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### Tackling Crises Together? – An Econometric Analysis of Charitable Crowdfunding During the COVID-19 Pandemic

Maïke Althaus

*Paderborn University*, [maïke.althaus@wiwi.upb.de](mailto:maïke.althaus@wiwi.upb.de)

Martin Poniatowski

*Paderborn University*, [martin.poniatowski@wiwi.upb.de](mailto:martin.poniatowski@wiwi.upb.de)

Dennis Kundisch

*Paderborn University*, [dennis.kundisch@wiwi.uni-paderborn.de](mailto:dennis.kundisch@wiwi.uni-paderborn.de)

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# Tackling Crises Together? – An Econometric Analysis of Charitable Crowdfunding during the COVID-19 Pandemic

*Completed Research Paper*

**Maike Althaus**  
Paderborn University  
Warburger Str. 100  
33098 Paderborn, Germany  
Maike.Althaus@uni-paderborn.de

**Martin Poniatowski**  
Paderborn University  
Warburger Str. 100  
33098 Paderborn, Germany  
Martin.Poniatowski@uni-paderborn.de

**Dennis Kundisch**  
Paderborn University  
Warburger Str. 100  
33098 Paderborn, Germany  
Dennis.Kundisch@uni-paderborn.de

## Abstract

*Crowdfunding platforms enable individuals or groups to appeal to the public to support a variety of ventures or campaigns. Whilst the majority of campaigns raise funds for private causes, some of the issues for which help is being sought have arisen as a direct consequence of world events and crises. Nevertheless, the research on charitable crowdfunding has largely ignored this connection. We use the COVID-19 pandemic, and related public health policies, to explore the impact of the global crisis on donation behavior on the donation-based crowdfunding platform GoFundMe. By using a quasi-experimental research design, we find that after the introduction of stay-at-home orders, campaigns in U.S. states with such measures experienced a significant decline in the number of donors and amounts donated, which is more pronounced for crisis-related than for non-crisis-related campaigns. Our findings contribute to the literature by providing novel insights on crowdfunding behaviors in times of societal crisis.*

**Keywords:** Charitable Crowdfunding, Crises, COVID-19 Pandemic, Stay-at-Home Order, Difference-in-Differences, Quasi-Experimental Research Design

## Introduction

Major crises continue to affect or have affected many, if not all, parts of the world, from the global financial crisis in 2008, to the ongoing climate crisis, and, of course, the COVID-19 pandemic with its serious, multifaceted repercussions for public health, economies, and society. The political measures taken to control or mitigate crises have left many people in need of financial support, either because of the loss of business income, employment, or the cost of medical treatments, to name a few. In the past, donation-based crowdfunding, such as the much-publicized GoFundMe platform, has emerged as an easily accessible and increasingly popular source of providing financial help to individuals experiencing crisis-related issues.

While crowdfunding platforms in non-crisis times have been the subject of much research, there is a lack of exploration of crowdfunding platforms during a crisis. In our study, we investigate whether the consequences of a crisis in terms of political measures have an impact on donation behavior on a donation-based crowdfunding platform, compared to non-crises times. A crisis, with its social, economic and political consequences and its unprecedented threats to lives and livelihoods, can lead to behaviors that differ from those exhibited in times of abundance and security (Rao et al. 2011, Vardy and Atkinson 2019). In addition, given the vast sums spent by governments to soften the impact of the social and economic damage caused by any kind of crisis, understanding how society is affected by a crisis can help to increase future resilience. For instance, the severity of the ongoing COVID-19 pandemic has been destructive on a global scale, affecting every national economy and industry sector, not least due to demand and supply shocks and a level of uncertainty comparable only to previous economic crises (Goodell 2020, Baker et al. 2020). To date, the COVID-19 pandemic has resulted in the loss of jobs, money, health, and lives, and has likely provoked large economic and private despair with the demand for financial assistance. We use the COVID-19 pandemic as an example of a crisis to examine donation behavior in response to a crisis with measures taken by governments. In doing so, we target empirical evidence of donation behavior as response to a crisis in the first months after the political reaction to the occurrence of the COVID-19 pandemic on donation-based crowdfunding platforms. The COVID-19 pandemic is particularly useful as an example to examine the effects of consequential governmental interventions that accompany a crisis. Moreover, since crises repeatedly enjoy high media attention as well as large parts of the world's population have been succumbed by crises, we also want to take a closer look at campaigns that have arisen due to a crisis and the particular consequences in donation behavior for those. The confrontation with current crisis issues in society may lead to different donation behavior than before crisis, which may cause a (dis)balance of donations. Thus, our research contributes to the literature by exploring the following research questions:

*How does a crisis affect donations for charitable donation-based crowdfunding?*

*Are there any systematic differences in the donations for crowdfunding campaigns with a crisis concern compared to those without?*

To answer these questions, we analyze the consequences of the policy measure of stay-at-home orders imposed during the COVID-19 pandemic, with stay-at-home orders serving as an indicator for the impact of COVID-19 pandemic. In fact, this measure has been mandated only because of the crisis and thus has impacted the vast majority of the population. Indeed, while few people have been initially affected, the measures made it impossible for people to ignore the crisis and affected almost everybody. Conducting a difference-in-differences approach (DiD) in a quasi-experimental research design, we use data from the donation-based crowdfunding platform GoFundMe. Our findings are as follows: After the rollout of stay-at-home orders, the number of donors and monetary amounts donated on charitable crowdfunding platforms decreased in those U.S. states that have been affected by it. In addition, the negative effect varies across crowdfunding campaigns, as campaigns with a crisis-related reference (i.e., including keywords like wildfire, hurricane, but also including COVID-19 keywords) undergo an eleven-month decrease in the monetary amounts donated and in number of donors after the stay-at-home orders had been rolled out.

This study offers three important contributions. The first and most important contribution is evidence of divergent donation behavior in electronic crowdfunding markets during a crisis. Hence, it provides an important insight into how the use of crowdfunding technologies affects the nature of charitable giving under an external shock that has a devastating impact on living beings, particularly humans and their way of life. Our study introduces first key findings on the long-term impact of policy action which addresses the COVID-19 pandemic by proving the duration of their negative impact on donation behavior in charitable crowdfunding. Thus, it contributes to current research on the effects of policies, e.g., lockdowns, in the COVID-19 pandemic on various contexts such as the volume of new equity transactions and the financing of start-ups (Brown and Rocha 2020). The second contribution is the bilaterally disadvantaged role of topical references in crowdfunding campaigns. During the crisis, crowdfunding campaigns with a crisis-related topic were more disadvantaged in terms of numbers and amounts of donations compared to those with a non-crisis-related topic. Finally, this study undermines the argument that at a time of crises we witness less, not more, prosocial behavior. We can also infer from our study that, in challenging circumstances, the societal response to public health policies is a lower willingness to donate.

