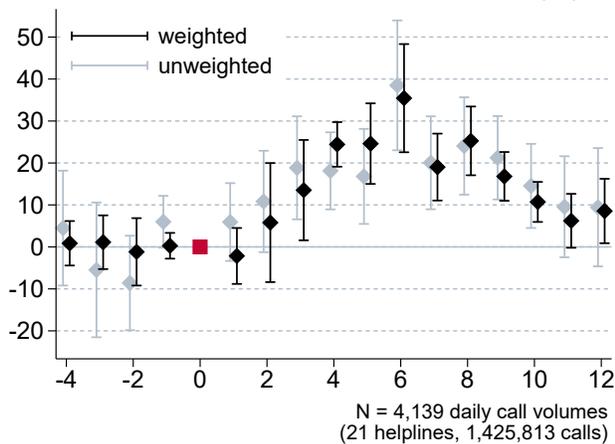
59 pandemic. The data cover 14 European countries, the United States, China, Hong Kong, Israel, and
60 Lebanon. Full details are provided in the Supplementary Materials. All helplines in our sample keep
61 digital logs of calls. In most cases, these logs report call topics and caller characteristics, including
62 estimated age and gender, as recorded by helpline operators.

63 We consider the analysis of helpline calls as a complement, not a substitute, to established
64 approaches, such as survey evidence [17] or suicide statistics [18, 19]. Mental health surveys and
65 suicide statistics can be highly informative measurement tools, but they tend to be low-frequency and
66 available with a lag. A notable exception is Japan, where suicide statistics are reported frequently and
67 have already been subject to scientific analysis within the COVID-19 context [20]. Higher-frequency
68 monitoring has been performed in the context of the COVID-19 pandemic based on online searches
69 as recorded by Google Trends [13, 21–23], by tracking visits to emergency departments [24, 25], and
70 by monitoring calls to the police for help with domestic disputes [26–28]. In line with our findings,
71 the available evidence based on such indicators suggests that the COVID-19 pandemic has had
72 significant deleterious effects on public mental health [29, 30]. None of those studies has been able
73 to draw on indicators with as broad a country, time and topic coverage as ours.

74 Results

75 **Helpline call volumes significantly increased after the onset of the pandemic, but decreased again**
76 **after six weeks.** When we pool and size-weight the data for our 21 sample helplines, we observe
77 a peak call volume, reached six weeks after the outbreak of the pandemic, that exceeds the pre-
78 pandemic level by 35% (95% CI: 22.6 to 48.3%; see Fig. 1). With the country-specific outbreak defined
79 as the date when more than one SARS-CoV-2 infection per 100,000 inhabitants was recorded (Fig. 1a),
80 we see a significant increase for the first time in week 3, peaking in week 6 at around 35%, gradually
81 decreasing back towards pre-pandemic levels by around week 11. When we instead define the starting
82 point of the pandemic as the entry into force of the first shelter-in-place (SIP) order (Fig. 1b), we
83 observe a significant increase for the first time in week 2, reaching a steady peak level during weeks
84 3-8, and decreasing thereafter. The different time profiles are mainly explained by the fact that SIP
85 orders on average were issued some 2 to 3 weeks after local outbreaks.

A) Call-volumes around the local outbreak (%)



B) Around the introduction of SIP orders

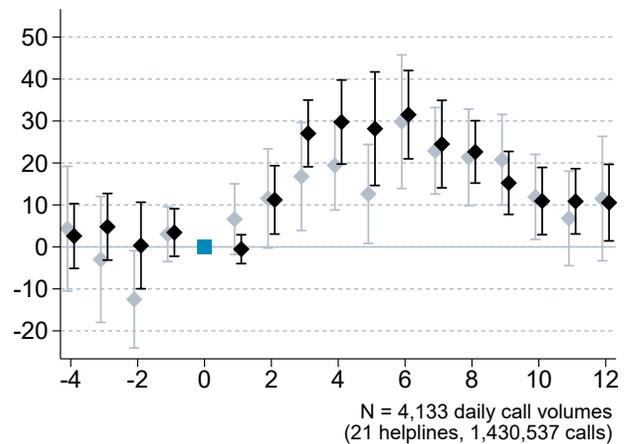


Figure 1: Evolution of total helpline call numbers during the first wave

Event study models; dependent variable is $\ln(\text{daily helpline calls}+1)$. The sample includes daily data for 21 helplines during the period from 4 weeks before to 12 weeks after the event date in early 2020, and, for 17 of the 21 helplines, the corresponding days of 2019. Coefficients on week indicators, plotted with 95% confidence intervals, show the average percentage change in call volumes relative to reference week 0, which represents the week when (A) the cumulative number of COVID-19 infections exceeded 1 per 100,000 inhabitants [31], or (B) shelter-in-place orders were introduced [32]. Models include helpline fixed effects interacted with year, week-of-year and day-of-week indicators. See Methods, equation (1). Standard errors are clustered at the helpline-week level. Results on data weighted by total number of calls recorded for each helpline during the sample period (black); and unweighted models (gray). Supplementary Table S1 and Fig. S1 show the trends in call volumes and country-specific event dates separately for the 21 helplines. Table S2 shows detailed regression results underlying the graphs.

86 The gradual nature of the increase in call volumes could to some extent be due to capacity
87 constraints. Some helplines initially had to leave some of the additional calls unanswered and only
88 gradually managed to adjust capacity to the new level of demand. Because of this capacity constraint,
89 the evolution of recorded aggregate call numbers should be interpreted as a lower-bound estimate
90 of the true increase in the number of people who sought to call a helpline in the first wave of the
91 pandemic. However, unanswered calls are not pre-screened, and call answering is thus a random
92 process unrelated to the motives of the caller. Hence, our data provide representative information on
93 the reasons for calling even if some calls were left unanswered because of capacity constraints.

94 **The main drivers of increased call numbers in the first wave were fear and loneliness.** We analyze
95 the reasons for calling for 12 helplines that are general in scope and for which we have individual
96 call-level information on conversation topics. We present our main results relating to call topics in

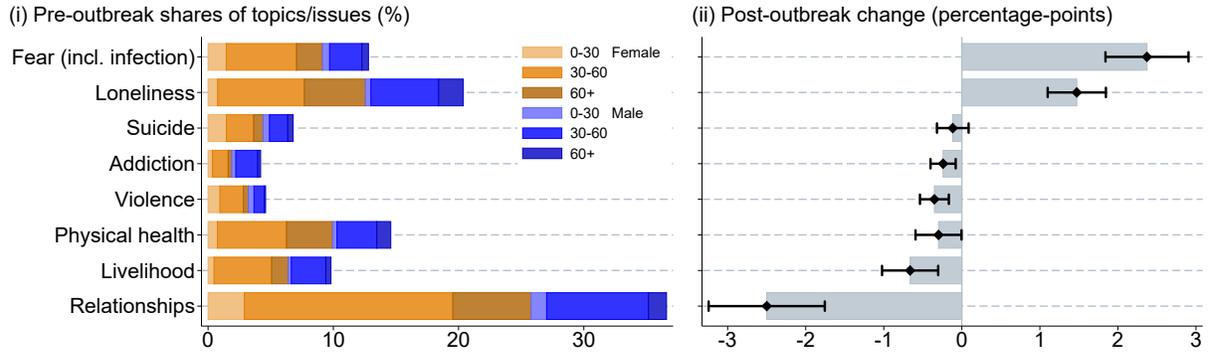
97 Fig. 2. Panel A(i) of Fig. 2 shows that most pre-COVID-19 pandemic calls were made because of
98 relationship issues (36%), loneliness (21%), or various fears and anxieties (14%). Women made 62%
99 of total calls, and 63% of calls were made by people aged 30-60.

100 We present our main results relating to call topics in Fig. 2. Panel a(i) of Fig. 2 shows that most
101 pre-COVID-19 pandemic calls were made because of relationship issues (36%), loneliness (21%) or
102 various fears and anxieties (14%). Women made 62% of total calls, and 63% of calls were made by
103 people aged 30-60.

104 During the first wave of the pandemic, the composition of calls changed significantly (see Panel
105 A(ii) of Fig. 2). The biggest increase in calls was recorded in the category 'fear' (+2.4 p.p.). This category
106 includes calls made out of fear of infection with SARS-CoV-2. The other category of calls whose share
107 increased during the first wave of the pandemic was 'loneliness' (+1.5 p.p.). The share of all other
108 conversation topics decreased during the first wave. Significant relative decreases were observed for
109 the topics 'relationships' (-2.5 p.p.), 'livelihood' (i.e. economic worries, -0.7 p.p.), 'violence' (-0.4 p.p.),
110 and addiction (-0.2 p.p.). We detect no statistically significant change in the share of calls made out
111 of suicidal ideation. These results show that the first wave of the pandemic and associated lockdown
112 measures led to a less than proportional increase in calls about domestic violence, addiction, and
113 suicidal ideation relative to the overall increase in calls.

114 In Panel B of Fig. 2, we decompose post-pandemic changes in topic shares by gender and age
115 group. Among the particularly noteworthy results, we observe that the strong increase in fear-related
116 calls was entirely driven by the over-30s, both male and female. This is consistent with the fact that
117 vulnerability to COVID-19 increases monotonically with age. The share of suicide-related calls fell
118 particularly strongly for men under 30. That same category of young men stands out with an increase
119 in the share of calls related to addiction and relationships. Conversely, women under 30 stand out as
120 having slight increases in call shares due to violence and economic worries, even though both those
121 increases are not statistically significant.

A) Conversation topics around the pandemic outbreak



B) Post outbreak change by gender and age group (percentage-points)

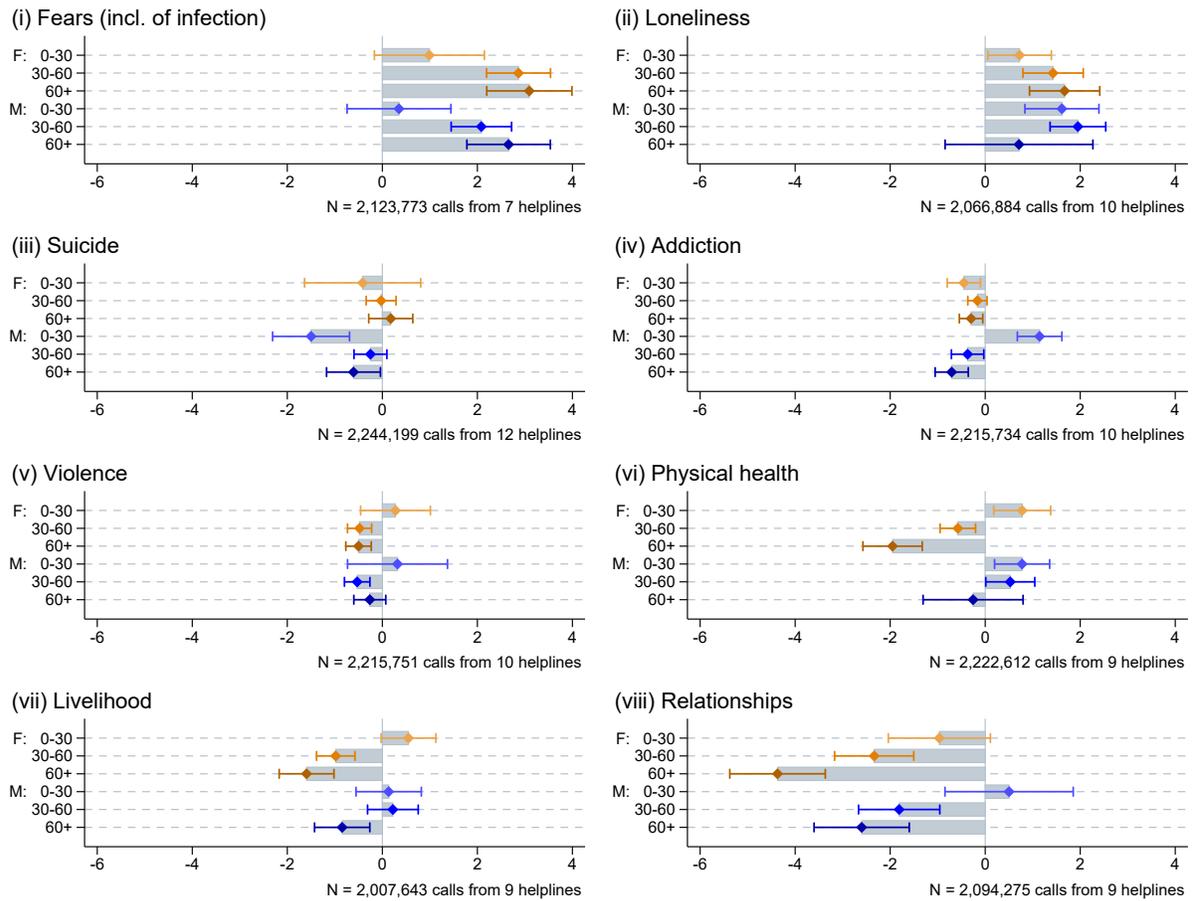


Figure 2: Helpline conversation topics in the first COVID-19 wave

(A) Main conversation topics by sex and age group: (i) Pre-pandemic shares, before 1/100,000 COVID-19 infections/inhabitants was recorded [31], (ii) estimated coefficients for binary variable *post outbreak* with 95% confidence intervals. Separate linear probability regression models with dependent variable set to one for calls related to the respective topic. Models include helpline fixed effects, interacted with year, week-of-year, and day-of-week indicators. See Methods, equations (2) and (3). Standard errors are clustered at the helpline-week level. (B) Changes by caller sex and age group; coefficient estimates for interaction terms of group indicators with binary variable *post outbreak*. Main effects for sex and age group not reported. Supplementary Tables S3, S4, and S5 show descriptive statistics for the estimation sample overall and separately by helpline, Table S6 shows detailed estimation results.

122 Overall, our results suggest that the observed increase in helpline calls during the first wave of
123 the COVID-19 pandemic was driven to a large extent by fears of the virus itself and by loneliness in
124 the context of shelter-in-place orders, rather than domestic violence, addiction, or suicidal ideation.
125 Many commentators had anticipated strong increases in domestic violence, addiction and suicidal
126 ideation. While helpline calls due to such issues increased in the first half of 2020, they did so less
127 strongly than helpline calls that were more directly linked to the pandemic – be it out of fear of
128 infection or of loneliness in the context of shelter-in-place requirements.

129 **Helpline calls during the second and third waves of COVID-19 resembled those of the first wave.**

130 For the two largest helplines in our sample, Germany (*Telefonseelsorge*) and France (*S.O.S. Amitié*),
131 we have received data up until 31 March 2021, allowing us to analyze helpline calls beyond the first
132 wave of the pandemic. The left-hand-side panels of Fig. 3 show that call volumes increased again in
133 the second half of 2020, in parallel with an increase in infections and a tightening of NPIs. While in
134 Germany the volume of calls has increased continuously into early 2021, in France it fell again after a
135 peak in December 2020. These diverging patterns correlate with stronger up- and downswings in
136 both infections and the stringency of government measures in France compared to Germany.

137 Conversation topic patterns resemble each other both between the two countries and between
138 the two distinguished periods of the pandemic (Figs. 2 and 3). As in the first wave, fear (incl. of
139 the fear infection) and loneliness were the conversation topics that saw their share of calls increase
140 most, whereas the share of calls because of relationship issues decreased markedly. The share of calls
141 related to suicide shrank further during subsequent waves. Conversely, the share of calls related to
142 problems with physical health increased in the second/third waves. This could be related to a larger
143 share of the population being infected with SARS-CoV-2, or to health worries because of restricted
144 opportunities for physical activity. Similar to the first wave, additional calls focused predominantly
145 on issues linked directly with the pandemic: fear of infection, loneliness, and – new in subsequent
146 waves – physical health.

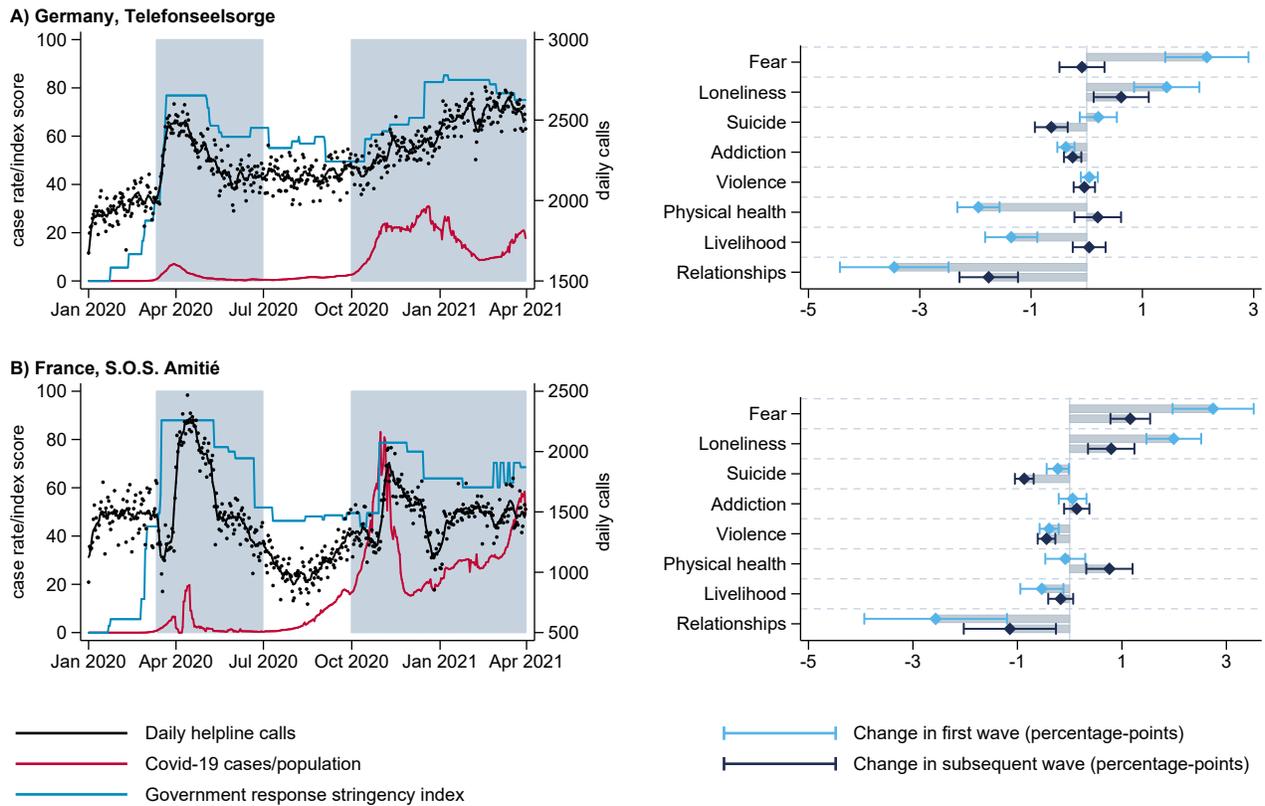


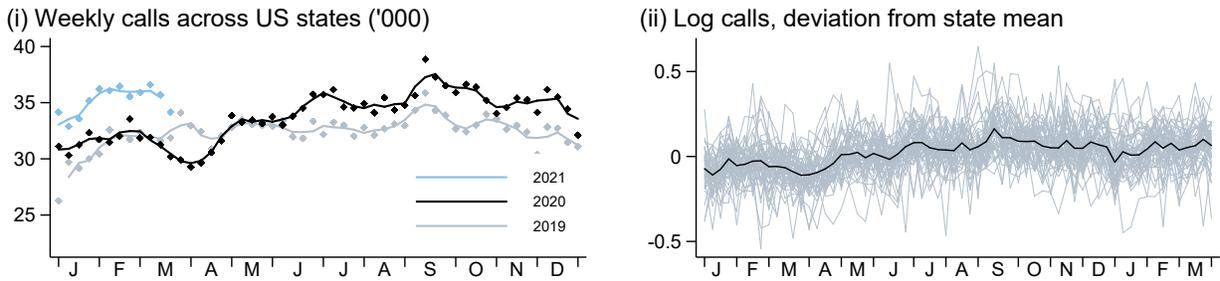
Figure 3: Helpline calls in Germany and France during the first and subsequent waves

Helpline calls and topics recorded for (A) Germany (Telefonseelsorge) and (B) France (S.O.S. Amitié). Plots on the left show the seven-day moving average sum of daily helpline calls in black (right axis), with government response stringency index in blue [32], and the seven-day moving average of newly confirmed COVID-19 cases per million population and day in red (left axis) [31]. Shaded areas indicate first- and subsequent-wave periods. Plots on the right show estimated coefficients for binary variables denoting the two periods with 95% confidence intervals, based on separate linear probability regression models with dependent variable set to one for calls related to the respective topic. Models include year, week-of-year, and day-of-week fixed effects. See Methods, equation (4). Standard errors are clustered at the week level. Supplementary Table S7 shows detailed regression results.

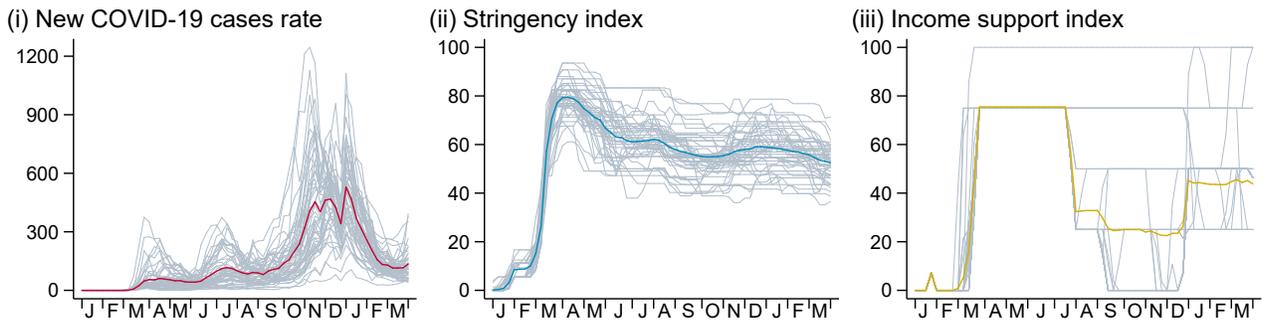
147 **Calls related to suicidal ideation decreased when case numbers rose, increased when contain-**
148 **ment measures were tightened and decreased when income support was extended.** Helpline call
149 data allow us to use panel data regression to isolate partial correlations between policy measures
150 and indicators of mental health. A particularly informative empirical laboratory for this analysis are
151 calls to the National Suicide Prevention Lifeline (Lifeline) in the United States. We have data for 2019,
152 2020, and early 2021, allowing us to exploit the considerable intra-national (state-level) variation
153 of epidemiological situations and policy measures observed within the United States. Thanks to
154 coordination across the network of crisis centers that constitute the Lifeline through a common set
155 of general guidelines, institutional and measurement issues that complicate comparisons across
156 diverse sets of helplines and nations are less of a concern in this dataset. Moreover, calls to the
157 Lifeline have been used to predict the incidence of actual suicides, e.g. by [12]. As a helpline focused
158 on suicide, however, the Lifeline does not allow us to track changes in the composition of mental
159 health problems.

160 Fig. 4 presents our main findings. The averaged time trends shown in Panel A reveal that calls to
161 the Lifeline were no higher in 2020 than in 2019 during the first wave, but somewhat higher during
162 subsequent waves of COVID-19. Panel A(ii) illustrates the heterogeneity in the number and evolution
163 of calls across states. It is this variation that we seek to ‘explain’ with state-week variation in infections
164 and policies. In Panel B of Fig. 4, we show the variation of our three explanatory variables: COVID-19
165 cases [31], NPIs as measured by the components ‘containment and closure policies’ summarized in
166 the stringency index, and the generosity of public compensation payments to workers as measured
167 by the component ‘income support’ of the Oxford COVID-19 Government Response Tracker [32].
168 These graphs illustrate the longitudinal variation of the independent variables in our regression
169 analyses. In Panel C of Fig. 4, we summarize our regression results (see Table S8 for the precise
170 model specification). The left-hand chart shows estimates from data that are pooled across the entire
171 duration of the pandemic. We find that increases in SARS-CoV-2 infections, *ceteris paribus*, were
172 associated with statistically significant decreases in the number of calls to the suicide helpline. The
173 estimated coefficient implies that a 10% increase in infections leads to a drop in calls to the suicide
174 helpline of some 0.1%.

A) National Suicide Prevention Lifeline



B) Local pandemic dynamics and government response



C) Coefficient estimates, Log-log model with state and week fixed effects (elasticities)

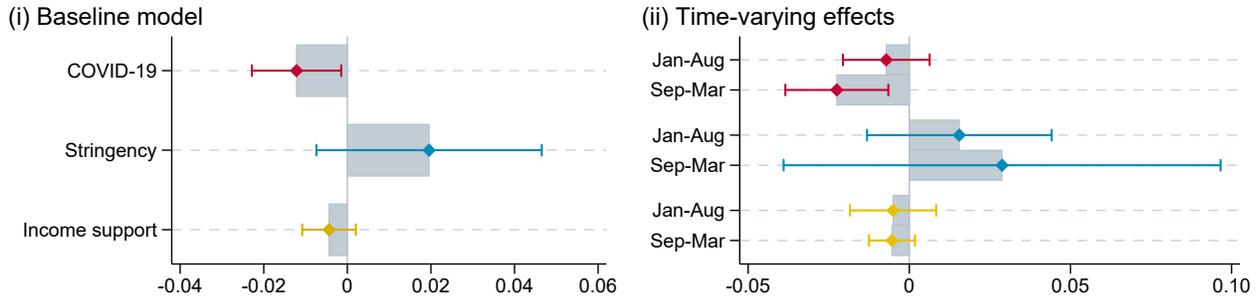


Figure 4: Calls to the National Suicide Prevention Lifeline, COVID-19, and policy in the United States

(A) National Suicide Prevention Lifeline, (i) overall sum of weekly calls routed to centers in 51 states by year, with 3-week moving average; (ii) deviation of log calls from the state mean in gray, overall weekly average in black. (B) Weekly average scores for (i) newly confirmed COVID-19 infections per 100,000 population [31], (ii) government response stringency index, and (iii) income support index [32]. Individual state values in gray. (C) Sub-national panel model including state and week fixed effects, dependent variable is $\ln(Lifeline\ calls+1)$ and independent variables are measured in logs as well. Estimated coefficients with 95% confidence intervals, standard errors are clustered at the state-month level. See Methods, equation (5). Tables S8 and S9 show detailed estimation results and alternative specifications.

175 One interpretation of this result is that the pandemic itself attenuates suicidal anxieties, perhaps
 176 by shifting people’s focus on the distress of others, or on their own fear of the pandemic. This interpre-

177 tation is consistent with the evolution of calls to the U.S. Disaster Distress Helpline, which is aimed
178 at providing crisis counseling to people affected by COVID-19: calls to that helpline increased very
179 strongly in the initial phase of the pandemic, suggesting some substitution away from pre-existing
180 anxieties toward more proximate COVID-19-related sources of distress (see Fig. S2 in the Supplemen-
181 tary Materials). Policy interventions in the shape of more stringent state-level NPIs or more generous
182 state-level income support measures are not found to have statistically significant effects on Lifeline
183 calls. Taking the somewhat imprecisely estimated coefficients at face value, however, suggests that
184 stricter NPIs were followed by a slight increase in Lifeline calls, while income support policies had the
185 opposite effect. The point estimate on the NPI stringency measure implies that tightening measures
186 by 10% raised the volume of calls to the suicide helpline by some 0.2%.

187 The right-hand-side chart of Panel C in Fig. 4 shows the estimated effects of the three explanatory
188 variables separately for the first and the subsequent waves of the pandemic, with the cutoff date
189 placed at September 1, 2020. We find that the dampening effect on Lifeline calls of the pandemic itself
190 (measured through confirmed infections) increased across the two pandemic waves. The effects on
191 Lifeline calls of more stringent NPIs or more generous income support, however, did not noticeably
192 differ across waves of the pandemic. Taken together, these estimates confirm that the mental-health
193 implications of the pandemic remained relatively stable across the first and subsequent waves. Table
194 S9 shows that these qualitative results are robust across a range of panel regression specifications.

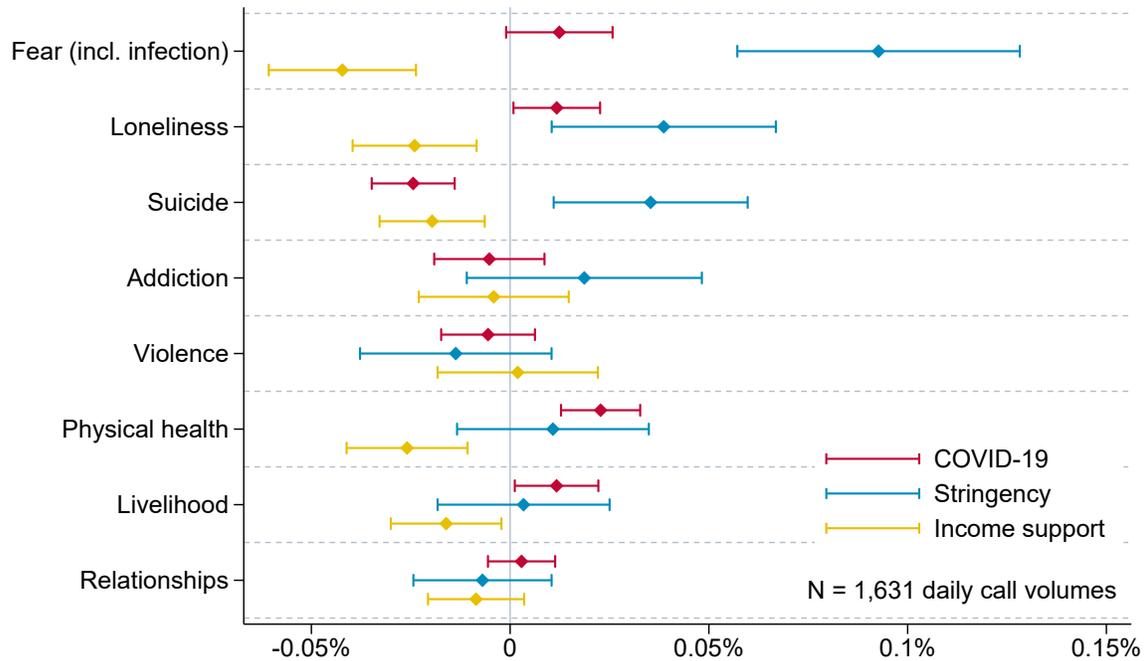


Figure 5: Daily calls by conversation topic, COVID-19, and policy in Germany and France

Coefficients from separate regression models by topic with 95% confidence interval. The dependent variable is $\ln(\text{Daily calls}+1)$ and the independent variables are defined as $\ln(\text{COVID-19 case rate}+1)$, $\ln(\text{Stringency index}+1)$, and $\ln(\text{Income support index}+1)$ [31, 32]. The sample includes all calls featuring at least one recorded conversation topic to *Telefonseelsorge* (Germany) and *S.O.S. Amitié* (France), from January 1, 2019 to March 31, 2021, aggregated to daily totals. All models include helpline indicators, interacted with year, week-of-year, and day-of-week fixed effects. See Methods, equation (7). Standard errors are clustered at the helpline-week level. Supplementary Table S12 shows detailed regression results.

