The COVID-19 Pandemic Eroded System Support But Not Social Solidarity

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Abstract

While the World has been busy mitigating the disastrous health and economic effects of the novel coronavirus, a less direct, but not less concerning peril has largely remained unexplored: the COVID-19 crisis may disrupt some of the most fundamental social and political relationships in democratic societies. We interviewed samples resembling the national population of Denmark, Hungary, Italy and the US three times: in April, June and December of 2020 (14K observations). We employed a broad set of survey questions tapping into perceptions about the two major relationships structuring society: Horizontal relationships between citizens, and vertical relationships between citizens and the state. We benchmarked these data against pre-COVID levels measured in the World Values Survey and the European Values Survey. We present strikingly similar findings across the four diverse countries. We show that support for the political system has markedly decreased already by April and fell further till December. Exploiting the panel setup, we demonstrate that within-respondent increases in indicators of pandemic fatigue (specifically, the perceived subjective burden of the pandemic and feelings of anomie) correspond to decreases in system support and increases in extreme anti-systemic attitudes. Meanwhile, we find much smaller changes in social solidarity and trust compared to pre-pandemic levels, and we find that these attitudes are largely unaffected by pandemic burden. Our results imply that the pandemic is not only a health-crisis, but poses a substantial challenge to the relationship between citizens and the state.

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COVID-19 | system support | social solidarity | extreme discontent

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The COVID-19 pandemic is the first once-in-100-year pandemic to hit modern, highly developed, individualized democracies. Before its outbreak, political and health experts have consistently warned that pandemic outbreaks “could cause (...) social disruption on a massive scale” (Lemon, Mahmoud, Mack, & Knobler 2005), hold “the potential for serious social disruption” (Gust, Hampson, & Lavanchy 2001), and had “caused significant political and social disruption” in the past (Qiu, Rutherford, Mao, & Chu 2017). These warnings reflected in part that many Western democracies were already strained by political tensions prior to the onset of the COVID-19 pandemic (Petersen, Rasmussen, Lindholt, & Jørgensen 2021; Turchin 2016). On the basis of lessons of the 1918 pandemic, Parmet and Rothstein (2018, 1435) warned that “in our era of political polarization, ‘fake news,’ and tribal politics, [the fading] trust in the media, government officials, and even science ... can be catastrophic if a [new] pandemic arises.”

Almost two years into the COVID-19 pandemic, it is now time to evaluate the wider political disruption following in its wake. While COVID-19’s disastrous effects on public health and economic activities are well-studied, surprisingly little attention has been paid to the pandemic’s political impact on democratic societies. Specifically, we examine whether the pandemic disrupted citizens’ views of (a) each other and (b) the political system. Thus, we focus directly on the two major forms of relationships in any society: Horizontal relationships of solidarity between society’s members and vertical relationships of power and legitimacy between people and the state.

Understanding this impact is of key importance. During the pandemic, citizens who trust each other and the political system comply more with advice regarding physical distancing, testing and vaccination (Petersen, Bor, Jørgensen, & Lindholt 2021; Petersen et al. 2021). Deteriorating social solidarity and political legitimacy may thus make pandemic management more difficult as the crisis prolongs. Furthermore, the solution of a number of other monumental social challenges—such as the climate crisis—are highly dependent on the public’s willingness to engage in and support collective action, which again requires social and political trust (Ostrom 1990). A negative impact of the pandemic can thus make the handling of these other crises more difficult for societies. Finally, many democracies have been experiencing increased instability over the last decades (Turchin 2016). If the COVID-19 pandemic fuels this development, democratic societies may face significant turbulence in the coming years.

We ask whether the pandemic has eroded social solidarity and system support across democracies. Answering this question is demanding in terms of causality and generalizability. Under the circumstances, we provide what is one of the strongest possible empirical designs: A multi-wave multi-country panel survey with clear pre-pandemic benchmarks, which allow us to study citizens' attitudes across democratic societies as the crisis unfolds. Specifically, we collected data from four countries: the United States, Italy, Denmark, and Hungary. These are all democracies but differ both in how severely they have been affected by the pandemic and in their wider level of social conflict. If we find that the pandemic impacts these diverse countries in similar ways, we should expect this to generalize to the broader population of democratic countries.

Existing research has found that the initial impact of decisive government action against the coronavirus led to a rally around the flag, increasing support for national leaders, trust in the government and satisfaction with democracy (Bol, Giani, Blais, & Loewen 2021). Yet, as the crisis prolongs, its impact may turn negative. The World Health Organization (WHO) has warned about "pandemic fatigue" (WHO 2020) and a "global epidemic of misinformation" (Zarocostas 2020), both highlighting tensions between citizens and authorities. In a study of 144 countries during the COVID-19 pandemic, researchers documented violations of democratic standards in over 90% of the cases, including many democracies (Edgell, Lachapelle, Lührmann, & Maerz 2021). Consistent with this, 2020 saw a seven percent increase in public protests worldwide, many of them directly targeting pandemic restrictions (Bartusevičius, Bor, Jørgensen, & Petersen 2021). At the same time, democratic standards themselves may be waning: both American and British respondents supported emergency measures encroaching civil liberties proposed by their party or by trusted experts (Arceneaux, Bakker, Hobolt, & De Vries 2020).

While these accounts highlight how the pandemic has tested the vertical relationships between citizens and the system, there is also evidence that the pandemic has strained horizontal social solidarity. Survey research, for example, documents widespread shaming and blaming of fellow citizens who do not comply with health advice (Bor, Lindholt, Jørgensen, & Petersen 2020). Conflicts arising from such moralistic condemnation may undermine interpersonal trust between citizens. The global spread of the coronavirus may have also made citizens more suspicious of foreigners. Tightening border security has proved a popular policy even in EU countries that otherwise cherish free movement of citizens (Lindholt, Jørgensen, Bor, & Petersen 2021b).

Meanwhile, hate crimes against Chinese minorities have increased in response to the pandemic (e.g. [Gray & Hansen 2020](#)).

Finally, both the disease of COVID-19 itself and the restrictions implemented to contain the virus affect marginalized groups disproportionately ([Bambra, Riordan, Ford, & Matthews 2020](#)). Such inequalities raise the importance of helping the disadvantaged through redistribution. Moreover, as inequalities grow, they can become a hotbed of grievances, not only among those suffering, but – perversely – also among privileged groups, who may think that the pandemic is none of their concern, or worse, that their own suffering is caused by the non-compliance of the marginalized. Feelings of social injustice and group-based grievances, in turn, are important antecedents of social conflict ([Van Zomeren, Postmes, & Spears 2008](#)).

While these observations may suggest that the pandemic has strained both the horizontal and vertical relationships in democratic societies, we lack a systematic assessment that integrates generalizable, cross-country comparisons with temporal comparisons about the state of these relationships prior to the pandemic and as the pandemic unfolds. We also lack an understanding of the psychological sources of the potential strain.

From a psychological perspective, the pandemic’s peril lies in its potential to disrupt people’s sense of normality, which may result in feelings of low power and a lack of control. Research on social change and populism has documented how these feelings lead to both “vertical and horizontal opposition” ([Obradović, Power, & Sheehy-Skeffington 2020](#), 125), fueling support for right-wing populism, elite discontent and prejudice ([Forgas, Crano, & Fiedler 2021](#)). Part of the psychological mechanism may include that other groups in society as well as the political system constitute tangible enemies compared to diffuse feelings of distress. Opposition towards these targets may serve as a way to restore a sense of control. The slogans of successful populist movements such as Trump’s “Make American Great Again” and the Brexiter’s “Take Back Control” speak directly to this need ([Obradović et al. 2020](#)).

It is likely that the COVID-19 pandemic elicits both distress and feelings of low control. For many, the pandemic created the most severe social upheaval of their lifetime. The disease and the restrictions used to contain it (e.g., lockdowns) disrupted people’s regular social habits and prompted physical distancing, which over extended periods of time may harm mental and physical health ([Clemmensen, Petersen, & Sørensen 2020](#)), and generate a sense of “fatigue”

(Petersen, Rasmussen, et al. 2021; WHO 2020). In addition to the distress from social isolation, people over the pandemic have been worried about their health and economic prospects and expressed concerns about violations of fundamental rights and freedoms (Kachanoff, Bigman, Kapsaskis, & Gray 2021). This compound of stressors, and the associated pandemic-related distress, “may lead to anger at those perceived as causing it” (Michie, West, & Harvey 2020), whether this is the authorities imposing restrictions (Bartusevičius et al. 2021) or groups spreading the virus (Bor et al. 2020).