## Related Literature

### *Charitable giving in times of non-crisis*

Prior literature is largely concerned with charitable giving behavior in times of greater financial and personal security. Due to the changes of everyday life brought about by the COVID-19 pandemic, this event may have led to donation behaviors that are different from those that have been previously studied. In non-crisis times, for example, the personal connections between the campaign creator and the donor may play an important role in giving behavior (Bretschneider and Leimeister 2017). These personal connections can include many factors, such as sharing the same values or experiences. Moreover, at different stages of the crowdfunding campaign, i.e., before and after the donation goal is reached, different donation behavior is observed. In the proximity of the fundraising goal, before it is reached, crowdfunding campaigns experience an increase in donations (Li and Wang 2019, Ryu et al. 2020). Thus, prosocial motivators may outweigh uncertainties shortly before the donation goal is reached and show up in higher donation activity than after the donation goal is reached (Li and Wang 2019). Another motivator of prosocial behavior is the signal that several people have already performed good deeds so that a spillover effect will occur and several people imitate this behavior (Bénabou and Tirole 2006). On crowdfunding platforms, the display of previous donations addresses this effect. Previous donations motivate people to contribute to good causes. In addition, a motivator for help is to release the negative tension that is triggered when suffering of others is seen (Batson and Powell 2003). Experiencing the suffering of others evokes vicarious suffering, which is then experienced by oneself, and in order to escape this self-experienced suffering, help is given (Batson and Powell 2003, Piliavin and Charng 1990). By reading crowdfunding campaigns' descriptions, which usually reflect negative experiences because people require financial support due to various incidents, the suffering of others is shared. This subsequently arising tension may then be resolved through donations.

<b>Study</b>	<b>Study Focus</b>	<b>Crowdfunding Type</b>	<b>Crisis Context</b>
Ahlers et al. (2015)	Risk signaling → Funding success	Equity	No
André et al. (2017)	Relation between funding amount and reward (reciprocity) → Campaign success	Reward	No
Argo et al. (2020)	Completion effect → Funding success	Donation	No
Bretschneider and Leimeister (2017)	Motivation → Investment	Reward	No
Calic and Mosakowski (2016)	Sustainability orientation → Funding success, amount funded	Reward	No
Defazio et al. (2021)	Pro-Social framing → Campaign success	Reward	No
Gleasure and Feller (2016)	Motivation → Amount donated	Donation	No
Li and Wang (2019)	Goal distance → Number of backers and number of facebook shares	Reward	No
Mollick (2014)	Various campaign characteristics → Funding success	Reward	No
Ryu et al. (2020)	Motivation → Funding timing, amount funded	Reward	No
<i>This study</i>	<i>Stay-at-home-orders, crisis concern → Number of donors, amount donated</i>	<i>Donation</i>	<i>Yes</i>

**Table 1. Crowdfunding Literature**

Overall, numerous works on crowdfunding platforms show various variables, for example, campaign duration, campaign quality, campaign goal, degree of goal achievement and social networks, have a positive impact on campaign success in non-crisis times (e.g., Calic and Mosakowski 2016, Argo et al. 2020, Mollick 2014, André et al. 2017, Gleasure and Feller 2016, Ryu et al. 2020, Bretschneider and Leimeister 2017). They mainly studied the number of donations as dependent variable under different labels such as campaign success (André et al. 2017, Defazio et al. 2021), donation amount (Ryu et al. 2020) or investment (Bretschneider and Leimeister 2017). In Table 1, we show different studies on crowdfunding platforms with their study focus, i.e., which independent variable affects which dependent variable, on which type of crowdfunding platform was studied, and whether this study considered times of crisis. The studies focused mainly on crowdfunding platform reward-based crowdfunding platforms. It is noticeable that we identify no study that has yet been conducted on crowdfunding platforms, especially donation-based platforms, examining donation behavior in times of crisis.

### ***Charitable giving in times of crisis***

By contrast, previous literature on donation behavior in general has found evidence for the counter-argument, i.e., that people give less in the context of a crisis. On the one hand, it is shown that prosocial behavior can be triggered by a disaster such as an earthquake, increasing with the severity of the crisis, and decreasing over time (Rao et al. 2011). In such a case, it appears that those who have had more contact with people in need are more likely to give an equal or greater monetary amount than in pre-crisis times (Vardy and Atkinson 2019). On the other hand, crises can affect social capital through cracks in the trust and reciprocity of the community (Fleming et al. 2014). Resource scarcity and security threats can limit the cooperative scope and lead to prioritizing short-term survival needs (Vardy and Atkinson 2019). This can influence reciprocity to the point that it becomes negative (Felming et al. 2014). As soon as an emergency situation arises, important decisions have to be made under stress and pressure. Emergencies are associated with threat, ambiguity, urgency, and stress, which then translates into inaction (Latané and Darley 1968). Relying on others to do something, as well as the signal that others have already helped, leads to composure and inaction, and therefore non-altruistic behavior (Latané and Darley 1968). Thus, the experience of a crisis can show a general decline in prosocial behavior (Vardy and Atkinson 2019). Overall, prosocial behavior may be adjusted in response to a crisis, but the direction of its impact likely depends on the nature and severity of how the crisis is experienced.

## **Theoretical Foundations and Derivation of Hypotheses**

As mentioned, in previous literature, statements on charitable giving behavior in response to crises vary, identifying either positive or negative outcomes. To examine this behavior in more detail, we use psychological theories that may explain intergroup relations in times of crises as overall paradigm of identity and intergroup behavior. According to the social identity approach – social identity theory (SIT) and self-categorization theory (SCT) – our society establishes a sense of belonging into “we”- and “they”-groups (Ashforth and Mael 1989, Tajfel and Turner 1979, Turner et al. 1987). On the one hand, SIT states that individuals categorize themselves as belonging to different groups by constantly review their belonging to “we”- and “they”-groups, evaluating these groups, and comparing their value, thus creating the individual’s social identity. On the other hand, SCT states that a person’s behavior is driven by either social or personal identity processes, depending upon the relative importance of a particular situation in terms of social or personal identity. Social identity depends upon an individual’s group membership, whereas personal identity is more or less independent upon the individual’s group membership. However, both identities can be simultaneously important and trigger (non-)prosocial behavior that is motivated by dynamic interplay of both identities. Overall, SIT has an intergroup focus, while SCT also describes in-group processes. Both theories originate from the same ideological perspective with most of the same assumptions and methods shared. Thus, in social identity approach, a distinction is made between the “we-group,” i.e., the group that is similar to us and in which group members share comparable experiences and events, and the corresponding opposing “they”-group. More support is shown to the group to which one feels a sense of belonging (Sole et al. 1975). This support is manifested, for example, in positive feelings felt toward the “we”-group and in being more generous in allocating resources to people in this group (Gaertner and Dovidio 2000). This interaction is backed up by empathy, which takes on a crucial role in how prosocial behavior is carried out (Batson et al. 1987, Bierhoff and Rohmann 2004). The higher the empathy, the more likely it is that a person’s distress will be perceived and understood by the compassionate person, and the

greater their willingness to help (Bierhoff and Rohmann 2004). Indeed, as already stated, certain aspects of experiencing a crisis are likely to set in motion psychological processes associated with prosocial behavior. For example, witnessing the suffering of other people awakens an empathic concern for their well-being (de Waal 2008). The empathy may be stronger or weaker for the “we”- than “they”-group. Thus, in line with social identity theory and self-categorization theory, the COVID-19 pandemic should increase empathy between group members and therefore bring “we”-groups closer together. Due to the association between empathy and giving behavior (Batson et al. 1987), the increased empathy might have a positive impact on charitable crowdfunding donations. Consequently, with the COVID-19 pandemic being unique in terms of its policy measures – stay-at-home orders – adopted by some countries, prosocial behavior should increase only in those countries. In contrast, since the stay-at-home orders have as a characteristic that the society physically distances itself from each other, the feeling of the “they”-group could increase and spread a sense of alienation among members of society, despite everybody suffering from the political measures in the affected regions. Consequently, the COVID-19 pandemic could also impair collaboration by motivating individuals to place short-term personal needs above those of the community at large. The COVID-19 pandemic thus may lead to an overall reduction in generosity toward others, due to an increase in prioritizing one’s own well-being. Put differently, the COVID-19 pandemic and its consequences may cause society to drift further apart with regard to a decreasing willingness to donate. Thus, we have two competing hypotheses about the number of donors and monetary amounts donated:

*Hypothesis 1a: The number of donors on charitable crowdfunding increase after the introduction of stay-at-home orders due to the COVID-19 pandemic in U.S. states affected by the order.*

*Hypothesis 1b: The number of donors on charitable crowdfunding decrease after the introduction of stay-at-home orders due to the COVID-19 pandemic in U.S. states affected by the order.*

*Hypothesis 2a: The amounts donated on charitable crowdfunding increase after the introduction of stay-at-home orders due to the COVID-19 pandemic in U.S. states affected by the order.*

*Hypothesis 2b: The amounts donated on charitable crowdfunding decrease after the introduction of stay-at-home orders due to the COVID-19 pandemic in U.S. states affected by the order.*

Another property of SIT and SCT suggests that when the emphasis and salience of a shared group identity is reinforced, it can facilitate forms of prosocial behavior, such as cooperative and socially responsible behavior, especially for social dilemmas (Kramer and Brewer 1984, Wit and Kerr 2002). The vary process of distinguishing between “us” and “them” changes the way individuals see each other (Turner et al. 1987). Hence, when category distinctions are emphasized, individuals find similarities within the “we”-group and reinforce their differences to the “they”-group (Hornsey 2008). As a global crisis is felt by a larger population, users of the crowdfunding platform may better identify with crisis-related campaigns in times of crisis than with other issues and feel more empathy as they are affected themselves. By reading crowdfunding campaigns that are particularly concerned with the current crisis, the “we”-group feeling is strengthened and evokes an emphasis and reinforcement of a particular shared characteristic of their group identity. However, this effect may spill over in the other direction too, since the current crisis also has the effect of physically distancing vis-à-vis members and sections of society and can therefore reinforce the sense of “they”-group, which could lead to individuals prioritizing short-term personal needs above those of others. Thus, in line with the argumentation for the previous hypotheses, prosocial behavior may either increase or decrease, especially for crisis-related crowdfunding campaigns. Overall, however, regardless of how donations on charitable crowdfunding change in response to COVID-19 policy measures, crowdfunding campaigns related to, or referencing the crisis, may elicit a difference in donations compared to non-crisis related campaigns, in terms of number of donors and sums donated. We exploit evidence already found in the literature that certain campaign characteristics, such as positive and negative associated campaigns (Erlandsson et al. 2018), result in different donation behavior, leading us to investigate whether such differentiated donation behavior changes with focus on crisis. Hence, the role of crisis-related campaigns in donation responses to the COVID-19 is considered in our third hypotheses:

*Hypothesis 3a: In the context of the COVID-19 pandemic, there is a difference in number of donors for crisis-related and non-crisis-related crowdfunding campaigns after the introduction of stay-at-home orders.*

*Hypothesis 3b: In the context of the COVID-19 pandemic, there is a difference in amounts donated for crisis-related and non-crisis-related crowdfunding campaigns after the introduction of stay-at-home orders.*

## Empirical Analysis

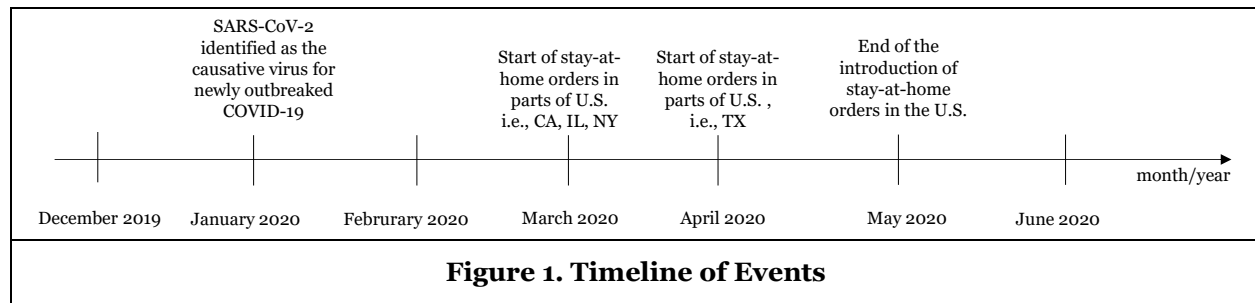
### Dataset

We used a customized web-crawler to obtain crowdfunding campaign data from GoFundMe, a prominent donation-based crowdfunding platform. We chose GoFundMe since the platform has received a lot of media attention recently and has already proven to be a strong resource for financial support in previous crises (GoFundMe 2022a, GoFundMe 2022b). GoFundMe's target group and the platform's scheme fit well with our research question, which is more generally focused on campaigns donating for personal and societal causes, rather than crowdfunding for a monetary return. The platform supports the KIA (keep-it-all) payout scheme, so every contribution is donated regardless of whether or not the goal is reached; moreover, the crowdfunding campaign can remain open indefinitely (GoFundMe 2021). This observational dataset covers all crowdfunding campaigns and donations from August 2019 to February 2021 in the U.S. states of California, Illinois, New York, Texas, and Ontario, Canada. The dataset consists of a total of 1,368,169 unique donations to 33,889 distinct crowdfunding campaigns covering 21 different categories. Thereby, the dataset is limited to the pre-treatment phase, that is, campaigns launched before April 2020, to rule out that donation behavior for newly launched crowdfunding campaigns after the treatment bias our results. We estimate the difference in donations in terms of number of donors and amounts donated before and after the introduction of stay-at-home orders occurs. The U.S. states have ordered people to stay at home to combat the spread of the COVID-19 pandemic caused by the novel SARS-CoV-2 coronavirus. Therefore, citizens, except essential workers, were asked to stay at home and remain socially and physically distanced from others as much as possible. Stores and non-essential businesses were either closed or had shortened hours (Helsel 2020). The stay-at-home orders serve as an indicator for the COVID-19 pandemic in this study. In fact, this policy action has been mandated only because of the crisis and thus has impacted everyone affected by this policy measure. Even though the COVID-19 pandemic first emerged in early 2020 with initial cases of the disease, comparatively very few were actively affected by it at the time. This changed with the start of the policy response, making everyone aware of the COVID-19 pandemic. The state of California launched the stay-at-home order on March 19, Illinois on March 21, New York on March 22, and Texas on April 2 (Wu et al. 2020). Ontario, and Canada in general, for the matter, did not impose any stay-at-home order, at least not for the period covered in the dataset<sup>1</sup>. The introductions of the stay-at-home orders in the U.S. ended in May 2020 (Wu et al. 2020). In addition, using literature on sentiment and linguistic analyses (e.g., verified keyword lists to classify campaigns as crisis-related), we examined each campaign to determine whether or not it had been related to an exogenous crisis (e.g., Beigi et al. 2016, Mendon et al. 2021, Asif et al. 2021, Chintalapudi et al. 2021). This, naturally, includes the COVID-19 pandemic. However, it also contains, for example, natural disasters and wars. It is important to note that the crisis-related campaigns defined in this study are not related to personal crises per se. A serious illness such as cancer, but also car accidents, can commonly be considered as personal crises, but lack a major societal impact. By contrast, the COVID-19 pandemic and its consequences, hurricanes, nuclear disasters, and other natural disasters can affect a larger population and are therefore of societal interest. For a random subsample of 800 crowdfunding campaigns, with one half assigned as crisis-related and the other half not, the campaign description has been read. Occasionally, certain terms have been used in a context independent of the appeal for funds, such as "hope you are doing well in pandemic". Words that are supposed to be assigned to crises have been used in a metaphorical or other sense. Thus, "emotional war", "storm / flood of emotions" or "let's hope this can spread like wildfire" have appeared in the campaign descriptions. Wars or past severe natural disasters often were added as a background story without being connected to the actual appeal for the crowdfunding campaign. 90 crowdfunding campaigns that were declared as crisis-related were recorded to non-crisis related due to the just mentioned ambiguities.

