

**Public Trust in Health Authorities:
Examining Twitter Comments on CDC and Fauci During
Covid-19**

**by
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Abstract

The purpose of the study is to examine public trust in health authorities during COVID-19 and whether individuals' trust in health authorities is influenced by inconsistent health messages. Considering the origin of public trust in the public sphere, the study focuses on the online form of the public sphere- Twitter. As many studies in health communication have implemented large-scale approaches to investigate Twitter data, this study offers a qualitative analysis by conducting a close reading of tweets that mention the Center of Disease Control and Prevention (CDC) and Dr. Anthony Fauci. The results of this research suggest that inconsistency in health guidance and information may potentially hinder public trust in health authorities. Specifically, inconsistency in numbers of COVID-19 metrics may significantly influence individual perceptions of the trustworthiness of health authorities. The rhetorical implications of research findings also suggest that existing partisan divides and general concerns in science may also shape how the public fails to trust during the COVID-19 pandemic.

Keywords: Public Trust; Twitter; Health Authorities; Crisis Communication; COVID-19

Dedication

To my families, friends, and peers for supporting me through this journey.

To my cutest cat for his company in every silent night.

Special thanks to my neighbours and friends who have offered me technical and mental support.

Cheers!

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Chapter 1.

Introduction

Preliminary research has shown strong links between public trust in health authorities and compliance to follow health guidelines in pandemic crises. Such as H1N1 influenza outbreak, trust in media and health ministry was shown as a critical factor for the public to perform the recommended health measures (Parti, Pietrantonio, & Zani, 2011). Maintaining public trust in health authorities is significant yet challenging in our current pandemic crisis when the latest scientific findings may result in changes and updates in health guidance. Specifically, these changes and updates in health messages may be perceived as message inconsistency, affecting public perceptions of health authorities who deliver the messages.

Before the pandemic, most Americans (86%) show at least a fair amount of confidence in scientists to act in the public interest (Funk, Kennedy & Johnson, 2019). During the COVID-19 pandemic, health measures including mask-wearing, social distancing and vaccination have been widely debated in public in the United States. Drawing upon literature in the field of crisis communication mainly based in Western nations, this paper questions whether inconsistent stances on health measures (such as mask wearing) and critical information (such as the origin of the virus) from public health authorities hinders public trust during the ongoing process of the pandemic. By looking into tweets that discuss two American health authorities: Center of Disease Control (CDC) in the United States and Dr. Anthony Fauci (globally recognized epidemiologist for his significant contribution in H1N1 and Aids and American Chief doctor who has served the government for several decades), this paper aims to provide insights on how public trust may have shifted during critical moments of COVID-19.

Chapter 2.

Literature Reviews

2.1. Uncertainties, Inconsistency, and Public Opinion

The literature gathered for this section demonstrates how health officials communicate health-related messages during crises, suggesting that delivering health messages to the public is inevitable but tricky in pandemic crises. These studies show how public opinions and attitudes towards health authorities can be influenced by inconsistency, contradictory and mixed messages during pandemic crises, leading to questions, doubts, and skepticism.

During the SARS outbreak in 2003, scientists have learned valuable lessons to communicate uncertainties. However, many of the same problems still existed when the H1N1 outbreak occurred (Driedger et al., 2018). According to Morens & Taubenberger (2011), “pandemic outbreaks are characterized by many areas of uncertainty including unpredictable and changing details related to scale, risk and severity of the outbreak, the categories and vulnerable people and patterns of mortality” (as cited in Driedger et al., 2018). Several aspects of uncertainties during pandemic crises create challenges for health authorities to establish consistent messages. Driedger et al. (2018) further conducted a focus group study and interviews in Canada to investigate whether a transparent communication approach can prevent public confusion caused by the nature of pandemics. Within the interviews, some participants show that they wanted health officials to offer facts with some degree of certainty. Others preferred officials to be more open and upfront with uncertainties (Driedger et al., 2018). That said, the expectations on how health officials should communicate uncertainties in health messages can be different among the public. In specific details, researchers found that the participants started to tune out many health messages when they found the message they received was mixed or contradictory (i.e., confusion over who was first eligible to the vaccine but learned that prioritization meant restricted access); such type of inconsistent or mixed messages could further lead many participants to question the integrity of public health

messages, but also the ability of health agencies. As a result, the public will contextualize the current pandemic with their existing knowledge, which does not guarantee accurate understandings (Dreidger et.al, 2018).

A recent case study of COVID-19 shows that contradictions in public health recommendations have created public skepticism and mistrust toward health authorities. Through online focus group interviews, Zhang et al. (2021)'s study suggests that Canadians had raised a sense of mistrust when the health agency changed its stances on mask-wearing. Frewer & Lynn's (2002) study demonstrates that the causes of uncertainties may affect how the public opinions of the crisis. According to Frewer & Lynn (2002), the public tends to accept uncertainties associated with the scientific process but is less accepting of uncertainties due to a lack of action on government. In other words, the public may prefer being informed with uncertainties, suggesting that transparency in crisis communication may lead to higher level of acceptance with uncertainties and the origins that cause such uncertainties may shape public opinions significantly.