On this basis, we investigate whether the COVID-19 pandemic eroded people’s *social solidarity* and people’s *system support*. As potential psychological mechanisms of fatigue, we assess 1) a broad, compound measure of various burdens inflicted by the COVID-19 crisis, and 2) a narrow measure of the perceived loss of control over one’s life. Given the severity of the crisis, we go beyond traditional measures of system support and also assess whether these psychological mechanisms drive *extreme discontent* in the form of support for destruction, populist sentiments, the sharing of misinformation and anti-social mindsets.

Methods

Data

We believe, our study provides one of the strongest possible empirical designs to study the attitudinal effects of the COVID-19 crisis: our data are comparative, timely, reflective of national populations, measures people at multiple times and can be benchmarked to pre-pandemic values. We discuss each of these merits in turn below.

We collected survey data from four countries, which constitute a diverse selection of Western democracies: Denmark, Hungary, Italy and USA. To the extent that we can identify trends that are similar across these four countries despite their differences, we may assume that similar processes characterize other democratic societies. Our countries vary on the level of democracy (highest in Denmark, lower in Italy and the USA, and lowest in Hungary), political polarization (low in Denmark, high in Italy, very high in USA and Hungary), violations of democratic standards in handling the pandemic (no violations in Denmark, minor violations in Italy, moderate violations in the US and Hungary), GDP (lowest in Hungary, medium in Italy, highest in Denmark and USA), government effectiveness (very high in Denmark, lower in USA, lowest in

Hungary and Italy), and health equality (very high in Denmark and Italy, lower in Hungary, lowest in USA). Section B.1 in the Online Appendix (OA) reports detailed statistics underpinning these differences.

We started data collection in April 2020 within weeks of the WHO’s announcement of COVID-19 as a pandemic on March 11. At the time, Italy was suffering from a massive epidemic toll and severe lockdowns, Hungary and Denmark were locked down but the epidemic was kept under control; meanwhile in the US most places were relatively open, but the epidemic was gaining speed.

Our data was collected by YouGov survey agency via quota sampling from online panels on age, gender, geography, education, and in the US also race. Accordingly, our initial samples resembled the marginal distribution of these variables in the population. Given that traditional face-to-face interviews which could yield more representative samples were not feasible (or ethical) due to the lockdowns, we believe these quota-sampled online surveys offer the highest quality and safest data under the circumstances. Our initial sample sizes were set to 1500 respondents per country with the goal of retaining samples of 1000 respondents by wave 3 assuming a 33% attrition (which has proved overly optimistic in the USA and especially Hungary). Thus our total sample size in Wave 1 was 6,131.

Given our ambition to study the social and political damage of the unfolding COVID-19 crisis, we employ a panel setup re-interviewing the same participants in two additional waves. We invited participants to take the same survey a second time in June 2020. This decision has been motivated by two considerations: first, by that time the first wave of the pandemic has receded in all of our countries (although this meant different infection rates in different places); and second, the Black Lives Matter protests and counter-protests in the United States indicated that considerable social tension had accumulated. The total sample size in Wave 2 was 4,568.¹

We fielded a third and final wave in early December of 2020 re-inviting all participants from wave 1, even if they had missed wave 2. By this time, the second pandemic wave was peaking in most countries, matching or – in the case of Hungary – superseding the first wave’s levels of infection. 4,018 respondents participated in wave 3. All in all, we collected 14,717 observations from 6,131 individuals. 3,620 respondents participated in all 3 waves (1,080 from Denmark, 639 from Hungary, 1,002 from Italy and 899 from the USA) yielding a balanced panel sample of

¹A small subset of our variables from the first two waves have been analysed in [Bartusevičius et al. \(2021\)](#).

10,860 observations.

Outcome measures

Our survey is unusual in that it includes fourteen outcome variables. Given the high uncertainty surrounding the potential socio-political effects at the onset of the pandemic, our strategy was to paint a broad overview of respondents’ perceptions of society and politics. We bundle outcomes into three broad categories, consistent with our theory: social solidarity, system support and extreme discontent. We do not claim that the measures bundled together form latent traits, just that they show sufficient theoretical and empirical consistency that it is helpful to consider them together. For transparency, we report all results both for individual measures and pooling by category. All measures within social solidarity and system support are based on validated items from the European / World Values Survey. In OA Section [A](#) we report full question wordings, while in OA Section [B](#) we report descriptive statistics, test-retest correlations, and reliability estimates for our outcomes.

Social solidarity. The four variables under social solidarity concern horizontal relationships between citizens. Did the pandemic change how people think and feel about other people in society? First, we measure *support for redistribution* with three items, which prompt respondents to position themselves on a 10-point scale whose endpoints are marked by two statements, e.g. “Individuals should take more responsibility for providing for themselves (1)” or “The state should take more responsibility to ensure that everyone is provided for (10)”² Second, we measure *attitudes towards immigrants* with similar 10-point scales, e.g. “Immigrants are a strain on a country’s welfare system (1)” versus “Immigrants are not a strain on a country’s welfare system (10)” We scale items such that higher values indicate more solidarity with immigrants. Third, we measure *social trust* with a binary item recording response to the question “generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?”. Finally, we measure *attitudes towards surveillance* by three items asking whether the government should have the right to e.g. “to collect information about anyone ... without their knowledge”. Answers to a four-point scale are reversed to indicate a rejection of state surveillance and thus indicating trust in fellow citizens.

²Due to a coding error, answers to one of the three solidarity items had to be discarded from the first wave of the Danish survey.

System support. The four variables under system support concern vertical relationships between citizens and the state. Importantly, we are more interested in (diffuse) support for the broader institutional order than views about the current government. First, we measure *satisfaction with the political system* with a question directly prompting how satisfied respondents are with “how the political system is functioning these days.” Second, we rely on a similar question asking “how democratically is this country being governed today” to tap into perceptions about the *level of democracy*. Third, to measure *support for democracy*, we combine three items about respondents’ impressions on how good or bad various types of political systems would be for their country: a democratic political system, a strong leader who does not have to bother with parliament and elections, and an army rule. We flip the latter two items, thus higher values on the resulting index indicate higher support for democracy.³ Finally, we asked respondents on how *proud citizens* they are on a 4-point scale.

Extreme discontent. The scales tapping into extreme discontent go a step further in measuring respondents’ potential frustrations. Beyond a mere lack of social solidarity or system support, they ask if people also entertain more radical attitudes. Freed from the burden of relying on measures which could be benchmarked against pre-pandemic surveys, these variables also rely on more items, reducing measurement error. To measure radical anti-systemic attitudes, we use the 8-item *Need for Chaos* scale (e.g. “I think society should be burned to the ground”) (Petersen, Osmundsen, & Arceneaux 2018). To measure *populism*, we use a six-item scale, e.g. “The government is pretty much run by a few big interests looking out for themselves” (Silva et al. 2018). Finally, we also asked respondents to indicate to what extent they would *believe or share a false news* headline stating that “The coronavirus has been developed intentionally in a lab to be used as a bioweapon”. Respondents used standard seven-point Likert scales to indicate their agreement or disagreement with each item. All indices are recoded such that higher values indicate more extreme discontent.

Finally, three unbenchmarked additional measures, for affective polarization, perceived financial prospects and support for the government’s handling of the coronavirus crisis are reported in Section C.5 of the OA.

³This battery includes a fourth item about “having experts, not government, make decisions according to what they think is best for the country”. Given most politicians’ limited knowledge of virology or epidemiology, it is unclear to what extent a technocratic approach to decision making during the pandemic threatens democracy. Therefore, we exclude this item from the index.

Predictors

Our ambition is to estimate the individual level effects of the COVID-19 crisis. But how to quantify a pandemic? One approach could have been to rely on objective indicators, like the incidence of COVID-19 to measure the severity of the pandemic, or stringency indices to measure the severity of the government’s response to the pandemic etc. Yet, these measures would be both too broad – in the sense of lumping too many people together despite markedly different personal experiences – and too narrow – in the sense of zooming in on a specific effect of a global crisis. Therefore, instead we rely on two subjective measures of the COVID-19 crisis’ immediate impact on respondents. First, we designed an original scale that taps into four⁴ dimensions of the *subjective burden of COVID-19 crisis*: health, finances, social connection and anomie. Our aim with this novel measure, therefore, is to create a battery reflecting that the COVID-19 crisis is a compound treatment, affecting several domains of citizens’ lives. Each of the four dimensions is measured with two items, one positively and one negatively worded. For example, the two items about finances read “The coronavirus crisis has affected negatively my financial situation” and “My finances are in good order despite the coronavirus crisis.”

