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Lost in Lockdown? COVID-19, Social Distancing, and Mental Health in Germany

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Abstract

The COVID-19 pandemic and social-distancing and stay-at-home orders can directly affect mental health and quality of life. In this ongoing project, we analyze rich data from *Telefonseelsorge*, the largest German helpline service, to better understand the effect of the pandemic and of local lockdown measures on mental health–related helpline contacts. First, looking at Germany-wide changes, we find that overall helpline contacts increase by around 20% in the first week of the lockdown and slowly decrease again after the third lockdown week. Our results suggest that the increase is not driven by financial worries or fear of the virus itself, but reflects heightened loneliness, anxiety, and suicidal ideation. Second, we exploit spatial variation in policies among German federal states to assess whether the effect depends on the stringency of local measures. Preliminary evidence suggests that the average effect is more pronounced in states that implemented stricter measures.

Keywords: COVID-19, Stay-at-Home Orders, Mental Health

JEL codes: I12,I3

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1 Introduction

There is widespread concern that the current COVID-19 outbreak is associated with increased psychological distress, mental illness, and suicide (Rajkumar 2020). Evidence from global economic crises suggests that periods of high unemployment rates are followed by significant increases in suicide (Parmar et al. 2016), and an exceptionally large number of suicide deaths occurred at the time of the SARS epidemic in 2003 (Yip et al. 2010).[4] Social distancing measures such as stay–at–home orders are effective in containing the spread of COVID-19 (Fang et al. 2020), but, in addition to the outbreak of a pandemic itself, potentially cause severe mental illness (Brooks et al. 2020). A better understanding of mental health trends during the COVID-19 outbreak, and particularly the implications of social-distancing policies, is essential to inform policy in the current situation, where the net benefit of releasing lockdown measures is unclear (Layard et al. 2020).

In this study, we focus on Germany, where various social-distancing policies were enacted on the national level as well as by the 16 federal states. The majority of shops were closed on March 17th, and on Sunday, March 22nd, Germany implemented national-wide social distancing and contact restrictions (further referred to as the "lockdown week"). In contrast to most other European countries, the stringency of measures differs substantially between states: For example, while Bavaria banned "leaving the house without a reason", spending time outdoors was still allowed in neighboring Baden-Württemberg. The central aim of this paper is to find out if the demand for psychological assistance increased due to the general COVID-19 outbreak and lockdown measures (hypothesis H1), and second, if the effect is stronger in those states that imposed stricter measures (H2).

We test our hypotheses by using data from Germany's largest online and telephone counseling hotline, the "TelefonSeelsorge", (TS, TelefonSeelsorge 2020) for the period 01/01/2019 – 04/31/2020, combined with data on reported daily COVID-19 cases and deaths (RKI 2020a), state–wide policy measure data for Germany (Armbruster and Klotzbuecher 2020), as well as state-level unemployment (Bundesagentur fuer Arbeit 2020). After analyzing the development

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[4] Parmar et al. (2016) found a strong increase in suicide after the 2008 global economic crisis; there were about 4900 excess suicides in the year 2009 alone compared with those expected based on previous trends. Yip et al. (2010) examine the case of Severe Acute Respiratory Syndrome (SARS) and suicide among older adults in Hong Kong, finding that social disengagement, mental stress, and anxiety at the time of the SARS epidemic among a certain group of older adults resulted in an exceptionally high rate of suicide deaths.

graphically, we take the data to an (i) event study framework to quantify the effect over time (H1) and to a (ii) Difference–in–Difference (DiD) model, where we try to disentangle the effects of the pandemic and the mitigation policies on mental health by comparing strict and less–strict lockdown states and by controlling for infection rates that differ across states (H2).

Our main findings can be summarized as follows. During the week of the lockdown, demand for counseling increased by around 20%, and started to slowly decrease again after the third week. Results for different problem issues reveal that the spike in helpline contacts is mainly driven by mental health issues, such as loneliness, fear and depression. Our results are robust to using alternative econometric approaches and different specifications. Regarding H2, preliminary evidence suggests that the effect is indeed stronger where stricter measures were implemented: We find a significantly stronger increase in helpline contacts for strict lockdown states in the week of the lockdown, in particular for contacts concerning mental health issues.

Our paper relates to several strands of interdisciplinary literature. We contribute to the current medical and psychological research on the effect of COVID-19 and mental health (Rajkumar 2020).[5] For China, Wang et al. (2020); Xiao (2020) and Liu et al. (2020) suggest that anxiety is a very common individual mental health symptom. Our study offers valuable insights into the mental health issues prevailing during the COVID-19 pandemic in Germany.

We further add to the fast growing literature analyzing the social (see, e.g. Brodeur et al. 2020; Knipe et al. 2020; Brülhart and Lalive 2020) and economic impacts of the COVID-19 outbreak (see, e.g. Alon et al. 2020). Focusing on lockdown measures, evidence shows that people's behavior towards compliance with prevention recommendations and lockdown policies can depend on media exposure and misinformation (Bursztyn et al. 2020), political leader's communication (Ajzenman et al. 2020), people's expectations about the length of the lockdown (Briscese et al. 2020) or the economic endowment of a living area (Wright et al. 2020).[6]

One closely related study by Brodeur et al. (2020) uses Google Trends data to a analyze the consequences of COVID-19 lockdowns implemented in Europe and America on well-being and

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[5] A further living systematic map of the evidence is online available under: COVID-19: living map of the evidence

[6] Bursztyn et al. (2020) focus on misinformation in the U.S. concerning the COVID-19 risk and find that provision of misinformation in the early stages of a pandemic affects precautionary behavior and downstream health outcomes. Ajzenman et al. (2020) show that when Brazil's president publicly dismisses the COVID-19 risks, recommended prevention practices were reduced. Briscese et al. (2020) study the role of expectation about the length of the lockdown in Italy and resulting compliance with Stay–at–home orders. If the lockdown is longer than expected, there is a lower willingness to comply. Wright et al. (2020) show that compliance with local Stay–at–Home orders depends on the economic endowments and that low income areas comply less than areas with stronger endowments.

mental health. Findings suggest that there is evidence for severe mental health implications: levels of fear are rising and searches for loneliness, worry and sadness increase substantially under lockdown.[7] The main advantage of Google Trends over survey data is, in addition to the availability of daily data for different countries before and after the pandemic, the fact that online search intensity reveals the actual interest of the population. On the downside, older segments of the population are less likely to search online and it is not possible to distinguish individuals by age, gender or other characteristics. Tran et al. (2017) provide evidence and a review of research on using Google Trends to forecast suicide and conclude that the validity of the approach is rather low and depends very much on the specific search terms chosen.

The closest match to our approach is a preliminary analysis of Brülhart and Lalive (2020), who analyze calls to Switzerland's most popular helpline "*Die Dargebotene Hand*" during the COVID-19 outbreak. They show that anxiety did not increase substantially in response to lockdown measures, and that only calls related to the pandemic threat, i.e. elderly individuals who worry about the risk of infection, increased. They do, however, find that calls about relationship issues, as well as addiction and suicidality, have been increasing during the lockdown. Our paper provides new evidence from Germany, looking more closely into the development for different relevant topics and further uses spatial variation in lockdown measures across states to analyze the effect of the lockdown itself.

The remainder of this paper proceeds as follows. Section 2 provides background on the chronology of the COVID-19 outbreak in Germany and on the TS and summarizes the data and illustrates descriptive time trends. Section 3 describes the econometric approach. Section 4 presents the empirical findings. Section 5 concludes.

2 Background and Data

In this section, we provide background information on the timeline of the COVID-19 pandemic in Germany (section 2.1) as well as on Germany's largest psychological telephone and online counseling service, the "TelefonSeelsorge" (section 2.2). In section 2.3, we describe our combined dataset, followed by descriptive time trends in Section 2.4.

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[7] The findings of Knipe et al. (2020), who also study changes in online search behavior using Google Trends are broadly similar

2.1 COVID-19 in Germany

In December 2019, SARS–CoV–2, a new virus from the family of corona viruses, appeared in China. The virus causes the lung disease COVID-19 with typical symptoms such as fever, cough, breathing problems, sometimes runny nose and diarrhea. The infection is usually less severe but in particularly difficult cases, life–threatening pneumonia can develop. The disease developed into an epidemic in China in January 2020 and ultimately spread worldwide.[8] On March 11, 2020, the WHO officially declared the previous epidemic a pandemic.

In Germany, which is the focus of our study, the first official case occurred on January 27, 2020. The Robert Koch Institute (RKI), the government's central scientific institution in the field of biomedicine initially rated the risk of the COVID-19 pandemic for the population in Germany on February 28, 2020 as "low to moderate", since March 17 as "high" and since March 26 as "very high", especially for risk groups. Risk groups are classified based on a higher risk of severe symptoms, which mainly occurs for individuals from about 50–60 years (87% of those who died of COVID-19 in Germany were ≥ 70 years old (median age: 82 year), for smokers (weak evidence), very obese people and individuals with certain medical conditions (RKI 2020b). On February 25, the first cases were documented in Baden-Württemberg and North Rhine-Westphalia. As of May 5th 2020, there are 166,877 confirmed cases in Germany, 132,700 recovered and 7,110 persons died with COVID-19 (RKI 2020a).

As a response to the COVID-19 pandemic, Germany enacted various mitigation policies on the national as well as on the federal state level (i.e. a large number of laws, ordinances, general directives and other regulations). As the stringency index provided by Hale et al. (2020) makes clear, these measures were relatively liberal compared to the lockdown in neighboring countries such as France or Italy. On the national level, Germany started on March 8th with a recommendation to cancel events with more than a thousand participants, followed by an entry stop for third-country nationals, a global travel warning, and restrictions to within EU travel. Most shops, as well as schools and kindergartens, were closed on March 17th. On March 22nd, Germany implemented national–wide social distancing and contact restrictions. Both the "economic lockdown" of March 17th and the "social lockdown" on the 22nd were announced roughly two days before. We further

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[8] On 30 January 2020, the World Health Organization (WHO) announced the international health emergency in order to counteract the spread to countries without efficient health systems. From February 28, 2020, the WHO's reports assessed the risk at global level as "very high".

call the week of March 16th – 23th as the "lockdown week." The goal of the social lockdown was to reduce physical contact as much as possible, requiring a minimum distance of at least 1.5 meters in public spaces. Restaurants and services in the field of personal care, e.g. hairdressers, cosmetic studios, massage practices and tattoo studios, were closed, with exceptions only for medically necessary services.

However, each of the 16 federal states in Germany regulated the lockdown details differently.[9] The different lockdown measures by each federal state are presented online and are regularly updated, see Armbruster and Klotzbuecher (2020).[10] In particular, we classify the federal states of Bavaria, Saarland, Berlin and Brandenburg and Sachsen–Anhalt as "strict lockdown states", as they implemented not only contact-restriction measures but also a stay–at–home order, not allowing individuals to leave the house "without a reason." Our data availability leaves us with Bavaria, Saarland, and Sachsen–Anhalt as the strict states, see figure 1 and section 2.3. In these states, leaving one's home was only allowed if there were good reasons. Such reasons included the way to work, to emergency care, participation in necessary appointments, as well as individual sport and exercise in fresh air. All other outside activity, however, such as resting in parks, were not permitted.

