

Association for Information Systems

## AIS Electronic Library (AISeL)

---

AMCIS 2022 Proceedings

SIG SI - Social Inclusion and Socio-Technical  
Issues

---

Aug 10th, 12:00 AM

# A Rollercoaster of Emotions – A Semantic Analysis of Fundraising Campaigns over the Course of the Covid-19 Pandemic

Nicole Grieger

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

Janina Seutter

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

Dennis Kundisch

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

Follow this and additional works at: <https://aisel.aisnet.org/amcis2022>

---

### Recommended Citation

Grieger, Nicole; Seutter, Janina; and Kundisch, Dennis, "A Rollercoaster of Emotions – A Semantic Analysis of Fundraising Campaigns over the Course of the Covid-19 Pandemic" (2022). *AMCIS 2022 Proceedings*. 8.

[https://aisel.aisnet.org/amcis2022/sig\\_si/sig\\_si/8](https://aisel.aisnet.org/amcis2022/sig_si/sig_si/8)

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2022 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# **A Rollercoaster of Emotions – A Semantic Analysis of Fundraising Campaigns over the Course of the COVID-19 Pandemic**

*Completed Research*

**Nicole Grieger**

Paderborn University

nicole.grieger@wiwi.uni-paderborn.de

**Janina Seutter**

Paderborn University

janina.seutter@wiwi.uni-paderborn.de

**Dennis Kundisch**

Paderborn University

dennis.kundisch@wiwi.uni-paderborn.de

## **Abstract**

Donation-based crowdfunding platforms are increasingly important for those in need, especially in times of crisis. When fundraisers face financial difficulties in addition to the original challenges underpinning their appeal, we can expect to find highly emotional textual descriptions in charitable crowdfunding campaigns. On top of any existing challenges, the COVID-19 pandemic has induced feelings of helplessness and uncertainty. Hence, we pose the question of whether, and to what extent, this pandemic has influenced the topics of donation campaigns and the emotionality expressed in them. Conducting an exploratory analysis on a dataset from GoFundMe, we combine a quantitative approach of dictionary-based sentiment analysis with exploratory topic modeling. Key findings indicate that negative emotions (i.e., negatively associated words) in the campaign descriptions have increased sharply at the onset of the pandemic, and that the topics of pandemic-related campaigns have spread from health to other aspects of life, such as personal difficulties.

## **Keywords**

COVID-19, Pandemic, Crowdfunding, Sentiment Analysis, Topic Modeling.

## **Introduction**

The need for financing innovative ideas, start-ups, digital technologies, and personal emergencies has given rise to crowdfunding, an alternative form of financing that brings together a range of project ideas and potential backers via internet platforms (Kuti and Madarász, 2014). Crowdfunding platforms make it possible for people to obtain financing from non-traditional financial sources. In doing so, private individuals often take on the role of funders, supporting a wide variety of projects. Some crowdfunding platforms, such as GoFundMe, focus on donation-based funding. The fundraising campaigns posted on such platforms often aim to support individuals in need. Therefore, the funders do not expect any form of compensation and the beneficiaries do not have any obligations towards their funders. In this type of crowdfunding, communication between funders and fundraisers is a particularly important determinant, as potential funders decide to fund a project voluntarily and in response to an open call (Majumdar and Bose, 2018). As fundraisers are often in distress, the descriptions of campaigns on such platforms are also often highly emotional (Majumdar and Bose, 2018). The developments of the COVID-19 pandemic in 2020 inspired our question on whether and to what extent the helplessness and existential fears that this pandemic has triggered has heightened the emotional content of donation appeals. It is particularly important for governments or social institutions to understand emotions, worries, and concerns that society faces in this unprecedented crisis to develop coping strategies and to help those who are most affected by the situation. If, for example, the analysis we carried out here reveals that homeless people or children are among the groups most affected by the pandemic, the government could act accordingly and provide more

support to those in greatest need, for example in the form of offering more free meals or schoolbooks. It is to be expected that a change in people's emotionality can be perceived because of the pandemic. However, it is unclear to what extent this change will be reflected in crowdfunding campaigns (e.g., compared to changes in social media) and how far-reaching these changes will be. Since the academic literature has so far predominantly analyzed emotions on social media, we explore donation-based crowdfunding campaigns to further examine the emotional content and the concerns of those who may be most in need. Hence, we formulate the following research question:

*How do campaign topics, and the emotionality expressed in the textual campaign descriptions, change over the course of the pandemic?*

This research question will be investigated using an empirical and exploratory approach (Ågerfalk, 2014). The paper analyzes a dataset from the charitable crowdfunding platform GoFundMe to examine whether and how the COVID-19 pandemic affected the emotions conveyed in the campaign descriptions over several months. Our analysis found that the sentiment of the crowdfunding campaign texts decreased substantially at the beginning of the pandemic and subsequently remained at a lower level than before the outbreak. The sentiment is a variable of overall sentiment which subtracts the number of negatively associated words from the number of positively associated words. In addition, we find that donations were increasingly collected during the pandemic to support people who experienced health, professional, or financial difficulties as a result of the crisis. There was also an increase in campaigns benefitting workers employed in the health and health care sectors. Donations for meals or other supplies, including for the homeless, have also become more of an issue. This paper provides contributions to both practice and academia. Our findings may be of interest to medical researchers, and to health organizations or governments, to identify behavioral patterns, changes in emotions, or specific issues that concern the population in such a crisis.