Second, we rely on a validated 17-item scale of *anomie* – or meaninglessness – developed by Yang (2015). Zooming in on feelings of anomie provides important additional insight beyond a broad measure of covid burden for two reasons: (1) previous research found that anomie underlies a wide range of anti-social attitudes and behaviors from radical anti-systemic attitudes (Petersen et al. 2018); (2) it has been argued from the first weeks of the government mandated lockdowns that the severe social isolation imposed on societies may easily contribute to feelings of anomie. Indeed, multiple items of our psychometrically validated anomie-scale – e.g. “I live a trapped life” and “I have no control over my destiny” – offer an uncannily insightful description of life under a quarantine. We form simple additive indices from both of these scales indicating higher burden and anomie, respectively.

In Section C.1, we offer both within-respondent and cross-sectional analyses on who feels more burden and anomie. These show that anomie and burden are influenced by, but not driven by changes in personal health, getting infected with COVID-19, or changes in employment

⁴The original battery included a fifth dimension, government evaluations, which could be seen as endogenous to some of our outcomes. Therefore, our main analyses do not include this factor, but we replicate our findings with the full battery in the Online Appendix D.1.

status. We also find that young respondents, and those with lower education are more vulnerable to both covid burden and anomie. Covid burden and anomie are related to each other both conceptually (anomie is one of the four facets of the burden index), and empirically, with a Pearson’s correlation of $r = 0.56$.

Modeling

Our paper has two ambitions. The first is descriptive: how much solidarity did people feel towards their fellow citizens? How much did they support the political system they lived in? How much extreme discontent did they express? How much burden and anomie did people feel at various stages of the pandemic? Monitoring large samples of people living in four different countries, our data is uniquely well-suited to answer these questions. Whenever possible,⁵ we benchmark our measures against the last pre-pandemic data collection of the European Values Survey (Denmark – late 2017; Hungary – first half of 2018; Italy – late 2018) and the World Values Survey (USA – Spring 2017). Specifically, we transform our individual level responses to z-scores using the weighted mean and standard deviation from the benchmark survey. To minimize the potential impact of difference in data collection and sampling, we used entropy balancing ([Hainmueller 2012](#)) to re-weight both benchmark and original surveys to the same population margins applied to our own data (age, gender, education and region); see Section [B.2](#) in the OA for distributions in demographic variables for both weighted and unweighted, full and balanced panel samples. In our descriptive analyses of the outcome variables, we rely on all responses collected, irrespective of whether they come from respondents who later dropped out or not (total $N = 14,717$).

Our second ambition is to estimate the effects of COVID-19 burden and anomie on our outcome variables. As we are unable to identify or to experimentally induce exogenous shocks in burden and anomie, our causal ambitions must be tempered. Yet, our panel data has a large advantage over standard cross-sectional surveys, by allowing us to zoom in on within-individual changes. In other words, instead of comparing people with high burden to people with low burden (while making futile attempts to control away the several other differences between these two groups), we are comparing people to themselves contrasting times when their

⁵We miss benchmarks for the USA for 5 items: one of three items in the support for redistribution scale, and four of six items in the tolerance for immigrants scale. Thus, these two scales for the US are formed using the two benchmarked items. We use the full batteries in the within-respondent analyzes.

burden was higher to times when it was lower. More technically, we rely on linear regressions with respondent and country-wave fixed effects, also known as two-way fixed effects (2FE) models. These fixed effects demean all our measures and thus respondent i 's response at time t changes its meaning to a deviation from what we would have expected given the respondent's average answers (across all waves) and the tenor of the time (across all respondents). These models purge all selection bias from confounders that are either respondent-specific but time-invariant – *i.e.* affect a respondent in the same way across the three waves – or time-specific but respondent-invariant – *i.e.* affect all respondents in a country in the same way in a given survey wave. At the same time, these models remain vulnerable to bias from time-varying confounders and reverse causality. Yet, we believe these within-respondent analyzes constitute a good (perhaps the best) compromise balancing internal validity and generalizability, especially because interventions experimentally manipulating the impact of the pandemic are difficult if not impossible to conduct.

We report two types of linear two-way fixed effects models: 1) standard 2FE models that regress each outcome variable (e.g. support for democracy) on a predictor (e.g. the perceived burden of COVID-19). At the same time, to reduce the complexity of our findings, we also average across the outcomes within each of the three categories by building pooled models. These models stack our data such that each respondent appears three or four times in our sample, once for each of the constituting outcomes within a given category. Here, we add a third fixed effect, namely outcome, thereby removing variation caused by the fact that people on average agree more with some scales than with others within a category. In practice, this pooling method yields identical results to simply forming an additive index across the three sets of outcomes for each individual, but its uncertainty estimates are a bit more conservative.

Because 2FE models rely exclusively on within-unit variance, it is important to scale effect sizes to realistic within-unit changes. After all, covid burden or anomie hardly ever change for a respondent from the minimum to the maximum value during our study period. Accordingly, we follow best practices and calculate the distribution of the (largest) within-unit changes in our predictors (see Figure [OA5](#) in the OA) and identify a large but realistic within-unit change at the 95th percentile of this distribution ([Mummolo & Peterson 2018](#)). Coincidentally, this value is close to a standard deviation of the overall (between respondents) variance in our sample for

both COVID-19 burden (1.00) and anomie (1.18) reflecting the turbulence of the study period. This value corresponds to roughly twice the average largest within unit-change between the three waves (burden = 0.48; anomie = 0.51), but it is still half, or a third of the maximum observed within-unit changes in our samples (burden = 2.05; anomie = 3.36). Finally, we note that in these analyzes we rescale all outcomes to 0-1 range. To sum up, the coefficient estimates we report denote the expected percentage point change in the outcomes corresponding to a large but realistic within-unit change in the predictor.

Results

Figure 1 displays descriptive trends in horizontal relationships of solidarity and vertical relationships of system support. As noted, we can benchmark these measures against pre-pandemic levels (trends in unbenchmarked extreme discontent measures are reported in Section C.3 of the OA). Colors denote individual outcome measures with black reserved for the pooled estimate. Recall that negative values indicate an average decrease compared to the benchmark. The y-axis is scaled to the standard deviations observed in the benchmark survey.

How did social solidarity change throughout 2020 and compared to the pre-pandemic benchmark? Pooling across variables and countries (black line leftmost facet), social solidarity remained remarkably similar in our sample compared to the benchmark surveys. We observe notable decreases in tolerance towards immigrants among Danes and Americans, as well as support for redistribution among Americans (in the range of -25% to -40% of a standard deviation). These negative changes are, however, offset by smaller opposite trends in several other variables. Indeed, when we look at the country averages (black lines within each facet), we see that by April social solidarity slightly increased in Hungary and Italy (by 10-14%), while decreased in Denmark and the US (by 5-14%). Furthermore, we find no evidence that social solidarity has been eroding throughout 2020.

How did system support change throughout 2020 and compared to the pre-pandemic benchmark? System support paints a markedly different picture than social solidarity. To begin with, already by April, system support decreased by 25% of a standard deviation averaging across countries and outcomes (black line, leftmost facet). Moreover, this trend continued throughout the corona-crisis. While the summer relieved a bit the burden of the pandemic, system support

Figure 1: Descriptive trends in social solidarity and system support benchmarked against pre-pandemic baselines. Values are z-scored to nationally representative surveys conducted pre-pandemic by World and European Values Surveys. Negative values indicate a decrease compared to the benchmark. The scale refers to standard deviation changes. The black lines pool across the outcome variables. The leftmost facets pool across the four countries. The plot shows a sizeable and growing decrease in systemic support, whereas the changes in social solidarity are smaller and do not appear to change throughout the study period.

Figure 2: Country-level descriptive trends during the study period. COVID-19 deaths per million people from the European CDC (top panel), stringency of government response from the Oxford Covid-19 Government Response Tracker (middle panel), and average perceptions of the burden of COVID-19 (bottom panel) based on our data. “Pre” denotes values from the pre-pandemic benchmark surveys for the short anomie measure (2017-8).

continued to decrease to about -32% by July and to -37% by December. The severity of these trends is well summed up by the fact that of the 16 estimates in wave 1 (four outcomes in four countries) only two increased compared to the benchmark, and both of these dropped below the benchmark levels as the pandemic dragged on. Indeed, Danes’ perceptions on the level of democracy decreased by an astonishing 92% of a standard deviation by December.

As argued, it is likely that these aggregated changes are driven by individual-level changes in the psychological burden or anomie triggered by the pandemic. We first assess the overall changes of these psychological factors as the pandemic unfolds.