Since April 10th, a 14–day domestic quarantine requirement for returnees from abroad was implemented. Re-opening slowly started on April 28th, when the Saarland Constitutional Court overturned parts of the restrictions: encounters with family members and spending time outdoors were possible again. Around the Easter weekend, demands for further re–opening became louder and since May 4th, school started to re–open, although daycare centers remained closed. Re–opening of playgrounds, hairdressing salons, church services, museums and zoos started on May 6th on the national level. On the state level, Bavaria allowed to meet or visit a person outside of the own household and close family members since May 5th. Five people can meet again in Saxony–Anhalt, even if they do not belong to a common household and Lower Saxony decided to gradually reopen restaurants and coffee shops from May 11. National contact restrictions and mask requirements were generally extended until June 5th, but federal states are supposed to take on more responsibility and decide about the regionally appropriate level of restrictions.

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[9] In Germany, authority between the federal government and the states is divided by sixteen partly–sovereign states, see Ter-Minassian (1997) for an overview on the German system of fiscal federalism.

[10] The now widley used Hale et al. (2020) data base does not contain sub–national state level data for Germany.

2.2   Psychological counseling by the TelefonSeelsorge

With over 100 helpline–centers in Germany, the TS is by far the largest telephone and online crisis helpline offered in Germany. It is free, anonymous, partly government funded, and the only facility in Germany to offer telephone conversations day and night for people in crisis. The TS is a pastoral service under responsibility of the Evangelical and the Catholic Church and can be reached around the clock by telephone at the nationwide toll-free numbers +49 0800 1110 111 (Protestant), +49 800 1110 222 (Catholic), and 116 123, as well as online via webmail and a chat on the central website telefonseelsorge.de. Online search for relevant topics, such as "kill yourself" on Google lead individuals in Germany directly to the TS hotline, see figure A.1. Around 7,500 fully trained volunteers (TS counselors) with a wide range of life and professional skills are available to help those seeking advice in 105 local counseling centers.
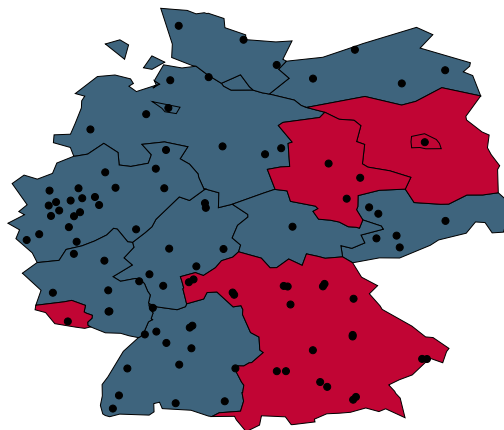

Figure 1: Lockdown stringency and helpline–centers. Black dots represent the approximate locations of TS helpline–centers, red shading indicates strict-lockdown states.

2.3   Data

Since 2019, the TS has been implementing a contact tracking system and we have access to anonymized data on contacts to the TS for the period of 01/01/2019 – 04/28/2020 (Telefon-Seelsorge 2020). The dataset includes information on the date, time, and duration, and type of counseling (telephone, mail, chat, on–site), as well as the the organizational unit. Moreover, a number of individual characteristics are recorded, and we know the gender, approximate age, occupation, living situation (living alone, in marriage / partnership, in a family, in an institution, in a shared apartment), as well as whether the contact was the first contact of the respective person or a repeated one. Further details include known psychological diagnoses, suicidal ideation,

and up to three conversation topics per data record.[11] Table A.2 provides an overview over the available variables. We drop records where people hung up, as well as those that are labeled as jokes or irrelevant.

Out of the available information on conversation topics, we classify the following broader categories, which are potentially overlapping and thus non–exclusive:

- Mental and physical health: depression, grief, suicide, self-harming behavior, fears, anger, confusion, addiction, loneliness, other mental health, and physical constitution

- Violence: physical and sexual violence

- Social issues: relationships, religion, society
  → Relationships: life with partner, parenting, pregnancy, everyday relationships, family relations, separation, virtual relationships
  → Religion: Belief/values, church, religion
  → Society: Society/culture

- Economic issues: Finance and economics
  → Finances/inheritance, poverty, living situation
  → Work situation, unemployment, job search

If a person seeking advice calls the TS or makes contact via the Internet, he or she will be connected to a location that is as close as possible to one's current location. This allows us to track counseling by helpline–center, and therefore by federal state. Table A.1 gives an overview of the helpline–centers by state. After some initial cleaning, where we drop erroneous records and helpline–centers that start using the tracking system only later, we are left with 91 helpline–centers and we concentrate on mail, chat and telephone contacts. On–site contacts are dropped as they are not tracked consistently.

We combine our data set with information on state–level policy measures for Germany that we compile together with collaborators (Armbruster and Klotzbuecher 2020). The data includes information on the federal state level about the onset of the lockdown, the social distancing policies, bans on social interaction in group settings (restaurants, movies, gymnasiums etc.), zoo,

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[11]During a contact is made, the TS counselor picks a maximum of three topics out of an available list with problem topics.

kindergarten and school closures as well as shop closures. We use the national announcement date of the social contact restrictions on the state level as our "lockdown" date.

We further complement the data set on the helpline–center level (i.e. the community of the helpline–center) with daily COVID-19 cases and deaths caused by COVID-19, provided by the RKI (RKI 2020a). Suspected COVID-19 cases, as well as evidence of SARS-COV-2 are reported to the responsible health authorities. The data is transmitted electronically by the health department to the state authorities and from there to the RKI at the latest on the next working day where the data is validated using largely automated algorithms.[12] The cases are assigned to the federal state or county from which the case was transmitted, which usually corresponds to the place of residence or habitual residence of the cases and not the place where the person was probably infected. Note that as our main goal is to control for the fear caused by locally reported cases, it is not important whether the numbers reflect the actual prevalence of the disease but rather captures the alert level transported in local media. Moreover, we also use monthly unemployment rates on the state level from (Bundesagentur fuer Arbeit 2020).

2.4 Graphical Analysis of Helpline Contacts in 2020

Figure 2a shows the development of the daily number of helpline contacts around the social lockdown date (03/22/2020) in Germany. Overall, contacts sharply increased around one week before the national social lockdown, from around 1800 to almost 2400 contacts per day. After around 3 weeks, the number of contacts starts to decrease again, but remains elevated at around 2200 daily contacts at the end of April.

Figure 2b shows the mean number of daily contacts for a helpline–center around the same time, distinguishing strict and less–strict lockdown states. Before the lockdown, an average center received about 22–25 contacts each day, with no substantial difference between the two groups. Around the lockdown date, the average number increases by around 5 contacts per day, and the increase appears to be slightly stronger in strict lockdown states.

Looking into the development of contacts by topic, i.e. contacts concerning mental and physical health (figure 3a), violence (figure 3b), and social issues (figure 3c) allows us to gain a better understanding of what is behind the strong overall increase. Figure 3a illustrates that the overall

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[12]Only cases in which laboratory diagnostic confirmation is available regardless of the clinical picture are published.
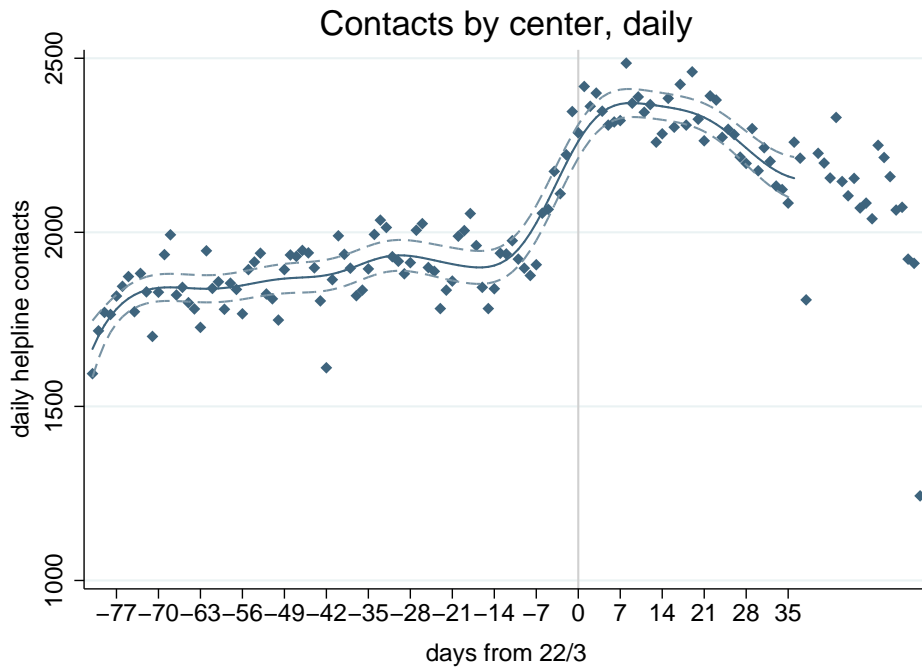
(a) Daily contacts in Germany, 2020
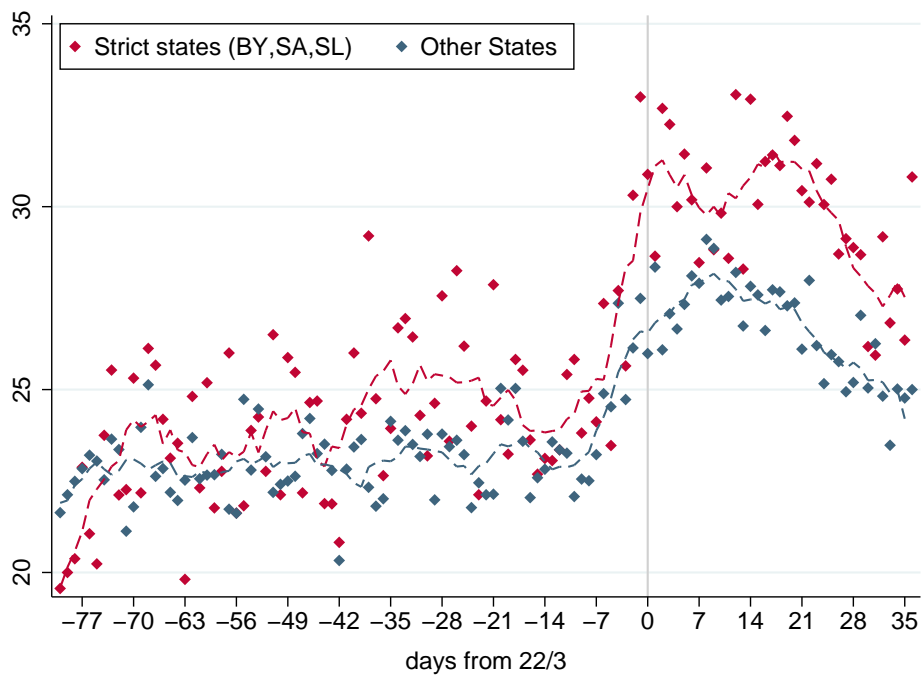
(b) Mean daily contacts per center, strict and non–strict states