## **Related Literature**

### ***Characteristics of Crowdfunding***

Over the past two decades, the concept of crowdfunding has emerged as an attractive alternative to more traditional methods of raising capital, especially for innovative ideas, social projects, or companies (Schwienbacher and Larralde, 2010). This alternative form of financing is becoming increasingly important due to its high economic potential.

The focus of this paper is on donation-based crowdfunding. In the era of digitization, the growth of charitable platforms and donation-based crowdfunding platforms is becoming more prevalent. Platforms such as GoFundMe enable people to make a donation directly and thus provide help as quickly as possible (Zhao et al., 2020). The platforms make donation requests visible to anybody who is interested in charitable causes and thus act as intermediaries between campaign owners and potential funders (Burtch et al., 2013). The published crowdfunding projects usually contain a description of the project or the campaign and the motivation for which the raised funds are to be used. The description of the campaign is crucial as it is the only way through which fundraisers can connect with potential donors and convince them to donate (Majumdar and Bose, 2018). The semantic analysis of these texts therefore allows to identify the fundraiser's motivation and their underlying emotions. Research studies that deal with semantic analyses of crowdfunding campaigns usually aim to find out to what extent certain textual elements of the campaigns contribute to the campaign's success, which is usually measured in terms of the proportion of funds raised out of the total they hope to raise. For example, Majumdar and Bose (2018) studied how the presence of various persuasive arguments in a fundraising appeal increases the likelihood of receiving a donation. Other studies have investigated which particular elements of descriptive texts contribute to successful campaigns. According to research, a campaign should be described in as much detail as possible and include facts and figures that provide insight into the background and the necessity of the appeal (Sokolova and Perez, 2018; Wang et al., 2017).

The availability of salient and concrete information in crowdfunding campaigns is often limited. This circumstance can lead to donors being largely guided in their decision by the emotional content conveyed in campaigns (Kim et al., 2016). The literature review highlights the predominance of semantic analysis as a commonly used method in numerous studies on crowdfunding. But while the research questions in the existing articles usually aim to determine which aspects of the blurb can contribute to the success of a

campaign, the role played by emotions is only considered in terms of the campaign's effectiveness. We argue that it is important, especially for donation-based crowdfunding platforms, to better know and understand the emotions expressed in the campaign texts. To date, little is known about how crowdfunding platforms are dealing with the (increased number of) campaigns during the COVID-19 crisis and what strategies these platforms can adopt to maintain or even improve financial and community support for fundraisers (Farhoud et al., 2021). However, it is evident that crowdfunding platforms can employ different strategies to support certain target groups that are especially in need of help (e.g., social enterprises or healthcare employees) in times of crisis (Farhoud et al., 2021). The sentiments expressed in the campaigns provide a snapshot of the emotions prevalent in a society. Understanding this can be relevant to both academics and practitioners, for example, to identify and understand global events more quickly to certain (e.g., new diseases) and related concerns (e.g., new workplaces in the healthcare system). This knowledge can serve as a guidance for where and when support is (most) needed e.g., by presenting certain campaigns that are especially emotional or on a certain topic as urgent or by providing statistics on the emotionality of the campaigns.

### ***Analyses in Times of Crisis***

The ongoing COVID-19 pandemic has had a massive impact on many people's lives and caused a huge number of deaths. Since the onset of the pandemic, governments have implemented various protective measures, including mandatory mask wearing in public places and temporary lockdowns. Nevertheless, the rapid spread of the virus and the morbidity and mortality associated with infection have caused worldwide affliction (Bojja et al., 2020). However, many people are not only concerned about how the disease affects their health, but also about the emotional and financial damage caused by the protective measures. This includes, for example, the loss of income, temporary business closures, and the resulting lack of work or prospects (Zhao et al., 2020). In this context, numerous crowdfunding campaigns have been launched. The accessibility of online crowdfunding platforms makes them a powerful tool, to fund medical treatments for COVID-19, for example. A study by Rajwa et al. (2020) identified 1,579 crowdfunding campaigns related to problems associated with the outbreak of the coronavirus in just the first two weeks of the pandemic. In response to the urgency and timeliness of the topic, research has already started to examine social media content in terms of the emotions published on the pandemic. Our literature review and analysis identified a total of three research strands that deal with emotions during the pandemic or in times of crisis in general.