How did the subjective burden of COVID-19 and anomie change throughout 2020? Figure 2 displays the descriptive trends in our two independent variables, covid burden (yellow) and anomie (green), and an additional single-item measure of anomie that we could benchmark to pre-pandemic levels (purple). The plot also displays the running average of COVID-19 related deaths standardized to population size.⁶ The plot highlights that despite notable differences in pandemic trends across the four countries, the trends in people’s subjective perceptions were remarkably similar. In each country, people experienced a high burden at the onset of the pandemic in April. Our benchmarked anomie measure indicates that people felt 30 to 40% of a standard deviation more that “what they do has no real effect on what happens to them” in every country in our dataset (see details in Section C.8 of the OA). Compared to this initial change, fluctuations during the pandemic are much smaller. Burden and anomie decreased a bit in July, but bounced back by the end of the year. Cross-national differences in the levels of perceived burden and anomie roughly track the differences in pandemic severity with Hungary and Italy having both higher death rates and burden; Denmark having both low death rates and burden; and with the US in the middle on both. At the same time, Figure 2 also offers a reminder that a subjective burden is not perfectly in tune with objective circumstances. Hungarians express as high a burden in April, when the pandemic was kept well under control, than in December, when it certainly was not. No doubt, the severe uncertainty and the harsh restrictions made many respondents miserable early on, which even the high death toll of the second wave could not surpass. Similarly, despite deaths falling to low levels and most governments lifting the harshest of restrictions by June, burden and anomie fell only by a few points on average. It is also noteworthy that while system support exhibits a trend of slow decay over time, perceptions of burden and anomie fluctuate more with the objective circumstances, suggesting that the potential effect of these subjective assessments on system support involves some complexity. We return to this key observation in the discussion.

Next, we ask whether these changes in subjective perceptions about the pandemic drive

⁶Data downloaded from the European Centre for Disease Prevention and Control website on 2021-06-23. Link: <https://www.ecdc.europa.eu/en/publications-data/data-national-14-day-notification-rate-covid-19>.

the changes in perceptions of horizontal and vertical societal relationships. Therefore, now we turn to our linear two-way fixed effects models exploring whether changes in burden or anomie relate to changes in our outcomes. Figure 3 displays the regression coefficients for each group of outcomes and independent variables pooling across the four countries.

Figure 3: The burden of COVID-19 and anomie are associated with a decreased system support and increased extreme discontent but not with changes in social solidarity. The figure reports two-way fixed effect regression coefficients with 95% confidence intervals from models pooling across the four countries.

Is an increase in the subjective burden of COVID-19 or anomie associated with a decrease in social solidarity? The top left panel in Figure 3 indicates that covid burden is largely independent of social solidarity. Judging from the pooled DV, the average effect of changes in burden on changes in social solidarity are very close to 0 and estimated very precisely (95% CIs: burden = [-0.01, 0.01]; anomie = [-0.02, 0.01]). This average effect appears to be the result of a small positive effect on support for redistribution, and small negative effects on tolerance for immigrants and social trust.

The top right panel in Figure 3 shows that the effects of anomie are parallel to those of covid burden: changes in anomie were not associated with systematic changes of attitudes related to social solidarity on average. The only divergence between the two independent variables is the

opposite trends in attitudes towards surveillance. An increase in anomie is associated with a slight decrease in the rejection of surveillance, although we do not find the same pattern for changes in burden.

Is an increase in the subjective burden of COVID-19 and anomie associated with a decrease in system support? Yes. The middle row of panels in Figure 3 demonstrates that when respondents' covid burden or anomie increase they also tend to feel lower support for the political system. Pooling across the four outcome variables, a one unit increase in our independent variables is associated with a 3-4 percentage points decrease in system support (95%CI: burden = [-0.04, -0.03]; anomie = [-0.04, -0.02]). This trend describes all four outcomes well: all our estimates fall between 2.5 and 5 percentage points.

Is an increase in the subjective burden of COVID-19 and anomie associated with an increase in extreme discontent? Yes. Judging from the bottom row of panels in Figure 3 when respondents' covid burden or anomie increases, they also tend to feel 2-5 percentage points more extreme political discontent (95%CI: burden = [0.01, 0.03]; anomie = [0.04, 0.06]). Again, this trend can be observed to some extent for each of our three outcome variables, yet there are more interesting heterogeneities. First, changes in anomie result in more than twice as large changes in extreme discontent compared to changes in covid burden. Second, we observe the largest shifts in Need for Chaos with an 8 percentage points change associated with a one unit change in anomie (95%CI: [0.07, 0.09]). Of these three outcomes, we observe smaller yet still concerning trends in believing and sharing misinformation, whereas populist attitudes remain largely unaffected by changes in burden and anomie.

Additional Analyses and Robustness Tests

What other attitudes do changes in covid burden and anomie predict? Our surveys included three additional outcome variables, which reinforce some of the results presented so far (details in OA Section C.5). In line with the small and inconsistent associations with Social Solidarity, we find no evidence that changes in either covid burden or anomie are associated to changes in affective polarization. We do find however, that in line with the consistent negative effects on System Support, an increase in burden and anomie is also associated with a large decrease in support for the government. Finally, and unsurprisingly, we find that when respondent's burden

or anomie increases, they also become more pessimistic about financial prospects.

How much country-level variation do we observe in within-individual associations? We replicate our within-respondent regression models independently for each of the four countries. These analyses demonstrate that for the most part the associations are remarkably consistent across countries, especially when looking at the pooled models (see details in OA Section C.4).

Which factors of the subjective burden of COVID-19 drive the observed effects? Curious about the relative effects of the four facets of our measure of covid burden, we rerun our analyses separately using finance, health, anomie and social life. Figure OA9 shows that when it comes to system support, feelings of anomie play by far the largest role, although each of the other three factors show negative correlations as well. Surprisingly, the main driver of extreme discontent appears to be burden on health, although – again – each of the other three factors show positive correlations too.

How much confidence should we put in the internal validity of our estimates? The linear two-way fixed effects models constituting the backbone of our analyses guard us against all (observed or unobserved) respondent- or time-specific confounders. They yield unbiased estimates of causal effects as long as the parallel trends assumption holds. This assumption posits that the outcome for respondents would move in parallel in time, absent changes in the predictors. Of course, if there are time-variant confounders or if changes in the outcome feed back to future changes in the predictor(s), the parallel trends assumption are violated. We perform two sets of robustness tests to assess the severity of these dangers to the internal validity of our estimates.

First, we rerun our models including leaded predictors. This means that we regress e.g. perceptions of Social Solidarity not only on perceived burden in the same wave, but also burden in the following wave. If the outcomes feed back on the predictors – i.e. change in the outcome precedes change in the predictor – we would expect to find substantively significant coefficients for the leads. We would also expect the inclusion of these leads to diminish the original estimates for the within-unit associations. Figure OA13 reports results from these leaded models along the original estimates. Given the consistent null results with the variables under Social Solidarity, we focus on System Support and Extreme Discontent here. We find no evidence that associations with Extreme Discontent are affected by the inclusion of leads, all of which are close to 0. At the same time, we do find that multiple leads under the System Support category – including

the pooled estimate – turn out to be statistically significant and in the same direction as the original estimates. In other words, when respondents’ System Support decreases, they are more likely to perceive an increased covid burden – and to a lesser extent anomie – in the following wave. This overall trend appears to be driven by satisfaction with the political system and level of democracy in the case of covid burden, and satisfaction with the political system and pride in citizenship in the case of anomie.

Second, we rerun our models including respondent-specific linear time trends. These in effect relax the parallel trends assumption by letting each respondent to follow their own linear trend, and seeks to find associations in the deviations over and above this trend. We note that with three panel waves, our estimates of these individual-specific trends are bound to be noisy, and thus results should be taken with a grain of salt. Yet, it is “heartening” (Angrist & Pischke 2008, 178) that according to Figure OA14, our estimates remain substantively similar – if slightly diminished – with the inclusion of respondent-specific linear trends.

Does system support measure anything beyond support for the government? Yes. Support for the incumbent government is likely to influence and be influenced by system support. Nonetheless, our data underpins decades of political science research highlighting the distinct nature of system support and government evaluations (Easton 1975). The correlation between our pooled system support variable and government evaluations is medium ($r = .39$), ranging from $r = 0.01$ in the case of support for democracy to $r = 0.68$ in the case of system support. Moreover, when we rerun our individual-level models regressing system support variables on covid burden and anomie while adjusting for changes in support for the government, we find that the associations retain most of their size, 63% for burden, 79% for anomie (see Figure OA15).