195 The pattern observed in U.S. suicide helpline data is corroborated by a corresponding regression
 196 analysis based on the German and French helplines (Fig. 5): ceteris paribus, rising infection rates
 197 and more generous income support policies were followed by drops in the number of helpline calls
 198 due to suicidal ideation, whereas more stringent NPIs were followed by more suicide-related calls.
 199 These effects are estimated to be statistically significant, and consistent with those based on the U.S.
 200 Lifeline. Our findings suggest that public compensation payments for pandemic-induced losses not
 201 only reduce economic hardship but also have broader benefits: more generous income support is
 202 found to lead to fewer calls because of fear, loneliness, suicidal ideation, physical health concerns
 203 and, as expected, economic anxiety ('livelihood', see Fig. 5).

204 Methods

205 **Helpline call data** Our sample of helplines includes large, general crisis helplines, dedicated suicide preven-
 206 tion helplines, as well as some helplines that focus on specific groups such as children, parents, or immigrants.
 207 The selection of sample headlines was based (a) on an internet search of well-documented helplines and
 208 (b) on receiving data from those helplines. Of 154 helplines contacted, we received data from 37 helplines.
 209 The information from 23 of these was of sufficiently detailed coverage and consistency to be included in our
 pooled analyses. Table 1 lists the included helplines, classified based on the format of the available data. The

Table 1: Helpline data

Country	Helpline	Total calls	Data start	Data end
A Germany	<i>Telefonseelsorge Deutschland</i>	1,500,938	01.01.2019	31.03.2021
France	<i>S.O.S. Amitié</i>	1,153,029	01.01.2019	31.03.2021
Netherlands	<i>De Luisterlijn</i>	454,820	01.01.2019	30.06.2020
Germany	<i>Nr. gegen Kummer (children)</i>	208,924	01.01.2019	18.02.2021
Belgium	<i>Tele-Onthaal</i>	189,386	01.01.2019	28.06.2020
Austria	<i>Telefonseelsorge Österreich</i>	89,619	01.01.2019	30.06.2020
China	<i>Hope 24 Line</i>	65,519	01.01.2019	25.06.2020
Italy	<i>Telefono Amico</i>	54,999	01.01.2019	01.06.2020
Slovenia	<i>Zaupni telefon Samaritan</i>	43,494	01.01.2019	14.01.2021
Germany	<i>Nr. gegen Kummer (parents)</i>	31,363	01.01.2019	18.02.2021
Czech Republic	<i>Modrá linka</i>	19,871	01.01.2019	12.06.2020
Israel	<i>SAHAR Emotional support chat</i>	10,099	01.01.2020	24.12.2020
Portugal	<i>S.O.S. Voz Amiga</i>	9,930	02.01.2019	15.06.2020
Germany	<i>Muslimisches Seelsorgetelefon</i>	5,485	01.01.2020	08.12.2020
Lebanon	<i>Embrace Lifeline</i>	5,020	02.01.2019	01.07.2020
Luxembourg	<i>SOS Détresse</i>	1,928	01.01.2020	21.06.2020
Bosnia Herzeg.	<i>Plavi Telefon</i>	1,034	01.01.2019	23.10.2020
Hong Kong	<i>Samaritan Befrienders</i>	635	23.01.2020	06.10.2020
B Switzerland	<i>Die Dargebotene Hand</i>	110,177	28.02.2019	30.06.2020
Hungary	<i>LESZ</i>	79,491	01.01.2019	31.05.2020
Finland	<i>MIELI Mental Health</i>	32,148	01.01.2020	30.06.2020
C United States	<i>National Suicide Prevention Lifeline</i>	3,858,039	01.01.2019	21.03.2021
	<i>Disaster Distress Helpline</i>	78,861	01.01.2019	21.03.2021

210
 211 most detailed information was provided by the helplines in panel (A), where we have received individual
 212 conversation-level data, including information on caller's sex and approximate age, as well as on the issues
 213 discussed during the conversation. From the three additional helplines in panel (B), we received aggregate
 214 time series of daily call volumes, with separate series by gender, age category and topic. Moreover, for the two
 215 helplines in panel (C), we received sub-national weekly series of call volumes across US States. In contrast to
 216 the data in (A) and (B), the number of calls does not refer to answered calls and actual conversations, but to
 217 the raw number of calls routed to local centers.

218 **Call volumes after the pandemic outbreak** For Fig. 1, we combine the time series data (B) with aggregates based on the call-level data (A) in a daily panel of call volumes for 21 helplines, covering the time up to June, 30 2020 if available. Note that for 4 of the helplines (*MIELI*, *S.O.S. Détresse*, *SAHAR*, *Muslimisches Seelsorgetelefon*) no data is available for 2019. We then look exclusively on the period from 4 weeks before to 12 weeks after the country-specific event date in 2020, as well as, if available, the corresponding days of the year 2019. To summarize the overall dynamics, we estimate the following model:

$$\ln(\text{Calls})_{h,t} = \sum_{\tau=-4}^{-1} \gamma^{\tau} \text{Week}_{h,t}^{\tau} + \sum_{\tau=1}^{12} \gamma^{\tau} \text{Week}_{h,t}^{\tau} + \xi_h \times \Theta_t + \epsilon_{h,t} \quad (1)$$

224 The dependent variable is the natural logarithm of the number of calls to helpline h recorded on day t . We define the local outbreak as (a) the date when the cumulative number of COVID-19 cases per population exceeded 1/100,000 or (b) when shelter-in-place orders were first introduced [31, 32]. For both versions, we define indicator variables $\text{Week}_{h,t}^{\tau}$ that are set to one for days in event week number $\tau \in [-4, 12]$ in 2020. The model includes helpline fixed effects ξ_h , interacted with year, week-of-year and day-of-week indicators, summarized in the vector Θ_t . The reference category is the week of the pandemic outbreak, and the coefficients γ^{τ} allow us to track the percentage deviation in daily calls compared to week 0. See Figure S1 and Table S1 in the supplementary materials for details on event dates and call volumes for each of the 21 included helplines.

232 **Helpline data, individual calls** To investigate changes in conversation topics in Fig. 2, we focus on the call-level data (from helplines in Panel (A) of Table 1) and combine information from 12 helplines in a database of more than 2 million calls. For each helpline, we categorize calls based on the recorded information on the problems of callers and the topics discussed. Precise categorizations of call topics differ across helplines, but they are sufficiently similar to allow us to map them into to the following common categories: *loneliness* (social isolation, entrapment), *fear* (general fear, anxiety, fear of infection with SARS-Cov-2), *suicide* (suicidal ideation, suicidal thoughts or plans, suicide attempts, suicide of others), *addiction* (drugs, alcohol, other addictions), *violence* (physical violence and abuse, sexual harassment, rape), *physical health* (disease, long-term illness, disability), and two broad categories for *livelihood* (work situation, unemployment, financial problems, housing), and *relationships* (family life, parenting, marriage and intimate relationships, separation). Note that, as some topics are not recorded at all for some helplines, the sample size differs depending on which topic we look at: the largest sample includes data from 12 helplines, where we can distinguish calls related to suicide from calls concerning other issues.

245 Additionally, we have coded the sex and age category of each caller, and (where possible) further characteristics such as marital status, living situation and occupational status. In the supplementary materials, we provide a more detailed description of each sample helpline. As helplines record age categories differently, our classification cannot be fully precise. Using the boundaries of available age groups, the group of callers below 30 includes only those that were recorded in an age group with an upper limit below 30. The same logic applies to the group of callers older than 60, and the middle category in some cases includes also individuals whose age is slightly below 30 years or above 60.

252 For Fig. 2 we restrict the sample to calls recorded for the time from 1 January 2019 through 30 June 2020, where information on sex and age group of callers is available. When estimating the relative importance

254 of a topic, we define the dependent variable $T_{i,h,t}$ as equal to one for call i to helpline h on day t if the
 255 conversation was related to topic T (*Fear, Loneliness, Suicide, Addiction, Violence, Physical health, Livelihood,*
 256 *or Relationships*), and zero for unrelated calls, where another topic was recorded. Calls without information
 257 on caller issues or conversation topics are not included. Based on the date when the cumulative number of
 258 COVID-19 cases per population exceeded 1/100,000 in the country of operation [31], we define an indicator
 259 $Post\ outbreak_{h,t}$ and estimate a linear probability model as in equation 2:

$$T_{i,h,t} = \gamma Post\ outbreak_{h,t} + \xi_h \times \Theta_t + \epsilon_{i,t} \quad (2)$$

260 The model includes helpline indicators ξ_h to account for time invariant differences among helplines. We
 261 further add year, week-of-year and day-of-week indicators, summarized in the vector Θ_t , interacted with the
 262 helpline fixed effects, to account for secular trends and for seasonal and day-of-week effects. Standard errors
 263 are clustered at the helpline-week level.

264 When estimating heterogeneous effects, we estimate alternative specifications including individual caller
 265 characteristics and interaction terms. To illustrate the change in topics for different groups, we classify callers
 266 into six non-overlapping groups, denoted in the vectors *Sex* (male, female) and *Age group* (below 30, 30–60,
 267 above 60). In the model illustrated in equation 3, we interact the post-outbreak variable with all six group
 268 indicators, so that the coefficients represent the group-specific changes in topic shares:

$$T_{i,t} = \beta(Sex_{i,t} \times Age\ group_{i,t}) + \gamma Post_{h,t} * (Sex_{i,t} \times Age\ group_{i,t}) + \xi_h \times \Theta_t + \epsilon_{i,t} \quad (3)$$

269 For the main effects of caller sex and age groups, indicators for the reference group of male callers in the
 270 30–60 age category are omitted. Tables S3 to S6 in the supplementary materials show descriptive statistics and
 271 detailed estimation results.

272 For the analysis of the longer time horizon and the second wave in Fig. 3, we focus on call level data from
 273 Germany and France, from January, 1 2019 through March, 31 2021. We estimate a specification similar to
 274 the previous approach, separately for the two helplines and each topic. To distinguish the changes around
 275 the outbreak from later adjustments during the subsequent wave, we define two indicator variables W^1 and
 276 W^2 denoting two periods. The first covers the time from 11 March 2020, when the World Health Organization
 277 declared the outbreak a pandemic, to 30 June 2020, when the number of infections decreased again and
 278 containment measures were relaxed both in Germany and in France. The second period indicator is equal to
 279 one for the time after 1 October 2020. equation 4 illustrates the estimated model:

$$T_{i,t} = \gamma_1 W_t^1 + \gamma_2 W_t^2 + \Theta_t + \epsilon_{i,t} \quad (4)$$

280 As we analyze the two helplines separately, we do not include helpline fixed effects here, but capture secular
 281 trends and seasonal patterns through the inclusion of year, week-of-year, and day-of-week indicators. Standard
 282 errors are clustered at the week level.

283 **Call volumes across U.S. states** The analysis of sub-national call volumes in Fig. 4 relies on data on weekly
 284 call volumes routed to the *National Suicide Prevention Lifeline* (Lifeline). The analysis is based on weekly

285 call volumes for US States and Territories over 116 weeks, starting in 2019 with the week ending on January
 286 6, and up to the week ending on Sunday, March 21, 2020 Based on phone numbers, the state from which
 287 calls were placed can be inferred, even though internal migration means that this classification is subject
 288 to measurement error. We focus on calls from 50 US states and the District of Columbia. While the Lifeline
 289 receives calls from Canadian provinces, its mission is to serve the US. Calls from Canada, from other countries
 290 and of unknown origin are therefore not included.

291 In order to measure the timing and intensity of government responses consistently across time, countries
 292 and sub-national regions, we rely on aggregate policy indices from the *Oxford COVID-19 Government Response*
 293 *Tracker* [32]. In particular, we use two policy indices, the *Government Response Stringency Index*, and the *Income*
 294 *Support Index*. The stringency index shows the strictness of containment policies and restrictions of personal
 295 freedom, and is based on an unweighted average of 8 component scores for stay-at-home requirements,
 296 workplace and public transport closures, restrictions on public events, gatherings, domestic and international
 297 travel, and information campaigns. The income support index reflects the availability of financial support. To
 298 obtain a comparable measure, we construct the index score using the ordinal measure and the flag for sectoral
 299 targeting to arrive at a value between 0 and 100. As we rely on the sub-national information on policies in
 300 US states, it is important to note that we use the total index scores: whenever national policies were more
 301 restrictive than those of individual states, the higher score is imputed. Data on the daily number of newly
 302 confirmed COVID-19 cases and deaths are taken from the *JHU CSSE data repository* [31].

303 The panel structure allows us to exploit the idiosyncratic variation within states j over time (weeks w)
 304 while controlling for overall trends. We estimate a two-way error component model as illustrated in equation 5:

$$\ln(\text{Calls}+1)_{j,w} = \pi_1 \ln(\text{COVID-19}+1)_{j,w} + \pi_2 \ln(\text{Stringency}+1)_{j,w} + \pi_3 \ln(\text{Inc. support}+1)_{j,w} + \xi_j + \theta_w + \epsilon_{j,w} \quad (5)$$

305 The dependent variable is the natural logarithm of the number of calls plus one, *COVID-19* is defined as
 306 one plus the sum of newly confirmed COVID-19 cases in week w per 100,000 people, while *Stringency* and
 307 *Income support* are calculated as weekly averages of the respective daily index scores. State fixed effects ξ_j
 308 absorb all time-invariant factors, and our analysis is therefore based on the idiosyncratic within-state variation
 309 in call volumes over time. The inclusion of week indicators θ_w allows us to capture all nation-wide and global
 310 effects and to focus solely on the relative differences in pandemic exposure and policy response. Standard
 311 errors are clustered at the state-month level.

To investigate the extent to which the relationship changed over time, we re-estimate the model as in
 equation 6. Here, we include the three main explanatory variables interacted with two indicators variables that
 are set to 1 for the time period from January to July 2020, and for September 2020 to March 2021 respectively.

$$\begin{aligned} \ln(\text{Calls}+1)_{j,w} = & (\text{Jan-Aug}) * [\pi_1 \ln(\text{COVID-19}+1)_{j,w} + \pi_2 \ln(\text{Stringency}+1)_{j,w} + \pi_3 \ln(\text{Inc. support}+1)_{j,w}] \\ & + (\text{Sep-Mar}) * [\pi_1 \ln(\text{COVID-19}+1)_{j,w} + \pi_2 \ln(\text{Stringency}+1)_{j,w} + \pi_3 \ln(\text{Inc. support}+1)_{j,w}] \quad (6) \\ & + \xi_j + \theta_w + \epsilon_{j,w} \end{aligned}$$

For the analysis in Fig. 5, we combine the previous approaches and estimate the relationship between
 call volumes and the three variables as illustrated in equation 7, based on topic-specific call volumes to

Telefonseelsorge (Germany) and *S.O.S. Amitié* (France) during the time from January 1, 2019 to March 31, 2021.

$$\ln(\text{Calls}+1)_{h,t} = \pi_1 \ln(\text{COVID-19}+1)_{h,t} + \pi_2 \ln(\text{Stringency}+1)_{h,t} + \pi_3 \ln(\text{Inc. support}+1)_{h,t} + \xi_h \times \Theta_t + \epsilon_{h,t} \quad (7)$$

312 In contrast to the sub-national panel of US states, here we do not include week fixed effects but capture
313 secular trends and seasonal patterns through helpline fixed effects, interacted with year, week-of-year, and
314 day-of-week indicators. Standard errors are clustered at the helpline-week level.

315 References

- 316 [1] Ridley, M., Rao, G., Schilbach, F. & Patel, V. Poverty, depression, and anxiety: Causal evidence and
317 mechanisms. *Science* **370**, eaay0214 (2020). URL <https://doi.org/10.1126/science.aay0214>.
- 318 [2] McInerney, M., Mellor, J. M. & Nicholas, L. H. Recession depression: mental health effects of the 2008
319 stock market crash. *Journal of Health Economics* **32**, 1090–1104 (2013). URL <https://doi.org/10.1016/j.jhealeco.2013.09.002>.
- 320 [3] Parmar, D., Stavropoulou, C. & Ioannidis, J. P. A. Health outcomes during the 2008 financial crisis in Europe:
321 systematic literature review. *BMJ* **354**, i4588 (2016). URL <https://doi.org/10.1136/bmj.i4588>.
- 322 [4] Chang, S.-S., Stuckler, D., Yip, P. & Gunnell, D. Impact of 2008 global economic crisis on suicide: time
323 trend study in 54 countries. *BMJ* **347**, f5239 (2013). URL <https://doi.org/10.1136/bmj.f5239>.
- 324 [5] Phillips, J. A. & Nugent, C. N. Suicide and the Great Recession of 2007–2009: the role of economic factors
325 in the 50 US states. *Social Science & Medicine* **116**, 22–31 (2014). URL <https://doi.org/10.1016/j.socscimed.2014.06.015>.
- 326 [6] Nordt, C., Warnke, I., Seifritz, E. & Kawohl, W. Modelling suicide and unemployment: a longitudinal
327 analysis covering 63 countries, 2000–11. *The Lancet Psychiatry* **2**, 239–245 (2015). URL [http://dx.doi.org/10.1016/S2215-0366\(14\)00118-7](http://dx.doi.org/10.1016/S2215-0366(14)00118-7).
- 328 [7] Gunnell, D. *et al.* Suicide risk and prevention during the COVID-19 pandemic. *The Lancet Psychiatry* **7**,
329 468–471 (2020). URL [https://doi.org/10.1016/S2215-0366\(20\)30171-1](https://doi.org/10.1016/S2215-0366(20)30171-1).
- 330 [8] Zorteza, T. C. *et al.* The impact of infectious disease-related public health emergencies on suicide, sui-
331 cidal behavior, and suicidal thoughts. *Crisis* **0** (2020). URL <https://doi.org/10.1027/0227-5910/a000753>.
- 332 [9] Leach, L. S. & Christensen, H. A systematic review of telephone-based interventions for mental dis-
333 orders. *Journal of Telemedicine and Telecare* **12**, 122–129 (2006). URL <https://doi.org/10.1258/135763306776738558>.
- 334 [10] Coveney, C. M., Pollock, K., Armstrong, S. & Moore, J. Callers' experiences of contacting a national
335 suicide prevention helpline. *Crisis* **33**, 313–324 (2012). URL <https://doi.org/10.1027/0227-5910/a000151>.

- 342 [11] De Leo, D., Buono, M. D. & Dwyer, J. Suicide among the elderly: the long-term impact of a telephone
343 support and assessment intervention in northern Italy. *British Journal of Psychiatry* **181**, 226–229 (2002).
344 URL <https://doi.org/10.1192/bjp.181.3.226>.
- 345 [12] Choi, D. *et al.* Development of a machine learning model using multiple, heterogeneous data sources to
346 estimate weekly US suicide fatalities. *JAMA Network Open* **3**, e2030932 (2020). URL [https://doi.org/](https://doi.org/10.1001/jamanetworkopen.2020.30932)
347 [10.1001/jamanetworkopen.2020.30932](https://doi.org/10.1001/jamanetworkopen.2020.30932).
- 348 [13] Halford, E. A., Lake, A. M. & Gould, M. S. Google searches for suicide and suicide risk factors in the early
349 stages of the COVID-19 pandemic. *PLOS ONE* **15**, e0236777 (2020). URL [https://doi.org/10.1371/](https://doi.org/10.1371/journal.pone.0236777)
350 [journal.pone.0236777](https://doi.org/10.1371/journal.pone.0236777).
- 351 [14] Turkington, R. *et al.* Behavior of callers to a crisis helpline before and during the COVID-19 pandemic:
352 quantitative data analysis. *JMIR Mental Health* **7**, e22984 (2020). URL [http://dx.doi.org/10.2196/](http://dx.doi.org/10.2196/22984)
353 [22984](http://dx.doi.org/10.2196/22984).
- 354 [15] Armbruster, S. & Klotzbücher, V. Lost in lockdown? COVID-19, social distancing, and mental health in
355 Germany. *Covid Economics: Vetted and real-time papers* **22**, 117–153 (2020). URL [https://cepr.org/](https://cepr.org/file/9096/download?token=RZOVZVi5)
356 [file/9096/download?token=RZOVZVi5](https://cepr.org/file/9096/download?token=RZOVZVi5).
- 357 [16] Brühlhart, M. & Lalive, R. Daily suffering: Helpline calls during the COVID-19 crisis. *Covid Economics:*
358 *Vetted and Real-Time Papers* **19**, 143–158 (2020). URL [https://cepr.org/file/9088/download?](https://cepr.org/file/9088/download?token=c6oU20eH)
359 [token=c6oU20eH](https://cepr.org/file/9088/download?token=c6oU20eH).
- 360 [17] Richter, D., Riedel-Heller, S. & Zürcher, S. Mental health problems in the general population dur-
361 ing and after the first lockdown phase due to the SARS-Cov-2 pandemic: Rapid review of multi-wave
362 studies. *Epidemiology and Psychiatric Sciences* **30**, E27 (2021). URL [https://doi.org/10.1017/](https://doi.org/10.1017/S2045796021000160)
363 [S2045796021000160](https://doi.org/10.1017/S2045796021000160).
- 364 [18] John, A., Pirkis, J., Gunnell, D., Appleby, L. & Morrissey, J. Trends in suicide during the COVID-19 pandemic.
365 *BMJ* **371**, m4352 (2020). URL <http://dx.doi.org/10.1136/bmj.m4352>.
- 366 [19] Pirkis, J. *et al.* Suicide trends in the early months of the COVID-19 pandemic: Interrupted time series
367 analysis of preliminary data from 21 countries. *The Lancet Psychiatry* (2021). URL [https://doi.org/](https://doi.org/10.1016/S2215-0366(21)00091-2)
368 [10.1016/S2215-0366\(21\)00091-2](https://doi.org/10.1016/S2215-0366(21)00091-2).
- 369 [20] Tanaka, T. & Okamoto, S. Increase in suicide following an initial decline during the COVID-19 pan-
370 demic in Japan. *Nature Human Behaviour* **5**, 229–238 (2021). URL [https://doi.org/10.1038/](https://doi.org/10.1038/s41562-020-01042-z)
371 [s41562-020-01042-z](https://doi.org/10.1038/s41562-020-01042-z).
- 372 [21] Brodeur, A., Clark, A. E., Fleche, S. & Powdthavee, N. COVID-19, lockdowns and well-being: evidence from
373 Google Trends. *Journal of Public Economics* **193**, 104346 (2020). URL [https://doi.org/10.1016/j.](https://doi.org/10.1016/j.jpubeco.2020.104346)
374 [jpubeco.2020.104346](https://doi.org/10.1016/j.jpubeco.2020.104346).

- 375 [22] Fetzer, T., Hensel, L., Hermle, J. & Roth, C. Coronavirus perceptions and economic anxiety. *Review of*
376 *Economics and Statistics* 1–36 (2020). URL https://doi.org/10.1162/rest_a_00946.
- 377 [23] Tran, U. S. *et al.* Low validity of Google Trends for behavioral forecasting of national suicide rates. *PLOS*
378 *ONE* **12** (2017). URL <https://doi.org/10.1371/journal.pone.0183149>.
- 379 [24] Faust, J. S. *et al.* Suicide deaths during the COVID-19 stay-at-home advisory in Massachusetts, March
380 to May 2020. *JAMA Network Open* **4**, e2034273–e2034273 (2021). URL [https://doi.org/10.1001/](https://doi.org/10.1001/jamanetworkopen.2020.34273)
381 [jamanetworkopen.2020.34273](https://doi.org/10.1001/jamanetworkopen.2020.34273).
- 382 [25] Holland, K. M. *et al.* Trends in US emergency department visits for mental health, overdose, and violence
383 outcomes before and during the COVID-19 pandemic. *JAMA Psychiatry* **78**, 372–379 (2021). URL [https://doi.org/10.1001/](https://doi.org/10.1001/jamapsychiatry.2020.4402)
384 [jamapsychiatry.2020.4402](https://doi.org/10.1001/jamapsychiatry.2020.4402).
- 385 [26] Baron, E. J., Goldstein, E. G. & Wallace, C. T. Suffering in silence: how COVID-19 school closures inhibit
386 the reporting of child maltreatment. *Journal of Public Economics* **190**, 1–13 (2020). URL [https://doi.](https://doi.org/10.1016/j.jpubeco.2020.104258)
387 [org/10.1016/j.jpubeco.2020.104258](https://doi.org/10.1016/j.jpubeco.2020.104258).
- 388 [27] Bullinger, L. R., Carr, J. B. & Packham, A. COVID-19 and crime: effects of stay-at-home orders on domestic
389 violence. *American Journal of Health Economics* (2021). URL <https://doi.org/10.1086/713787>.
- 390 [28] Leslie, E. & Wilson, R. Sheltering in place and domestic violence: evidence from calls for service dur-
391 ing COVID-19. *Journal of Public Economics* **189**, 104241 (2020). URL [https://doi.org/10.1016/j.](https://doi.org/10.1016/j.jpubeco.2020.104241)
392 [jpubeco.2020.104241](https://doi.org/10.1016/j.jpubeco.2020.104241).
- 393 [29] Banks, J., Xu, X. *et al.* The mental health effects of the first two months of lockdown during the COVID-19
394 pandemic in the UK. *Fiscal Studies* **41**, 685–708 (2020). URL [https://doi.org/10.1111/1475-5890.](https://doi.org/10.1111/1475-5890.12239)
395 [12239](https://doi.org/10.1111/1475-5890.12239).
- 396 [30] Holman, E. A., Thompson, R. R., Garfin, D. R. & Silver, R. C. The unfolding COVID-19 pandemic: a
397 probability-based, nationally representative study of mental health in the United States. *Science Advances*
398 **6**, eabd5390 (2020). URL <https://doi.org/10.1126/sciadv.abd5390>.
- 399 [31] Dong, E., Du, H. & Gardner, L. An interactive web-based dashboard to track COVID-19 in real time.
400 *The Lancet Infectious Diseases* **20**, 533–534 (2020). URL [https://doi.org/10.1016/S1473-3099\(20\)](https://doi.org/10.1016/S1473-3099(20)30120-1)
401 [30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1).
- 402 [32] Hale, T. *et al.* A global panel database of pandemic policies (Oxford COVID-19 Government Re-
403 sponse Tracker). *Nature Human Behaviour* **5**, 529–538 (2021). URL [https://doi.org/10.1038/](https://doi.org/10.1038/s41562-021-01079-8)
404 [s41562-021-01079-8](https://doi.org/10.1038/s41562-021-01079-8).

405 **Acknowledgments**

406 We thank the following people and helplines for sharing their expertise and for granting us access to
407 their data:

408 Carola Hochhauser and Antonia Kesselring (*Telefonseelsorge*, Austria), Jennifer Pots (*Tele-Onthaal*,
409 Belgium), Maja Kovacevic (*Plavi Telefon*, Bosnia and Herzegovina), Rujun Ma and Wenping Ni (*Hope*
410 *24 Line*, China), Hana Regnerova (*Modrá linka*, Czech Republic), Hervé Dumont (*S.O.S. Amitié*,
411 France), Susanna Winter (*MIELI*, Finland), Ludger Storch and Bernd Blömeke (*Telefonseelsorge*, Ger-
412 many), Imran Sagir (*Muslimisches Seelsorgetelefon*, Germany), Heidi Schütz (*Nummer gegen Kummer*,
413 Germany), Hsuan-Chia (*Samaritan Befrienders*, Hong Kong), Eva Brandisz (*LESZ*, Hungary), Yael
414 Levy (Sahar, Israel), Monica Petra (*Telefono Amico*, Italy), Pia Zeinoun (*Embrace Lifeline*, Lebanon),
415 Sébastien Hay (*SOS Détresse*, Luxembourg), Jaap Jakobs (*De Luisterlijn*, Netherlands), Francisco
416 Paulino (*SOS Voz Amiga*, Portugal), Kristina Bogataj (*Zaupni telefon Samarijan*, Slovenia), Sabine
417 Basler (*Die Dargebotene Hand*, Switzerland), Alena Goldstein, Johnathan Higgins, and Sean Murphy,
418 Vibrant Emotional Health (*National Suicide Prevention Lifeline* and *Disaster Distress Helpline*, USA).

419

420 We thank Charles Efferson and Laurent Keller for helpful comments.

421 **Funding** We are grateful to the Swiss National Science Foundation (NCCR LIVES –‘Overcoming
422 Vulnerability: Life Course Perspectives’) for financial support.

423 **Author contributions** All authors contributed equally to this work.

424 **Competing interests** The authors declare that they have no competing interests.

425 **Data availability** Data were provided by helplines for the sole purpose of this research project,
426 subject to non-disclosure agreements. We will be happy to ask our data providers to allow us to share
427 the sub-set of data required to replicate all of our analyses. Given that these data would reveal no
428 information that can be tracked to individuals, we are hopeful of obtaining data providers’ agreement.

