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Crowdfunding as a response to COVID-19: Increasing inequities at a time of crisis

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ABSTRACT

During the first seven months of the COVID-19 pandemic, more than 175,000 crowdfunding campaigns were established in the US for coronavirus-related needs using the platform GoFundMe. Though charitable crowdfunding has been popular in recent years, the widespread creation of COVID-19 related campaigns points to potential shifts in how the platform is being used, and the volume of needs users have brought to the site during a profound economic, social, and epidemiological crisis. This study offers a systematic examination of the scope and impacts of COVID-19 related crowdfunding in the early months of the pandemic and assesses how existing social and health inequities shaped crowdfunding use and outcomes. Using data collected from all US-based GoFundMe campaigns mentioning COVID or coronavirus, we used descriptive analysis and a series of negative binomial and linear models to assess the contributions of demographic factors and COVID-19 impacts to campaign creation and outcome. We find significant evidence of growing inequalities in outcomes for campaigners. We find that crowdfunding provides substantially higher benefits in wealthier counties with higher levels of education. People from these areas are more likely to initiate campaigns in response to adverse health and economic impacts of COVID-19, and they also receive more funding compared to people living in areas with lower income and education. Modeling also indicates differential outcomes based on the racial and ethnic composition of county population, though without more detail about who is creating and funding campaigns we cannot explain causality. A targeted qualitative analysis of the top earning COVID-19 campaigns offers further evidence of how user privilege and corporate practices contribute to highly unequal outcomes. Taken together, these findings demonstrate how a market-oriented digital technology used to respond to large-scale crisis can exacerbate inequalities and further benefit already privileged groups.

1. Introduction

During the first year of the COVID-19 crisis, many Americans turned to charitable crowdfunding for help with medical bills, funeral expenses, lost wages, small business support, food assistance, and other needs. Coronavirus-related crowdfunding increased exponentially after March 2020 on platforms such as GoFundMe (Saleh et al., 2021; Cadogan, 2021). In addition to the direct health impacts of COVID-19, pandemic mitigation efforts like stay-at-home orders caused widespread economic displacement and exacerbated existing economic vulnerabilities and social safety net gaps as government relief has been delayed, limited, and unequally distributed. Charitable crowdfunding offers a

well-known, easy to use, and accessible platform for offering or requesting financial help remotely, making it a particularly attractive financial tool for the pandemic era.

Nevertheless, previous research on charitable crowdfunding has shown that, despite its popularity, it exacerbates social inequities, providing financial relief primarily to privileged recipients (Barcelos, 2020; Berliner and Kenworthy, 2017; Kenworthy et al., 2020; van Duynhoven et al., 2019). Previous economic and ecological crises have also been used by powerful individuals and institutions to serve private interests, resulting in deepened inequities and health disparities during recovery (Adams, 2013; Farmer, 2012). Yet crises can allow communities to forge new solidarities for mutual support, and it is possible that

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crowdfunding makes these efforts easier (Solnit, 2010). Here, we examine the coronavirus-related crowdfunding (CCF) during the first seven months of the pandemic, asking whether it provides a timely and helpful tool for finding assistance during a crisis, or if it exacerbates existing inequities.

To answer these questions, we draw on a large dataset of geo-tagged CCF campaigns started on the popular site GoFundMe between January 1 and July 31, 2020. In addition to measuring the size, scope, and growth of CCF, this paper examines the dynamics shaping campaign creation and the factors associated with campaign outcomes. We first describe how crowdfunding was used to address the early impacts of COVID-19, and assess inequalities in campaign outcomes. We then develop several models to assess the sociodemographic and epidemiologic factors associated with where campaigns have been created and how campaigns have performed, in order to better understand where crowdfunding worked, and for whom, during this crisis. A qualitative analysis of a subset of the most successful campaigns provides further insights about factors of campaign success, and the extent to which even highly successful campaigns were effective in addressing COVID-19 related needs. We conclude with some thoughts about what the rise in crowdfunding indicates about the sociological impacts of the COVID-19 crisis in the US, and the role of technology in influencing how communities respond to crisis.

2. Background

According to Tim Cadogan, CEO of GoFundMe, the platform saw “unprecedented use,” in the first few months of the COVID-19 pandemic (Ryssdal and Fam, 2020), and crowdfunding “activity has persisted at an alarming rate” since then (Cadogan, 2021). CCF campaigns aim to meet an array of urgent and long-term needs, including help with medical bills, paying rent, substituting for lost wages, supplying PPE, and supporting small businesses. Unlike most disasters, which generally have an acute phase of destruction and then a recovery phase, the economic and health impacts of the pandemic are long-lasting, and this is reflected in the prolonged growth of CCF campaigns. Between March and August of 2020, GoFundMe reported that more than 150,000 CCF campaigns had been started (Cadogan, 2021), a phenomenon that has been confirmed by recent research (Saleh et al., 2021). While Europe saw CCF focused largely on supporting medical facilities and workers, the majority of US CCF aimed to support individuals, raising money for food, rent, funerals, and other expenses (Rajwa et al., 2020). Early research on CCF in the US shows uneven use and successes. Bian et al. (2020) found that US counties with a higher level of individualism (defined as those that spent longer amounts of time on the frontier during the development of the US) launched fewer COVID-19 campaigns as a whole, and of those launched, raised less money than counties with more collectivist tendencies.

Researchers have frequently raised questions about crowdfunding as an effective, efficient, or fair means of distributing health resources to those who need it most (Snyder et al., 2016). As CCF grows, a central research question should be whether and how it exacerbates inequities already worsened by COVID-19, and to what extent it offers effective support to those most impacted by the pandemic. More broadly, US charitable giving increases in proportion to income, education, and wealth; given that most crowdfunding solicits donations from existing social networks, it has the potential to exacerbate economic and social marginalization and widen inequities (Osili, 2020). Recent medical crowdfunding research confirms that donations and campaign outcomes follow similar trends. Medical crowdfunding is more often used where safety nets such as health coverage are weaker, and it offers a poor substitute for these systems: 90% of campaigns fail to meet their goals, and social, geographic and racial inequities are negatively associated with campaign outcomes (Berliner and Kenworthy, 2017; Kenworthy et al., 2020; van Duynhoven et al., 2019). In the US, Lee and Lehdonvirta (2020) found that campaigns were most common, but also performed

most poorly, in counties with fewer formal and informal safety nets. In Canada, both Lukk et al. (2018) and Snyder et al. (2020) found that campaigns corresponded to known gaps in the social system but campaign outcomes corresponded to existing social disparities. Other research has tracked these disparities more closely: van Duynhoven and colleagues found that Canadian campaigns were more successful in areas with higher levels of income and property values; Kenworthy et al. (2020) found significant associations between race and the size of campaign donations; and Igra (in press) showed that Black and Hispanic recipients receive lower returns to their campaigns than white and Asian recipients, consistent with lower financial capacity of potential donors as estimated from patterns of Facebook friend locations and racial homophily reflected in donor names.