As yet another empirical evidence underpinning that system support matters, in Section C.7 of the OA, we replicate and extend recent findings showing that those who perceive a heavy covid burden and high anomie have on average higher intentions to participate in political violence (Bartusevičius et al. 2021). Here, we use data from Waves 2 and 3 to demonstrate that this relationship stands even in within-respondent analyzes, which guard against all observed and unobserved time invariant confounders. In other words, when respondents’ covid burden or anomie increases, they are also 3 percentage points more likely to have radicalism intentions (95% CIs = [0.01,0.05]). Meanwhile, the association to changes in (non-violent) political

activism intentions are smaller and do not reach statistical significance at conventional levels.

Do we find similar substantive results in one-way respondent fixed effects models? Yes. Recent methodological advances remind us that our interpretation of two-way fixed effects coefficient estimates – as associations between within-respondent changes beyond the common time shocks – hinges on the common assumption that the causal effects of burden and anomie are constant across units (Kropko & Kubinec 2020). The critiques of two-way fixed effects models recommend verifying that more easily interpretable respondent-fixed effects models yield similar conclusions than two-way fixed effects models. Accordingly, we rerun our models with only respondent fixed effects to assess the relationships if we are unwilling to make these assumptions. The one-way respondent fixed effects models estimate the average associations between changes in predictors and outcomes within respondents across the sample. Figure OA16 demonstrates that these estimates are in essence identical to our two-way fixed effects estimates reported above.

Does zooming in on within-respondent changes (and omitting time invariant confounders) make a difference? Yes. We also run one-way country-wave (i.e. time) fixed effects, which estimate the average associations between the predictors and outcomes *across* respondents in our sample. As these are essentially cross-sectional models, we adjust for standard demographic covariates: age, gender, and education. These estimates highlight the large benefits of our panel design: had we missed the opportunity to control for time invariant unobserved confounders, we would have grossly overestimated the associations between our variables. This pattern is especially striking in the case of social solidarity, where our within-respondent analyzes consistently find negligible effects, while the cross-sectional analyzes (even with the covariates) find large effects. For example, respondents with higher COVID-19 burden trust fellow citizens 13% points less than respondents with lower burden. Meanwhile, those with higher burden support redistribution 6% points more than those with lower burden. Yet, neither of these associations hold up once we purge omitted variable bias. We find a similar, although substantively less concerning patterns for system support and extreme discontent. Cross-sectional models tend to overestimate 2-3 times the strength of these associations, although they all point in the same direction as our within-respondent analyzes.

Do our results hinge on the inclusion of survey weights? No. As a final robustness tests,

in Figure OA17 we demonstrate that our estimates are not sensitive to the inclusion of survey weights.

Discussion and Conclusions

Overall, we find that the COVID-19 crisis has eroded system support in a diverse set of four Western democracies. Within-individual analyses show that this is driven, in part, by indicators of pandemic fatigue: when respondents' subjective burden of COVID-19 and feelings of anomie grew, they also expressed less support for and satisfaction with the political system they live in. To make things worse, these frustrations appear to spill over to expressions of extreme discontent. When the burden and anomie grew, respondents were more likely to feel a need for chaos, to believe and share misinformation, and to endorse populist ideas. At the same time, we find no evidence that social solidarity has decreased compared to pre-pandemic levels, nor that individual-level changes in the burden of the crisis cause systematic shifts in horizontal social relationships.

While there is a clear association between individual-level changes in system support and feelings of anomie and COVID-19 burden, respectively, one particular concerning empirical pattern obtained is that there is a mismatch between the associated aggregate trends. System support decayed constantly over time in all four countries. COVID-19 burden and anomie, in contrast, eased slightly in the summer, most likely due to the improvements in epidemic severity, and restrictions. This disjunction suggests that the pandemic's damage to system support is more permanent or, at least, that system support may not immediately bounce back once the burden of the pandemic lessens. When the COVID-19 pandemic hit Western democracies, it set in motion a process of slow decay in system support, spreading farther and deeper as the crisis prolongs.

These conclusions notwithstanding, our analyses are subject to a number of limitations. First, our data are limited to four countries, all in the West, all democratic (even if some of them are backsliding). We believe that the cross-country consistency of our key findings warrants careful generalization to other Western democracies. Still, our results cannot speak to several other regions of the World, where the burden of the pandemic is often heavier, and political system is often more volatile and the fabric of society is frailer. Second, caution is also warranted

when generalizing to other forms of attitudes beyond those measured in our surveys. Although the outcomes we group together show reasonable consistency, it is possible that some other attitudes deviate from these patterns. Perhaps some forms of social solidarity – for example, those related to moralistic condemnation ([Bor et al. 2020](#)) – still suffered from the COVID-19 crisis. Conversely, perhaps some forms of system support showed more resilience than those we measured. Finally, while the panel setup goes a long way in guarding against unobserved confounders, our estimates regarding the causal effects of anomie and covid burden are still vulnerable to, for example, time variant confounders. Our design sought to balance ecological and internal validity. Future research could manipulate burden and anomie experimentally to estimate unbiased causal effects. Our findings should be useful in benchmarking these estimates to realistic shifts in the predictors.

What are the implications of our findings? We demonstrate that the COVID-19 pandemic is a *total crisis*, affecting many domains of life beyond health and consequently straining the relationships between citizens and the state. This is worrisome first because it makes the mitigation of the pandemic itself more difficult: trust in the authorities is among the strongest predictors of willingness to take a vaccine, and as of the Winter of 2021 several democratic countries struggle to reach high levels of vaccination and face yet again the danger of overheating health systems ([Lindholt, Jørgensen, Bor, & Petersen 2021a](#)). But our results are also concerning in a long-term perspective. At present, we can only hope that anti-system sentiments and extreme discontent subside once the pandemic is over. Democratic political systems have been facing challenges from populist leaders, growing political polarization, increasing inequalities even before the pandemic. Addressing these social challenges may become even more difficult due to the pandemic. Finally, while the COVID-19 pandemic is arguably the largest global crisis in most of our lifetimes, it may not be the last one. Health experts warn that in an increasingly globalized world pandemics are an increasing threat. Meanwhile, it is still unclear if and how a climate catastrophe could be averted, thus the next total crisis may be looming just over the horizon. Given the impact of the pandemic documented in this manuscript, such crises may become even more difficult to manage.

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Online Appendix for

The COVID-19 Pandemic Eroded System Support
But Not Social Solidarity

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A Question wordings

Below we share the English language versions of our questions that were fielded in the USA. Naturally, where a question refers to the US or Americans, it is replaced with the country or nation of the respondent in all four countries.

A.1 Predictors – Covid Burden

Question: How much do you agree or disagree with the following statements?

1. {Health +} I am in good health despite the coronavirus crisis.
2. {Health –} I have felt extremely unwell as a consequence of the coronavirus crisis.
3. {Finance –} The coronavirus crisis has affected negatively my financial situation.
4. {Finance +} My finances are in good order despite the coronavirus crisis.
5. {Social life –} My social life has suffered a great deal due to the coronavirus crisis.
6. {Social life +} I have managed to stay in contact with my friends and family despite the physical distancing measures.
7. {Anomie –} The coronavirus crisis made me realize that all individuals can only rely on themselves.
8. {Anomie +} I believe the coronavirus crisis highlighted that the State can effectively protect its citizens.

The following two additional items have been omitted from all analyzes unless otherwise noted, for being endogeneous with outcome variables.

1. {Democracy –} The extraordinary measures taken by the government in response to the coronavirus crisis make me concerned about my democratic rights.
2. {Democracy +} The government has not violated my democratic rights to fight the coronavirus beyond what is needed.

Scale: 1. Strongly agree; 2. Agree; 3. Somewhat agree; 4. Neither agree nor disagree; 5. Somewhat disagree; 6. Disagree; 7. Strongly disagree.

{ Info in brackets } indicates the five components of the index and whether the item is positively or negatively worded. Our main analyses exclude the Democracy component.

A.2 Predictors – Anomie

Question: How much do you agree or disagree with the following statements?

- My life is getting worse.
- These days I don't really know who I can count on.
- It is hard for me to know where I stand from one day to the next.
- Everything changes so quickly these days that I often have troubles deciding which are the right rules to follow.
- I often feel out of place.
- It is hard for me to decide what is the right thing to do.
- I feel all alone these days.
- I am sure I will find the right person who cares about me.
- I often feel discriminated against.
- My whole world feels like it is falling apart.
- I wish I were somebody important.
- I live a trapped life.
- I don't know what is expected of my life.
- I have no control over my destiny.
- My socioeconomic status determines my life.
- It is hard for me to understand what is going on in the world.
- No matter how hard I try in life, it does not make any differences.