429 **Supplementary Materials**430 **Supplementary tables and figures****Table S1:** Daily call volumes around the pandemic outbreak, 21 helplines

Country	Helpline	Outbreak	SIP introduction	Number of calls
Germany	<i>Telefonseelsorge Deutschland</i>	8 Mar.	9 Mar.	408464
France	<i>S.O.S. Amitié</i>	7 Mar.	17 Mar.	369736
Netherlands	<i>De Luisterlijn</i>	7 Mar.	6 Mar.	210098
Belgium	<i>Tele-Onthaal</i>	7 Mar.	18 Mar.	86733
Switzerland	<i>Die Dargebotene Hand</i>	4 Mar.	17 Mar.	86512
Germany	<i>Nr. gegen Kummer (children)</i>	8 Mar.	9 Mar.	67178
Austria	<i>Telefonseelsorge Österreich</i>	8 Mar.	16 Mar.	38198
Hungary	<i>LESZ</i>	21 Mar.	12 Mar.	34762
Italy	<i>Telefono Amico</i>	27 Feb.	23 Feb.	28114
China	<i>Hope 24 Line</i>	2 Feb.	23 Jan.	25663
Finland	<i>MIELI Mental Health</i>	11 Mar.	16 Mar.	22420
Slovenia	<i>Zaupni telefon Samaritan</i>	10 Mar.	14 Mar.	14240
Germany	<i>Nr. gegen Kummer (parents)</i>	8 Mar.	9 Mar.	9532
Czech Rep.	<i>Modrá linka</i>	13 Mar.	15 Mar.	9243
Israel	<i>SAHAR Emotional support chat</i>	13 Mar.	17 Mar.	5734
Portugal	<i>S.O.S. Voz Amiga</i>	13 Mar.	19 Mar.	4565
Lebanon	<i>Embrace Lifeline</i>	13 Mar.	16 Mar.	2518
Germany	<i>Muslimisches Seelsorgetelefon</i>	8 Mar.	9 Mar.	1916
Luxembourg	<i>SOS Détresse</i>	11 Mar.	17 Mar.	1290
Bosnia	<i>Plavi Telefon</i>	18 Mar.	20 Mar.	656
Hong Kong	<i>Samaritan Befrienders</i>	24 Feb.	8 Feb.	432

Note: Helplines included in the analysis of daily call volumes underlying Fig. 1. Columns 3 and 4 show the local pandemic outbreak (the day when more than 100 cases per 100,000 population have been recorded)[31], and the date of SIP introduction (when shelter-in-place requirements were first introduced)[32] in the country of operation. Column 5 shows the sum of calls recorded on days included in the analysis of Fig. 1a, using the available data for the period from 4 weeks before to 12 weeks after the outbreak date in 2020, and the corresponding days of the year 2019.

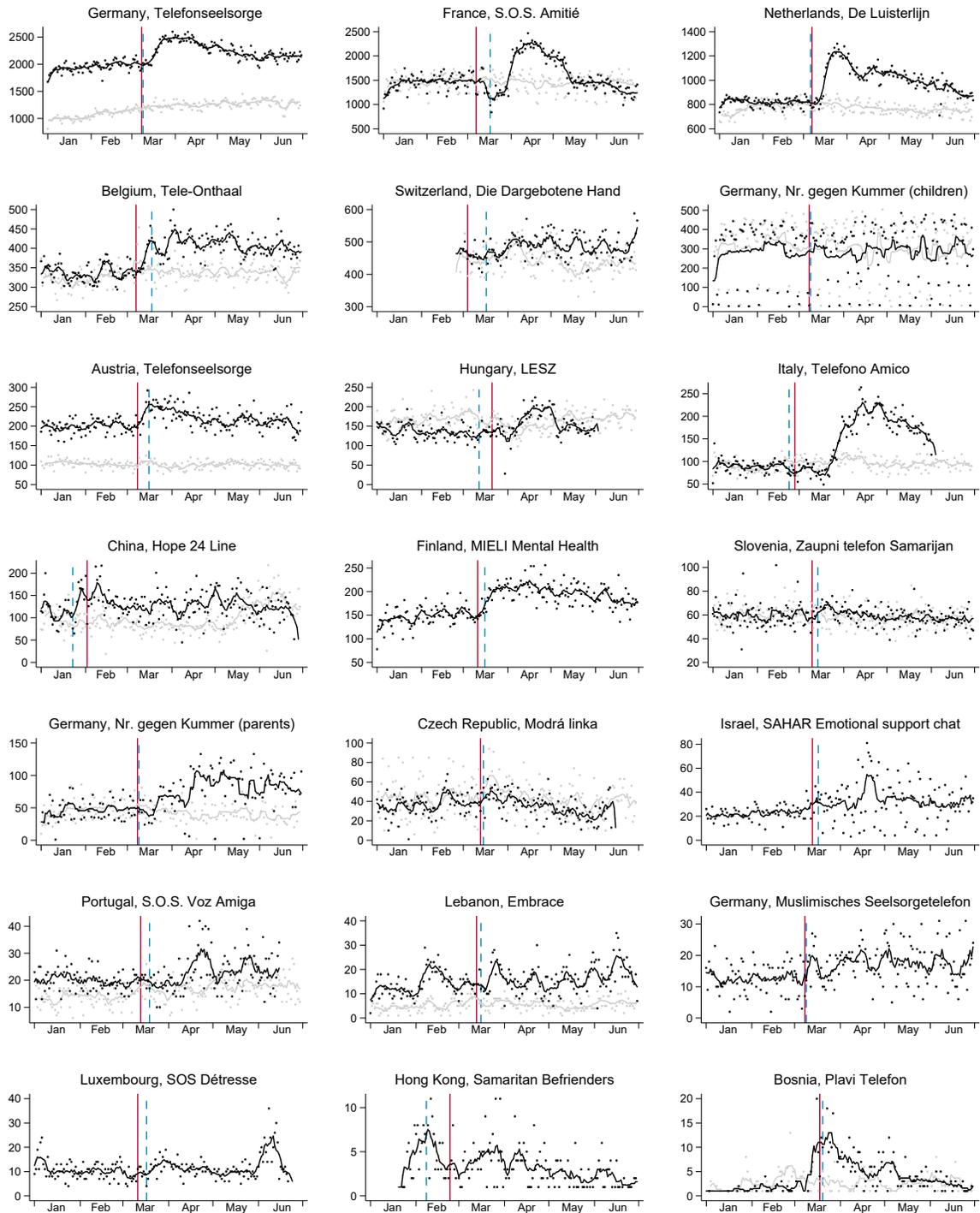


Figure S1: Evolution of daily helpline call volumes during the first wave

Sum of daily helpline contacts with seven-day moving average, January–June 2020 (black) and 2019 (light grey, not available for all helplines). The solid red line shows the date of the pandemic outbreak, when more than 199 cases per 100,000 population have been recorded[31]; the dashed blue line shows the date when shelter-in-place requirements were first introduced[32] in the country of operation.

Table S2: Call volumes during the first wave - event study results

Event week 0:	Local outbreak		Shelter-in-place order	
	(1)	(2)	(3)	(4)
<i>Week -4</i>	0.045 [-0.092,0.182]	0.009 [-0.044,0.062]	0.043 [-0.105,0.192]	0.026 [-0.051,0.103]
<i>Week -3</i>	-0.055 [-0.215,0.106]	0.011 [-0.053,0.075]	-0.030 [-0.180,0.120]	0.048 [-0.031,0.127]
<i>Week -2</i>	-0.086 [-0.199,0.027]	-0.012 [-0.092,0.069]	-0.125 [-0.241,-0.009]	0.003 [-0.100,0.106]
<i>Week -1</i>	0.060 [-0.002,0.122]	0.003 [-0.028,0.033]	0.030 [-0.035,0.096]	0.034 [-0.022,0.091]
<i>Week 1</i>	0.059 [-0.033,0.152]	-0.022 [-0.088,0.045]	0.066 [-0.018,0.150]	-0.005 [-0.040,0.029]
<i>Week 2</i>	0.108 [-0.013,0.229]	0.058 [-0.084,0.200]	0.115 [-0.003,0.233]	0.112 [0.031,0.194]
<i>Week 3</i>	0.188 [0.066,0.311]	0.135 [0.016,0.255]	0.168 [0.039,0.296]	0.270 [0.191,0.350]
<i>Week 4</i>	0.181 [0.089,0.273]	0.244 [0.191,0.297]	0.194 [0.088,0.301]	0.297 [0.197,0.398]
<i>Week 5</i>	0.168 [0.055,0.281]	0.246 [0.150,0.342]	0.126 [0.008,0.244]	0.282 [0.146,0.417]
<i>Week 6</i>	0.385 [0.230,0.540]	0.354 [0.226,0.483]	0.298 [0.139,0.458]	0.315 [0.210,0.420]
<i>Week 7</i>	0.200 [0.090,0.311]	0.190 [0.110,0.270]	0.229 [0.126,0.332]	0.245 [0.141,0.349]
<i>Week 8</i>	0.240 [0.124,0.356]	0.253 [0.171,0.335]	0.214 [0.099,0.328]	0.226 [0.152,0.301]
<i>Week 9</i>	0.212 [0.113,0.312]	0.168 [0.110,0.226]	0.208 [0.100,0.316]	0.152 [0.077,0.227]
<i>Week 10</i>	0.145 [0.045,0.246]	0.107 [0.059,0.155]	0.119 [0.018,0.220]	0.109 [0.029,0.189]
<i>Week 11</i>	0.096 [-0.025,0.216]	0.062 [-0.002,0.126]	0.068 [-0.045,0.180]	0.109 [0.031,0.186]
<i>Week 12</i>	0.095 [-0.046,0.235]	0.086 [0.009,0.162]	0.115 [-0.033,0.263]	0.106 [0.014,0.197]
Weighted # Helplines # Observations	No 21 4,139	YES 21 4,139	No 21 4,133	YES 21 4,133

Note: Evolution of total helpline call numbers during the first wave. The dependent variable is the natural logarithm of daily helpline call volumes. The sample includes the period from 4 weeks before to 12 weeks after the event date in 2020, as well as the corresponding days of the year 2019. Coefficients show the average percentage change in daily calls compared to reference week 0, which represents the week of a) the pandemic outbreak, defined as the date when the cumulative number of COVID-19 infections exceeded 1 per 100,000 inhabitants, or b) the date when shelter-in-place orders first entered into force. Standard errors in parentheses are clustered at the helpline-month level.

Table S3: Call-level data January 2019–June 2020: Estimation sample

Country	Helpline	Calls	Female	Age 0-30	Age 30-60	Age 60+
Germany	<i>Telefonseelsorge Deutschland</i>	768,694	0.69	0.15	0.55	0.30
France	<i>S.O.S. Amitié</i>	736,491	0.54	0.04	0.78	0.18
Netherlands	<i>De Luisterlijn</i>	328,565	0.67	0.09	0.72	0.20
Germany	<i>Nr. gegen Kummer (children)</i>	134,893	0.59	1.00	0.00	0.00
Belgium	<i>Tele-Onthaal</i>	115,588	0.67	0.13	0.57	0.29
Italy	<i>Telefono Amico</i>	54,999	0.41	0.06	0.85	0.09
Austria	<i>Telefonseelsorge Österreich</i>	54,687	0.69	0.09	0.58	0.33
Slovenia	<i>Zaupni telefon Samaritan</i>	28,956	0.47	0.01	0.90	0.09
Germany	<i>Nr. gegen Kummer (parents)</i>	19,339	0.88	0.11	0.81	0.08
China	<i>Hope 24 Line</i>	19,100	0.54	0.63	0.37	0.00
Israel	<i>SAHAR Emotional support chat</i>	4,771	0.69	0.42	0.57	0.02
Lebanon	<i>Embrace Lifeline</i>	3,537	0.54	0.67	0.27	0.06

Note: Helplines included in the call-level analysis of conversation topics during the first wave in Fig. 2. The sample includes calls recorded for the time from 1 January 2019 through 30 June 2020, where information on sex and age group of callers is available. Columns 4 to 7 show the shares of calls recorded for female callers and the three approximate age groups.

Table S4: Caller characteristics and topics in the estimation sample

	Share	Sum of calls	Observations
<i>Female</i>	0.623	1,413,105	2,269,620
<i>Age 0-30</i>	0.156	354,716	2,269,620
<i>Age 30-60</i>	0.630	1,429,318	2,269,620
<i>Age 60+</i>	0.214	485,586	2,269,620
<i>Fears</i>	0.136	289,498	2,123,773
<i>Loneliness</i>	0.206	425,151	2,066,884
<i>Suicide</i>	0.069	154,198	2,244,199
<i>Addiction</i>	0.041	91,581	2,215,734
<i>Violence</i>	0.045	100,102	2,215,751
<i>Physical health</i>	0.144	319,835	2,222,612
<i>Livelihood</i>	0.096	191,944	2,007,643
<i>Relationships</i>	0.360	753,049	2,094,275
Total calls	2,269,620		

Note: Overall distribution of calls included in the estimation sample (Fig. 2).

Table S5: Individual call level data

Country	Helpline	Fears	Loneli.	Suicide	Addict.	Violence	P. health	Liveli.	Relations.
Germany	<i>Telefonseelsorge Deutschland</i>	0.15	0.21	0.13	0.03	0.03	0.16	0.12	0.43
France	<i>S.O.S. Amitié</i>	0.08	0.17	0.04	0.04	0.03	0.13	0.06	0.28
Netherlands	<i>De Luisterlijn</i>	0.32	0.51	0.03	0.05	0.08	0.15	0.15	0.37
Germany	<i>Nr. gegen Kummer (children)</i>	0.04	0.05	0.00	0.06	0.11	0.05		
Belgium	<i>Tele-Onthaal</i>	0.05	0.20	0.09	0.09	0.07	0.30		0.44
Italy	<i>Telefono Amico</i>		0.07	0.04	0.07	0.10	0.03	0.02	0.45
Austria	<i>Telefonseelsorge Österreich</i>	0.07	0.26	0.01	0.02	0.01	0.05	0.03	0.06
Slovenia	<i>Zaupni telefon Samaritan</i>		0.19	0.01	0.04	0.02		0.02	
Germany	<i>Nr. gegen Kummer (parents)</i>		0.04	0.00	0.05	0.23	0.04	0.02	0.39
China	<i>Hope 24 Line</i>			0.02			0.06	0.09	0.30
Israel	<i>SAHAR Emotional support chat</i>	0.18	0.28	0.17	0.01	0.03		0.28	0.30
Lebanon	<i>Embrace Lifeline</i>			0.35					

Note: Overall shares of topics in the estimation sample, January 2019–June 2020 (Fig. 2), by helpline.

Table S6: Changing conversation topics following the pandemic outbreak

a)	(1) Fear	(2) Loneliness	(3) Suicide	(4) Addiction	(5) Violence	(6) Phys. Health	(7) Livelihood	(8) Relationships
<i>Post outbreak</i>	0.024 [0.018,0.029]	0.015 [0.011,0.018]	-0.001 [-0.003,0.001]	-0.002 [-0.004,-0.001]	-0.004 [-0.005,-0.002]	-0.003 [-0.006,-0.000]	-0.007 [-0.010,-0.003]	-0.025 [-0.032,-0.018]
# Helplines	7	10	12	10	10	9	9	9
# Observations	2,123,773	2,066,884	2,244,199	2,215,734	2,215,751	2,222,612	2,007,643	2,094,275
b)	(9) Fear	(10) Loneliness	(11) Suicide	(12) Addiction	(13) Violence	(14) Phys. Health	(15) Livelihood	(16) Relationships
<i>Post*Female*Age 0-30</i>	0.010 [-0.002,0.021]	0.007 [0.001,0.014]	-0.004 [-0.016,0.008]	-0.004 [-0.008,-0.001]	0.003 [-0.005,0.010]	0.008 [0.002,0.014]	0.006 [-0.000,0.011]	-0.010 [-0.020,0.001]
<i>Post*Female*Age 30-60</i>	0.029 [0.022,0.035]	0.014 [0.008,0.021]	-0.000 [-0.003,0.003]	-0.002 [-0.004,0.000]	-0.005 [-0.007,-0.002]	-0.006 [-0.009,-0.002]	-0.010 [-0.014,-0.006]	-0.023 [-0.032,-0.015]
<i>Post*Female*Age 60+</i>	0.031 [0.022,0.040]	0.017 [0.009,0.024]	0.002 [-0.003,0.006]	-0.003 [-0.005,-0.001]	-0.005 [-0.008,-0.002]	-0.019 [-0.026,-0.013]	-0.016 [-0.022,-0.010]	-0.044 [-0.054,-0.034]
<i>Post*Male*Age 0-30</i>	0.004 [-0.007,0.014]	0.016 [0.008,0.024]	-0.015 [-0.023,-0.007]	0.011 [0.007,0.016]	0.003 [-0.007,0.014]	0.008 [0.002,0.014]	0.001 [-0.006,0.008]	0.005 [-0.008,0.019]
<i>Post*Male*Age 30-60</i>	0.021 [0.014,0.027]	0.020 [0.014,0.025]	-0.003 [-0.006,0.001]	-0.004 [-0.007,-0.000]	-0.005 [-0.008,-0.003]	0.005 [0.000,0.010]	0.002 [-0.003,0.008]	-0.018 [-0.027,-0.010]
<i>Post*Male*Age 60+</i>	0.027 [0.018,0.035]	0.007 [-0.008,0.023]	-0.006 [-0.012,-0.000]	-0.007 [-0.011,-0.004]	-0.003 [-0.006,0.001]	-0.003 [-0.013,0.008]	-0.008 [-0.014,-0.003]	-0.026 [-0.036,-0.016]
<i>Female*Age 0-30</i>	0.085 [0.078,0.093]	-0.106 [-0.111,-0.102]	0.141 [0.134,0.148]	-0.041 [-0.044,-0.039]	0.056 [0.052,0.060]	-0.053 [-0.058,-0.048]	-0.054 [-0.058,-0.049]	0.094 [0.087,0.100]
<i>Female*Age 30-60</i>	0.039 [0.036,0.041]	-0.021 [-0.026,-0.017]	-0.003 [-0.005,-0.000]	-0.033 [-0.034,-0.031]	0.016 [0.015,0.018]	0.025 [0.021,0.028]	0.009 [0.007,0.012]	0.126 [0.122,0.130]
<i>Female*Age 60+</i>	0.023 [0.020,0.026]	0.086 [0.083,0.089]	-0.027 [-0.031,-0.024]	-0.049 [-0.051,-0.046]	-0.004 [-0.006,-0.003]	0.103 [0.097,0.109]	-0.032 [-0.037,-0.028]	0.063 [0.059,0.068]
<i>Male*Age 0-30</i>	0.066 [0.059,0.073]	-0.098 [-0.103,-0.093]	0.113 [0.108,0.119]	-0.017 [-0.021,-0.014]	0.045 [0.041,0.050]	-0.058 [-0.063,-0.053]	-0.039 [-0.043,-0.034]	0.071 [0.065,0.076]
<i>Male*Age 60+</i>	-0.013 [-0.016,-0.009]	0.133 [0.127,0.139]	0.004 [0.001,0.007]	-0.026 [-0.028,-0.023]	-0.009 [-0.011,-0.008]	0.069 [0.065,0.074]	-0.040 [-0.045,-0.036]	-0.065 [-0.072,-0.058]
# Helplines	7	10	12	10	10	9	9	9
# Observations	2,123,773	2,066,884	2,244,199	2,215,734	2,215,751	2,222,612	2,007,643	2,094,275

Note: Separate linear probability models, dependent variable is equal to one for calls related to the respective category. Estimated coefficients with 95% confidence intervals in brackets. The sample includes all calls during the time from 1 January 2019 to 30 June 2020. **a)** Average change post-outbreak, **b)** fully interacted model. Models include helpline fixed effects, interacted with year, week-of-year and day-of-week indicators, standard errors are clustered at the helpline-week level. See Methods, equations 2 and 3.

Table S7: Helpline calls in Germany and France during the first and subsequent waves

a) Germany	(1) Fear	(2) Loneliness	(3) Suicide	(4) Addiction	(5) Violence	(6) Phys. Health	(7) Livelihood	(8) Relationships
<i>First wave</i>	0.022 [0.014,0.029]	0.014 [0.009,0.020]	0.002 [-0.001,0.005]	-0.004 [-0.005,-0.002]	0.000 [-0.001,0.002]	-0.019 [-0.023,-0.016]	-0.014 [-0.018,-0.009]	-0.035 [-0.044,-0.025]
<i>Subseq. wave</i>	-0.001 [-0.005,0.003]	0.006 [0.001,0.011]	-0.006 [-0.009,-0.003]	-0.003 [-0.004,-0.001]	-0.000 [-0.002,0.001]	0.002 [-0.002,0.006]	0.000 [-0.003,0.003]	-0.018 [-0.023,-0.012]
# Observations	1,481,813	1,481,813	1,481,847	1,481,813	1,481,813	1,481,813	1,534,509	1,534,509
b) France	(1) Fear	(2) Loneliness	(3) Suicide	(4) Addiction	(5) Violence	(6) Phys. Health	(7) Livelihood	(8) Relationships
<i>First wave</i>	0.027 [0.020,0.035]	0.020 [0.015,0.025]	-0.002 [-0.004,-0.000]	0.001 [-0.002,0.003]	-0.004 [-0.006,-0.002]	-0.001 [-0.005,0.003]	-0.005 [-0.009,-0.001]	-0.026 [-0.039,-0.012]
<i>Subseq. wave</i>	0.012 [0.008,0.015]	0.008 [0.004,0.012]	-0.009 [-0.010,-0.007]	0.001 [-0.001,0.004]	-0.004 [-0.006,-0.003]	0.008 [0.003,0.012]	-0.002 [-0.004,0.001]	-0.011 [-0.020,-0.003]
# Observations	1,153,029	1,153,029	1,153,029	1,153,029	1,153,029	1,153,029	1,153,029	1,153,029

Note: Separate linear probability models, dependent variable is equal to one for calls related to the respective category. Estimated coefficients with 95% confidence intervals in brackets. The sample includes all calls during the time from 1 January 2019 to 30 June 2020. Models include year, week-of-year and day-of-week fixed effects, standard errors are clustered at the helpline-week level. See Materials and methods, equation 4.

Table S8: Lifeline calls across US states

	(1)	(2)	(3)	(4)
$\log(\text{COVID-19 case rate}+1)$	0.017 [0.012,0.022]	-0.014 [-0.023,-0.006]	-0.013 [-0.023,-0.004]	-0.012 [-0.023,-0.001]
$\log(\text{Stringency index}+1)$	0.013 [0.004,0.023]	0.028 [0.009,0.047]	0.018 [-0.002,0.039]	0.020 [-0.007,0.047]
$\log(\text{Income support index}+1)$	-0.009 [-0.014,-0.005]	-0.008 [-0.013,-0.002]	-0.006 [-0.012,-0.000]	-0.004 [-0.011,0.002]
State/province FE	YES	YES	YES	YES
Year FE	YES			
Month FE		YES	YES	
Week-of-year FE			YES	
Week FE				YES
# States/provinces	51	51	51	51
# Observations	5,909	5,909	5,909	5,909

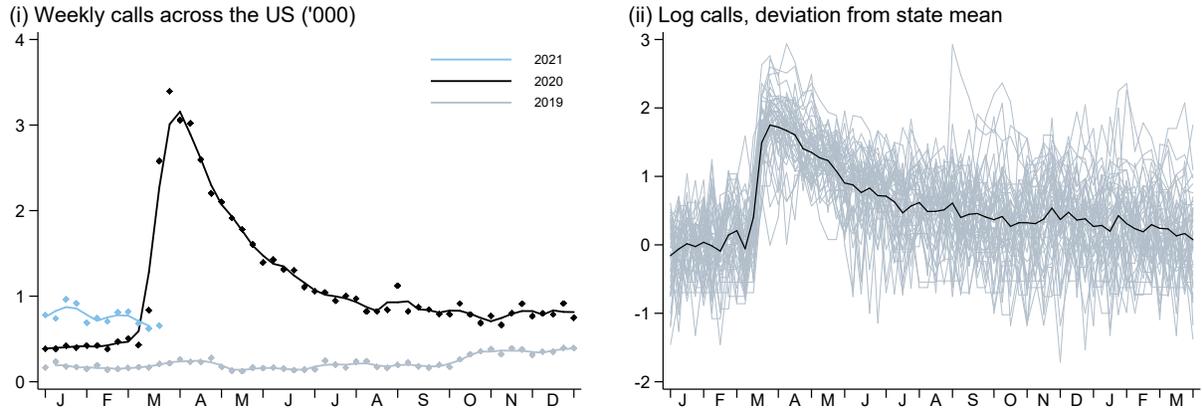
Note: Sub-national panel model including state and week fixed effects, dependent variable is $\log(\text{Lifeline calls}+1)$ and independent variables are measured in logs as well. Estimated coefficients with 95% confidence intervals, standard errors are clustered at the state-month level. See Methods and materials, equation 5.

Table S9: Lifeline calls across US states: Interacted model

	(1)	(2)	(3)	(4)
$\text{Jan-Aug}*\log(\text{COVID-19 case rate}+1)$	0.017 [0.008,0.027]	-0.009 [-0.021,0.003]	-0.008 [-0.021,0.004]	-0.007 [-0.021,0.006]
$\text{Jan-Aug}*\log(\text{Stringency index}+1)$	0.002 [-0.008,0.012]	0.024 [0.004,0.045]	0.019 [-0.003,0.041]	0.016 [-0.013,0.044]
$\text{Jan-Aug}*\log(\text{Income support index}+1)$	-0.003 [-0.013,0.007]	-0.010 [-0.020,0.001]	-0.013 [-0.024,-0.002]	-0.005 [-0.018,0.008]
$\text{Sep-Mar}*\log(\text{COVID-19 case rate}+1)$	-0.030 [-0.040,-0.020]	-0.027 [-0.041,-0.012]	-0.021 [-0.036,-0.006]	-0.022 [-0.038,-0.006]
$\text{Sep-Mar}*\log(\text{Stringency index}+1)$	0.078 [0.062,0.094]	0.031 [-0.035,0.098]	0.032 [-0.035,0.099]	0.029 [-0.039,0.097]
$\text{Sep-Mar}*\log(\text{Income support index}+1)$	-0.010 [-0.017,-0.003]	-0.009 [-0.015,-0.002]	-0.006 [-0.013,0.001]	-0.005 [-0.013,0.002]
State/province FE	YES	YES	YES	YES
Year FE	YES			
Month FE		YES	YES	
Week-of-year FE			YES	
Week FE				YES
# States/provinces	51	51	51	51
# Observations	5,909	5,909	5,909	5,909

Note: Sub-national panel model including state and week fixed effects, dependent variable is $\log(\text{Lifeline calls}+1)$ and independent variables are measured in logs as well. Estimated coefficients with 95% confidence intervals, standard errors are clustered at the state-month level. See Methods and materials, equation 6.

a) Disaster Distress Helpline



b) Estimation results: Log-log model with state and week fixed effects

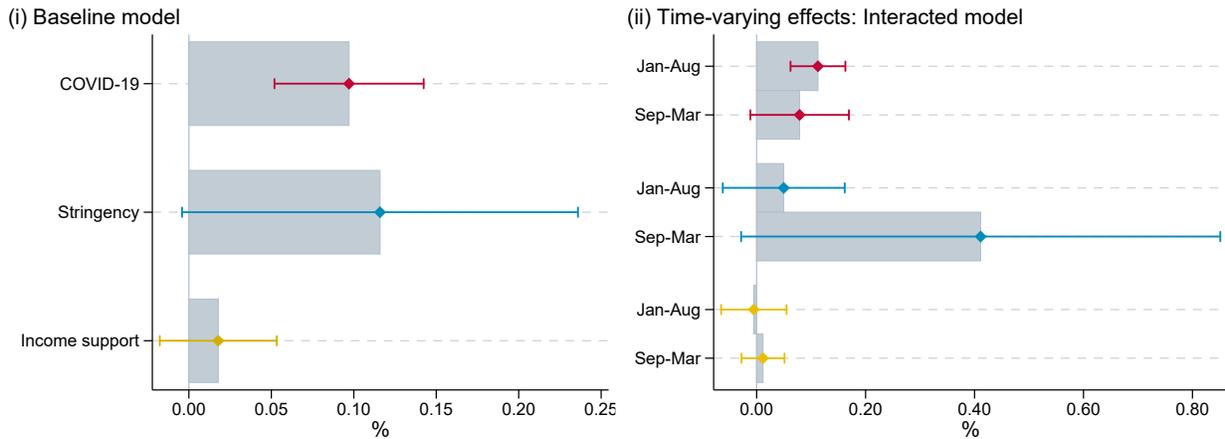


Figure S2: Calls to the Disaster Distress Helpline, COVID-19, and policy in the United States

a) Disaster Distress Helpline, (i) overall sum of weekly calls routed to centers by year, with 3-week moving average; (ii) deviation of log calls from state mean (gray), with overall weekly average (black). **b)** Sub-national panel model including state and week fixed effects, dependent variable is $\log(\text{calls} + 1)$ and independent variables are measured in logs as well. Estimated coefficients with 95% confidence intervals, standard errors are clustered at the state-month level. See Methods, equation 5.

Table S10: Disaster Distress Helpline calls across US states

	(1)	(2)	(3)	(4)
$\log(\text{COVID-19 case rate}+1)$	-0.057 [-0.082,-0.033]	0.158 [0.120,0.196]	0.139 [0.099,0.179]	0.097 [0.052,0.142]
$\log(\text{Stringency index}+1)$	0.203 [0.159,0.247]	0.254 [0.160,0.348]	0.219 [0.119,0.318]	0.116 [-0.004,0.236]
$\log(\text{Income support index}+1)$	0.135 [0.109,0.161]	0.055 [0.023,0.088]	0.046 [0.012,0.080]	0.018 [-0.018,0.053]
State/province FE	YES	YES	YES	YES
Year FE	YES			
Month FE		YES	YES	
Week-of-year FE			YES	
Week FE				YES
# States/provinces	51	51	51	51
# Observations	5,909	5,909	5,909	5,909

Note: Sub-national panel model including state and week fixed effects, dependent variable is $\log(\text{Disaster Distress calls}+1)$ and independent variables are measured in logs as well. Estimated coefficients with 95% confidence intervals, standard errors are clustered at the state-month level. See Methods and materials, equation 5.

