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DISCUSSION PAPER SERIES

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# ABSTRACT

## COVID-19 Crisis Fuels Hostility against Foreigners*

Aggressive behavior against out-group members often rises during periods of economic hardship and health pandemics. Here, we test the widespread concern that the Covid-19 crisis may fuel hostility against people from other nations or ethnic minorities. Using a controlled money-burning task, we elicited hostile behavior among a nationally representative sample (n=2,186) in the Czech Republic, at a time when the entire population was under lockdown. We provide causal evidence that exogenously elevating salience of the Covid-19 crisis magnifies hostility against foreigners. This behavioral response is similar across various demographic sub-groups. The results underscore the importance of not inflaming anti-foreigner sentiments and suggest that efforts to restore international trade and cooperation will need to address both social and economic damage.

**JEL Classification:** C90, D01, D63, D91, J15

**Keywords:** COVID-19, pandemic, scapegoating, hostility, inter-group conflict, discrimination, experiment

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## Introduction

Intergroup conflicts are among the most pressing problems facing human society(Bowles 2009; Fiske 2002; Blattman and Miguel 2014). Social scientists have long argued that difficult life conditions imposed upon individuals by external forces that threaten physical wellbeing and safety (e.g., economic and political upheavals, widespread disease) may create a fertile environment for xenophobia and out-group hostility. Several psychological mechanisms have been posited to lead to such behavioral responses, such as shifting anger caused by hardship onto innocent "scapegoats" (Doob et al. 1939; Allport 1954; Marcus-Newhall, Pedersen, and Carlson 2000), coping with thoughts of death by conforming to parochial group norms (Greenberg, Pyszczynski, and Solomon 1986), or protecting the self from contagious pathogens (Murray and Schaller 2016; O'Shea et al. 2020).

In light of this reasoning, the Covid-19 crisis, arguably the most severe health and economic shock since WWII (Baldwin and Weder di Mauro 2020; *New York Times, 2020*), has created an unfortunate but suitable testing ground for exploring whether an important, naturally-occurring shock in the health and economic domains spills over to the social domain and magnifies inter-group animosity. Since Covid-19 originally surfaced in China and spreads across borders via interactions with people from other countries, contemporary commentators have suggested that it may foster prejudice against foreigners, particularly against people from Asia(*CNN* 2020)**.** For example, Fernand de Varennes, the UN Special Rapporteur, warns that "COVID-19 is not just a health issue; it can also be a virus that exacerbates xenophobia, hate and exclusion." (*United Nations News* 2020). Rigorously identifying the causal effects of Covid-19 on inter-national and domestic group divisions is fundamental for understanding the current and future social and political landscape. Such divisions may reduce support for global initiatives to tackle the pandemic, create barriers to re-establishing international trade, strengthen support for extreme right-wing political parties and increase the risk of conflicts.

Despite the importance of this issue, causal evidence on how fears associated with major health and economic shocks shape hostility against particular groups is lacking. This is not surprising because of several empirical challenges. First, hostility denotes aggressive harmful behavior motivated by negative emotions towards certain individuals or groups, in contrast to harmful behavior motivated by personal material gain. Using naturally occurring data to uncover hostility, such as the prevalence of robbery or violence, is problematic because hardship often goes hand in hand with greater financial needs. Similarly, avoidance of out-

group members or support for border closures can be a rational protective strategy. Thus, using these measures does not allow us to separate selfish motivations, based on a rational calculus of potential material benefits to ones' self, from hostility. Second, a clean measurement requires an exogenous variation in the identity of the victim of the hostile behavior, in order to distinguish whether hardship fuels hostility towards particular groups, rather than towards people in general. The third challenge is identification of causal impacts. For understanding impacts of a shock that hits the whole country at a similar point in time, a key issue is finding a ceteris paribus variation in fears that is not correlated with time trends or unobserved confounders between individuals. Simply comparing individuals from localities with lower versus higher prevalence of disease during a health pandemic can be misleading. More pro-social and tolerant individuals can self-select into residing in localities that have a greater capacity to cope with the crisis. Moreover, individuals vary along many unobserved dimensions. For example, out-group hostility can be related to economic vulnerability and personal characteristics that affect people's ability to cope with economic or health shocks. These aspects could result in spurious correlations.

Here we address this gap in empirical knowledge and provide clean evidence that a health pandemic accompanied by a severe economic shock, fuels harmful behavior towards people living in other countries. Our evidence is based on a large-scale experiment implemented in midst of the Covid-19 crisis. We elicited hostile behavior among a nationally representative sample (n = 2,186) in the Czech Republic, a medium-sized country in Central Europe, while the pandemic was on the rise, and the entire population lived under lockdown and border closure; see Supplementary Information (SI) for more details about the background.

Several features of our experimental design help us to overcome the empirical challenges described above. First, we directly elicit willingness to cause financial harm in a controlled money-allocation task. Subjects make anonymous, one-shot allocation decisions, in which they can decide to decrease a monetary reward for another person. Since reducing the reward does not result in pecuniary benefits for the decision-maker (or for anyone else), the choice reveals individual willingness to engage in hostile behavior. Second, we exogenously manipulate information about identity of the recipient of the reward, in order to identify discrimination against foreigners. Third, we randomly assign the participants either to a treatment condition that increased the salience of Covid-related problems and fears, or to the control condition in which Covid-related challenges were not made salient. Random allocation ensures that participants in the treatment and control conditions are comparable in terms of

observable and unobservable characteristics, helping to overcome selection issues and concerns about spurious correlation. Finally, an attractive feature of our empirical approach is that it can be easily employed on large representative samples in virtually any country with well-developed data collection infrastructure.

Earlier work has documented a correlation between greater exposure to (real or perceived) health threats and measures of group biases in explicit and implicit attitudes. For example, in US states with higher rates of infectious diseases, people exhibited greater racial prejudice (O'Shea et al. 2020). A representative survey from US shows that citizens who felt more vulnerable to contracting Ebola displayed greater prejudice against immigrants in survey questions (Kim, Sherman, and Updegraff 2016). Small increases in implicit (but not explicit) bias against gay and lesbians were found at the height of the 2014 Ebola pandemics (Inbar et al. 2016). Moving beyond correlations, showing a disease-related picture primes increased prejudice among subjects in the lab(Duncan and Schaller 2009) and among a sample of M-Turk workers (O'Shea et al. 2020). We contribute by providing causal evidence of the impacts of a naturally-occurring health pandemic on incentivized behavior among a representative sample.

This paper is also related to a broader literature which tests the role of environmental factors and policies that may influence the prevalence of discrimination (Paluck and Green 2009). The focus has been mostly on the effects of inter-group contacts (Alexander and Christia 2011; Rao 2019), perspective-taking (Broockman and Kalla 2016), social environment(Bauer et al. 2018), and exposure to violent elections (Hjort 2014) or war (Bauer et al. 2014). In terms of measuring out-group hostility, we build on economic experiments designed to uncover biases in social preferences towards people with specific group attributes, using incentivized allocation tasks (Bernhard, Fischbacher, and Fehr 2006; Kranton and Sanders 2017; Angerer et al. 2016; Fehr and Fischbacher 2003). A noteworthy aspect of our work is the focus on multiple dimensions of group identity, since most of the earlier work studies only a single group attribute.

We collected experimental data on a large, nationally-representative sample, using an approach inspired by (Almas, Cappelen, and Tungodden 2019; Falk and Hermle 2018), and took advantage of the online infrastructure of a leading data-collection agency in the Czech Republic (NMS Market Research and PAQ Research). The data were collected via the agency from a sample of 2,186 adults from March 30 to April 1, 2020. The sample is nationally representative in terms of age, sex, education, employment status before the Covid-19

pandemic, municipality size, and regional distribution, with a higher share of people living in large cities (Supplementary Table 1).

We developed a detailed experimental module, designed to uncover the shape of hostile preferences towards people with different group attributes. We administered a series of decisions in an allocation task that we label a Help-or-Harm task (HHT), which combines features of the well-established Dictator game and the Joy of Destruction game (Abbink and Sadrieh 2009). The participants were asked to increase or decrease rewards to a set of people with different characteristics, at no monetary costs to themselves. The default allocation was CZK 100 (USD 4). Participants could allocate any amount between CZK 0 and CZK 200 (USD 0-8), using a slider located in the middle of the 0-200 scale (see Supplementary Fig. 1). The participants had to make an active choice - even if they decided to keep the reward at the default allocation, they had to click on the slider.

The advantage of implementing a salient reference point is that we can identify (i) changes in basic pro-social behavior and (ii) changes in the prevalence of hostile behavior. We denote behavior as pro-social when subjects choose to increase rewards above CZK 100, revealing that a participant cares positively about the recipient. Next, we refer to behavior as being hostile when subjects allocate less than CZK 100 to the recipient, since in order to do so they have to actively cause financial harm with no pecuniary benefit to themselves. Thus, such behavior cannot be explained by selfish motivations. We also consider the most extreme manifestations of such behavior, when subjects destroy all recipient's earnings, by allocating CZK 0. Note that since the previous literature documents that a non-negligible fraction of people tend to act in hostile ways even towards in-group members (Abbink and Sadrieh 2009; Bauer et al. 2018), hostile behavior towards out-group members does not necessarily reflect anti-outgroup bias. A clear measurement of such bias requires a comparison of the prevalence of hostility towards in-group members and towards out-group members.

In order to measure nation-based divisions and hostile behavior towards foreigners, the participants made decisions whether to increase or decrease money to a person living in the Czech Republic, in the EU, in the USA, in Asia, and in Africa. We chose not to mention specific countries, such as China or Italy (the countries most saliently linked to the Covid-19 pandemic during our data collection period), in order to avoid inducing an experimenter demand effect. In the analysis, we focus on average behavior towards a foreigner, and compare it to behavior towards a person from the Czech Republic. Further, in order to measure domestic divisions and hostility to out-group members from one's own country, in the second set of decisions

participants allocated money to people who all live in the Czech Republic but who either share a group attribute with them (in-group) or not (out-group). We focused on the following dimensions: region of residence, political orientation, ethnicity, and religion. In the analysis, we study average behavior towards domestic in-group members and towards domestic out-group members. In total, each participant made seventeen choices. The choices were incentivized -- the subjects knew that thirty participants would be randomly selected and one of their choices would be implemented.

In order to exogenously manipulate the intensity of Covid-19- related concerns when subjects made decisions, we used a priming technique. Each participant was randomly allocated either to the COVID-19 (n = 1,142) or to the CONTROL condition (n = 1,044). In the COVID-19 condition, before making decisions in the Help-or-Harm tasks, the subjects answered a series of survey questions focusing on the coronavirus crisis, specifically on their preventive health behavior, social distancing, economic situation, and psychological wellbeing. The prime is designed to activate or intensify a complex set of thoughts and concerns that characterize people's lives during the coronavirus crisis. The median time the respondents spent answering this set of questions was 13 minutes. In the CONTROL condition, the participants made the decisions in the Help-or-Harm tasks at the beginning of the survey, and answered the coronavirus-related questions only later. Supplementary Table 1 shows that randomization was successful, since participants do not exhibit systematic differences across conditions in terms of observable characteristics. See the Methods section and SI for more details about the sample, experimental design, definition of variables, and complete experimental protocol.

The priming technique allows us to measure purely psychological impacts of a greater intensity of Covid-related concerns on hostility. Priming is a well-established technique in social science (Bargh and Chartrand 2000; Cohn and Maréchal 2016) and has been successfully used to shed light on a range of other important issues (Cohn, Fehr, and Maréchal 2014; Mani et al. 2013; Cohn et al. 2015). Also note that this technique identifies impacts of greater intensity of Covid-related thoughts, rather than the overall effects of Covid-19. Thus, to the extent that people in the CONTROL condition also have Covid-19 concerns very much at top of mind, this technique may underestimate the actual effects of the pandemic.

**Results**

We find that, on average, participants allocate less money to foreigners than to a person from their own country (Table 1). They reduced the reward to foreigners (from the EU, USA, Asia or Africa) from CZK 100 to CZK 92, while they increased the reward to a domestic person to CZK 133 (Somer's D test, z(1, N=10,929) = -37.89, P < 0.001, Clusters = 2,186, Cohen's d = 0.71). The main question of interest is whether thinking about Covid-19 magnifies such nation-based discrimination by increasing hostility towards foreigners. In order to answer this question, we compare choices in the COVID-19 condition with choices in the CONTROL condition.

Thinking about Covid-19 has negative impacts on behavior towards foreigners (Fig. 1a and Table 2). While in the CONTROL condition, participants on average allocated CZK 94 to foreigners, in the COVID-19 condition they allocated CZK 89 (OLS, effect of COVID-19 = -4.88, t(8,600) = -2.29, P = 0.022, confidence interval (95% CI) = -9.06 to -0.70). The effect on behavior towards a domestic recipient is small in magnitude and not statistically significant (OLS, effect of COVID-19 = -0.70, t(2,043) = -0.31, P = 0.753, 95% CI = -5.04 to 3.65). In a regression analysis, we find a negative interaction effect between COVID-19 and an indicator variable for 'foreigner' (as compared to a domestic person) on the amount allocated to the other person, but it does not reach statistical significance at conventional levels (Supplementary Table 2, OLS, effect of COVID-19*Foreigner = -3.57, t(10,784) = -1.48, P = 0.140, 95% CI = -8.31 to 1.18).

Next, we take a more granular approach and explore the effects on behavior towards individuals from different parts of the world. We find a negative impact of COVID-19 on behavior towards people from the EU, the USA and Asia, but not from Africa (Fig. 1a and Table 2). As compared to CONTROL, in COVID-19, participants allocated on average CZK 8 less to a person from the EU (OLS, t(2,043) = -3.43, P = 0.001, 95% CI = -12.47 to -3.40) and CZK 5 less to a person from the USA (OLS, t(2,043) = -1.86, P = 0.063, 95 % CI = -9.50 to 0.25) and CZK 4 less to a person from Asia (OLS, t(2,043) = -1.67, P = 0.094, 95 % CI = -9.41 to 0.74).

Further, we show that the COVID-19 condition reduces money allocations to foreigners not only due to reduced pro-social behavior, but primarily due to increased prevalence of hostile behavior (Fig. 1b and Supplementary Table 3). We define an indicator variable equal to one if the participant actively destroyed the money allocated to the other person, i.e. reduced the

reward to an amount below 100. The prevalence of hostile behavior is higher in COVID-19 than in CONTROL when such behavior impacts foreigners living in the EU (by 6 percentage points, linear probability model, t(2,043) = 3.12, P = 0.002, 95% CI = 0.02 to 0.09), in the USA (by 5 percentage points, linear probability model, t(2,043) = 2.11, P = 0.035, 95% CI = 0.00 to 0.09), and in Asia (by 4 percentage points, linear probability model, t(2,043) = 1.97, P = 0.049, 95% CI = 0.00 to 0.08). The effect on prevalence of hostility is largest for behavior towards a person living in the EU. In CONTROL, 20% decided to act in a hostile way towards a person from the EU, while in COVID-19 the prevalence of this behavior increased by 29 percent, to 26%. The size of the effects is 10 percent and 12 percent for recipients living in the USA and Asia, respectively, partly reflecting a larger hostility towards these group in the CONTROL condition.

Interestingly, the observed increase in the prevalence of hostility towards these groups of foreigners is driven by the extreme manifestation of hostility, namely the prevalence of decisions that reduce the rewards to 0 CZK, resulting in destruction of all the recipient's earnings (Supplementary Table 3). While in the CONTROL condition, 12.4% of participants destroyed all the earning of a foreign recipient, the proportion increases to 15.5% in the COVID-19 condition (linear probability model, effect of COVID-19=0.031, t(8,600) = 2.49, P = 0.013, 95% CI = 0.01 to 0.05), Again, the magnitude of these effects is largest for the recipient from the EU, where the prevalence of such behavior increases by 50 percent, from 6.2% to 9.3% (linear probability model, effect of COVID-19=0.031, t(2,043) = 2.68, P = 0.007, 95% CI = 0.01 to 0.05). We see very low prevalence of this extreme hostility towards domestic recipients, 2.3% in CONTROL and 2.5% in COVID-19 (linear probability model, effect of COVID-19=0.002, t(2,043) = 0.26, P = 0.797, 95% CI = -0.01 to 0.02). We provide further support for these conclusions in Supplementary Fig. 2, which shows full distributions of choices across both COVID-19 and CONTROL conditions. As expected, we also observe that COVID-19 reduces the prevalence of basic pro-sociality, defined as a willingness to increase rewards above the default allocation (Supplementary Table 3), but the effects are relatively small and mostly not significant statistically.