In parallel with these findings, research shows that social, ecological, and economic crises can produce opportunities for cross-class solidarities as communities come together to respond to disaster, but that powerful institutions and actors also exploit crises to serve their own interests (Klein, 2007; Solnit, 2010). Often, despite considerable mutual aid efforts and charitable investment following disasters, periods of crisis widen and entrench inequalities (Adams, 2013; Spade, 2020). While no crisis is identical, many share similar dynamics: existing infrastructures provide limited protection to the most vulnerable populations, causing them to experience the most severe impacts of crisis; marginalized and non-white populations are more likely to experience discrimination, over-policing, and disbelief during acute phases of crisis, making it harder to access necessary support; powerful individuals, corporations, and non-profit institutions often seize on crises to extend their shareholdings, power, or reach, thus further depleting communities of necessary resources and opportunities; and all of these factors are compounded in long-term recovery efforts (Adams, 2013; Farmer, 2012; Klein, 2007; Klinenberg, 2002).

As a largely for-profit industry that has previously been found to exacerbate social inequities, crowdfunding provides a popular platform for crisis relief that may mimic or alter the social dynamics of crisis response. While much attention has been paid to medical crowdfunding and inequality, this paper is the first to assess crowdfunding’s role in responding to social and health disasters, and its impacts on inequality in these contexts. As the COVID-19 crisis disproportionately impacts under-resourced communities, precarious workers, and communities of color both epidemiologically and economically, the populations most in need of crowdfunding support may be least likely to access it through CCF. On the other hand, crowdfunding may offer more accessible, rapid support than more formal relief efforts. Thus, this paper aims to explore whether areas hit hardest by COVID-19 and communities most in need of support were able to use CCF, whether CCF directed assistance to those neediest communities, and how social inequalities influence the ability of CCF to provide assistance during disasters.

3. Methods and data sources

Using custom web-scraping code, we gathered data from 176,561 U.S.-based GoFundMe campaigns created over a seven-month period between January 1, 2020 and July 31, 2020. We initiated web scraping March 26, 2020 and repeated the process roughly monthly, beginning our last scrape on August 1. All campaigns were updated with the latest information available at each point in time, and we retained data for campaigns that had been removed from the web. Campaigns were identified by searching for all pages containing the words “COVID” or “coronavirus” using custom URLs that allowed us to search each US zip-code sequentially, which allowed us to gather data on all campaigns using those terms in the US. Of these, we identified 12,250 campaigns taking part in a small business promotion sponsored by GoFundMe, Yelp and Quickbooks, which promised \$500 matching funds for small business campaigns (GoFundMe, 2020). Many of these campaigns were created without the knowledge of the small businesses (Bursztynsky, 2020); consequently, we did not include them in our analysis, leaving a

total of 164,122 campaigns analyzed below. Core campaign data was catalogued and analyzed, including campaign outcomes (money raised, percent of goal met, number of donations, average donation size) and campaign characteristics (location, date initiated, category of need).

It is difficult — and often impossible — to assess demographic information from campaign webpages, particularly across large datasets like this one. GoFundMe does not publicly share any user demographics data. Consequently, we utilize county-level data to estimate the demographic characteristics of communities where crowdfunding occurs, an approach used by similar studies (Bian et al., 2020; Lee and Lehdonvirta, 2020; van Duynhoven et al., 2019). Counties in the US are the primary legal divisions of most US states and the largest unit of census small-area geographic entities. This makes counties a more appropriate unit for leveraging census data than zip codes; they are routinely used to geospatially estimate socioeconomic characteristics. We assigned each campaign organizer’s zip code to a county using the U.S. Housing and Urban Development zip code to county mapping, augmented with additional zip code mappings from [geonames.org](https://www.geonames.org) (GeoNames, 2020; HUD, 2020). County-level income, education and population data were drawn from the U.S. Census American Community Survey 5-year 2014–2018 estimates. COVID-19 case counts were pulled from usafacts.org, which gathers data directly from local and state agencies (USAFacts, 2020). The impact of COVID on unemployment was operationalized as the change in unemployment reported by the Bureau of Labor Statistics from February 2020 to the peak unemployment for each county over the time period under study (BLS, 2020).

We first assessed descriptive statistics on campaign outcomes, campaign categories, and outcomes by category. A keyword analysis provided further data on types of assistance sought by campaigners, and how this aligned with campaign outcomes. We also assessed inequalities in the amounts raised by campaigns using several standard measures.

To analyze factors of campaign creation, we used a negative binomial model to predict the number of campaigns created in each county, with an exposure offset to adjust for county population size. Negative binomial models were used because data was overdispersed for Poisson models. We predicted that campaign prevalence would be correlated with indices of both **need** and **capabilities** - that is, both the complex economic and health needs arising from the COVID-19 pandemic; and the resources that give campaigners the capability to launch a campaign and expect it to be relatively successful. Independent variables included the number of confirmed coronavirus cases per capita in each for the last date in our dataset, July 31, 2020 along with county level median income, population, race and education estimates.

To estimate associations between county-level context and campaign success, we built models to explore factors influencing the mean donation value and number of donations in each county. We used linear models to estimate mean donation and negative binomial models with an offset of the number of campaigns initiated in the county to estimate the number of donations. In these analyses we included only the 119,472 campaigns that had been active at least one month since last scraping. We also excluded “viral” campaigns with over 3000 donations each from this analysis under the assumption that these outliers were less likely to reflect county-level influences, leaving 119,435 campaigns. Supplemental materials include models estimated including outliers.

We predicted that increased capability in terms of income in the local area would yield larger donation sizes, consistent with prior research that examined smaller samples of campaigns (Kenworthy et al., 2020; Lee and Lehdonvirta, 2020). We also expected that levels of education would be positively associated with the number of donations, based on prior research showing that social network size and dispersion increases with years of education (Bailey et al., 2017; McPherson et al., 2006). While information on the race and ethnicity of individual beneficiaries is difficult to measure in such a large dataset, we include percentage Black and Hispanic in the county as covariates of interest. Covariates were scaled relative to their standard deviations to allow direct comparison of the magnitude of effects. Population and income independent variables

are in log form to represent an elasticity-based rather than linear relation. The log income variable is scaled to make effects comparable with other variables. Because independent variables representing county level income, education, racial composition and COVID cases are correlated, we evaluated the Variance Inflation Factor to check for multicollinearity issues. Across all models and covariates, we found a maximum VIF of 2.6, well within the “moderate” range.