Table S11: Disaster Distress Helpline calls across US states: Interacted model

	(1)	(2)	(3)	(4)
$\text{Jan-Aug}*\log(\text{COVID-19 case rate}+1)$	-0.040 [-0.092,0.011]	0.155 [0.110,0.201]	0.149 [0.104,0.195]	0.113 [0.062,0.163]
$\text{Jan-Aug}*\log(\text{Stringency index}+1)$	0.125 [0.082,0.168]	0.096 [0.006,0.186]	0.107 [0.011,0.204]	0.050 [-0.062,0.162]
$\text{Jan-Aug}*\log(\text{Income support index}+1)$	0.204 [0.153,0.255]	0.189 [0.133,0.244]	0.146 [0.086,0.207]	-0.005 [-0.065,0.055]
$\text{Sep-Mar}*\log(\text{COVID-19 case rate}+1)$	0.014 [-0.041,0.068]	0.069 [-0.011,0.150]	0.069 [-0.018,0.156]	0.079 [-0.011,0.169]
$\text{Sep-Mar}*\log(\text{Stringency index}+1)$	0.126 [0.045,0.207]	0.424 [-0.005,0.852]	0.415 [-0.020,0.850]	0.411 [-0.028,0.851]
$\text{Sep-Mar}*\log(\text{Income support index}+1)$	0.010 [-0.027,0.047]	0.008 [-0.029,0.046]	0.013 [-0.027,0.052]	0.012 [-0.028,0.051]
State/province FE	YES	YES	YES	YES
Year FE	YES			
Month FE		YES	YES	
Week-of-year FE			YES	
Week FE				YES
# States/provinces	51	51	51	51
# Observations	5,909	5,909	5,909	5,909

Note: Sub-national panel model including state and week fixed effects, dependent variable is $\log(\text{Disaster Distress calls}+1)$ and independent variables are measured in logs as well. Estimated coefficients with 95% confidence intervals, standard errors are clustered at the state-month level. See Methods and materials, equation 5.

Table S12: Daily calls by conversation topic, COVID-19, and policy in Germany and France

	(1) Fear	(2) Loneliness	(3) Suicide	(4) Addiction	(5) Violence	(6) Phys. Health	(7) Livelihood	(8) Relationships
$\log(\text{COVID-19 case rate}+1)$	0.012 [-0.001,0.026]	0.012 [0.001,0.023]	-0.024 [-0.035,-0.014]	-0.005 [-0.019,0.009]	-0.006 [-0.017,0.006]	0.023 [0.013,0.033]	0.012 [0.001,0.022]	0.003 [-0.006,0.011]
$\log(\text{Stringency index}+1)$	0.093 [0.057,0.128]	0.039 [0.010,0.067]	0.035 [0.011,0.060]	0.019 [-0.011,0.048]	-0.014 [-0.038,0.010]	0.011 [-0.013,0.035]	0.003 [-0.018,0.025]	-0.007 [-0.024,0.010]
$\log(\text{Income support index}+1)$	-0.042 [-0.061,-0.024]	-0.024 [-0.040,-0.008]	-0.020 [-0.033,-0.006]	-0.004 [-0.023,0.015]	0.002 [-0.018,0.022]	-0.026 [-0.041,-0.011]	-0.016 [-0.030,-0.002]	-0.009 [-0.021,0.004]
# Observations	1,631	1,631	1,631	1,631	1,631	1,631	1,631	1,631

Note: Coefficients from separate models by topic with 95% confidence interval. Dependent variable is the natural logarithm of the respective number of calls plus 1. COVID-19 infections per 100,000 population, government response stringency, and income support are defined as logarithmic measures as well. All models include helpline indicators, interacted with year, week-of-year, and day-of-week fixed effects. The sample includes all calls featuring at least one recorded conversation topic to Telefonseelsorge (Germany) and S.O.S. Amitié (France), from January 1, 2019 to March 31, 2021, aggregated to 1,631 daily totals. Standard errors are clustered at the helpline-week level. See Methods, equation (7).

431 **Supplementary materials: Individual helplines, by country**

432 **Austria**

433 Telefonseelsorge Österreich is an Austria-wide organization with nine counseling centers that can be reached
434 free of charge, 24 hours a day. The first helpline center was established 1966 in Linz as an offshoot of Tele-
435 fonsseelsorge Germany, sponsors are the Catholic and Protestant churches, as well as a private association in
436 Vorarlberg. The team consists of around 25 full-time and 800 trained volunteer counselors. Originally founded
437 with a focus on suicide prevention, today the helpline deals more broadly with acute crisis intervention and
438 coping with everyday crises. Further information is available online at www.telefonseelsorge.at.

439 We received data on calls answered at the helpline center in Vienna, for the time from January 1, 2019
440 to June 30, 2020. The collected information includes the sex and age group of callers, as well as the primary
441 conversation topic. Note that, in contrast to most other helplines included in this study, only one exclusive
442 topic is recorded for each call. Overall, topics are classified into 10 broad groups, and further distinguished
into 46 finer categories.

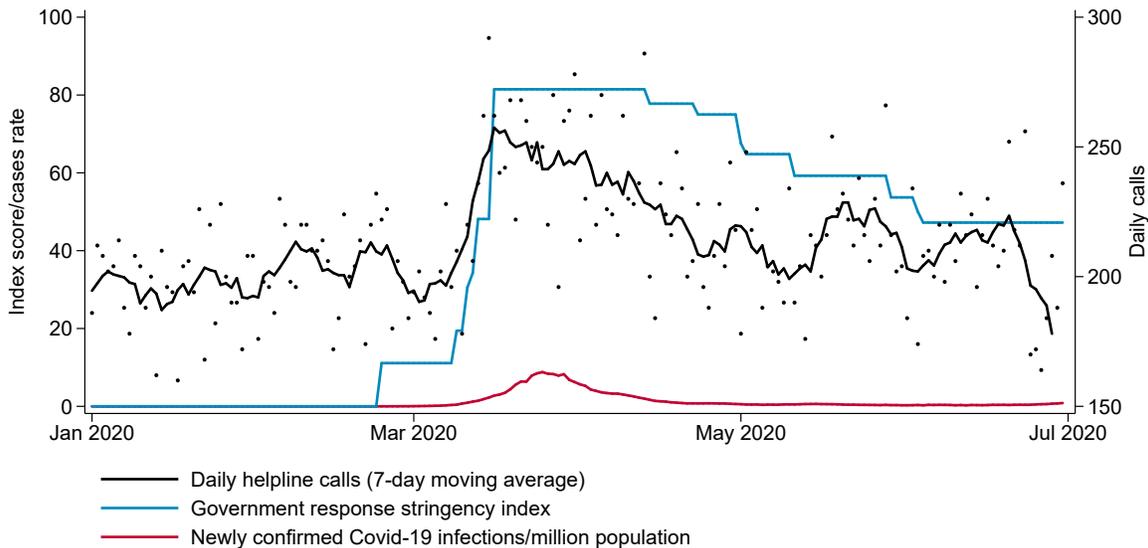


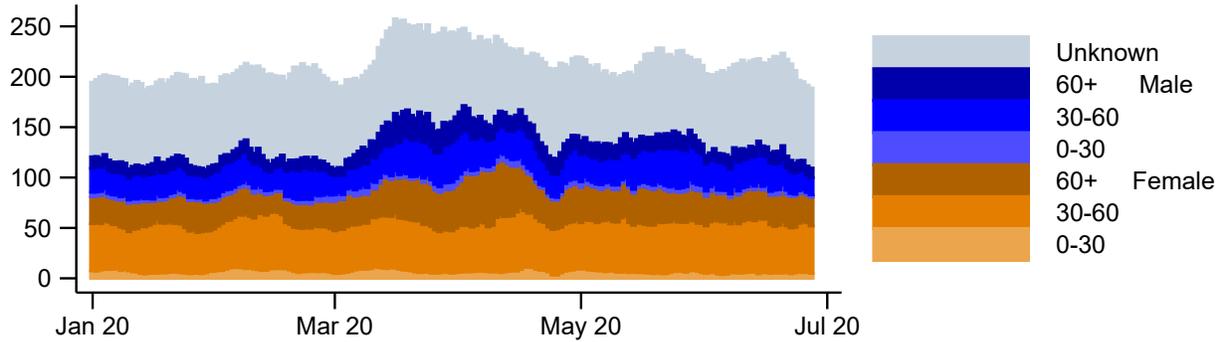
Figure S3: Daily calls to Telefonseelsorge, Covid-19 incidence and government response in Austria

443

Table S13: Classification of conversation topics: Telefonseelsorge, Austria

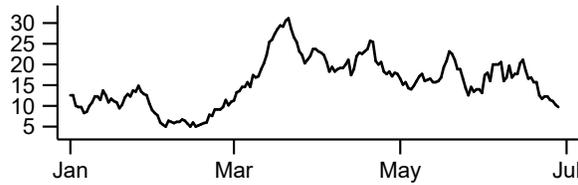
Topic	Helpline-specific topic definitions
<i>Fears</i>	Ängste/Zwänge
<i>Loneliness</i>	Einsamkeit/Isolation/Alltag
<i>Suicide</i>	Suizid; Suizidgefährdete; Sorge um Suizidgefährde
<i>Addiction</i>	Sucht; Alkohol; andere Suchterkrankung; Sorge um Suchtkranke
<i>Violence</i>	Gewalt/Missbrauch gegen Erwachsene; gegen Kinder
<i>Physical health</i>	Krankheit/Gesundheit (körperlich)
<i>Livelihood</i>	Arbeitslos/Arbeitssuche; Probleme in Ausbildung/Beruf
<i>Relationships</i>	Partnerschaft; Erziehung; Schwangerschaft/Abtreibung

a) Daily calls by age and sex of caller (seven-day moving average)

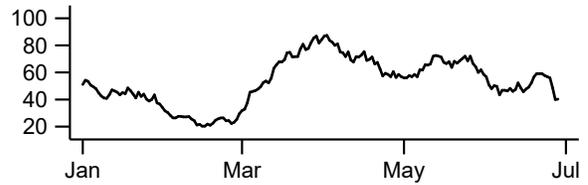


b) Daily calls by topic (seven-day moving average)

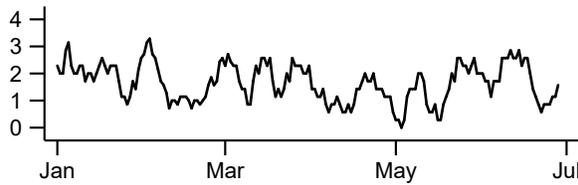
(i) Fears (incl. of infection)



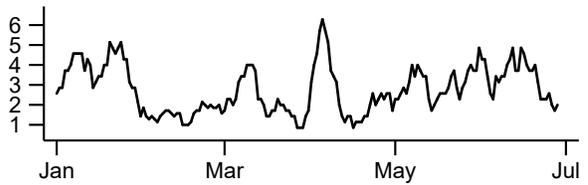
(ii) Loneliness



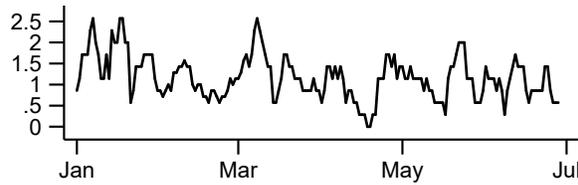
(iii) Suicide



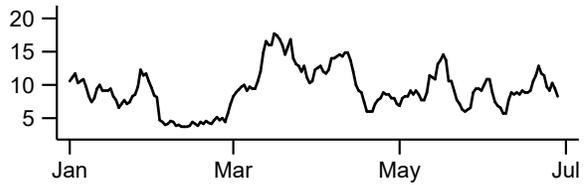
(iv) Addiction



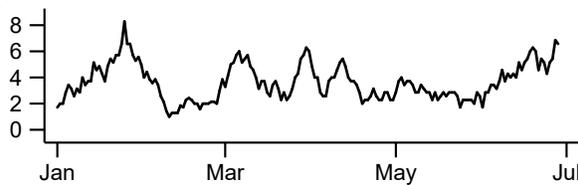
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

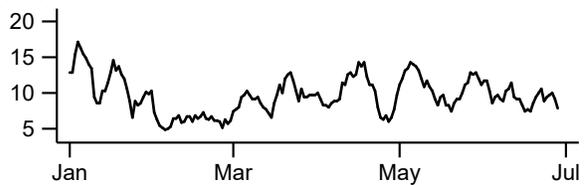


Figure S4: Caller characteristics and conversation topics, Telefonseelsorge Austria

444 **Belgium**

445 Tele-Onthaal has a tele-reception service in every Flemish province and in Brussels and the services work
446 together within the Federation of Tele Reception Services in Flanders (Federatie van tele-onthaaldiensten
447 Vlaanderen). The five centers are Verband der Fernempfangsdienste in Flandern, Tele-Empfang Limburg
448 (Limburg), Teleempfang Ostflandern (East Flanders), Teleempfang Flemisch Brabant und Brüssel (Flemish
449 Brabant & Brussels Capital Region), Tele-Welcome West Flanders, and Teleempfang Antwerpen. Each service
450 has its own legal structure (non-profit organization). The service is subsidized by the Flemish government
451 (Decree General Welfare Work). Tele-Onthaal offers 24/7 telephone advice anonymously. Chatting is possible
452 7 days every evening from 6 p.m. to 11 p.m. and on Wednesday and Sunday afternoons from 3 p.m. Further
453 information is available online at www.tele-onthaal.be.

454 We received data on individual calls received during the time from January 1, 2019 to June 30, 2020,
455 including information on caller's sex, age group, and up to 3 non-exclusive conversation topics. Additionally,
456 counselors collect information on up to 4 psychological disorders.

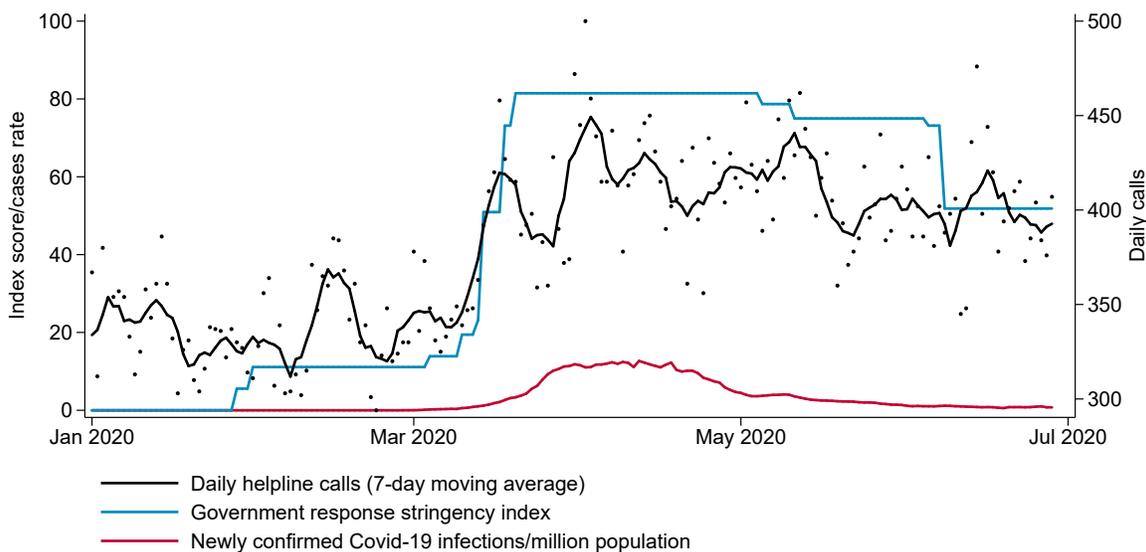
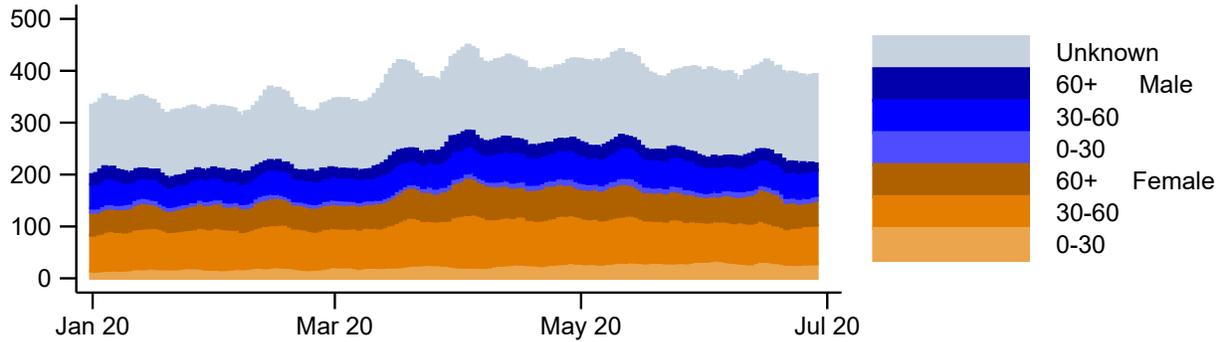


Figure S5: Daily calls to Tele-Onthaal, Covid-19 incidence and government response in Belgium

Table S14: Classification of conversation topics: Tele-Onthaal, Belgium

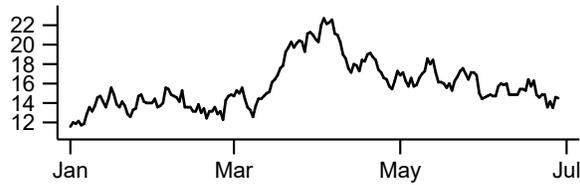
Topic	Helpline-specific topic definitions
<i>Fears</i>	Disorder: Angsten/fobieën
<i>Loneliness</i>	Eenzaamheid
<i>Suicide</i>	Zelfdoding
<i>Addiction</i>	Afhankelijkheid/Verslaving; Disorder: Verslaving
<i>Violence</i>	Slachtofferbeleving
<i>Physical health</i>	Gezondheid
<i>Livelihood</i>	
<i>Relationships</i>	Relaties

a) Daily calls by age and sex of caller (seven-day moving average)

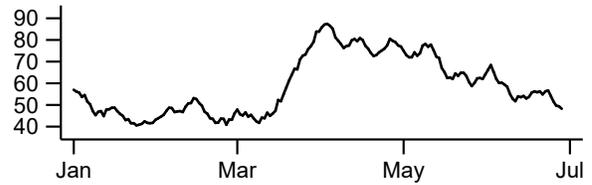


b) Daily calls by topic (seven-day moving average)

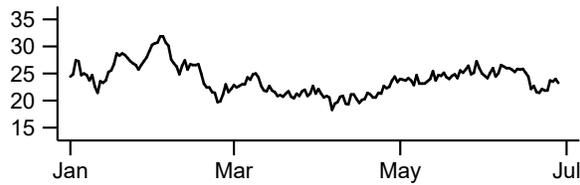
(i) Fears (incl. of infection)



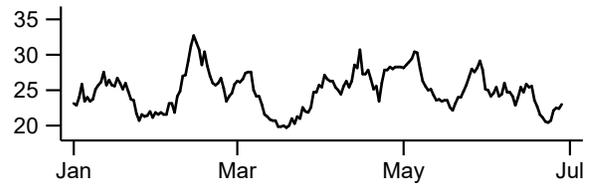
(ii) Loneliness



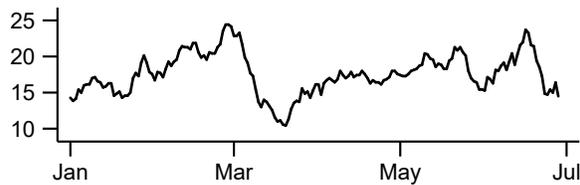
(iii) Suicide



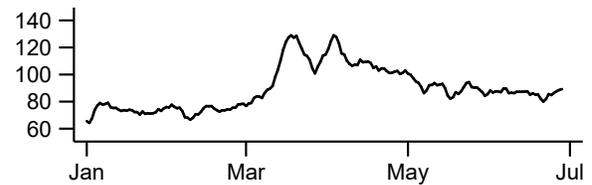
(iv) Addiction



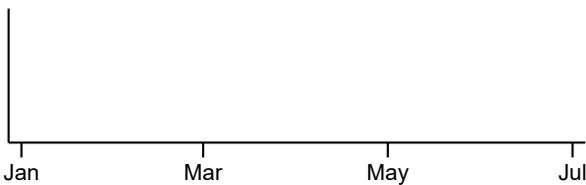
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

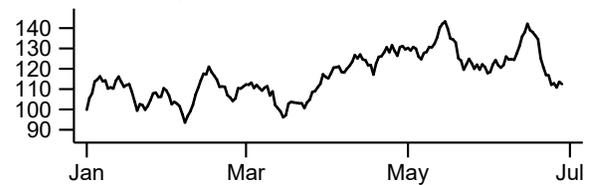


Figure S6: Caller characteristics and conversation topics, Tele-Onthaal, Belgium

457 **Bosnia and Herzegovina**

458 Plavi Telefon was established in 1990 and is part of the Blue Phone Association. The helpline is connected
459 to the Croatian Plavi Telefon and consists of two employees and at least 4 volunteers each day. The helpline
460 did not change their services during the pandemic but built up psychotherapist supervision for volun-
461 teers and consultations with clients led by psychotherapists. Further information is available online at
462 www.facebook.com/PlaviTelefonBanjaluka.

463 We received data on individual calls, covering the time from January 1, 2019 to October 23, 2020.

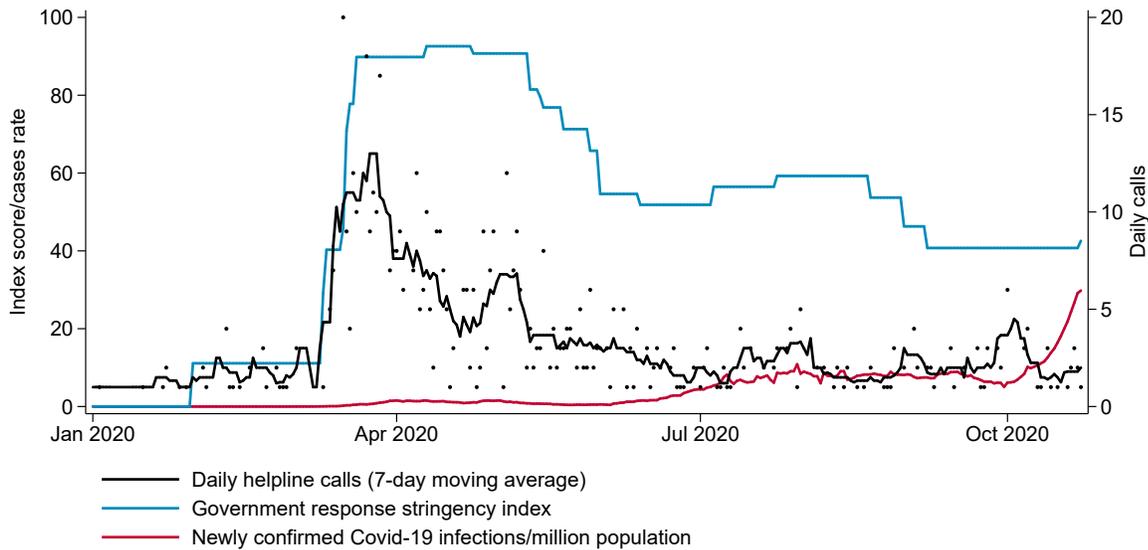


Figure S7: Helpline calls, COVID-19, and government response in Bosnia

464 **China**

465 The Chinese helpline Hope 24 was officially launched in Shanghai in December 2012. From December 2013,
466 the line started to cover all of China, and as of today, there are 21 switch rooms waiting for calls. An average
467 of 20 volunteers answer calls every day on the toll free number. The helpline belongs to the Public Welfare
468 Department of Beijing Dagan Institute of Psychosomatic Medicine. During the pandemic, an additional line
469 was opened as the number of calls was increasing during March, April and May in 2020. Similar hotlines were
470 opened throughout the country during the epidemic. For additional information, visit www.hope9995.com.

471 We received data on individual calls, covering the time from January 1, 2019 to June 25, 2020. The recorded
472 information includes caller sex and age group, as well as the main reason for consultation and the psychological
473 trauma level, where one exclusive reason and level is selected by counselors for each call.

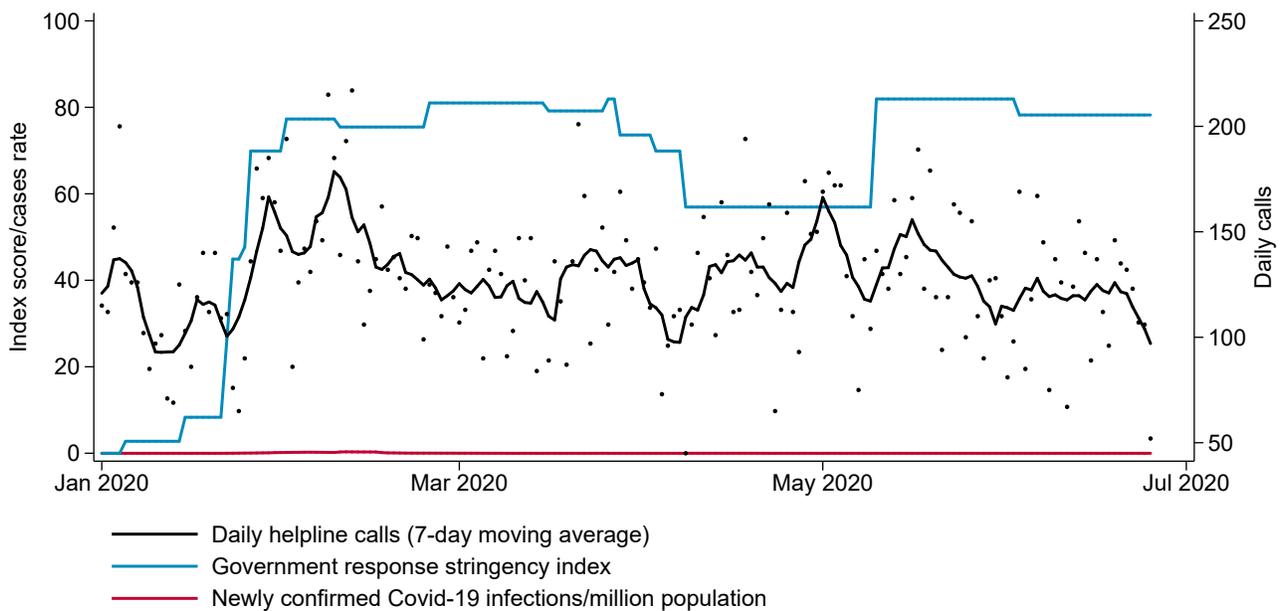
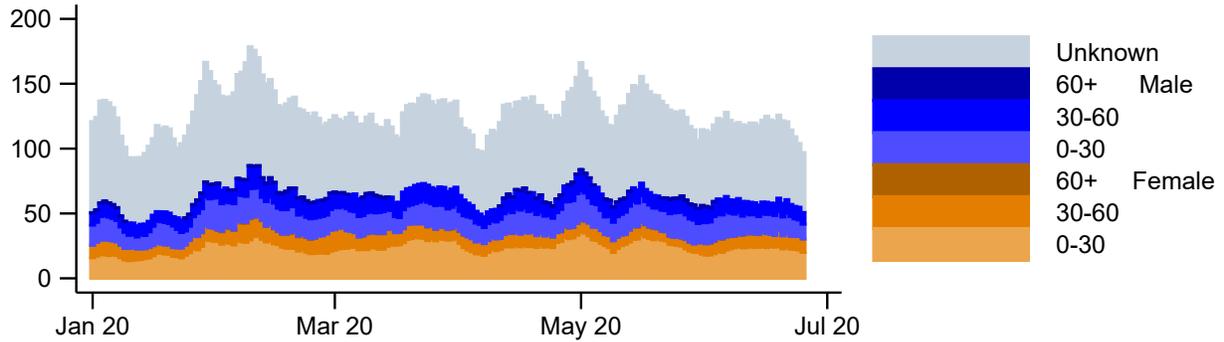


Figure S8: Daily calls to the Hope 24 Line, COVID-19, and government response in China

Table S15: Classification of conversation topics: Hope 24 Line, China

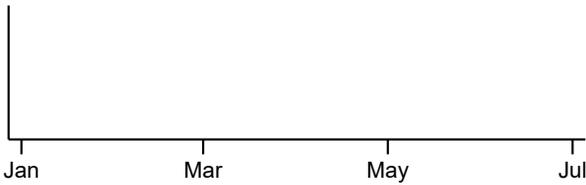
Topic	Helpline-specific topic definitions (translated from Mandarin)
<i>Fears</i>	
<i>Loneliness</i>	
<i>Suicide</i>	Psychological trauma level: Suicidal ideation
<i>Addiction</i>	
<i>Violence</i>	
<i>Physical health</i>	Reason for consultation: Disease and disability
<i>Livelihood</i>	Reason for consultation: Job-related; Financial issues
<i>Relationships</i>	Reason for consultation: Relationship; Friendship; Marriage; Issues with children; Issues with parents

a) Daily calls by age and sex of caller (seven-day moving average)

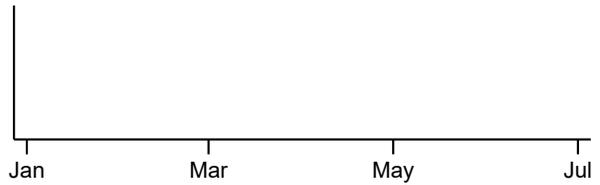


b) Daily calls by topic (seven-day moving average)

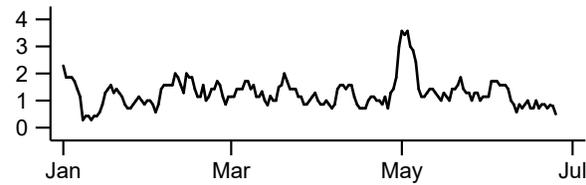
(i) Fears (incl. of infection)



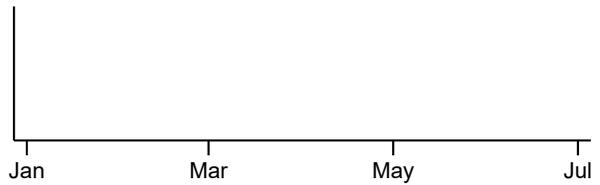
(ii) Loneliness



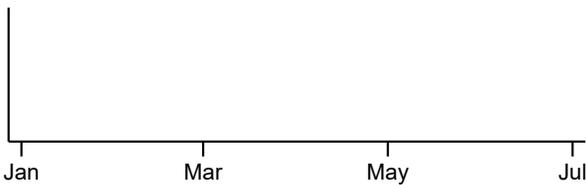
(iii) Suicide



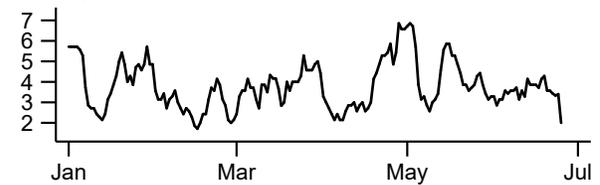
(iv) Addiction



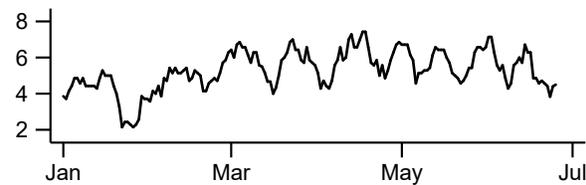
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

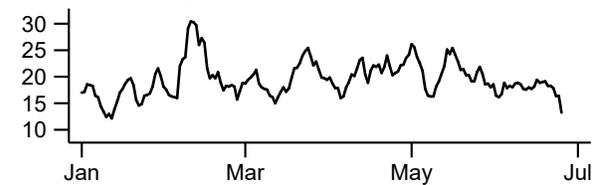


Figure S9: Caller characteristics and conversation topics, Hope 24 Line, China

474 **Czech Republic**

475 The helpline Modrá linka started in December 1994. There is no specific focus, and everyone in crisis can call.
476 Five full time employees and 21 part time employees offer mail, chat, skype and classical phone counseling
477 from 9 am to 9 pm every day. Employees are trained in crisis assistance trainings (minimum 100 hours) or
478 have obtained a university degree (psychologists, educators, or social workers). Modrá linka further offers
479 accredited courses aimed at crisis assistance for other organizations. Callers pay only the own tariff. Modrá
480 linka is an Ifotes member.