**Emotions in Challenging Times.** Emotions are essential to all of us, as they influence us in our daily life and cause us to react and act in certain ways (Wango et al., 2020). Especially in times of crisis, people's emotions often represent their own interpretation of events (Jin et al., 2012). Emotions can be defined as feelings that significantly influence our behavior and either originate from a natural and conscious source, or are uncontrollably triggered by external influences (Wango et al., 2020; Wuropulos, 2020). One such external influence on our emotions and behaviors is the ongoing COVID-19 pandemic. The curfews, social distancing and quarantine measures, and other restrictions, have damaged mental health and led to emotional challenges as well as financial difficulties worldwide. Several studies have revealed that, in a pandemic, particularly common are fears include losing one's job, wage cuts and layoffs (Bhardwaj et al., 2021; Sloan et al., 2020). The resulting insecurity about one's job can have serious implications for mental health (Bhardwaj et al., 2021). Other studies examined not only the fear of the virus but also the behavioral patterns it triggered in people. The increase in the number of cases, the constant feeling of uncertainty about what might happen next, and the resulting sense of powerlessness and lack of control have led many people to behave in unusual ways. Typical behaviors, especially early on in the pandemic, included, for example, rushing to grocery stores and pharmacies to stock-pile certain products such as pasta, toilet paper, disinfectant, or masks (Xue et al., 2020; Sloan et al., 2020).

**Semantic Analysis of Texts in Times of the COVID-19 Pandemic.** During the COVID-19 pandemic numerous semantic analyses of texts in social media or newspapers have been conducted and published, to examine the general mood and emotions expressed in the textual descriptions. One common finding that emerged from several studies was that the start of the pandemic coincided with a predominantly negative mood and emotions. In the social media, for example, this has been expressed in the form of fears and rumors surrounding the new virus (Kaur et al., 2020; Bojja et al., 2020; Wango et al., 2020; Bhardwaj et al., 2021). The dominant sentiment in the social media tweets studied was anticipation and the associated expectation that various measures should be taken to protect against the disease. Fear and anxiety particularly characterized discussions of infection (new cases) rates and the death toll (Xue et al., 2020). In

addition to tweets, emotionality was also examined in newspaper headlines. Here, Aslam et al. (2020) found that more than half of headlines evoked negative emotions, and fear, trust, anticipation, sadness, and anger were the most commonly expressed emotions. These findings reveal that semantic analyses have already been carried out regarding the pandemic, but not yet any with crowdfunding campaigns as the data basis.

**Topic Modeling in Times of the COVID-19 Pandemic.** Further research, in addition to identifying prevalent emotions or behaviors, has identified common topics related to the pandemic, including disease prevention, common symptoms, or the outbreak of the disease (Bojja et al., 2020). Predominant topics identified through topic modeling show that respondents are particularly concerned about the workplace and the economy in general, as well as about family and friends (Kleinberg et al., 2020). The study by Sloan et al. (2020) found that a large proportion of subjects were concerned not only about themselves, but also about family members, the older generation, and health care employees. In the literature that examines emotions during the pandemic the semantic analyses conducted are based on social media data. However, to the best of our knowledge, no semantic analysis of fundraising campaigns on the emotions during the ongoing pandemic has been conducted so far.

Given the uncertain developments regarding the pandemic and preventative measures required in the future, it is crucial to understand how, for example, governments and social organizations can support those most in need (Kleinberg et al., 2020). Given the limited literature on this timely and significant topic, this paper attempts to contribute to filling this research gap by focusing on emotions in fundraising campaigns in the context of the global COVID-19 pandemic.

## **Research Environment**

For the purpose of analyzing the emotions in donation-based crowdfunding campaigns over the course of the COVID-19 pandemic we use a comprehensive dataset from GoFundMe. GoFundMe describes itself as the leading online donation platform worldwide. The goal of this platform is to bring people together to receive or provide support in times of need. Donations can be collected either for oneself, for other people, for companies, or even for non-profit organizations. To start a campaign, fundraisers must specify the goal of their campaign, its category (e.g., Animals & Pets, Kids & Family), a zip code, and the title of the campaign, and can add images or videos, as well as text. The campaign text should clarify what the donations are collected for. Requests on this platform range from one-line texts to long, emotional narratives and calls for help (GoFundMe, 2022). The dataset we used for the analysis contains 99,427 observations, with each observation representing a fundraising request. The dataset includes all fundraising campaigns published on GoFundMe in the United States, in English, between January 2018 and November 2020. This includes 11,910 campaigns published in 2018, 30,358 in 2019, and 57,159 in 2020. The associated variables contain various elements of information about the campaigns, such as the title, the description text, and the date of publication. Based on these variables, the following analysis was carried out.