The size and diversity of our sample allows us to explore whether the observed effects of COVID-19 on hostility against foreigners is a broad response spanning across demographics, or behavior that characterizes certain demographic sub-groups of the population. Fig. 2 and Supplementary Table 4 display the effect of the COVID-19 condition on the mean amount of money allocated to (i) to all foreigners on average, and (ii) to recipients from the EU, for whom

we observe the largest effects, across age groups, gender, education level, income level, and size of municipality. Overall, the results are similar across demographics.

Does thinking about Covid-19 fuel hostility against any type of out-group members, including domestic ones, or is it a response specific to foreigners? To study this, we distinguish two groups of recipients living in the Czech Republic whose reward is subject to a participants' decision. We measure behavior towards domestic in-group members based on the average amount allocated to individuals who share a group attribute with the decision-maker (region of residence, ethnicity, political opinions, and religious beliefs). Behavior towards domestic out-group members refers to an average allocation to individuals who do not share a given group attribute.

We find evidence of domestic divisions in Czech society, which are comparable in magnitude to nation-based divisions. On average, the participants allocated 125 CZK to people who share a group attribute with them, but to people who do not share a group attribute they allocated CZK 95 (Somer's D test, $z(1, N=26{,}232) = -42.92$, $P < 0.001$, Clusters = 2,186, Cohen's $d = 0.54$). We find that thinking about Covid-19 does not magnify domestic out-group hostility (Figure 3 and Supplementary Tables 5-6). For measures of average behavior towards out-group members, the observed effects of COVID-19 are negative, significant statically when we use non-parametric tests (Somer's D test, $z(1, N=16{,}935) = -2.03$, $P=0.043$, Clusters = 2,186, Cohen's $d = 0.05$), but not statistically significant in the regression analysis (OLS, effect of COVID-19 = -2.82, $t(16{,}792) = -1.60$, $P = 0.111$, 95% CI = -6.28 to 0.64). We observe small negative effects that do not reach statistical significance across different out-groups, including recipients from the ethnic minority (OLS, effect of COVID-19 = -3.61, $t(2{,}043) = -1.42$, $P = 0.156$, 95% CI = -8.61 to 1.38) and migrants (OLS, effect of COVID-19 = -1.68, $t(2{,}043) = -0.70$, $P = 0.483$, 95% CI = -6.38 to 3.02). In addition, the negative effect on behavior seems to be somewhat larger towards domestic in-group members: in CONTROL the in-group recipients get CZK 127, while in COVID-19 they receive CZK 123 (OLS, effect of COVID-19 = -3.85, $t(9{,}154) = -2.06$, $P = 0.040$, 95% CI = -7.53 to -0.18). This effect is primarily driven by reduced allocations to recipients from participant's own region (OLS, effect of COVID-19 = -5.85, $t(2{,}043) = -2.52$, $P = 0.012$, 95% CI = -10.40 to -1.30).

Overall, the results about the effects on behavior towards domestic recipients need to be interpreted with caution. On one hand, we find virtually no effects on behavior towards a random person from the Czech Republic (Fig. 1). At the same time, the estimated coefficients on behavior towards specific groups within the Czech Republic are mostly negative, and some

of them reach statistical significance, including when recipients share a group attribute with the decision-maker. While it remains an open question whether Covid-19 has null or mildly negative effects on behavior towards people from own country, in any case, our results do not support the optimistic view that the Covid-19 crisis may create stronger social bonds.

A potential concern is that thinking and answering questions in the COVID-19 condition may have caused fatigue and led to less attention to allocation decisions, and thus may have affected choices without activating Covid-related concerns and fears. This explanation is, however, not supported by our data. Subjects in COVID-19 are neither more prone to stick to the default allocation, nor less likely to correctly answer attention check questions (Supplementary Table 7). Both of these patterns would be expected if subjects were less attentive. In fact, the effects of COVID-19 on behavior towards foreigners is caused by reduced likelihood of sticking to the default allocation, and an increased tendency to actively reduce recipients' income (Supplementary Fig. 2). Subjects' response time is somewhat lower in COVID-19, but all results are robust to controlling for response time (Supplementary Table 8). These and other robustness tests, including various regression specifications, are reported in the Supplementary Materials (Supplementary Tables 2-9).

In Table 2 and Supplementary Table 5 we present three types of p-values. The first is standard "per comparison" p-values. These are appropriate for researchers with an a priori interest in a specific outcome. For instance, researchers interested in the impact of Covid-19 on behavior specifically towards foreigners, or specifically towards people living in Asia, should focus on these p-values.

In addition, the analysis also presents additional p-values that account for multiple hypothesis testing, using the method developed by Barsbai et al. (2020), since a potential concern might be that our results are susceptible to false discovery of significant results that arise simply by chance when testing the impacts on multiple outcome variables. Since the paper is motivated by concerns about Covid-19 fostering out-group hostility, we consider the two main outcome variables capturing behavior towards out-group members: (i) behavior towards foreigners and (ii) behavior towards domestic out-group members. Thus, researchers with a priori interest in behavior towards out-group members should focus on these p-values. The effect on foreigners remains statistically significant ($P = 0.045$). Finally, we take the most conservative approach, relevant for the question whether Covid-19 affects social behavior in general, towards any type of recipient. Consequently, we adjust for the 17 hypotheses corresponding to all dependent variables for which we estimate the effects. Even under this

approach, the effect on the recipients from European Union (P = 0.008) is still statistically significant. Nevertheless, the effects on behavior towards foreigners, people living in the USA and in Asia do not reach statistical significance after this correction.

## Discussion

This paper provides causal evidence documenting how concerns triggered by a global health pandemic, Covid-19, shape hostility towards people with different group attributes. The main result is that thinking about Covid-19 increases anti-foreigner sentiments, making people more prone to financially harm people from the EU, and with less statistical strength, also from the USA and Asia. We show that this is a relatively general response, present across various demographic groups. The evidence illuminates how health and economic crises can cause damage in the social domain, and points to an important research agenda for social scientists interested in the immediate impacts and long-term legacies of Covid-19.

Given that the experimentally induced greater salience of Covid-19 in the treatment condition is temporary, the effects of the COVID-19 prime on behavior is also likely to be temporary. Nevertheless, it is plausible to assume that the effect identified by the prime goes in the same direction as the overall shift in out-group hostility caused by the crisis, since people are continuously facing cues that remind them of the Covid-19 pandemic. Further, it is possible that the effects may last even beyond the crisis period, if people internalize the social behavior developed during the crisis or if social norms change as a response to the crisis.

Although we demonstrate systematic effects of thinking about COVID-19 on social behavior across diverse social and economic groups, the evidence comes from a single country. More research is needed to explore how generalizable the effects are across settings. By integrating experimental measures of preferences and priming techniques into an online survey, this study provides a portable toolkit to study this issue in different countries across the globe, at various stages of the pandemic.

The Covid-19 crisis has entered people's lives in complex ways. It has created fears about people's own health, and that of friends and family members. To many, it has imposed economic hardships and uncertainty about future material well-being. It has also forced people to isolate themselves socially. The prime used in this paper may have activated all these concerns, and we cannot separate their roles in triggering the observed increase in hostility towards foreigners. A fruitful avenue for future research would be to try to more sharply

disentangle these aspects, perhaps by designing a set of Covid-related primes, each aiming to activate a different dimension of concerns. Such an approach could ultimately help researchers to figure out which of the potential psychological mechanisms drives the observed effect, particularly whether it is driven by redirection of anger caused by economic problems and social isolation on innocent scapegoats (Doob et al. 1939; Allport 1954; Marcus-Newhall, Pedersen, and Carlson 2000), or whether it reflects a defensive psychological response to the threat of contracting an infection disease (Murray and Schaller 2016; O'Shea et al. 2020).

The mechanisms above consider direct effects of the pandemic on individual preferences. Another possibility is that the observed increase in anti-foreigner sentiments may have been created by the behavior of politicians who may have incentives to blame foreigners for spreading the virus, in order to redirect attention from their own internal problems fighting the pandemic. In such a case, the increase in hostility towards foreigners would not be a direct effect of the pandemic per se, but rather the effect of politicians using the pandemic to incite hate against foreigners. This important question should be tested further by comparing the effects of Covid-19 in countries in which politicians do and do not incite anti-foreigner sentiments.

In terms of policy, our results underscore the importance of making sure political and other opinion-leaders avoid blaming foreigners and other countries for the crisis. Placing blame as a political strategy can either create, as described above, or tap into elevated anti-foreigner sentiments, and consequently increase the risk that the health and economic crises will become compounded by unravelling of international collaborations and increased risk of conflicts. Further, after the worst of the pandemic is over, rebuilding initiatives may need to go beyond purely economic reconstruction. Our results suggest policy-makers will need to think about ways how to rebuild social ties across national borders, as a pre-condition to re-establishing international trade and cooperation at a global level.

## Methods

**Sample.** The sample (n = 2,186, 1098 females / 1088 males, mean age 49.6 (s.d. = 16.68), youngest 18, oldest 91) is representative of the Czech population 18+ in terms of sex, age, education, region, municipality size, employment status before the Covid-19 pandemic, age x sex, and age x education. Prague and municipalities above 50,000 are oversampled (boost 200%). Sample statistics are presented in Supplementary Table 1. Participants were randomized

into the COVID-19 (n = 1,142) and CONTROL (n = 1,044) conditions by a computer. Randomization was done on an individual level. There are more than 1,000 participants in each of the two experimental conditions, and thus we are powered to detect even relatively small effects. We sampled from the largest online panel in the Czech Republic and cooperated with the major survey agency (NMS Market Research and PAQ Research). Respondents agreed to participate in the survey voluntarily and they were compensated for participating. The research was approved by the Commission for Ethics in Research of the Faculty of Social Sciences of Charles University.

We use nonparametric comparison tests. For regression analysis, data distribution was assumed to be normal but this was not formally tested. All reported tests are two-sided. No data points were excluded from the analysis. Data collection and analysis were not performed blind to the conditions of the experiments.

**Experimental design.** Details about the Help-or-Harm task, manipulation of the identity of the recipient and manipulation of the intensity of thinking about Covid-19 (the COVID-19 condition) are provided in the Supplementary information.

**Statistical analysis.** We report results from OLS regressions with the Help-or-Harm task allocation as the dependent variable and the COVID-19 condition indicator as the main explanatory variable. Each respondent allocated rewards to 17 different recipients (Supplementary Methods 1.2). In each regression model, we focus on allocations to a particular type of recipients (e.g. foreign recipients, domestic recipient). Full regression specification is described in Supplementary Methods 1.3. Whenever multiple observations per individual are used, standard errors are clustered at individual level. We report p-values and the number of observations in all tables. Wherever appropriate, we also report number of clusters. In main specifications, we further report p-values corrected for multiple hypothesis testing using the method developed by Barsbai, Licuanan, Steinmayr, Tiongson, and Yang (2020); see Supplementary Methods 1.6.

As a baseline specification, we report unweighted results for all 2,186 participants (Fig. 1a and Panel A of Table 2, Figure 3 and Panel A of Supplementary Table 5). Baseline models control for gender, age category (6 categories), household size, number of children, region (14 regions), town size (7 categories), education (4 categories), economic status (7 categories), household income (11 categories) and task order. Precise definitions of all variables are provided in Supplementary Methods 1.4. As a robustness check, we report results of 1) OLS

models with no controls, 2) OLS models with additional controls for the variables approximating economic situation, mental health, Covid-19 symptoms and activities during the lockdown, and 3) weighted OLS regressions, using probability weights to correct for the oversampling of respondents from large municipalities (Panels B-D of Table 2 and Supplementary Table 5). We present a formal test of whether the COVID-19 condition has a differential impact on behavior towards out-group recipients relative to in-group members (e.g., foreign and domestic recipients) using a difference-in-differences model, in which we add an indicator for out-group recipient and an interaction of the COVID-19 condition indicator with the out-group indicator (Supplementary Tables 2 and 6).

We additionally use binary dependent variables indicating 1) basic pro-social behavior in the Help-or-Harm task (i.e., increasing the reward above the default allocation of CZK 100), 2) hostile behavior (i.e., reducing the reward below the default allocation), 3) most extreme form of hostility (i.e., reducing the reward to zero) or 4) sticking with the default allocation (i.e., allocating CZK 100) (Fig. 1b and Supplementary Table 3). We estimate these models using the same specification as for the continuous allocations in the task, using linear probability models with baseline controls.

In Fig. 2 and Supplementary Table 4, we report results from a sub-group analysis. We always report data for both mutually exclusive sub-groups (e.g. younger participants and older participants). Number of observations in each sub-group is specified in the regression table.

When testing for differences between two groups in Table 1 (mean allocations in the Help-or-Harm task) and Supplementary Table 1 (randomization check), we use non-parametric tests. For ordinal variables, we report z-statistics and p-values from the Wilcoxon rank-sum equality test whenever the number of observations is the same as the number of clusters, and Somer's D z-statistics and p-values clustered at individual level whenever we have more observations than clusters. For categorical variables, we use Pearson's chi-squared test.

**Data and code availability**

The datasets and do-file replication files are available in the Harvard Dataverse repository (doi: 10.7910/DVN/XD8OOL)(Bauer et al. 2020).

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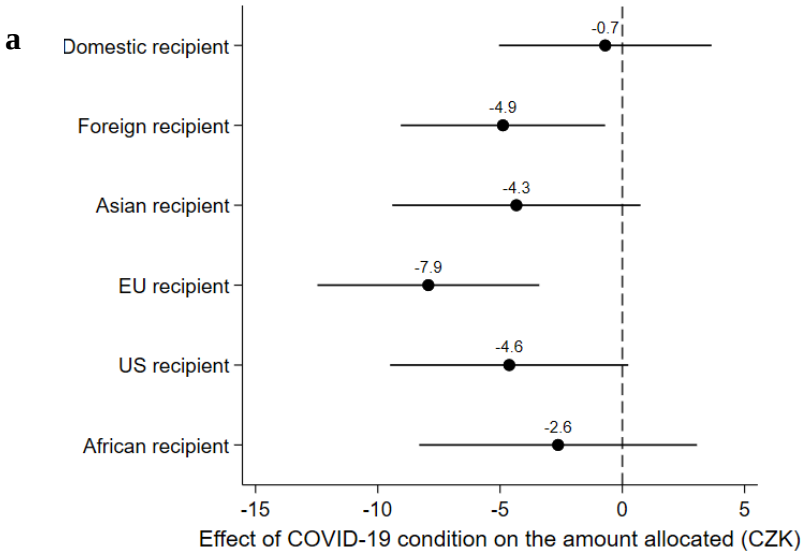
**Figure 1. Effect of the COVID-19 condition on allocations in the Help-or-Harm task, by the identity of the recipients.** Coefficient plots. Bars represent 95 percent confidence intervals. In **a**, the dependent variable is the amount allocated. In **b**, the dependent variable is a binary variable indicating hostile behavior, equal to 1 if allocation is strictly lower than the default allocation (100 CZK). Both panels present estimated coefficients of the COVID-19 condition relative to the CONTROL condition (corresponding regression models including numbers of observations appear in Panel A of Table 2 and Panel A of Supplementary Table 3). Data for all 2,186 participants used.