Finally, a targeted sample of the 50 top earning COVID-19 campaigns was selected for further qualitative analysis in May 2020 after we recognized steep inequalities in the dataset between median campaigns and a small subset of extremely high-earning campaigns. Among these most successful campaigns, we sought to assess the factors of their success and how effectively they were able to provide significant COVID-19 related support. Campaigns were qualitatively analyzed for: intended and stated use of campaign funds; people, corporations, and institutions involved in the campaign; and other apparent factors of success. Using a two-staged coding technique, thematic categories for these indicators were developed, assigned to campaigns, and subsequently refined and re-coded as necessary.

4. Results

4.1. Crowdfunding as a response to COVID-19

More than 175,000 GoFundMe campaigns for COVID-19 related needs were created between January 1 and July 31, 2020 in the US. These campaigns raised more than \$416 million from over 4,750,000 individual donations. 12,250 of these campaigns were created by GoFundMe for its small business initiative, and as described above, were removed from subsequent analysis; they accounted for \$35,120,321 raised from 353,045 donations.

Overall, campaign success was extremely rare, and performance across multiple indicators was overwhelmingly poor, as shown in [Table 1](#). The median campaign raised only \$65 out of a \$5000 goal and had a median of 2 donations. Strikingly, 43.2% of campaigns in the COVID-19 dataset received no donations at all, and more than 90% did not reach their campaign goal. These metrics appear to be considerably worse than previous studies have found; for example, a 2017 study of medical campaigns found only 3.5% had not received any donations

Table 1
Campaign summary.

	Overall (N = 164,311)
Goal (\$)	
Median	5000
Q1, Q3	1500, 10,000
Mean (SD)	698,395 (22,496,266)
Range	1–1,000,000,000
Raised (\$)	
Median	65
Q1, Q3	0, 1175
Mean (SD)	2318 (33,205)
Range	0–8,238,330
Received donations	
FALSE	70,949 (43.2%)
TRUE	93,362 (56.8%)
Met goal	
FALSE	150,028 (91.3%)
TRUE	14,283 (8.7%)
Donation count	
Median	2
Q1, Q3	0, 18
Mean (SD)	27 (320)
Range	0–98,589
Mean donation (\$)	
Median	58
Q1, Q3	38, 89
Mean (SD)	89 (1875)
Range	1–508,333

(Berliner and Kenworthy, 2017; Helhoski and Simons, 2016). The large range of standard deviations for amounts raised, donation counts, and even mean donation indicate large disparities in campaign outcomes between the most and least successful campaigns. Limiting the analysis to campaigns that received at least 1 donation, the top 1% of campaigns received 23.1% of all donations and 23.6% of all money raised. Using a standard measure of inequality, the gini-coefficient for amount of money raised in COVID-19 campaigns is .88. As a point of comparison, the US gini-coefficient for income inequality is 0.481 (US Census Bureau, 2019).

CCF was used to address a wide variety of needs during the first seven months of the crisis. As shown in Table 2, the largest proportion of campaigns were for Community/Volunteer/Faith (14.5%); Medical, Illness & Healing (18.3%), and Accidents and Emergencies (19.7%). These categories broadly reflect some of the most significant pandemic impacts and response efforts. While campaign outcomes remained poor across categories, differences in outcome can be observed: Funerals & Memorials received the largest mean number of donations, followed by Medical, Illness and Healing and Community, Volunteer and Faith. The lowest earning categories in terms of mean number of donations were Dreams, Hopes and Wishes, Education & Learning, Other, and Babies, Kids and Families. These trends generally held for average donation size as well. Large standard deviations across all categories and multiple outcome measures indicate broad variances between the most and least successful campaigns.

User-selected categories from a pre-set list offer minimal information about COVID-19, so campaign keywords for common COVID-19 needs were also analyzed. Table 2 shows substantial differences in campaign outcome by keyword. Campaigns seeking to address personal financial issues, including keywords related to rent, eviction and job loss, received donations at a lower rate and smaller size than those focused on business or medical needs. Campaigns indicating severe medical needs, including terms like “ICU” or “ventilator” received an average of 96 donations, and an average donation size of \$197, whereas campaigns mentioning “rent” or “eviction” received an average of 23 donations, with an average size of \$84. Campaigns seeking money for businesses or PPE were between these extremes (see Table 1).

Given significant evidence of large inequalities in campaign outcomes, we used a quintile analysis to explore whether per-capita income influenced campaign prevalence or outcomes. We grouped campaigns by quintile based on the per-capita income of their county, such that each quintile includes counties comprising 20% of the population. Fig. 1 shows that the percentage of COVID-19 cases by county varies

somewhat, with the highest percentage of cases in the lowest and middle income quintiles. By contrast, the percentage of campaigns by income quintile shows a clear linearity, with the smallest percentage of campaigns in the lowest income quintile, and the largest percentage of campaigns in the highest income quintile. This indicates that COVID-19 crowdfunding campaigns are created most often in the highest-income areas, not those hardest hit by COVID-19. Income is even more strongly correlated with campaign outcomes by number of donations per quintile and total amount raised per quintile. Given these initial findings, in this section and the next, we further explore associations between key county-level covariates and crowdfunding campaign creation (Section B), and outcomes (Section C).

4.2. Factors associated with COVID-19 campaign creation

We predicted that the number of CCF campaigns in any area would be influenced by needs arising from COVID-19 and capability to crowdfund. To test this, we assessed whether the number of crowdfunding campaigns was associated with two county-level factors: 1) **Need** - the cases of COVID-19, the percent of Black and Hispanic residents (given high economic and epidemiologic impacts in these groups), and the increase in unemployment during COVID-19; and 2) **Capabilities** - the resources crowd funders could draw on to set up a campaign and expect to attract donations, namely income and education. We did not include broadband access as a capability covariate due to high correlation with income and education covariates. Our final models in this section combine need and capabilities variables to assess their interactions.

Fig. 2 shows the relationship between the number of campaigns per capita and our six key explanatory variables. Negative binomial models demonstrate the relationship between these variables and the number of campaigns (Table 3). Of our capability measures, the percent of county residents aged 25–64 obtaining bachelor’s degrees is most strongly associated with increased campaign creation. When considered independently of education, higher county median incomes are associated with more campaign creation. Note, however, that high incomes may be associated both with higher capability and lower need for support: when included in models together with education, income has a *negative* association with campaign creation. These models adjust for population with an exposure offset, but an additional parameter for log population is positive and significant, indicating that the *per-capita* rate of campaign creation rises in higher-population counties.

Additionally, the rate of campaign creation increases where need is

Table 2
Campaigns by GoFundMe category and keywords in text. Average donation size is computed for each campaign individually.

