How does Online Social Networks Help Spreading Sentiments?: A Comparative Analysis of Anti-Xenophobic Campaigns and Social Movements During the Time of COVID-19

Jiayue (Gaveal) Fan
Dept. of Information Science
Cornell University, Ithaca NY
jf675@cornell.edu

Abstract

Amid the COVID-19 pandemic, a rise of xenophobia in online communities has triggered scapegoating behaviors against Asian groups. Negative connotations along with xenophobic sentiments in public opinion have placed them in a vulnerable position to suffer from social inequalities, discrimination, and hatred. How is this xenophobic sentiment counteracted online and what can the online social networks do to efficiently spread the anti-xenophobic sentiments? This study explores the two different approaches in the online social media platforms to achieve this anti-xenophobic purpose: campaigns organized by authorities and decentralized social movements. To explore and improve the efficacy of both anti-xenophobic campaigns and movements, this study requests data from Twitter, constructs and visualizes the sentiment spreading networks, and quantitatively analyzes their structures and contents. By referring to the "I Am Not A Virus" movement and "I Still Believe In Our City" campaign, this study discloses the patterns behind network outreach, discusses the uses of technology affordances in building social networks, identifies catalyzing factors for both approaches, and finally explores the potential capacity of online collective actions. The study finds that opinion leaders are essential in promoting anti-xenophobic sentiments, while individual involvement sustains and stabilizes the spread. Additionally, external events to cause responses from online communities also trigger more outreach to a larger audience. This study is concluded with a detailed and comprehensive technical review on how to combine the beneficial factors to improve the anti-xenophobic sentiment spreading of campaigns and movements online.

Keyword

COVID-19, Anti-Xenophobic Sentiments, Social Movements and Campaigns, Social Networks Analysis, Public Opinion

Introduction

Online social networking has been developing rapidly in the past decades from its nascent stage to a worldwide prevalent tool for people to connect boundlessly. Amid the information exchange happening online, not only objective contents form the basic conversations reaching out to different people, but also sentiments of distinct interpretations constitute the subject parts of online communication. Social media has been an essential actor in the sentiment spreading online for its convenience of large-scale information exchange and, to some degree, anonymity, and timeliness. (Salganik, 2019) These traits provide the exclusive advantage of social media to nurture the formation of online communities and thus encourage collective actions from groups that couldn't gather otherwise.

While the outreach of social media goes beyond the physical distances, xenophobia becomes a hidden topic under many things people discuss online. It has a rich history and has appeared in many situations where people notice the difference between them and others, or to a further extent directly recognize and call others "foreigners." (Makari, 2021) Xenophobia is often linked to a negative connotation and used with another term – racism, as race is one apparent trait of humans to distinguish between themselves. Though there are more conceptually comprehensive distinctions between racism and xenophobia, it is a prevalent phenomenon online to discuss these two simultaneously. And the way how xenophobia is demonstrated in social media is implicit, usually rooted in a subtle reference to other topics. But in recent years, especially after the outbreak of COVID-19, more direct targets with xenophobic sentiments have been placed on specific nationalities and groups, in which Sinophobic and scapegoating behaviors have been prevalent in online communities. (Tahmasbi et al., 2021) This specific xenophobic sentiment has later impacted a larger group of targets outside of the original Chinese nationals – especially Asians outside of Asia – which led to both online insults and offline physical assaults. (Chou and Gaysynsky, 2021) Such aggressiveness in the public consensus brought a further societal impact – when hatred has been naturalized and integrated into the attitudes towards a specific group of people, their social status is structurally weak to strive for their deserved rights and this may even lead to more exclusionary policies from the authority. (Gover et al., 2020)

To combat the emerging xenophobic sentiments online, several stakeholders have made their respective moves. There are two types of collective actions initiated online using different approaches: movements, mobilizing sentiments from a bottom-up approach; and campaigns, delegating sentiments from a top-down approach. Both strategies were used against the COVID-19 related xenophobia online. In this research project, I will present a comparative analysis of how they respectively utilize online social networks to spread the anti-xenophobic sentiments with quantitative evaluation from case studies. I choose to analyze a Twitter-based online anti-xenophobic movement, #IAmNotAVirus, and focus on the "I Still Believe In Our City" public art campaign organized by the New York City Commission on Human Rights (NYCCHR). Both movement and campaign have been used for counteracting the xenophobia spreading online and aim to negate the vilification of Asians. By analyzing these two specific case studies on Twitter and their respective social networks, I will observe the sentiment spreading patterns within the public opinion and provide suggestions to both online movements and campaigns on better outreach strategies and amplifying their overall impact.