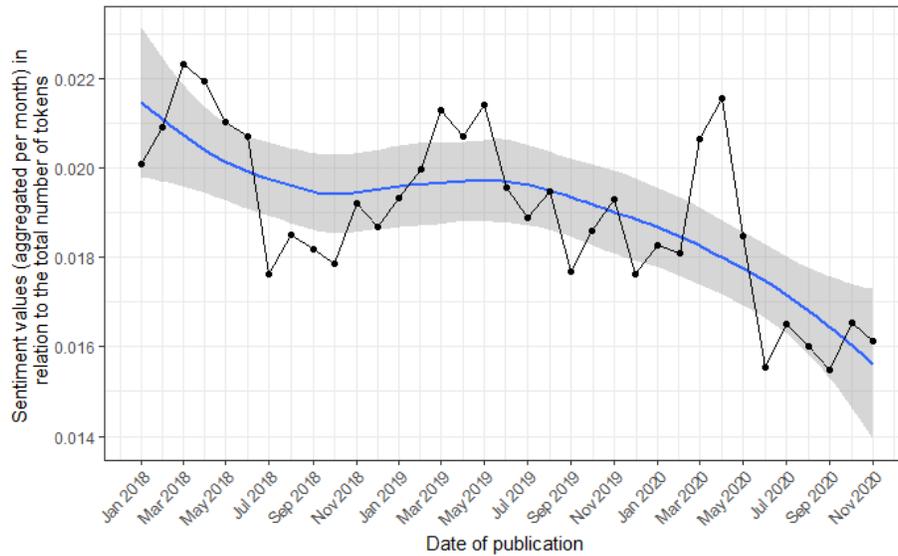
## **Data Analysis**

### ***Semantic Analysis Using a Dictionary-based Approach***

In the first part of the modelling, a semantic analysis of the fundraising campaigns is performed using a dictionary-based approach. The goal of this analysis is to identify the emotions expressed in the campaign texts. The dictionary-based approach is particularly suitable for this purpose, as it allows the positive or negative polarity of the descriptive texts to be identified. A positive polarity implies pleasant, favorable feelings or emotions and a negative polarity indicates unpleasant, unfavorable feelings towards certain events (Aslam et al., 2020).

For our analysis, the data were cleaned and prepared in a first step. As the following analysis aims to examine the campaign descriptions in terms of the emotions expressed during the COVID-19 pandemic, the textual descriptions of the campaigns, their date of publication, and the campaign title represent the relevant variables for this analysis. First, the texts must be pre-processed. This includes several steps, such as tokenization or conversion to lowercase. The pre-processing steps carried out in this study are based on Debortoli et al. (2016). After preparing the dataset, we determined the sentiment values of the pre-processed texts to identify and compare possible linguistic developments over time. The sentiment values

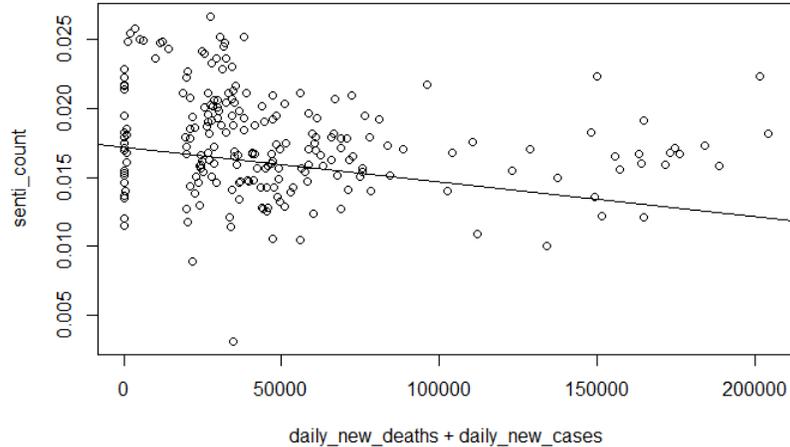
of individual words were first determined by using the *Bing Liu Sentiment Lexicon* (Bing Liu Sentiment Lexicon, 2004). This lexicon includes over 6,700 English language terms as well as the associated coding of whether the terms carry a positive or a negative sentiment. The same coding is then performed for the tokens in all descriptive texts. In addition, another variable is created which subtracts the number of negative words from the number of positive words, providing a measure of overall sentiment. The black dots in Figure 1 represent the average sentiment values per month, and the blue line displays the estimated trend. To further avoid a possible distortion of the graph due to campaigns with many negatively or positively coded words, the general sentiment is mapped in relation to the given number of words per day. Thus, the ordinate shows the monthly aggregated sentiment values (number of negative words subtracted from the number of positive words) in relation to the total number of words. As these are averages, the values are quite small, which is why even small deviations are to be interpreted as decisive. The abscissa shows the month of publication of the campaigns.



**Figure 1. Average Sentiment over Time by Month**

It is noticeable that the graph of the general sentiment in the descriptive texts shows regularly recurring fluctuations until the beginning of 2020. From April 2020 onwards, however, a sharp decline in sentiment can be seen, which reaches its lowest point in June 2020. Thereafter, the sentiment value remains at a much lower level compared to the pre-pandemic period. From the analysis, it appears that the decrease in sentiment values can be explained by both an increasing number of negative tokens and a decreasing number of positive tokens over the course of the COVID-19 pandemic. To control for consistent results across multiple lexica, the same procedure was carried out with the *NRC Emotion Lexicon* (Mohammad and Turney, 2013) and the *AFINN Sentiment Lexicon* (Nielsen, 2011). Similar results were obtained for the sentiment analysis of negative and positive emotions across all the dictionaries we used. It is conceivable that the sentiment values declined in part because of the 2020 lockdown in the United States. The lockdown may have caused loss of income or even loss of employment, whereupon those affected may have vented their frustration and despair in fundraising appeals. To find out whether there is a possible relationship between the sentiment scores and the number of cases and deaths in the US, we additionally performed a single-variable regression.