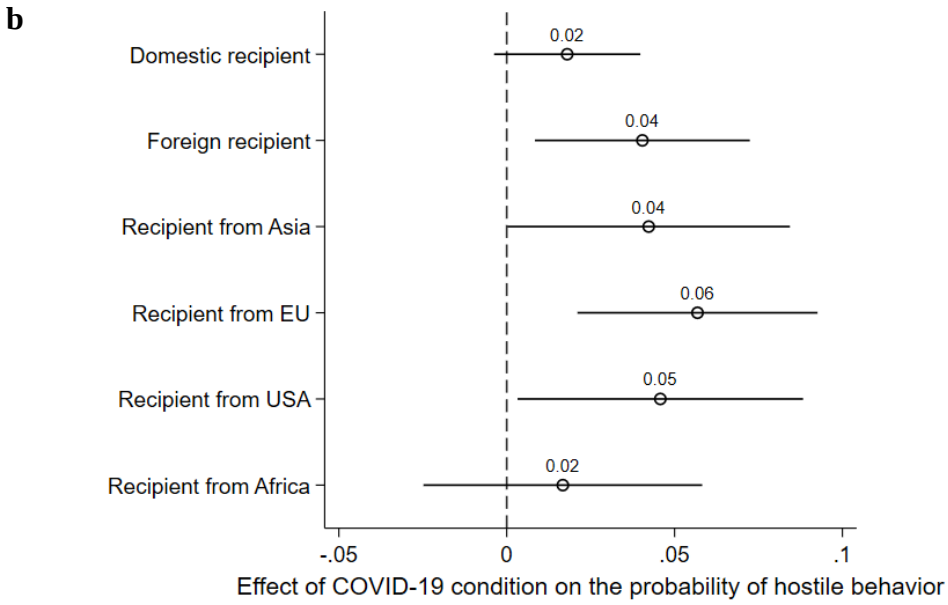



**Figure 2. Sub-group analysis of the effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipients.** Coefficient plots. Bars represent 95 percent confidence intervals. The dependent variable is the amount allocated. The figure presents estimated coefficients of the COVID-19 condition relative to the CONTROL condition (corresponding regression models including numbers of observations are in Supplementary Table 4). Age and net monthly household income are divided by the median (50 years and CZK 35,000). Municipalities are divided into cities with more than 100,000 inhabitants, and smaller villages and towns. Data for all 2,186 participants used.

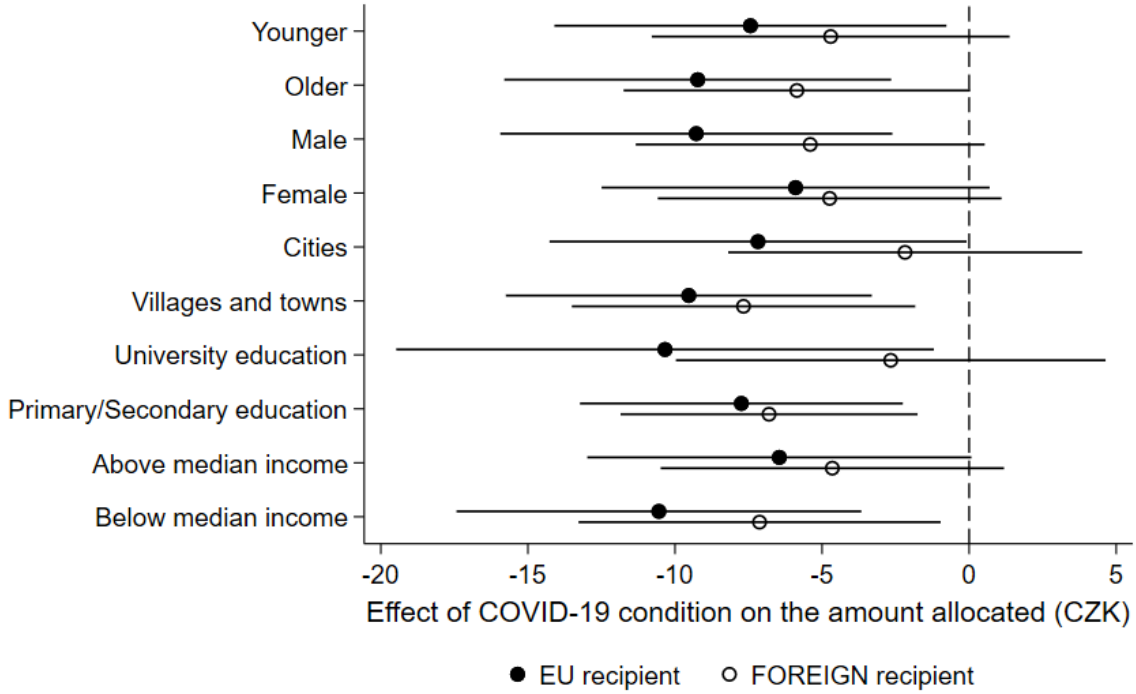


**Figure 3. Effect of the COVID-19 condition on allocations in the Help-or-Harm task, by the identity of domestic recipients.** Coefficient plots. Bars represent 95 percent confidence intervals.

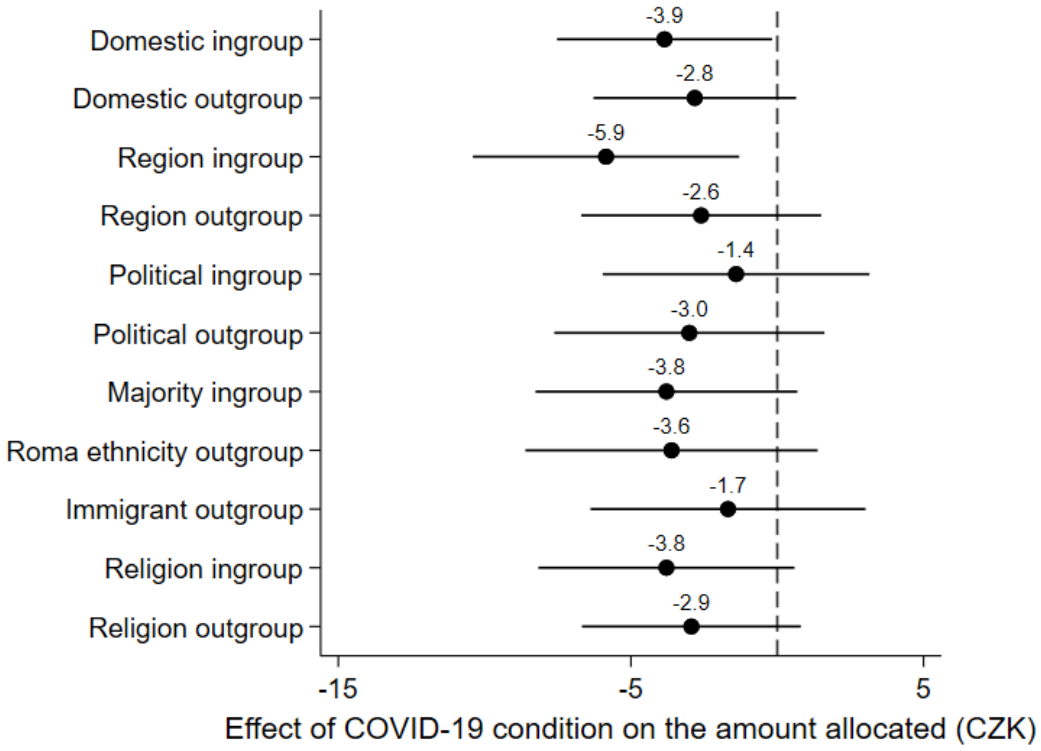


**Table 1. Mean allocations in the Help-or-Harm task by the identity of the recipient, across CONTROL and COVID-19 conditions**

| | Mean allocations [95% confidence intervals] | | | Effect | N |
|---|---|---|---|---|---|
| | All | Control | COVID-19 | [z-statistic, p-value] | |
| | (1) | (2) | (3) | (4) | (5) |
| **Panel A: Indexes** | | | | | |
| Domestic (Czech) | 132.8 [130.7, 135.0] | 133.5 [130.5, 136.5] | 132.2 [129.2, 135.3] | -1 [z=-0.86, p=0.390] | 2186 |
| Foreign | 91.6 [90.3, 92.8] | 94.1 [92.3, 95.9] | 89.3 [87.5, 91.1] | -5 [z=-2.50, p=0.013] | 8743 (2186 clusters) |
| (vs. Domestic) | -41 [z=-37.89 , p<0.001] | -39 [z=-26.04, p<0.001] | -43 [z=-27.54, p<0.001] | | |
| Domestic in-group | 125.1 [124.0, 126.1] | 127.3 [125.8, 128.6] | 123.0 [121.5, 124.5] | -4 [z=-2.23, p=0.026] | 9297 (2186 clusters) |
| Domestic out-group | 95.0 [94.1, 95.8] | 96.5 [95.3, 97.8] | 93.5 [92.3, 94.7] | -3 [z=-2.03, p=0.043] | 16935 (2186 clusters) |
| (vs. in-group) | -30 [z=-42.92, p<0.001] | -31 [z=-30.89, p<0.001] | -30 [z=-29.98, p<0.001] | | |
| **Panel B: Foreign** | | | | | |
| Asian | 89.0 [86.6, 91.5] | 91.4 [87.9, 94.9] | 86.9 [83.4, 90.4] | -4 [z=-2.02 , p=0.044] | 2186 |
| (vs. Domestic) | -44 [z=-34.08, p<0.001] | -42 [z=-23.37 , p<0.001] | -45 [z=-24.79 , p<0.001] | | |
| European Union | 103.4 [101.1, 105.6] | 107.1 [103.9, 110.3] | 100.0 [96.8, 103.2] | -7 [z=-2.98, p=0.003] | 2186 |
| (vs. Domestic) | -29 [z=-26.02 , p<0.001] | -26 [z=-17.36 , p<0.001] | -32 [z=-19.40, p<0.001] | | |
| US | 76.2 [73.8, 78.7] | 78.9 [75.4, 82.4] | 73.8 [70.4, 77.1] | -5 [z=-2.47 , p=0.013] | 2186 |
| (vs. Domestic) | -57 [z=-48.07, p<0.001] | -55 [z=-32.60, p<0.001] | -58 [z=-35.36, p<0.001] | | |
| African | 97.8 [95.1, 100.6] | 99.2 [95.2, 103.1] | 96.6 [92.7, 100.4] | -3 [z=-1.05, p=0.296] | 2185 |
| (vs. DOMESTIC) | -35 [z=-22.81, p<0.001] | -34 [z=-15.78, p<0.001] | -36 [z=-16.48, p<0.001] | | |
| **Panel C: Domestic in-group/out-group** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Region in-group | 129.7 [127.7, 131.6] | 133.0 [130.2, 135.7] | 126.7 [123.9, 129.4] | -6 [z=-2.44, p=0.015] | 2783 (2186 clusters) |
| Region out-group | 111.0 [109.3, 112.8] | 112.6 [110.2, 115.1] | 109.6 [107.2, 112.0] | -3 [z=-1.93, p=0.053] | 3775 (2186 clusters) |
| (vs. in-group) | -19 [z=-18.75, p<0.001] | -20 [z=-14.00, p<0.001] | -17 [z=-12.65, p<0.001] | | |
| Political in-group | 119.5 [117.3, 121.7] | 120.5 [117.4, 123.6] | 118.6 [115.5, 121.7] | -2 [z=-1.26, p=0.207] | 2186 |
| Political out-group | 92.3 [90.1, 94.6] | 94.3 [91.1, 97.5] | 90.5 [87.4, 93.7] | -4 [z=-1.75, p=0.080] | 2186 |
| (vs. in-group) | -27 [z=-27.04, p<0.001] | -26 [z=-18.62, p<0.001] | -28 [z=-19.61, p<0.001] | | |
| Majority in-group | 123.4 [121.2, 125.6] | 125.6 [122.6, 128.7] | 121.4 [118.3, 124.4] | -4 [z=-2.01, p=0.045] | 2186 |
| Roma ethnicity out-group | 74.6 [72.2, 77.1] | 76.4 [72.9, 79.9] | 73.0 [69.6, 76.5] | -3 [z=-1.90, p=0.058] | 2186 |
| (vs. Majority in-group) | -49 [z=-39.53, p<0.001] | -49 [z=-27.86, p<0.001] | -48 [z=-28.12, p<0.001] | | |
| Immigrant out-group | 94.6 [92.3, 96.9] | 95.5 [92.2, 98.7] | 93.8 [90.5, 97.0] | -2 [z=-0.60, p=0.550] | 2186 |
| (vs. Majority in-group) | -29 [z=-24.94, p<0.001] | -30 [z=-18.48, p<0.001] | -28 [z=-16.86, p<0.001] | | |
| Religion in-group | 126.4 [124.1, 128.5] | 128.4 [125.4, 131.5] | 124.5 [121.5, 127.5] | -4 [z=-1.47, p=0.142] | 2142 (2142 clusters) |
| Religion out-group | 93.5 [92.1, 94.9] | 95.1 [93.1, 97.1] | 92 [90.06, 94.0] | -3 [z=-1.81, p=0.070] | 6602 (2186 clusters) |
| (vs. in-group) | -33 [z=-35.28, p<0.001] | -33 [z=-25.41, p<0.001] | -32 [z=-24.62, p<0.001] | | |

*Notes:* Mean allocations in the Help-or-Harm task, 95% confidence intervals in brackets. "In-group" indicates that the respondent and the recipient share the group attribute. Differences reported in column 4 and on respective rows indicate a comparison group (e.g., vs. Domestic). We report z-statistics and p-values from the Wilcoxon rank-sum equality test whenever the number of observations is the same as the number of clusters, and Somer's D z-statistics and p-values clustered at individual level whenever we have more observations than clusters. The number of observations equals the number of individual decisions considered for each group of recipients (See Supplementary Information 1.2 for detailed descriptions of recipient group construction).