Literature Review

A. Collective Actions and Social Networks

Online social networks support the reticulation of public opinions and are more accessible than real-world communication for low costs and barriers of entry. Collective actions only are easily demonstrated with similarly designed affordances across social media platforms and are aided with efficient amplification of subjective attitudes with the echo chamber effects. (Lee et al., 2021) When attitudes from an individual user receive positive feedback from others, both users' personal choices and algorithmic recommendation system work to promote the contents, along with the subjective attitudes within the contents, to a larger audience group. As the impact reaches more people to form an echo chamber, which indicates the reinforcement of in-group sentiments and confirmation of information exchange, members within this echo chamber are more likely to enact collective actions rooted in their common sentiments.

Collective actions online utilize the properties of their networks to reach social mobilization, which depends on the formal operations within the network structure. (Krinsky and Crossley, 2013) To understand the structural components of the networks in which sentiments spread to

influence and direct collective actions, research on network analysis must be done to unravel the step-by-step information cascade. Past literature has referred to many case studies on how online social networks have mobilized real-world protests, including the 2011 Occupy Wall Street social movement in New York City, the 2013 Gezi Park protests in Istanbul, Turkey, and the 2019 protests against Anti-extradition Law in Hong Kong. (Tremayne, 2013; Tufekci, 2017; Sun et al., 2020) A correlation between online and offline activities has been proven in past events to demonstrate the coordination between individuals can be constructed online while enacted in the real world.

In this study, I hope to further develop the network analysis, adopted by the past literature to delineate the growth of social movements, to explore the spread of sentiments behind the movements and campaigns. Looking into how the attitudes of individuals were amplified and exchanged within a group, this study discloses the foundation of the coordination between online and offline collective actions.

B. Movements and Campaigns

Social media platforms have amplified the grassroots voices using their decentralized power in disseminating information, but as social networking has become more mature, authorities also treated the online spaces as strategic components of advertising and large-scale campaigns. The essential distinguishing factor between the decentralized movements online and digital campaigns is the approach and stakeholders they take: while the former is initiated by the crowds with a bottom-up approach, the former is organized by an authority, usually verified on the social media platforms to increase its credibility, with a top-down approach. (Armano, 2010) While past literature has mostly demonstrated the collective power of the crowds to influence the public consensus, less research was done to demonstrate the efficacy of centralized campaigns. By comparing these two means to the same end, which is spreading anti-xenophobic sentiments in this study, I present additional different measures that movements and campaigns may utilize to achieve a better audience outreach.

C. Anti-Xenophobic Sentiment amid COVID-19

The history of pandemic-prompted xenophobic sentiments can be traced back to 1918 when the influenza epidemic was nicknamed as “Spanish flu.” (Karalis Noel, 2020) In the early stage of COVID-19, scapegoating behaviors were prevalent worldwide to target Chinese nationals and people with a Chinese legacy with a xenophobic connotation. Much past literature has also demonstrated the vulgar usage of xenophobic sentiments online against the target groups. (Tahmasbi et al., 2021) While many sources trace the individual social media user’s negative portrayal of Chinese amid COVID-19 to demonstrate the growth of xenophobia in the web communities, none of them targeted the anti-xenophobic sentiments to analyze the counteractive responses in the databases they’ve established. Hence, this study will focus on the anti-xenophobic sentiments spreading online, aiming to identify the efficient way of voicing against the emerging xenophobic phenomenon during COVID-19.

Based on the careful evaluation of past literature and examination of currently available data, I present the Research Question (RQ):

How do anti-xenophobic campaigns and movements differ while simultaneously achieving the purpose of spreading sentiments?

To answer the above RQ, I will address 3 essential components of this RQ:

1. How do they expand network size to outreach more audiences?
2. What are their respective network patterns?
3. What are the respective factors to catalyze the spread of anti-xenophobic sentiments?

Methodology

A. Data Collection and Analysis

This study will be based on datasets built with Twitter Application Programming Interfaces (APIs) with information crawled from Twitter users. Twitter has its API available to the public but with some limitations. However, this study has been granted academic research access to Twitter API to conduct large-scale data extractions.