This panel data includes the period between August 2019 and February 2021, thus providing the opportunity to analyze charitable donation behavior in the time before the COVID-19 pandemic, the stay-

<sup>1</sup> Refer to <https://www.ontario.ca/laws/regulation/210265> (Retrieved September 3, 2021)

at-home orders in response to the crisis coming into effect, and one year after the start of the COVID-19 pandemic. Figure 1 summarizes the main events covered in a timeline to which we have added our selected U.S. states as examples for March and April to more clearly indicate that stay-at-home orders started earlier in some U.S. states than in others.



New York maintains the most crowdfunding campaigns during this time period with 10,065 campaigns, followed by California with 9,438, and Illinois with 7,521 campaigns. Ontario has the smallest number of campaigns in the dataset with 2,619. The largest categories in this dataset were related to *Medical, Illness & Healing*, with approximately 22% and *Accidents & Emergencies*, with approximately 16%. This is followed by *Funerals & Memorials* with 13%. Thus, these three categories represent just over half of the dataset. The remaining 18 categories are distributed over the rest of the dataset. The majority of the crowdfunding campaigns, therefore, deal with healthcare issues, which suits the current topic of the COVID-19 pandemic and reflects the important role of GoFundMe in health- and crisis-related subjects. Among the crowdfunding campaigns that deal with a crisis-related issue, 3,488 refer to a crisis (*CRISIS*), and, of these, 2,416 make explicit mention of the COVID-19 pandemic.

Descriptive statistics of the numerical campaign variables on a monthly-level are presented in Table 2. As the mean value of each variable is greater than the median, each variable shows a right-skewed (left-leaning) distribution. The standard deviation is also very large overall and indicates a strong dispersion around the mean. Thus, the data show a large variation within the variables.

	N	Mean	Median	Std. dev.	Min	Max
<i>DONORS</i>	78,934	17.30	7	44.94	1	994
<i>AMOUNT</i>	78,934	1,547.18	455	5,666.04	4	640,736
<i>GOAL_AMOUNT</i>	78,934	66,765.13	6,500	4,650,409	1	1,000,000,000
<i>DESC_LENGTH</i>	78,934	254.75	189	250.03	0	11,011
<i>ANONYM_DONOR_%</i>	78,934	0.26	0.18	0.28	0	1
<i>OFFLINE_DONATION_%</i>	78,934	0.04	0	0.18	0	1
<i>VERIFIED_DONOR_%</i>	78,934	0.80	1	0.37	0	1
<i>NUM_FOLLOWERS</i>	53,450	89.72	38	267.65	2	10,200
<i>NUM_SHARES</i>	46,336	406.98	148	1,125.57	2	31,400
<i>NUM_COMMENTS</i>	46,078	11.94	5	27.18	1	310
<i>NUM_UPDATES</i>	29,535	1	1	0.06	1	4

**Table 2. Descriptive Statistics of Numerical Monthly-Level Variables**

Aggregated on a monthly-level, the variables are informative about the monthly proportions of donations per crowdfunding campaign. On average, about 17 donors contribute per month (*DONORS*). Thereby, the monthly donated monetary amount (*AMOUNT*) per campaign reaches approximately \$1547. On average 26% of donations were made anonymously (*ANONYM\_DONOR\_%*), and on average 80% of donations have originated from verified donors (*VERIFIED\_DONOR\_%*). Only four percent of monthly donations per crowdfunding campaign has emerged from offline donations (*OFFLINE\_DONATION\_%*), i.e., donations that have been delivered in person or otherwise and are therefore not paid out by GoFundMe. Moreover, the crowdfunding campaigns that have generated followers (*NUM\_FOLLOWERS*) and shares (*NUM\_SHARES*) own an average of about 90 followers and 407 shares per campaign and month. Besides, an average of 12 comments (*NUM\_COMMENTS*) and one update (*NUM\_UPDATES*) have been posted each month. The large fluctuations in the donation goal amount (*GOAL\_AMOUNT*) are due to various



causes. Since GoFundMe requires the fundraiser to enter a goal, many campaign creators feel compelled to enter any amount, even just \$1 or other small amounts. This applies to projects which, for example, simply aims to collect donations to help from time to time or if there is no known matching monetary amount for the cause. However, the dataset also reflects the opposite, by stating a comparatively high and unrealistic amount, such as one billion US dollars. The average of the goal amount is roughly \$66,765, whereas the median of \$6500 seems more reasonable. On average, the length of the campaign descriptions (*DESC\_LENGTH*) is 255 words. The dataset also included 270 crowdfunding campaigns where videos or photos have been used instead of a descriptive text, resulting in a campaign without words, i.e., with a description length of zero.

### **Empirical Model**

To assess the effect of the COVID-19 pandemic on the crowdfunding platform GoFundMe, this study uses crowdfunding campaigns from four major U.S. states and a major province in Canada. Thereby California, Illinois, and New York are considered as locations where the effect of interest occurs after the start of implementation of the stay-at-home orders in March 2020. For the investigation of Hypothesis 1a and Hypothesis 1b as well as Hypothesis 2a and Hypothesis 2b, we selected campaigns from Ontario, Canada, as a control group. This province has not been subject to a stay-at-home order during the time period of this study, instead only experiencing temporary restrictive measures (e.g., health checks, hygiene measures, social distancing) that applied in the other states as well. Campaigns from Ontario can be considered as comparable to campaigns from California, Illinois, Texas, and New York, since the only difference is the campaign creator's country of origin. In addition, since not all U.S. states introduce the stay-at-home order at once, states which have not introduced it yet (i.e., a certain date), act as control groups until the day they introduce the order. We assess the adequacy of our control groups in both our empirical analysis and our robustness checks.

The identification of the impact of the COVID-19 pandemic on charitable crowdfunding markets in form of lockdown measures, like stay-at-home orders, is obtained in a DID framework. This measures the impact of a particular incident – in this case, stay-at-home orders as a response to the COVID-19 pandemic – on a dependent variable, by comparing a group confronted with the policy measure with a comparable group that did not, both before and after the measure took effect. Thus, we exploit the fact that crowdfunding campaigns are available in the months before the COVID-19 pandemic and the coming into force of the stay-at-home orders in the U.S., while Canada has not implemented a stay-at-home order during the same time period. The DID approach extracts the difference in donations on the crowdfunding platform GoFundMe before and after the end of the introduction of the stay-at-home order in response to the COVID-19 pandemic.