**Table 2. Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipient (domestic vs. foreign)**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Identity of the recipient:** | Domestic | Foreign | Asian | European Union | US | African |
| **Panel A: Baseline controls** | | | | | | |
| COVID-19 | -0.698 | -4.882 | -4.332 | -7.933 | -4.625 | -2.628 |
| 95% confidence interval | [-5.04, 3.65] | [-9.06, -0.70] | [-9.41, 0.74 ] | [-12.47, -3.40] | [-9.50, 0.25] | [-8.31, 3.05] |
| t-statistic | -0.31 | -2.29 | -1.67 | -3.43 | -1.86 | -0.91 |
| p-value | [0.753] | [0.022] | [0.094] | [0.001] | [0.063] | [0.364] |
| p-value (MHT; 2 hypotheses) | | [0.045] | | | | |
| p-value (MHT; 17 hypotheses) | [0.755] | [0.202] | [0.459] | [0.008] | [0.398] | [0.797] |
| **Panel B: No controls** | | | | | | |
| COVID-19 | -1.277 | -4.842 | -4.478 | -7.144 | -5.110 | -2.628 |
| 95% confidence interval | [-5.56, 3.00] | [-9.08, -0.61] | [-9.42, 0.46] | [-11.70, -2.59] | [-9.96, -0.26] | [-8.13, 2.87] |
| t-statistic | -0.59 | -2.24 | -1.78 | -3.08 | -2.07 | -0.94 |
| p-value | [0.558] | [0.025] | [0.076] | [0.002] | [0.039] | [0.349] |
| p-value (MHT; 2 hypotheses) | | [0.044] | | | | |
| p-value (MHT; 17 hypotheses) | [0.559] | [0.178] | [0.369] | [0.025] | [0.249] | [0.775] |
| **Panel C: Additional controls** | | | | | | |
| COVID-19 | -0.284 | -5.473 | -4.969 | -8.094 | -5.440 | -3.386 |
| 95% confidence interval | [-4.65, 4.08] | [-9.69, -1.26] | [-10.12, 0.19 ] | [-12.71, -3.48] | [-10.38, -0.50] | [-9.12, 2.35] |
| t-statistic | -0.13 | -2.55 | -1.89 | -3.44 | -2.16 | -1.16 |
| p-value | [0.898] | [0.011] | [0.059] | [0.001] | [0.031] | [0.247] |
| p-value (MHT; 2 hypotheses) | | [0.024] | | | | |
| p-value (MHT; 17 hypotheses) | [0.889] | [0.118] | [0.348] | [0.004] | [0.217] | [0.623] |
| **Panel D: Probability weights** | | | | | | |
| COVID-19 | -2.740 | -5.726 | -6.131 | -6.127 | -8.298 | -2.344 |
| 95% confidence interval | [-8.34, 2.86] | [-11.41, -0.04] | [-12.79, 0.53] | [-11.96, -0.29] | [-14.72, -1.88] | [-9.76, 5.07] |
| t-statistic | -0.96 | -1.97 | -1.8 | -2.06 | -2.54 | -0.62 |
| p-value | [0.337] | [0.049] | [0.071] | [0.039] | [0.011] | [0.536] |

| | | | | | | |
|---|---|---|---|---|---|---|
| CONTROL mean | 133.5 | 94.1 | 91.4 | 107.1 | 78.9 | 99.2 |
| # Clusters | | 2186 | | | | |
| Observations | 2186 | 8743 | 2186 | 2186 | 2186 | 2185 |

*Notes:* OLS coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at an individual level in column 2 where multiple observations are used per individual). The dependent variable is the amount allocated in the Help-or-Harm task. In Panel A, each regression controls for gender, age category (6 categories), household size, number of children, region (14 regions), town size (7 categories), education (4 categories), economic status (7 categories), household income (11 categories) and task order. Panel B reports results from regressions without control variables. In Panel C, each regression controls for baseline controls (as in Panel A) and further controls for the variables approximating economic situation, mental health, Covid-19 symptoms and activities during the lockdown (see Supplementary Information 1.4 for the list and definition of variables). Panel D reports results of weighted OLS regressions with no controls, using probability weights to correct for the oversampling of respondents from large municipalities. We also report multiple hypothesis testing corrected p-values using a method developed by (Barsbai et al. 2020). See Supplementary Information 1.6 for details on the procedure and the hypotheses tested.

# Supplementary Information

## Covid-19 Crisis Fuels Hostility against Foreigners

Vojtěch Bartoš, Michal Bauer, Jana Cahlíková, Julie Chytilová

# Contents



Complete experimental protocol is available in the Harvard Dataverse repository (doi: 10.7910/DVN/XD8OOL).

# 1 Supplementary Methods

## 1.1 Background of the Covid-19 pandemic in the Czech Republic

The Czech Republic is a landlocked country in Central Europe, bordering Germany, Austria, Slovakia, and Poland. The population is around 10.7 million. The Czech Republic is a parliamentary democracy and it joined the EU in 2004. The 2018 GDP per capita (PPP) was around USD 40,000 (or 90.6% of the EU average). Before the beginning of the Covid-19 pandemic, the country had the lowest unemployment rate in the EU (2% in February 2020).

The data collection took place on March 30-April 1, 2020. At the beginning of the data collection (March 30), there were 3,001 confirmed cases of Covid-19 in the country, with 23 confirmed deaths. The evolution of confirmed Covid-19 cases is depicted in Supplementary Fig. 3.

The data were collected about one month after the first three cases of Covid-19 were confirmed in the country (March 1) and about two and a half weeks after the government declared a state of emergency (March 12, originally valid for 30 days). Schools had been closed since March 13, non-essential shops and restaurants since March 14. Since March 16, free movement of people had been restricted, allowing only essential travel (to work, to medical facilities, to see family, etc.). Furthermore, citizens were forbidden from traveling abroad, and foreigners were forbidden to enter the country. Starting on March 19, everyone was required to wear face masks while in public. Additional measures were implemented on March 24, banning the assembly of more than two people in public spaces (apart from household members) and introducing obligatory distance of two meters between people. The timeline and a full descriptions of the measures is available on the website of the Czech Ministry of Health (https://koronavirus.mzcr.cz/en/development-of-events-over-time/; accessed on April 23, 2020) and on the website of the Czech government (https://www.vlada.cz/en/media-centrum/aktualne/measures-adopted-by-the-czech-government-against-coronavirus-180545/; accessed on April 23, 2020).

Similar measures (canceling public events, closing schools, closing non-essential shops and restaurants, restricting free movement of people) were implemented by most European governments and many other countries in March 2020. The OECD provides an overview of measures adopted by specific countries at https://oecd.github.io/OECD-covid-action-map/ (Accessed on April 23, 2020).

The data from our survey document that the Covid-19 crisis was accompanied by increased economic hardship. The average household income dropped to 83% of the pre-crisis level, and hours worked dropped by a similar magnitude. About 7% of respondents report someone from their household had lost a job in the past two weeks. 35% of households reported having savings of less than one month of their monthly expenditures. Supplementary Table 9 provides further details.

## 1.2 Experimental design

### Help-or-Harm Task

To measure pro-social and hostile behavior towards others, we implemented an incentivized allocation task, labeled the Help-or-Harm task. The participants were asked to increase or decrease rewards to a set of people with different characteristics, at no monetary costs to themselves. The default allocation was CZK 100 (USD 4). Participants could allocate any amount between CZK 0 and CZK 200 (USD 0-8), using a slider located in the middle of the 0-200 scale (see Supplementary Fig. 1). Before making their decisions, respondents were given the following instructions:

*"Now there will be a different activity. In contrast to traditional survey questions, you are to make several decisions that may have real consequences on the financial reward received by someone else. We will ask you whether you want to increase or decrease the reward of several people. Each of them is a different person, and none of them participated in this survey. After this survey, we will randomly select thirty participants and select one of their decisions that will determine the reward for someone else. Please make your decisions carefully, because each of your decisions may play a role.*

*Now please make a decision for each of the persons listed below. If you decide not to change their reward, they will receive CZK 100. But you can decide to increase or decrease their reward to any amount between CZK 0 and CZK 200. Please use the slider to determine the reward for each of these individuals."*

A screenshot with an example of the decision-making environment is presented in Supplementary Fig. 1. Each decision starts with brief instructions: *"Using the slider, please select the reward between CZK 0-200."* The slider is set by default at CZK 100 and the amount selected at each particular moment is presented above the slider, dynamically responding to moves of the sliders. Respondents could set fine-grained allocations, using the entire range of the decision space between CZK 0 and CZK 200 in increments of CZK 1. The participants had to make active choices - even if they decided to keep the reward at the default allocation, they had to click on the slider.

The Help-or-Harm task is related to existing money-burning tasks, designed to uncover a dark side of human social behavior, the individual preference to destroy earnings of other individuals when there is no pecuniary benefit to themselves and no fairness justification (i.e., retaliation for hostile behavior, reduction of inequality). Individuals reduce the payoffs of others in one-shot anonymous settings in which payoff-reducing behavior is not confounded by strategic motives. In some of these tasks, the destruction of another's payoff is costly to the decision-maker[1–3] – such tasks are commonly referred to as the Joy of Destruction game. In other tasks the destruction of another person's payoff is costless[4–6]. In both cases, the payoff-reducing behavior is unambiguously harmful, because nobody benefits. The Help-or-Harm task is similar to the costless version of these money-burning tasks. In addition, the subjects have the opportunity not only to reduce other person's payoff but also to increase it.

The terminology used to describe the willingness of an individual to reduce the payoff of others with no benefit to self is not unified. Various studies refer to such behavior interchangeably as antisocial, money burning, harmful, hostile, nasty, or destructive. Social psychology refers to costless antisocial behavior as sadism and to costly antisocial behavior as sadomasochism[7]. In

this paper, we refer to reduction of payoffs below the default allocation as hostile or harmful behavior.

**Manipulating the identity of the recipient**

Each respondent allocated rewards to 17 different recipients. For each allocation decision, the identity of the recipient was displayed on the screen: e.g. *"A person living in Asia"* or *"A person whose political opinions are close to yours (i.e., votes for the same political party)"* Five choices are designed to uncover nation-based divisions and hostile behavior towards foreigners. Specifically, the participants made decisions whether to increase or decrease money to a person living in the Czech Republic, in the European Union, in the United States, in Asia, and in Africa.

Twelve choices are designed to measure domestic divisions and hostility towards domestic out-group members. Specifically, respondents allocated rewards to: a person living in the same region, a person living in a different region, a person living in Prague, a person with similar political views (i.e., voting for the same political party as you), a person with different political views (i.e., voting for the party from the other side of a political spectrum), a person from the Czech majority group, a person from the Roma ethnic minority group, a person that immigrated to the Czech Republic in the past five years, a person with no religious affiliation living in the Czech Republic, a person with Christian affiliation living in the Czech Republic, a person with Muslim affiliation living in the Czech Republic, and a person with Jewish affiliation living in the Czech Republic.

Each of the 17 decisions was displayed on a separate screen. The order of decisions was randomized across blocks. The blocks were based on different dimensions of the identity of the recipient (nationality, region, political views, ethnicity, and religion). In total, there were 96 different types of block orderings. In the regression analysis we control for the order of the blocks.

In the main analysis, we distinguish four main groups of recipients. The first two groups capture divisions based on nationality:

- Domestic recipient: a person living in the Czech Republic.
- Foreign recipient: a person living in Asia OR the European Union OR the United States OR Africa

The following two groups focus on divisions within the Czech Republic:

- Domestic in-group: a person living in the same region OR a person living in Prague (for participants living in Prague) OR a person with similar political views to those of the participant OR a person from the majority Czech population OR a person who shares a religious affiliation with the participant.
- Domestic out-group: a person living in a different region OR a person living in Prague (for participants living outside of Prague) OR a person with different political views to those of the participant OR a person from the Roma ethnic minority OR a person who immigrated to the Czech Republic in the past five years OR a person who does not share a religious affiliation with the participant.

In the supporting analysis, we distinguish the groups of recipients in greater detail as follows: Asian recipient: a person living in Asia; European Union recipient: a person living in the European Union; United States/US recipient: a person living in the USA; African recipient: a person living in Africa; Region in-group: a person living in the same region OR a person living in Prague (for participants living in Prague); Region out-group: a person living in a different region OR a person living in Prague (for participants living outside of Prague); Political in-group:

a person with similar political views to those of the participant; Political out-group: a person with different political views to those of the participant; Majority in-group: a person from the majority Czech population; Roma ethnicity out-group: a person from the Roma ethnic minority; Migrant out-group: a person who immigrated to the Czech Republic in the past 5 years; Religion in-group: a person with the same religious affiliation as the respondent (no affiliation, Christian, Muslim, or Jewish); Religion out-group: a person who does not share a religious affiliation with the respondent.

Since we did not ask a question about ethnicity and immigration status when making the in-group and out-group classification, we implicitly assume that the sample is composed of ethnic Czech majority respondents only, given the homogenous nature of the Czech population.[1] Also, we have data about religious affiliation for 1,667 respondents (out of 2,168). For the remaining respondents we assume they belong to the dominant category, which in this setting is "without religious affiliation" (77%). The results are robust to excluding subjects for whom we do not have information about their religious affiliation (available upon request).

**Manipulating the intensity of thinking about Covid-19**

We exogenously manipulate the degree to which respondents were thinking about Covid-19 during the experiment. Each participant was randomly allocated either to the COVID-19 or to the control condition. In the COVID-19 condition, before making decisions in the Help-or-Harm tasks, the subjects answered a series of survey questions focusing on the coronavirus crisis, while in the control condition, the participants made their decisions in the Help-or-Harm tasks at the beginning of the survey, and answered the coronavirus-related questions only later.

The prime is designed to activate or intensify a complex set of thoughts and concerns that characterize people's lives during the coronavirus crisis. In total, it consists of 43 questions. The focus is on preventive health behavior, social distancing, economic impacts, and psychological wellbeing during the last two weeks. The median time the respondents spent answering this set of questions was 13 minutes. Below, we provide a short summary; the full wording of the questions is available in the last section of the SOM.

The part focusing on preventive health behavior included questions about whether the participant or a household member travelled abroad in February/March; whether they knew someone infected with Covid-19 or someone who was quarantined and whether they had met with that person; what was the frequency of their use of public transportation, going shopping, taking taxi rides or trips with friends, etc.; whether participants adhered to preventive behavior including hand-washing, wearing a face mask, social distancing, etc. The respondents were also asked whether they or a household member had been tested for Covid-19, and whether they experienced any of its common symptoms.

The part focusing on the economic situation contained questions on whether the respondent or a household member had experienced a recent job loss or reduction of working hours; drop in household earnings; savings; self-reported fear of job-loss and evaluation of own financial situation; and whether participants expect to need to borrow money or reduce expenses.

[1] In a population of over 10 million, in March 2020 the Czech Statistical Office listed 604,076 foreign born residents. Ukrainians are the largest group with 151,481 individuals, followed by 121,036 Slovaks, and 62,290 Vietnamese. Most have lived in the Czech Republic for extended periods of time beyond our 5 year threshold. While official data are missing, the population of Roma is estimated to comprise between 1.5 to 3 percent of the population.

The psychological well-being section contained questions on anxiety- or depression-related symptoms (including experiencing problems with sleeping, feeling nervous/anxious, feeling tired, having less interest in and enjoyment of things, becoming angry more easily, experiencing feelings of not having control over important things, etc.), and self-reported happiness levels.

## 1.3 Regression specifications

This section describes the empirical strategy used for regression analysis.

From the raw data in which individual-level data are presented as a single row, we reshape the dataset to have a single row for each decision in the Help-or-Harm task for each individual. This gives us 17 observations per individual.

In our main specifications, we test the effect of the COVID-19 condition on allocations in the Help-or-Harm task using the following ordinary least squares regression model (Table 2 and Supplementary Table 5):

$$HHT_{ij} = \alpha + \beta COVID - 19_i + \gamma X_i + \varepsilon_{ij} \quad (1)$$

where $HHT_{ij}$ is the allocation proposed by the participant $i$ to recipient $j$, where $j$ corresponds to the type of recipient for whom the participant makes an allocation decision (e.g., domestic, foreign, person living in Asia, person living in the same region, etc.). See exact definitions of recipient types in Supplementary Information 1.2. $COVID - 19_i$ is an indicator variable equal to 1 if the respondent was allocated to the COVID-19 condition and equal to 0 if she was allocated to the control condition, i.e. it is constant across all $j$s for each individual $i$.

$X_i$ is a set of individual-specific characteristics and controls. In baseline models, the control variables are: gender, age category (6 categories), household size, number of children, region (14 regions), town size (7 categories), education (4 categories), economic status (7 categories), and household income (11 categories) and task order (96 orderings). As robustness tests, we also report results for (i) models without any control variables, (ii) models with additional control variables (beyond those included in the baseline specification) capturing the economic situation and stress, and (iii) models without controls using probabilistic weights to produce estimates for the representative population (see the discussion on the representativeness of the sample in Methods). A full definition of all variables is provided in Supplementary Information 1.4. Standard errors $\varepsilon_i$ are clustered at the individual level when we use multiple observations for an individual $i$. In all other models we use Huber-White robust standard errors.

We estimate the models on the full sample of 2,186 respondents. The models are estimated separately by $j$ (which refers to the identity of the recipient). Note that in some cases, $j$ is defined across several observations for an individual $i$. For example, when we define an index Foreign recipient, we use four observations per individual: for recipients from Asia, the European Union, the United States, and Africa. In such cases, the regression has 2,186 clusters and would have 4x2,186=8,744 observations.[2]

[2] In reality, for foreign recipients we only have 8,743 observations, because for one respondent the allocation to a recipient from Africa is missing. All results are robust to excluding this individual. This is the only missing value. In total, we collected 37,161 allocations from all respondents (2,186*17-1).