To construct the social networks within anti-xenophobic movements and campaigns, this study requests the following properties of individual tweets from Twitter API: text, tweet id, author id,

public metrics (including numbers of likes, replies, and retweets), referenced tweets, and hashtags. To visualize the social networks using the obtained data, this study utilizes Gephi as software and ForceAtlas2 as the graph layout algorithm to identify clusters and groups within the nodes and ties. (Jacomy et al., 2014) The data cleaning and parsing process is done by Python with various packages, including but not limited to CSV, JSON, and WordCloud.

B. Empirical Case Studies

This study chooses the first 3 months of the "I Am Not A Virus" online movement as the research objective, extracting all its relevant tweets under the hashtag #IAmNotAVirus (N = 6652). It is an anti-xenophobic social movement initiated by spontaneous counteractions from Twitter users to COVID-19 related scapegoating behaviors. However, it was later taken care of by an organization to become a social campaign against racism. Hence, this study only focused on its growth in the early stage (first 3 months) on Twitter.

Simultaneously, this study chooses the "I Still Believe In Our City" as the objective for campaigns, also extracting all tweets under the hashtag #IStillBelieveInOur City (N = 81) and #OurCityNYC (N = 416). (NYCCHR, 2020) This campaign is organized by New York City Commission on Human Rights as a public art campaign to exhibit Asian and Pacific Islander artists' works to promote anti-xenophobic sentiments offline and a Twitter hashtag campaign online. To compare the online social networks of campaigns and movements, this study will only focus on the online campaign part.

Results and Discussion

A. Outreach Comparison

Tweets within the hashtags play an essential role to carry the sentiment and spreading it out. By doing this, other Twitter users interact with the users who used the hashtags in their tweets. Under this circumstance, the precondition for the sentiment to flow is to have more tweets and mobilize more people, mainly the followers of the Twitter users who posted with the hashtag, to also post with the hashtag. With this logic, I calculated the number of tweets that each user has posted using the same hashtag and constructed a graph in Fig. 1 to demonstrate the percentage of Top 5 Author's Tweets out of all tweets in that hashtag.

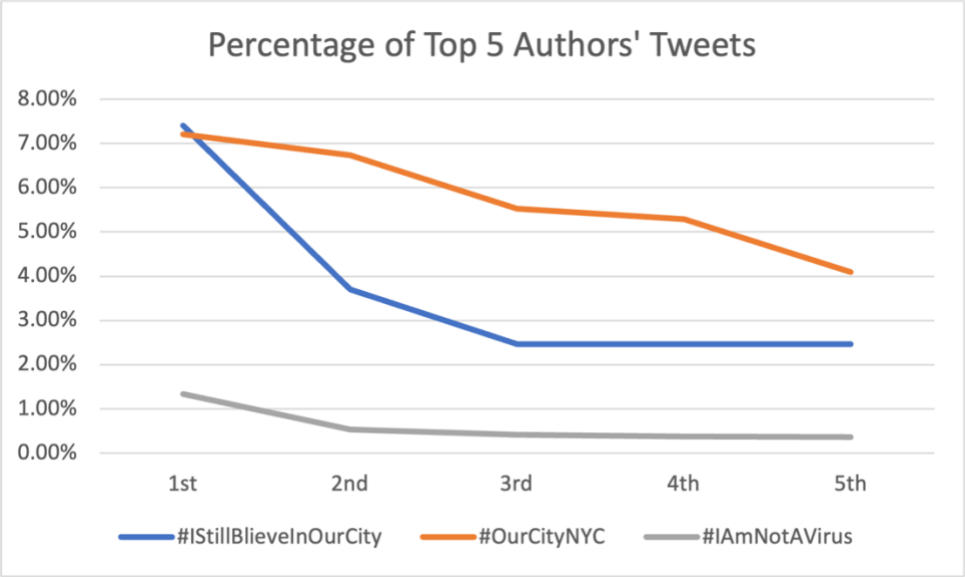

Fig. 1 Percentage of Top 5 Authors' Tweets

According to Fig. 1, there is a clear distinction between campaigns (#IStillBelieveInOurCity and #OurCityNYC) and movements (#IAmNotAVirus). While the campaign organizers become the main contributor to the sentiment diffusion, scattered individual-oriented posting is the main trend for movements to outreach more audiences. It is intuitive that the organizers of campaigns mobilize the spread of sentiments by injecting much influence from themselves, which could be their credibility that audiences have built on them because of their past experiences. However, compared to grassroots movements with more involvement from the public themselves, campaigns lack a source of consensus built by the sentiment itself.