Category	Campaigns	Donation Count				Average Donation		
		Median	Zeros	Q1 - Q3	Mean (sd)	Median	Q1-Q3	Mean (sd)
Dreams, Hopes & Wishes	5631 (3.4%)	0	72%	0–1	4 (18)	\$43	\$22 - 75	\$70 (145)
Animals & Pets	7589 (4.6%)	4	34%	0–14	13 (33)	\$42	\$29 - 60	\$55 (159)
Education & Learning	9336 (5.7%)	1	49%	0–8	11 (42)	\$56	\$35 - 95	\$85 (145)
Funerals & Memorials	10,202 (6.2%)	26	14%	6–68	62 (248)	\$69	\$52 - 91	\$80 (107)
Business & Entrepreneurs	10,689 (6.5%)	1	47%	0–11	22 (385)	\$62	\$41 - 99	\$87 (133)
Babies, Kids & Family	12,278 (7.5%)	0	62%	0–3	11 (79)	\$50	\$31 - 79	\$70 (99)
Other	22,401 (13.6%)	0	51%	0–9	15 (78)	\$54	\$34 - 90	\$78 (137)
Community/Volunteer/Faith	23,791 (14.5%)	5	34%	0–24	34 (334)	\$56	\$36 - 89	\$137 (4547)
Medical, Illness & Healing	30,002 (18.3%)	5	36%	0–32	39 (223)	\$62	\$42 - 92	\$82 (241)
Accidents & Emergencies	32,392 (19.7%)	1	47%	0–16	27 (560)	\$60	\$40 - 92	\$81 (108)
Keyword								
Childcare	1234 (1.2%)	3	37%	0–24	49 (295)	\$70	\$44 - 104	\$97 (125)
ICU/Ventilator	5340 (5.1%)	30	16%	5–89	96 (583)	\$69	\$51 - 95	\$197 (7598)
Laid Off	9956 (9.6%)	0	61%	0–5	12 (53)	\$55	\$34 - 91	\$148 (3999)
PPE	10,569 (10.2%)	6	32%	0–29	50 (1027)	\$56	\$37 - 87	\$161 (6025)
Rent/Eviction	18,672 (18.0%)	1	49%	0–12	23 (162)	\$59	\$38 - 94	\$84 (217)
Bills	22,178 (21.3%)	2	43%	0–21	32 (222)	\$62	\$41 - 92	\$80 (183)
Business/Staff/Employees	35,946 (34.6%)	5	33%	0–30	37 (292)	\$67	\$45 - 100	\$129 (3660)

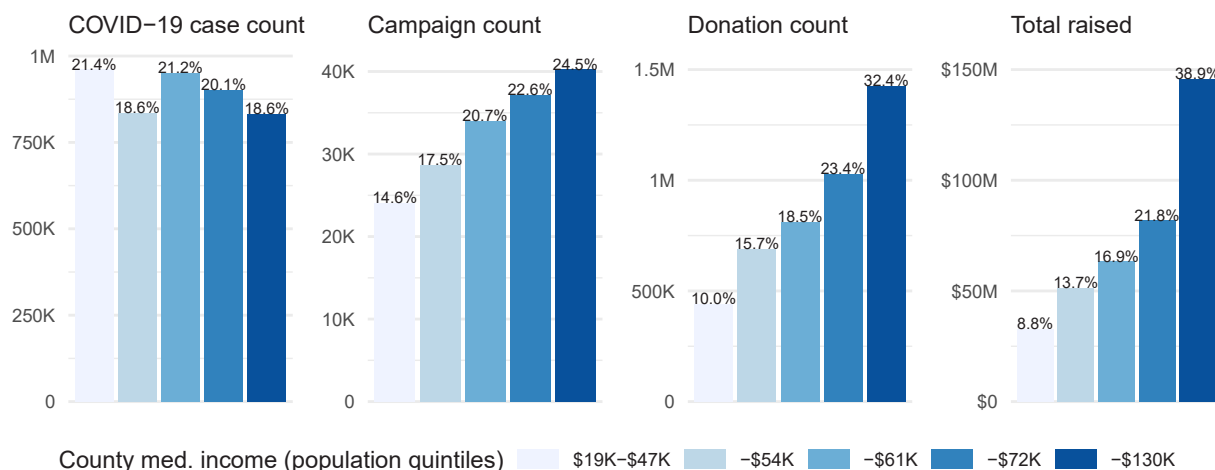


Fig. 1. Key metrics by county median income. Each quintile comprises counties including 20% of the U.S. population.

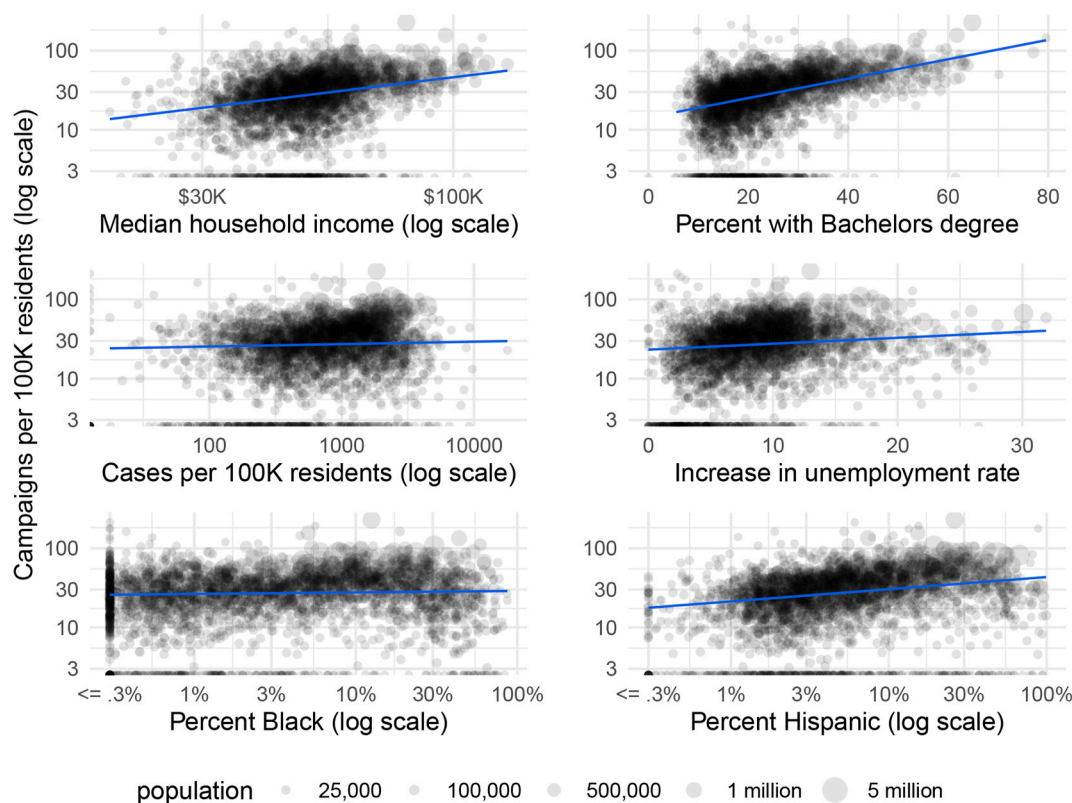


Fig. 2. Bivariate plots of key explanatory variables and campaign creation.