Kriner & Kreps (2020) suggest a strategic approach that may minimize the erosion of public trust when communicating health messages. By conducting five survey experiments in the United States, the research shows that a less precise prediction may reduce public trust among those with high levels of scientific knowledge; however, a less precise model can avoid projections to prove wrong, which will significantly erode public support for science in the long run. In particular, the research also suggests scenarios include different types of reversals, such as the CDC reverses guidance on masks and projected fatalities, which may lead to erosion of trust (Kriner & Kreps, 2020). To avoid such reversals in health messages, some trade-offs such as reduced precision in scientific projections may help the health authorities to communicate uncertainties.

2.2. Knowledge, Trust and Compliance

Studies from this following section suggest a strong correlation between public trust in science and health authorities with higher compliance of recommended health

measures. Trust in health authorities may play a more significant role in complying with health measures than individuals' factual knowledge. The findings further suggest the urgent need to investigate how public trust may be influenced by inconsistency in health messages.

A large-scale online questionnaire hosted by the SoSci survey between March 13 and 15, 2020, among a sample of citizens of the USA explores the relationship between active information-seeking behaviours and compliance with preventative measures (Sailer et al., 2021). By conducting the study, Sailer et al. (2021) investigate how information-seeking leads to compliance with health guidelines and panic behaviour. The study suggests that higher trust in medicine will increase compliance with preventive measures and decrease the relation between information seeking and panic behaviours. Within the study, trust in medicine was assessed using the Trust in the Medical Professional Scale, and participants would rate their agreement with five statements such as “I completely trust doctors’ decisions about medical treatments are the best” (Sailer et al., 2021). Although Trust in the Medical Professional Scale addressed questions regarding trust in doctors primarily and does not ask questions on health authorities such as public health agencies, the study highlights the role of trust as they found that those who have common coronavirus knowledge tend to comply with preventive measures when their trust in medicine itself was high (Sailer et al., 2021). Conversely, individuals with low trust in medicine reported less compliance with preventive measures even if their coronavirus knowledge was high. Such findings reveal that individuals' level of factual knowledge about the pandemic may not drive them to comply with the health guidance, trust in medical professionals may play a more dominant role.

Another research also shows that trust in experts only impacts those lacking knowledge of the hazard; strong correlations were between trust, and judged risks were found for hazard perception (Siegrist & George, 2000). In correspondence to the study mentioned above in which a less precise model may reduce public trust among more those with more knowledge but will not influence public trust in health agencies among those who lack scientific knowledge (Kriner & Kreps, 2020), both studies reveal that trust may play a more significant in making judgements among those has little knowledge

on the topic. As several studies argue, trust can serve as a tool for individuals to make judgements, especially when their knowledge is lacking. Moreover, a high level of trust in scientists and medical professionals may lead to compliance with health guidelines than individuals' scientific knowledge. To overcome our current pandemic crisis, maintaining trust in health authorities is deemed urgent and significant as the higher-level trust seems to tie to a higher level of compliance closely.

2.3. Twitter as Public Discourse

The literature from this section shows how other scholars have used data from Twitter to examine public discourse; Twitter has been widely used to study the most recent large-scale epidemics, Ebola and H1N1, before COVID-19. However, whether Twitter can be considered a public sphere is debatable. To understand the communication processes in the public arena, the concept of the public sphere that was first introduced by Habermas (1962) describes the structural transformation from the 18th-century coffeehouses with a much more mediatized public sphere in the late 20th century (Habermas, 1989) has been heavily implemented to examine the characteristics of Twittersphere (Bruns & Highfield, 2015). Bruns & Highfield (2015) argue that the conceptualization of the public sphere assumes the presence of a politically engaged, rationally deliberating public. Social media platforms like Twitter are imperfect reflections of wider patterns of participation as these sites expand the "number and range of individuals who may enter the privately public space" (Papacharissi, 2010, a cited in Bruns & Highfield, 2015). According to a report from Pew Research Center (Wojcik & Hughes, 2019), 22% of American adults use Twitter, and Twitter users are younger, more highly educated, and wealthier than the general American public. Furthermore, Twitter users consist of a higher percentage of Democrats than republicans compared to the ratio in general population public, and Twitter may hold different attitudes on specific topics such as immigrants. As an online platform, the most prolific 10% of Twitter users produce the majority (80%) of tweets (Wojcik & Hughes, 2019). As Twitter allows users to have multiple accounts and some accounts may be used by multiple people or bots that produce automated content, assuming Twitter users as "all people" can be problematic (boyd & Crawford, 2012)

Although researchers acknowledged the limitations of Twitter in studying public discourse as Twitter does not represent the general population. However, Twitter is still an inexpensive and valuable source to analyze the dynamics of the networked public on social media. In 2009, Twitter messages were closely examined during the H1N1 outbreak, and the research results validate Twitter as a real-time content, sentiment, and public attention trend-tracking tool (Chew & Eysenbach, 2010). When Twitter allows health messages to be quickly disseminated among the public, Gesser-Edelsburg et al. (2015) discuss a dilemma in the current reality of the online public sphere. Also touched upon three major elements of Habermas's concept of the public sphere (1989): disregard of status, the domain of common concern and interest, and inclusively, Gesser-Edelsburg et al. (2015) discuss the challenges that health organizations face in communicating with the public sphere. On Twitter, the messages from health authorities have equal influences as other Twitter users. Gesser-Edelsburg et al. (2015) argue that in such a sphere that gives power to the public, it poses challenges for organizations to express their professional knowledge and manage the outbreak concerning equal powers.