To explain this more concretely, sentiment spreading within campaigns in our case studies suffers from the echo chambers built by themselves. This is observed by the repetitive contents and high percentage of the Top 5 authors' tweets among all. When a specific stakeholder takes up too much weight in the information exchange like what happens in our campaign case study, the outreach is not efficient, especially to new individuals who have no empathy with the sentiment, as the authority built within this community scares off new audiences.

B. Usage of Likes/Replies in Networks

Affordances on social media platforms serve important roles to demonstrate user interactions and mobilize attitudes over topics online. "Likes" on Twitter are an affordance for users to show general support or agreement with other tweets. It also reduces pluralistic ignorance for people to rule out the false belief of everyone else's attitudes. (Tufekci, 2017) "Replies" on Twitter is another affordance for users to leave a message under the original tweets, which can be seen by the author and all other users who has access to the author's tweets. It provides more concrete involvement and suggests more specific expressions of attitudes, requiring individual interpretations to understand the sentiments. These two affordances both, to some degree, counteract slacktivism and encourage more collective actions to be made within web communities. Based on these, I construct the networks of these three hashtag communities in Fig. 2 and Fig. 3 to trace the spread of anti-xenophobic sentiments.

While the nodes and ties are constituted by the same properties of the data, there are some similarities and differences demonstrated between these two figures:

Regardless of the network size, the numbers of likes and retweets (RTs) are proportional to each other. Such a pattern has proven that pluralistic ignorance is reduced by the demonstration of individual attitudes, which consolidate the growth of both campaigns and movements. This also proves that the outreach of online collective actions relies on the contents that can echo with most people.

However, the number of replies and RTs have no visible relation in small-scale networks like the campaign case studies (#IStillBelieveInOurCity and #OurCityNYC), while visibly proportional in large-scale networks like the movement case study (#IAmNotAVirus). For campaigns that have less public involvement but more authority's injection of influence, replies are not an essential parameter to measure effective sentiment spreading. This also indicates that the large-scale spread of sentiment, especially like influential grassroots movements, needs reinforcement from user replies to consolidate public involvement.

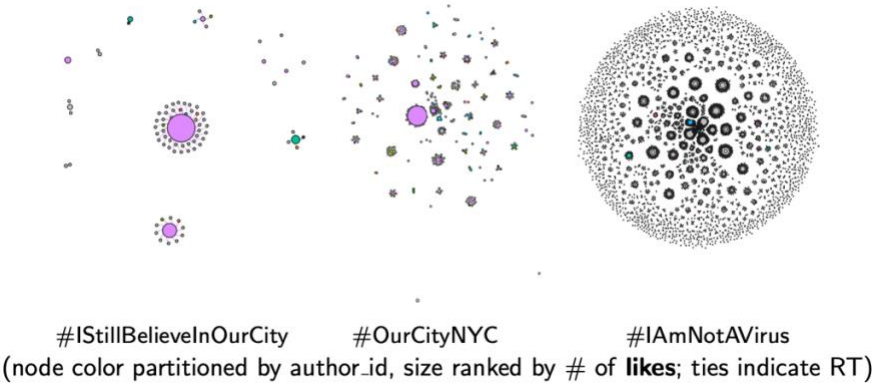

Fig. 2 Visualized Networks (Part 1)

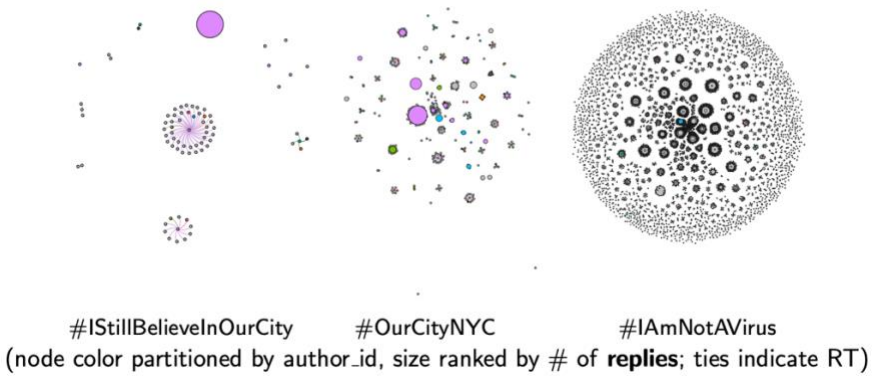

Fig. 3 Visualized Networks (Part 2)

C. Respective Catalyzing Factors

Using affordances of social media platforms to construct network patterns identifies the structural component of collective actions' development. But context-oriented factors that function exclusively for a specific campaign or movement still exist, and they require more in-text exploration to be identified. I generate word clouds using all texts from extracted tweets in Fig. 4, and an important factor is the opinion leaders' promotion of sentiments.