The regression line displayed in Figure 2 shows a weak, negative, linear relationship: The higher the daily number of new infections and deaths, the lower the sentiment value. The linear regression analysis shows a p-value smaller than 1% and indicates that 10.7% of the variation in sentiment scores can be explained by the changes in daily new infections and deaths according to the coefficient of determination. This statistically significant result confirms the assumption that the increasingly negative sentiment in the campaign texts during the pandemic was due, among other things, to the trends in the prevailing number of COVID cases and deaths in the US.



**Figure 2. Regression of Sentiment Values on New Infections and Deaths per Day**

### Topic Modeling

For further analysis, and to identify topics potentially connected to the changes in emotions in the campaigns, we conducted topic modeling. For this, we divided the dataset into campaigns according to whether they had started before or during the COVID-19 pandemic. The start date of the pandemic is considered to be March 13, 2020, the day on which the pandemic was declared as such by the World Health Organization (WHO, 2020). The period before the pandemic accounts for 48,123 observations in the underlying dataset, and the period during the pandemic accounts for 51,304 observations. The topic modeling approach is based on the so-called distributional hypothesis of linguistics which states that words that occur together in similar contexts tend to have similar meanings. The co-occurring patterns can be interpreted as topics and used to cluster the analyzed documents (i.e., campaign texts; Debortoli et al., 2016). For this, we used the R package *stm*, which implements the structural topic model approach and provides various tools for machine-based reading of text corpora. This method of analysis is suitable for identifying the campaign topics that prevailed before the pandemic and comparing them to those that emerged during the pandemic.

In addition to the data preparation already performed, topic modeling requires additional pre-processing steps such as removing stop words and conversion to corpora. Again, the pre-processing steps of the texts carried out in this study are mainly based on the paper by Debortoli et al. (2016) and facilitate the generation and interpretation of the topics. For each dataset, a total of 15 topics were identified. The number of topics is the result of an iterative procedure. In this process, we start with a random number of topics. Since the dataset is very large, 60 topics were determined in the first iteration. The resulting topic models were then evaluated. Some topics were partially overlapping, and, in some cases, multiple topics were included in one larger, overarching topic. Accordingly, the number of topics was then iteratively reduced to a final number of 15 topics (Debortoli et al., 2016).

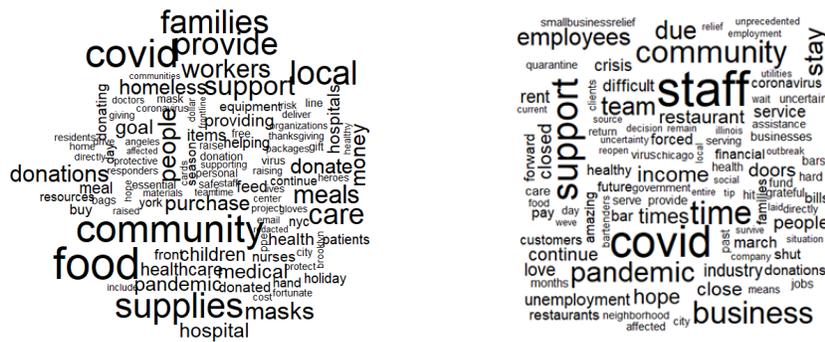
After creating the topic models, we evaluated the topics by conducting the Word Intrusion Task according to Chang et al. (2009). The output of the Word Intrusion Task is the so-called precision of the coder, which indicates in what percentage of cases the coder was able to identify the intruder from the vocabulary of the corpus that is added to the list of the five most frequent words of a given topic (Chang et al., 2009). In the context of this study, two independent coders performed this task, with each coder examining each topic. For the topic models before the pandemic, the precision for coder 1 is 93.33% and for coder 2 it is 80%. For the topic models during the pandemic, the first coder achieved a precision of 86.67% and the second coder 93.33%. These high precision results show that the topics identified through topic modeling are robust in terms of their interpretability and, thus, are a good representation of the content of the corresponding campaign texts.

The topics for the time before and during the pandemic, their distribution and the most popular words for each topic are presented in Table 1.