Rauchfleisch, Vogler & Eisenegger (2021) also propose four dimensions of the public sphere to narrow the focuses on crisis-related topics, investigating public debate about COVID-19 on Twitter. Using extensive digital trace data, Rauchfleisch, Vogler & Eisenegger (2021) examined the effect of lockdown of public life on the public discourse on Twitter about the pandemic. Trust in scientists during the COVID-19 outbreak is also investigated through Twitter and online surveys. During the early phase of the pandemic, Battiston et al. (2021) investigate the dynamics of reliance on public health authorities during the early phase of the pandemic in Italy. The results also suggest a strong correlation between trust in science/health authorities and public containment support.

Furthermore, the study suggests that public trust in public health authorities and their responsiveness to expert sources were weakened with prolonged exposure to the epidemic. The study opens a space for discussion on whether public reliance on scientists may decline over prolonged exposure to the pandemic. In particular, Al-Ramahi et al. (2021) investigate the topics associated with the public discourse against wearing masks in the United States. The researchers extracted all tweets, identified all hashtags between

January 1, 2020, to October 27, 2020, and categorized a large volume of tweets into ten categories obtained using the latent Dirichlet allocation model, which identifies key themes/issues of anti-mask discourse on Twitter (Al-Ramahi et al. 2021). The findings also demonstrated the potential to further investigate public discourse about issues during the pandemic by mining tweets.

2.4. Conceptualising Public Trust in Health Authorities

To examine public trust in health authorities, this paper borrows the conceptual framework from Gille, Smith and Mays (2017) and methodological inspiration from Abelson et al's empirical approach (2009), as well as Gilson's (2006) notion of an institutional type of trust in health authorities. In discussing public trust in health authorities and how the public expresses their trust through tweets we collected, the concepts of "public trust" and "health authorities" need to be addressed first. There are two health contexts: interpersonal trust between the patient and provider and institutional trust between individuals, the healthcare system, and the government. Drawing upon both conceptual literature and empirical research, Gilson (2006) discusses the role of trust by asking four key questions: 1) what is trust, can it be constructed? 2) Why does it matter to health systems? 3) what is it based on? and 4) What are the dangers of trust. Gilson (2006) argues that trust is commonly discussed in a one-to-one relationship, yet another type of generalized trust in others that institutions such as organizations and the expert system of medical knowledge act to establish the foundations of trust in the complex social system. That said, trust in the CDC and Dr. Anthony Fauci can be considered a generalized trust between individuals and the organization and the expert of medical knowledge.

On the other hand, Gille, Smith and Mays (2017) propose a conceptualization of trust in the health care system that situates the origin of public trust in the public sphere, which individuals shape, the health care system, the state and other societal institutions. With specific details, Gille, Smith & Mays (2017) emphasize the role media plays in channelling information within and outside the public sphere, which significantly influences public trust in all social institutions, including shaping public trust in the

health care system. Gille, Smith & Mays (2017) further suggests that people's trust in the health care system does not necessarily need to have had any personal experience of the health care system to reach a judgement about trust. Instead, two forms of participation in the public sphere can influence their perceived trust as a whole: active participation in physical fora and online fora for a such as Twitter. By looking at these two forms of participation in the public sphere, we can explore individuals' experiences of trust in the health care system. This conceptualization of public trust offers a valuable framework to investigate individuals' trusting experiences in Twitter, as Twitter is considered one form of participation. This framework guides researchers to explore public trust by examining the discourse of individuals' experiences and the Twitter system. However, it does not offer an empirical construct to investigate and measure public trust in the health system.

As many trust discourse focuses on how interpersonal relationships (patient and provider) in shaping trust in the health care system, Abelson et.al (2009) also urges the need to explore the dynamics between interpersonal trust and institutional trust to examine how the public loses and build trust in the health care system. To do so, Abelson et.al (2009) conducted a focus group cross-sectional survey. Their findings suggest that the core to trust relationship is the experience of vulnerability in which the participants tend to position themselves as the vulnerable party. Abelson et.al (2009) work provides an avenue to invent a new empirical approach to interpret public discourse on Twitter. Two significant findings can guide further research to interpret public trust through textual analysis. First, the study focuses on how participants describe themselves when discussing the health system, and the results reveal that respondents tend to construct cleavages and alliances. By positioning themselves (the participants) as “us”, they position themselves as the vulnerable party and the health care system as "them"- the dominant party. The “us” and “them” portrayal also reveal that the public perceives themselves outside of the health system rather than members of the health care system. Such constructs can be considered in further analysis on public trust in health care authorities.

When examining trust in health authorities through tweets, we can explore whether the sense of vulnerability is expressed in trust-related claims. Inspired by

Abelson et.al (2009), the study will address research questions by analyzing how the expressions, cues, and terms applied in tweets collected contribute an in-depth analysis of public trust in health authorities.

Chapter 3.