likely higher. Increased COVID-19 cases per-capita are positively associated with campaign creation. The increase in county-wide unemployment during the pandemic is also strongly associated with campaign creation: a 4.7% (one standard deviation) increase in the unemployment rate corresponds to a roughly 14% increase in campaign creation. Coefficients for county-level Black and Hispanic population are also positive and significant, though Hispanic population is much more strongly associated with higher levels of campaign creation, and percent Black population is not significantly associated with higher campaign creation in models accounting for COVID-19 cases and increases in unemployment. Given the disproportionate burden of COVID-19 cases and economic impacts in non-white communities across the US, we might expect these co-variables to be stronger; however other research has noted that BIPOC users, and especially black users, are under-

represented on crowdfunding platforms which may explain some of this effect (Bassett et al., 2020; Getachew et al., 2020; Kenworthy et al., 2020).

Table 4 summarizes models that include covariates related to both county capability and need. Models 2, 3 and 4, which include interaction terms between need and capability, are particularly interesting. In model 2, the proportion of county residents with bachelor's degrees is significant and strongly positively associated with the number of campaigns created, and the interaction terms for both COVID cases and unemployment impact are positive and significant. Because coefficients in these models can be difficult to interpret, the expected number of campaigns from model 2 is illustrated in Fig. 3, which shows the expected number of campaigns in two hypothetical counties with 100,000 residents. At low levels of pandemic-induced need, the county with 35%

Table 3
Negative binomial models estimating rate of campaign creation based on county-level capability factors (top panel) and level of need (lower panel).

County capability and campaign creation				
	(1)	(2)	(3)	(4)
(Intercept)	-10.711 *** (0.072)	-10.407 *** (0.079)	-9.848 *** (0.077)	-9.880 *** (0.077)
log Population	0.239 *** (0.006)	0.210 *** (0.007)	0.156 *** (0.007)	0.160 *** (0.007)
log Income (scaled)		0.083 *** (0.009)		-0.046 *** (0.011)
% Bachelors (scaled)			0.168 *** (0.008)	0.194 *** (0.010)
N	3139	3139	3139	3139
BIC	17862.571	17790.051	17463.004	17452.536
County need and campaign creation				
	(1)	(2)	(3)	(4)
(Intercept)	-8.068 *** (0.011)	-8.090 *** (0.011)	-8.068 *** (0.011)	-8.099 *** (0.011)
Cases per cap. (scaled)	0.066 *** (0.011)			0.025 (0.013)
Unemp. Impact (scaled)		0.138 *** (0.011)		0.139 *** (0.011)
% Black (scaled)			0.029 ** (0.011)	0.023 (0.012)
% Hispanic (scaled)			0.116 *** (0.010)	0.110 *** (0.011)
N	3139	3139	3139	3139
BIC	18993.704	18881.259	18926.804	18783.338

***p < 0.001; **p < 0.01; *p < 0.05.

Table 4
Models including capability and need, along with interactions between capability and need. Levels of campaign creation are not only higher in counties with high levels of capability, but campaign creation increases more rapidly with need.

	(1)	(2)	(3)	(4)
(Intercept)	-9.519 *** (0.087)	-9.472 *** (0.087)	-10.176 *** (0.090)	-9.470 *** (0.087)
log Population	0.125 *** (0.008)	0.121 *** (0.008)	0.188 *** (0.008)	0.121 *** (0.008)
log Income (scaled)	-0.053 *** (0.011)	-0.054 *** (0.011)	0.086 *** (0.010)	-0.053 *** (0.011)
% Bachelors (scaled)	0.217 *** (0.010)	0.209 *** (0.010)		0.207 *** (0.011)
Cases per cap. (scaled)	0.021 * (0.010)	0.021 * (0.010)	0.003 (0.011)	0.021 * (0.010)
Unemp. Impact (scaled)	0.055 *** (0.009)	0.048 *** (0.009)	0.031 ** (0.010)	0.051 *** (0.009)
% Black (scaled)	-0.005 (0.010)	-0.008 (0.010)	0.020 (0.011)	-0.006 (0.010)
% Hispanic (scaled)	0.061 *** (0.009)	0.058 *** (0.009)	0.032 *** (0.010)	0.058 *** (0.009)
% Bachelors (scaled) x Cases per cap. (scaled)		0.026 ** (0.008)		0.017 (0.012)
% Bachelors (scaled) x Unemp. Impact (scaled)		0.029 *** (0.008)		0.040 *** (0.011)
log Income (scaled) x Cases per cap. (scaled)			0.025 ** (0.009)	0.012 (0.012)
log Income (scaled) x Unemp. Impact (scaled)			0.023 * (0.010)	-0.018 (0.012)
N	3139	3139	3139	3139
BIC	17388.442	17380.284	17800.011	17393.236

***p < 0.001; **p < 0.01; *p < 0.05.

college graduates (the 90th percentile) can expect about 50% more campaigns than a county with 12% college graduates (10th percentile). The model estimates that campaign creation grows quickly alongside need in the high-education county, but stays at a baseline level in the low-education county. Similarly, model 3 indicates that counties with higher median income levels respond to unemployment and COVID cases with crowdfunding more strongly than poorer counties. Note, however, that prevalence of college education may fully explain the income covariates, as income has a negative coefficient and insignificant interaction terms in model 4, which includes both education and income covariates.

4.3. Factors associated with COVID-19 crowdfunding outcomes

Given highly uneven campaign performance, we conducted several tests to better understand factors of crowdfunding outcomes. We predicted that campaign outcomes would be positively associated with key county-level demographic indicators, including per-capita income, race, and education along with the impact of COVID on health and employment in the county.

Campaign outcomes are measured using two variables: the number of campaign donations and the average size of those donations. We present models that predict log number of donations and mean donation

size in Table 5 and Table 6. Higher income and education levels in the county where a campaign was created are associated with a higher number of donations in all models that include these variables, with education having a much larger association in all models (Table 5). By contrast, income is most strongly associated with the size of donations to campaigns; once income is accounted for, education level has a smaller association with size of donations, and is only significant in some models.

The racial and ethnic composition of county population has significant associations with both the number of donations and the average donation size. The percent Hispanic population is positively associated with donation size and number of donations. However, a larger Black population by county is negatively associated with number of donations. Given the limits on what we know about who is creating and donating to these campaigns we cannot draw conclusions about causality. As illustrated in supplemental materials, a small number of counties in the top decile of both income and Hispanic population account for this effect. In most of these counties, for example Orange County California, the White non-Hispanic population has much higher incomes than the Hispanic population and may be driving higher returns. Higher COVID-19 prevalence and increases in unemployment in the county are positively associated with the number of donations to campaigns, but differences are not significant in most models where the data excludes outliers.