The first specification also includes fixed effects and control variables. These variables create a framework in which donation behavior intensity is conditionally exogenous to the factors that may influence the same donation behavior on donation-based crowdfunding platforms. The panel structure of this approach includes fixed effects on donations that exclude the effect of potentially endogenous unobserved time-invariant attributes. Thus, it also contains a time effect that captures state-level factors that may influence donations in a given time period. To empirically test the first and second hypotheses, we examine a fully flexible DID design with multiple interactions between the treatment and the monthly time dummies, as depicted in equation (1):

$$\ln(Y_{it}) = \beta_0 + \beta_1 STAYATHOME_i + \sum_{j=1}^T \alpha_j \cdot MONTH_{ijt} * STAYATHOME_i + \sum_{j=1}^T \theta_j \cdot MONTH_{ijt} \quad (1) \\ + \beta_2 \gamma_{it} + \beta_3 \varphi_{it} + \delta_i + \varepsilon_{it}$$

Overall,  $Y_{it}$  represents the dependent variable of campaign  $i$  in month (and year) combination  $t$ . The key variables of interest are the interactions  $MONTH_{ijt} * STAYATHOME_i$  which represent the DID estimator and capture the average treatment effect on the treated crowdfunding campaigns. The variables of the interaction are incorporated separately in the specification as well, where the  $MONTH_{ijt}$  variable in the specification denotes a month  $j$ , which has the value 1 when  $t$  equals  $j$  and  $STAYATHOME_i$  denotes the stay-at-home order indicator for campaign  $i$ . Finally,  $\gamma_{it}$  is a vector of campaign-specific control variables,  $\varphi_{it}$  is a vector of socioeconomic-specific control variables,  $\delta_i$  represents crowdfunding campaign fixed effects, and  $\varepsilon_{it}$  is a random error term.

In this model, the dependent variables are *DONORS* and *AMOUNT*. These variables are intended to measure the long-term effects of the COVID-19 pandemic, or more precisely, the consequences of the resulting policy measures, on charitable crowdfunding. That is,  $\ln(AMOUNT)$  represents the natural logarithm of the monetary amount donated to campaign  $i$  in month  $t$ . Similarly,  $\ln(DONORS)$  portrays this for the number of donations. The  $STAYATHOME_i$  term shows whether or not a state has ever imposed a stay-at-home order.  $MONTH_{ijt} \cdot STAYATHOME_i$  denotes the interaction effect, the DID estimator. It equals 1 for the treatment group, i.e., U.S. states with a stay-at-home order, after the introduction of the order. Hence, since there are two different months in which the U.S. states in this dataset have started to implement stay-at-home orders (i.e., March 2020 and April 2020), fully flexible relative timing to the treatment is captured (Autor 2003) and denoted as a dummy variable.  $MONTH_{ijt}$  represents a single month (and year) dummy that is equal to 1 if  $t$  represents its respective month (and year).

Moreover,  $\gamma_{it}$  denotes a vector of time-varying campaign-specific control variables. For example, the number of months since the crowdfunding campaign has been launched is intended to analyze the impact of the duration of the campaigns on the activity of donation behavior (*DURATION\_LAUNCHED*). This is to rule out that recently launched campaigns skew the results. The percentage of the campaigns that reached the goal amount in month  $t$  is also captured in the control variables (*GOAL\_REACHED\_%*), to reflect the fact that, at different stages of the crowdfunding campaign, contributors' donation behavior may change according to whether the goal amount has been reached (Li and Wang 2019, Ryu et al. 2020). Furthermore, the percentage in month  $t$  of verified (*VERIFIED\_DONOR\_%*) and anonymous (*ANONYM\_DONOR\_%*) donors, as well as offline donations (*OFFLINE\_DONATION\_%*) but also the monthly percentage of updates (*NUM\_UPDATES*), comments (*NUM\_COMMENTS*), followers (*NUM\_FOLLOWERS*) and shares (*NUM\_SHARES*) on campaigns are included as time-varying control variables. These various details on crowdfunding campaigns are visible to everyone, can serve to attract further donations through the impact of social identity and status, and can vary over time (Becker 1974, Aaker and Akutsu 2009). Finally, to control for the current financial burden of the pandemic, but also, for example, the festival season, we have included  $\varphi_{it}$  a vector of socioeconomic-specific control variables. Thus, we control for the unemployment rate per month per state or province (*UNEMPLOYMENT\_RATE*), (quarterly) per capita income per state or province (*PER\_CAPITA\_INCOME*), minimum wage (*MINIMUM\_WAGE*) and average annual wage (*AVERAGE\_WAGE*) per U.S. state or province in Canada. These data are based on various databases, e.g., U.S. Bureau of Economic Analysis, OECD and Statistics Canada database, a digital archive and verification of the values against official newspaper articles. In addition, we included the duration of the federal pandemic payments (*PAYOUT\_TIME*), like Federal Pandemic Unemployment Compensation (FPUC).

Furthermore,  $\delta_i$  is a vector of campaign-specific fixed effects. These variables capture the variation in crowdfunding campaigns that is not associated with the time-varying underlying conditions that could cause a different monetary amount and number of donations in each crowdfunding campaign. This includes, for example, the respective crowdfunding campaign ID or the campaign category split into dummy variables for the individual categories – as different donation patterns may occur for different categories. The variable *GOAL\_AMOUNT* controls for the campaign's goal amount. As highlighted by other studies, a higher number of donations could be received just before the donation goal is reached (Li and Wang 2019, Ryu et al. 2020). Since the goal amount targets are set at different levels and may sometimes not be set realistically for reasons mentioned before, it has to be controlled for. In addition, the campaign description length (*DESC\_LENIGHT*) may indicate different writing styles, which varies the amount of campaign details provided, and the degree to which the personality of the campaign creator comes across (Gleasure and Feller 2016).

The research design of this study mimics a natural experiment where crowdfunding campaigns located in the U.S. states of California, Illinois, New York, and Texas on the donation-based platform GoFundMe are subject to treatment (i.e., stay-at-home order) and the remaining crowdfunding campaigns – in this case, located in Ontario – serve as the control group. Technically,  $MONTH_{ijt} \cdot STAYATHOME_i$  identifies the average treatment effect on the treated (ATT), i.e., the effect of the stay-at-home order on all the campaigns in the dataset. ATT campaigns are detected by the interaction term of  $MONTH_{ijt} \cdot STAYATHOME_i$  after the treatment, i.e., the introduction of stay-at-home orders is concluded in the U.S. states. Moreover, the identification of the causal effect relies on the conditional independence assumption of the treatment (Angrist and Pischke 2008). Given the exogenous nature of the stay-at-home order as a policy response to

the COVID-19 pandemic, it is likely that the conditional independence assumption is not violated. Exploring official statements in online newspaper articles or similar for possible stay-at-home order (or differently named, which have analogies to it) in the control group could be excluded for the underlying observation period. To provide a reference factor for deciphering the treatment effect, our analysis omits the month preceding the completion of the stay-at-home order implementation in the U.S. states (i.e., April 2020), indicating the corresponding period immediately before the onset of effects of and responses to the policies imposed in response to the COVID-19 pandemic. The interaction term hence estimates the average difference in donation behavior for crowdfunding campaigns, in states that received a stay-at-home order, compared to campaigns that were not subject to such an order, after the implementation of stay-at-home orders has been completed.