Methodology

3.1. "Small Data Approach"

In order to decipher public trust in health authorities during our current pandemic crisis, the study must collect data from the general population. With the limitations mentioned above, Twitter still offers a valuable avenue for researchers to investigate epidemics, and Twitter is considered as popular means of disseminating news and updates in emergent situations such as pandemic crises. Since Twitter provides a tool for tracking the spread of epidemics, the platform has also been used to investigate public attitudes and reactions. In the United States, Twitter has become a commonly used communication tool for many local health departments and CDC since the Ebola outbreak (Wong et al., 2017). Tran & Lee (2016) conduct a large-scale data-driven analysis of geotagged social media messages to understand citizens' reactions to public health crises understand citizen reactions regarding Ebola. By mining a large scale of tweets, the method allows the researchers to identify a pattern of propagation on Twitter and measure how main topics on Ebola spread locally and globally (Tran & Lee, 2016). To study public knowledge and beliefs that manifested in Twitter, sentiment analysis has also been widely employed to study Twitter messages. Dubey (2020) also conducted a sentiment analysis that investigates how people from twelve countries felt about the pandemic in the early phase of the pandemic, and the study demonstrates "Trump" as one of the most tweeted words in all twelve countries (Dubey, 2020). Large-scale studies from Dubey (2020) and Tran & Lee (2016) contribute a general snapshot of the pandemic crisis. Nevertheless, minimal substances/details of perceptions are presented in large-scale studies on Twitter.

When big data approaches can reveal patterns, connections, and comparisons for Tweets analysis, privileging large-scale quantitative approaches can sideline other forms of analysis as big data loses its meaning when taken out of context (boyd and Crawford, 2012). Furthermore, boyd & Crawford (2012) argue that Twitter data has methodological

challenges because of the limits of datasets from Twitter APIs and the questions that researchers ask from the data they try to interpret. When studying public trust from Twitter data, a smaller sample size with sophisticated interpretation can be necessary to complement the existing large-scale studies.

To analyze the comments left on news outlets to investigate the concerns and potential measures that can be developed to support the public during COVID-19, Shorey et.al (2020) conducted a qualitative analysis involving a small size sample of 2075 comments shared by Singapore's public. By separating these comments into five major themes, the analysis illustrates the significant concerns expressed in the public's responses. Such an approach investigates how users expressed their concerns, worries and expectations of the pandemic situations, revealing other potential underlying reasons that caused the public reactions. To explore whether and how public trust is influenced by inconsistency in health messages, the relation between the two cannot be interpreted and concluded by concrete metrics. These two carry complex meanings varied in different social and cultural contexts. By examining a relatively small number of tweets with detailed scrutiny, this study contributes insights into how public attitudes toward the CDC and Fauci may be influenced by health messages, especially when perceived as inconsistency. For this study, a close reading approach will qualify certain words, themes, and ideas related to trust from the sample tweets we collected.

3.2. Study Design

According to Brummett (2018), close reading requires a mindful, discipline reading of an object to provide understanding and meaning. To execute a close reading on tweets and further analyze public trust in health authorities, the research aims to collect tweets that reflect public perceptions on two health authorities (CDC and Fauci) when new findings on COVID-19 were announced. By doing so, the study aims to examine public trusting attitudes in the CDC and Fauci by extracting and interpreting tweets when these new findings may be perceived as inconsistency in health messages.

Four key events were explicitly chosen to examine whether inconsistency in public health messages has influenced public trust in CDC and Fauci. The events all contribute new findings or guidance of COVID-19. These events are: World Health Organization announced COVID-19 as a global pandemic on March 11, 2020 (Event 1); WHO recommended the public to wear masks on June 5, 2020 (Event 2); WHO announced the virus is extremely unlikely from the lab on March 31, 2021 (Event 3); and Fauci's early confidential emails were released on June 2, 2021 (Event 4). Other events, such as several of Trump's conflicting statements against the CDC and debates about reopening school and vaccination policies, may also cause public confusion. However, these four key events were chosen because the events all implied specific guidance and updates in health messages. To explain, event one was chosen to examine how the public commented and perceived the health authorities during the very initial stage of the pandemic. As mask-wearing was highly controversial throughout the early stage of the pandemic, event 2 was chosen to see whether the public may perceive the announcement as inconsistency and how the event may have influenced public trusting attitudes. Similar to the selection of event 2, the origin of the virus has been widely discussed. This newest update on this issue may help us examine public trust in health authorities as the director of the CDC and Dr. Fauci had both commented on this issue. Lastly, event 4 was chosen because the release of Fauci's emails contains information covering several debates of COVID-19, including mask-wearing and the origin of the virus that is not fully aligned with Fauci's earlier statements. Therefore, the public may interpret this event as reversals, contradictions, or inconsistencies in health messages.

3.3. Sampling and Data Collection

The study collected data by generating 300 tweets mentioning "Fauci" and "CDC" over a three-day range for each critical moment mentioned above. We decided to examine tweets through a three-day interval, and tweets were documented in UTC (coordinated universal time). The reason for extracting tweets for a three-day interval is that we can capture immediate public responses to the events before and after. Therefore, tweets from March 10, March 11, and March 12 were pulled out for the event on March 11, 2020. Three-day intervals were applied to the other three key events as well. Using

Snsrape (a public python library), 300 tweets on Fauci and CDC on four key events were extracted, resulting in 2400 tweets (N=2400). Scrape library allows us to scrape tweets through Twitter API without any restrictions or request limits. To reduce randomness, we applied filters including like counts and language (English) when scraping tweets.