Figure 2: Helpline contacts before and after lockdown. The upper graphs shows the daily number of total contacts in Germany. The solid line is fitted using kernel-weighted local polynomial regression, dashed lines represent the 95% confidence intervals. The lower graph shows the average daily contacts by helpline–center in strict lockdown states in red and in all other states in blue.

increase is driven by contacts related to mental health issues have risen sharply from around 1400 daily contacts to around 1800. Contacts dealing with the work and financial situation remained roughly constant with a slightly decreasing trend (figure 3d). While not as strong as the increase in mental health–related contacts, we also see a light uptick in contacts who talk about physical and sexual violence. Note that the true prevalence of domestic violence might be higher than figure 3b suggests, as victims might not be able to contact the helpline while in lockdown with their tormentor.
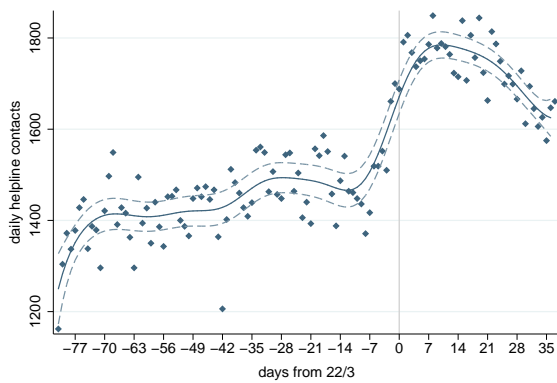
(a) Mental and physical health
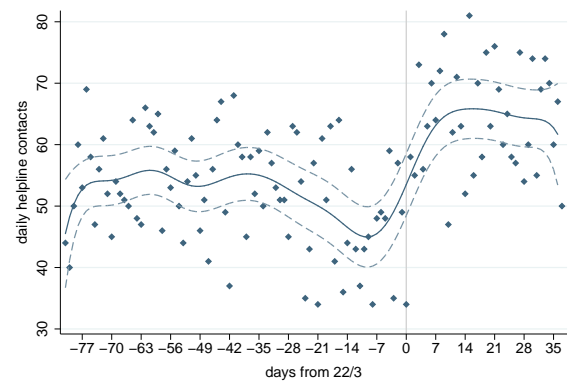
(b) Violence
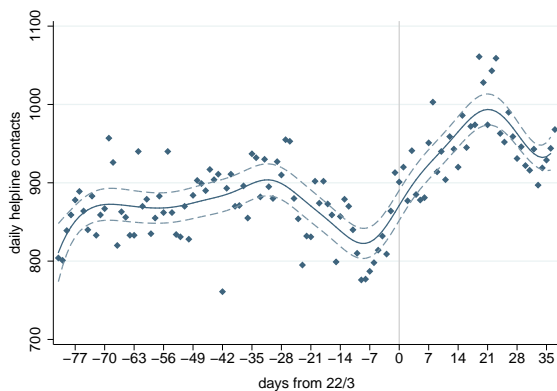
(c) Social issues
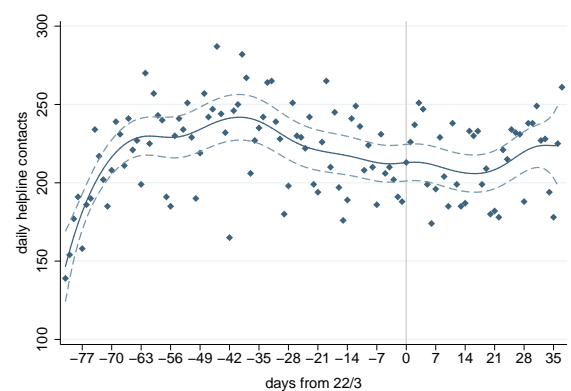
(d) Economic issues

Figure 3: Daily helpline contacts in Germany by topic, before and after lockdown. The solid line is fitted using kernel-weighted local polynomial regression, dashed lines represent the 95% confidence intervals.

In figure 4, we show mental health–related contacts further broken down into subcategories (see section 2.3 for details) and look at the topics of loneliness, addiction, and suicidal ideation. Loneliness, i.e. the perceived discrepancy between desired and actually existing relationships, is as a key concern regarding the effect of social distancing policies. We see a sharp increase from around 400 to 550–600 daily contacts during the week of the national lockdown. Contacts peaked after around two weeks and started to decline again, but did not fully revert to the pre–lockdown

level. Addiction–related contacts (figure 4b) seem to decrease immediately before the lockdown, from around 60 contacts to a little over 50, but then increase with a delay of around one week to around 70 daily contacts. As the COVID-19 pandemic is challenging for many people (e.g. fears of subsistence, social isolation, overwhelmed with home office and childcare), some might get used to drinking regularly, and functional addicts might further loose control without the daily routine of work. Closed borders might additionally lead to illegal drugs becoming more expensive.
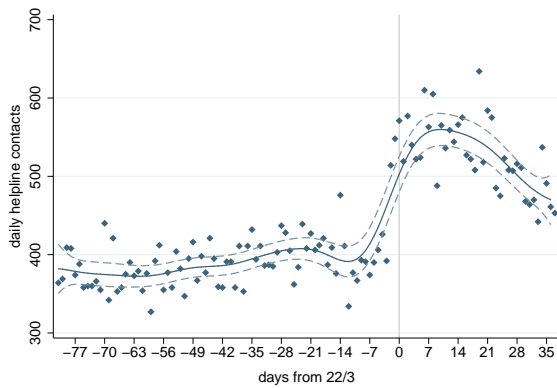
(a) Loneliness
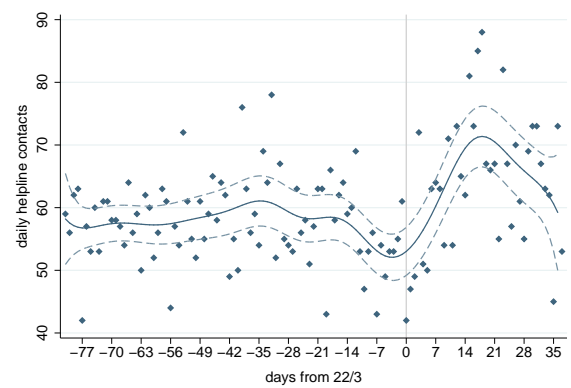
(b) Addiction
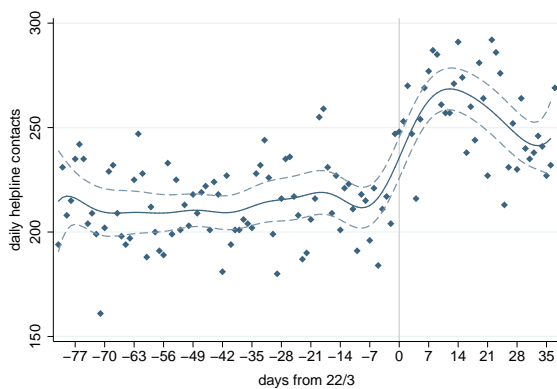
(c) Suicide
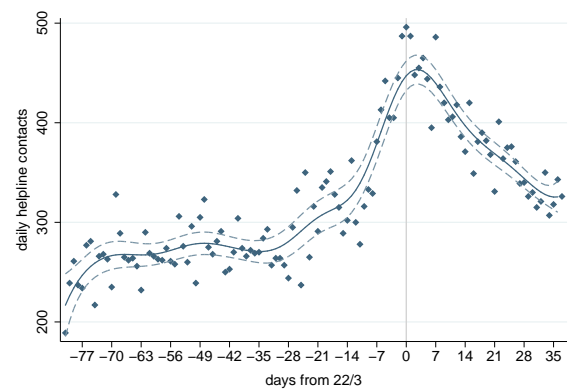
(d) Fear

Figure 4: Daily helpline contacts in Germany, mental health–related issues, before and after lockdown. The solid line is fitted using kernel-weighted local polynomial regression, dashed lines represent the 95% confidence intervals.

The demand for suicide counseling (i.e. contacts relating to suicidal thoughts, intentions, or even suicide attempts) shows a similar development as overall mental health, with a sharp increase in the week of the national lockdown, from around 230 to 280 contacts per day (4c). Also interesting is the development of fear–related contacts shown in figure 4d: Already four weeks before the lockdown, we see an increase from 250 to 350, probably reflecting fear of the pandemic itself. Around the lockdown, these contacts further increase to around 450 per day.

In principle, people are not good at enduring insecurities. Humans have a basic need for

consistency, and the experience of coherence in our lifestyle is demonstrably related to life satisfaction. Due to the multiple uncertainties caused by the corona crisis, this cannot be guaranteed, which contributes to the individual and collective reduction in mental well-being (Grevenstein et al. 2018).

3   Empirical Approach

In this section, we elaborate on the empirical method we use to test our main hypotheses. To quantify the magnitude and statistical significance of the previously described effects more precisely, we apply an event study design to assess the dynamic movements of helpline demand. In order to capture differences in lockdown measures and other local factors such as the locally reported number of COVID-19 infections, we analyze the effect in a daily panel of helpline–centers. In total, our panel covers 91 helpline–centers and the period from 1/1/2019 up to 28/4/2020. The baseline specification we estimate to test H1 takes the following form:

$$Contacts_{i,j,t} = \alpha + \sum_{\tau=-9}^{5} \beta^{\tau} \, week_t^{\tau} + \gamma \, X'_{i,t} + \delta \, Z'_{j,t} + \xi_i + \theta_t + \mu_t + \upsilon_t + \epsilon_{i,j,t} \tag{1}$$

The dependent variable is the number of contacts (general and later by subcategory) per helpline–center i in the federal state j on date t. The dummies $week_t^{\tau}$ takes the value of one if date is within τ weeks before/after the lockdown week (March 16–22), and zero otherwise. $X'_{i,t}$ is a vector of community–level control variables (COVID-19 cases), $Z'_{j,t}$ contains controls on the state level (unemployment rate). ξ_i represent helpline–center fixed effects that capture constant factors on the helpline–center and state level, e.g. the size of the helpline–center, quality of counseling service, or local culture. We also include a weekly linear time trend θ_t to capture the long-term increase in contacts, as well as year and weekday indicators, denoted μ_t and υ_t. The constant is represented by α and $\epsilon_{i,j,t}$ is the error term.

To learn if there is a higher demand for psychological counseling in stricter states (H2), we extend the event study and estimate the following model:

$$Contacts_{i,j,t} = \alpha + \sum_{\tau=-9}^{5} \left(\lambda^{\tau} \, week_t^{\tau} \times strict_j \right) + \gamma \, X'_{i,t} + \delta \, Z'_{j,t} + \xi_i + \vartheta_t + \epsilon_{i,j,t} \tag{2}$$

where we include again helpline–center fixed effects ξ_i and control for local COVID-19 infections and unemployment, and where $strict_j$ is defined as follows:

$$strict_j = \begin{cases} 1 \text{ if } j = \text{Bavaria/Saarland/Saxony–Anhalt} \\ 0 \text{ else} \end{cases}$$

Berlin and Brandenburg also fall under this category of strict states but are dropped from the analysis because of incomplete coverage. Importantly, in this specification we include daily date fixed effects ϑ_t that non-parametrically capture all common time effects (e.g. chancellor Merkel's speech on March 18), allowing us to isolate the differential effect in strict-lockdown states. For the ease of interpretation, we provide simple OLS estimates even though our dependent variable is the non-negative count of contacts and a count data model is therefore more appropriate (Greene 2003). We obtain qualitatively similar results when we estimate the model using a Poisson Pseudo Maximum Likelihood (PPML) estimator (Correia et al. 2019a,b).