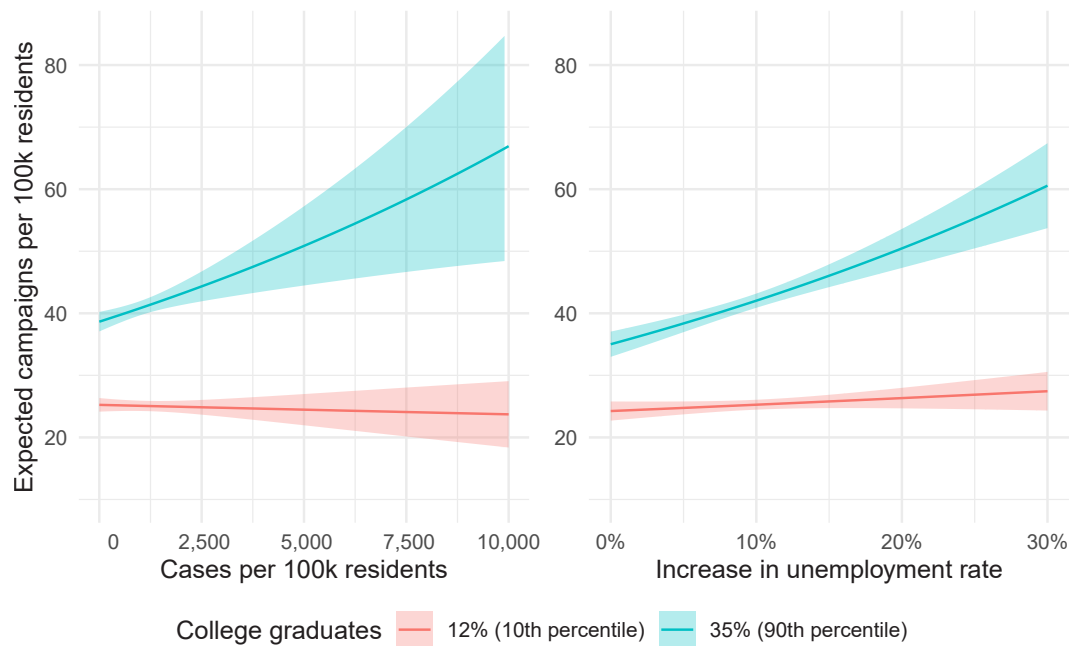


Fig. 3. Expected campaign creation for hypothetical counties with 100,000 residents at different levels of higher education.

Table 5

Negative binomial models estimating log number of donations per campaign. Models estimated with an offset for number of campaigns in each county (Excludes viral campaigns, campaigns active less than 1 month, and counties with 0 campaigns).

	(1)	(2)	(3)	(4)	(5)	(6)
(Intercept)	2.516 *** (0.214)	2.889 *** (0.224)	2.970 *** (0.225)	3.035 *** (0.232)	3.172 *** (0.246)	3.034 *** (0.252)
log Population	0.022 (0.020)	-0.015 (0.021)	-0.023 (0.021)	-0.029 (0.022)	-0.043 (0.023)	-0.031 (0.024)
log Income (scaled)	0.223 *** (0.027)		0.087 ** (0.033)	0.090 ** (0.034)	0.088 ** (0.033)	0.047 (0.035)
% Bachelors (scaled)		0.287 *** (0.027)	0.235 *** (0.034)	0.240 *** (0.034)	0.244 *** (0.034)	0.266 *** (0.034)
Cases per cap. (scaled)				0.023 (0.025)	0.032 (0.025)	0.048 (0.029)
Unemp. Impact (scaled)					0.047 (0.026)	0.055 * (0.026)
% Black (scaled)						-0.143 *** (0.031)
% Hispanic (scaled)						0.093 *** (0.027)
N	2635	2635	2635	2635	2635	2635
BIC	30656.524	30611.074	30611.690	30618.554	30622.660	30588.826

***p < 0.001; **p < 0.01; *p < 0.05.

Model estimates that include outliers, included in supplemental materials, show a consistent and significant positive association of COVID case rates on number of donations. However, higher unemployment has no association with average donation size, and increased COVID-19 prevalence is either unrelated to size of donations or *negatively* associated with donation size in models that account for race and ethnicity. Returning to our hypothetical counties where 12% and 35% of the population have bachelor's degrees, we can compare the expected results for a campaign that clears the hurdle of attracting donations. A campaign can be expected to receive roughly 12 donations averaging \$80 each in the lower education county, and an identical campaign in the more highly educated county is expected to receive approximately 23 donations averaging \$87 each. Thus, a campaign started where a relatively large proportion of adults are college graduates would receive \$2021, almost \$1000 dollars more than a campaign in the county with fewer college graduates.

4.4. Hidden factors of success

A qualitative examination of the top “viral” COVID-19 campaigns sheds further light on success factors that are difficult to discern quantitatively, especially in the final two models where viral campaigns have been removed. Here, we explore the 50 top-earning campaigns in the sample as of May 2020. Two campaigns were removed due to fraud or duplication. All 48 remaining campaigns raised more than \$200,000, 6 raised more than \$1 million, and the top campaign earned more than \$7 million. In total, these campaigns earned more than \$31 million from nearly 170,000 donations; put differently, 48 top campaigns - 0.03% of the more than 175,000 campaigns we studied - accounted for more than 8% of all revenue and 3% of all donations.

As detailed in [Supplemental Table 8](#), many campaigns aimed to help workers in specific industries or companies (n = 9, 18.75%), or aimed to help provide PPE (n = 8, 16.67%), often for healthcare workers. Another common purpose was for mutual aid in the form of cash or gift cards

Table 6

Models estimating mean donation size for counties. (Excludes viral campaigns, campaigns active less than 1 month, and counties with 0 donations).