In addition, in order to formally test whether the effect of COVID-19 has different (larger) impact on behavior towards out-group members (e.g., foreigners) than on in-group members (people living in the Czech Republic), we employ the following difference-in-differences models (Supplementary Tables 2 and 6):

$$HHT_{ij} = \alpha + \beta_1 COVID-19_i + \beta_2 OUTGROUP_{ik} + \beta_3 COVID-19_i * OUTGROUP_{ik} + \gamma X_i + \varepsilon_{ik} \quad (2)$$

The specification is otherwise identical to the main model in Equation (1). The main coefficient of interest is $\beta_3$. This coefficient presents a difference in the impact of the COVID-19 condition on the Help-or-Harm task allocation when the recipient is from the out-group, relative to the impact when the recipient is from the in-group.

## 1.4 Definitions of variables

**Outcome variables**

The main outcome of interest is the amount allocated in the Help-or-Harm task:

- $\text{HHT}_{\text{ij}}$: Help-or-Harm task allocation to recipient $j$ by participant $i$, range: CZK 0 to CZK 200, in increments of CZK 1 (numeric)

We also define additional outcomes that are constructed using $HHT_{ij}$:

- $\text{Hostile behavior}_{\text{ij}} = 1$ if $HHT_{ij} < 100$ (binary)
- $\text{Reducing the reward to } 0_{ij} = 1$ if $HHT_{ij} = 0$ (binary)
- $\text{Prosocial behavior}_{ij} = 1$ 1 if $HHT_{ij} > 100$ (binary)
- $\text{Sticking to the default}_{ij} = 1$ 1 if $HHT_{ij} = 100$ (binary)

Whenever we use binary outcomes as dependent variables, we estimate linear probability models with the same specification as in Equation (1). The results are robust to using a probit estimator as well (available upon request).

**Treatment variable**

- $\text{COVID}-19_{\text{i}} = 1$ if the respondent was randomly assigned to the COVID-19 condition.

**Baseline control variables**

- Gender: Female (binary)
- Age category: 18-24 (binary, omitted in regression models to avoid perfect multicollinearity) / 25-34 (binary) / 35-44 (binary) / 45-54 (binary) / 55-64 (binary) / 65+ (binary)
- Household size: "How many members are there in your household?" (integer)
- Number of children: "How many children under 18 or students are there in your household?" (integer)
- Region: Prague (binary, omitted) / Central Bohemia (binary) / South Bohemia (binary) / Plzeň (binary) / Karlovy Vary (binary) / Ústí (binary) / Liberec (binary) / Hradec Králové (binary) / Pardubice (binary) / Vysočina (binary) / South Moravia (binary) / Olomouc (binary) / Zlín (binary) / Moravia-Silesia (binary)

- Town size: Below 999 (binary, omitted) / 1,000-1,999 (binary) / 2,000-4,999 (binary) / 5,000-1,9999 (binary) / 2,0000-4,9999 (binary) / 5,0000-9,9999 (binary) / Above 100,000 (binary)
- Education: Primary (binary, omitted) / Lower secondary (binary) / Upper secondary (binary) / University (binary)
- Economic status: Answered "What is your economic status?" with: Employee (binary, omitted) / Entrepreneur (binary) / Unemployed (binary) / Retired (binary) / Student (binary) / Parental leave (binary) / Other (binary)
- Household income: Monthly net household income as provided by the Czech National Panel (pre-crisis levels): Up to 10,000 CZK (binary, omitted) / 10,001 – 15,000 CZK (binary) / 15,001 – 20,000 CZK (binary) / 20,000 – 25,000 CZK (binary) / 25,001 – 30,000 CZK (binary) / 30,001 – 35,000 CZK (binary) / 40,001 – 50,000 CZK (binary) / 50,001 – 60,000 CZK (binary) / More than 60,000 CZK (binary) / I don't know (binary) / Missing income data (binary)
- Task order effects: 96 binary variables specifying block ordering randomized across individuals (95 binary variables included, one omitted)

**Additional control variables**

- Job loss: Answered "Has anyone in your household lost their job in the last two weeks?" with "Yes" (binary)
- Payment problems: Answered "Is your household currently experiencing problems with regular payments on any of the items listed below?" with "Mortgage or rent=Yes" OR "Loan or credit=Yes" OR "Regular household expenses (e.g., bills) =Yes" (binary)
- Household savings would last 1 month and less: Answered "If your household experienced a complete loss of income, how long do you estimate your savings would allow you to cover your expenses?" with "Less than a week" OR "1 week to 2" OR "2 weeks to 3" OR "1 month" (binary)
- Number of weeks savings would last: Recoded answers to "If your household experienced a complete loss of income, how long do you estimate your savings would allow you to cover your expenses?" If "less than a week"=0, if "1 week"=1, if "2 weeks"=2, if "3 weeks"=3, if "1 month"=4, if "2 months"=8, if "3 months"=12, if "6 months"=24, if "more than six months"=25 (categorical).
- Happiness: "Overall, how happy are you feeling now?" (integer; 0=Very unhappy to 10=Very happy)
- Depression and anxiety: Sum of scores for the following categories (a subset of PHQ-9 and GAD-7 screening tools;[8,9]. The participants were asked: "Please state how often you experienced the following difficulties in the last two weeks." Scores for each category range from 0=Not at all to 3=Almost every day (note that following GAD-7 coding, we assign the same score to "More than half of the days" and "Almost every day")
    1. I had trouble falling or staying asleep or was sleeping too much (PHQ-9)
    2. I felt nervous, anxious, or on edge (GAD-7)
    3. I had poor appetite or was overeating (PHQ-9)
    4. I felt tired or had little energy (PHQ-9)
    5. I had little interest or pleasure in doing things (PHQ-9)
    6. I was becoming easily annoyed or irritable (GAD-7)
- Perceived stress scale PSS-4[10]: Sum of scores for each of the following four questions. Scores for each question range from 0=Never to 4=Very often. (numeric; questions 2 and 3 reverse coded)

1. In the last two weeks, how often have you felt that you were unable to control the important things in your life?
2. In the last two weeks, how often have you felt confident about your ability to handle your personal problems?
3. In the last two weeks, how often have you felt that things were going your way?
4. In the last two weeks, how often have you felt difficulties were piling up so high that you could not overcome them?

- Are you considering any of the measures listed below to address your present financial situation?
  - "Loan from family or friends" answered with "Yes" (binary)
  - "Loan from a bank or credit company" answered with "Yes" (binary)
  - "Sale of assets" answered with "Yes" (binary)
  - "Significant reduction of the food bill" answered with "Yes" (binary)
  - "Significant reduction of expenditures on consumables" answered with "Yes" (binary)
  - "Looking for cheaper accommodation" answered with "Yes" (binary)
  - "Looking for a different or another job" answered with "Yes" (binary)
  - "Not considering any of these measures" answered with "Yes" (binary)
- Traveling abroad: Answered "Were you abroad in the last eight weeks (since the beginning of February)?" with "Yes" (binary)
- Household member traveling abroad: Answered "Was anyone from your household abroad in the last eight weeks (since the beginning of February)?" with "Yes" (binary)
- Know anyone infected by coronavirus: Answered "Do you know anyone who has been identified to be infected with coronavirus?" with "Yes, and we were in personal contact" OR "Yes, I was in contact with a person who has been in contact with an infected person" OR "Yes, but we were not in contact" (binary)
- Household member knows anyone infected by coronavirus: Answered "Does anyone from your household know a person who has been identified to be infected with coronavirus?" with "Yes, and they were in personal contact" OR "Yes, he/she was in contact with a person who has been in contact with an infected person" OR "Yes, but they were not in contact" (binary)
- Knows anyone quarantined: Answered "Do you know anyone who has been quarantined due to coronavirus symptoms or because he has returned from a risky area? If yes, have you been in contact with that person in the last 14 days?" with "Yes, and we were in personal contact" OR "Yes, but we were not in contact" (binary)
- Activities done two weeks ago (0-12): Count of ACTIVITIES (see below) NOT answered with "Never" in "Please state whether you personally engaged in any of the following activities in the week between 16 and 22 March, i.e., after the nation-wide lockdown was imposed, and how many times." ACTIVITIES (12): *Riding in a crowded means of public transit, train, or bus / Shopping in a shop (or going to a bank, post office) with a larger number of people present / Buying unpackaged food / Visiting a restaurant or pub / Visiting a doctor or medical or social institution (retirement homes, hospitals, day care centres, etc.) / Visiting family or friends (in their or in your home) / Going on vacation or a trip with multiple people / Visiting a fitness club, sports facility, playing team sports / Use of public toilets / Taking a taxi / Walking in a park, in the city, etc. in the company of more than one person / Going to my cottage/summer house and communicating with the locals*
- Household member activities done two weeks ago (0-12): Count of ACTIVITIES (see above) answered with "Yes" in "Please state whether anyone from your household

engaged in any of the following activities in the week between 16 and 22 March, i.e., after the nation-wide lockdown was imposed."

- Activities done one week ago (0-12): Count of ACTIVITIES (see above) NOT answered with "Never" in "Please state if you engaged in any of the following activities in the week between 23 and 29 March, and how many times."
- Household member activities done one week ago (0-12): Count of ACTIVITIES (see above) answered with "Yes" in "Please state whether anyone from your household engaged in any of the following activities last week, i.e., in the week between 23 and 29 March."
- Not working two weeks ago: Answered "Were you at work in the week between 16 and 22 March or did you work from home?" with "I did not work" (binary)
- Not meeting anyone two weeks ago: Answered "Based on this description of the period from 16 to 22 March, try to recall how many different people you met at work, during sports, on a trip, etc. With how many people do you estimate you talked for at least 5 minutes? Give at least a rough estimate." with "0" (binary)
- Not working one week ago: Answered "Were you at work in the week between 23 and 29 March or did you work from home?" with "I did not work" (binary)
- Not meeting anyone one week ago: Answered "Based on this description of the period from 23 and 29 March, try to recall how many different people you met at work, during sports, on a trip, etc. With how many people do you estimate you talked for at least 5 minutes? Give at least a rough estimate." with "0" (binary)
- Preventive measures used: Count of PREVENTIVE MEASURES (see below) answered with "Yes" in "[T]o which preventive measures do you adhere?; PREVENTIVE MEASURES (13): *I avoid people who cough or sneeze / I avoid places where there are many people / I wear a mask or a respirator / I restrict personal contact with people (handshakes, etc.) / I use a sanitizer / I avoid people who are in contact with an infected individual / I avoid public transit / I take vitamins to boost my immunity / I try not to touch my eyes, mouth, or nose / I nearly do not leave my house / I wash my hands thoroughly (with water and soap for at least 20 seconds) more frequently than usual / I wash my hands thoroughly after sneezing or coughing / I wash my hands thoroughly after using mass transport*
- Tested for coronavirus: Answered "I" in "Have you or anyone from your household been tested for coronavirus?" (binary)
- Household member tested for coronavirus: Answered "Someone from my household" in "Have you or anyone from your household been tested for coronavirus?" (binary)
- Covid-19 symptoms recently experienced: Count of SYMPTOMS (see below) answered with "Yes" in "Thinking objectively, which of the following symptoms have you felt in the last few days or are feeling now?" SYMPTOMS (11): *Higher temperature (higher than 37 °C) / Dry cough / Shortness of breath / Inability to hold one's breath for 10 seconds without the urge to cough (try now) / Headache / Muscle ache / Sore throat / Nausea / Diarrhoea / Cold / Frequent sneezing*
- Contacted medical services: Answered "Have you attempted to contact a physician, medical emergency service, public health authorities, information, or any other assistance in relation to coronavirus in order to have yourself or any member of your household tested?" with "Yes" (binary)
- Household member recently had health issues: Answered "Has any member of your household felt unwell or had medical difficulties in recent days?" with "Yes" (binary)

**Variables used for sub-sample analyses**

In Fig. 2 and Supplementary Table 4, we conduct the analysis using the model specified in Equation (1) with baseline control variables (defined above) for the following subsamples of respondents $i$:

- Age: Younger (below median) (N=1,086)
- Age: Older (above median) (N=1,100)
- Gender: Men (N=1,088)
- Gender: Women (1,098)
- Municipality size: Cities (N=998)
- Municipality size: Villages/towns (N=1,188)
- Education: University (N=622)
- Education: Primary/Secondary (1,564)
- Income: Above median (N=1,152)
- Income: Below median (N=1,034)

## 1.5 Robustness checks – the role of inattention

A potential concern is that thinking and answering questions in the COVID-19 condition may have caused fatigue and led to less attention to allocation decisions, and thus may have affected choices without activating Covid-related concerns and fears. However, this explanation is not supported by our data. If the participants in COVID-19 were less attentive, we would expect them to be more prone to stick to the default allocation, to be less likely to correctly answer attention check questions and to spend less time making decisions.
However, subjects in COVID-19 are neither more prone to stick to the default allocation, nor less likely to correctly answer attention check questions. Their response time is somewhat lower in COVID-19, but all results are robust to controlling for response time (Supplementary Tables 7 and 8).

Specifically, a dummy variable "Sticking to default" is equal to one if the allocation in the HHT is 100 (i.e., the default allocation). To measure attention levels we included two test questions, in which respondents were asked to fill out a specific response to show that they read the text. We code the variable "Passing both attention checks", which is equal to1 if both attention checks were successfully passed (binary). Only 185 or 8 percent of the sample did not pass this check. Finally, response time is measured as time in minutes to complete the set of choices in the Help-or-Harm tasks (numeric).

## 1.6 Multiple hypothesis testing

In Table 2 and Supplementary Table 5, we present three sets of p-values. The first is standard "per comparison" p-values. These are appropriate for researchers with an a priori interest in a specific outcome. For instance, researchers interested in the impact of COVID-19 on behavior towards foreigners, or specifically towards Asians, should focus on these p-values.

Additionally, the analysis also presents p-values that account for multiple hypothesis testing, as a potential concern might be that our results are susceptible to false discovery of significant results that arise simply by chance. We correct the p-values using a method recently developed by Barsbai et al. (submitted). The method extends the procedure of [12] by allowing for correction in

multivariate regression models. The method accounts for the dependence structure between hypotheses and thus increases statistical power to reject true false null hypotheses when compared to methods assuming independence between hypotheses (e.g., [13,14]).

Since the paper is motivated by concerns about Covid-19 fostering out-group hostility, we consider the two main outcome variables capturing behavior towards out-group members: (i) behavior towards foreigners and (ii) behavior towards domestic out-group members. Thus, researchers with a priori interest in behavior towards out-group members should focus on these p-values. The effect on foreigners remains statistically significant (P = 0.045).

Additionally, we take the most conservative approach, relevant for the question whether Covid-19 affects social behavior in general, towards any type of recipient. Consequently, we adjust for the 17 hypotheses corresponding to all dependent variables for which we estimate the effects (Table 2 a Table 5). Even under this approach, the effect on the recipients from European Union (P = 0.008) is still statistically significant. Nevertheless, the effects on behavior towards foreigners, people living in the USA and in Asia do not reach statistical significance after this correction.

## 1.7 Labeling error in a preliminary version of the manuscript

Please note that a preliminary version of this manuscript contained an error in labeling of three variables that impacted some of the reported treatment effects, as described below. The preliminary version of the paper was made available at SSRN (id 3593411), as IZA Discussion Paper 13250, as CEPR Discussion Paper 14821, as Max Planck Institute for Tax Law and Public Finance Working Paper 2020-03, as CRC Rationality and Competition Discussion Paper 243, and as CESifo Working Paper 8309. In this section, we describe how the error occurred, when it was discovered and corrected, and what the implications for the results are.

The error was caused by the survey programmer erroneously numbering three questions in the Help-or-Harm task. The error occurred only in the CONTROL condition. The labeling was correct in the treatment (COVID-19) condition. This mislabeling resulted in the following:

1. The reward allocated to a recipient living in the Czech Republic without religious denomination was labeled as a reward allocated to a person living in Asia.
2. The reward allocated to a person living in the Czech Republic with Christian denomination was labeled as a reward to a person living in the Czech Republic with no religious denomination.
3. The reward allocated to a person living in Asia was labeled as a reward to a person living in the Czech Republic with Christian denomination.