4 Results

In this section, we present our effects estimates for H1 and H2. Our outcome of interest is the change in helpline–center contacts across different time periods and problem categories.

4.1 Helpline Contacts Before and After Lockdown

In Table 1, we show the results of model (1), estimated using OLS for helpline contacts in levels or logs, as well as PPML. As all specifications show similar results, we focus on the most simple model and plot the coefficients from column (1) in figure 5: The results confirm the interpretation from the graphical analysis, indicating that the introduction of lockdown measures is associated with a significant increase in helpline contacts. H1 is confirmed. In the first four weeks of the lockdown, approximately four to five additional daily contacts were recorded at an average helpline–center: After the fourth week contacts decrease again, and although they remain elevated, the difference is not statistically significant. We find a significant time trend but no discernible effect of local infections or unemployment.

Estimation results for the four main groups by problem category are presented in table 2.
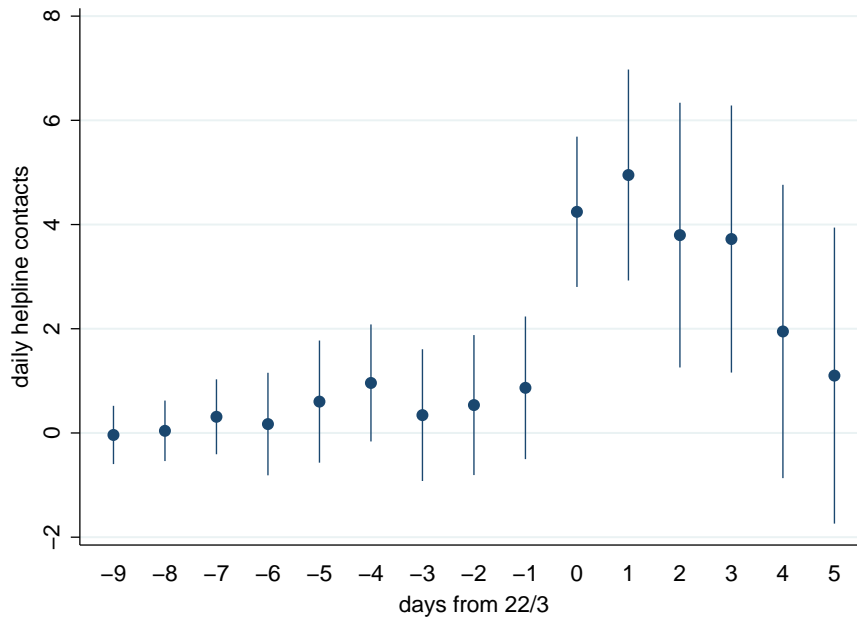
Figure 5: Event study results. The graph shows point estimates from table 1, column (1) with 95 % confidence intervals. Zero is the week of the lockdown and the coefficients are estimated relative to the time before.

For ease of interpretation, we present OLS estimations with count of contacts as the dependent variable. PPML estimates are identical in terms of significance and sign. See table A.5 and A.6. The picture which is emerging in the descriptive trends can be confirmed. The effect is most pronounced for mental health–related contacts, which significantly increase starting in the first lockdown week and peak in the second week. Additional contact related to physical and sexual violence are positive and highly significant in the first week after the lockdown and then appear to flatten out. For social and economic issues, we do not find a significant increase on the demand for psychological counseling during the lockdown period.

A more detailed analysis of the increase in demand for advice on health problems reveals that the increase is driven by loneliness and fear. As the results presented in table 3 show, contacts concerning loneliness significantly increase in the lockdown week and remain high until the fourth week. For fear we find a significant increase already four weeks before the lockdown, capturing the effect of the pandemic rather than the lockdown. After the lockdown, these contacts increase further, and remain significantly higher four weeks after the lockdown. Unexpected demand on suicidal ideation is most pronounced in week one after the lockdown, but flattens out more quickly in the weeks after. For addiction, we find no significant increase after the lockdown.

Table 1: Event Study Results – Alternative Specifications

	OLS		PPML
	Contacts	log(Contacts)	Contacts
Week -9	−0.038	0.015	−0.002
	(0.262)	(0.017)	(0.011)
Week -8	0.041	0.012	0.001
	(0.272)	(0.018)	(0.012)
Week -7	0.310	0.041*	0.013
	(0.337)	(0.021)	(0.015)
Week -6	0.171	0.032	0.006
	(0.462)	(0.033)	(0.021)
Week -5	0.602	0.047	0.024
	(0.550)	(0.043)	(0.025)
Week -4	0.960*	0.072*	0.039*
	(0.527)	(0.040)	(0.024)
Week -3	0.342	0.037	0.011
	(0.593)	(0.047)	(0.027)
Week -2	0.536	0.041	0.020
	(0.630)	(0.048)	(0.028)
Week -1	0.867	0.059	0.033
	(0.642)	(0.044)	(0.029)
Week of lockdown	4.244***	0.182***	0.167***
	(0.677)	(0.041)	(0.027)
Week 1	4.951***	0.181***	0.186***
	(0.950)	(0.056)	(0.039)
Week 2	3.797***	0.129	0.143***
	(1.192)	(0.073)	(0.049)
Week 3	3.722***	0.133	0.137***
	(1.202)	(0.079)	(0.052)
Week 4	1.948	0.067	0.069
	(1.321)	(0.085)	(0.057)
Week 5	1.101	0.031	0.034
	(1.333)	(0.085)	(0.058)
C19 cases	0.163	0.009	0.009*
	(0.119)	(0.007)	(0.005)
Unemployment	0.615	0.032	0.015
	(0.640)	(0.049)	(0.036)
Trend	0.060***	0.005***	0.003***
	(0.013)	(0.001)	(0.001)
Constant	15.805***	2.499***	3.011***
	(3.380)	(0.259)	(0.190)
Helpline center FE	✓	✓	✓
Year FE	✓	✓	✓
Weekday FE	✓	✓	✓
# Helpline centers	91	91	91
# Observations	34,199	34,199	34,199

Note: Results from estimation equation (1), standard errors in parentheses are clustered at the state level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level.

Table 2: Event Study Results – Issues

	Health	Violence	Social	Economic
Week -9	0.089	0.027	−0.152	0.408***
	(0.254)	(0.030)	(0.140)	(0.076)
Week -8	0.066	0.026	−0.059	0.377***
	(0.297)	(0.051)	(0.130)	(0.126)
Week -7	0.278	−0.044	−0.190	0.437***
	(0.311)	(0.061)	(0.145)	(0.109)
Week -6	−0.002	0.038	0.011	0.514***
	(0.408)	(0.064)	(0.273)	(0.170)
Week -5	0.661	0.003	0.022	0.587***
	(0.538)	(0.042)	(0.238)	(0.100)
Week -4	0.884*	−0.003	0.322	0.351***
	(0.416)	(0.063)	(0.292)	(0.085)
Week -3	0.617	−0.083	−0.451	0.344***
	(0.529)	(0.065)	(0.312)	(0.112)
Week -2	0.924*	−0.065**	−0.315	0.230*
	(0.493)	(0.027)	(0.272)	(0.109)
Week -1	0.199	−0.142***	−1.175***	0.195***
	(0.521)	(0.041)	(0.339)	(0.060)
Week of lockdown	2.490***	−0.078	−0.480	0.099
	(0.529)	(0.051)	(0.334)	(0.085)
Week 1	3.389***	0.129**	−0.097	0.106
	(0.765)	(0.044)	(0.388)	(0.113)
Week 2	2.554**	0.053	−0.254	−0.025
	(0.956)	(0.100)	(0.579)	(0.182)
Week 3	2.325**	0.109	0.402	−0.159
	(0.933)	(0.084)	(0.503)	(0.157)
Week 4	1.119	0.051	−0.527	0.094
	(1.101)	(0.091)	(0.643)	(0.206)
Week 5	0.387	0.052	−0.797	0.067
	(1.074)	(0.078)	(0.585)	(0.199)
C19 cases	0.141	0.005	0.083*	0.024*
	(0.095)	(0.003)	(0.045)	(0.013)
Unemployment	0.500	−0.016	0.321	0.017
	(0.444)	(0.043)	(0.217)	(0.150)
Trend	0.045***	0.001	0.027***	0.001
	(0.011)	(0.001)	(0.006)	(0.003)
Constant	11.845***	0.646**	7.436***	2.242**
	(2.373)	(0.228)	(1.180)	(0.785)
Helpline center FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Weekday FE	✓	✓	✓	✓
# Helpline centers	91	91	91	91
# Observations	34,199	34,199	34,199	34,199

Note: Results from estimation equation (1), standard errors in parentheses are clustered at the state level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level.

Table 3: Event Study Results – Mental Health Issues

	Loneliness	Suicide	Addiction	Fear
Week -9	−0.180	−0.022	0.004	0.052
	(0.110)	(0.092)	(0.039)	(0.122)
Week -8	−0.201	−0.184*	−0.033	0.108
	(0.167)	(0.094)	(0.044)	(0.144)
Week -7	−0.003	−0.059	0.015	0.247**
	(0.135)	(0.080)	(0.048)	(0.095)
Week -6	−0.060	−0.101	−0.010	0.133
	(0.132)	(0.129)	(0.054)	(0.109)
Week -5	0.035	−0.111	0.051	0.124
	(0.191)	(0.130)	(0.065)	(0.158)
Week -4	0.112	−0.021	0.014	0.087
	(0.161)	(0.160)	(0.063)	(0.128)
Week -3	0.146	−0.099	−0.035	0.485***
	(0.159)	(0.233)	(0.053)	(0.148)
Week -2	0.129	0.054	0.047	0.673***
	(0.137)	(0.173)	(0.066)	(0.196)
Week -1	−0.142	−0.201	−0.104**	1.049***
	(0.116)	(0.174)	(0.048)	(0.188)
Week of lockdown	1.206***	0.113	−0.110*	2.134***
	(0.226)	(0.090)	(0.056)	(0.209)
Week 1	1.639***	0.385**	−0.032	1.970***
	(0.303)	(0.141)	(0.047)	(0.182)
Week 2	1.378***	0.257	0.034	1.312***
	(0.355)	(0.286)	(0.047)	(0.241)
Week 3	1.178***	0.214	0.069	1.015***
	(0.309)	(0.248)	(0.057)	(0.318)
Week 4	0.552	−0.086	−0.043	0.668**
	(0.354)	(0.207)	(0.065)	(0.269)
Week 5	0.230	−0.124	−0.072	0.383
	(0.366)	(0.197)	(0.065)	(0.262)
C19 cases	0.037	0.019	0.009**	0.023
	(0.025)	(0.012)	(0.003)	(0.028)
Unemployment	0.322	0.157*	0.028	0.031
	(0.203)	(0.084)	(0.035)	(0.122)
Trend	0.018***	0.007**	0.002*	0.008***
	(0.004)	(0.003)	(0.001)	(0.002)
Constant	2.105*	1.376***	0.433**	2.457***
	(1.096)	(0.464)	(0.183)	(0.663)
Helpline center FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Weekday FE	✓	✓	✓	✓
# Helpline centers	91	91	91	91
# Observations	34,199	34,199	34,199	34,199

Note: Results from estimation equation (1), standard errors in parentheses are clustered at the state level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level.