481 We have detailed information on answered contacts, covering the time from January 1, 2019 to June 28,
482 2020. Around the outbreak of the pandemic, capacity was extended and the helpline started to operate 24
483 hours a day. Conversation topics and characteristics are available only for selected calls, the sex of callers is
484 not recorded. Further information is available online at www.modralinka.cz.

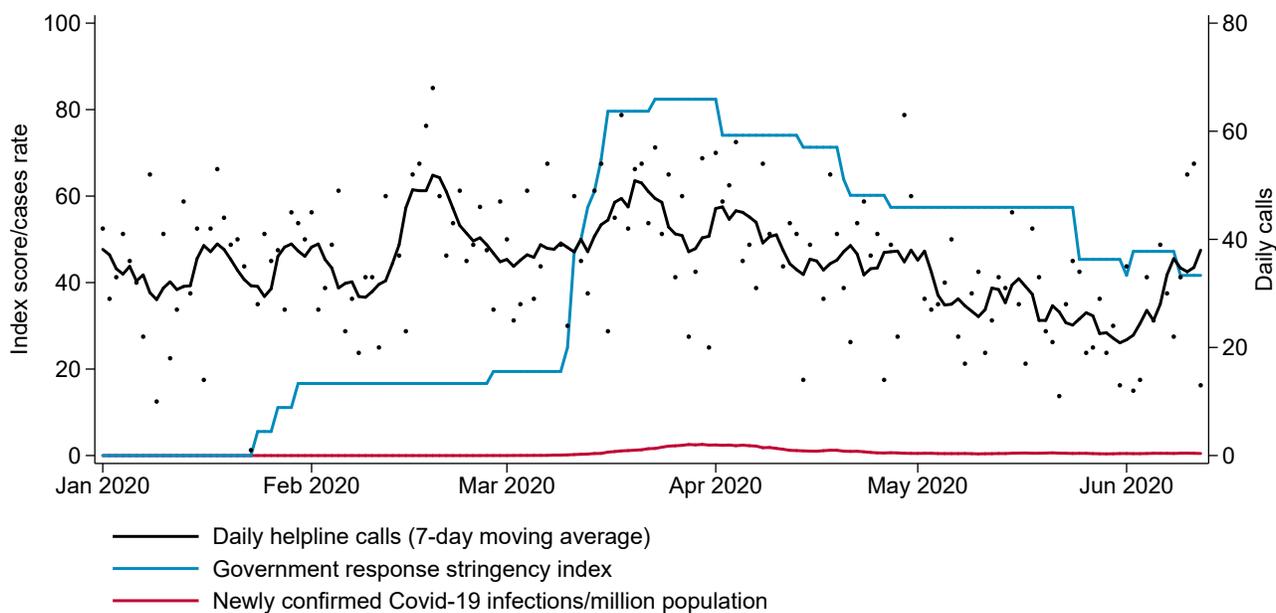


Figure S10: Modrá linka , COVID-19, and government response in Czech Republic

485 **Finland**

486 MIELI Mental Health Finland is operating 24/7 each day, providing help for people in crisis with a special focus
487 in preventing suicide. Established in 1897, MIELI is the oldest non-profit mental health organisation in the
488 world. Since April 2019, the service is offered on a new, cheaper number where callers pay only the regular
489 phone operator fees. MIELI's operations are primarily financed by the Finnish State, and the amount of crisis
490 workers and volunteers depends on the time of the day: just one or two crisis workers in the early morning
491 hours, eight or more people in the evening, which are the most active hours. With the start of the pandemic
492 mid-march), higher capacity adjustment was implemented and the helpline has been enabling remote work
493 for both professional crisis workers and volunteer incl. acquiring about 200 SIM cards. Crisis workers' working
494 hours shifted from face-to-face counselling to helpline, resulting in a higher amount of answered calls and
495 extra hours in the helpline (between March 16 and June 20, 1,372 extra hours by volunteers and 1,054 hours
496 by employees). In addition, they received a lot of publicity in February 2020 with the connection of Crisis
497 Helpline to the public emergency number 112 application, which has been downloaded by almost 1/3 of Finns.
498 The record of call attempts in 2019 was approximately 212,000 calls. Call volumes increased by 42 % in early
499 October 2020, which amounts to a 42% increase compared to the same period 2019. Calls from young women
500 (18-29 years old) have increased most noticeably. For further information, visit www.mieli.fi

501 We have obtained daily series of call volumes for the period January 1, 2019 to June 12, 2020, as well as
502 separate series by caller sex and conversation topic.

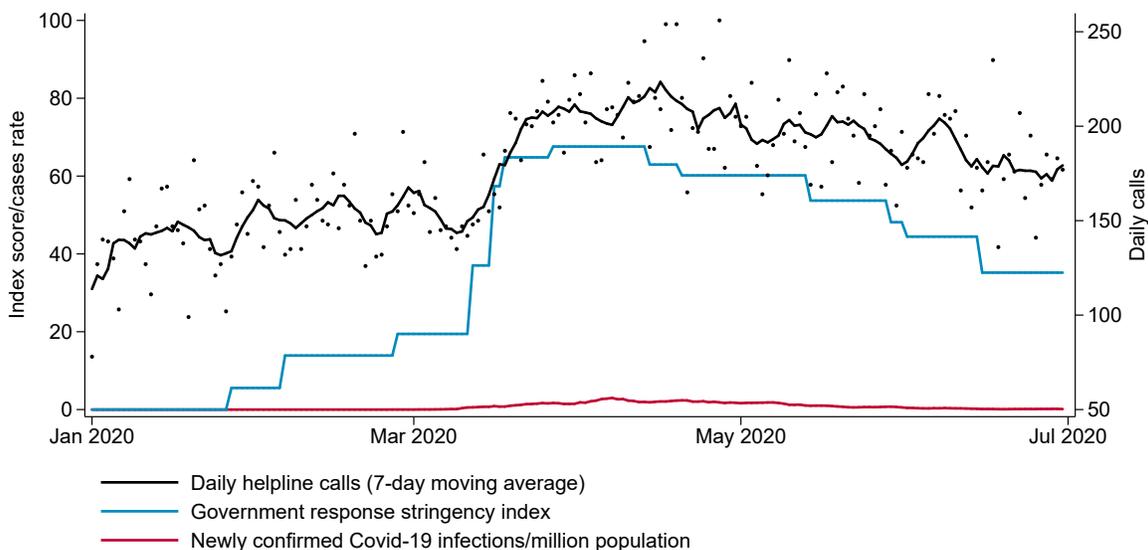


Figure S11: Daily calls to MIELI, COVID-19, and government response in Finland

503 **France**

504 S.O.S. Amitié consists of a federation of several regional charitable organizations that was founded 1974, two
505 years before the helpline was established. The aim is to provide emotional support to anyone in emotional
506 distress, struggling to cope, or at risk of suicide via listening service by telephone, messaging and chat. S.O.S.
507 Amitié is a federation of 44 regional associations bringing together 50 listening stations. The anonymous listening
508 on the phone is offered 24 hours a day, 7 days a week and in chat every day from 1 p.m. to 3 a.m. For further
509 information, visit www.sos-amitie.com.

510 We received data on individual calls received for the time from January 1, 2019 to March 31, 2021, including
511 information on caller's sex, age group, and conversation topics. Counselors select up to three topics for each
the conversation, and topic categories are therefore non-exclusive.

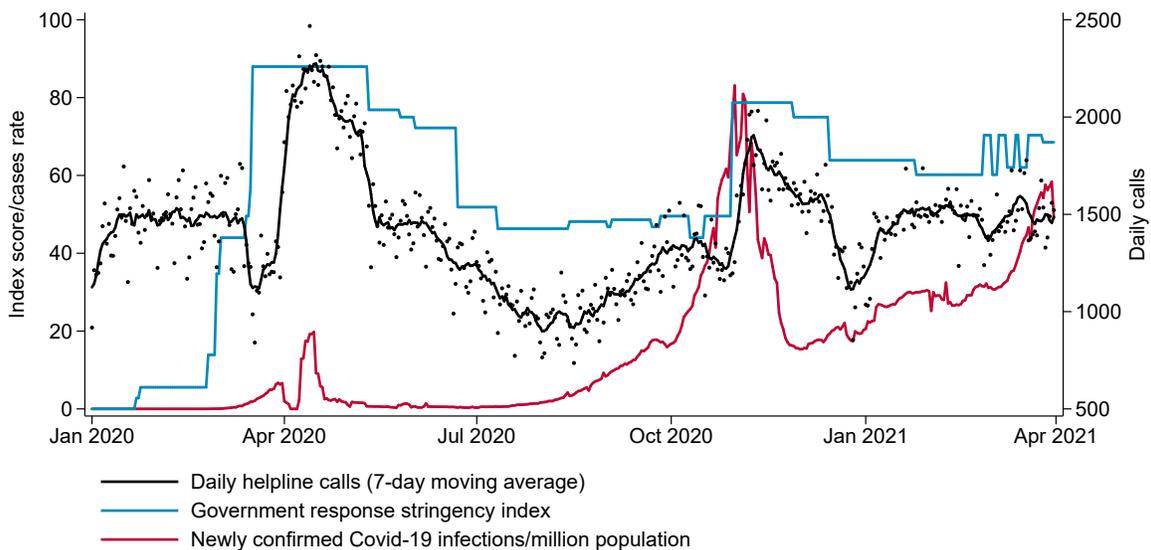


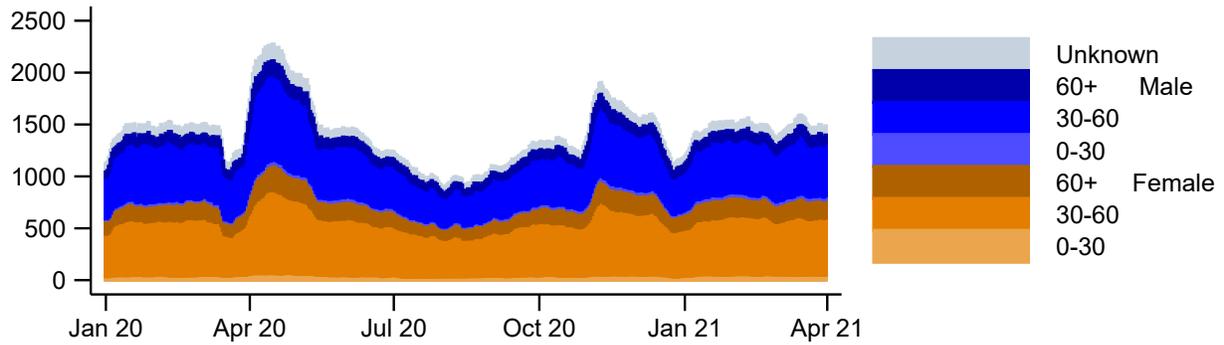
Figure S12: Daily calls to S.O.S. Amitié, Covid-19 incidence and government response in France

512

Table S16: Classification of conversation topics: S.O.S. Amitié, France

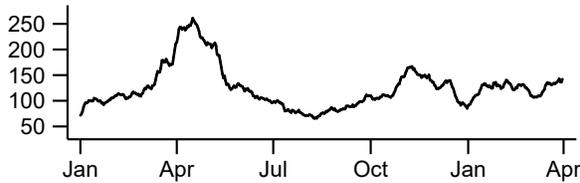
Topic	Helpline-specific topic definitions
<i>Fears</i>	Peur Anxiété; Peur de la mort; Crise Angoisse
<i>Loneliness</i>	Sentiment de solitude; Isolement social; Autre (Solitude)
<i>Suicide</i>	Suicidaire; Suicidant; Conduite suicidaire
<i>Addiction</i>	Alcool; Drogue; Tabaco; Poly addiction; Autre (Addiction)
<i>Violence</i>	Violence; Maltraitance; Harcèlement exclusion/sexuel; Autre (Abus sexuel/Violence)
<i>Physical health</i>	Maladie; Longue maladie; Physique; Handicap physique; Autre (Physique)
<i>Livelihood</i>	Emploi protégé; Emploi précaire; Sans logement; Mal logé; Surendettement; Autre (travail; logement; finances)
<i>Relationships</i>	Relations parents enfants; Conflit entre personnes; Fratrie; Curatelle, tutelle; Voisinage; Famille recomposée; Familiale; Couple; Conjugale; Problèmes sentimentaux; Divorce Séparation; Autre (difficulté de relation)

a) Daily calls by age and sex of caller (seven-day moving average)

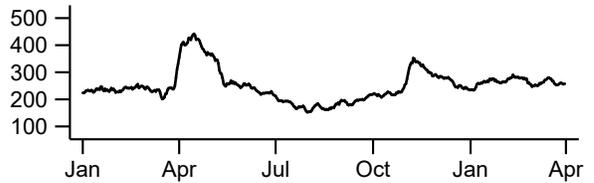


b) Daily calls by topic (seven-day moving average)

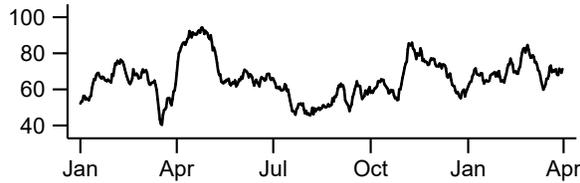
(i) Fears (incl. of infection)



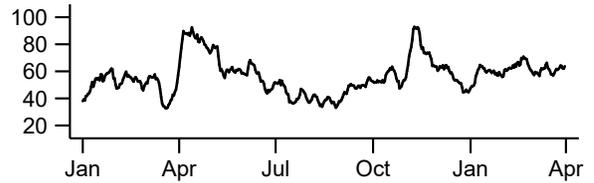
(ii) Loneliness



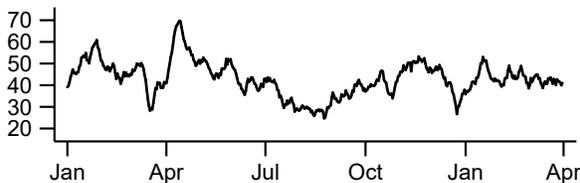
(iii) Suicide



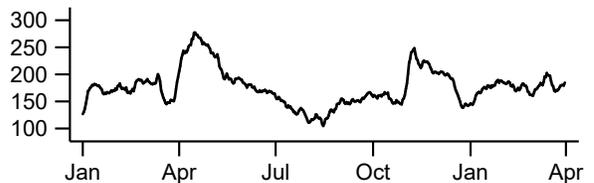
(iv) Addiction



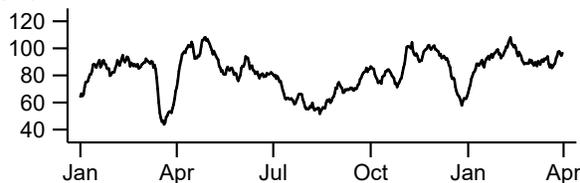
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

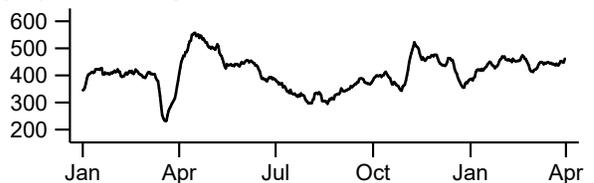


Figure S13: Caller characteristics and conversation topics, S.O.S. Amitié, France

513 **Germany I**

514 The Telefonseelsorge is the by far the largest telephone and online emergency helpline in Germany, with over
515 100 centers in Germany. It is nationally well known, free, anonymous, partly government-funded, and the only
516 facility in Germany to offer telephone conversations both day and night (24 hours). The Telefonseelsorge is
517 under responsibility of the Protestant and the Catholic church and can be reached via phone, as well as online
518 via mail and chat on the central website. Further information is available online at www.telefonseelsorge.de)

519 We received a data on individual calls from January 1, 2019 to March 31, 2021, including the sex and age
520 group of callers, as well as their living situation, occupational status, and call duration. For each call, counselors
521 also record conversation topics and caller issues, with no limit to the number of selected topics. From 1 March
522 2020 onwards, an additional variable on the 'current topic' records whether calls are related to the COVID-19
523 pandemic.

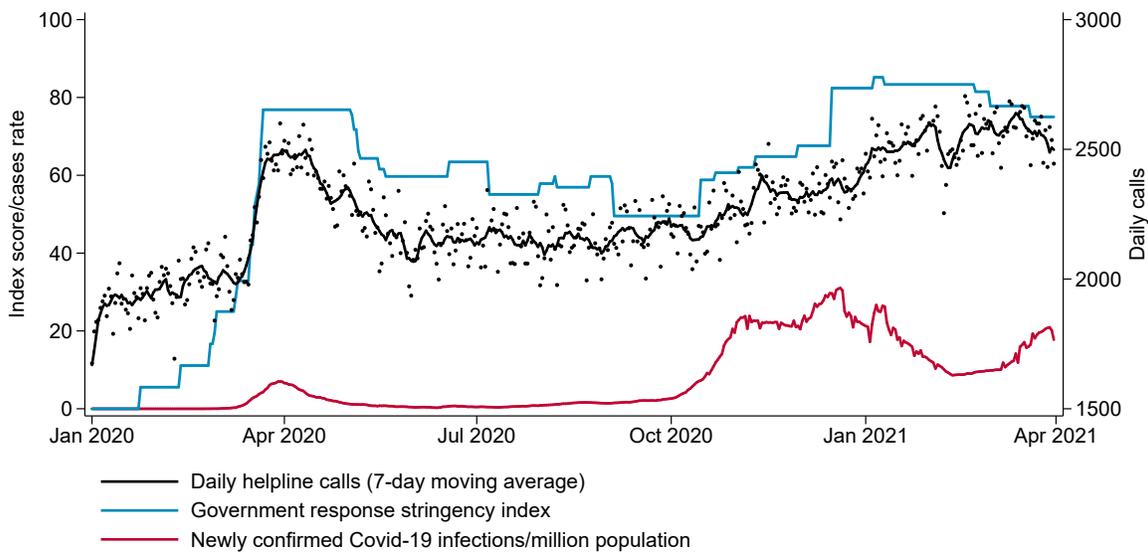
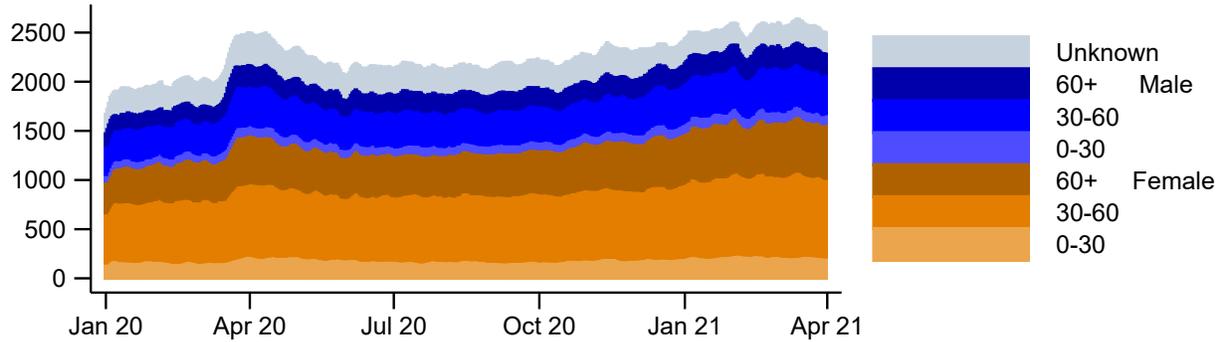


Figure S14: Daily calls to Telefonseelsorge, COVID-19, and government response in Germany

Table S17: Classification of conversation topics: Telefonseelsorge, Germany

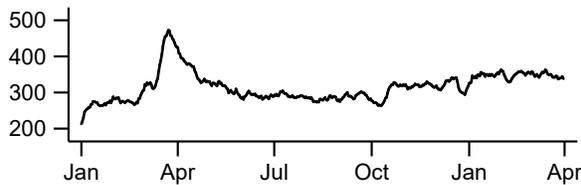
Topic	Helpline-specific topic definitions
<i>Fears</i>	Ängste
<i>Loneliness</i>	Einsamkeit/Isolation
<i>Suicide</i>	Suizidgedanken; Suizidabsichten; Suizidversuche; Suizidalität des Ratsuchenden; Suizidalität einer anderen Person
<i>Addiction</i>	Sucht
<i>Violence</i>	Körperliche/Seelische Gewalt; Sexualisierte Gewalt
<i>Physical health</i>	Körperliches Befinden/Beschwerden
<i>Livelihood</i>	Arbeitssituation; Arbeitslosigkeit/Arbeitssuche; Wohnung/Wohnumfeld; Armut; Finanzfragen/Erbschaft/Unterhalt
<i>Relationships</i>	Leben in Partnerschaft; Partnersuche/Partnerwahl; Trennung; Familiäre Beziehungen; Schwangerschaft/Kinderwunsch; Elternschaft/Erziehung; Virtuelle Beziehungen; Alltagsbeziehungen/Nachbarn

a) Daily calls by age and sex of caller (seven-day moving average)

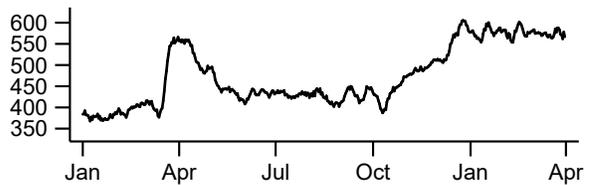


b) Daily calls by topic (seven-day moving average)

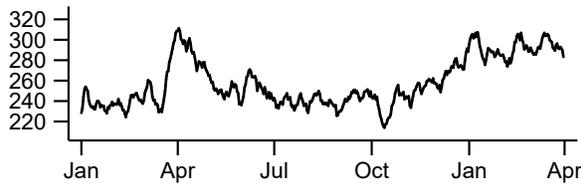
(i) Fears (incl. of infection)



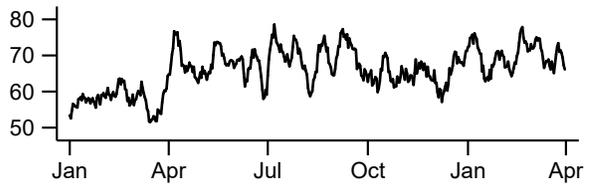
(ii) Loneliness



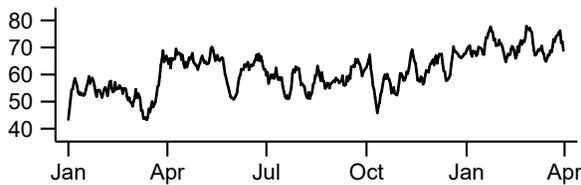
(iii) Suicide



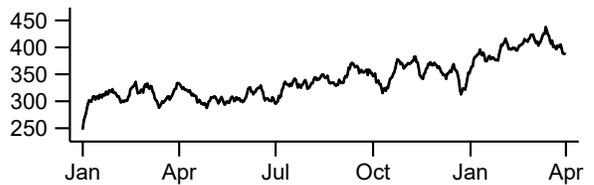
(iv) Addiction



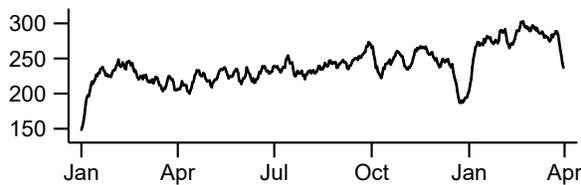
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

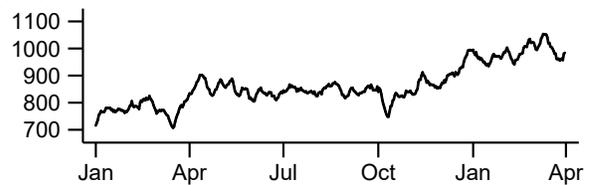
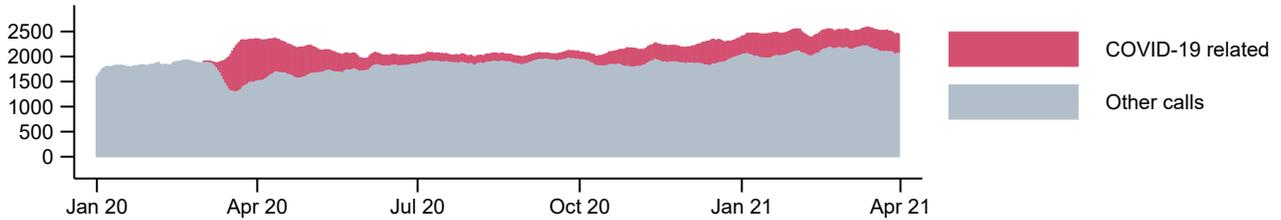


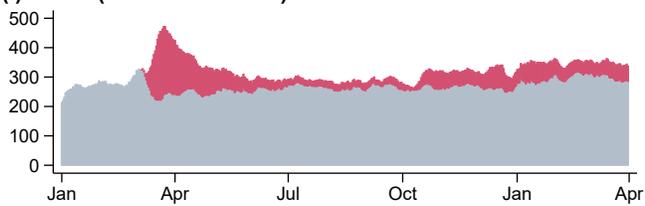
Figure S15: Caller characteristics and conversation topics, Telefonseelsorge, Germany

a) Daily calls related to COVID-19 (seven-day moving average)

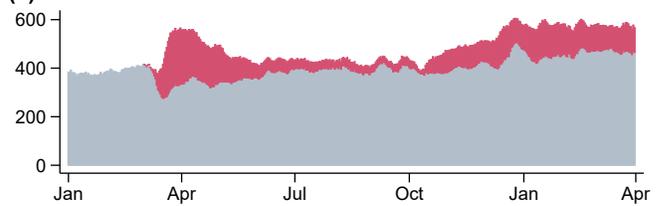


b) COVID-19 related calls by topic

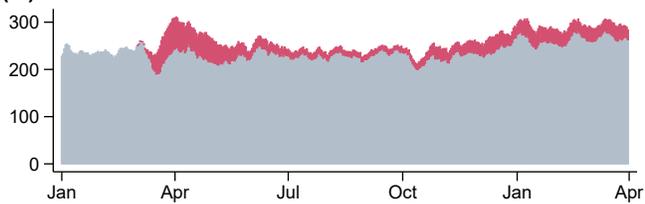
(i) Fears (incl. of infection)



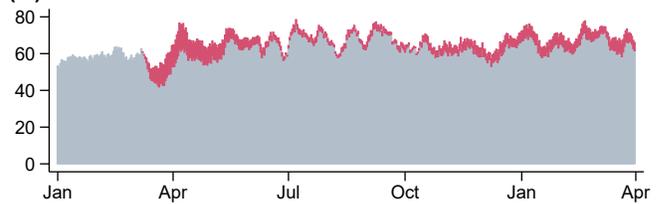
(ii) Loneliness



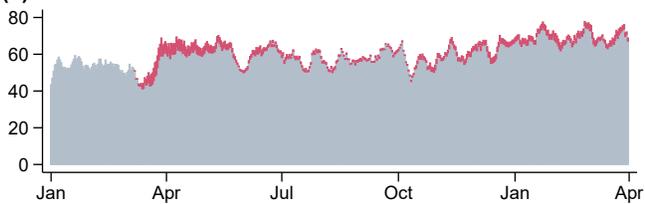
(iii) Suicide



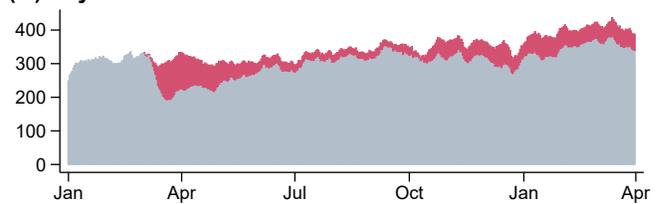
(iv) Addiction



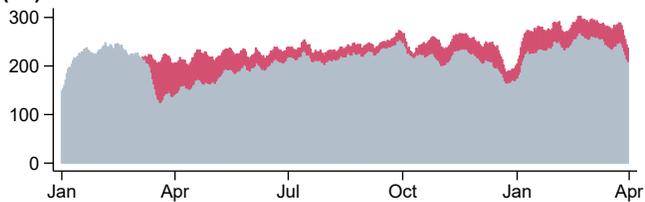
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