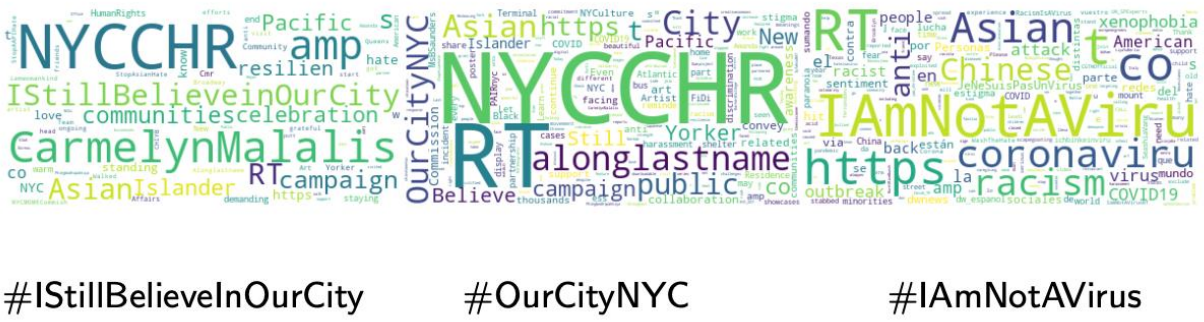

Fig. 4 Word clouds generated under each hashtag

According to the word clouds, where the words with the more mentions will be bigger in the figure, campaigns (#IStillBelieveInOurCity and #OurCityNYC) are still bounded by the organizing authorities, as NYCCHR was the sponsor of this campaign and Carmelyn Malalis was the chairperson of NYCCHR. The content coverage is still limited to the basic understanding of this campaign as being an activity hosted by an authority. However, for the movements (#IAmNotAVirus), the content coverage is wider as some obvious mentions contain "coronavirus", "racism", and other general terms to attract more public attention. There is a clear tendency that opinion leaders are more important in campaigns and usually are in direct relation with the campaign organizations. While their promotion of sentiments is extremely important to reach out to more audiences and works more for the campaigns, more general terms to appeal to the public without the existence of a specific leader function better in grassroots movements.

Besides the opinion leaders orienting the sentiment spreading, external events can also serve as a catalyzing factor for both campaigns and movements to increase outreach due to shared attitudes. To explore this factor, I plotted the chronological development of the numbers of tweets posted in all hashtags to trace the growth of both movements and campaigns in Fig. 5.

Fig. 5 Number of tweets in a chronological order

While it is intuitive that online discussions have a short life span due to the speedy overflow of information and users' rapidly changing focuses, these campaigns and movements have multiple waves. It is observed that there is a wave peak in mid/late March 2020, and there is a reason behind it – Donald Trump, the U.S. President at that time, tweeted "Chinesevirus" to indicate COVID-19 on his own Twitter account. As the purpose of the movements is to spread anti-xenophobic sentiments and counteract the mainstream xenophobic and scapegoating behaviors, this external event has caused many reactions from the web community inside of our movement case study (#IAmNotAVirus). This catalyzing factor is exclusive to the chosen case study, as it bears the responsibility to counteract xenophobic behaviors. However, what we can generalize from this case study is that the collective actions online do react to external events, depending on the specific purposes they carry.

D. Capacity of Movements and Campaigns

Observing the internal structure and development of both anti-xenophobic movements and campaigns, this study is also interested in the potential of their capabilities in outreaching outside sources. One method would be using multiple hashtags in the tweets and hence attaching the tweet to another web community under the different hashtags. This looks like tweets mentioning #IAmNotAvirus and #Coronavirus appear simultaneously in two communities and can act as a brokerage. Being a brokerage means the tweet connects two groups of Twitter audience and introduces each group to the other. With this logic, I calculated the percentage of the specified hashtags out of all hashtags used in the tweet texts and plotted a graph in Fig. 6.