4.2 Differential Effect by Lockdown Stringency

Table 4 presents the estimation results for H2 specified by equation (2). We find a significant positive difference (5% level) between the strict and non–strict federal states in the week of the lockdown (*Week of the lockdown × strict*) of around four additional calls per helpline–center per day than in the less–strict states. Results for selected topics suggest a significantly higher increase in the demand for health related contacts as well as for violence and economic issues.

When we further break down the category of mental health–related contacts in table 5, we see a positive difference for loneliness and fear, and an even stronger difference for contacts concerning suicidal ideation. After the second lockdown week, we find no significant differential increase in stricter states for any of the topics.

While this preliminary evidence speaks in favor of H2, we can not be certain what is behind the stronger average effect in Bavaria, Saarland and Saxony-Anhalt. As a next step in our project, we will not only classify states as "strict" and "less strict", but also take a closer look at the individual measures of the federal states to assess whether there are certain measures that people find particularly difficult to cope with.

5 Concluding remarks

In this paper, we exploit some unique design features of the COVID-19 lockdown in Germany in order to bring new evidence to bear on two important questions. First, did the demand for psychological assistance increase as a response to the outbreak of the COVID-19 pandemic and the implemented lockdown measures? Second, is the increase in demand is higher in stricter states?

We see clear evidence for substantial increase in the demand for psychological counseling after the lockdown week, by around 20% relative to the time before. While contacts related to financial worries and fear of the pandemic itself increase already before, the strong increase around the lockdown date seems to be driven by heightened feelings of loneliness and other mental health problems. For contacts concerning violence we see some increase as well. Results are robust to using alternative estimators. Our analysis further suggests that, on average, stricter states experience a somewhat stronger increase in helpline contacts compared to less strict states.

Table 4: Event Study Results, Lockdown Stringency

	Total	Health	Violence	Social	Economic
Week -9 × strict	2.029	1.899*	0.254***	0.962	0.144
	(1.641)	(1.026)	(0.078)	(0.588)	(0.215)
Week -8 × strict	2.658	2.405*	0.099*	0.517	−0.082
	(1.673)	(1.251)	(0.048)	(0.665)	(0.262)
Week -7 × strict	2.686	2.537	0.079	0.889	0.068
	(1.957)	(1.462)	(0.052)	(0.705)	(0.260)
Week -6 × strict	2.534	2.106	0.080	0.565	0.152
	(1.822)	(1.196)	(0.067)	(0.864)	(0.405)
Week -5 × strict	3.896	2.909	0.148**	1.940**	0.629**
	(2.247)	(1.730)	(0.053)	(0.867)	(0.218)
Week -4 × strict	3.446	3.472	0.097	1.516	0.325
	(2.815)	(2.033)	(0.063)	(1.262)	(0.263)
Week -3 × strict	3.048	2.561	0.109	0.671	0.284
	(2.815)	(2.232)	(0.097)	(1.280)	(0.349)
Week -2 × strict	2.534	2.616	0.222***	0.950	0.334
	(2.509)	(1.672)	(0.068)	(1.073)	(0.195)
Week -1 × strict	3.542*	2.613**	0.147	1.615	0.420**
	(1.709)	(1.068)	(0.091)	(1.019)	(0.147)
Week of lockdown × strict	4.378**	3.134**	0.296***	0.971	0.723**
	(1.923)	(1.303)	(0.066)	(1.048)	(0.298)
Week 1 × strict	3.258	2.475	0.269***	0.936	0.712**
	(2.705)	(2.090)	(0.062)	(1.115)	(0.305)
Week 2 × strict	3.674	3.274*	−0.005	0.508	0.359
	(2.714)	(1.834)	(0.083)	(1.410)	(0.437)
Week 3 × strict	3.896	2.971	0.047	1.113	0.470*
	(3.720)	(2.379)	(0.054)	(1.458)	(0.218)
Week 4 × strict	2.870	2.593	−0.018	−0.141	0.103
	(3.523)	(2.595)	(0.132)	(1.660)	(0.423)
Week 5 × strict	2.840	2.168	0.107	0.413	0.171
	(3.590)	(2.530)	(0.102)	(1.555)	(0.373)
C19 cases	0.239**	0.202***	0.007**	0.120***	0.030**
	(0.085)	(0.065)	(0.003)	(0.032)	(0.013)
Unemployment	1.696***	1.120***	−0.021	0.731***	0.166
	(0.311)	(0.222)	(0.050)	(0.228)	(0.154)
Constant	12.147***	10.031***	0.706**	5.949***	1.563*
	(1.661)	(1.183)	(0.255)	(1.188)	(0.793)
Helpline center FE	✓	✓	✓	✓	✓
Date FE	✓	✓	✓	✓	✓
# Helpline centers	88	88	88	88	88
# Observations	32,914	32,914	32,914	32,914	32,914

Note: Results from estimation equation (1), standard errors in parentheses are clustered at the state level.
***, ** and * denote statistical significance at the 1%, 5% and 10% level.

Our findings are important as they shed light on the true extent of mental health consequences of the COVID-19 pandemic and lockdown measures in Germany. Our results support the recent warning by the United Nations: Launching the UN policy brief on COVID-19 and mental health on May 13th, Secretary-General António Guterres stressed that "mental health services are an essential part of all government responses to COVID-19".[13]

This article is still work in progress as we will further analyze different groups and topics, as

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[13]See www.un.org/en/coronavirus/mental-health-services-are-essential-part-all-government-responses-covid-19

Table 5: Event Study Results, Lockdown Stringency by Mental Health Issues

	Loneliness	Suicide	Addiction	Fear
Week -9 × strict	0.552	−0.128	−0.005	0.738***
	(0.458)	(0.174)	(0.078)	(0.209)
Week -8 × strict	1.400***	−0.005	0.074	0.893**
	(0.435)	(0.199)	(0.108)	(0.335)
Week -7 × strict	0.988	−0.207	0.138	0.303
	(0.736)	(0.141)	(0.080)	(0.281)
Week -6 × strict	1.094**	0.004	0.158*	0.594**
	(0.449)	(0.176)	(0.079)	(0.259)
Week -5 × strict	1.429*	−0.110	−0.059	0.883
	(0.669)	(0.183)	(0.120)	(0.531)
Week -4 × strict	1.439	−0.251	0.335***	0.737
	(0.895)	(0.391)	(0.074)	(0.443)
Week -3 × strict	1.020	0.030	0.265***	0.716
	(0.697)	(0.293)	(0.087)	(0.476)
Week -2 × strict	0.851	−0.066	0.249	0.291
	(0.545)	(0.305)	(0.171)	(0.368)
Week -1 × strict	0.836**	0.617***	−0.149**	0.433
	(0.358)	(0.161)	(0.061)	(0.308)
Week of lockdown × strict	0.863*	0.302*	0.033	1.128**
	(0.443)	(0.156)	(0.111)	(0.377)
Week 1 × strict	0.890	0.515***	−0.155	0.615*
	(1.034)	(0.127)	(0.089)	(0.306)
Week 2 × strict	1.634**	0.653**	0.094	1.197*
	(0.713)	(0.289)	(0.076)	(0.638)
Week 3 × strict	1.399	0.268	−0.022	0.812
	(0.863)	(0.290)	(0.170)	(0.744)
Week 4 × strict	1.036	−0.176	−0.013	1.047*
	(0.789)	(0.247)	(0.084)	(0.576)
Week 5 × strict	1.306	−0.010	−0.096	0.679
	(0.821)	(0.237)	(0.119)	(0.633)
C19 cases	0.050***	0.030***	0.012***	0.038*
	(0.012)	(0.009)	(0.003)	(0.020)
Unemployment	0.421**	0.183	0.084**	0.137
	(0.146)	(0.137)	(0.038)	(0.103)
Constant	2.104**	1.440*	0.181	2.276***
	(0.754)	(0.707)	(0.196)	(0.537)
Helpline center FE	✓	✓	✓	✓
Date FE	✓	✓	✓	✓
# Helpline centers	88	88	88	88
# Observations	32,914	32,914	32,914	32,914

Note: Results from estimation equation (1), standard errors in parentheses are clustered at the state level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level.

well as update our estimates as new data points become available, allowing us to look at the development in May 2020. Given that the lockdown measures in Germany were far less strict than in other countries, future research should look more closely into the mental health effects in stricter countries such as France or Italy.

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Appendix

A.1   Additional figures and tables

Table A.1: List of Helpline–centers by State

Baden-Württemberg: Freiburg (485), Heilbronn (134), Karlsruhe (89), Konstanz (484), Lörrach (480), Mannheim (482), Offenburg (484), Pforzheim (481), Ravensburg (326), Stuttgart (913), Tübingen (404), Ulm (485)

Bavaria: Aschaffenburg (485), Augsburg (297), Bamberg (302), Bayreuth (478), Erlangen (472), Ingolstadt (452), München (897), Passau (334), Regensburg (443), Rosenheim (483), Weiden (485), Würzburg (484)

Berlin: Berlin (822)

Brandenburg: Potsdam (1)

Bremen: Bremen (451)

Hamburg: Hamburg (908)

Hesse: Darmstadt (484), Frankfurt (880), Fulda (120), Gießen (441), Hanau (485), Kassel (480), Mainz (182), Trier (126)

Mecklenburg-Vorpommern: Greifswald (459), Neubrandenburg (466), Rostock (485), Schwerin (485)

Lower Saxony: Bad Bederkesa (394), Braunschweig (337), Hannover (416), Meppen (59), Oldenburg (274), Soltau (1), Wolfsburg (485)

North Rhine-Westphalia: Aachen (484), Bad Neuenahr (31), Bad Oeynhausen (485), Bielefeld (474), Bochum (485), Bonn (454), Dortmund (469), Duisburg (312), Düren (479), Düsseldorf (362), Essen (883), Hagen (485), Hamm (485), Krefeld (485), Köln (519), Meschede (1), Münster (485), Neuss (316), Paderborn (484), Recklinghausen (484), Siegen (485), Solingen (470), Wesel (318), Wuppertal (485)

Rhineland-Palatinate: Bad Kreuznach (120), Kaiserslautern (484), Koblenz (136)

Saarland: Saarbrücken (397)

Saxony: Auerbach (468), Chemnitz (188), Dresden (151), Leipzig (191), Zwickau (114)

Saxony-Anhalt: Dessau (485), Halle/Saale (326), Magdeburg (124)

Schleswig-Holstein: Kiel (119), Lübeck (35), Sylt (302)

Thuringia: Erfurt (129), Jena/Gera (1)

Note: The table shows the helpline–centers by federal state, number of daily observations in parentheses. Stuttgart, München, Berlin, Hamburg, Frankfurt, Essen, and Köln each have two separate centers.