Scale: 1. Strongly agree; 2. Agree; 3. Somewhat agree; 4. Neither agree nor disagree; 5. Somewhat disagree; 6. Disagree; 7. Strongly disagree.

A.3 Outcomes – Social solidarity

SUPPORT FOR REDISTRIBUTION

Question: Please read the following statements and indicate where you would place your views on this scale

1. Individuals should take more responsibility for providing for themselves.

... {answer options 2-9 which appear without a label are hidden for brevity}

10. The state should take more responsibility to ensure that everyone is provided for.

1. People who are unemployed should have to take any job available or lose their unemployment benefits.

...

10. People who are unemployed should have the right to refuse a job they do not want.

1. Incomes should be made more equal.

...

10. There should be greater incentives for individual effort.

SOCIAL TRUST

Question: Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?

Scale: 1. Most people can be trusted; 2. Can't be too careful

TOLERATE IMMIGRANTS

Question: How much do you agree or disagree with this statement? "When jobs are scarce, employers should give priority to American people over immigrants"

Scale: 1. Agree strongly; 2. Agree; 3. Neither agree, nor disagree; 4. Disagree; 5. Disagree strongly

Question: Now we would like to know your opinion about the people from other

countries who come to live in the US - the immigrants. How would you evaluate the impact of these people on the development of the US?

Scale: 1. Very good; 2. Quite good; 3. Neither good, nor bad; 4. Quite bad; 5. Very bad

Question: Please read the following statements and indicate where you would place your views on this scale

1. Immigrants take jobs away from Americans.

... {answer options 2-9 which appear without a label are hidden for brevity}

10. Immigrants do not take jobs away from Americans.

1. Immigrants make crime problems worse.

... {answer options 2-9 which appear without a label are hidden for brevity}

10. Immigrants do not make crime problems worse.

1. Immigrants are a strain on a country's welfare system.

... {answer options 2-9 which appear without a label are hidden for brevity}

10. Immigrants are not a strain on a country's welfare system.

1. It is better if immigrants maintain their distinct customs and traditions.

... {answer options 2-9 which appear without a label are hidden for brevity}

10. It is better if immigrants do not maintain their distinct customs and traditions.

REJECT SURVEILLANCE

Question: Please indicate if you think that the US government should or should not have the right to...

1. Keep people under video surveillance in public areas.

2. Monitor all e-mails and any other information exchanged on the Internet.

3. Collect information about anyone living in the US without their knowledge.

Scale: 1. Definitely should have the right; 2. Probably should have the right; 3. Probably should not have the right; 4. Definitely should not have the right

A.4 Outcomes – System support

SATISFACTION WITH THE POLITICAL SYSTEM

Question: On a scale from 1 to 10 where “1” is “not satisfied at all” and “10” is “completely satisfied”, how satisfied are you with how the political system is functioning in your country these days? {options 2-9 unlabelled}

LEVEL OF DEMOCRACY

Question: And how democratically is this country being governed today? Again using a scale from 1 to 10, where 1 means that it is “not at all democratic” and 10 means that it is “completely democratic,” what position would you choose? {options 2-9 unlabelled}

SUPPORT FOR DEMOCRACY

Question: In the following questions, various types of political systems will be described. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country?

1. Having a strong leader who does not have to bother with parliament and elections.
2. {Having experts, not government, make decisions according to what they think is best for the country.}⁷
3. Having the army rule the country.
4. Having a democratic political system.

Scale: 1.Very good; 2.Fairly good; 3.Fairly bad; 4.Very bad

{The final support for democracy index flips the scores for items 1. and 3.}

PROUD CITIZEN

⁷As explained in the main text, we omit this answer option when forming the index.

Question: How proud are you to be a US citizen?

Scale: 1.Very proud; 2.Quite proud; 3.Not very proud; 4.Not at all proud

A.5 Outcomes – Extreme discontent

NEED FOR CHAOS

Question: How much do you disagree or agree with the following statements?

1. I get a kick when natural disasters strike in foreign countries.
2. I fantasize about a natural disaster wiping out most of humanity such that a small group of people can start all over.
3. I think society should be burned to the ground.
4. When I think about our political and social institutions, I cannot help thinking "just let them all burn".
5. We cannot fix the problems in our social institutions, we need to tear them down and start over.
6. I need chaos around me - it is too boring if nothing is going on.
7. Sometimes I just feel like destroying beautiful things.
8. There is no right and wrong in the world.

Scale: 1. Strongly agree; 2. Agree; 3. Somewhat agree; 4. Neither agree nor disagree; 5. Somewhat disagree; 6. Disagree; 7. Strongly disagree.

BELIEVING AND SHARING MISINFORMATION

Question: There are many stories about the coronavirus on the Internet. Some of these stories are true, others are not. Consider the following news story headline: "The coronavirus has been developed intentionally in a lab to be used as a bioweapon."

How much do you agree or disagree with the following two statements?

1. I think the story is true.
2. I might share the story on a social media platform (e.g. Facebook, Twitter).

Scale: 1. Strongly agree; 2. Agree; 3. Somewhat agree; 4. Neither agree nor disagree; 5. Somewhat disagree; 6. Disagree; 7. Strongly disagree.

POPULISM

Question: To what extent do you agree or disagree with the following statements?

1. Politicians should always listen closely to the problems of the people.
2. Politicians don't have to spend time among ordinary people to do a good job.
3. The government is pretty much run by a few big interests looking out for themselves.
4. Government officials use their power to try to improve people's lives
5. You can tell if a person is good or bad if you know their politics.
6. The people I disagree with politically are not evil.

Scale: 1. Strongly agree; 2. Agree; 3. Somewhat agree; 4. Neither agree nor disagree; 5. Somewhat disagree; 6. Disagree; 7. Strongly disagree.

A.6 Outcomes – Additional measures

AFFECTIVE POLARIZATION

Question 1: What do you feel when you think about people on the right in political matters?

Question 2: What do you feel when you think about people on the left in political matters?

1. Angry
2. Frustrated
3. Afraid
4. Hopeful
5. Enthusiastic
6. Proud

Scale: 1. Very strongly; 2. 3. 4. 5. 6. 7. Not at all.

{Affective polarization is calculated as the gap in emotions towards in-group and out-group (based on personal left-right placement). Scores to negative emotion items are flipped.

FINANCIAL PROSPECTS

Question: In your opinion, how hard is it to find good jobs in the community where you live?

Scale: 1. Good jobs are difficult to find. 2. Lots of some jobs, few of others. 3. There are plenty of good jobs 'available. 4. Don't know.

Question: Please think of your parents, when they were the same age as you. How is your standard of living compared to theirs? Is your standard of living...

Scale: 1. Much better; 2. Somewhat better; 3. About the same; 4. Somewhat worse; 5. Much worse; 6. Don't know;

Question: Please imagine your children when they reach the same age as you. How will their standard of living be compared to yours? Will their standard of living be

Scale: 1. Much better; 2. Somewhat better; 3. About the same; 4. Somewhat worse; 5. Much worse; 6. Don't know;

GOVERNMENT SUPPORT

Question: How much do you agree or disagree with the following statements?

1. The government conducts a policy that harms the country's economy.
2. The government conducts a policy that is positive for the country.
3. The government has conducted the policies necessary to handle the coronavirus.
4. The government's response to the coronavirus has been too extreme.
5. Our country and our leaders have been united against the coronavirus.

Scale: 1. Strongly agree; 2. Agree; 3. Somewhat agree; 4. Neither agree nor disagree;

5. Somewhat disagree; 6. Disagree; 7. Strongly disagree.

B Descriptive Statistics

B.1 Country statistics

Table OA1 below reports macro-level statistics from the World Bank (GDP per capita PPP) and the V-Dem Institute (all others), to give a broad overview of the differences across countries. All V-Dem indicators are based on expert ratings.⁸

- V-Dem’s **Liberal Democracy Index** scores countries on how close they get to the ideal of liberal democracy. The LDI “judges the quality of democracy by the limits placed on government”, by incorporating the rule of law, civil liberties, freedom and fairness of elections etc.
- V-Dem’s **Political Polarization** measures to what extent to which political differences affect social relationships beyond political discussions.
- **GDP per capita** on purchasing power parity from the World Bank.
- V-Dem’s **Health Equality** measure asks “to what extent is high quality basic healthcare guaranteed to all, sufficient to enable them to exercise their basic political rights as adult citizens?”
- V-Dem’s **Government effectiveness** combines into a single grouping responses on the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government’s commitment to policies. The main focus of this index is on “inputs” required for the government to be able to produce and implement good policies and deliver public goods.
- V-Dem’s **Pandemic Violations of Democratic Standards Index (PanDem)** captures the extent to which state responses to Covid-19 violate democratic standards for emergency responses. Edgell, Amanda B., Jean Lachapelle, Anna Lührmann, ... and Staffan I. Lindberg. 2020. Pandemic Backsliding: Democracy During

⁸Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, ... and Daniel Ziblatt. 2021. “V-Dem Codebook v11.1” Varieties of Democracy (V-Dem) Project.

