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Short communication

## Crowdfunding narratives and the valuation of vaccines for COVID-19

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## ARTICLE INFO

## Article history:

Received 8 July 2021

Received in revised form 22 July 2022

Accepted 29 July 2022

Available online 3 August 2022

## ABSTRACT

Social media spreads information about vaccines and can be used to better understand public attitudes about them. Using American crowdfunding campaigns that mentioned COVID-19 vaccines from January 2020 to March 2021, this paper investigates public attitudes towards vaccines, specifically the perceived role vaccines could (or couldn't) play in ending the pandemic. We identified 776 crowdfunding campaigns and coded each for their aims and whether they valued vaccines as returning their community to a pre-pandemic state (utopian), helping some but not all people (cautious), and doubtful about the likely positive impacts of vaccines (skeptical). Cautious and skeptical valuations increased over time whereas utopian views declined. This paper uniquely situates attitudes toward COVID-19 vaccines in the context of financial need (as characterized by the campaigners). It offers insight into the “vaccine class gap” in America and demonstrates the usefulness of crowdfunding campaigns for assessing public views on vaccines.

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## 1. Introduction

From early on in the COVID-19 pandemic, SARS-CoV-2 vaccines were heralded as a key means for emerging from the crisis [1]. Some saw vaccines as the only viable exit plan [2,3], as non-pharmaceutical interventions (like contact tracing, masking, border closures, and social distancing) were unevenly enacted throughout the world with varied impact [4]. Much of the research and discussion of how the public valued these vaccines has focused on the causes of and responses to vaccine hesitancy, and numerous analyses have focused on social media, including Twitter [5] and Facebook [6], since these platforms are known sources and spreaders of misinformation [7]. In this paper we present findings from an analysis of crowdfunding campaigns that mention coronavirus vaccines in order to develop a broader sense of how Americans seeking financial help during the pandemic valued these vaccines. Crowdfunding campaigns have emerged as an important tool for understanding the socioeconomic impacts of the pandemic and how the public's experience of the pandemic has evolved [8]. Using crowdfunding campaigns to assess public valuation of vaccines places these views in a context of financial need that can complement existing analyses of vaccine discourse on social media.

## 2. Methods

We collected US-based crowdfunding campaigns that mentioned a vaccine for the COVID-19 coronavirus initiated between January 1, 2020 (the date of initial reports of COVID-19 beginning to appear in the Western press) and March 12, 2021 (the date when 100 million vaccine doses were declared administered in the US) [9]. We searched the [GoFundMe.com](https://www.gofundme.com) website weekly from December 11, 2021 to March 22, 2021 using the terms “vaccine” and “coronavirus” or “covid.” We selected GoFundMe for data collection as it is the dominant charitable crowdfunding platform in the US and reports having hosted 150,000 COVID-19-related campaigns from March 1 – August 31, 2020 [10]. Campaigns identified through these searches were scraped for data using an automated web scraping program. Data collected included the campaign title, text, creation date, number of Facebook shares, funding requested, funding pledged, and campaigner location. This process identified 13,120 campaigns. Duplicate campaigns and campaigns by non-US based campaigners were (to achieve a dataset with similarities in the campaigners' health system and access to vaccines) excluded, resulting in 1,766 campaigns.

All authors reviewed 65 randomly assigned campaigns (5 from each month of data collection) and met to identify common ways that campaigners valued vaccines. Consensus was reached that three types of dominant valuation were used: 1) post-pandemic

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utopians who thought vaccines would end the direct impacts of the pandemic and indirect impacts of mitigation strategies; 2) cautious campaigners who saw vaccines as improving many aspects of the pandemic, but not for every-one, not forever, or not quickly; and 3) vaccine skeptics who viewed vaccines as dangerous, ineffective, or otherwise deeply flawed as a response to the pandemic. We also agreed to identify the goal of the funding for each campaign: 1) Social supports including food and housing; 2) Medical needs including personal protective equipment and ventilators; 3) Research and development of treatments for and vaccines against COVID-19; 4) Supporting a business; 5) Supporting a club, group, or charity; 6) Relieving loneliness or social isolation; and 5) Other or no discernable goal. The 1,766 campaigns were coded for valuation content by RK, with JS confirming interpretation and addressing uncertainties, according to the dominant vaccine valuation made by the campaigner. Campaigns not referencing a vaccine for the COVID-19 coronavirus for human use were excluded during this coding step, leaving 776 campaigns included in this content analysis.