Topic	Top 5 Words before the Pandemic	Top 5 Words during the Pandemic	Distrib. (%)	
			before	during
Topic 1	mother, god, mom, heart, life	funds, amount, raise, gofundme, campaign	8,21	3,35
Topic 2	funeral, passed, family, loved, brother	family, funeral, passed, loved, expenses	13,52	12,16
Topic 3	surgery, vet, pain, life, dog	love, people, bring, time, gift	5,84	5,19
Topic 4	project, school, funds, community, church	school, students, college, student, program	4,30	7,05
Topic 5	home, fire, lost, house, apartment	money, raising, donation, contribution, difference	5,40	6,47
Topic 6	police, legal, stolen, truck, court	cancer, medical, diagnosed, hospital, treatment	3,44	6,04
Topic 7	cancer, diagnosed, treatment, medical, disease	people, black, food, lives, families	5,73	4,70
Topic 8	money, pay, raise, time, job	family, time, support, appreciated, friends	9,78	10,37
Topic 9	family, time, support, friends, love	money, home, pay, job, lost	10,93	9,58
Topic 10	money, raising, children, community, donation	food, covid, community, supplies, local	6,95	6,23
Topic 11	music, event, art, film, support	surgery, dog, vet, life, pain	4,55	6,87
Topic 12	school, students, team, opportunity, college	life, heart, mother, children, sister	8,41	6,60
Topic 13	people, redacted, phone, animals, email	car, hospital, bills, medical, accident	3,27	5,26
Topic 14	hospital, medical, bills, recovery, surgery	business, Mexico, shop, owned, businesses	6,51	2,89
Topic 15	life, business, dream, people, space	staff, covid, support, time, business	3,16	7,24

**Table 1. Identified Topics before and during the Pandemic and their Distribution**

The campaigns for the time before the pandemic are mainly about collecting donations for funerals of deceased friends or family members. Furthermore, donations are often needed to support friends or family during difficult times. Overall, as expected, the topics show a wide variety of subjects (Mollick, 2014), but unexpected topics or special features in the topics are not found. It is therefore necessary to examine the extent to which the thematic diversity of topics has developed during the pandemic. It turns out that the topics around funeral expenses and financial support for family and friends continue to dominate. For example, Topic 2 has the highest distribution rate (12,16%) of all 15 topics.



**Figure 3. Word Clouds of Topics 10 (left) and 15 (right)**

However, it is noticeable that topics 10 and 15, for example, are directly related to the ongoing pandemic. The word clouds of these topics, shown in Figure 3, visualize the words weighted by the probability of their occurrence in the selected topics. The larger the size of the word in the figure, the higher its probability of appearing frequently in the corresponding topic. These word clouds highlight that during the pandemic donations are mainly collected for people who may have lost their jobs due to the lockdowns or for those who had to close their business (temporarily) and, as a result, are in need of financial support. Furthermore, the visualization shows that donations are collected for the health care system or for health care workers. In addition, fundraising appeals are made for the homeless, meals and other supplies. The results of the topic modeling confirm the assumption that the pandemic and its effects have been addressed in the description texts and that there is a thematic shift in the analyzed fundraising requests. In comparison with other studies, and the COVID-related topics they identified, it is striking that some of those topics were not present in the campaign texts examined here. We did not find indications in the topics that campaigns are directly related to rumors and conspiracy theories surrounding the pandemic, unlike Kaur et al., 2020 or Bojja et al., 2020. Rather, the topics identified in our dataset address the individual needs of the fundraiser or of their relatives. Overall, however, according to their distribution of topics, it has to be emphasized that topics related to the pandemic dominate over those addressing non-COVID personal health issues. Nevertheless, it is difficult to objectively state whether the number of COVID-related topics is high or low.

## **Discussion**

The growth of donation-based crowdfunding platforms is driven by the advancing digitalization of society (Zhao et al., 2020). Particularly in times of crisis, such platforms can become increasingly important for those in need of help or for their relatives. The descriptive texts of the donation campaigns published are therefore often characterized by great emotionality, which underlines the distress of the donation callers. Pandemic-related stress in society and social, economic, health and financial concerns caused by the pandemic worldwide raises the question of how and to what extent the current pandemic has been influencing the topics of donation campaigns and of the emotionality that fundraisers expressed in them. The aim of this paper was, therefore, to review the current state of research on this issue and to conduct our own exploratory analysis of donation-based fundraising campaigns.

To this end, we investigated the influence of the ongoing pandemic on emotionality in the descriptive texts of campaigns from the crowdfunding platform GoFundMe, combining a quantitative approach of dictionary-based sentiment analysis with exploratory topic modeling. Due to its explorative nature, the initial goal of this paper is not to test theories but to explore and give an indication for possible effects of the COVID-19 pandemic on the emotional state of fundraisers. The key findings of this analysis show that public sentiment in the campaigns deteriorated sharply at the beginning of the pandemic and subsequently dropped to a lower level than before the outbreak of the coronavirus. Previous research that has conducted semantic analyses of textual data has observed similar trends over time during the current pandemic (Kaur et al., 2020; Bojja et al., 2020; Wango et al., 2020; Bhardwaj et al., 2021). By using a dataset from GoFundMe, we added a new perspective to this stream of literature as, to the best of our knowledge, we are the first to observe the sentiment and the topics in charitable crowdfunding campaigns during the COVID-19 pandemic. We argue that the difference in the characteristics of social media data and charitable crowdfunding campaigns makes this analysis interesting. Social media posts are comparably shorter and tend to pursue more superficial and short-term concerns than charitable crowdfunding campaigns. Furthermore, our analysis spans a longer period of time compared to any of the previous analyses.