The reason for this mistake being treatment specific is that the questions for the COVID-19 and the CONTROL conditions were programmed separately, in order to allow randomizing the position of the experimental module within the survey. We developed a codebook for the survey that contained question numbering. This codebook was later used by a programmer from NMS Market Research to prepare the code for the online survey. The data collection agency PAQ research received raw data with variable names corresponding to question numbers and used the codebook numbering for data labeling, without reflecting the change in the numbering used by the survey programmer. The codebook was shared with us, while the code was not, which prevented us from detecting the error.

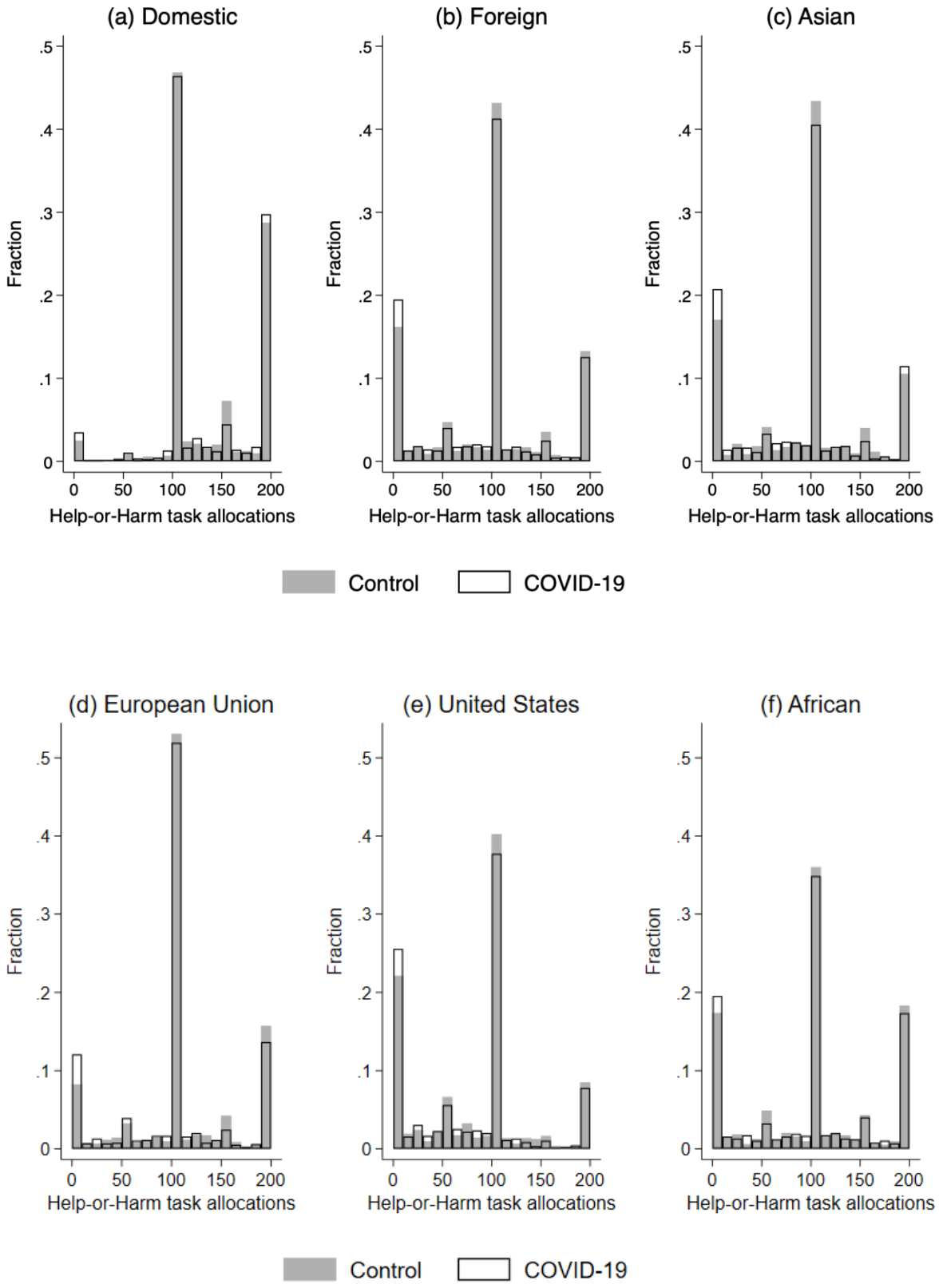
The error was discovered by PAQ research and was reported to us on June 10, 2020. After making sure the dataset was corrected and accurate, we re-ran the analysis using the corrected dataset and made changes in the paper reflecting the changes in the results. The estimates for the following outcome variables were affected: Asian, foreign, domestic in-group, domestic out-group, religion in-group, religion out-group. Estimates for other outcome variables were not affected by the error.

The main change in the results is that the effect of the treatment on allocations to Asian recipients is smaller in magnitude and statistically significant only in some specifications, compared to the preliminary version of the paper. The main finding of the paper – that Covid-19 increases hostility to foreigners – holds.

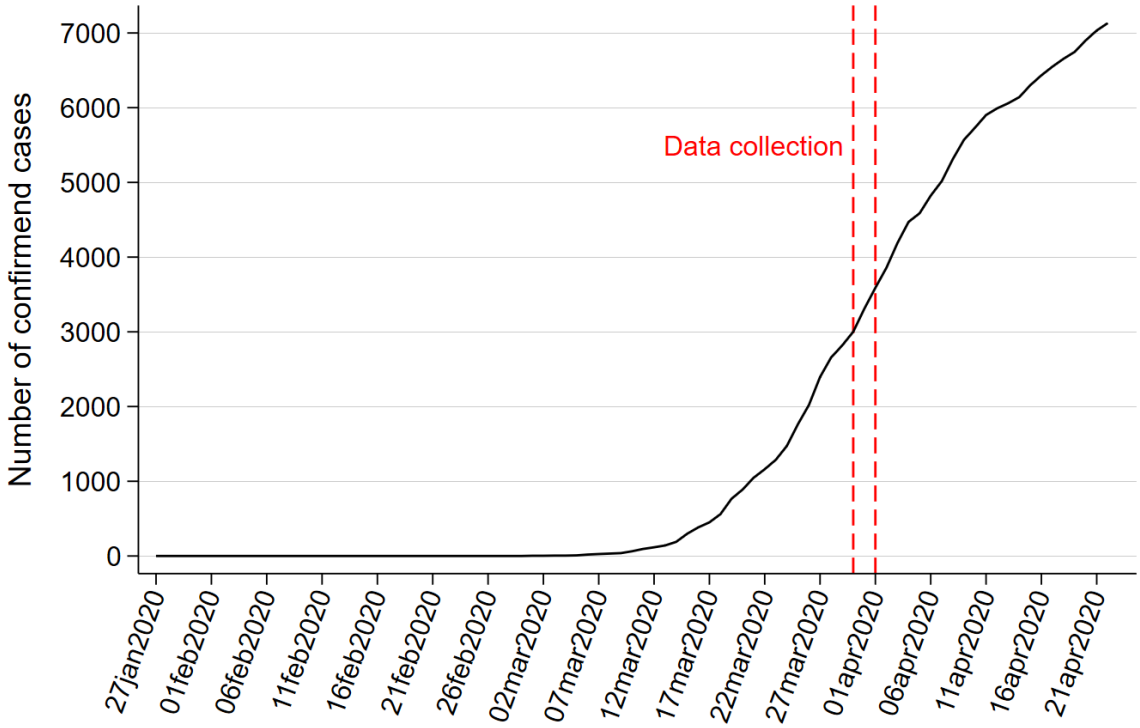
The nature of the mistake and the time when it was discovered and shared with us has been acknowledged and described in detail in a letter by the director of PAQ research, Daniel Prokop. Further, to ensure accuracy of the question numbering in the corrected dataset, an independent audit of the data was conducted by Martin Buchtík, the director of STEM, a major survey agency based in the Czech Republic. His audit confirmed that this was the only error in the raw data that we received for our analysis. The letter from Daniel Prokop and the statement of Martin Buchtík are both available in our data repository at Harvard Dataverse, available at https://doi.org/10.7910/DVN/XD8OOL.

# 2 Supplementary Figures


**Supplementary Figure 1. Screenshot of the decision-making environment in one of the Help-or-Harm tasks (allocating a reward to a person from Asia).** Credit: NMS Market Research. The graphical design of this task was created by NMS, using their CAWI software.




**Supplementary Figure 2. Histograms of Help-or-Harm task allocations by COVID-19 and control condition for (a) domestic, (b) foreign, (c) Asian, (d) European Union, (e) US, and (f) African recipients.**




**Supplementary Figure 3. Confirmed Covid-19 cases in the Czech Republic.** Own illustration, dataset and code available in the Harvard Dataverse repository (https://doi.org/10.7910/DVN/XD8OOL). Data source: Czech Ministry of Health, open dataset available at https://onemocneni-aktualne.mzcr.cz/api/v2/covid-19 (Dataset: "COVID-19: Celkový (kumulativní) počet osob s prokázanou nákazou dle krajských hygienických stanic včetně laboratoří (v2)", accessed on April 23, 2020).

# 3 Supplementary Tables

## Supplementary Table 1. Demographic characteristics: summary statistics and randomization check

| | (1) Sample mean | (2) Control | (3) COVID-19 | (4) (2) vs. (3) p-value | (5) Sample mean (weighted) | (6) Czech population | (7) diff. (5) vs. (6) |
|---|---|---|---|---|---|---|---|
| **Female** | 0.50 | 0.51 | 0.50 | 0.571 | 0.52 | 0.51 | -0.01 |
| **Age category** | | | | 0.599 | | | |
| age cat 18-24 | 0.08 | 0.08 | 0.07 | | 0.08 | 0.08 | 0.00 |
| age cat 25-34 | 0.15 | 0.16 | 0.14 | | 0.16 | 0.16 | 0.01 |
| age cat 35-44 | 0.18 | 0.16 | 0.19 | | 0.21 | 0.20 | -0.01 |
| age cat 45-54 | 0.18 | 0.18 | 0.19 | | 0.17 | 0.17 | 0.00 |
| age cat 55-64 | 0.16 | 0.16 | 0.16 | | 0.15 | 0.15 | 0.01 |
| age cat 65+ | 0.26 | 0.26 | 0.25 | | 0.24 | 0.24 | 0.00 |
| **Education** | | | | 0.434 | | | |
| primary | 0.06 | 0.06 | 0.07 | | 0.10 | 0.11 | 0.01 |
| lower secondary | 0.29 | 0.30 | 0.29 | | 0.35 | 0.34 | -0.01 |
| upper secondary | 0.36 | 0.37 | 0.35 | | 0.35 | 0.35 | 0.00 |
| university | 0.28 | 0.27 | 0.30 | | 0.20 | 0.20 | 0.00 |
| **Economic status** | | | | 0.395 | | | |
| Employee | 0.49 | 0.49 | 0.49 | | 0.47 | 0.48 | 0.01 |
| Entrepreneur | 0.04 | 0.03 | 0.05 | | 0.09 | 0.10 | 0.01 |
| Unemployed | 0.03 | 0.04 | 0.03 | | 0.03 | 0.03 | 0.00 |
| Retired | 0.31 | 0.31 | 0.30 | | 0.30 | 0.30 | -0.01 |
| Student | 0.06 | 0.06 | 0.06 | | 0.06 | 0.06 | 0.00 |
| Parental leave and other | 0.07 | 0.07 | 0.07 | | 0.05 | 0.05 | 0.00 |
| **Town size** | | | | 0.417 | | | |
| Below 999 | 0.08 | 0.08 | 0.07 | | 0.17 | 0.17 | 0.00 |
| 1,000-1,999 | 0.04 | 0.04 | 0.04 | | 0.10 | 0.10 | 0.00 |
| 2,000-4,999 | 0.07 | 0.07 | 0.06 | | 0.12 | 0.11 | 0.00 |
| 5,000-19,999 | 0.12 | 0.12 | 0.11 | | 0.18 | 0.18 | 0.01 |
| 20,000-49,999 | 0.08 | 0.07 | 0.08 | | 0.12 | 0.12 | 0.00 |
| 50,000-99,999 | 0.17 | 0.16 | 0.17 | | 0.10 | 0.10 | 0.00 |
| Above 100,000 | 0.46 | 0.44 | 0.47 | | 0.22 | 0.22 | 0.00 |
| **Region** | | | | 0.728 | | | |
| Prague | 0.27 | 0.27 | 0.28 | | 0.12 | 0.12 | 0.00 |
| Central Bohemia | 0.1 | 0.10 | 0.10 | | 0.12 | 0.13 | 0.00 |
| South Bohemia | 0.05 | 0.04 | 0.06 | | 0.07 | 0.06 | -0.01 |
| Plzeň | 0.05 | 0.05 | 0.04 | | 0.05 | 0.06 | 0.00 |
| Karlovy Vary | 0.02 | 0.02 | 0.02 | | 0.03 | 0.03 | 0.00 |
| Ústí | 0.06 | 0.06 | 0.06 | | 0.07 | 0.08 | 0.00 |
| Liberec | 0.04 | 0.05 | 0.03 | | 0.04 | 0.04 | 0.00 |
| Hradec Králové | 0.04 | 0.04 | 0.04 | | 0.05 | 0.05 | 0.00 |
| Pardubice | 0.04 | 0.04 | 0.05 | | 0.05 | 0.05 | 0.00 |
| Vysočina | 0.04 | 0.04 | 0.03 | | 0.05 | 0.05 | 0.00 |
| South Moravia | 0.09 | 0.09 | 0.09 | | 0.11 | 0.11 | 0.00 |

Continued

**Supplementary Table 1. Demographic characteristics: summary statistics and randomization check (Continued)**

| | (1) Sample mean | (2) Control | (3) COVID-19 | (4) (2) vs. (3) p-value | (5) Sample mean (weighted) | (6) Czech population | (7) diff. (5) vs. (6) |
|---|---|---|---|---|---|---|---|
| Olomouc | 0.05 | 0.05 | 0.05 | | 0.06 | 0.06 | 0.00 |
| Zlín | 0.05 | 0.05 | 0.04 | | 0.06 | 0.06 | 0.00 |
| Moravia-Silesia | 0.1 | 0.10 | 0.10 | | 0.11 | 0.12 | 0.01 |
| **Household size** | 2.49 | 2.49 | 2.49 | 0.662 | 2.61 | | |
| **Number of children** | 0.54 | 0.54 | 0.55 | 0.629 | 0.59 | | |
| **Household income** | | | | | | | |
| Above CZK 35,000 | 0.46 | 0.46 | 0.46 | 0.821 | 0.45 | | |
| **N** | 2186 | 1044 | 1142 | | | | |

*Notes:* Means in columns 1, 2, and 3. Column 4 reports p-values of Wilcoxon rank-sum test for equality between the control and COVID-19 conditions for non-binary variables (the last three variables in the list), whereas for all remaining categorical variables we use Pearson's chi-squared. The sample is representative of the Czech population 18+ in terms of sex, age, education, region, municipality size, employment status before the Covid-19 pandemic, age x sex, age x education. Prague and municipalities above 50,000 are oversampled (boost 200%). Column 5 reports weighted sample means that correct for the oversampling. Column 6 reports means for the Czech population for the variables based on which the sample is benchmarked (this excludes household size, number of children, and household income). Simple differences between columns 5 and 6 are presented in column 7.