	(1)	(2)	(3)	(4)	(5)	(6)
(Intercept)	88.609 *** (9.667)	92.268 *** (10.208)	94.881 *** (10.243)	92.351 *** (10.676)	95.890 *** (11.251)	105.197 *** (11.580)
log Population	-1.081 (0.898)	-1.422 (0.950)	-1.680 (0.954)	-1.438 (0.997)	-1.790 (1.057)	-2.668 * (1.088)
log Income (scaled)	5.618 *** (1.195)		3.937 ** (1.503)	3.797 * (1.512)	3.802 * (1.512)	3.690 * (1.585)
% Bachelors (scaled)		5.060 *** (1.173)	2.718 (1.474)	2.597 (1.481)	2.746 (1.489)	3.355 * (1.499)
Cases per cap. (scaled)				-1.037 (1.232)	-0.820 (1.252)	-2.998 * (1.454)
Unemp. Impact (scaled)					1.168 (1.171)	1.742 (1.178)
% Black (scaled)						1.417 (1.441)
% Hispanic (scaled)						5.417 *** (1.257)
N	2324	2324	2324	2324	2324	2324
BIC	24924.531	24927.989	24928.877	24935.918	24942.673	24939.509

***p < 0.001; **p < 0.01; *p < 0.05.

given to individuals (n = 8, 16.67%). Notably, even some of the most successful campaigns struggled to meet the considerable financial needs arising from the COVID-19 pandemic. All mutual aid campaigns noted that they did not raise enough funds to meet needs. For example, a fund to provide \$100 grocery cards to low-income families of the notably wealthy Arlington School District in northern Virginia raised more than \$270,000, but still fell short of meeting community needs. "The need is just too large," organizers wrote. "We have made a noticeable impact for thousands of people in Arlington, but that's just scratching the surface."

Many top-earning campaigns had significant connections to wealth and privilege. Top campaigns sought support for: the high-end restaurant Le Bernadin's employees; golf caddies in Los Angeles; and employees of two exclusive social clubs in New York and California. Organizing teams overwhelmingly consisted of corporate executives, industry leaders, celebrities, and influencers. Twenty of the top campaigns were started by, or directly benefited, for-profit companies, such as several campaigns to fund high-end brands to produce or distribute masks. Top campaigns also had direct support from GoFundMe, including 9 campaigns started by, directing money to, or receiving large donations from, GoFundMe. In several cases GoFundMe directed large amounts of money (in seed or matching funds) to campaigns to build their momentum. Four of the top five earning campaigns were supported or started by GoFundMe. This demonstrates the concerted efforts being made by GoFundMe to generate, and capitalize upon, interest in COVID-19, as well as to influence which campaigns succeeded.

While GoFundMe is a for-profit company, during recent crises it has used its non-profit arm, [GoFundMe.org](https://www.gofundme.org), to create campaigns and funnel money toward successful campaigns (Miller, 2019). [GoFundMe.org](https://www.gofundme.org) began or was involved in numerous COVID-19 fundraisers, some of which also directed profits to its corporate arm. For example, the "Small Business Relief Fund" was collecting tax-deductible donations to [GoFundMe.org](https://www.gofundme.org) and using them to give grants to small businesses impacted by the pandemic. To qualify for a matching \$500 grant, small businesses had to start their own GoFundMe and raise more than \$500 in donations. The platform appears to be using its non-profit arm to reduce its tax burden (and those of donors) while increasing revenue for itself by generating new campaigns, new donors, and additional tips.

5. Discussion

Americans have turned to CCF in large numbers since the early months of the pandemic, yet for many users it has not offered considerable relief. During the pandemic crowdfunding appears to have become more competitive, with the top 1% of campaigns netting nearly

a quarter of all money raised, and more than 40% of campaigns receiving no donations at all. There are several possible explanations for this phenomenon. First, many campaigns initiated at the beginning of the pandemic may have been started with little or no planning or poorly-defined goals, arising from widespread anxiety over needs and desire to help others at a time of limited leadership and government support. Some users may have also capitalized on this chaotic period to create fraudulent campaigns. As the CEO of GoFundMe recently noted, the platform increasingly relies on "the community of friends, family, and the extended network of people ... [to] provide us with an early warning" about fraud (Kodner, 2020). The phenomenon of growing inequality on GoFundMe may have more to do with the site's own infrastructure and how it directs donor attention in an oversaturated market. In the early months of COVID-19, Americans faced an onslaught of news and social media information, much of it poorly moderated. It seems likely that overwhelmed donors might have deferred even more than they usually do to trending, well-known campaigns, including those started by GoFundMe, which are prominently displayed on the site and shared through extensive PR campaigning. COVID-19 has also been an unmitigated economic crisis particularly affecting low-income communities of color; in these places, numerous appeals for help might have seen fewer donations due to more competition, less visibility, and social networks full of others facing similar economic hardships. Analyses of donor behavior as well as platform architectures have been limited, and much more needs to be known about how donors choose campaigns to support, and how those choices are influenced by platform algorithms.

Campaign creation shows strong correlation with COVID-19 related needs, but also access to financial and social capital, particularly income and education. While recent research by Saleh et al. (2021) found limited relationships between COVID-19 campaign creation and COVID-19 case counts, our research takes into account a more complex set of factors related to campaign creation, including economic impacts from shut-down orders as well as capability factors. Strikingly, where education is highest, COVID-19 cases and increasing unemployment result in more crowdfunding, whereas campaign creation in low education areas remains low, even when COVID-19 related needs rise. These findings underscore the limited ability to leverage crowdfunding as a tool for responding to crisis in marginalized areas. Population is also positive and significantly associated with campaign creation, indicating smaller communities may rely on alternate means of soliciting help. It is also possible these results reflect the severity of the pandemic in highly populated areas during the time period studied. These results demonstrate good reasons for researchers and policymakers to exercise caution when using crowdfunding data to estimate either acute or long term

needs, despite calls by some researchers for using this data to measure the impacts of crises (Saleh et al., 2021). Because it appears that areas with low education and income have fewer campaigns, it is likely that additional, silent barriers prevent equal access to crowdfunding, as several other studies have also indicated (Kenworthy et al., 2020; van Duynhoven et al., 2019). While research (Kenworthy et al., 2020) has shown that people of color, particularly Black women, are under-represented in medical crowdfunding, our analysis shows somewhat higher levels of campaign creation in counties with higher proportions of Black, and particularly Hispanic, residents. The heavy impacts of early COVID-19 in dense urban areas with large non-white populations, such as the Bronx and Chicago, may have been over-represented in our sample given its time frame. Additionally, we cannot know from these results whether the increased number of campaigns in an area is attributable to campaigns by or for people of color, and as we explain below, there is some indication higher returns in heavily Hispanic areas are due to wealthier white populations in the same areas. More research – and better data – is needed to parse these complex dynamics.

We observed similar disparities in campaign outcomes: areas with higher income and education levels had better outcomes, with income strongly predictive of donation size and education more predictive of donation volume. This is not surprising, as high income areas could likely donate larger amounts, whereas increased education is associated with increased reach of social networks (Bailey et al., 2017; McPherson et al., 2006). The effect of education levels on outcomes was quite sizeable: in areas with high education, models estimate that campaigns receive approximately twice as much funding than in equivalent areas with low education. The poor performance of those with immediate financial needs lends further credence to the hypothesis that those who suffer from general financial precarity are the least likely to find help via crowdfunding, in part because they are less likely to have others in their network who are in a position to respond to their needs. These findings highlight that access to financial resources within communities is an important determinant of support, adding important ingredient to findings that social capital drives crowdfunding returns (Giudici et al., 2018; Kshetri, 2015). Racial composition of counties appeared to have interesting effects on campaign outcomes. Campaigns created in counties with larger Hispanic populations had more and larger donations, whereas counties with larger Black populations were associated with smaller and fewer donations, though this may be more reflective of the income distributions of counties with larger Black and Hispanic populations, which differ considerably.