Based on the topic modeling we conducted on the data, we observed an increase in the number of campaigns that try to support health sector employees or homeless and disadvantaged individuals. It is noticeable that pandemic-related campaigns encompassed many aspects of life. In the COVID-related topics we observed that not only health related issues were addressed but also issues related to professional, or financial difficulties caused by the crisis. In addition, it is suspected that factors like the number of deaths and infections influence the sentiment expressed in the campaign appeals. With our regression analysis, we observed a correlation between the daily number of new infections and deaths, and the sentiment value.

Hence, our findings offer important implications for both research and practice. Public health organizations, medical research institutions, or governments could benefit from these findings to derive insights on the current state of society (e.g., *What are the current needs in society?*, *What groups of people are in need of support?*) for policy and public interventions that, on the one hand, attempt to contain the

spread of a pandemic or other crises, and, on the other, address citizens' concerns. The results indicate that crowdfunding platforms might particularly promote campaigns from people who have lost their jobs due to business closures or issues related to the health care system by presenting these campaigns as urgent or providing statistics on the number of campaigns related to these matters.

## **Limitations and Further Research**

Our study is not free from limitations and we see numerous opportunities to build on previous results. Firstly, the dataset used for our analysis contains information on fundraising campaigns published only up to November 2020. Obviously, the effects of the pandemic are felt right up to the time of writing, as more infection waves have hit people all over the world over a period of more than two years. Accordingly, it would be relevant to examine the current fundraising campaigns in terms of the expressed emotionality to identify any additional changes. This could further explore how emotions changed after different inflection points in the pandemic (e.g., vaccine availability, Delta variant rise and recession, Omicron rise and recession). Thus, due to the uniqueness of the ongoing pandemic, new datasets are always needed to examine people's responses and their emotions in relation to the pandemic (Kleinberg et al., 2020). Secondly, to provide first insights on the development of the sentiment and the topics of charitable crowdfunding campaigns during the COVID-19 pandemic, we adopted a broad approach to the dataset. Future research could focus on subcategories, e.g., campaigns of environmental protection, or support for small businesses. Thirdly, in terms of methodology, the analysis could be extended, for example, by using further dictionaries in addition to the ones applied to the semantic analysis of textual data. This would allow to include foreign-language campaigns, rather than just those published in English. Future work could also include covariates/controls in the regression analysis, to isolate the effects of deaths, for example. Similarly, covariates can also be included in the structural topic modeling, to estimate the influence of time on topic distribution. Data sources from different countries might also broaden the perspective of the analysis beyond the fundraising campaigns studied. Due to the timeliness and uncertain future developments of the global pandemic, it is relevant to continue the investigation of the resulting emotional impact of the population.

Given the lessons learned, it is conceivable that information systems research can contribute to a timely and more nuanced understanding of the social consequences of the pandemic. With this study we aim to show how such research could be carried out. To this day not enough is known about the change in emotions in times of a pandemic, which is why further research is needed to identify long-term emotional developments. Thus, the ongoing COVID-19 crisis has spawned its own field of research (Wuropolos, 2020). This study, therefore, by offering a new perspective on the emotions during the COVID-19 pandemic in donation-based crowdfunding, can serve as the basis for further research on this topic.

## **References**

- Ågerfalk, P. J. 2014. "Insufficient theoretical contribution: a conclusive rationale for rejection?" *European Journal of Information Systems* 23 (6), pp. 593–599.
- Aslam, F., T. M. Awan, J. H. Syed, A. Kashif and M. Parveen 2020. "Sentiments and emotions evoked by news headlines of coronavirus disease (COVID-19) outbreak." *Humanities and Social Sciences Communications* 7 (1), pp. 1–9.
- Bhardwaj, S., N. Singh and B. Mohan Dash 2021. "COVID-19: A Study on Emotions." *International Journal of Recent Advances in Psychology & Psychotherapy* 5 (1), pp. 13–20.
- Bing Liu Sentiment Lexicon 2004. *Opinion Mining, Sentiment Analysis, and Opinion Spam Detection*. URL: <https://www.cs.uic.edu/%7Eliub/FBS/sentiment-analysis.html> (visited on 27-01-2022).
- Bojja, G. R., M. Ofori, J. Liu and L. Sai Ambati 2020. "Early Public Outlook on the Coronavirus Disease (COVID-19): A Social Media Study." *AMCIS 2020 Proceedings*.
- Burch, G., A. Ghose and S. Wattal 2013. "An Empirical Examination of the Antecedents and Consequences of Contribution Patterns in Crowd-Funded Markets." *Information Systems Research* 24 (3), pp. 499–519.
- Chang, J., S. Gerrish, C. Wang, J. Boyd-Graber and D. M. Blei 2009. "Reading Tea Leaves: How Humans Interpret Topic Models."