**Supplementary Table 2. Interaction-effects specification: Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipient (domestic vs. foreign)**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| **Identity of the recipient:** | Foreign vs. domestic | Asian vs. domestic | European Union vs. domestic | United States vs. domestic | African vs. domestic |
| COVID-19 | -1.190 | -0.914 | -1.38 | -0.75 | -0.98 |
| 95% confidence interval | [-5.57, 3.19] | [-5.24, 3.41] | [-5.68, 2.92] | [-5.06, 3.57] | [-5.32, 3.37] |
| t-statistic | -0.53 | -0.41 | -0.63 | -0.34 | -0.44 |
| p-value | [0.594] | [0.678] | [0.529] | [0.735] | [0.659] |
| Foreigner | -39.36 | -42.13 | -26.40 | -54.60 | -34.30 |
| 95% confidence interval | [-42.65, -36.06] | [-46.03, -38.23] | [-29.57, -23.23] | [-58.48, -50.72] | [-38.63, -29.97] |
| t-statistic | -23.43 | -21.2 | -16.32 | -27.59 | -15.54 |
| p-value | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| COVID-19*Foreigner | -3.568 | -3.201 | -5.87 | -3.83 | -1.36 |
| 95% confidence interval | [-8.31, 1.18] | [-8.77, 2.27] | [-10.49, -1.25] | [-9.36, 1.69] | [-7.44, 4.72] |
| t-statistic | -1.48 | -1.13 | -2.49 | -1.36 | -0.44 |
| p-value | [0.140] | [0.260] | [0.013] | [0.174] | [0.661] |
| Control mean | 133.3 | 133.4 | 133.5 | 133.5 | 133.5 |
| # Clusters | 2186.0 | 2186.0 | 2186 | 2186 | 2186 |
| Observations | 10929 | 4372 | 4372 | 4372 | 4371 |
| COVID-19+COVID-19*Foreigner | -4.76 | -4.12 | -7.25 | -4.58 | -2.34 |
| 95% confidence interval | [-8.91, -0.61] | [-9.09, 0.86] | [-11.74, -2.76] | [-9.37, 0.22] | [-7.86, 3.18] |
| t-statistic | -2.25 | -1.62 | -3.17 | -1.87 | -0.83 |
| p-value | [0.025] | [0.105] | [0.002] | [0.061] | [0.406] |

*Notes:* OLS coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level whenever multiple observations are used per individual). The dependent variable is the amount allocated in the Help-or-Harm task. "Foreigner" indicates that the recipient is a foreigner. Each regression controls for gender, age category (6 categories), household size, number of children, region (14 regions), town size (7 categories), education (4 categories), economic status (7 categories), household income (11 categories), and task order. The bottom row presents an estimate, 95% CI, t-statistic, and a p-value of a coefficient COVID-19+COVID-19*Foreigner estimated using a linear combination of the two coefficients.

## Supplementary Table 3. Effect of the COVID-19 condition on the prevalence of hostile and pro-social behavior in the Help-or-Harm task, by the identity of the recipient (domestic vs. foreign)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Identity of the recipient:** | Domestic | Foreign | Asian | European Union | United States | African |
| **Panel A: Hostile behavior (= 1 if Help-or-Harm task allocation < 100)** | | | | | | |
| COVID-19 | 0.018 | 0.040 | 0.042 | 0.057 | 0.046 | 0.017 |
| 95% confidence interval | [-0.00,0.04] | [0.01, 0.07] | [0.00, 0.08] | [0.02,0.09] | [0.00,0.09] | [-0.02,0.06] |
| t-statistic | 1.62 | 2.48 | 1.97 | 3.12 | 2.11 | 0.79 |
| p-value | [0.105] | [0.013] | [0.049] | [0.002] | [0.035] | [0.430] |
| Control mean | 0.057 | 0.328 | 0.341 | 0.198 | 0.443 | 0.330 |
| **Panel B: Reducing the rewards to zero (=1 if Help-or-Harm task allocation = 0)** | | | | | | |
| COVID | 0.002 | 0.031 | 0.030 | 0.031 | 0.032 | 0.031 |
| 95% confidence interval | [-0.01,0.02] | [0.01,0.05] | [-0.00,0.06] | [0.01,0.05] | [-0.00,0.07] | [0.00,0.06] |
| t-statistic | 0.26 | 2.49 | 1.88 | 2.68 | 1.85 | 1.96 |
| p-value | [0.797] | [0.013] | [0.061] | [0.007] | [0.064] | [0.050] |
| CONTROL mean | 0.023 | 0.124 | 0.135 | 0.062 | 0.167 | 0.131 |
| **Panel C: Pro-social behavior (= 1 if Help-or-Harm task allocation > 100)** | | | | | | |
| COVID-19 | -0.015 | -0.023 | -0.033 | -0.033 | -0.031 | -0.009 |
| 95% confidence interval | [-0.06,0.03] | [-0.05, 0.01] | [-0.05, 0.02] | [-0.07,0.01] | [-0.06,-0.00] | [-0.05,0.03] |
| t-statistic | -0.66 | -1.61 | -0.96 | -1.69 | -1.98 | -0.46 |
| p-value | [0.507] | [0.108] | [0.335] | [0.091] | [0.048] | [0.648] |
| Control mean | 0.495 | 0.261 | 0.245 | 0.298 | 0.173 | 0.326 |
| **Panel D: Sticking to the default (= 1 if Help-or-Harm task allocation = 100)** | | | | | | |
| COVID-19 | -0.003 | -0.018 | -0.024 | -0.024 | -0.015 | -0.007 |
| 95% confidence interval | [-0.05,0.04] | [-0.05, 0.02] | [-0.07, 0.02] | [-0.07,0.02] | [-0.06,0.03] | [-0.05,0.03] |
| t-statistic | -0.16 | -1.05 | -1.12 | -1.09 | -0.69 | -0.35 |
| p-value | [0.875] | [0.294] | [0.264] | [0.277] | [0.488] | [0.728] |
| Control mean | 0.447 | 0.412 | 0.414 | 0.504 | 0.384 | 0.345 |
| # Clusters | | 2186 | | | | |
| Observations | 2186 | 8743 | 2186 | 2186 | 2186 | 2185 |

*Notes:* Linear probability model coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level in column 2 where multiple observations are used per individual). The dependent variable in Panel A is a binary variable "Hostile behavior" indicating that the Help-or-Harm task allocation is strictly lower than 100. The dependent variable in Panel B is a binary variable "Reducing the rewards to zero" indicating that the allocation is equal to 0. The dependent variable in Panel C is a binary variable "Pro-social behavior" indicating that the allocation is strictly greater than 100. The dependent variable in Panel D is a binary variable "Sticking to the default" indicating that the allocation is equal to 100. In all columns, the set of controls is the same as in Supplementary Table 2.

**Supplementary Table 4. Sub-group analysis: Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Panel A: Age** | Younger (below median) | | | Older (above median) | | |
| **Identity of the recipient:** | Domestic | Foreign | European Union | Domestic | Foreign | European Union |
| COVID-19 | -0.0615 | -4.707 | -7.436 | -2.172 | -5.855 | -9.226 |
| 95% confidence interval | [-6.67,6.55] | [-10.79,1.37] | [-14.10,-0.77] | [-8.45,4.10] | [-11.75,0.04] | [-15.80,-2.65] |
| t-statistic | -0.02 | -1.52 | -2.19 | -0.68 | -1.95 | -2.75 |
| p-value | [0.985] | [0.129] | [0.029] | [0.497] | [0.051] | [0.006] |
| Control mean | 134.4 | 100.0 | 111.9 | 132.6 | 88.3 | 102.3 |
| Observations | 1086 | 4344 | 1086 | 1100 | 4399 | 1100 |
| **Panel B: Gender** | Men | | | Women | | |
| **Identity of the recipient:** | Domestic | Foreign | European Union | Domestic | Foreign | European Union |
| COVID-19 | -0.490 | -5.402 | -9.275 | -0.961 | -4.741 | -5.899 |
| 95% confidence interval | [-6.96,5.98] | [-11.33,0.53] | [-15.94,-2.61] | [-6.98,5.06] | [-10.59,1.10] | [-12.50,0.70] |
| t-statistic | -0.15 | -1.79 | -2.73 | -0.31 | -1.59 | -1.75 |
| p-value | [0.882] | [0.074] | [0.006] | [0.754] | [0.112] | [0.080] |
| Control mean | 130.5 | 91.3 | 105.6 | 136.4 | 96.9 | 108.5 |
| Observations | 1088 | 4352 | 1088 | 1098 | 4391 | 1098 |
| **Panel C: Municipality size** | Cities | | | Villages/towns | | |
| **Identity of the recipient:** | Domestic | Foreign | European Union | Domestic | Foreign | European Union |
| COVID-19 | 4.026 | -2.178 | -7.177 | -4.575 | -7.671 | -9.530 |
| 95% confidence interval | [-2.71,10.76] | [-8.19,3.84] | [-14.27,-0.09] | [-10.61,1.47] | [-13.51,-1.83] | [-15.75,-3.31] |
| t-statistic | 1.17 | -0.71 | -1.99 | -1.49 | -2.58 | -3.01 |
| p-value | [0.241] | [0.478] | [0.047] | [0.138] | [0.010] | [0.003] |
| Control mean | 129.4 | 91.2 | 106.2 | 136.8 | 96.5 | 107.9 |
| Observations | 998 | 3991 | 998 | 1188 | 4752 | 1188 |

(Continued)

**Supplementary Table 4. Sub-group analysis: Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task (Continued)**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Panel D: Education** | University | | | Primary/secondary | | |
| **Identity of the recipient:** | Domestic | Foreign | European Union | Domestic | Foreign | European Union |
| COVID-19 | 0.290 | -2.665 | -10.34 | -1.898 | -6.801 | -7.741 |
| 95% confidence interval | [-8.24,8.82] | [-9.97,4.64] | [-19.48,-1.20] | [-7.13,3.33] | [-11.85,-1.75] | [-13.23,-2.25] |
| t-statistic | 0.07 | -0.72 | -2.22 | -0.71 | -2.64 | -2.77 |
| p-value | [0.947] | [0.474] | [0.027] | [0.477] | [0.008] | [0.006] |
| Control mean | 123.0 | 93.0 | 105.0 | 137.4 | 94.5 | 107.9 |
| Observations | 622 | 2488 | 622 | 1564 | 6255 | 1564 |
| **Panel E: Income** | Above median | | | Below median | | |
| **Identity of the recipient:** | Domestic | Foreign | European Union | Domestic | Foreign | European Union |
| COVID-19 | 1.681 | -4.651 | -6.452 | -3.526 | -7.124 | -10.55 |
| 95% confidence interval | [-4.50,7.87] | [-10.49,1.19] | [-12.98,0.08] | [-9.91,2.86] | [-13.28,-0.97] | [-17.43,-3.67] |
| t-statistic | 0.53 | -1.56 | -1.94 | -1.08 | -2.27 | -3.01 |
| p-value | [0.594] | [0.118] | [0.053] | [0.279] | [0.023] | [0.003] |
| Control mean | 129.1 | 96.0 | 107.4 | 138.3 | 92.1 | 106.8 |
| Observations | 1152 | 4608 | 1152 | 1034 | 4135 | 1034 |

*Notes:* OLS coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level in columns 2 and 5). The dependent variable is the amount allocated in the Help-or-Harm task. Younger (older) is coded as below (above and equal to) the median age of 50. Cities is coded as municipalities of 100,000 inhabitants and above, villages and towns are coded as having less than 100,000 inhabitants. Above (below) median income is coded as the net monthly household income equal to or above (below) CZK 35,000. In all columns, the set of controls is the same as in Supplementary Table 2.

**Supplementary Table 5. Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipient (domestic in-group vs. domestic out-group)**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Identity of the recipient:** | Domestic in-group | Domestic out-group | Region in-group | Region out-group | Political in-group | Political out-group | Majority in-group | Roma ethnicity out-group | Migrant out-group | Religion in-group | Religion out-group |
| **Panel A: Baseline controls** | | | | | | | | | | | |
| COVID-19 | -3.853 | -2.818 | -5.852 | -2.601 | -1.406 | -3.004 | -3.787 | -3.614 | -1.683 | -3.786 | -2.935 |
| 95% confidence interval | [-7.53,-0.18] | [-6.28,0.64] | [-10.40,-1.30] | [-6.70,1.50] | [-5.96,3.15] | [-7.62,1.61] | [-8.26,0.69] | [-8.61,1.38] | [-6.38,3.02] | [-8.16,0.59] | [-6.68,0.81] |
| t-statistic | -2.06 | -1.60 | -2.52 | -1.24 | -0.61 | -1.28 | -1.66 | -1.42 | -0.7 | -1.7 | -1.54 |
| p-value | [0.040] | [0.111] | [0.012] | [0.214] | [0.545] | [0.202] | [0.097] | [0.156] | [0.483] | [0.090] | [0.124] |
| p-value (MHT; 2 hypotheses) | | [0.128] | | | | | | | | | |
| p-value (MHT; 17 hypotheses) | [0.289] | [0.497] | [0.107] | [0.619] | [0.766] | [0.630] | [0.443] | [0.574] | [0.810] | [0.475] | [0.528] |
| **Panel B: No controls** | | | | | | | | | | | |
| COVID-19 | -4.237 | -3.039 | -6.272 | -3.087 | -1.928 | -3.778 | -4.278 | -3.371 | -1.698 | -3.937 | -3.046 |
| 95% confidence interval | [-7.93,-0.55] | [-6.56,0.49] | [-10.82,-1.72] | [-7.25,1.08] | [-6.34,2.48] | [-8.28,0.72] | [-8.62,0.06] | [-8.29,1.54] | [-6.33,2.93] | [-8.22,0.35] | [-6.82,0.73] |
| t-statistic | -2.25 | -1.69 | -2.7 | -1.45 | -0.86 | -1.65 | -1.93 | -1.34 | -0.72 | -1.8 | -1.58 |
| p-value | [0.024] | [0.091] | [0.007] | [0.146] | [0.391] | [0.100] | [0.053] | [0.179] | [0.472] | [0.072] | [0.114] |
| p-value (MHT; 2 hypotheses) | | [0.093] | | | | | | | | | |
| p-value (MHT; 17 hypotheses) | [0.189] | [0.402] | [0.061] | [0.507] | [0.720] | [0.432] | [0.321] | [0.558] | [0.699] | [0.374] | [0.436] |
| **Panel C: Additional controls** | | | | | | | | | | | |
| COVID-19 | -3.431 | -2.885 | -5.111 | -2.620 | -1.147 | -3.054 | -3.365 | -4.006 | -1.853 | -3.531 | -2.907 |
| 95% confidence interval | [-7.08,0.22] | [-6.36,0.59] | [-9.62,-0.60] | [-6.76,1.52] | [-5.75,3.46] | [-7.74,1.63] | [-7.85,1.12] | [-9.05,1.04] | [-6.61,2.90] | [-7.92,0.86] | [-6.67,0.86] |
| t-statistic | -1.84 | -1.63 | -2.22 | -1.24 | -0.49 | -1.28 | -1.47 | -1.56 | -0.76 | -1.58 | -1.51 |
| p-value | [0.066] | [0.104] | [0.027] | [0.215] | [0.625] | [0.201] | [0.142] | [0.120] | [0.445] | [0.115] | [0.130] |
| p-value (MHT; 2 hypotheses) | | [0.117] | | | | | | | | | |
| p-value (MHT; 17 hypotheses) | [0.394] | [0.529] | [0.217] | [0.642] | [0.850] | [0.632] | [0.561] | [0.533] | [0.796] | [0.536] | [0.555] |

(Continued)

**Supplementary Table 5. Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipient (domestic in-group vs. domestic out-group)**
**(continued)**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Identity of the recipient:** | Domestic in-group | Domestic out-group | Region in-group | Region out-group | Political in-group | Political out-group | Majority in-group | Roma ethnicity out-group | Migrant out-group | Religion in-group | Religion out-group |
| **Panel D: Probability weights** | | | | | | | | | | | |
| COVID-19 | -4.640 | -4.183 | -7.285 | -5.164 | -0.861 | -4.800 | -5.786 | -2.123 | -2.655 | -4.569 | -4.352 |
| 95% confidence interval | [-9.40,0.12] | [-8.78,0.42] | [-12.94,-1.63] | [-10.64,0.31] | [-6.52,4.80] | [-10.52,0.92] | [-11.51,-0.06] | [-8.55,4.30] | [-8.68,3.37] | [-10.25,1.11] | [-9.29,0.58] |
| t-statistic | -1.91 | -1.78 | -2.53 | -1.85 | -0.3 | -1.65 | -1.98 | -0.65 | -0.86 | -1.58 | -1.73 |
| p-value | [0.056] | [0.075] | [0.012] | [0.065] | [0.765] | [0.100] | [0.048] | [0.517] | [0.387] | [0.115] | [0.084] |
| Control mean | 127.3 | 96.5 | 133.0 | 112.6 | 120.5 | 94.3 | 125.6 | 76.4 | 95.5 | 128.4 | 95.1 |
| # Clusters | 2186 | 2186 | 2186 | 2186 | | | | | | | 2186 |
| Observations | 9297 | 16935 | 2783 | 3775 | 2186 | 2186 | 2186 | 2186 | 2186 | 2142 | 6602 |

*Notes:* OLS coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level whenever multiple observations are used per individual). The dependent variable is the amount allocated in the Help-or-Harm task. In Panel A, each regression controls for gender, age category (6 categories), household size, number of children, region (14 regions), town size (7 categories), education (4 categories), economic status (7 categories), and household income (11 categories), and task order. Panel B reports results from regressions without control variables. In Panel C, each regression controls for baseline controls (same as in Panel A) and further controls for the variables approximating economic impacts of the Covid-19 pandemic, savings, mental health, and epidemiological measures (see Supplementary Information 1.4 for the list and definition of variables). Panel D reports results of weighted OLS regressions with no controls, using probability weights to correct for the oversampling of respondents from large municipalities. We also report multiple hypothesis testing corrected p-values using a method developed by Barsbai, Licuanan, Steinmayr, Tiongson, and Yang (submitted). See Supplementary Information 1.6 for details on the procedure and the hypotheses tested.