Table A.2: Summary Statistics – Individual and Contact Characteristics

	Mean	S.D.	Min.	Max.	N
Chat contacts	0.045	0.208	0	1	715,227
Mail contacts	0.070	0.255	0	1	715,227
Phone contacts	0.885	0.319	0	1	715,227
Duration in minutes	22.693	29.046	0	17312	715,227
First contacts	0.199	0.400	0	1	540,657
Recurring contacts	0.801	0.400	0	1	540,657

	Mean	S.D.	Min.	Max.	N
Female	0.683	0.465	0	1	697,929
Male	0.315	0.464	0	1	697,929
Other gender	0.002	0.049	0	1	697,929
Living alone	0.642	0.479	0	1	622,869
Living in institution	0.052	0.222	0	1	622,869
Living with family	0.137	0.344	0	1	622,869
Living with partner	0.143	0.351	0	1	622,869
Living in shared flat	0.025	0.157	0	1	622,869
Searching job	0.061	0.240	0	1	555,418
Employed	0.280	0.449	0	1	555,418
Disability	0.278	0.448	0	1	555,418
Not searching job	0.058	0.234	0	1	555,418
Retired	0.234	0.423	0	1	555,418
In education	0.088	0.284	0	1	555,418
Suicide of others	0.013	0.112	0	1	714,959
Suicidal thoughts	0.086	0.281	0	1	714,959
Suicidal intentions	0.014	0.119	0	1	714,959
Suicide attempts	0.012	0.109	0	1	714,959
Psych. diagnosis	0.326	0.469	0	1	714,968

Table A.3: Summary Statistics – Topics

	Mean	S.D.	Min.	Max.	N
Physical constitution	0.165	0.371	0	1	702,351
Depressive mood	0.178	0.383	0	1	702,351
Grief	0.044	0.206	0	1	702,351
Fears	0.146	0.353	0	1	702,351
Stress, emotional fatigue	0.091	0.288	0	1	702,351
Anger, agression	0.073	0.260	0	1	702,351
Self-harming behaviour	0.014	0.115	0	1	702,351
Confusion	0.023	0.150	0	1	702,351
Addiction	0.030	0.171	0	1	702,351
Low confidence, shame	0.068	0.252	0	1	702,351

	Mean	S.D.	Min.	Max.	N
Loneliness, isolation	0.211	0.408	0	1	702,351
Positive feeling	0.013	0.113	0	1	702,351
Suicidal self	0.031	0.174	0	1	702,351
Suicidal other	0.011	0.104	0	1	702,351
Sexuality	0.027	0.162	0	1	702,351
Other mental issues	0.075	0.263	0	1	702,351
Partner search or choice	0.056	0.230	0	1	702,351
Life with partner	0.076	0.265	0	1	702,351
Parenting	0.025	0.157	0	1	702,351
Pregnancy, childwish	0.004	0.063	0	1	702,351
Family relations	0.167	0.373	0	1	702,351
Everyday relationships	0.109	0.311	0	1	702,351
Public institutions	0.024	0.154	0	1	702,351
Care, therapy	0.071	0.257	0	1	702,351
Separation	0.034	0.181	0	1	702,351
Mortality, death	0.028	0.165	0	1	702,351
Virtual relationships	0.002	0.046	0	1	702,351
Migration, integration	0.002	0.048	0	1	702,351
Physical violence	0.018	0.133	0	1	702,351
Sexual violence	0.012	0.110	0	1	702,351
School, education	0.018	0.131	0	1	702,351
Work situation	0.047	0.211	0	1	702,351
Unemployment, job search	0.017	0.128	0	1	702,351
Daily routines	0.053	0.224	0	1	702,351
Volunteering	0.003	0.055	0	1	702,351
Poverty	0.014	0.117	0	1	702,351
Finances, inheritance	0.023	0.148	0	1	702,351
Housing situation	0.027	0.162	0	1	702,351
Belief, values	0.028	0.165	0	1	702,351
Church, religion	0.006	0.079	0	1	702,351
Society, culture	0.012	0.109	0	1	702,351
TS: positive feedback	0.018	0.133	0	1	702,351
TS: negative feedback	0.003	0.057	0	1	702,351
TS: agreed feedback	0.001	0.035	0	1	702,351

	Mean	S.D.	Min.	Max.	N
TS: other feedback	0.003	0.053	0	1	702,351
Further information	0.006	0.078	0	1	702,351
Other topic	0.014	0.116	0	1	702,351
Current topic	0.049	0.216	0	1	702,351

Table A.4: Summary Statistics – Age groups

	Mean	S.D.	Min.	Max.	N
Age: 0-9	0.000	0.011	0	1	653,683
Age: 10-14	0.009	0.096	0	1	653,683
Age: 15-19	0.041	0.199	0	1	653,683
Age: 20-29	0.103	0.305	0	1	653,683
Age: 30-39	0.133	0.340	0	1	653,683
Age: 40-49	0.170	0.376	0	1	653,683
Age: 50-59	0.249	0.433	0	1	653,683
Age: 60-69	0.196	0.397	0	1	653,683
Age: 70-79	0.075	0.263	0	1	653,683
Age: 80 and above	0.023	0.149	0	1	653,683

Table A.5: Event Study Results – Issues (PPML)

	Health	Violence	Social	Economic
Week -9	0.005	0.041	−0.015	0.158***
	(0.014)	(0.046)	(0.013)	(0.025)
Week -8	0.003	0.038	−0.007	0.146***
	(0.017)	(0.079)	(0.013)	(0.044)
Week -7	0.015	−0.070	−0.019	0.169***
	(0.018)	(0.094)	(0.014)	(0.036)
Week -6	−0.002	0.055	−0.001	0.196***
	(0.025)	(0.098)	(0.026)	(0.057)
Week -5	0.036	0.003	0.000	0.221***
	(0.031)	(0.066)	(0.023)	(0.034)
Week -4	0.048**	−0.006	0.028	0.139***
	(0.024)	(0.098)	(0.028)	(0.034)
Week -3	0.031	−0.137	−0.046	0.136***
	(0.031)	(0.100)	(0.031)	(0.041)
Week -2	0.049*	−0.106**	−0.033	0.094**
	(0.028)	(0.042)	(0.027)	(0.042)
Week -1	0.007	−0.246***	−0.120***	0.080***
	(0.031)	(0.068)	(0.034)	(0.024)
Week of lockdown	0.131***	−0.124	−0.049	0.041
	(0.028)	(0.079)	(0.032)	(0.035)
Week 1	0.169***	0.180**	−0.016	0.042
	(0.041)	(0.070)	(0.038)	(0.045)
Week 2	0.127**	0.097	−0.029	−0.012
	(0.051)	(0.151)	(0.055)	(0.073)
Week 3	0.113**	0.173	0.026	−0.069
	(0.052)	(0.130)	(0.049)	(0.064)
Week 4	0.053	0.099	−0.056	0.032
	(0.061)	(0.140)	(0.063)	(0.082)
Week 5	0.013	0.101	−0.082	0.020
	(0.060)	(0.123)	(0.058)	(0.080)
C19 cases	0.009**	0.004	0.009**	0.010**
	(0.004)	(0.005)	(0.004)	(0.005)
Unemployment	0.019	−0.041	0.023	0.006
	(0.032)	(0.067)	(0.024)	(0.064)
Trend	0.003***	0.002	0.003***	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	2.712***	−0.184	2.231***	0.979***
	(0.170)	(0.349)	(0.127)	(0.336)
Helpline center FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Weekday FE	✓	✓	✓	✓
# Helpline centers	91	90	91	91
# Observations	34,199	34,169	34,199	34,199

Note: Results from estimation equation (1) using PPML, standard errors in parentheses are clustered at the state level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level.

Table A.6: Event Study Results – Issues (PPML)

	Loneliness	Suicide	Addiction	Fear
Week -9	−0.040	−0.009	0.005	0.016
	(0.024)	(0.035)	(0.055)	(0.037)
Week -8	−0.045	−0.073**	−0.049	0.033
	(0.037)	(0.036)	(0.065)	(0.043)
Week -7	−0.003	−0.023	0.019	0.074***
	(0.030)	(0.031)	(0.069)	(0.028)
Week -6	−0.017	−0.040	−0.016	0.038
	(0.028)	(0.052)	(0.075)	(0.034)
Week -5	0.003	−0.044	0.068	0.035
	(0.040)	(0.052)	(0.085)	(0.048)
Week -4	0.018	−0.009	0.018	0.023
	(0.034)	(0.062)	(0.086)	(0.040)
Week -3	0.023	−0.040	−0.054	0.135***
	(0.034)	(0.093)	(0.076)	(0.041)
Week -2	0.020	0.018	0.062	0.186***
	(0.029)	(0.064)	(0.089)	(0.050)
Week -1	−0.040	−0.080	−0.161**	0.278***
	(0.027)	(0.072)	(0.080)	(0.046)
Week of lockdown	0.214***	0.043	−0.168*	0.506***
	(0.039)	(0.034)	(0.089)	(0.043)
Week 1	0.272***	0.137**	−0.047	0.468***
	(0.056)	(0.054)	(0.070)	(0.037)
Week 2	0.217***	0.088	0.036	0.337***
	(0.066)	(0.099)	(0.067)	(0.059)
Week 3	0.179***	0.076	0.075	0.270***
	(0.066)	(0.082)	(0.077)	(0.078)
Week 4	0.073	−0.023	−0.066	0.189***
	(0.075)	(0.072)	(0.094)	(0.066)
Week 5	0.012	−0.037	−0.107	0.115*
	(0.078)	(0.071)	(0.096)	(0.061)
C19 cases	0.011*	0.005**	0.011**	0.005
	(0.006)	(0.002)	(0.005)	(0.004)
Unemployment	0.055	0.063*	0.040	−0.002
	(0.052)	(0.034)	(0.054)	(0.038)
Trend	0.004***	0.003**	0.003*	0.003***
	(0.001)	(0.001)	(0.002)	(0.001)
Constant	1.214***	0.581***	−0.596**	1.110***
	(0.277)	(0.191)	(0.291)	(0.207)
Helpline center FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Weekday FE	✓	✓	✓	✓
# Helpline centers	91	91	90	91
# Observations	34,199	34,199	34,164	34,199