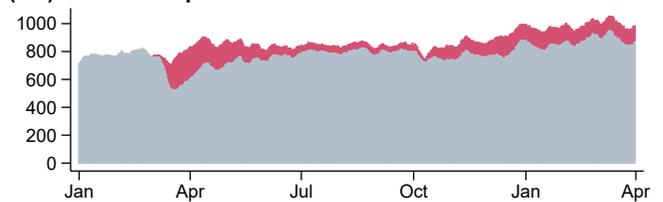
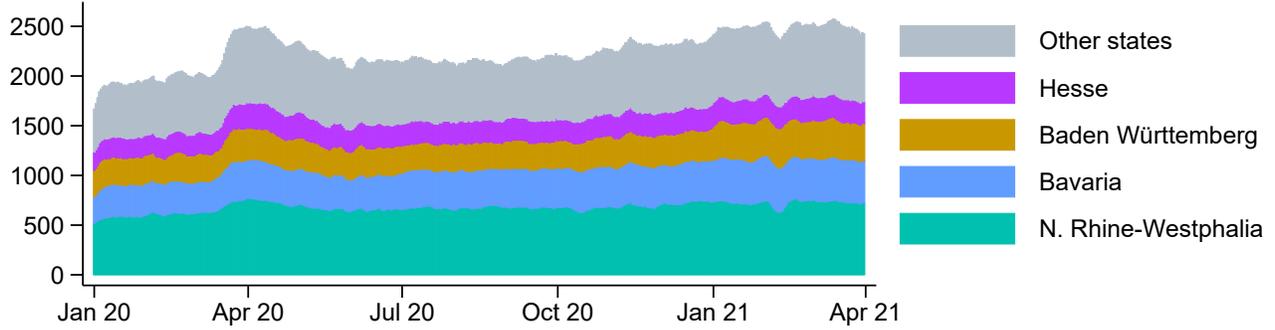
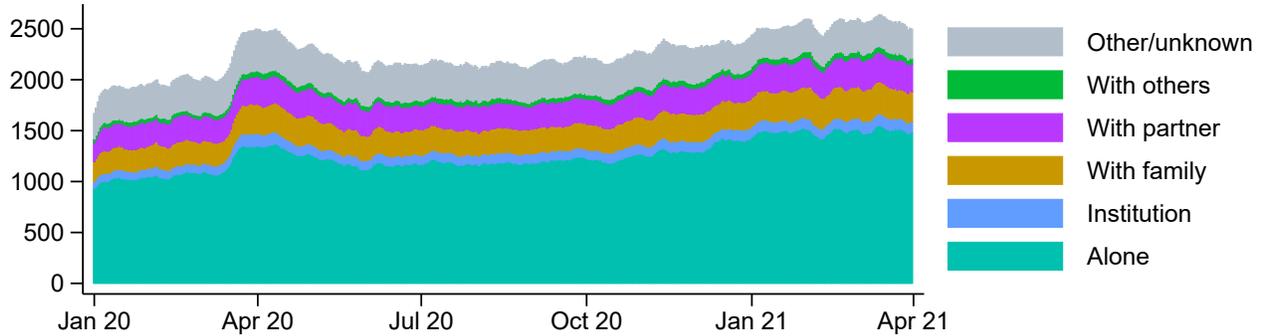


Figure S16: Helpline calls related to COVID-19, overall and by topic
 Helpline calls in 2020 and 2021, Telefonseelsorge...

a) State of receiving helpline center



b) Living situation



c) Occupational status

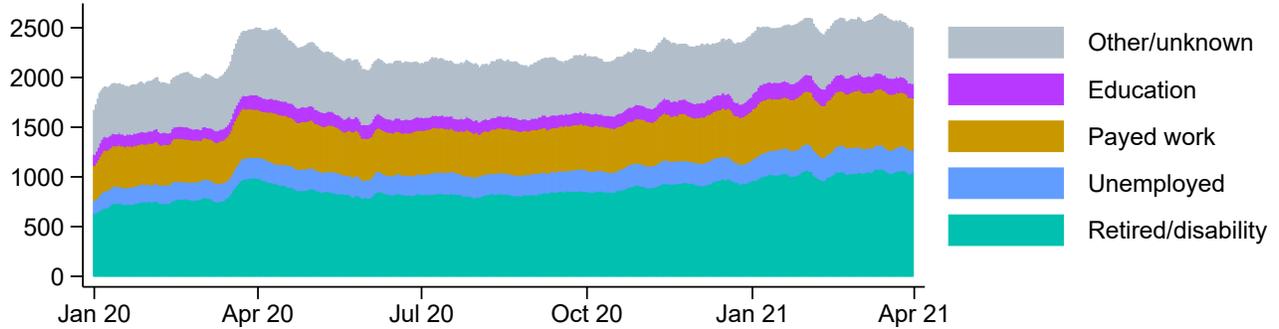


Figure S17: Helpline calls by state, living situation, and occupational status

Helpline calls in 2020 and 2021, Telefonseelsorge...

524 **Germany II**

525 The Muslimisches Seelsorgetelefon (MuTes) was founded 2009 with the help of the Telefonseelsorge Germany
526 and is operated by Islamic Relief Germany as the sole provider. Volunteer pastors guarantee a 24-hour service
527 every day of the year. They receive a theoretical and practical training by an experienced team, lasting about
528 160 hours. Further information is available online at www.mutes.de.

529 We have received data on individual calls received during the time from 1 January 2020 to 8 December
530 2020. Data collection on conversation topics follows the classification of Telefonseelsorge, see Table S17.

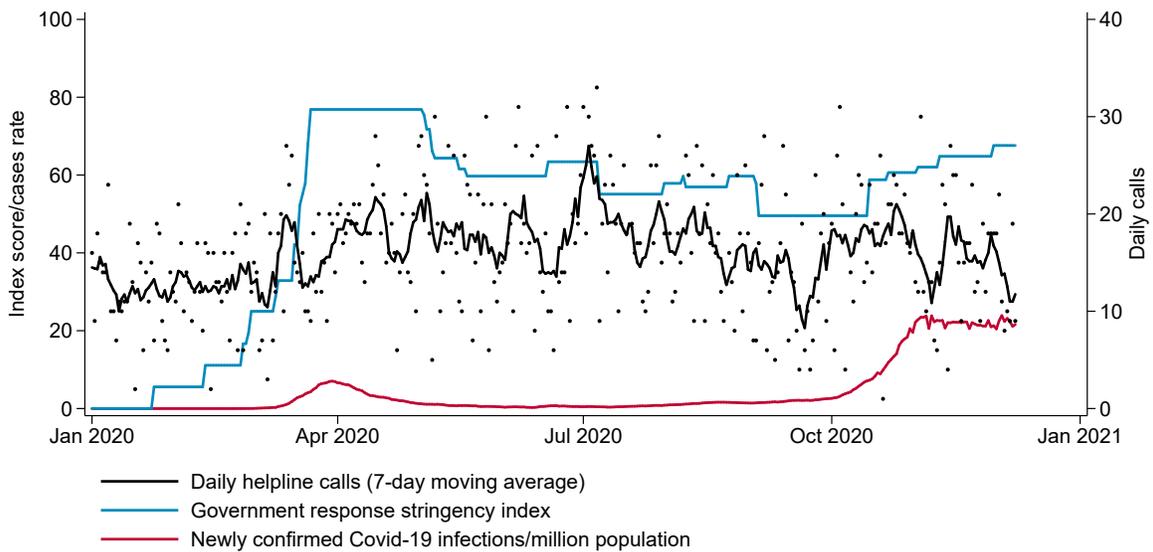
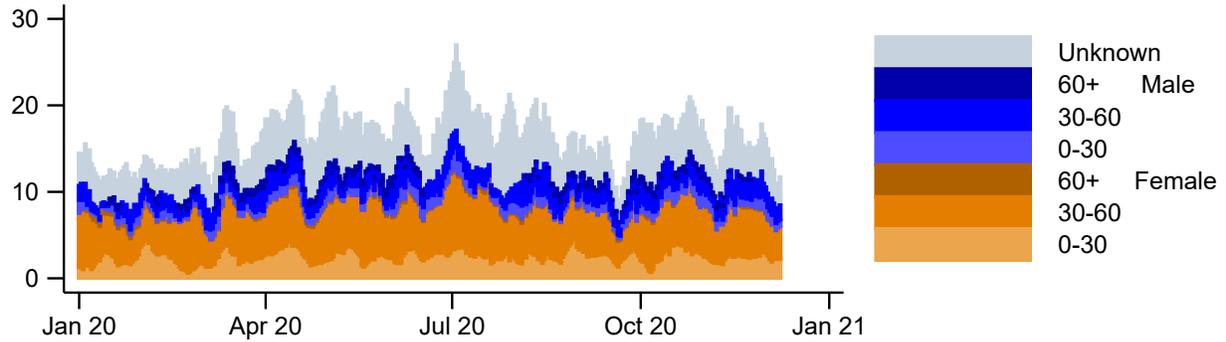


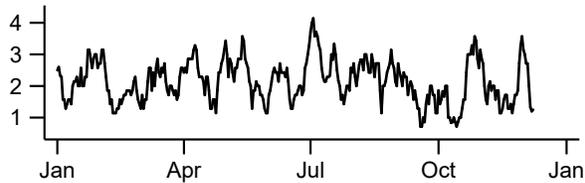
Figure S18: Daily calls to Muslimisches Seelsorgetelefon, COVID-19, and government response in Germany

a) Daily calls by age and sex of caller (seven-day moving average)

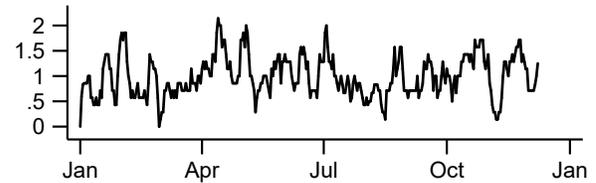


b) Daily calls by topic (seven-day moving average)

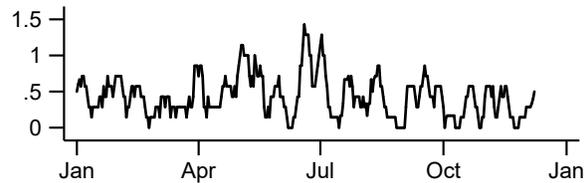
(i) Fears (incl. of infection)



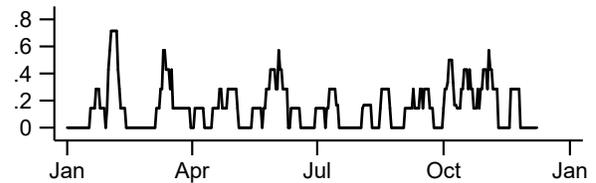
(ii) Loneliness



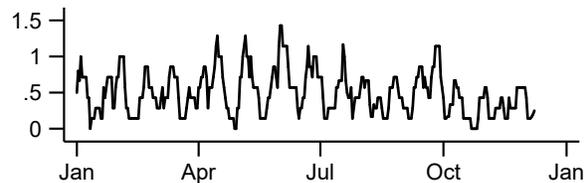
(iii) Suicide



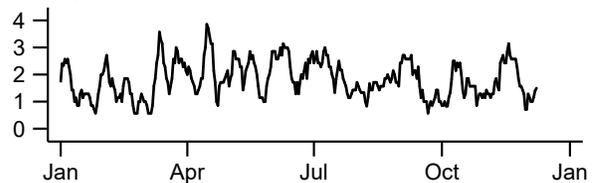
(iv) Addiction



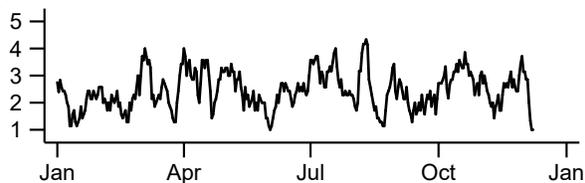
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

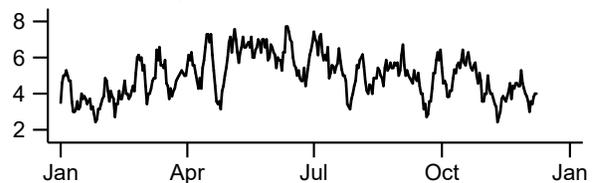


Figure S19: Caller characteristics and conversation topics, Muslimisches Seelsorgetelefon, Germany

531 **Germany III**

532 The Nummer gegen Kummer e.V. (engl.: Number against worries) is the umbrella organization of the largest
533 telephone advisory service dedicated to children, young people, and parents in Germany. The association was
534 founded in 1980 and has been a registered non-profit association based in Wuppertal since 1994. Nummer
535 gegen Kummer consists of two specific helpline, one for children and young people and one for parents,
536 operating anonymous and free of charge from mobile phones and landlines from Monday to Saturday from
537 2pm to 8pm (children) and Monday to Friday from 9 am to 5 pm as well as Tuesday and Thursday from 5pm
538 to 7 pm (parents). The helpline has 94 local associations that maintain a location for the child and youth
539 telephone and/or a location for the parent telephone across Germany. Further information is available online
540 at www.nummergegenkummer.de.

541 Nummer gegen Kummer provided us with a detailed data on individual calls to both helplines, covering the
542 time from January 1, 2019 to February 18, 2021. The information includes the location, problem, age, family
543 situation and status and the number of children in family.

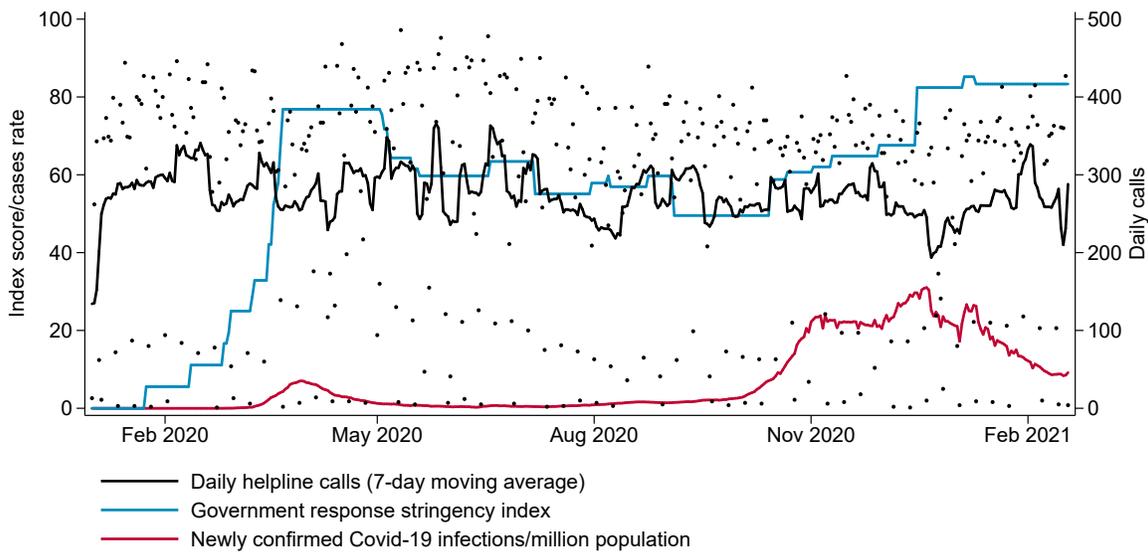
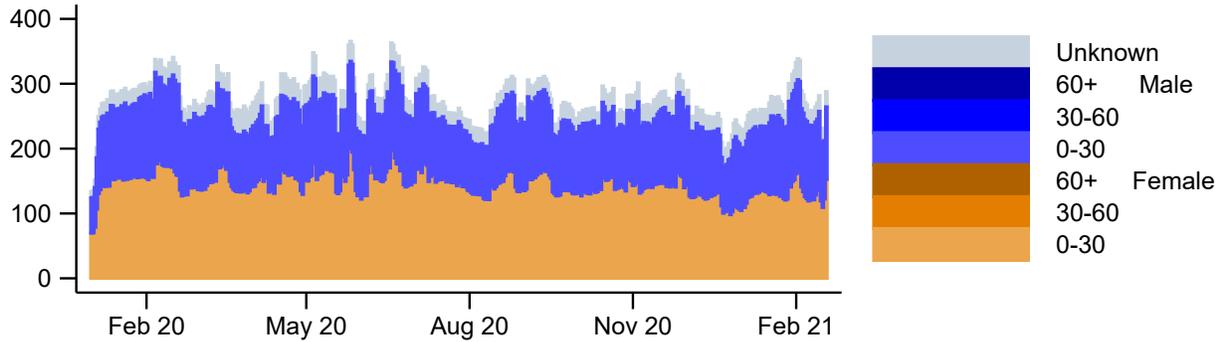


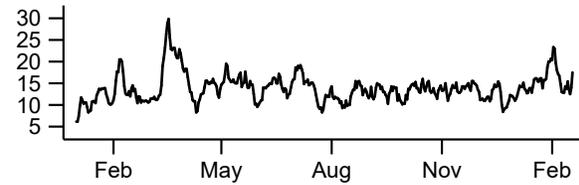
Figure S20: Daily calls to Nr. gg. Kummer (children line), COVID-19, and government response in Germany

a) Daily calls by age and sex of caller (seven-day moving average)

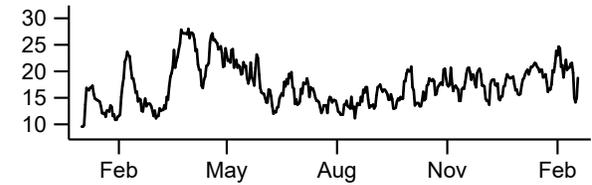


b) Daily calls by topic (seven-day moving average)

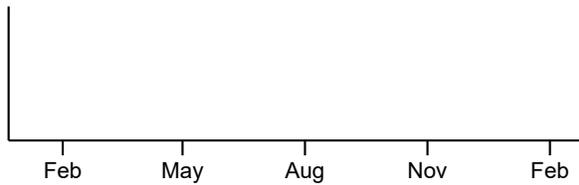
(i) Fears (incl. of infection)



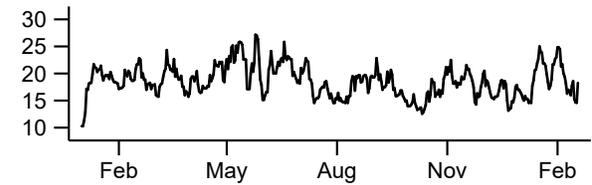
(ii) Loneliness



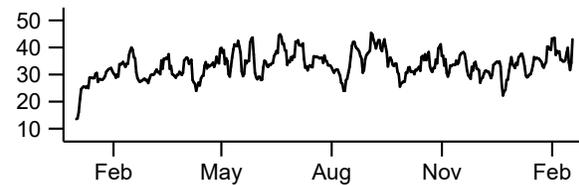
(iii) Suicide



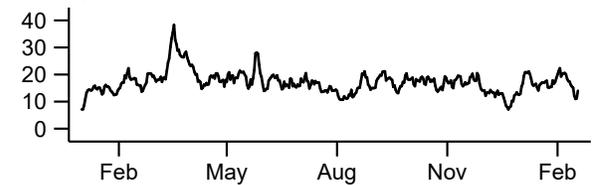
(iv) Addiction



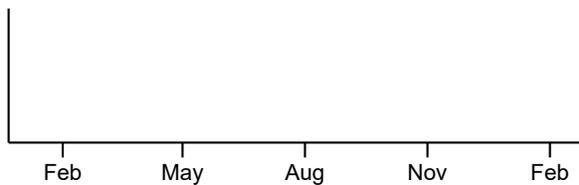
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

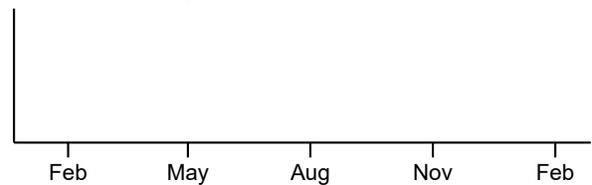


Figure S21: Caller characteristics and conversation topic, Nummer gegen Kummer (children line), Germany

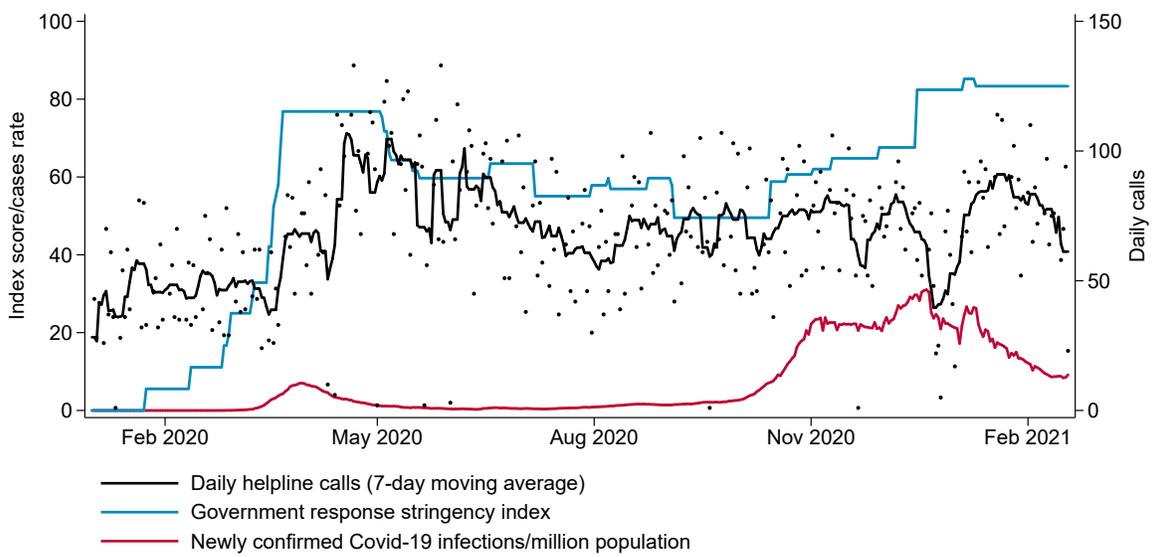
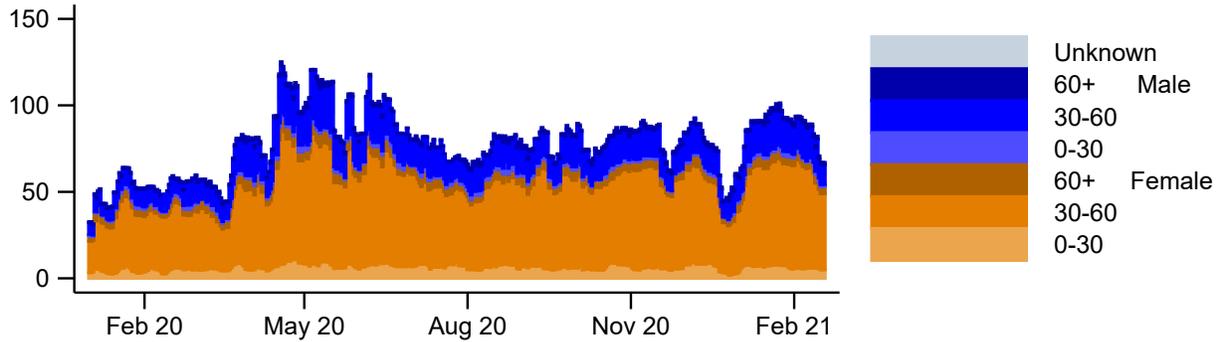


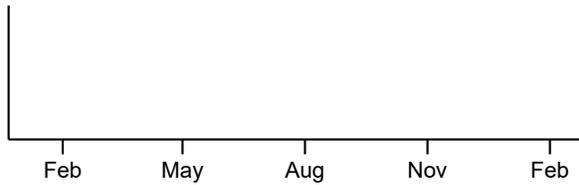
Figure S22: Daily calls to Nr. gg. Kummer (parent line), COVID-19, and government response in Germany

a) Daily calls by age and sex of caller (seven-day moving average)

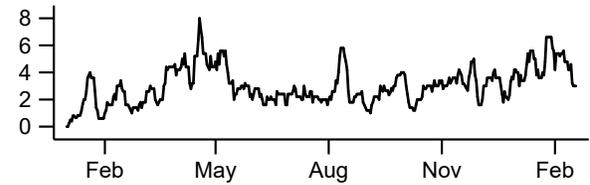


b) Daily calls by topic (seven-day moving average)

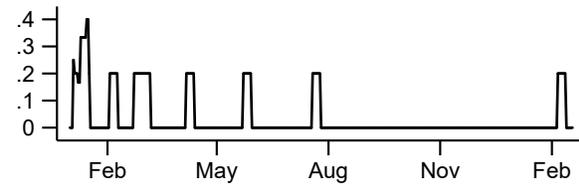
(i) Fears (incl. of infection)



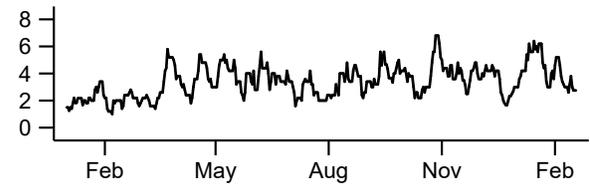
(ii) Loneliness



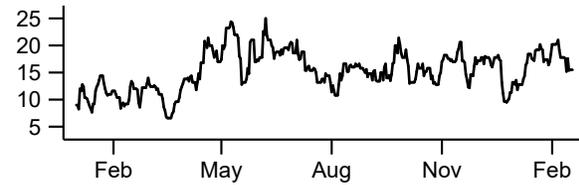
(iii) Suicide



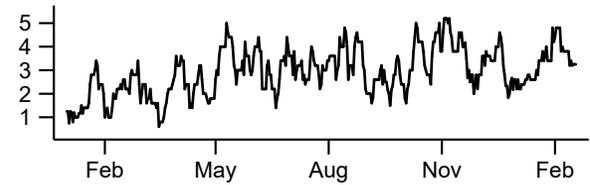
(iv) Addiction



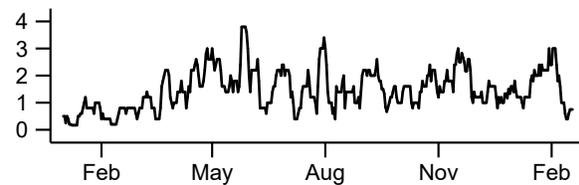
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

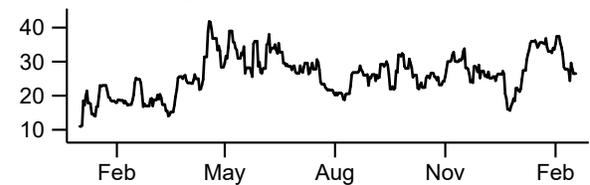


Figure S23: Caller characteristics and conversation topic, Nummer gegen Kummer (parent line), German

544 **Hong Kong**

545 The Samaritan Befrienders Hong Kong was officially registered 1963 as the Hong Kong Samaritans, which
546 they later renamed the Samaritan Befrienders Hong Kong in December 1976. The organisation, despite its
547 name, has no religious affiliation. They have over 290 volunteers and their Suicide Crisis Intervention Centre
548 provides immediate suicide intervention services, especially with the Emotional Support Hotline which is
549 offered all-year-round 24 hours. For further information, visit www.sbhk.org.hk.

550 We have received data on individual calls, covering the time from 23 January 2020 to 6 October 2020,
551 including the sex of callers.

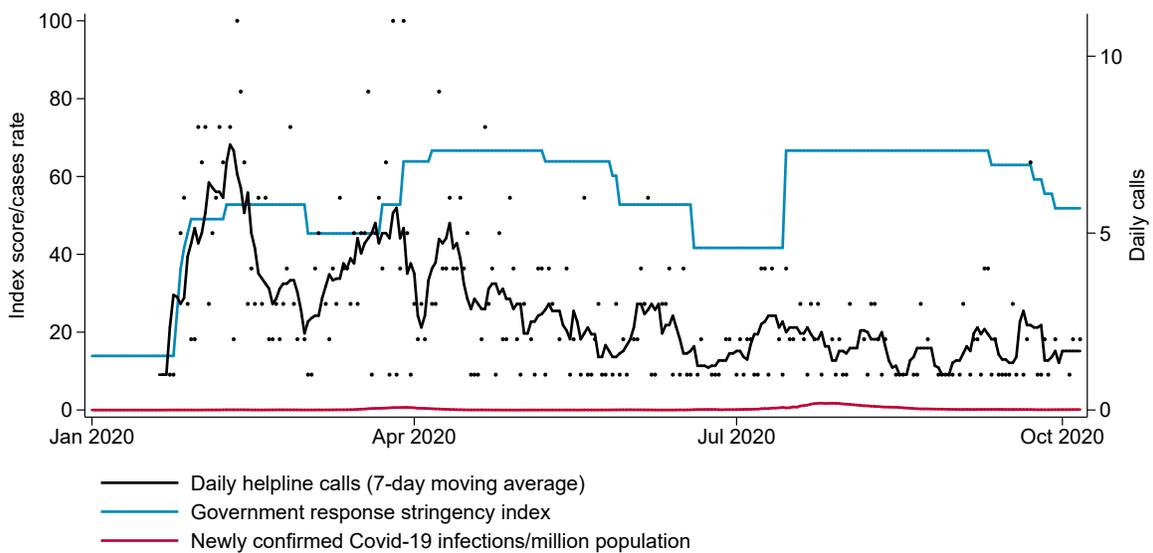


Figure S24: Daily calls to the Samaritan Befrienders, COVID-19, and government response in Hong Kong

552 **Hungary**

553 The Hungarian Spiritual first aid telephone service LESZ was founded in 1970 and provides free and anonymous
554 emotional helpline support with 400 volunteers in Hungary and approximately 25 counselors each day. LESZ
555 overs usual training for volunteers and asks them to pass exams (written and verbal). During the COVID-19
556 outbreak, the capacity to answer calls was at first lowered due to working-from-home requirements, but then
557 increased as an additional line was introduced. For further information, visit sos116-123.hu.