For the third hypotheses, we estimate following specification:

$$\begin{aligned} \ln(Y_{it}) &= \beta_0 + \beta_1 CRISIS_i + \sum_{j=1}^T \alpha_j \cdot MONTH_{ijt} * CRISIS_i + \sum_{j=1}^T \theta_j \cdot MONTH_{ijt} \\ &+ \beta_2 \gamma_{it} + \beta_3 \varphi_{it} + \delta_i + \varepsilon_{it} \end{aligned} \quad (2)$$

Similar to equation (1), the key variables of interest are the interactions  $MONTH_{ijt} * CRISIS_i$  which represent the DID estimator and capture the average treatment effect on the treated crowdfunding campaigns.  $CRISIS_i$  is a dummy variable that indicates which campaign deals with crisis-related topics in regions with stay-at-home orders, resulting in a control group which consists of all campaigns related to other subjects than crises (i.e.,  $CRISIS = 0$ ) in regions with or without stay-at-home orders. As in equation (1), the stay-at-home order in response to the COVID-19 pandemic remains as an exogenous event for campaigns dealing with crises. Again,  $\gamma_{it}$  is a vector of campaign-specific control variables,  $\varphi_{it}$  is a vector of socioeconomic-specific control variables,  $\delta_i$  represents crowdfunding campaign fixed effects, and  $\varepsilon_{it}$  is a random error term. To build up a reference point for the interpretation of the treatment effect, our model leaves out the last month and its respective interaction term before the treatment takes place (March 2020). Thus, the interaction terms estimate the average differences in donations for campaigns associated with the crisis concern and campaigns not associated with crisis concern after the introduction of stay-at-home orders as response to the COVID-19 pandemic.

## Results

Table 3 presents the empirical results of the estimated Equation (1) and Equation (2). For each case, the first column reports the results of the full specification with campaign-specific and socioeconomic-specific control variables, campaign fixed effects, and monthly fixed effects for the dependent variable  $\ln(DONORS)$ , and the second column gives the estimates for the dependent variable  $\ln(AMOUNT)$ . March 2020 and April 2020 show the starting dates of stay-at-home orders for the respective U.S. states from campaigns included in the research sample. Naturally, even more U.S. states adopted stay-at-home orders during this time, but for ease of reference, only the U.S. states in the dataset have been indicated in the corresponding Table 3. March 2020 was chosen as the reference month as this is the month when the first states begin mandating stay-at-home orders and thus the first impact and response to the policy measure and the COVID-19 pandemic can be observed.

The results show several findings for Equation (1). First, the pre-treatment period, August 2019 to February 2020, shows non-significant coefficients for all campaigns. Thus, the donations for crowdfunding campaigns launched in California, Illinois, New York, and Texas, and in Ontario, before the start of the pandemic and the imposition of stay-at-home orders in the United States, are all relatively similar, which means that, outside the period of interest, no significant differences can be found between the treated and the control group. It is encouraging to see that the control group is a valid choice and that the common trends assumption is supported (Autor 2003). Second, we can observe a strong significant effect in the average monthly number of donors, which drop by an average of 16.7% in April 2020, one month after the start of stay-at-home orders in the U.S. states affected by the policy. The decrease in the number of donations grows to 24% in August 2020. From October 2020, however, the effect becomes negative and statistically significant again and remains so until the end of the observation period. Third, Column (2) shows a significant decrease of 18.7% in the average monthly monetary amount donated in April 2020, one month after all U.S. states had implemented the stay-at-home orders. The monthly average amount donated in the states affected by the stay-at-home order decreases significantly between April and July 2020. After

Model	STAY AT HOME		CRISIS	
	(1) ln(DONORS)	(2) ln(AMOUNT)	(3) ln(DONORS)	(4) ln(AMOUNT)
<i>AUG</i> <sub>19</sub> * [TREAT]	0.240 (0.185)	0.278 (0.192)	-0.356 (0.583)	-0.348 (0.831)
<i>SEP</i> <sub>19</sub> * [TREAT]	0.046 (0.157)	0.020 (0.164)	-0.151 (0.436)	0.065 (0.609)
<i>OCT</i> <sub>19</sub> * [TREAT]	-0.106 (0.137)	-0.181 (0.143)	-0.376 (0.420)	-0.234 (0.556)
<i>NOV</i> <sub>19</sub> * [TREAT]	-0.069 (0.124)	-0.136 (0.130)	0.089 (0.350)	0.070 (0.476)
<i>DEC</i> <sub>19</sub> * [TREAT]	-0.041 (0.113)	-0.132 (0.120)	-0.141 (0.350)	0.008 (0.470)
<i>JAN</i> <sub>20</sub> * [TREAT]	0.066 (0.074)	0.019 (0.081)	-0.208 (0.304)	-0.345 (0.424)
<i>FEB</i> <sub>20</sub> * [TREAT]	-0.009 (0.046)	-0.035 (0.053)	-0.433* (0.247)	-0.462 (0.348)
<i>MAR</i> <sub>20</sub> * [TREAT] (start of stay-at-home orders in CA, IL, NY)	<i>Omitted</i>			
<i>APR</i> <sub>20</sub> * [TREAT] (start of stay-at-home order in TX)	-0.167*** (0.049)	-0.187*** (0.055)0	-0.159*** (0.051)	-0.149** (0.065)
<i>MAY</i> <sub>20</sub> * [TREAT] (end of introduction stay-at-home orders)	-0.161** (0.070)	-0.195** (0.076)	-0.392*** (0.057)	-0.378*** (0.075)
<i>JUN</i> <sub>20</sub> * [TREAT]	-0.175* (0.089)	-0.253*** (0.093)	-0.680*** (0.068)	-0.653*** (0.091)
<i>JUL</i> <sub>20</sub> * [TREAT]	-0.234* (0.122)	-0.324*** (0.123)	-0.916*** (0.088)	-0.928*** (0.118)
<i>AUG</i> <sub>20</sub> * [TREAT]	-0.241* (0.142)	-0.206 (0.143)	-1.202*** (0.101)	-1.131*** (0.133)
<i>SEP</i> <sub>20</sub> * [TREAT]	0.007 (0.164)	-0.056 (0.155)	-1.438*** (0.116)	-1.454*** (0.159)
<i>OCT</i> <sub>20</sub> * [TREAT]	-0.652** (0.326)	-0.273 (0.204)	-1.193*** (0.133)	-1.258*** (0.187)
<i>NOV</i> <sub>20</sub> * [TREAT]	-0.840** (0.413)	-0.619* (0.322)	-1.104*** (0.133)	-1.085*** (0.185)
<i>DEC</i> <sub>20</sub> * [TREAT]	-1.343** (0.527)	-0.959** (0.415)	-0.949*** (0.128)	-0.943*** (0.177)
<i>JAN</i> <sub>21</sub> * [TREAT]	-1.387** (0.629)	-1.236** (0.540)	-1.099*** (0.141)	-1.184*** (0.187)
<i>FEB</i> <sub>21</sub> * [TREAT]	-1.498* (0.171)	-1.147* (0.655)	-1.208*** (0.155)	-1.480*** (0.207)
Campaign-Specific Controls	✓	✓	✓	✓
Socioeconomic-Specific Controls	✓	✓	✓	✓
Campaign FE	✓	✓	✓	✓
Monthly FE	✓	✓	✓	✓
<i>N</i>	78,934	78,934	78,934	78,934
<i>R</i> <sup>2</sup>	0.645	0.633	0.648	0.635

*Note: Robust standard errors are in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .*

**Table 3. Regression Results**

November 2020, the effect becomes and remains negative and statistically significant again. Thus, similar to the number of donors, stay-at-home orders have had a significant, but not consistent, negative impact on crowdfunding campaign donations in affected U.S. states. Both the number of donors and amounts donated in charitable crowdfunding decrease after the introduction of stay-at-home orders during the COVID-19 pandemic in U.S. states affected by the order. Therefore, support is found for Hypothesis 1b and Hypothesis 2b, but not for Hypothesis 1a and Hypothesis 2a, which must therefore be rejected.