Covid-19 (PanDem), Version 6. Varieties of Democracy (V-Dem) Institute, www.v-dem.net/en/our-work/research-projects/pandemic-backsliding/.

Table OA1: Country level statistics from Varieties of Democracy (V-Dem) and the World Bank

	Denmark	Hungary	Italy	USA
Liberal Democracy	0.88	0.37	0.79	0.73
Political polarization	0.04	0.95	0.79	0.93
GDP per capita	60,908	15,899	31,676	63,543
Health equality	0.96	0.60	0.93	0.47
Government effectiveness	0.99	0.62	0.62	0.87
PanDem score	0	0.3	0.15	0.2

B.2 Demographics in the full and balanced panel samples

Figure OA1 below reports the distribution of demographic variables (sex, education, age, and region) in all four countries for both full samples (with all data collected) and balanced samples (including only those who participated in all 3 waves), and for both unweighted and weighted samples. It is noteworthy that with the exception of the Hungarian data, the unweighted samples are reasonably close to population margins (the green and red marks are close to each other). It is also noteworthy that attrition in the balanced panel sample was not systematic by demographic attributes. The most recognizable pattern is that attrition slightly exacerbated existing skews in sex and age in Hungary, and age in the US. Finally, it is clear that the entropy weights we rely on in all analyzes are very successful in bringing all demographics distributions to the population margins.

Figure OA1: Proportion of sex, education, age and region in four samples and four countries. Red marks denote unweighted samples, green marks denote weighted samples. Dots denote the full sample, triangles denote the balanced panel sample (i.e. only those who participated in all 3 waves). The large black cross denotes the population margins.

B.3 Descriptive statistics for our outcomes

Table OA2: Descriptive statistics in Denmark and Hungary for each of the three waves

label	Denmark_1	Denmark_2	Denmark_3	Hungary_1	Hungary_2	Hungary_3
Subjective Burden of COVID-19	0.36 (0.14)	0.34 (0.14)	0.36 (0.14)	0.5 (0.14)	0.46 (0.16)	0.51 (0.14)
Anomie	0.36 (0.18)	0.35 (0.18)	0.36 (0.17)	0.44 (0.21)	0.41 (0.21)	0.44 (0.20)
Support for redistribution	0.44 (0.20)	0.41 (0.19)	0.42 (0.19)	0.52 (0.19)	0.53 (0.19)	0.53 (0.18)
Tolerate immigrants	0.38 (0.21)	0.38 (0.21)	0.37 (0.21)	0.38 (0.20)	0.38 (0.21)	0.38 (0.20)
Social trust	0.69 (0.46)	0.68 (0.47)	0.69 (0.46)	0.3 (0.46)	0.34 (0.47)	0.33 (0.47)
Reject surveillance	0.58 (0.25)	0.58 (0.25)	0.57 (0.25)	0.7 (0.24)	0.71 (0.22)	0.71 (0.24)
Satisfaction with pol. system	0.67 (0.23)	0.66 (0.24)	0.64 (0.25)	0.34 (0.31)	0.33 (0.31)	0.3 (0.30)
Level of Democracy	0.72 (0.22)	0.7 (0.22)	0.69 (0.25)	0.36 (0.31)	0.36 (0.31)	0.34 (0.31)
Support for democracy	0.83 (0.20)	0.82 (0.20)	0.84 (0.19)	0.76 (0.20)	0.77 (0.20)	0.77 (0.19)
Proud citizen	0.77 (0.24)	0.76 (0.24)	0.74 (0.24)	0.65 (0.29)	0.64 (0.30)	0.62 (0.30)
Need for chaos	0.17 (0.17)	0.18 (0.18)	0.16 (0.17)	0.23 (0.21)	0.22 (0.18)	0.22 (0.18)
Believe and share misinfo	0.22 (0.25)	0.24 (0.25)	0.2 (0.24)	0.37 (0.29)	0.34 (0.27)	0.35 (0.28)
Populism	0.51 (0.10)	0.52 (0.10)	0.51 (0.10)	0.55 (0.13)	0.56 (0.13)	0.56 (0.13)
Support for the Government	0.68 (0.20)	0.65 (0.21)	0.61 (0.24)	0.45 (0.27)	0.44 (0.27)	0.41 (0.27)
Affective polarization	0.23 (0.25)	0.23 (0.25)	0.23 (0.25)	0.25 (0.27)	0.26 (0.28)	0.28 (0.29)
Financial prospects	0.58 (0.16)	0.58 (0.16)	0.58 (0.16)	0.5 (0.19)	0.5 (0.20)	0.48 (0.19)

Table OA3: Descriptive statistics in Italy and the USA for each of the three waves

label	Italy_1	Italy_2	Italy_3	USA_1	USA_2	USA_3
Subjective Burden of COVID-19	0.48 (0.13)	0.45 (0.14)	0.49 (0.13)	0.41 (0.13)	0.4 (0.14)	0.43 (0.14)
Anomie	0.48 (0.19)	0.46 (0.18)	0.48 (0.19)	0.34 (0.20)	0.34 (0.19)	0.34 (0.21)
Support for redistribution	0.45 (0.19)	0.45 (0.19)	0.44 (0.18)	0.42 (0.25)	0.41 (0.27)	0.41 (0.26)
Tolerate immigrants	0.42 (0.22)	0.42 (0.22)	0.43 (0.22)	0.5 (0.25)	0.51 (0.26)	0.52 (0.25)
Social trust	0.3 (0.46)	0.29 (0.46)	0.3 (0.46)	0.44 (0.50)	0.46 (0.50)	0.46 (0.50)
Reject surveillance	0.59 (0.26)	0.6 (0.27)	0.6 (0.25)	0.71 (0.26)	0.69 (0.26)	0.69 (0.27)
Satisfaction with pol. system	0.44 (0.28)	0.41 (0.27)	0.39 (0.27)	0.29 (0.29)	0.26 (0.28)	0.24 (0.27)
Level of Democracy	0.51 (0.29)	0.5 (0.29)	0.48 (0.30)	0.41 (0.28)	0.39 (0.28)	0.38 (0.27)
Support for democracy	0.71 (0.22)	0.72 (0.22)	0.72 (0.23)	0.79 (0.21)	0.79 (0.22)	0.79 (0.22)
Proud citizen	0.71 (0.28)	0.67 (0.28)	0.65 (0.29)	0.77 (0.30)	0.74 (0.32)	0.74 (0.30)
Need for chaos	0.26 (0.19)	0.26 (0.18)	0.28 (0.20)	0.2 (0.20)	0.19 (0.19)	0.19 (0.20)
Believe and share misinfo	0.41 (0.30)	0.39 (0.28)	0.4 (0.29)	0.34 (0.30)	0.34 (0.31)	0.34 (0.31)
Populism	0.59 (0.11)	0.58 (0.11)	0.58 (0.11)	0.61 (0.13)	0.62 (0.13)	0.62 (0.13)
Support for the Government	0.54 (0.20)	0.53 (0.20)	0.5 (0.21)	0.5 (0.20)	0.44 (0.19)	0.41 (0.18)
Affective polarization	0.28 (0.28)	0.29 (0.29)	0.26 (0.27)	0.38 (0.35)	0.44 (0.33)	0.4 (0.33)
Financial prospects	0.41 (0.20)	0.42 (0.20)	0.41 (0.19)	0.52 (0.22)	0.54 (0.22)	0.51 (0.21)

B.4 Test-retest correlations

Figure OA2: Test-retest correlation estimates for our measures

B.5 Alpha reliability estimates for multi-item scales

Figure OA3: Alpha reliability estimates for multi-item scales

C Model details and additional analyses

C.1 Which demographic groups experience more burden and anomie during 2020?