### 3. Findings

The 776 campaigns identified were shared on Facebook 43,474 times (median 50.5), requested \$2,615,967,985 (median \$10,000), and pledged \$2,516,120 (median \$921, 9.2 % of median request) from 18,010 (median 28) donors. 51 or 6.6 % of campaigns met their fundraising goals and 372 (47.9 %) campaigns received no donations. Social supports were the most common aim of these campaigns ( $n = 246$ , 31.5 %), followed by research and development of COVID-19 treatments and vaccines ( $n = 227$ , 29.1 %), business supports ( $n = 108$ , 13.8 %), medical needs ( $n = 99$ , 12.7 %), organization supports ( $n = 47$ , 6.0 %), no or other aim ( $n = 43$ , 5.5 %), and combating isolation ( $n = 11$ , 1.4 %). 5 campaigns had 2 goals each.

530 (68.3 %) campaigns valued vaccines for COVID-19 as offering a post-pandemic utopia, 189 (24.4 %) took a cautious view of vaccines, and 57 (7.3 %) were skeptical about the value of vaccines. The most common months for campaigns to be initiated were April 2020 ( $n = 110$ , 14.2 %), January 2021 ( $n = 95$ , 12.2 %), December 2020 ( $n = 92$ , 11.9 %), and March 2020 ( $n = 78$ , 10.1 %), coinciding with the first cases being identified in the US on January 21, 2020 and a second wave of infections in the fall of that year. Campaign counts decreased following the May 15, 2020 announcement of Operation Warp Speed to develop vaccines against COVID19 and reached a second peak around the period when the Pfizer and Moderna vaccines received emergency use authorization from the FDA on December 11 and December 18, 2020 respectively (see Fig. 1).

Utopian campaigns most frequently sought funding related to research and development of treatments for and vaccines against COVID-19. The majority of cautious campaigns and plurality of skeptic campaigns requested help with social supports. Notably, the second most common aim of skeptical campaigns was for vaccine development and this represented a larger percentage of these campaigns than even those in the utopian category. Whereas skeptical campaigns sought funding for research and development of vaccine alternatives, utopian campaigns typically sought to support vaccine development for both high- and low-income countries (see Table 1).

In the initial months of the pandemic, utopian campaigners generally expressed that a lack of vaccines meant that pandemic mitigation strategies and lockdowns would continue for the foreseeable future. Once vaccines became widely available, according to these campaigners, these restrictions would be lifted, removing the need for financial help. For example, one fundraiser from

March 2020 noted that a music venue would be unable to open “until a vaccine is readily available” while a campaign the next month sought to offer flowers to healthcare workers “until a vaccine is created.” Campaigns later in the pandemic, following initial testing and availability of vaccines, also requested help to rebuild lives and businesses now that the campaign recipient was fully vaccinated. One example of this was a campaign for someone who “just finished her two vaccine shots which allows her to job search again and she expects to find stable income in the next month or two.” As an overall percentage of campaigns, this category trended downward over the course of the pandemic.

Cautious campaigners stressed the limits of vaccines to repair the damage from the pandemic. In campaigns initiated before vaccines became available in the US, campaigners noted uncertainty over when or if a vaccine would be developed, for example by referencing a “potential vaccine” or that there is “no guarantee of success” in vaccine development. Others noted that a vaccine would not be helpful to those who had already been infected with COVID-19 or who had died from the disease. Similarly, vaccines would not be able to repair the damage for campaigners whose businesses had already been lost due to the economic consequences of the pandemic. Campaigns throughout the review noted limitations on who could receive a vaccine once it became available, including an immunocompromised child. New concerns about limitations to the effectiveness of vaccines emerged during the pandemic as with COVID-19 mutations that limited the efficacy of specific vaccine types. As a percentage of campaigns, this category trended higher as the pandemic went on.

Campaigns by skeptics included long-standing arguments against vaccines including mistrust of “Big Pharma” and preference for “natural” health interventions including building immunity through diet and supplements rather than vaccination as vaccines often “do more harm than good.” As vaccines became available in the US, some campaigns expressed specific concerns regarding unknown “long term health effects” of these vaccines and labeling those taking them as “Guinea pigs.” Later campaigns gave examples of side effects to specific vaccines for COVID-19 as reasons not to become vaccinated or sought funding to address their own experiences of vaccine side effects. Skeptical campaigns initially trended upwards as a percentage of total and were then relatively steady thereafter. Fig. 2 presents the monthly distribution of campaigns by these categories.