The results for investigating Hypothesis 3 are presented in the remaining columns for the number of donations and the monetary amounts donated, respectively. The corresponding coefficients in Column (3) for crisis-related campaigns in stay-at-home order affected states after the treatment, i.e., the start of introductions of stay-at-home orders, in comparison to non-crisis-related campaigns, are statistically significant. Compared to the number of donors in March 2020, the number of donors in April 2020 dropped by an average of 16% for crisis-related crowdfunding campaigns right after stay-at-home orders were rolled out in U.S. states in the dataset, in that month. The coefficients remain negative and statistically significant up to February 2021. The same pattern holds for the monetary amount donated in Column (4). Overall, the decrease in the number of donors ranges from 16% to 144%, while for the amounts donated it ranges from 15% to 145%. Hence, there is a difference between crisis-related and non-crisis-related crowdfunding campaigns in areas affected by stay-at-home orders, which lends support to Hypothesis 3a and Hypothesis 3b.

### **Robustness Checks**

First, to rule out biased results due to time-invariant unobserved heterogeneity between crowdfunding campaigns, we introduced campaign-specific fixed effects, creating a framework in which donation intensity is conditionally exogenous to the factors that may influence the same donation behavior on donation-based crowdfunding platforms. Second, other events or social uprisings that occurred concurrently with the COVID-19 pandemic (e.g., the deaths of Breonna Taylor in March 2020, and George Floyd in May 2020) could be an alternative explanation for the decrease in the monetary amounts donated and the total number of donors in the post-treatment periods. To reject the likelihood that crowdfunding campaigns received fewer donations because other events distracting from the COVID-19 pandemic may have influenced donation behavior on the platforms, the regression was run again, but this time excluding campaigns directly related to the BLM movement. Based upon the literature on sentiment and linguistic style surrounding the topic of this movement, we created and reviewed an adequate keyword list (Carney 2016, Clayton 2018). About 10,275 crowdfunding campaigns mention terms like, for example, "black lives matter", "black communities", "George Floyd" and "black identity" in their campaign description or title. When examining all crowdfunding campaigns from states affected by a stay-at-home order, and the behavior on crisis-related campaigns, our results remain qualitatively unchanged. Third, we intend to rule out the possibility that our results could be skewed because the treatment group's donation behavior might differ substantially from that of our control group anyway. As a result, if the groups differ systematically in observable characteristics, they may display distinct giving behavior, which could bias our results. To address this issue, we use propensity score matching (PSM) to identify campaigns in the control group that are statistical twins of campaigns in the treatment group (Rosenbaum and Rubin 1983, Kim and Steiner 2016). We use the control variables mentioned above as matching variables for kernel matching algorithm and local linear regression matching with bandwidth 0.01 to obtain our PSM sample. Our PSM significantly reduced the bias between the treated and control campaigns as indicated in the evaluation of the relative bias before and after matching of each covariate. Indeed, after matching, almost all of our control variables have insignificant mean differences ( $p > 0.05$ ). Thus, we conclude that our PSM approach effectively balanced the treatment and control offers in our sample and campaigns identified in this way are not statistically different from one another based on observable covariates, but solely in terms of the treatment status. We rerun all regression models from our baseline results and find qualitatively unchanged results. We also rerun our PSM approach for another matching algorithm, i.e., Nearest Neighbor Matching, and find qualitatively unchanged results again. Hence, systematic differences in treatment and control campaigns are unlikely to distort our estimation results.

## Discussion

Recent years have seen the growing trend of funds being raised on online charitable platforms, such as crowdfunding platforms, for social movements, natural disasters, and other major social events. The current COVID-19 pandemic crisis and its consequences have also given rise to the need for financial help for individuals, and may affect previously known giving behavior. This study, therefore, offers a new perspective on how a specific event – in this case, a crisis in the form of a global pandemic – influences donation behavior in the charitable crowdfunding environment. In previous literature, statements on charitable giving behavior in response to crises vary, identifying either positive or negative outcomes. These contradictory results may reflect the limitations of these studies. The use of hypothetical scenarios, as in the Rao et al. (2011) study, may not correspond to actual behavior, and it is difficult to isolate the causal effects of crisis exposure when only post-disaster behavior is considered, as in Fleming et al. (2014). We attempted to bridge these inconsistencies in our study. Accordingly, our study brings new insights and discoveries into the exploration of charitable giving during a crisis and our findings represent the effects of freedom-restricting policies in response to a health global crisis. Given the enormous sums spent by governments to mitigate the impact of the social and economic damage caused by any type of crisis, our study helps to understand how society is affected by such a crisis, which can help to increase future resilience. Since such crises not only cause financial need for individuals, but also entail an element of social cohesion, it is surprising that our results show a strong long-term decrease in donations after the onset of the COVID-19 pandemic and, specifically, the implementation of stay-at-home orders. Our results suggest that national measures taken by U.S. states to contain the spread of the virus, i.e., stay-at-home orders, that severely constrained the freedom of movement of citizens, led to a reduction in the level of the monthly average monetary amounts donated and the quantity of donations on charitable crowdfunding in affected states. The results are robust to alternative approximations for simultaneously occurring events, such as the Black Lives Matter movement. Because monthly data is used, our empirical analysis reflects the immediate impact of policies on donation-based crowdfunding platforms. However, we observed that the effect was not significant over the entire period, least of all August, September and October 2020. Various factors can play a role for this insignificance. For example, in the late summer months and early fall, the COVID pandemic situation may no longer have been perceived as prominent (COVID Tracking 2022, The New York Times 2022). The political discussion and media attention may also have contributed to the perception of the crisis and to the policy measures. In November 2020, these increased drastically and our values also became significantly more negative. Furthermore, crowdfunding campaigns that are thematically aligned with a crisis, or the impact and consequences of the COVID-19 pandemic, were disadvantaged in terms of attracting drastically fewer donors and a lower monetary donation volume. Thus, the decrease in donations is very diverse among the different types of crowdfunding campaigns. Since previous research has already shown that a negative mood reduces the willingness to help, this may be an explanation for the results found (Cialdini and Kenrick 1976, Rosenhan et al. 1974). Given that the stringent measures adopted to control the COVID-19 pandemic created a depressed mood, this may explain why donation behavior dropped in the states affected by these policy measures. In addition, it is reasonable to assume that donors feel very connected to the crowdfunding campaign creators because they witness the pandemic themselves and share the same experiences. Although research on donation behavior, including on crowdfunding platforms, has actually found a positive correlation between the personal connectedness of donors to the campaign creators, our results show contradictory insights (Bretschneider and Leimeister 2017). In particular, crisis-related crowdfunding campaigns show a negative drop in donation behavior while the policy measures are in place. Hence, despite a likely personal connection between donors and campaign creators in the same affected states, in contrast to other studies, we observe a decline in donations. Another explanation could be that the decreasing donation behavior leads to a downward spiral, because unlike the prosocial behavior and the observation of others with good deeds, the opposite is observed here by the donors, so that they themselves may be less inclined to donate (Bénabou and Tirole 2006). Moreover, the results may prove that the crisis has diminished trust and reciprocity within the community and that potential donors' own experience of the crisis and the resulting feelings of insecurity may have led to them to prioritize their own well-being above that of others. The COVID-19 pandemic, as well as stay-at-home orders, were major stressors and may have constrained the decision-making ability of potential donors, as well as their sense of community and “we”-group.