Figure OA4: Older and more highly educated respondents perceived less covid burden and anomie

To better understand who experienced a higher subjective burden from the COVID-19 crisis, we perform two sets of analyses: within-respondent and cross-sectional models. First, we regress covid burden and anomie on three indicators of the pandemic's immediate effects: perceptions of own physical health, getting sick with COVID-19 and getting unemployed. We find that when respondents report a decrease in physical health, get sick with COVID-19 or lose their jobs, they also report slightly higher covid burden. Admittedly, these effects are small amounting to only a 0.01-0.03 change in burden. Moreover, only 9% of respondents reported getting sick with COVID-19⁹ and only 12%

⁹As our question asks if the respondent was ever sick with COVID-19, we exclude respondents, who report COVID-19 but at a later wave renege on it. Thereby, we restrict the analysis to pre- post-comparisons of personal experience with the virus.

of respondents had a change in their employment status throughout our study period, therefore these relationships are driven by small subsamples. We also find that a decrease in physical health is associated to a small increase in anomie, but getting COVID-19 or (un)employed is not associated to changes in anomie. All in all, these analyses show that the subjective covid burden is influenced by, but not primarily driven by dramatic changes in personal health or employment. This conclusion is consistent with the aggregate analyses which show relatively little responsiveness to dramatic changes in epidemic trajectories.

We also investigated cross-sectional differences in covid burden and anomie. Specifically, we built multilevel regression models regressing burden and anomie on age, gender and level of education. We investigated heterogeneities across countries and waves by investigating if varying intercepts and slopes improve model fit. We found differences in levels of burden and anomie across both time and countries. We found that the demographic differences for age and education vary with country, but remain stable across time. Finally, gender has consistently no effect on burden and anomie.

Figure OA4 displays the coefficient estimates for secondary and higher education, as well as age for both burden and anomie in each of the four countries. To make the estimates comparable, we standardize the age variable by centering and dividing by two standard deviations. We find that on average younger respondents perceive slightly more burden ($b = 0.01$) and higher anomie ($b = 0.06$). This is surprising given that older people were much more likely to get seriously ill from the virus, but may reflect the fact that for most people the corona-crisis was not primarily about their physical health. We also find that higher educational attainment appears to shield from both burden and anomie. Compared to those with only a primary education, respondents with a secondary (burden $b = -0.03$, anomie $b = -0.04$) and especially a tertiary education (burden $b = -0.05$, anomie $b = -0.08$) are less negatively affected by the pandemic.

C.2 Estimating realistic changes in our predictors

In order to estimate a realistic within-unit change in our two predictors, we followed the following procedure: First, we regressed both predictors on the two fixed effects (respondent and country-wave). Then we exported the residuals from these models or in other words the demeaned predictors employed in our analyzes. Next, for each individual, we calculated the largest difference between any two waves. Figure OA5 below depict the distribution of these estimates.

Figure OA5: Distribution of within-unit changes in our predictors. Horizontal lines mark the average (black line) and a large but still realistic (dashed line) within-unit change in the covid burden and Anomie.

C.3 Descriptive Trends in Extreme Discontent

While we are unable to benchmark the levels of extreme discontent measured, we can still inspect their changes throughout the pandemic. Figure OA6 demonstrate that for the most part, average levels of extreme discontent were stable throughout the study period. We find the highest levels of extreme discontent in Italy and Hungary, with a faint pattern resembling the changes in the pandemic burden. Extreme discontent was lower in the US, and has been slightly but steadily increasing between April and December. Unsurprisingly, the lowest levels of extreme discontent were found in Denmark, but surprisingly, the within country trends moved oppose to the pandemic with the highest value observed in June.

Figure OA6: Descriptive trends in extreme discontent.

C.4 Cross-country variation in 2FE models

Figure OA7: 2FE models split by the four countries.

Regarding social solidarity we observe two notable heterogeneities. First, while we reported a tiny overall increase in support for redistribution for changes in covid burden, it appears that this masks larger positive relationships in Hungary, Italy and the US, tempered by a negative relationship in Denmark. Second, we found that an increase in Anomie is associated with a decrease in the rejection of surveillance. Our country-wise models show that this relationship is entirely driven by a large association among Hungarians, tempered by no relationships in the other three countries.

Next, we consider the category of System Support. Although the pooled country-wise estimates are not significantly different from each other, the US estimate appears to be consistently smaller than the ones in the other countries, driven primarily by negligible associations between covid burden and level of democracy, and support for the political system. It is notable that changes in covid burden do not predict changes in perceived levels of democracy in Hungary either, which happens to be the other country in our sample experiencing democratic backsliding. Other than these, all associations – and

notably all associations with change in Anomie – appear to be highly consistent across countries.

Finally, we consider Extreme Discontent. Overall, the heterogeneities are smaller here than with System Support. The pooled relationship between covid burden and Extreme Discontent is somewhat smaller in Hungary and the US than in Italy and Denmark. If anything, changes in believing and sharing misinformation are negatively related to changes in burden in Hungary, although we find the expected positive associations in the other three countries. Again, it is notable that all relationships between anomie and various types of extreme discontent are remarkably consistent across the four countries.

C.5 Additional outcome variables

Figure OA8: Additional outcome variables

C.6 Splitting Covid Burden into component factors

Figure OA9: Additional outcome variables

C.7 COVID-19 Burden, Anomie and Antigovernment Behavior Intentions – Replicating and extending Bartusevicius et al 2021.

Bartusevičius et al. (2021) provided evidence that respondents who suffered from a higher subjective COVID-19 burden at Wave 1 of data collection were also more likely to indicate an intention to participate in both peaceful and violent protests at Wave 2. These analyzes relied on validated measures of activism intentions.¹⁰ We replicate and extend these analyzes by conducting two-way fixed effects models relying on Wave 2 and 3 data (the only two waves where behavioral intentions were measured). Table OA4 below reports these coefficient estimates. These models show that while the relationships between COVID-19 burden, anomie and (peaceful) activism intentions are generally weak, both changes in burden and in anomie are significantly associated to changes in (violent) radicalism intentions.

¹⁰Moskalenko, S., & McCauley, C. (2009). Measuring political mobilization: The distinction between activism and radicalism. *Terrorism and political violence*, 21(2), 239-260.

Table OA4: 2FE models of Activism and Radicalism Intentions

	<i>Dependent variable:</i>			
	Activism Intentions		Radicalism Intentions	
	(1)	(2)	(3)	(4)
Covid-19 Burden	0.013 (0.012)		0.027** (0.011)	
Anomie		0.019* (0.010)		0.032*** (0.010)
Observations	6,860	6,860	6,869	6,869
Adjusted R ²	0.565	0.566	0.538	0.539
<i>Note:</i>		*p<0.1; **p<0.05; ***p<0.01		

C.8 The benchmarked, single-item measure of anomie

Our survey included an alternative, single-item measure of anomie, which we could benchmark to EVS and WVS data. The question read: “Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means ”no choice at all” and 10 means ”a great deal of choice” to indicate how much freedom of choice and control you feel you have over the way your life turns out.” Figure OA11 below reports z-scored averages for this item in each country. We find that in our survey, people on average reported much higher levels of anomie than compared to the benchmarked surveys. Across the four countries, this difference is 35% of a standard deviation, ranging from 30% in the USA, to above 40% in Italy. We also find that variation in the average levels of anomie during the study period (and the COVID-19 pandemic) is much smaller than the initial change.

Figure OA10: Benchmarked changes in an alternative measure of anomie: across the four countries, people on average felt about 35% of a standard deviation more anomie during the pandemic than before it.

Figure OA11 below demonstrates that the single item measure of anomie replicates almost all two-way fixed effects estimates from our main analyzes, with the caveat that as one would expect, these estimates are less precise, presumably due to higher measurement error. In practice means that the associations with system support variables are systematically over-estimated, whereas associations with extreme discontent are systematically under-estimated.

Figure OA11: Comparing original 2FE estimates of anomie to a single-item anomie measure, which we could benchmark to pre-pandemic levels

D Robustness checks

D.1 Full CBS scale

Figure OA12: Comparing original 2FE estimates with the full COVID-19 burden scale which includes the fifth component tapping into concerns about democracy

D.2 Testing the parallel trends assumption

D.2.1 Leading the predictors

Figure OA13: Comparing original 2FE estimates with models that also include a lead predictor variable

D.2.2 Respondent-specific time trends

Figure OA14: Comparing original 2FE estimates with models that also include respondent-specific linear time trends

D.3 Controlling for Support for government

Figure OA15: Comparing original 2FE estimates for system support variables with models that adjust for support for the government

D.4 Comparing one and two-way fixed effects models

Figure OA16: Comparing original 2FE estimates with unit-fixed effects and time-fixed effects model estimates

D.5 Replicating models without weights

Figure OA17: Comparing original 2FE estimates with models without survey weights