Note: Results from estimation equation (1) using PPML, standard errors in parentheses are clustered at the state level. ***, ** and * denote statistical significance at the 1%, 5% and 10% level.
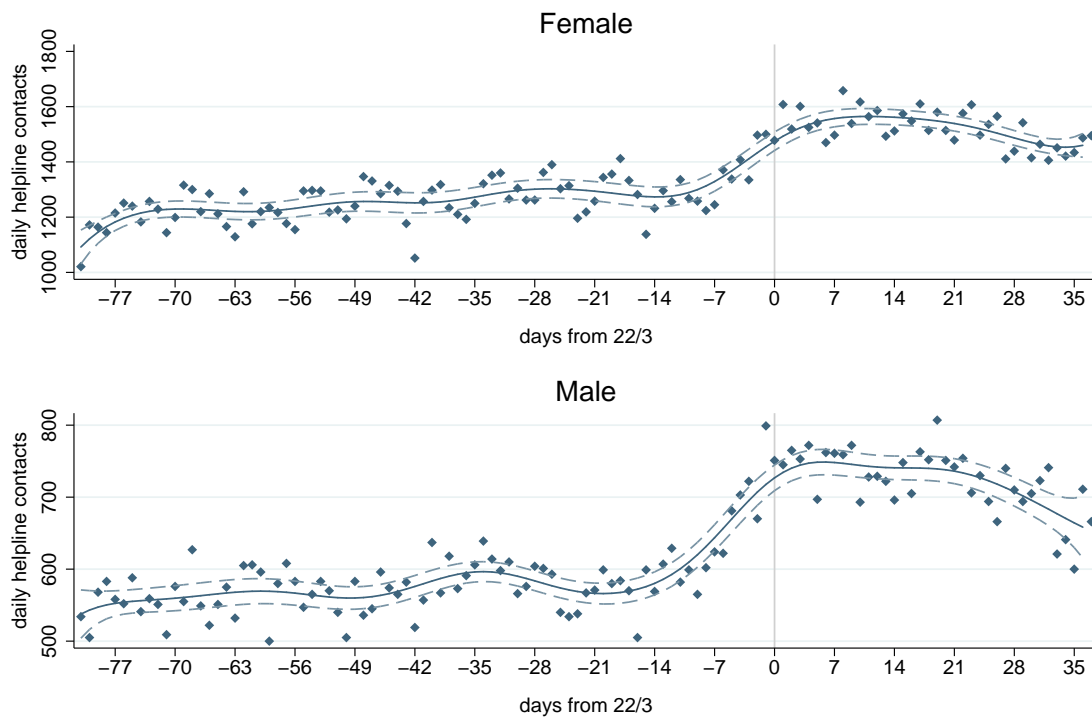
Figure A.1: Searching for help

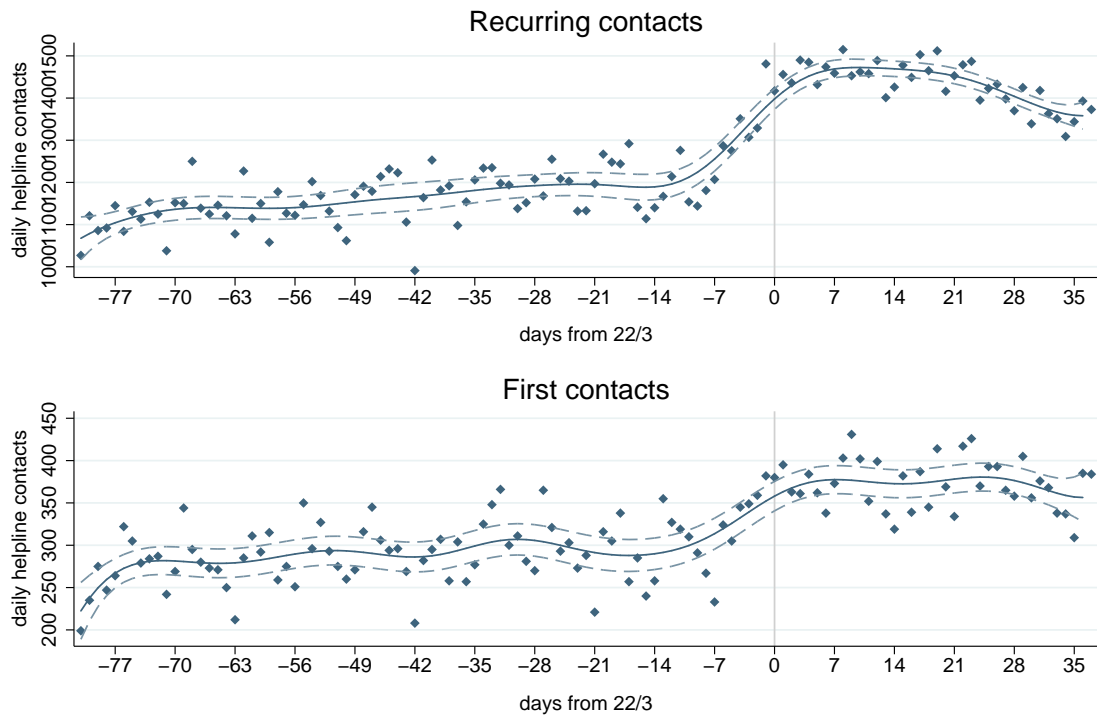Figure A.2: Daily helpline contacts, by gender

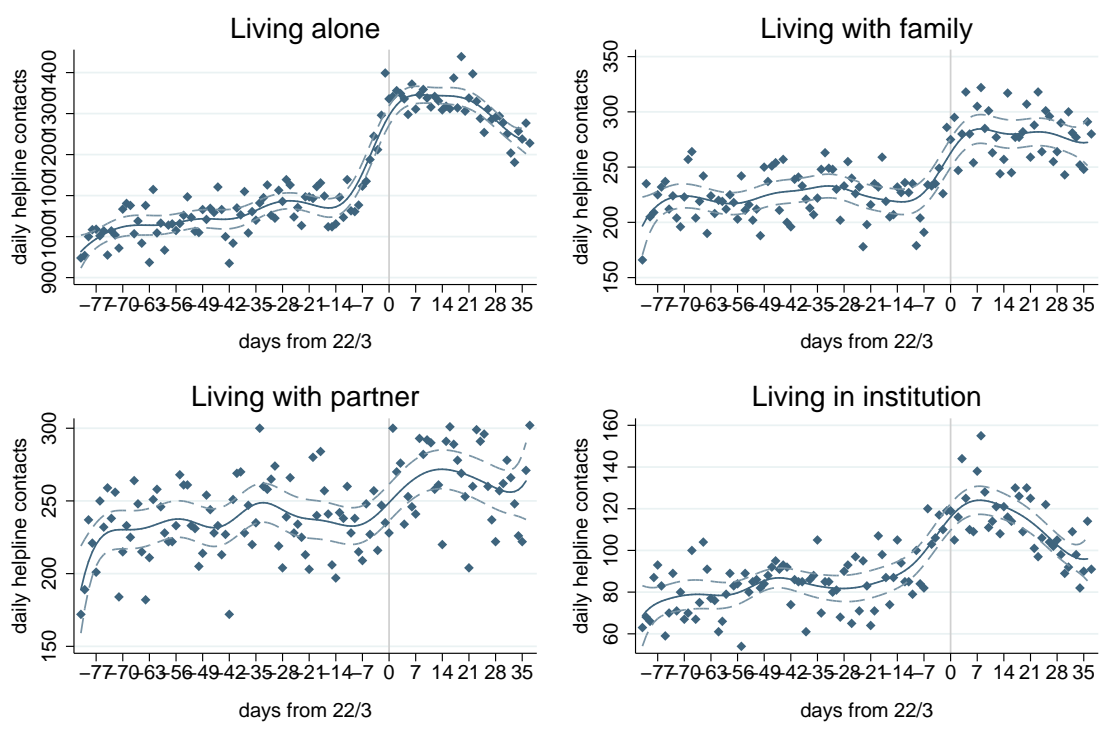Figure A.3: Daily helpline contacts, repeated and first contacts

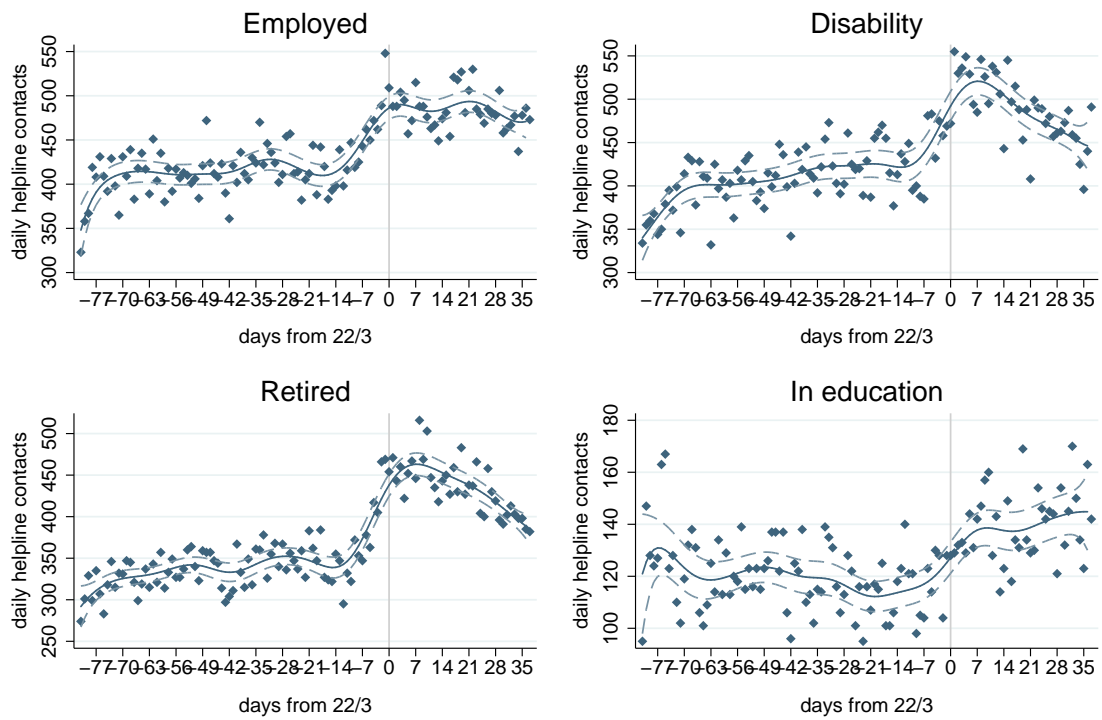Figure A.4: Daily helpline contacts, by living situation