## **Conclusion**

Overall, our study provides us with very valuable insights. First, the consequences and policy measures used to address the COVID-19 pandemic have resulted in a decline in donors and monetary donations to crowdfunding campaigns in affected U.S. states, and negatively impacted donations for crowdfunding campaigns in the first months after the political reaction to the occurrence of the COVID-19 pandemic. Second, the negative impact of the pandemic varies across the type of campaigns, with crisis-related campaigns experiencing a decline in the sums donated and in the number of donors for a period of eleven months. Hence, we observed a difference between crisis-related campaigns and non-crisis-related campaigns during the period that stay-at-home orders, taken to counter the COVID-19 pandemic, were in place.

## **Implications**

Our study provides important and nuanced insights into giving behavior at a time of societal crisis, of relevance to platform providers, campaign creators, donors, and policymakers. Donation-based crowdfunding platform providers need to be aware of the changes in donation behaviors when a crisis hits. When consequential governmental interventions accompany a crisis, crowdfunding campaigns in regions with these policies are particularly hard hit by a significant decline in the willingness to donate, and would benefit from a special placement on the crowdfunding platform to enable them to attract adequate financial support. In addition, it is important to highlight the crisis-related crowdfunding campaigns a bit more or to support them differently on the platform, so that they do not suffer from the decline in donations. This is particularly relevant for donation-based crowdfunding platforms like GoFundMe, which see their goal as enabling individuals to launch crowdfunding campaigns for private causes. Indeed, crisis-related crowdfunding campaigns often seek help for private personal matters in urgent need of financial assistance and therefore need a suitable platform environment that can provide them with the appropriate support. For crowdfunding platform users, this study serves as a guide to better assess donation behavior when crises arise. Those affected by a crisis may, based on the insights gained, have to be patient about accessing adequate financial assistance immediately after the crisis occurs. Additional assistance and resources may need to be considered to relieve financial hardship, as a decrease in participation on donation-based crowdfunding platforms for crisis-related campaigns can be expected. Yet, even non-crisis-related campaign creators may not improve their chances of successful fundraising in a crisis, if they are located in a state with policies measures that combat the crisis. Crowdfunding campaigns that are in states affected by crisis policies are expected to experience a decrease in the willingness to donate. Thus, users of donation-based crowdfunding platforms can now weigh up whether it is more reasonable to wait with their crowdfunding until the crisis is over to attract pre-crisis donation levels. In addition, this research also helps policymakers and researchers to further explore crisis behavior and management, based on the better understanding of the impact of policies in response to a crisis on social cohesion in terms of willingness to help. According to our findings, the willingness to help decreases sharply and persistently. Yet, social cohesion is particularly important in the aftermath of a crisis. In a crisis, some people may be affected more than others and rely on others for help. Thus, if policies result in and reinforce non-prosocial behavior, the impact on society and individuals may be disastrous. Thus, future policymakers should evaluate the different kinds of approaches taken to combat a crisis, to prevent a decline in prosocial behavior. Also, in the aftermath of a crisis, policymakers might consider policies that encourage the rebuilding of social cohesion and citizens' altruism. Researchers can use these results for further studies on donation behavior on crowdfunding platforms in times of crisis and join the discussion on prosocial or antisocial behavior in difficult times. Studying donations on these types of platforms in times of crisis would generate more insightful and predictive donation patterns and conclusions to be drawn on social behavior at a time of crisis.

## **Limitations and future research**

This research is not free of limitations, but also offers potential for future research. Since we observed a decreasing donation behavior in U.S. states affected by a stay-at-home order, which was even more pronounced for crisis-related campaigns, we may consider the social identity and self-categorization theory and the influences of, among others, empathy as follows: The perception and allocation and reinforcement of the sense of belonging to the “we”-group, i.e. the region affected by a stay-at-home order, may not have

led to increased cohesion within the group. Although it may be plausibly explained by the social identity approach, we did not measure "we" and "they"-group affiliations in this study. For future work we would want to observe only donor behavior but find ways to measure the change in "we" and "they"-group feelings. Moreover, different crowdsourcing platforms allow different time periods during which donations can be received. On GoFundMe, the KIA payout scheme prevails, so regardless of whether the donation goal has been reached, donations can be made indefinitely, even after the goal has been reached. Such variations may cause different results in the giving behavior for crowdfunding campaigns that have already reached their donation goal. Furthermore, we were only able to determine the exact location for campaign creators, while there is no publicly available location information for donors. Since only 45 out of 50 U.S. states (about 97% of the population), including the selected states, had experienced a stay-at-home order, the location of donors is neglected for the results, since the vast majority of donors in the U.S. were affected by stay-at-home orders. For future studies, it would be useful to take up the above-mentioned restriction and consider performing our analyses on other crowdfunding platforms. If these crowdfunding platforms follow a different payout scheme, so that no further donation can be made once the donation goal has been reached, possible distortions can then be ruled out. Another limitation arises in the choice of policy measures examined in response to the COVID-19 pandemic. Future crises, for example, natural disasters, may give rise to other political measures. Therefore, one suggestion for future research is to investigate the donation behavior on donation-based crowdfunding platforms against the background of natural disasters and related political measures, such as evacuations. This could provide additional insights and may corroborate the prevalence of non-prosocial behavior in challenging times. For example, one natural disaster that occurred during the time range of our study was Glass Fire wildfire in California in September 2020 (Selva 2020). Another limitation is that the dictionary on which the classification of crisis-related crowdfunding campaigns is based has been constructed subjectively. However, through the incorporation of previously performed research on the linguistic environment of natural disasters and the COVID-19 pandemic, the dictionary has been corroborated and tested with a manual mapping of a random subsample of classified crowdfunding campaigns to validate the results of the matching. Nevertheless, it might be beneficial in future research to also conduct qualitative methods such as a survey of crowdfunding donors to see if they prefer to donate to a cause with the same theme during a crisis or to other campaign topics. As a complementary approach, it would be useful to explore the text comments left by donors on a crowdfunding campaign and conduct a personality analysis of donors to determine, for example, which personalities donate more or less to crisis-related crowdfunding campaigns. Next, this study only observes the research subject on a donation-based crowdfunding platform. For researchers, it raises further possibilities about how donation behavior is affected on other types of crowdfunding platforms, for example, reward-based crowdfunding, during a crisis. Different crowdfunding platforms may attract their own donor base, who may be pulled to a platform based on specific characteristics of the type of crowdfunding platform or community addressed. Therefore, different crowd types may congregate on different crowdfunding platforms to handle a crisis differently and therefore exhibit different donation behaviors during a crisis.

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