After extracting four tweets (N=2400) containing keywords, we cleaned the data by manually removing irrelevant tweets for the research. The data cleaning process excluded tweets with minimal reference to trust-related topics, remaining tweets purely informative regarding CDC, Fauci and federal guidance. This data cleaning process then returned unequal amounts of tweets as some data sets have more relevant tweets than the others (range from 101-30 tweets). To be consistent with each data set, we chose to top 30 tweets with the most likes for each set of data (N= 240).

3.4. Research Questions

As noted, many studies have implemented an enormous number of tweets and engineer the data into an existing model; such methods allow researchers to make sense of the data at a macro-level but have not offered to decipher the expressions and arguments embedded in those tweets. With three research questions in mind, the study examines the sample tweets (N=2400) by paying specific attention to arguments and expressions of trust in these tweets; the research aims to answer these three central questions:

RQ1: How are the CDC and Fauci discussed during critical moments in the COVID-19 pandemic in Twitter discourse?

RQ2: What cues and terms were employed to express trust/distrust?

RQ3: How may these comments tell us whether message inconsistency may influence public trust in health authorities?

To address these questions, the research will examine the tweets by providing a generalized snapshot of how the public discusses the CDC and Fauci on those key events.

The second step is to extract common expressions of trust/mistrust, such as cues and terms from all tweets. Lastly, the paper will discuss public trust in health authorities with health message inconsistencies, bringing the observations back to the theory.

Chapter 4.

Data Analysis

RQ1: How the public discusses the CDC and Fauci?

Earlier in January 2020, WHO has warned the public about the spread of novel Coronavirus but did not use the term "pandemic" as it meant another level of emergency in crisis communication. "Pandemic is not a word to use lightly or carelessly... it is a word that can cause unreasonable fear or unjustified acceptance that the flight is over...", said Dr. Tedros in WHO's public briefing (Ducharme, 2020). The declaration of the pandemic has indeed escalated public awareness; examining tweets on this date can demonstrate how the public perceives CDC and Fauci at the very initial stage of the pandemic crisis. Among thirty most-liked tweets mentioning CDC during event 1, three out of thirty tweets mention the WHO all discuss concerns on "WHO testing kits."

["Trump won't ask to investigate why the U.S. declined to use the WHO tests that were ready in Feb and sent to 60 countries but instead waited months for the CDC to develop a test that allowed the virus to spread unchecked. Nope, he wants to investigate THE MEDIA. Because of course."] - Event 1, March 11, 2020

In correspondence to large scale sentiment analysis conducted by Dubby (2020) in March 2020 that Trump was one of the most frequently tweeted words among all twelve countries, the majority of the sample tweets contain keyword CDC (N=30) show severe concerns for Trump and Trump's administration in dealing with a pandemic crisis, especially on Trump's decision of not using WHO testing kits. In some tweets, CDC suggested a reliable source for pandemic guidance and Trump as the untrustworthy voice.

["Trump is going to get people killed. A lot of people. This is getting scary- not the Coronavirus, but how the White House sees it as a political rather than public health issue. I will say it again: LISTEN TO THE CDC AND STATE HEALTH OFFICIALS AND EXPERTS. IGNORE TRUMP".]- Event 1, March 12, 2020

Multiple tweets like this one also refer to the CDC as a source for public health messages compared to Trump, suggesting that the public believes health messages should be

apolitical and some still hold a certain degree of trust in CDC, according to the following tweet:

[" I just want to stress to politicians and the media to stop using Coronavirus as a tool to politicize things and to scare people. It is not responsible. This is not the time for this. People need to be looking to the CDC for guidance".]- Event 1, March 11, 2020

Besides accusing Trump of not using WHO test kits, there are a proportion of tweets (4 out of 30) show frustration on the CDC's responses on COVID-19 and reveals a certain level of distrust at this moment:

["Why are they lying to us? The CDC won't give us a straight answer. The V.P. @VP won't answer. Dr. Fauci won't answer it. And the Surgeon General won't answer it. How many Americans have been tested? Why did we not use the WHO test when we had a chance to?"]-Event 1, March 12, 2020

Nearly a year after, the WHO released its report on the joint investigation between Chinese and WHO investigators on March 30, 2021 (Event 3). The report states that the virus was extremely unlikely from a lab. According to Reyes et al. (2021), the controversy surrounding the origin of COVID-19 and the misinformation through mass media may influence individuals' perceptions and behaviours towards the virus. A Pew Research Center study conducted a year ago shows 3 in 10 Americans believe the virus is made in lab (Schaeffer, 2020). Although the report from WHO does not give certain, concrete answers to the origins of COVID-19, this new understanding may be discussed by the public online. One day before the report release (event 3), Trump has publicly accused Dr. Fauci of "reinventing history to cover for their bad instincts and faulty recommendations". Consequently, very few tweets collected from March 29 to March 30 contain keyword Fauci mention the new report from WHO, most tweets discuss Trump's accusation of Fauci. For tweets collected from March 29 to March 31, 2021, the term "virus" is highly such as:

["Fauci is a sociopath and a liar. He had nothing to do with vaccine. The father of the vaccine is @POTUS45. Fauci is the father of the ACTUAL virus. Wuhan lab!"]-Event 3, March 30, 2021

By describing Fauci as "the father of virus," this tweet reveals the opposite attitude that we found from tweets that describe him as "the hero" from previous events. Multiple tweets use the term "liar" or "lie" to signify attitudes of mistrust in Fauci. Tweets like this may contribute to the reasons why some believe Fauci is a liar.