558 We received time series of daily call volumes, covering the time from January 1, 2019 to May 31, 2020.

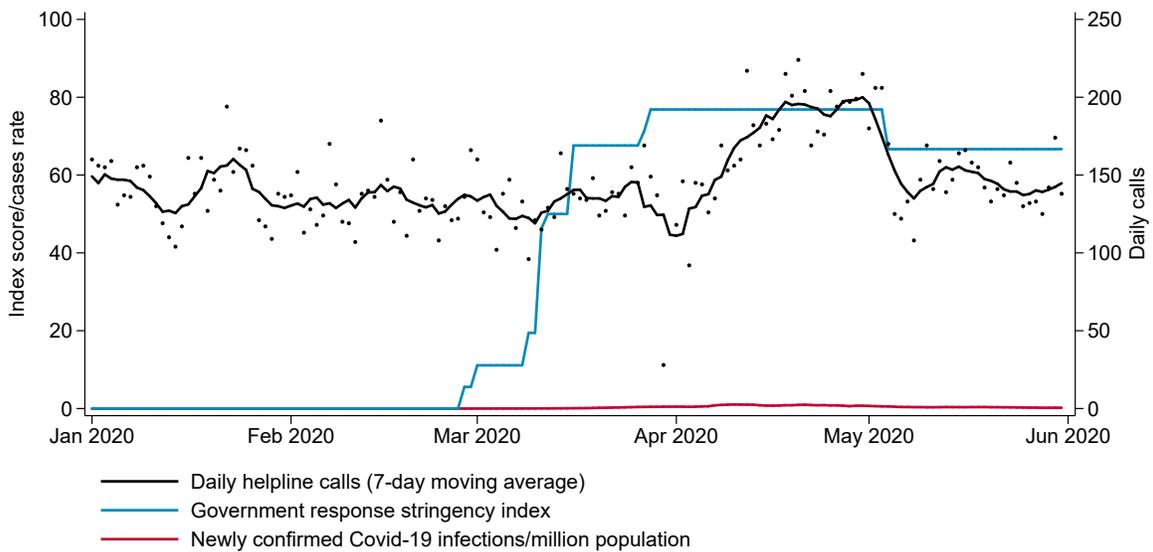


Figure S25: Daily calls to LESZ, COVID-19, and government response in Hungary

559 **Israel**

560 Israel's emotional support helpline Sahar is a non-profit organization based in Israel, established in 2000,
561 to provide anonymous, instantaneous, free-of-charge online assistance to people experiencing emotional
562 distress. Sahar was among the first hotlines to provide emotional assistance through digital services only (no
563 phone line), and offers a personal chat, support forums, and mail services provided by around 150 trained
564 volunteers. As far as we know, there are no other projects that aim to identify distress messages to prevent
565 suicide and ease severe emotional distress in Israel. Working hours are 8 hours a day (4 pm until midnight,
566 6 days a week) since 15 March 2020 - prior to the COVID-19 outbreak, they were working only 3 hours a day
567 (from 9pm until midnight, 6 days a week). Further information can be found online at www.sahar.org.il.

568 We received anonymous chat data from with information on gender, age category, and the content that
569 they raise in the chat. While the dataset covers calls from January 2019 to 24 December 2020, the data for 2019
570 are incomplete and we therefore consider only calls from 1 January 2020 onwards that are comparable to the
571 post-outbreak time.

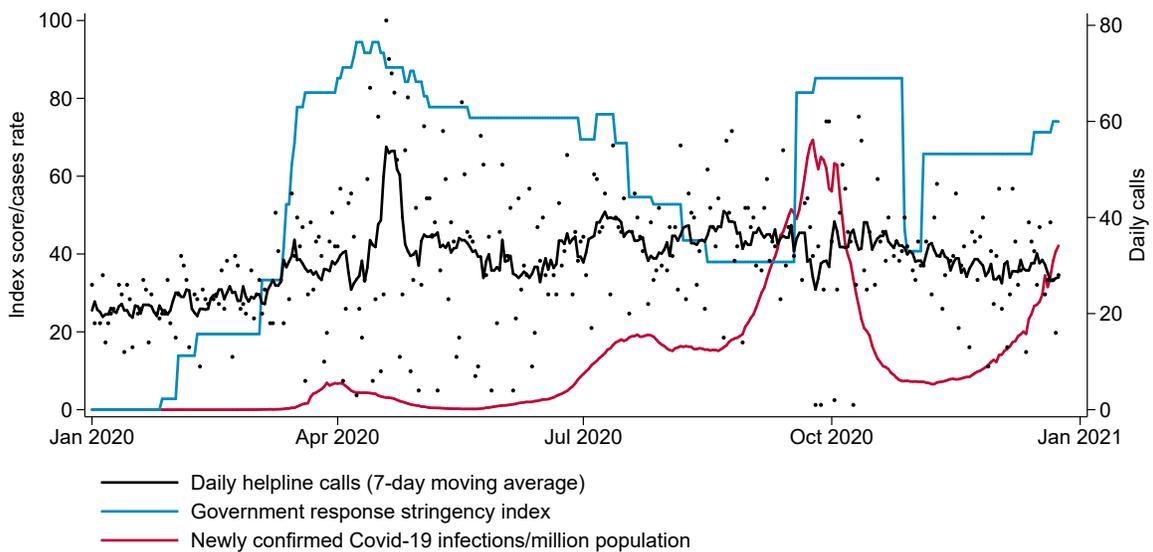
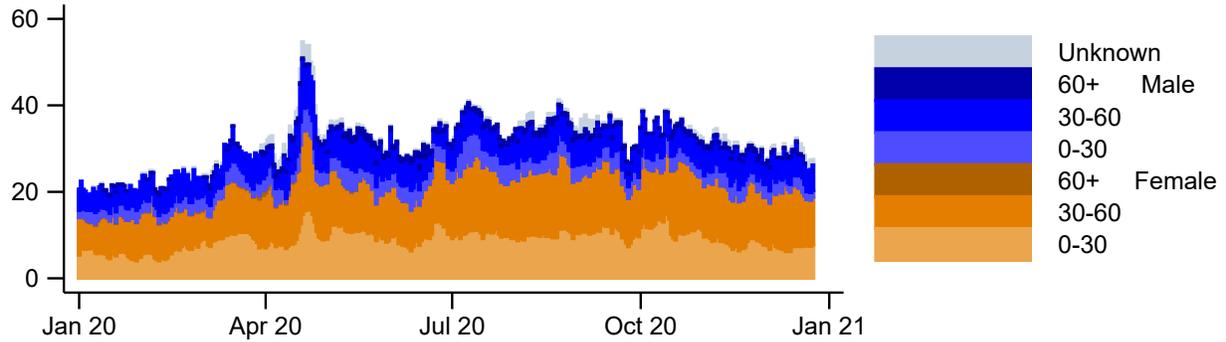


Figure S26: Daily calls to Sahar, Covid-19, and government response in Israel

Table S18: Classification of conversation topics: Sahar, Israel

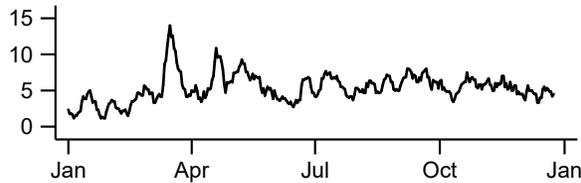
Topic	Helpline-specific topic definitions (translated from Hebrew original)
<i>Fears</i>	Fear/anxiety
<i>Loneliness</i>	Loneliness
<i>Suicide</i>	Suicidal ideation, Danger of committing suicide
<i>Addiction</i>	Addiction
<i>Violence</i>	Domestic violence
<i>Physical health</i>	
<i>Livelihood</i>	Economic difficulties, financials
<i>Relationships</i>	Social difficulties, problems in family, romantic relations

a) Daily calls by age and sex of caller (seven-day moving average)

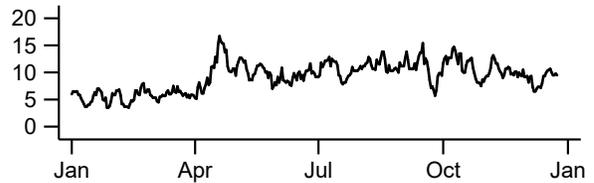


b) Daily calls by topic (seven-day moving average)

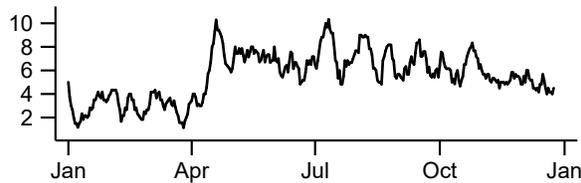
(i) Fears (incl. of infection)



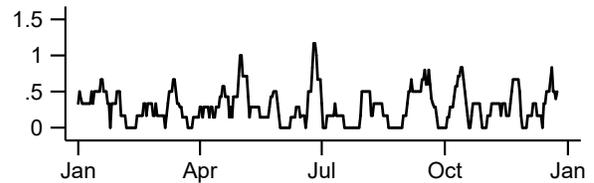
(ii) Loneliness



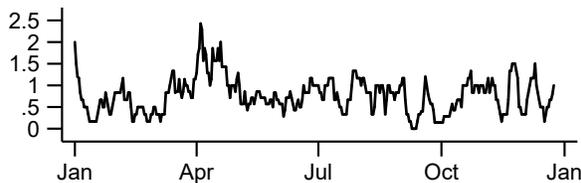
(iii) Suicide



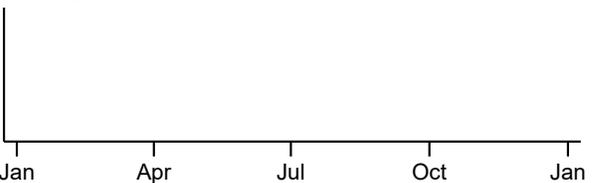
(iv) Addiction



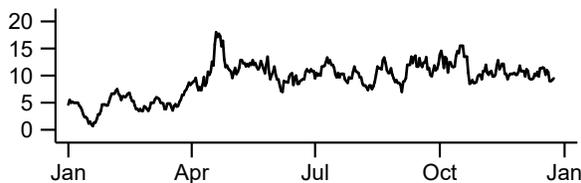
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

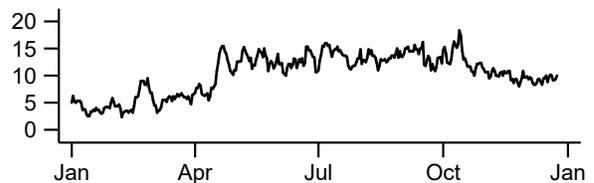


Figure S27: Caller characteristics and conversation topics, Sahar, Israel

572 **Italy**

573 Telefono Amico was founded in the 1960s and 1967, the National Association of Telefono Amico Italia was
 574 established. There are 20 centers across Italy providing free and anonymous web, chat and telephone service
 575 from 10 am to 12 pm each day. Further information is available online at www.telefonoamico.it

576 We received data on individual calls (incl. chats) from January 1, 2019 to June 1, 2020, including information
 577 on callers' sex and age group, as well as problems of callers and conversation topics. Additionally, the data
 578 includes the occupational status, living situation, call duration, and the sub-national region of origin. Calls
 579 labeled as hoax (scherzo) are dropped.

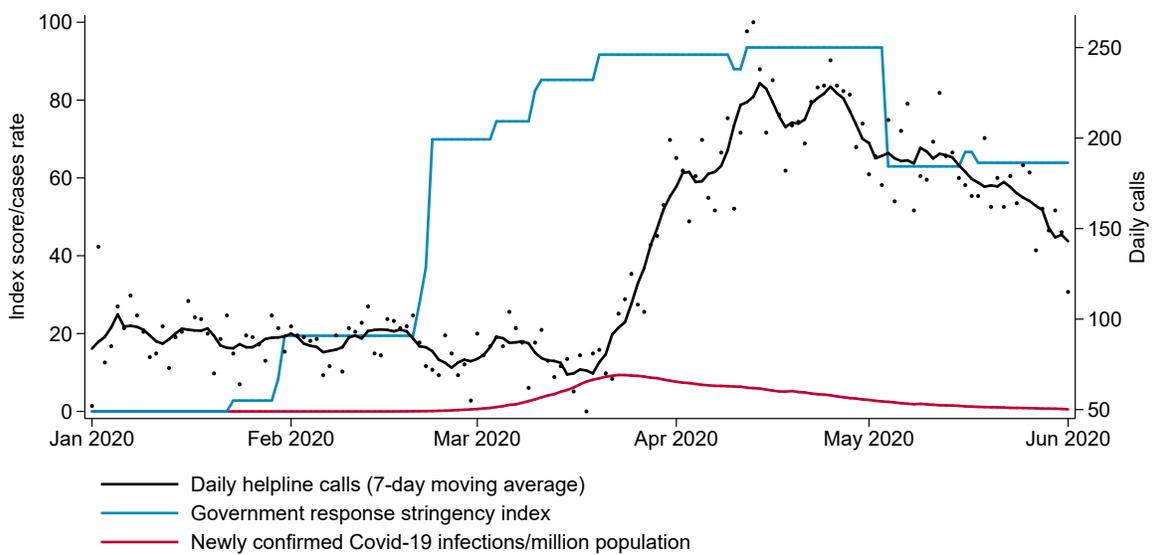
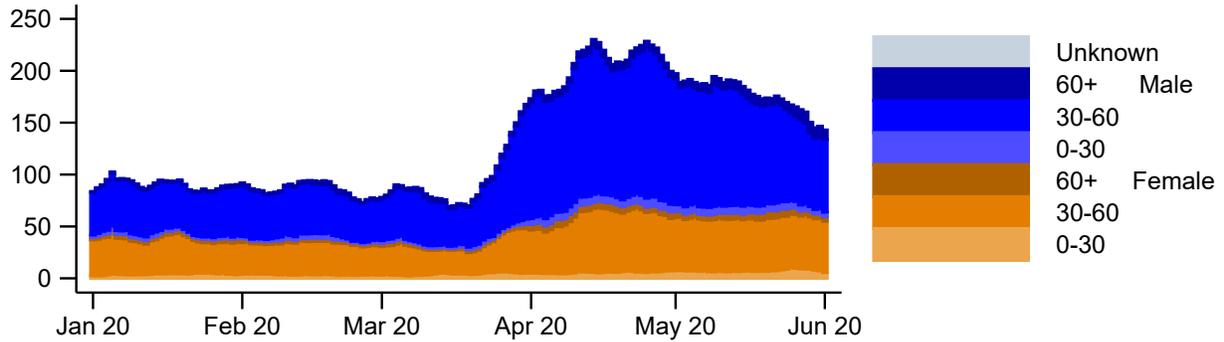


Figure S28: Daily calls to Telefono Amico, COVID-19, and government response in Italy

Table S19: Classification of conversation topics: Telefono Amico, Italy

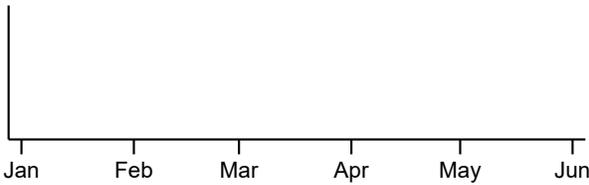
Topic	Helpline-specific topic definitions (problems and additional counselor reporting)
<i>Fears</i>	
<i>Loneliness</i>	Solitudine
<i>Suicide</i>	Suicidio
<i>Addiction</i>	Dipendenza sostanze
<i>Violence</i>	Violenza
<i>Physical health</i>	Malattia fisica
<i>Livelihood</i>	Abitative; lavorativi; economica; ins. lavorativo/sociale
<i>Relationships</i>	Amicali/altre relazioni; familiari; diff. rapporti e relazioni; bisogno di comp.; coppia

a) Daily calls by age and sex of caller (seven-day moving average)

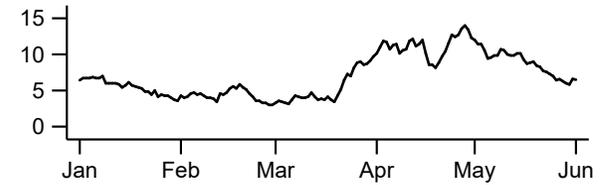


b) Daily calls by topic (seven-day moving average)

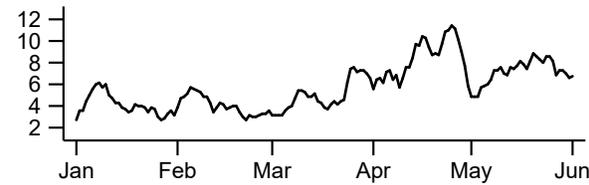
(i) Fears (incl. of infection)



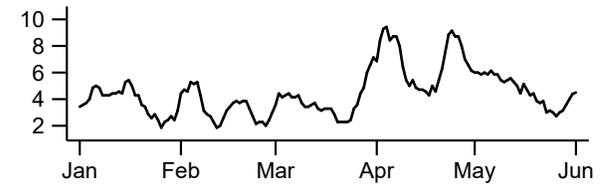
(ii) Loneliness



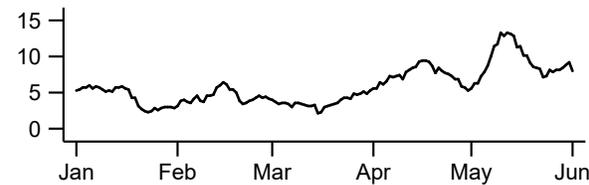
(iii) Suicide



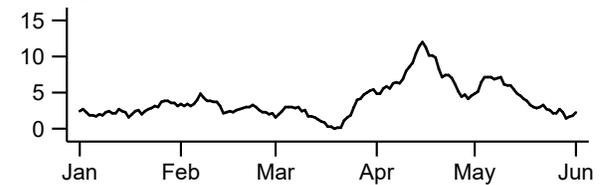
(iv) Addiction



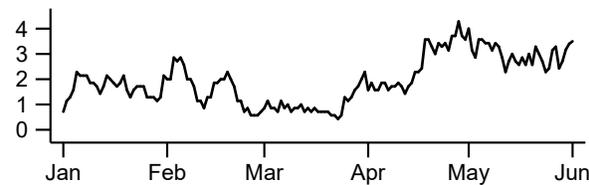
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

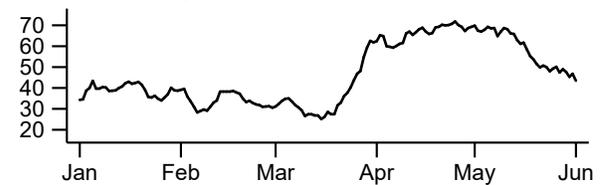


Figure S29: Caller characteristics and conversation topics, Telefono Amico, Italy

580 **Lebanon**

581 Embrace is a non-profit organization (NGO) which works to raise awareness around mental health in Lebanon.
582 Embrace's largest accomplishment to date is the Embrace Lifeline: the national emotional support and
583 suicide prevention helpline in Lebanon in collaboration with the National Mental Health Program of the
584 Ministry of Public Health (MOPH). The Embrace LifeLine is the first and only National Emotional Support
585 and Suicide Prevention Helpline in Lebanon which can be reached 24 hours each day. There are no other
586 helplines in Lebanon or the middle east and around 60 trained volunteer work as emotional crisis and suicide
587 prevention helpline operators. Capacity was not adjusted around the pandemic outbreak, but after the
588 explosion in Beirut in August 2020 (not included in our analysis). Further information can be found online at
589 www.embracelebanon.org.

590 We received data on individual calls from 2 January 2019 to 30 June 2020, with information on callers'
591 sex, age group, and the severity of suicidal ideation (distress, suicide plans, acute attempt). While no other
592 topics are collected, the data include occupational and marital status, living situation, and whether callers are
593 international migrants.

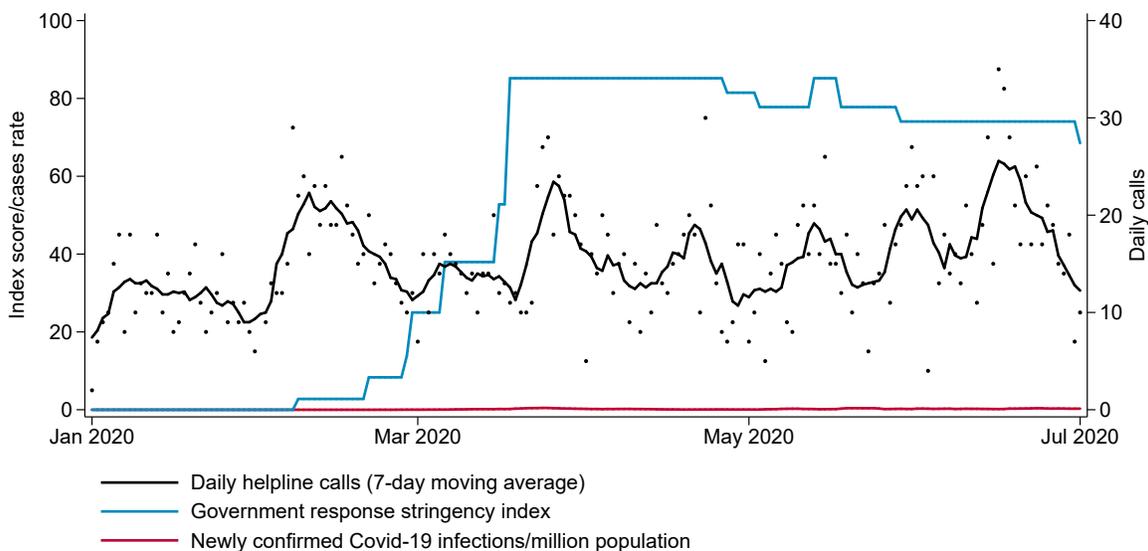


Figure S30: Daily calls to Embrace Lifeline, COVID-19, and government response in Lebanon

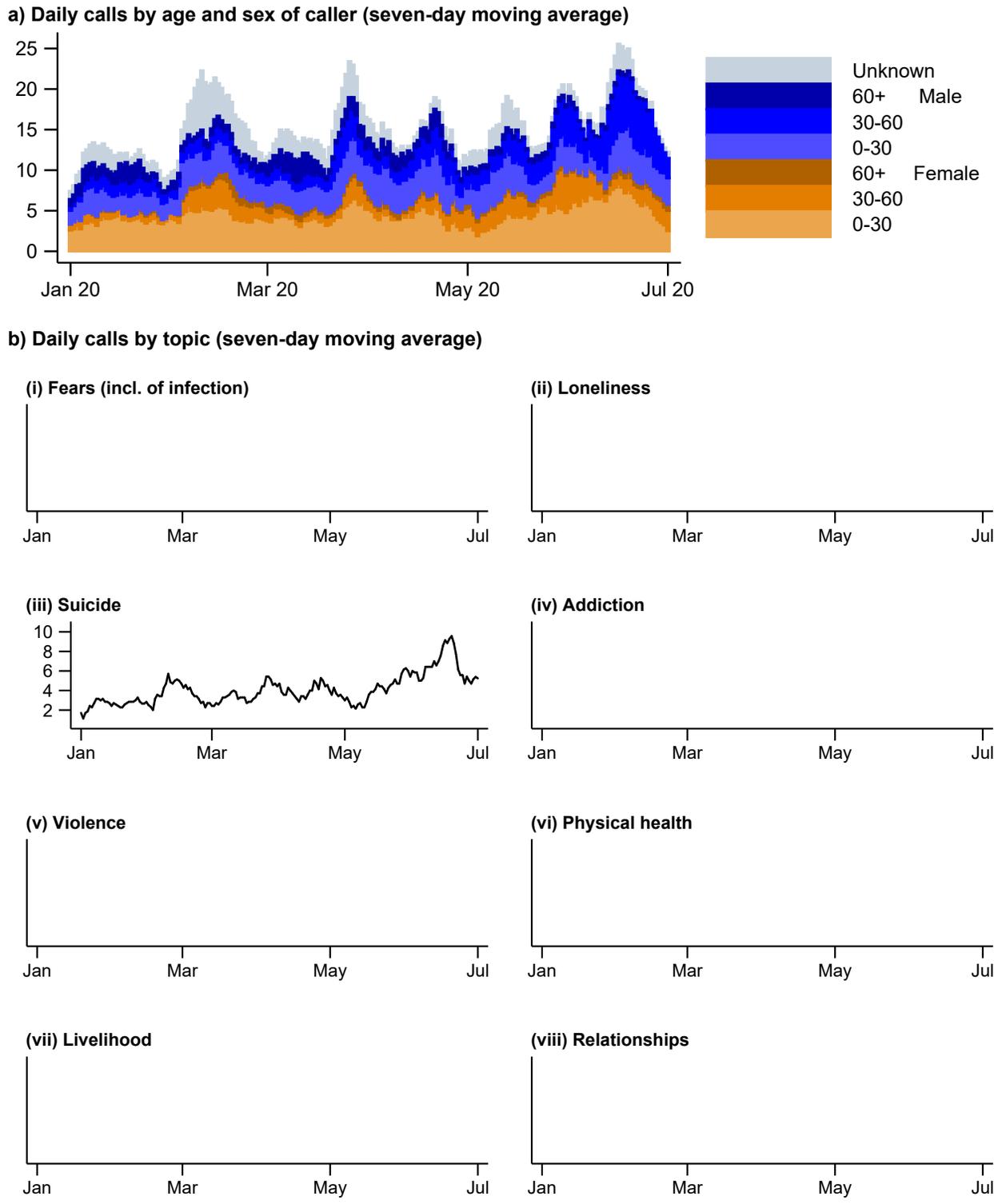


Figure S31: Caller characteristics and conversation topics, Embrace Lifeline, Lebanon

594 **Luxembourg**

595 The Luxembourg helpline SOS Détresse was founded in 1976. In 2013, an additional email counseling service
596 (SOS OnlineHelp). The lines are open every day from 11 a.m. to 11 p.m., and on Friday and Saturday nights also
597 until 3 a.m. The service is free in the sense that it is bound to normal landline rates. They have 45 volunteers
598 for the phone service and 7 volunteers for the online help (webmail platform) speaking German, French
599 and Luxembourgish. With the outbreak of the Corona pandemic, volunteers took over more shifts and the
600 frequency of training was increased. For further information, visit www.454545.lu.

601 We received data on individual calls from 1 January 2020 - 21 June 2020 with information on sex and age
602 group of callers, as well as main conversation topics.

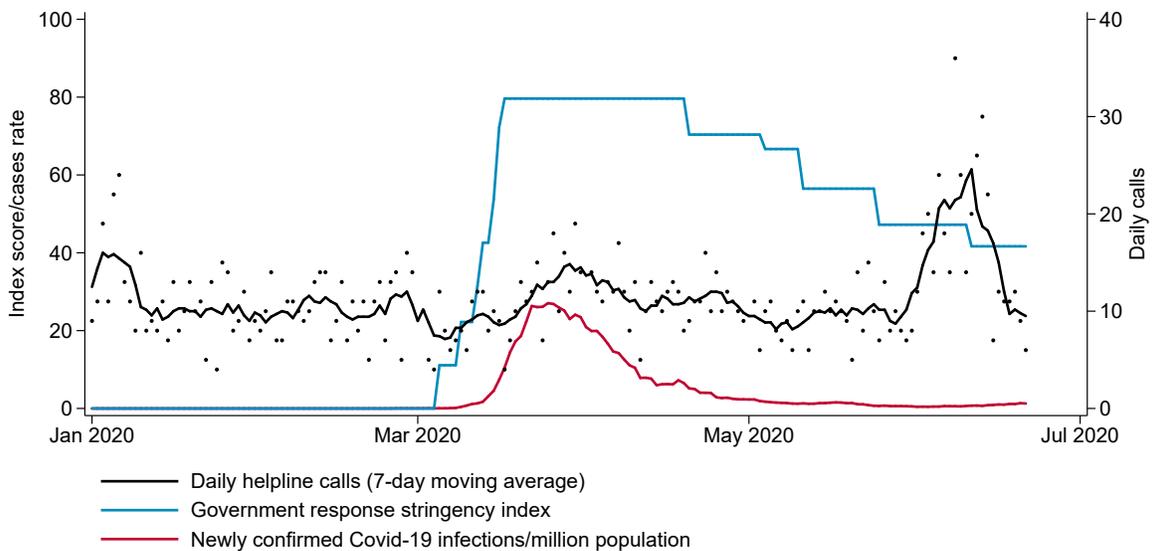


Figure S32: Daily calls to SOS Détresse, COVID-19, and government response in Luxembourg

603 **Netherlands**

604 In 1958, the Rotterdam preacher Ds. Teutscher started the first telephone emergency service in the Netherlands
 605 under the name De Luisterlijn. At first the telephone service was only carried out from Protestant churches,
 606 later Catholic volunteers were added and at the end of the 1960s the humanists came to strengthen the work.
 607 Meanwhile there are over 1,500 volunteers at De Luisterlijn providing phone counseling day and night, all year
 608 round, for people who need a confidential conversation. They further offer counselling by email, every day of
 609 the week and by chat 24/7. For more information, visit www.deluisterlijn.nl.

610 We received data on individual calls from January 1, 2019 to June 30, 2020, including information on caller's
 611 sex, age group, as well as up to 21 non-exclusive conversation topics and up to 14 caller feelings.