### 4. Discussion

The three categories of vaccine valuation showed distinctive characteristics. Utopian campaigns frequently exhibited broadly individualistic attitudes about the pandemic, expressing that once vaccines were widely available the pandemic would be over for the campaign recipient. By comparison, cautious campaigners observed that the damage of the pandemic had already been done and that vaccines would not be a cure all for everyone in their community. Cautious views increased over time and were found at similar rates to utopian campaigns in the final months of data recording. This may have been in response to the continued direct and indirect impacts of the pandemic in the US that were felt widely and continued despite the increasing availability of vaccines. The May 15, 2020 announcement of Operation Warp Speed to prioritize vaccine development coincided with very little change in the distribution of these campaign categories. By contrast, the emergency use authorizations of the first COVID-19 vaccines in mid-December 2020 coincided with a shift from utopian to a higher proportion of cautious campaigns. It is possible that the reality of these vaccines coupled with ongoing financial impacts of the pandemic experienced by people engaging in crowdfunding encouraged this relative increase in cautious valuations.

### Monthly Total Campaigns

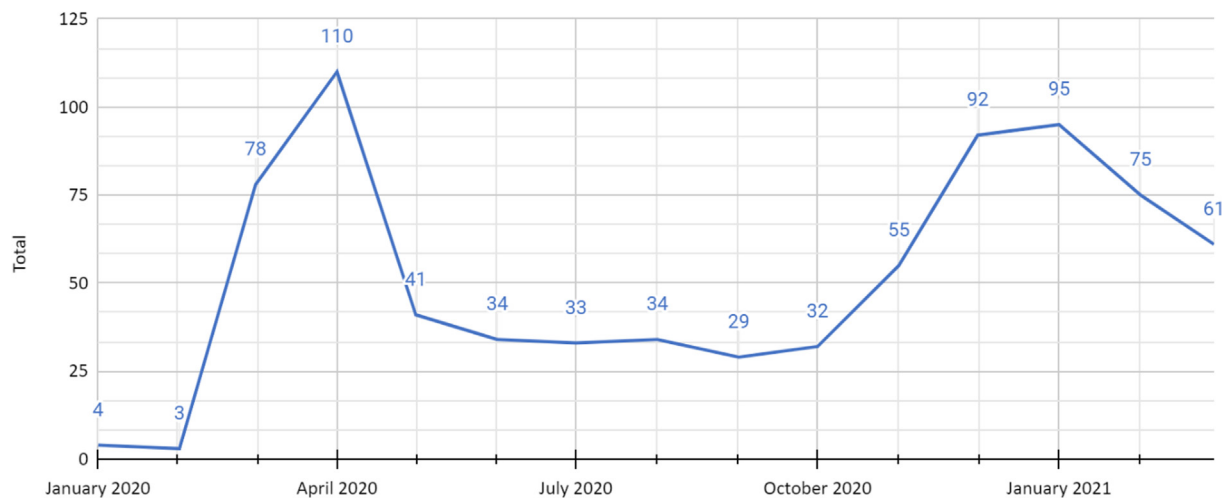


Fig. 1. Monthly number of new campaigns posted to GoFundMe meeting inclusion criteria from Jan 1/20 to March 12/21.

Table 1

Campaign fundraising purpose organized by dominant vaccine valuation: 781 (776 campaigns with 5 in multiple categories) initiated January 1, 2020 – March 12, 2021 in the US.

	Utopian <sup>a</sup>		Cautious <sup>b</sup>		Skeptic <sup>c</sup>		Total
<b>Social Supports</b>	116	21.7 %	106	56.1 %	24	42.1 %	246
<b>Medical Needs</b>	74	13.8 %	24	12.7 %	1	1.8 %	99
<b>Research</b>	187	35.0 %	20	10.6 %	20	35.1 %	227
<b>Businesses</b>	94	17.6 %	14	7.4 %	0	0.0 %	108
<b>Organizations</b>	34	6.7 %	12	6.4 %	1	1.8 %	47
<b>Social Isolation</b>	9	1.7 %	2	1.1 %	0	0.00 %	11
<b>Other</b>	21	3.9 %	11	5.8 %	11	19.3 %	43
<b>Total</b>	535		189		57		

<sup>a</sup> Post-pandemic utopians: Thought vaccines would end the direct impacts of the pandemic and indirect impacts of mitigation strategies.

<sup>b</sup> Cautious campaigners: Saw vaccines as improving many aspects of the pandemic, but not for every-one, not forever, or not quickly.

<sup>c</sup> Vaccine skeptics: Viewed vaccines as dangerous, ineffective, or otherwise deeply flawed as a response to the pandemic.