["We already knew that Birx was a liar and Fauci was a Flip Flop. We already knew!"]-Event 3, March 31, 2021

Several tweets like this with a shared link directing to a page of Trump's statement accusing Fauci and other disease experts of trying to reinvent history in a CNN interview detailing roles in combating the COVID-19 outbreak, showing the influences of Trump in directing public opinions on Twitter. Other than Trump's accusation, the term "father of virus" comes from Peter Navarro- who served as the assistant during Trump's administration. On March 30, 2021, Peter Navarro calls Fauci's father of the virus and accusing him of allowing China and the People's liberation army to engineer COVID-19 genetically(Navarro, March 30, 2020). On the other hand, a few tweets show support and trust in Fauci toward Navarro's public accusation by saying,

["hoping Fauci will sue this driveling, sniveling, impaired pile of parrot droppings."]-Event 3, March 31, 2021

Many studies conducted by Pew Research Center have shown partisan divides in Americans Trust in scientists. More specifically, Republicans and Republicans, leaning independents, are more likely than Democrats to say the virus was created in a lab (37% vs 21%). Among the tweets criticizing Fauci, many referred to Fauci.

["says exactly want democrats him to say."]-Event 3, March 31, 2021

Before the pandemic, partisan influences of public trust in scientists have been studied extensively in the United States, reflected in tweets commenting on the CDC and Fauci. Rhetoric analysis on Trump's tweets during COVID-19 has shown three major overarching ideologies embedded in Trump's tweets, including Asian American discrimination and racism, distrust of large institutions (CDC) including the media, and an increased political polarization (Lange, 2021). Our findings also suggest the significant role of Trump's discourse on Twitter during the pandemic, as Trump and

Navarro's attack on Fauci appear in most tweets. WHO's report on the origin of the virus is merely mentioned. As most of the tweets reveal people's expectations of scientists and health authorities should be independent sources of objective truth to guide the pandemic situation, their claims on health authorities on Twitter usually involve political references and expressions. Such a finding suggests that Twitter comments on health authorities may be deeply infused with partisanship, which also poses a challenge to investigate whether opinions and attitudes from the public by looking into Twitter data.

On June 5, 2020, WHO officially recommends using health masks in public settings (Event 2). Whether the public should wear non-surgical marks to slow the spread of COVID-19 was one of the critical debates in the early phase of a pandemic. In China, nearly all people wear masks as mask-wearing was made a mandatory health measure during the very early stage of pandemic (Tan et.al, 2020). Although the global public may have adapted to a basic understanding of COVID-19 by this date (June 5, 2020, Event 2), health officials recommended using face masks at different times in different countries. In the United States, the CDC did not suggest people wear cloth face coverings when social distancing is challenging to maintain until June 28, 2020. Nevertheless, the data collected from June 4 to June 6, 2020, also demonstrate the public attention was devoted to other major incidents that happened co-currently during the event (event 2).

On May 26, 2020, a series of protests against police brutality and racism began in Minneapolis, led to health concerns as hundreds of protestors went on the streets. For tweets collected on June 5, the texts reveal that public trust in Fauci was influenced by Fauci's attitudes toward the mass protest. However, the tweets demonstrate diverse public opinions in Fauci. Some of the tweets seemed to blame Fauci for shutting down businesses but not vigorously oppose the protests, saying:

["We got duped by China, the @WHO, and Fauci into shutting down American businesses to destroy our economy. The mass protests prove that radical activist liberals know the severity of COVID-19 is a hoax. They found comfort in destroying @realDonaldTrump's booming economy."]- Event 2nd, June 5, 2020

Martin (2021) discussed the incident of George Floyd in Minneapolis show how protesters demand more significant support from public health officials to make tactical adjustments by incorporating health guidelines and protest methods. Through some of the tweets, doubtful attitudes are clearly shown:

["So...has no one called Dr. Fauci to ask his opinions of the protests? Or is he no longer useful as an expert since he will give an honest and consistent opinion?]-Event 2, June 6, 2020

Dr. Fauci has spoken about the protests as the "perfect setup" for Coronavirus spread during the time (Event 2) (Lannelli, 2020). Still, many tweets show intense frustration towards Fauci's recommended policies by saying

["Fauci has magically discovered that when protesting, Covid 19 does not spread! But no trips to beach, churches, swimming pools, picnics...."]-Event 2, June 5, 2020

And

["Very well Fauci calling out the protests with no qualifications, He is not an expert on social protest, limits his comments to health risks."]-Event 2, June 6, 2020