An analysis of the top-performing COVID-19 campaigns reveals further concerns about the effectiveness and fairness of GoFundMe as a platform for responding to widespread crisis. Most show extraordinary access to social capital and wealth, including explicit support from GoFundMe, access to large networks of high-income donors, and teams of well-connected organizers. These factors belie the common perception of GoFundMe as an accessible, easy-to-use platform that is free for all, and underscores how equality of access should not be conflated with equality of outcome. Even in this rarified group, those seeking to provide direct financial aid to individuals were overwhelmed by the volume of needs that grew rapidly as COVID-19 spread across in the US. These struggles hidden within the most successful campaigns point to the inadequacy of crowdfunding as a response to crisis in the absence of broader social safety nets.

Taken together, these results offer a dim view of crowdfunding's capacity to offer equitable relief during a complex public health disaster. Large-scale crises have the capacity to both rend and remake the social fabric. While disaster can yield new forms of community solidarity and support across social strata, it can exacerbate harm among the most socially isolated and allow the powerful to capitalize on resulting social disorder (Klein, 2007; Klinenberg, 2002; Solnit, 2010). Online crowdfunding offered communities a widely-used means of providing support at a time when social distancing and pandemic fears limited other ways

of connecting. This data indicates, however, that CCF largely enables donations by the many to the few, with a small number of highly curated viral campaigns finding most success. Generally, areas with the greatest capabilities and the least needs were best able to create and find success with CCF. Given that COVID-19 is such a complex and devastating crisis for the most vulnerable communities, more finely-grained data is needed to understand how communities navigate this crisis, how its economic impacts are felt, and how these dynamics impact communities' capacity to respond 'from within.'

This study offers a preliminary examination of a complex and unfolding crisis, and does have several limitations. Data is only from GoFundMe, and does not include other crowdfunding platforms or interfaces. While GoFundMe controls a vast market share of crowdfunding activity in the US, this data does not encapsulate all CCF activities (Harris, 2018). We also focus solely on the US context here, leveraging data from county-level indicators that would not be available (or comparable) elsewhere. Crowdfunding is a global phenomenon with numerous local nuances, but studies from other countries have noted similar dynamics of inequity (Kenworthy, 2019; Lukk et al., 2018; Pifarré Coutrot et al., 2020; van Duynhoven et al., 2019). Given the complexity of factors that influence campaign performance, it is also likely our models do not fully capture factors contributing to "need" or "capability" when it comes to crowdfunding. Using locations reported by campaigners to measure geospatial attributes may in some cases attribute characteristics to campaigns in an area that are not reflective of the subpopulation actually using or donating to crowdfunding campaigns. Campaigns' stated locations may also not always be accurate and could refer to either the location of the campaign organizer or an intended recipient. In a previous, smaller study, where the relationship between campaigner and recipient was stated, 30% of campaigns were self-fundraising, and nearly 50% were for an immediate family member (Kenworthy et al., 2020). Thus, in the vast majority of cases we do believe we can surmise that campaigners and recipients share many characteristics.

Given the size of our dataset, using geospatial attributes was the most accurate and effective means of measuring the communal contexts of crowdfunding creation and success, but it presents some trade-offs in measuring more individual-level characteristics. We encourage readers to interpret results judiciously, with particular attention to the ways intersecting disparities of class, race, education, and COVID-19 impacts overlap both spatially and statistically, and can make it difficult to attribute effects to single variables. The cumulative evidence here indicates that intersecting social disparities impact both campaign creation and outcome. Better data is needed to explore these dynamics more closely, though we also call for more longitudinal and ethnographic work that can shed light on how inequities emerge in crowdfunding over time.

6. Conclusion

Across the US, fragmented and often inadequate policy responses to the COVID-19 pandemic, layered on top of existing systemic weaknesses in social safety nets, have created multiple vulnerabilities for Americans (Mendenhall, 2020; Yong, 2020). Financial support for those struggling with the health and economic impacts of COVID-19 has been particularly limited, leading to one of the most profound economic downturns in US history. It is neither surprising that Americans have turned to crowdfunding for their own and others' needs, nor that it has not provided adequate succor. We find a significant disconnect between COVID-19 related needs, and the ability to adequately and equitably address them with crowdfunding. CCF campaigns face heightened competition, and steep inequalities between winners and losers. In an increasingly saturated online environment, and amid widespread economic disruption, campaign success increasingly accrues among those with more social and economic capital. Further inequities in outcome are partially fueled by GoFundMe, which gives financial benefit and

increased visibility to certain successful campaigns. It is essential to remember that the platform is a for-profit company which makes money from “tips” on donations, and has a vested interest in campaign spread and success. As GoFundMe itself noted on a campaign page set up for COVID-19 mental health support, “We’re in a growth industry: pain. The world is hurting right now ... so we need to grow” (GoFundMe, 2020).

Inequities in campaign creation and outcome emerge along lines of need, capability, and privilege. While COVID-19 related needs do appear to drive people to crowdfund, people in areas with higher education and income are more likely to be able to start a crowdfunding campaign. This indicates both that there are significant barriers to crowdfunding use, and that campaigns on GoFundMe may not be reflective of the most acute or intersecting needs. We find that marginalized communities generally face additional barriers to crowdfunding success when they do use crowdfunding to cope with crisis. These inequities compound the many other ways COVID-19 has reinforced and deepened disparities in the US.

These dynamics resonate with broader patterns of crises, exacerbating inequities and further entrenching the power of already wealthy individuals and corporations. As GoFundMe itself has noted, pain is a “growth industry” for the company, which stands to profit from a crisis it is ineffective at ameliorating. As such, this raises questions about the changing role(s) of social media, digital technologies, and privatized institutions in responding to complex crises. There is an acute need for public health research examining both the impacts of such entities during the COVID-19 pandemic, as well as the ways they may be contributing to further health disparities.

Despite the limitations and challenges presented by crowdfunding, Americans continue to turn to it in record numbers, and it continues to reshape the cultural scripts of our crisis response. Its use underscores both the need for more robust systems of social support for communities impacted by the pandemic, and the broad appeal of rapid, remotely accessible, and technologically-enabled crisis response. To make such technology more equitable, a first step must be more publicly accessible data about its users and impacts. More fundamentally, however, policymakers should ensure that American suffering does not continue to provide a “growth industry” for private corporations by adequately investing in more sustainable, equitable, and preventative systems for addressing the impacts of COVID-19.

Declaration of competing interest

None.

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Appendix A. Supplementary data

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