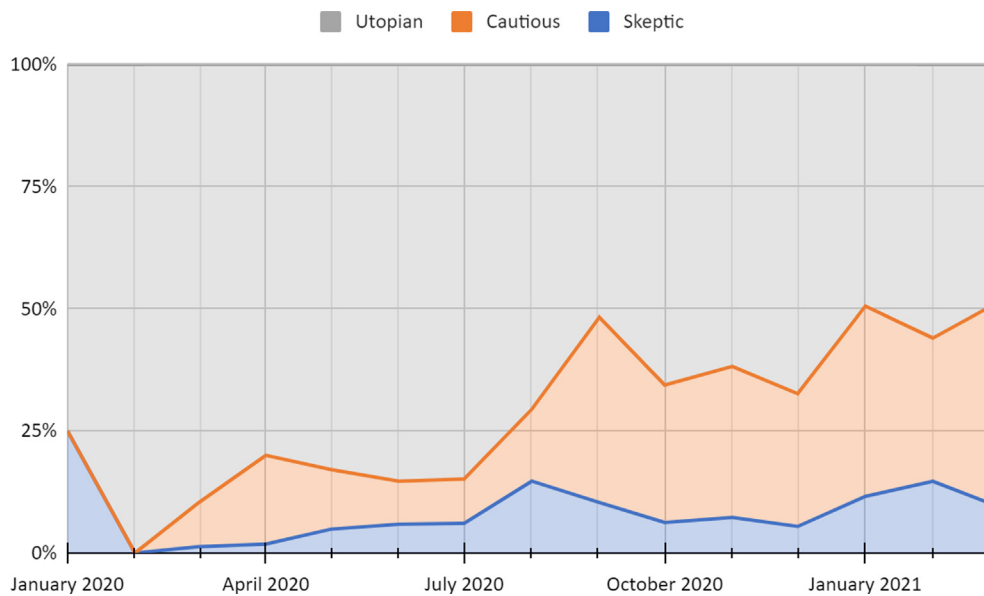


Fig. 2. Monthly trends in vaccine valuation among GoFundMe campaigns posted Jan 1/20 to March 12/21.

Campaign aims differed considerably among the three categories, suggesting that the needs identified by the campaigner may influence vaccine valuation. Over a third of utopian campaigners sought funding for research related to vaccine development and other medical interventions. The other most common aims for this group were related to the direct and indirect costs of the pandemic, including help for social supports, businesses, and medical needs. By comparison, over half of the cautious campaigners asked for help with social supports and just over 10% of these campaigns sought research-related funding. This split between these two groups suggests that the need for social supports may influence how vaccines are valued among people engaged in crowdfunding, a question that merits additional research as part of the noted COVID-19 “vaccine class gap” and extreme income inequality in the USA [11]. Campaigns among vaccine skeptics were largely grouped into those proposing research into COVID-19 treatments as an alternative to vaccines and people seeking social supports while expressing the inadequacy of vaccines to halt the pandemic’s effects. By comparison to the other two groups, vaccines were more centrally part of the focus of these skeptical campaigns in terms of their discussion and aims, including campaigns explicitly aiming to publicize anti-vaccine viewpoints.

Our findings demonstrate that crowdfunding priorities reflect public policy priorities and messaging, including around the role and effects of vaccines for COVID-19. The increase in cautious campaigns demonstrates the limits of approaches that emphasize the crucial role of vaccines without also communicating the essential need for traditional public health interventions and seeking to mitigate the spread of the coronavirus [12]. Whereas research into and messaging around the transformative effects of these vaccines were common in early utopian campaigns, these messages were increasingly challenged by actual experience with the limits of vaccines as a public health measure after these vaccines became publicly available.

Reporting on misinformation about the safety and efficacy of COVID-19 vaccines has been common in the US, particularly as vaccines have become widely available and vaccination rates have stalled in some regions. Nonetheless, skepticism about the safety and efficacy of vaccines was never the dominant concern in these campaigns and remained below 15% of campaigns after the first month. Nonetheless, this negative valuation of vaccines increased during later months. Skeptical attitudes around vaccines may become more common as vaccines are widely available and particularly if unvaccinated people face restrictions that vaccinated people do not, including around accessing education, traveling, and wearing masks. This possibility is supported by a shift in how skepticism about these vaccines was expressed, moving from general to specific concerns about how these vaccines were authorized for use and the danger of side effects.

Because campaign recording began in December 2020, later campaigns are likely overrepresented in our sample as campaigns can be deleted by the campaigner. While the campaigns recorded do not represent all relevant campaigns posted during the review period, they give a sense of how vaccines were valued by crowdfunding campaigners and how the distribution of these values changed over time.

## 5. Conclusion

Our findings show that crowdfunding campaigns provide rich narrative material to identify the ways in which vaccines are valued and to assess how these values change. These narratives, where campaigners seek donations to address pandemic-related needs, provide an opportunity to understand how vaccines are valued in a context of both crisis and economic need. Because of the focus of these campaigns on raising money, crowdfunding campaigns cannot replace other means of tracking public valuation of vaccines. However, they offer a timely and easily accessible insights that can complement other modes of assessment.

## Data availability

Data will be made available on request.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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