These two tweets show opposite attitudes on how Fauci should have reacted to the protests, yet both shows displeasing attitudes towards Fauci and the situation. The varying attitudes also highlight one of the tricky dilemmas of balancing protest rights with risks of virus transmission during a pandemic crisis. Overall, a significant percentage of tweets reveal a high level of distrust and anger:

["Hey Doomsday Fauci, you can crawl out of the filthy "WHO" rock now, everyone know you are the biggest FARUD; a HYPROCRITE."]- Event 2, June 6, 2020

The tweets on Fauci gathered on June 5, 2020, also align with the finding mentioned above, which demonstrates that other incidents that occurred during the identified key events may have influenced the dialogue on Twitter. More specifically, the George Floyd incident also reveals public expectations on Fauci to provide explicit opinions in tricky situations. In comparison, tweets on the CDC collected from the same time frame reveal the public's expectations of the CDC. Most of the tweets from June 5,

2020, do not relate the CDC to the mass protest but still show a low level of confidence regarding how the CDC handled the situation. By comparison, the public seems to be more concerned about the CDC being influenced by politics:

["Has the CDC lost credibility? The CDC now actually is in contrast with the World Health Organization. The CDC based all of their policies on a faulty information."]- Event 2, June 5, 2020

This tweet reveals that public skepticism may arise when the CDC's health messages do not align with the WHO. At the time, the CDC has not suggested the public wear masks. When the CDC's guidance conflicts with the WHO, it raises concerns about whether the health agency provides accurate information to the public. That said, the inconsistency in health messages from different agencies may cause public confusion, and some may perceive such inconsistency as "faulty information," as the tweet shows. Furthermore, these tweets commenting on the CDC and Fauci also show that the public may perceive these two figures of health authorities differently, as they would expect Fauci to provide fast and transparent responses to the ongoing situation and demand the health agency (the CDC) to stay more consistent with general health information.

On March 30, 2021, the WHO released its report on the joint investigation between Chinese and WHO investigators; the report stated that the virus was extremely unlikely from a lab (Event 3). In a cross-sectional study that examines misinformation regarding the origin of COVID-19 in social media and news, Reyes et al. (2020) argue that the controversy and misinformation surrounding the origin of COVID-19 may influence individuals' perceptions and behaviours as the study has established a possible link between perception of COVID-19 virus and the perception about social distancing. A Pew Research Center study conducted a year ago shows that 3 in 10 Americans believe the virus is made in a lab (Schaeffer, 2020). Although the report from WHO does not give specific, concrete answers to the origins of COVID-19, this new understanding may be discussed by the public online, especially when a poll conducted in June 2021 shows over half of the adult's trust U.S. intelligence agencies or the World Health Organization about how the pandemic started, and 1 in 5 said they believed the virus came from the lab (Gavin, 2021).

Meanwhile, the CDC has suggested that COVID-19 was not made from the lab as the official site states, "epidemiologists determined that the virus possibly came from an animal sold at a market" (July 2020, CDC), which aligns with WHO is a report on March 30, 2021. Examining tweets mentioned by the CDC may help us identify whether the consistency of understandings on the origin of COVID between WHO and the CDC helps gain some confidence from the public. However, only two tweets from the thirty top-performing samples discuss the origin of the lab, and both tweets mention the former director of the CDC's claim that "COVID-19 might have come from the Wuhan lab". The rest of the tweets (N=28) do not touch upon the topic on the origin of Coronavirus, and most tweets criticize the CDC' and the director of the CDC for spreading fear:

["The director of the CDC crying on air and saying she's scared of the "impending boom" is an absolute embarrassing train wreck. What a joke. You may not like how Donald Trump handled things but at least he didn't allow this scare tactic nonsense to perpetuate".]- Event 3, March 31, 2021

Similar to previous observations, incidents that happened co-currently with new scientific findings seem to strongly influence how the public perceives health authorities (the CDC) in this case as well. Quotes such as:

["listening to the CDC director nearly in tears begging people to stay the course, made me wish that we took public health approaches to public health problems. It's hard to both listen to her pleas and watch her agency loosen restrictions based on weak studies."]-Event 3, March 31, 2021

Such comment reveals the public attitudes on health authorities showing emotional attitudes when conveying health messages to the public; some events commented that

["the CDC director seems to be trying to create a panic." One of the tweets points out that health messages such as "impending boom" is ineffective and can damage the credibility of public health authorities:]-Event 3, March 30, 2021

["Hysterical/unhelpful quotes like therefore CDC continues to lose credibility.... The message should be to get vaccinated, not "impending doom, I am scared."]-Event 3, March 31, 2021

This tweet reveals the public's discomfort of emotional public health stances from the CDC. Most tweets criticize the CDC's director's emotional expression on T.V. rather than

the origin of the virus (event 3). Based on this observation, the public may expect health authorities to hold a straightforward, concise tone when delivering health messages and expressing the severity of the crisis with sentiments that may trigger public panic.

On June 2, 2021, over three thousand pages were obtained by the Washington Post, BuzzFeed News and CNN through the Freedom of Information Act request released Fauci's emails from January to June 2020 (Event 4). The release of Fauci's private emails once again has caused criticism, as the email has covered Fauci's responses on lab-leak theory, masks, and conversation with Bill Gates (BBC, 2021), and some of the contents were not fully transparent at the time. One of the critical questions raised from these emails is whether Dr. Fauci backed Chinese denials of the theory that COVID-19 leaked from a lab as an email to Fauci suggests unusual features of the virus may be engineered, and Fauci did not support the theory. Unsurprisingly, tweets collected on Event 4 contribute negatively to Fauci, and many tweets directly show distrust toward Fauci and science.