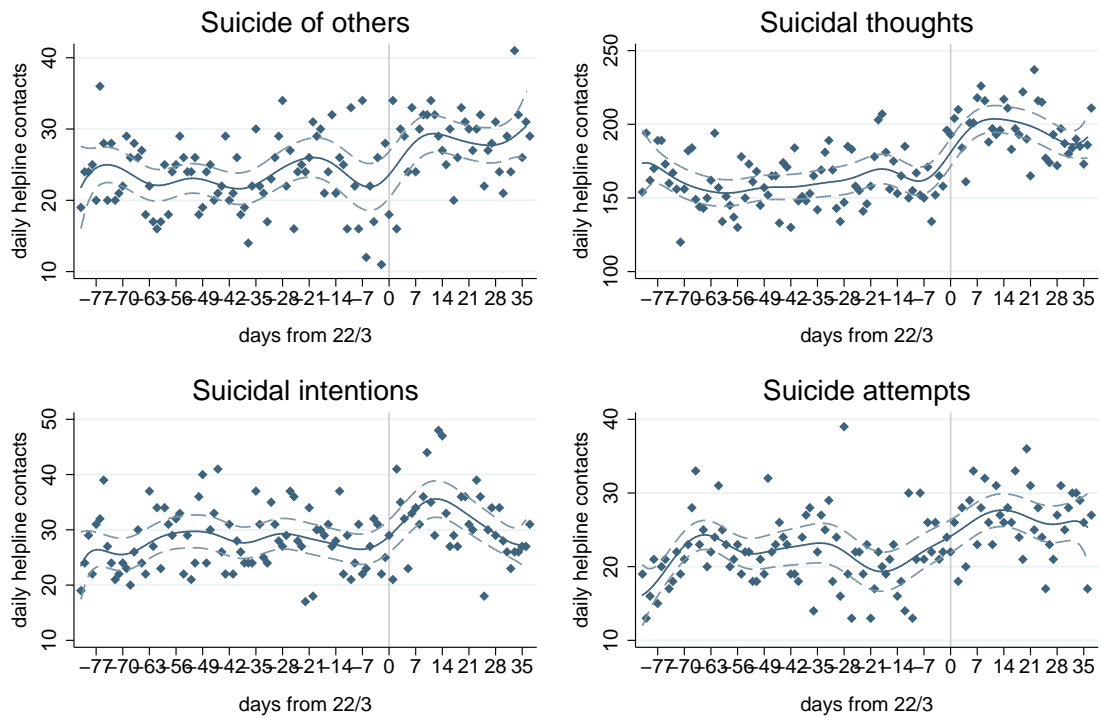Figure A.5: Daily helpline contacts, by occupation status

Figure A.6: Daily helpline contacts, different degrees of suicidal ideation
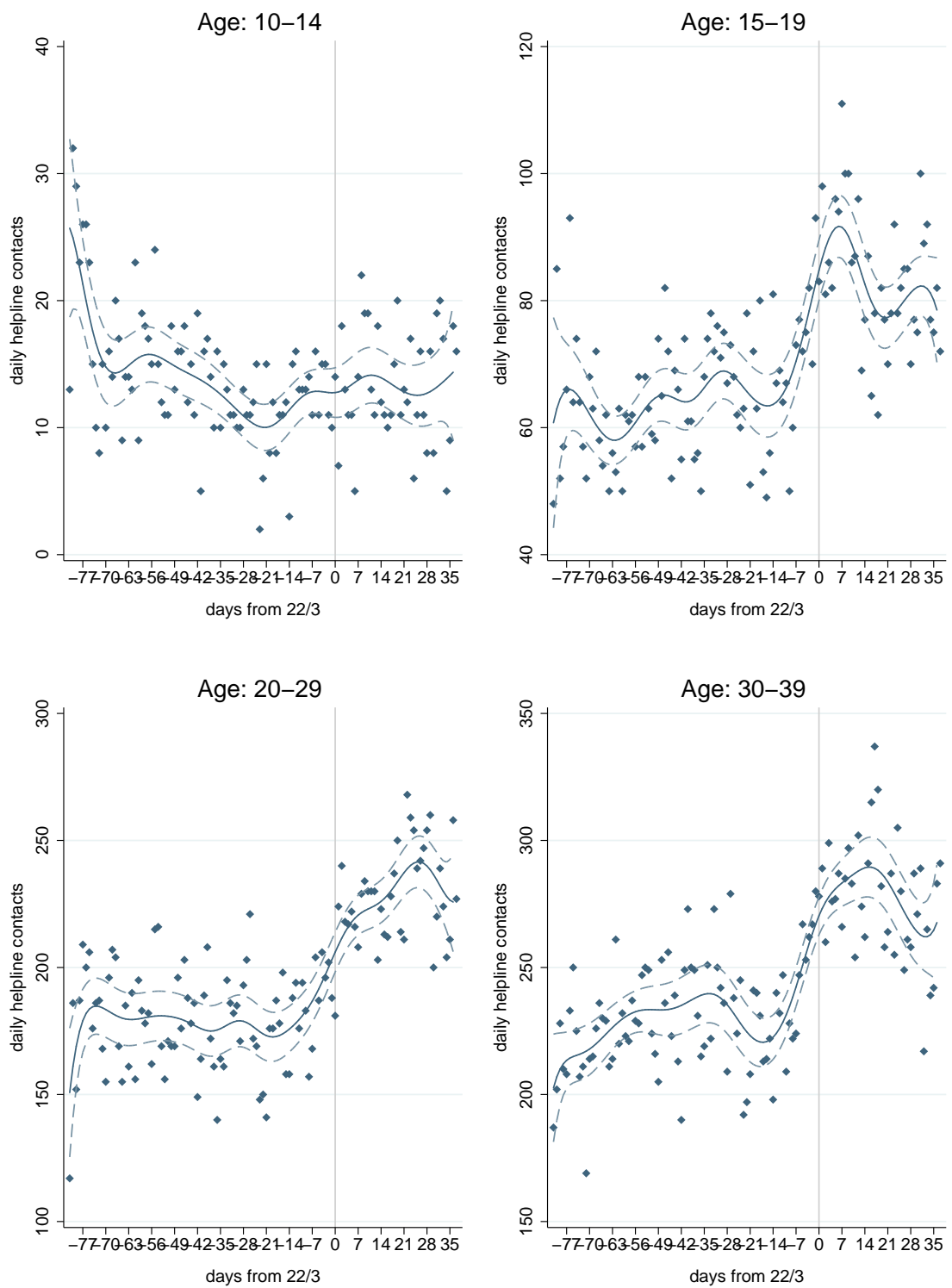
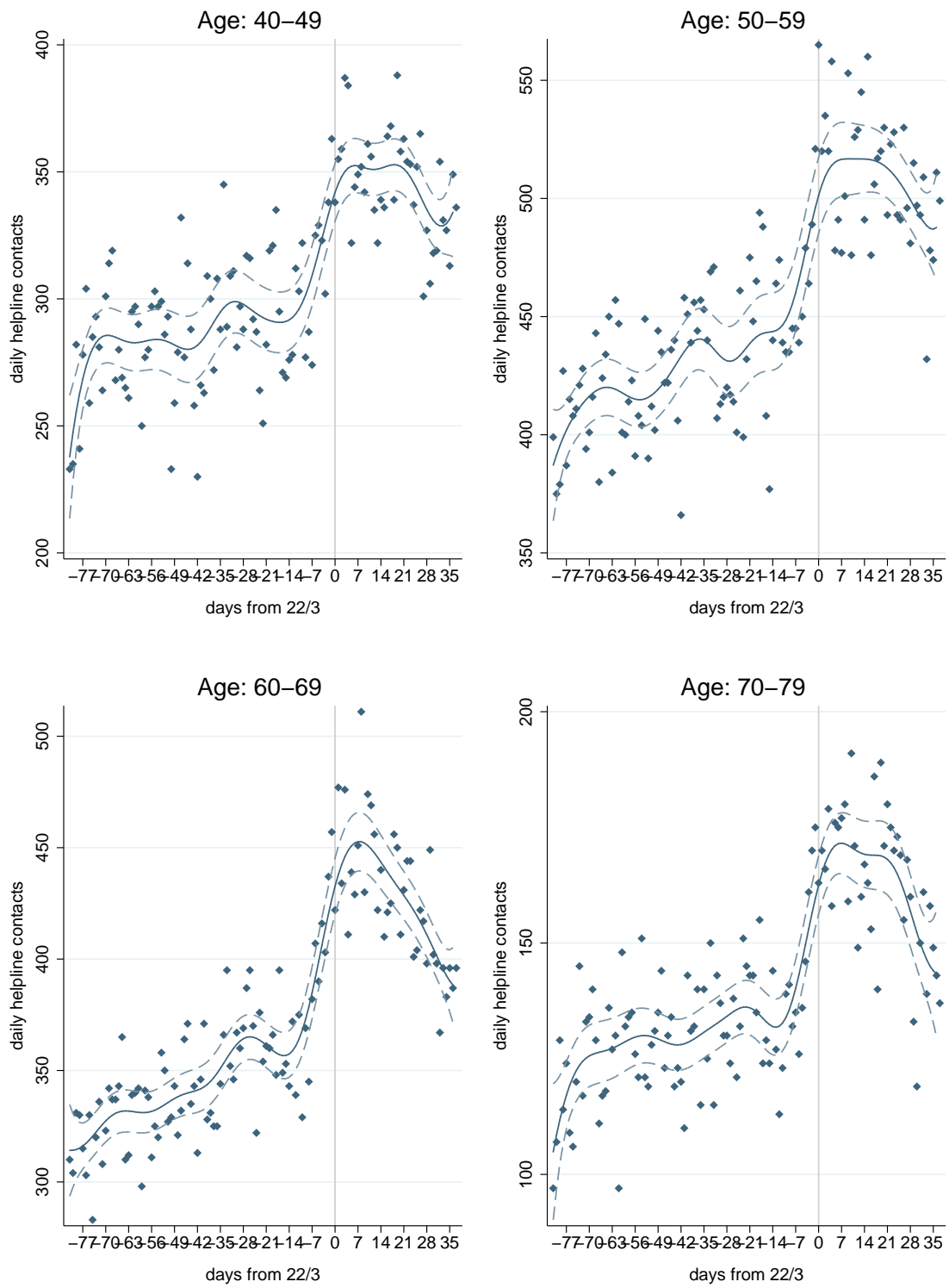Figure A.7: Daily helpline contacts, by age group

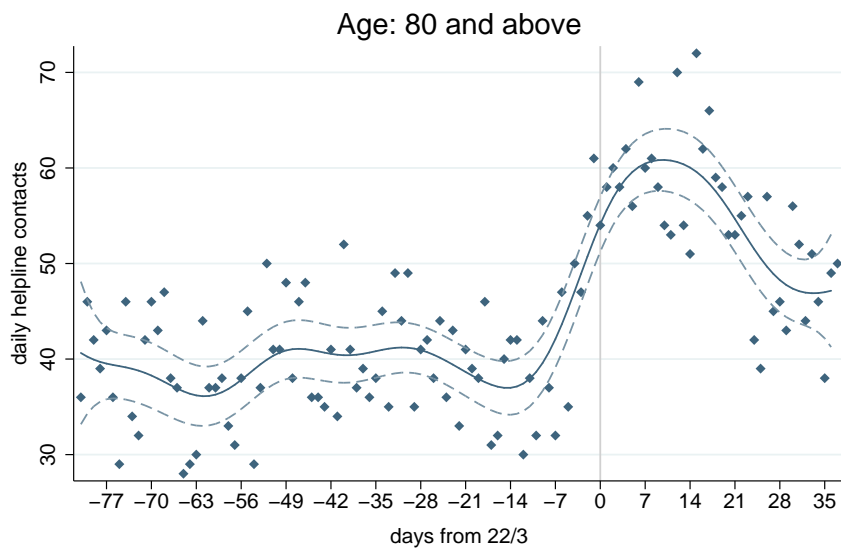Figure A.8: Daily helpline contacts, by age group (continued)

Figure A.9: Daily helpline contacts, by age group (continued)