- Debertoli, S., O. Müller, I. Junglas and J. vom Brocke 2016. "Text Mining for Information Systems Researchers: An Annotated Topic Modeling Tutorial." *Communications of the Association for Information Systems* 39 (7), pp. 110–135.
- Farhoud, M., S. Shah, P. Stenholm, E. Kibler, M. Renko and S. Terjesen 2021. "Social enterprise crowdfunding in an acute crisis." *Journal of Business Venturing Insights* 15, e00211.
- GoFundMe 2022. *Why GoFundMe*. URL: <https://www.gofundme.com/c/why-gofundme> (visited on 27-01-2022).
- Jin, Y., A. Pang and G. T. Cameron 2012. "Toward a Publics-Driven, Emotion-Based Conceptualization in Crisis Communication: Unearthing Dominant Emotions in Multi-Staged Testing of the Integrated Crisis Mapping (ICM) Model." *Journal of Public Relations Research* 24 (3), pp. 266–298.
- Kaur, S., P. Kaul and P. M. Zadeh 2020. "Monitoring the Dynamics of Emotions during COVID-19 Using Twitter Data." *Procedia Computer Science* 177, pp. 423–430.
- Kim, J., D. Cho and B. Lee 2016. "The Mind Behind Crowdfunding: An Empirical Study of Speech Emotion in Fundraising Success." *ICIS*.
- Kleinberg, B., I. van der Vegt and M. Mozes 2020. "Measuring Emotions in the COVID-19 Real World Worry Dataset."
- Kuti, M. and G. Madarász 2014. "Crowdfunding." *Public Finance Quarterly* 59 (3), pp. 356–366.
- Majumdar, A. and I. Bose 2018. "My words for your pizza: An analysis of persuasive narratives in online crowdfunding." *Information & Management* 55 (6), pp. 781–794.
- Mohammad, S. M. and P. D. Turney 2013. "CROWDSOURCING A WORD-EMOTION ASSOCIATION LEXICON." *Computational Intelligence* 29 (3), pp. 436–465.
- Mollick, E. 2014. "The dynamics of crowdfunding: An exploratory study." *Journal of Business Venturing* 29 (1), pp. 1–16.
- Nielsen, F. Å. 2011. "A new ANEW: evaluation of a word list for sentiment analysis in microblogs." *Proceedings of the ESWC2011 Workshop on 'Making Sense of Microposts': Big things come in small packages* 178, pp. 93–98.
- Rajwa, P., P. Hopen, L. Mu, A. Paradysz, J. Wojnarowicz, C. P. Gross and M. S. Leapman 2020. "Online Crowdfunding Response to Coronavirus Disease 2019." *Journal of general internal medicine* 35 (8), pp. 2482–2484.
- Schwiebacher, A. and B. Larralde 2010. "Crowdfunding of Small Entrepreneurial Ventures." *SSRN Electronic Journal*.
- Sloan, M., M. Haner, A. Graham, F. T. Cullen, J. Pickett and C. L. Jonson 2020. "Pandemic Emotions: The Extent, Correlates, and Mental Health Consequences of Personal and Altruistic Fear of COVID-19."
- Sokolova, K. and C. Perez 2018. "The digital ingredients of donation-based crowdfunding. A data-driven study of Leetchi projects and social campaigns." *Journal of Decision Systems* 27 (3), pp. 146–186.
- Wang, W., K. Zhu, H. Wang and Y.-C. J. Wu 2017. "The Impact of Sentiment Orientations on Successful Crowdfunding Campaigns through Text Analytics." *IET Software* 11 (5), pp. 229–238.
- Wango, G., G. Wairire and C. Kimamo 2020. "Anxiety and Emotions of COVID-19: The Emotional Underpinnings of Dealing with the Corona Virus Disease." *JOURNAL OF PSYCHOLOGY & BEHAVIORAL SCIENCE* 8 (2), pp. 1–18.
- WHO 2020. *Coronavirus disease (COVID-19) pandemic*. URL: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov> (visited on 27-01-2022).
- Wuopulos, K. 2020. "Emotions, emergencies and disasters: sociological and anthropological perspectives on the COVID-19 pandemic." *Global Affairs* 6 (4-5), pp. 609–615.
- Xue, J., J. Chen, R. Hu, C. Chen, C. Zheng, Y. Su and T. Zhu 2020. "Twitter Discussions and Emotions About the COVID-19 Pandemic: Machine Learning Approach." *Journal of medical Internet research* 22 (11).
- Zhao, N., Z. Q. Yuan, J. J. Zou, C. L. Chiu, H. C. Ho and S. Mansumittrchai 2020. "Successful Features of Crowdfunding Campaigns: An Analysis of Requests for Coronavirus Food Relief." *ICEB 2020 Proceedings*, pp. 496–500.