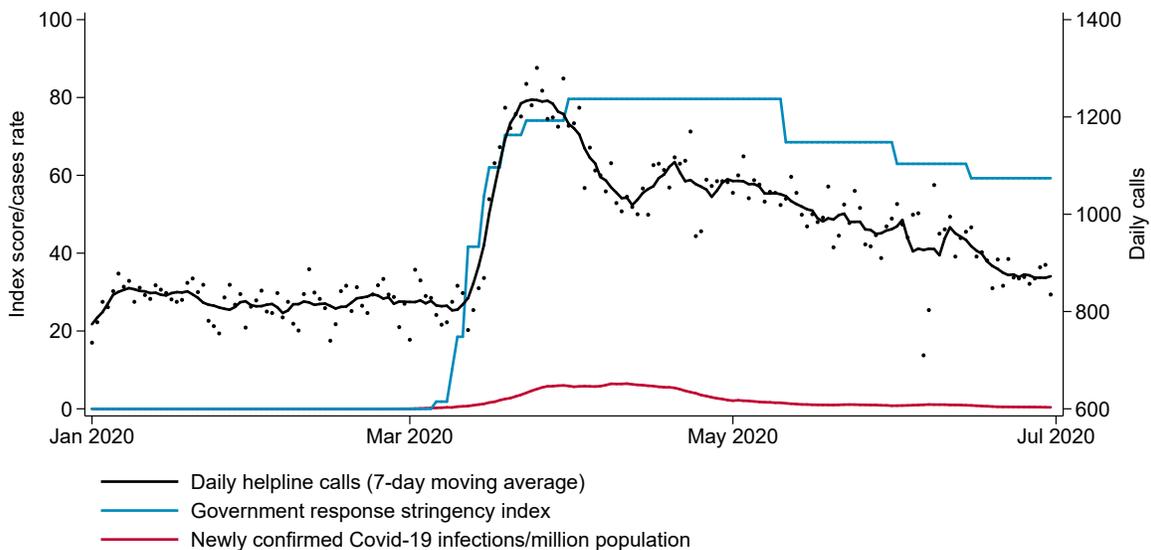
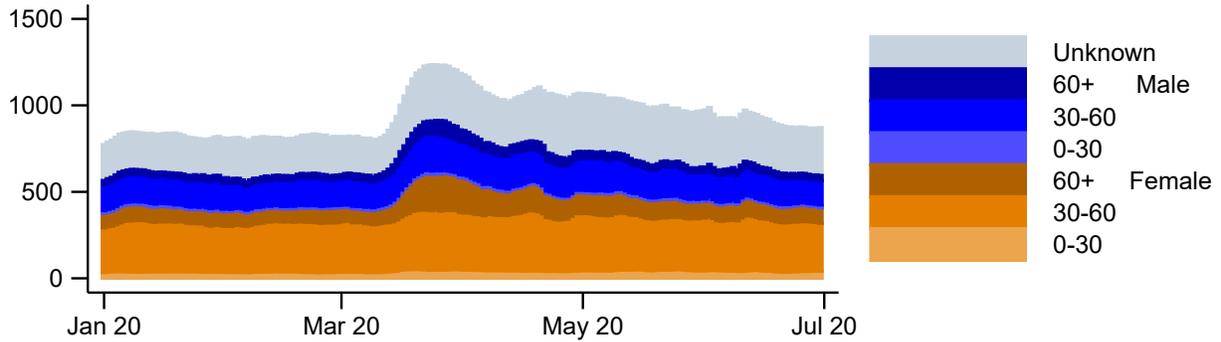


Figure S33: Daily calls to De Luisterlijn, COVID-19, and government response in the Netherlands

Table S20: Classification of conversation topics: De Luisterlijn, Netherlands

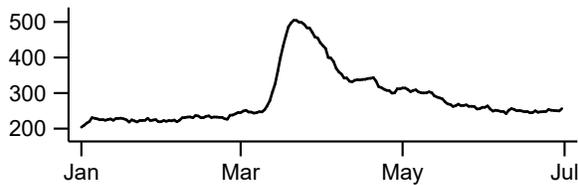
Topic	Helpline-specific topic definitions
<i>Fears</i>	Feeling: Bang; Bezorgd; Paniek
<i>Loneliness</i>	Eenzaam; Feeling: Alleen voelen
<i>Suicide</i>	Zelfmoord
<i>Addiction</i>	Verslaving
<i>Violence</i>	Huiselijk geweld; Geweld/veiligheid; Seksueel misbruik; Ouderenmishandeling; Pesten; Verwaarlozing
<i>Physical health</i>	Lichamelijke gezondheid
<i>Livelihood</i>	Werk; Werkloosheid; Financ; Huisvesting
<i>Relationships</i>	Relaties; Burenoverlast/ruzie

a) Daily calls by age and sex of caller (seven-day moving average)

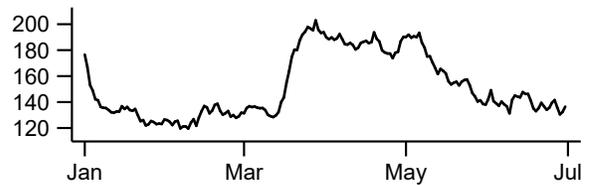


b) Daily calls by topic (seven-day moving average)

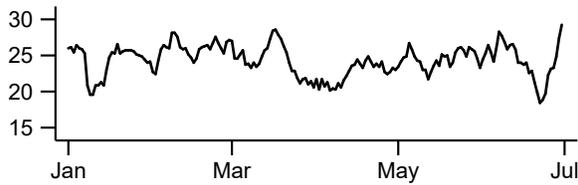
(i) Fears (incl. of infection)



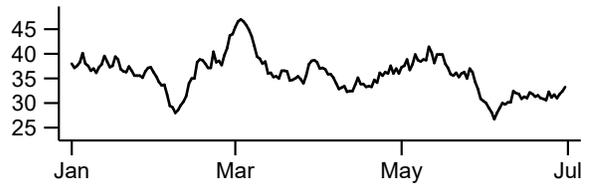
(ii) Loneliness



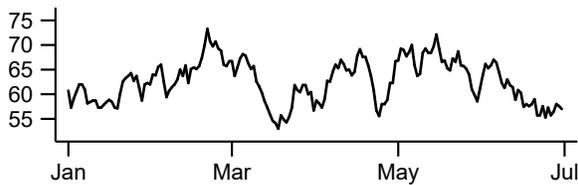
(iii) Suicide



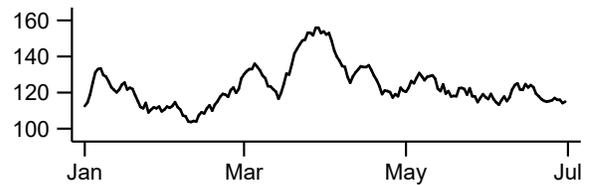
(iv) Addiction



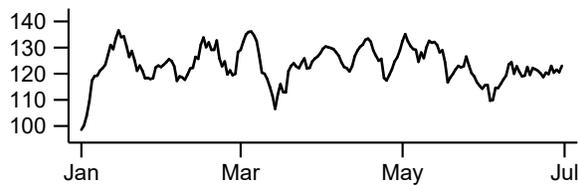
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

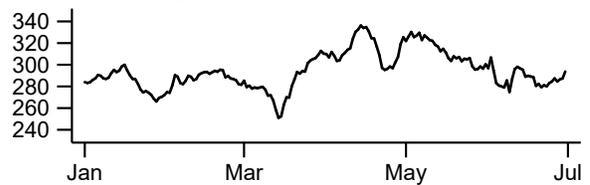


Figure S34: Caller characteristics and conversation topics, De Luisterlijn, Netherlands

612 **Portugal**

613 SOS Voz Amiga was established in 1978, and operates with a focus on preventing suicide. They offer phone
614 service which has no financial aid from official entities and they survive thanks to donations. Currently, 50
615 volunteers are answering calls, with around four to six volunteers present on a given day. In early 2020, SOS Voz
616 Amiga operated from 4 pm - 24 pm. Due to updated communications equipment at the telephone operator,
617 capacity increased after the pandemic, and working hours were prolonged to range from 3.30pm until 00.30.
618 Further information is available online at www.sosvozamiga.org)

619 We received data on individual calls from 2 January 2019 - 15 June 2020 with information on caller sex and
620 age group.

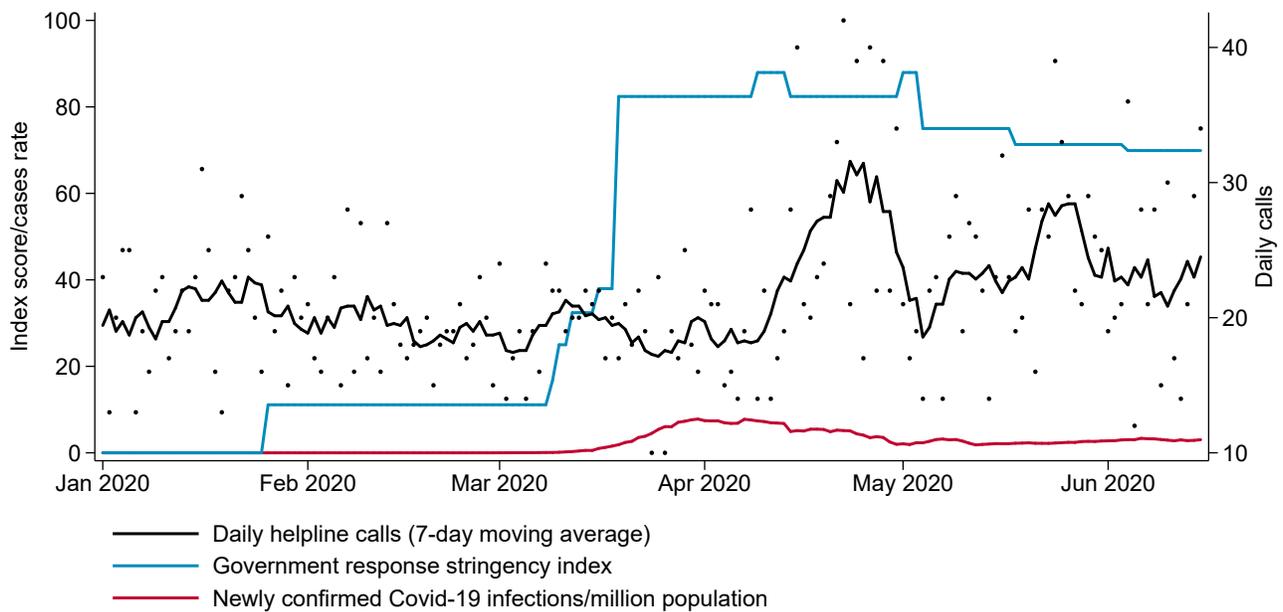
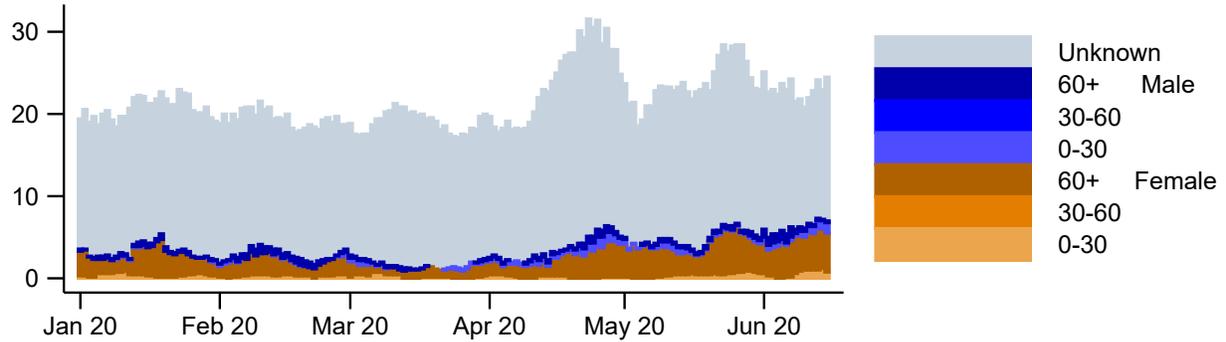


Figure S35: Daily calls to SOS Voz Amiga, COVID-19, and government response in Portugal

a) Daily calls by age and sex of caller (seven-day moving average)



b) Daily calls by topic (seven-day moving average)

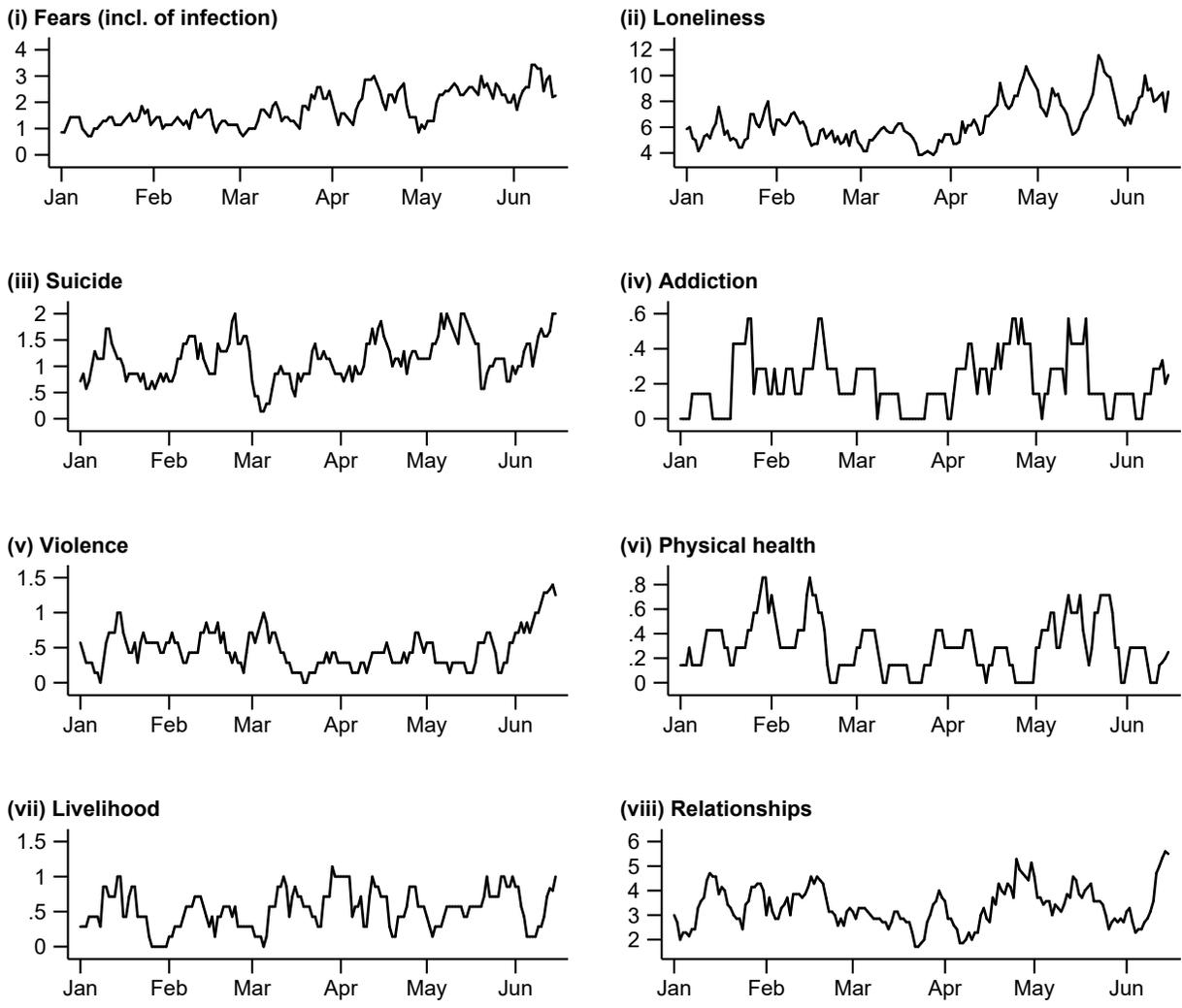


Figure S36: Caller characteristics and conversation topics, SOS Voz Amiga, Portugal

621 **Slovenia**

622 Zaupni Telefon Samaritan (confidential phone Samaritan, or Samaritans of Slovenia) is a non-governmental,
623 non-profit, humanitarian and voluntary organization offering a 24/7 helpline. The helpline is run by trained
624 volunteers 24 hours a day, every day of the year and free of charge. For further informaion, visit [www.telefon-](http://www.telefon-samaritan.si)
625 [samaritan.si](http://www.telefon-samaritan.si).

626 We received data on individual calls, recorded for the period from January 1, 2019 to January 14, 2021,
627 including information on callers' sex and age group, duration, martial status, and emotional relief. All entries
628 are based on assessments of lay consultants. Calls labeled as Volunteer questions, mistakes, or prank calls are
629 dropped from the analysis.

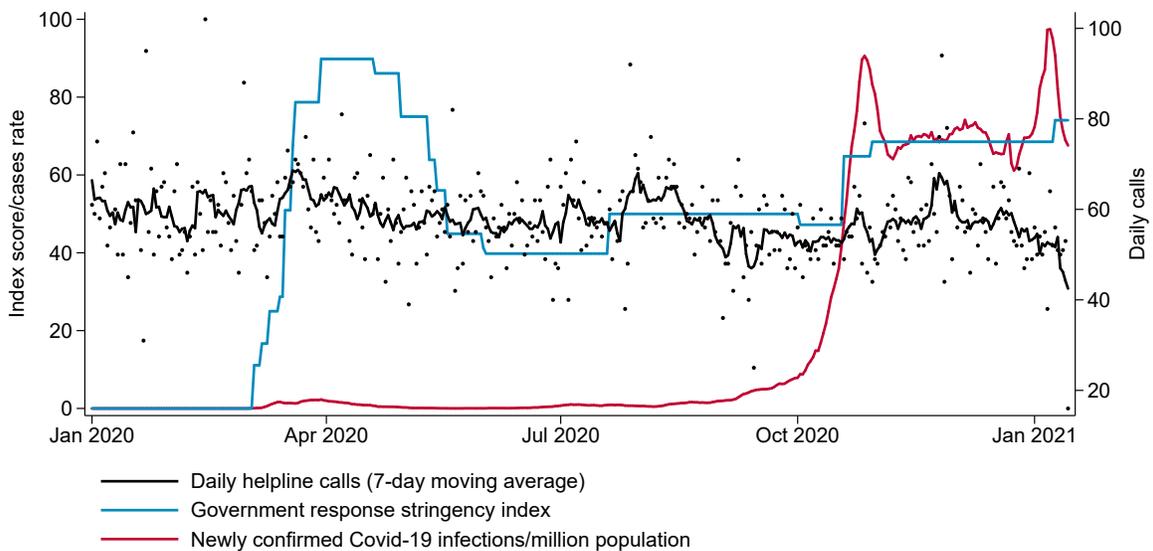
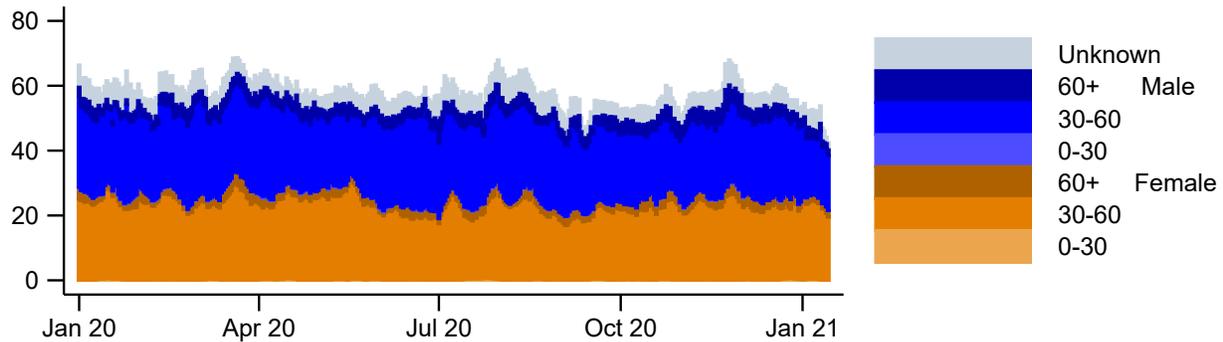


Figure S37: Daily calls to Zaupni Telefon Samaritan, COVID-19, and government response in Slovenia

Table S21: Classification of conversation topics: Zaupni Telefon Samarijan, Slovenia

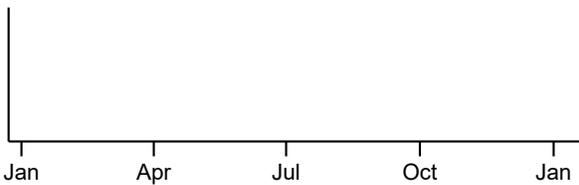
Topic	Helpline-specific topic definitions (data received in English)
<i>Fears</i>	
<i>Loneliness</i>	Loneliness; Lack of social contact
<i>Suicide</i>	Suicidal thoughts; Past suicide attempt; Suicide threat; Worries about the suicidal tendencies of others
<i>Addiction</i>	Alcohol abuse; Drug and narcotics abuse; Food abuse; Abuse of relationships; Sex abuse; Other addictions (games of chance, food, computer)
<i>Violence</i>	Violence (verbal/physical/psychological/sexual/economic); Violence (verbal/physical/psychological) in family; Violence in the social environment; Sexual abuse; Workplace violence/mobbing
<i>Physical health</i>	
<i>Livelihood</i>	Financial problems; Accommodation/apartment
<i>Relationships</i>	

a) Daily calls by age and sex of caller (seven-day moving average)

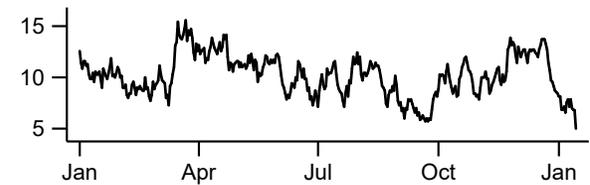


b) Daily calls by topic (seven-day moving average)

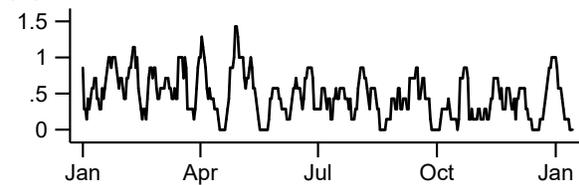
(i) Fears (incl. of infection)



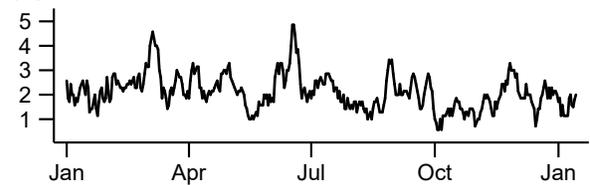
(ii) Loneliness



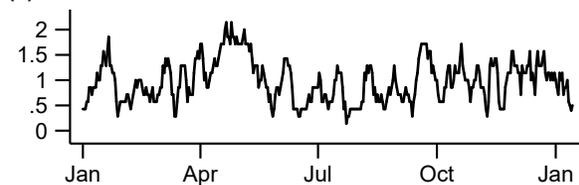
(iii) Suicide



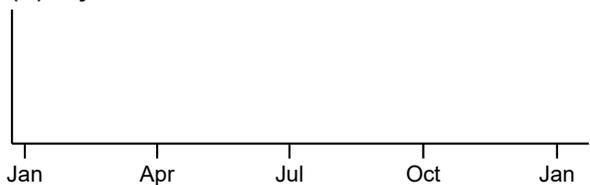
(iv) Addiction



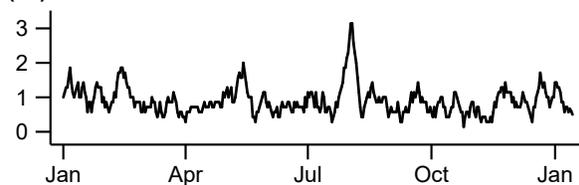
(v) Violence



(vi) Physical health



(vii) Livelihood



(viii) Relationships

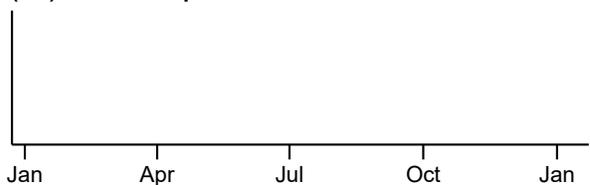


Figure S38: Caller characteristics and conversation topics, Zaupni Telefon Samarijan, Slovenia

630 **Switzerland**

631 Die Dargebotene Hand (Phone: 143, web: [Die Dargebotene Hand](#)) is the national biggest helpline in Switzerland
632 providing phone listing services in French, Italian and German. In 1957, the first telephone counseling center
633 in Switzerland was opened in Zurich under the name “Dargebotene Hand”. Today, the helpline is organized by
634 an amalgamation of twelve locally and regionally anchored, independent organizations under a nationwide
635 umbrella organization. The helpline is an Ifotes member.

636 We received time series data on daily call volumes, covering the time from February 28 to June 30, for both
637 2019 and 2020 (without the intermediate time in 2019 and early 2020).

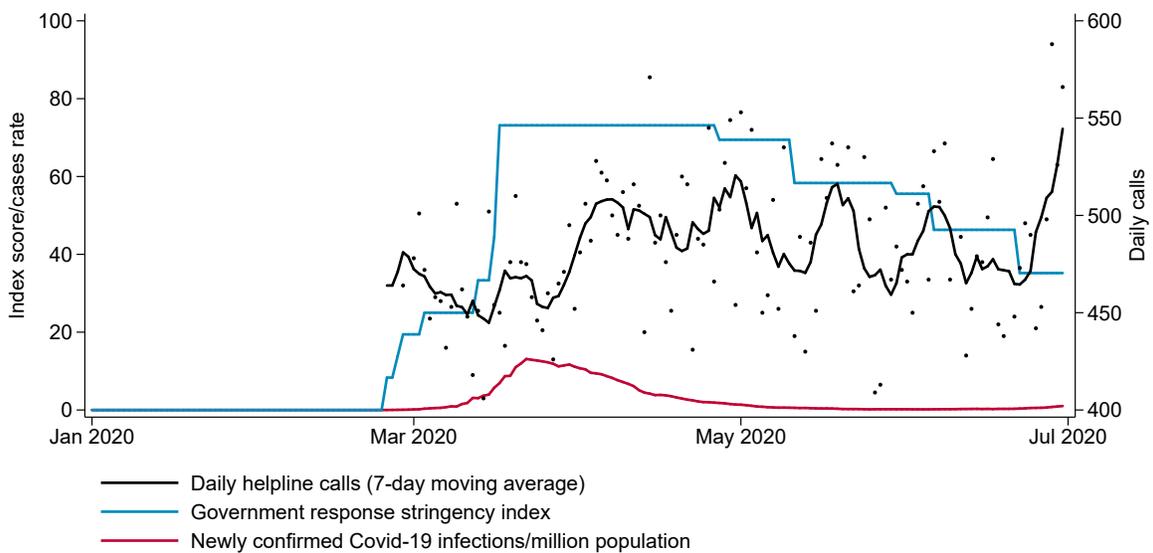


Figure S39: Daily calls to Die Dargebotene Hand, COVID-19, and government response in Switzerland

638 **United States of America**

639 From Vibrant Emotional Health, we obtained information on the weekly number of calls routed to centers
640 of the National Suicide Prevention Lifeline (Lifeline), and the Disaster Distress Helpline, from January 2019
641 to March 2021. The Lifeline provides 24/7, free and confidential support for people in distress, prevention
642 and crisis resources. The U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) and
643 Vibrant Emotional Health launched the Lifeline on January 1, 2005. The Lifeline is funded by the SAMHSA and
644 administered by Vibrant Emotional Health. All calls to the Lifeline are answered by crisis workers, who are
645 trained by the centers with an average of 90 hours of training. While information on caller demographics is not
646 routinely collected, estimates from reporting centers indicate that just over half of calls are from people under
647 the age of 35.

648 SAMHSA's Disaster Distress Helpline provides 24/7, 365-day-a-year crisis counseling and support to people
649 experiencing emotional distress related to natural or human-caused disasters. The service is provided by phone
650 or text and is the nation's only hotline dedicated to providing year-round disaster crisis counseling. It was
651 launched in 2010 as part of the former Oil Spill Distress Helpline and became the national Disaster Distress
652 Helpline in 2012. The helpline was heavily advertised during the corona crisis. Further information on the two
653 helplines is available online, at www.suicidepreventionlifeline.org and [www.samhsa.gov/find-help/disaster-](http://www.samhsa.gov/find-help/disaster-distress-helpline)
654 [distress-helpline](http://www.samhsa.gov/find-help/disaster-distress-helpline).

655 Based on the phone number of callers, it is possible to estimate the region from which most of the calls
656 originate. While the helplines are serving only the United States, they also receive calls from Canada and other
657 locations. For our analysis, we focus on calls from 50 US states and the District of Columbia. Information
658 on Canadian provinces, US Territories (American Samoa, Guam, Northern Marianas, Puerto Rico, and Virgin
659 Islands), as well as other/unknown origin are not considered, in order to maximize consistency and because of
660 the limited availability of other data sources.

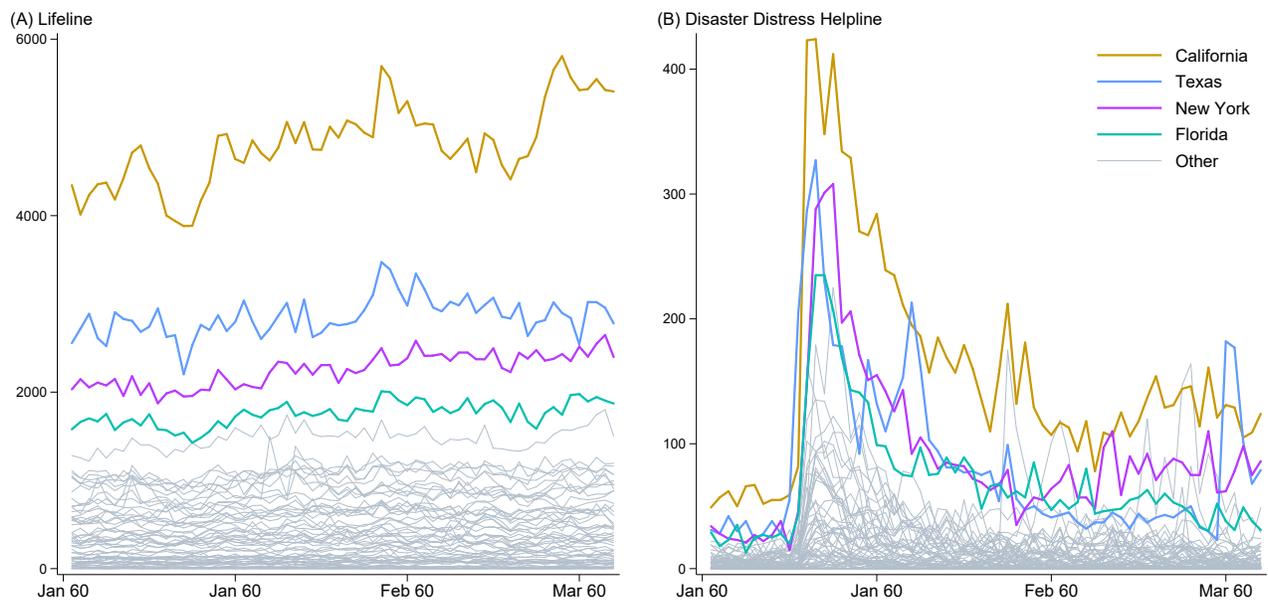


Figure S40: Weekly calls to the National Suicide Prevention Lifeline and the Disaster Distress Helpline