**Supplementary Table 6. Interaction-effects specification: Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipient (domestic in-group vs. domestic out-group)**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Identity of the recipient:** | Domestic out-group vs. domestic in-group | Region out-group vs. in-group | Political out-group vs. in-group | Roma ethnicity out-group vs. Majority in-group | Immigrant out-group vs. Majority in-group | Religion out-group vs. in-group |
| COVID-19 | -3.936 | -5.729 | -1.280 | -4.154 | -4.024 | -3.881 |
| 95% confidence interval | [-7.63,-0.25] | [-10.26,-1.20] | [-5.77,3.21] | [-8.59,0.28] | [-8.43,0.39] | [-8.20,0.44] |
| t-statistic | -2.09 | -2.48 | -0.56 | -1.84 | -1.79 | -1.76 |
| p-value | [0.037] | [0.013] | [0.576] | [0.067] | [0.074] | [0.078] |
| out-group | -30.88 | -20.383 | -26.212 | -49.263 | -30.174 | -33.59 |
| 95% confidence interval | [-32.96,-28.81] | [-23.00,-17.76] | [-29.41,-23.02] | [-53.14,-45.39] | [-33.60,-26.75] | [-36.35,-30.82] |
| t-statistic | -29.19 | -15.25 | -16.09 | -24.93 | -17.29 | -23.81 |
| p-value | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| COVID-19*out-group | 1.177 | 3.041 | -1.850 | 0.907 | 2.580 | 0.955 |
| 95% confidence interval | [-1.73,4.09] | [-0.87,6.96] | [-6.33,2.63] | [-4.54,6.35] | [-2.20,7.36] | [-2.91,4.82] |
| t-statistic | 0.79 | 1.52 | -0.81 | 0.33 | 1.06 | 0.48 |
| p-value | [0.427] | [0.128] | [0.418] | [0.744] | [0.290] | [0.628] |
| Control mean | 127.3 | 133.0 | 120.5 | 125.6 | 125.6 | 128.4 |
| # Clusters | 2186 | 2186 | 2186 | 2186 | 2186 | 2186 |
| Observations | 26232 | 6558 | 4372 | 4372 | 4372 | 8744 |
| COVID-19+COVID-19*out-group | -2.759 | -2.688 | -3.130 | -3.247 | -1.445 | -2.927 |
| 95% confidence interval | [-6.21,0.69] | [-6.78,1.41] | [-7.64,1.38] | [-8.15,1.65] | [-6.05,3.16] | [-6.65,0.80] |
| t-statistic | -1.57 | -1.29 | -1.36 | -1.30 | -0.62 | -1.54 |
| p-value | [0.117] | [0.198] | [0.174] | [0.194] | [0.538] | [0.123] |

*Notes:* OLS coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level whenever multiple observations are used per individual). The dependent variable is the amount allocated in the Help-or-Harm task. In all columns, the set of controls is the same as in Supplementary Table 2. The bottom row presents an estimate and a p-value of a coefficient COVID-19+COVID-19*out-group estimated using a linear combination of the two coefficients.

**Supplementary Table 7. Robustness checks: Effect of the COVID-19 condition on the likelihood of sticking to the default allocation, attention, and response time**

| | (1) | (2) | (3) |
|---|---|---|---|
| **Dependent variables:** | Sticking to default (d) | Passed both attention checks (d) | Response time |
| COVID-19 | -0.006 | 0.002 | -0.186 |
| 95% confidence interval | [-0.03, 0.02] | [-0.02, 0.03] | [-0.37, -0.00] |
| t-statistic | -0.39 | 0.18 | -1.98 |
| p-value | [0.695] | [0.856] | [0.048] |
| Control mean | 0.393 | 0.912 | 2.533 |
| # Clusters | 2186 | | |
| Observations | 37161 | 2186 | 2186 |

*Notes:* Linear probability model coefficients (columns 1 and 2) and OLS coefficients (column 3), with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level in column 1). The dependent variable in column 1 is a binary variable Sticking to default (d) equal to one if the amount allocated in the Help-or-Harm task was equal to 100. The dependent variable in column 2 is Passed both attention checks (d) equal to one if the individual completed both checks used to monitor respondents' attention (See Supplementary Information 1.5). The dependent variable in column 3 is Response time, the total duration in minutes a respondent spent answering the Help-or-Harm task module. In all columns, the set of controls is the same as in Supplementary Table 2.

## Supplementary Table 8. Robustness checks: Effect of the COVID-19 condition on the amount allocated in the Help-or-Harm task, by the identity of the recipient (domestic vs. foreign)

| | (1) | (2) | (3) |
|---|---|---|---|
| **Identity of the recipient:** | Domestic | Foreign | Asian |
| **Panel A: Controlling for passing both attention checks** | | | |
| COVID-19 | -0.707 | -4.877 | -7.920 |
| 95% confidence interval | [-5.05, 3.64] | [-9.06,-0.70] | [-12.46,-3.38] |
| t-statistic | -0.32 | -2.29 | -3.42 |
| p-values | [0.750] | [0.022] | [0.001] |
| Control mean | 133.5 | 94.1 | 107.1 |
| Observations | 2186 | 8743 (2186 clusters) | 2186 |
| **Panel B: Excluding inattentive respondents** | | | |
| COVID-19 | 0.821 | -3.673 | -6.436 |
| 95% confidence interval | [-3.70, 5.35] | [-8.08,0.73] | [-11.19,-1.69] |
| t-statistic | 0.36 | -1.64 | -2.66 |
| p-values | [0.722] | [0.102] | [0.008] |
| Control mean | 132.7 | 93.6 | 106.0 |
| Observations | 2001 | 8004 (2001 clusters) | 2001 |
| **Panel C: Controlling for response time** | | | |
| COVID-19 | -0.667 | -4.858 | -7.893 |
| 95% confidence interval | [-5.02, 3.69] | [-9.04,-0.67] | [-12.44,-3.35] |
| t-statistic | -0.30 | -2.28 | -3.41 |
| p-values | [0.764] | [0.023] | [0.001] |
| Control mean | 133.5 | 94.1 | 107.1 |
| Observations | 2186 | 8743 (2186 clusters) | 2186 |

*Notes:* OLS coefficients, with 95% confidence intervals and t-statistics. P-values reported in square brackets (robust standard errors clustered at individual level in column 2). The dependent variable is the amount allocated in the Help-or-Harm task. In all columns, the set of controls is the same as in Supplementary Table 2. Models estimated in Panel A further control for Passed both attention checks (d) that equals one if the individual completed both checks used to monitor respondents' attention (See Supplementary Information 1.5). Models estimated in Panel C further control for Response time, the total duration in minutes a respondent spent answering the Help-or-Harm task module. Observations for all 2,186 individuals used in Panels A and C. Panel B restricts the sample to 2,001 individuals who passed both attention checks.

## Supplementary Table 9. Additional variables: economic situation, mental health, Covid-19 symptoms and activities during the lockdown

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | **Full sample** | **Control** | **COVID-19** | **(2) vs. (3) p-value** | **Sample mean (weighted)** | **Additional control** | **N** |
| **Panel A: Income and work** | | | | | | | |
| Current income relative to pre-crisis time | 0.83 | 0.83 | 0.83 | 0.31 | 0.82 | | 2,139 |
| Share in hours worked during Mar 16 week to before crisis | 0.85 | 0.93 | 0.78 | 0.83 | 0.95 | | 1,118 |
| Share in hours worked during Mar 23 week to before crisis | 0.81 | 0.89 | 0.74 | 0.85 | 0.92 | | 1,118 |
| HH member lost job in previous two weeks (d) | 0.07 | 0.07 | 0.07 | 0.89 | 0.07 | ✓ | 2,186 |
| Currently fearing job loss (Likert 0-10) | 3.68 | 3.81 | 3.58 | 0.36 | 3.88 | | 1,162 |
| **Panel B: Household economy** | | | | | | | |
| Household has problem with payments (d) | 0.14 | 0.14 | 0.14 | 0.78 | 0.16 | ✓ | 2,186 |
| Household savings would last 1 month and less (d) | 0.36 | 0.34 | 0.38 | 0.04 | 0.38 | ✓ | 2,186 |
| Number of weeks household savings would last | 13.06 | 13.29 | 12.86 | 0.36 | 12.23 | ✓ | 2,186 |
| **Panel C: Psychological state** | | | | | | | |
| Happiness index (min 0-10 max) | 5.09 | 4.94 | 5.22 | 0.00 | 5.11 | ✓ | 2,186 |
| Depression and anxiety index (min 0-18 max) | 4.32 | 4.34 | 4.29 | 0.67 | 4.29 | ✓ | 2,186 |
| Perceived stress scale PSS-4 (min 0-16 max) | 5.77 | 5.86 | 5.68 | 0.18 | 5.89 | ✓ | 2,186 |
| **Panel D: Measures considered by the household** | | | | | | | |
| Loan from family or acquaintances (d) | 0.08 | 0.08 | 0.08 | 0.77 | 0.08 | ✓ | 2,186 |
| Loan from bank or credit company (d) | 0.03 | 0.04 | 0.03 | 0.53 | 0.03 | ✓ | 2,186 |
| Asset sales (d) | 0.04 | 0.03 | 0.04 | 0.45 | 0.04 | ✓ | 2,186 |
| Sign. reduction in spending on food purchases (d) | 0.28 | 0.28 | 0.29 | 0.47 | 0.29 | ✓ | 2,186 |
| Sign. reduction in spending on consumer purchases (d) | 0.39 | 0.39 | 0.40 | 0.71 | 0.40 | ✓ | 2,186 |
| Search for cheaper housing (d) | 0.02 | 0.02 | 0.03 | 0.20 | 0.02 | ✓ | 2,186 |
| Finding another or additional job (d) | 0.17 | 0.18 | 0.17 | 0.28 | 0.18 | ✓ | 2,186 |
| I do not consider any of these measures (d) | 0.50 | 0.50 | 0.49 | 0.77 | 0.48 | ✓ | 2,186 |
| **Part E: Coronavirus** | | | | | | | |
| Traveled abroad in past 8 weeks (d) | 0.11 | 0.10 | 0.12 | 0.23 | 0.10 | ✓ | 2,186 |
| HH member abroad in past 8 weeks (d) | 0.12 | 0.11 | 0.12 | 0.33 | 0.10 | ✓ | 2,186 |
| Know anyone infected by coronavirus (d) | 0.10 | 0.10 | 0.10 | 0.99 | 0.10 | ✓ | 2,186 |
| HH member knows anyone infected by coronavirus (d) | 0.10 | 0.10 | 0.09 | 0.49 | 0.10 | ✓ | 2,186 |
| Know anyone quarantined (d) | 0.33 | 0.31 | 0.34 | 0.22 | 0.32 | ✓ | 2,186 |
| Activities done two weeks ago (0-12) | 2.44 | 2.42 | 2.46 | 0.46 | 2.32 | ✓ | 2,186 |
| HH member activities done two weeks ago (0-12) | 1.54 | 1.55 | 1.53 | 0.92 | 1.54 | ✓ | 2,186 |
| Not working two weeks ago (d) | 0.53 | 0.54 | 0.52 | 0.25 | 0.52 | ✓ | 2,186 |
| Not meeting anyone two weeks ago (d) | 0.17 | 0.16 | 0.17 | 0.37 | 0.15 | ✓ | 2,186 |
| Activities done one week ago (0-12) | 2.02 | 2.01 | 2.03 | 0.87 | 1.92 | ✓ | 2,186 |
| HH member activities done one week ago (0-12) | 1.29 | 1.30 | 1.29 | 0.65 | 1.30 | ✓ | 2,186 |
| Not working one week ago (d) | 0.55 | 0.56 | 0.54 | 0.30 | 0.54 | ✓ | 2,186 |
| Not meeting anyone one week ago (d) | 0.20 | 0.19 | 0.20 | 0.40 | 0.18 | ✓ | 2,186 |

(Continued)

## Supplementary Table 9. Additional variables: economic situation, mental health, Covid-19 symptoms and activities during the lockdown (Continued)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | **Full sample** | **Control** | **COVID-19** | **(2) vs. (3) p-value** | **Sample mean (weighted)** | **Additional control** | **N** |
| Preventive measures used (0-13) | 9.46 | 9.49 | 9.43 | 0.61 | 9.29 | ✓ | 2,186 |
| Tested for coronavirus (d) | 0.003 | 0.004 | 0.003 | 0.72 | 0.003 | ✓ | 2,186 |
| HH member tested for coronavirus (d) | 0.005 | 0.009 | 0.003 | 0.08 | 0.005 | ✓ | 2,186 |
| N Covid-19 symptoms recently experienced (0-11) | 1.19 | 1.16 | 1.21 | 0.40 | 1.14 | ✓ | 2,186 |
| Contacted medical services recently (d) | 0.02 | 0.01 | 0.02 | 0.26 | 0.02 | ✓ | 2,186 |
| HH member recently had health issues (d) | 0.11 | 0.12 | 0.11 | 0.58 | 0.10 | ✓ | 2,186 |

*Notes:* Means. Current income relative to pre-crisis time is a measured using the question "To what percentage of the regular amount has the income of your entire household dropped in the last two weeks?". Share of hours worked are variables constructed as the share of hours worked in the respective week divided by hours worked prior to the Covid-19 crisis. Currently fearing job loss is measured using the question "How much do you currently fear that you may lose your job?" with answers on a 10-point Likert scale (0=not at all, 10=very much). Construction of all other variables is described in Supplementary Information 1.4 under "Additional controls". Column 4 reports p-values. These are constructed using Wilcoxon rank-sum test for equality between the control and COVID-19 conditions for non-binary variables, whereas for categorical variables we use Pearson's chi-squared test. The sample is representative of the Czech population 18+ in terms of sex, age, education, region, municipality size, employment status before the Covid-19 pandemic, age x sex, age x education. Prague and municipalities above 50,000 are oversampled (boost 200%). Column 5 reports weighted sample means that correct for the oversampling. Column 6 reports whether the variable is used as an additional control variable in regression models estimated Column C of Table 2 and of Supplementary Table 5.

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