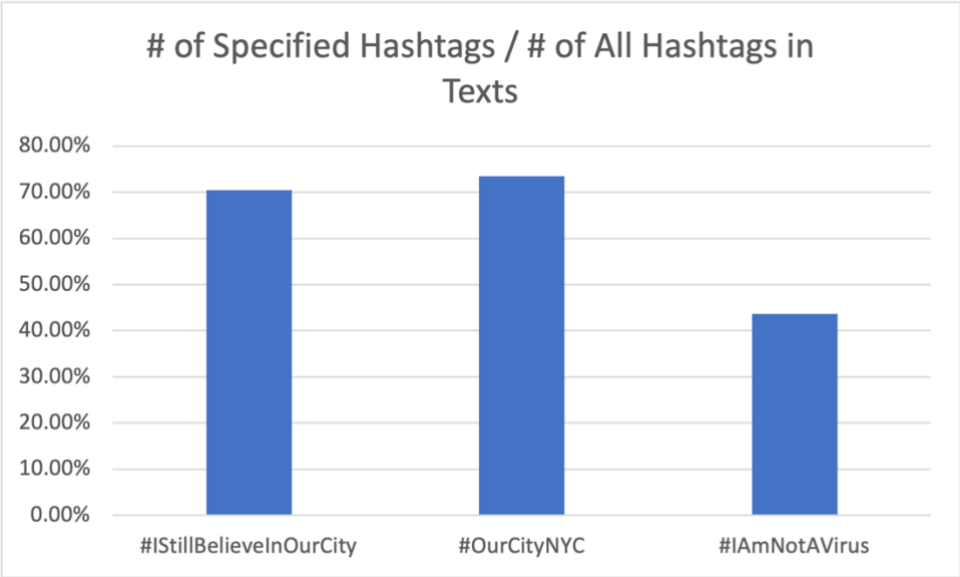

Fig. 6 Numbers of Specified Hashtags / Numbers of All Hashtags

According to Fig. 6, the centralized campaigns organized by authorities (#IStillBelieveInOurCity and #OurCityNYC) have a higher percentage of specified hashtags than the grassroots movements. This is aligned with other findings I introduced earlier to characterize the limited coverage and narrow advertising strategies of campaigns that cannot efficiently manage their co-exposure with other topics. As grassroots movements have no powerful spreaders, like the organizers of campaigns, they achieve more exposure by connecting themselves to other communities.

Another important component of the capacity of collective actions online is the stability of the networks, which can be measured in a simple way: the percentage of connected components out of all nodes in the networks. As ties are constructed from RT relationships, connected components mean that nodes are tied together, represent a meaningful interaction between Twitter users in the community, and demonstrate the cohesiveness within the networks. This is essential in framing the collective identities within groups. As the ultimate goal is to achieve collective actions to spread anti-xenophobic sentiments, a shared identity is the precondition of doing so. According to Fig. 7, movements (#IAmNotAVirus) have more connected networks to encourage more belongingness in the users in this web community. This also means that there are fewer non-connected components, which are individuals who use the hashtag but are not connected with others. To fully achieve the potential of both movements and campaigns, an

efficient way is to mobilize these individuals in the community to form bigger connected components. In this way, an ultimate collective action with a more efficient sentiment spreading structure can be built to better achieve the anti-xenophobic purposes.

Conclusion

In this study, I present the comparative analysis between campaigns and movements spreading anti-xenophobic sentiments in the time of COVID-19 with specific case studies. With the network analysis, quantitative differences can be traced to the structural reasons behind the approach of these two strategies. While one is top-down and another is bottom-up, there are distinct priorities in the sentiment spreading. However, the crux of all forms of collective actions online, including sentiment spreading, is to strengthen the robustness of the communities. If taking the organizers away, campaigns will easily fail; individual-oriented sentiment spreading does not have opinion leaders but is more stable because of the comprehensive components of networks. This study also presents more technical recommendations on methods to improve network properties of both campaigns and movements based on their respective catalyzing factors in chronological development. The ultimate status to keep the online sentiment spreading efficiently does not come from either approach itself, but a combination of the beneficial strategies from both: opinion leaders are efficient in large-scale information exchange, but individual involvement is essential in keeping enlarging and stabilizing the networks.

For the prospective work rooted in this study, contexts of anti-xenophobic sentiment spreading could be broadened. Instead of only focusing on COVID-19 related sentiments, scholars could identify other movements and campaigns that possess a wider coverage. To aim for more technical and accurate suggestions for future campaigns and movements, more quantification or agent-based modeling of identified communities' robustness could be done to offer concrete action recommendations.

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