["Fauci misled the world by saying lab leak theory had been debunked when it hadn't been. Chinese officials thanked him for doing so. Where is the accountability."]- Event June 4 3rd, 2021

This tweet exposes public distrust in Dr. Fauci. More than that, the message shows the public believes there is a suspected affiliation between the Chinese government and Fauci through the emails, and such conversation undermined Fauci's credibility among the public. Many tweets express similar doubts and anger on Fauci, saying:

["Amid the recent exposure of Fauci's emails, Fauci's claims that the attacks on him are very much an attack on science. Anthony Fauci is not a scientist. He's just another bureaucrat in Washington, D.C."]-Event 4th, June 2, 2021

Such tweets also correspond to previous findings that the public tends to lose confidence in health authorities when they suspect political factors played a role in health messages.

While for tweets on the CDC collected on this date, only a few tweets touched upon the incident-Fauci's emails were released. The majority of tweets discuss the issue of whether the CDC is transparent with data on vaccination. All of the tweets show strong skepticism and distrust of the CDC:

["Scary when the head of the CDC makes such a simple data and analytical error"] and

[" I find it amazing so many of us have to spend so much time and effort sharing data and evidence, just to combat the misinformation, exaggeration, and lack of context presented by mainstream media, and even the CDC."]-
Event 4, June 3, 2021

Overall, the comparison also verifies three significant findings from the sample tweets: 1) the identified events are not the only factors that influence trust in Fauci and the CDC as other incidents are mentioned along with expressions of distrust frequently within the sample tweets 2) the public may have different expectations on public health agency and scientists as they seem to ask different types of questions during the key event 3) associations with politics between health authorities (the CDC and Fauci) are consistently correlated with public distrust in the sample tweets collected.

Chapter 5.

Discussion

5.1. Expressions of Trust and Distrust

RQ2: What cues and terms were employed to express trust/distrust?

Lies, lying and liar

In many of these tweets, the messages refer to health authorities: the CDC and Dr. Fauci as liars or as the subjects who lied/lies. How do lies or acts of lying relate to trust? According to O'Neil (2012), lies are open in a way that invites a kind of trust from the victim, and these invitations to trust, in turn, put the deceiver into morally problematic relation to the victim's trust. Following O'Neil's (2012) arguments, several tweets also demonstrate how the public perceives trust in relation to lies.

["No, I think people probably stopped trusting the CDC after they deliberately lied and told people not to wear masks. If you think the response to Coronavirus has been coherent, I admire you."]-Event 2, June 6, 2020

As the message reveals that lies and coherent messages on mask-wearing caused people's decline of trust, the term "deliberately" that describes lying also referred to the deception of the message was intentional and active. This message also suggests that the "not to wear a mask" message was considered a "lie," a form of deception rather than an inconsistent or inaccurate health message. Several other tweets also use the term "lie" to express their concerns on other topics, such as:

["So CDC and media daring Fauci lied about the origin of the Wuhan virus!? Trump was right again"]-Event 3, March 30, 2021

This tweet was published during event 3 frames a conflicting relationship between CDC/Fauci and Trump, as it says, "Trump was right again." That said, such sayings reveal that if one side of them (CDC + Fauci VS Trump) was lying on the origin of the virus, and only one side can be trustworthy. The sayings show that some may perceive

the trustworthiness of health authorities from a black and white lens of extremity. When science itself is an evolving process with inherent uncertainties, it challenges the public to distinguish updates of health messages from faulty information if they perceive health authorities as "black."

Truth

["We must QUIT giving time and resources to Fauci. He continues to betray the great American people and distort the truth. Now he's releasing a book that will forever document his lies. Are you kidding me?]- Event 4, June 3, 2021

When denying the trustfulness of Fauci, this tweet also introduces a commonly used expression, 'truth', a term that shows how the public perceives the situation. In this message, the content of "truth" is not defined. Instead, it is used as an antonym of lies to show frustrations of being lied to as it says, "Fauci betray the American and distort the truth. A similar expression that is used in the other tweet:

["Censorship on Twitter has reached ridiculous levels. Maintaining the bogus narrative of Covid requires permitting the lies of conflicted scientists like Fauci, while suppressing the truths of courageous and honest ones"]- Event 4, June 2, 2021

From this tweet, "lies of conflicted scientists" suggest that Fauci had established contradictory sayings. The message does not provide any details on what and how Fauci "lied" but accusing Twitter of promoting "lies" of Fauci but censoring voices from "honest and courageous ones." Without identifying the "courageous ones," such expression simply attacks Fauci and the transparency and legitimacy of Twitter. Like this message, Fauci and the CDC's Twitter comments cannot be considered a logical argument as it does not provide any reasoning process. Instead, most tweets involve sentimental elements that describe how they think of the CDC and Fauci. The term "conflicted" also reveals that contradictory/conflicting messages may hinder trust in health authorities. Although the tweet does not refer to any specific conflicting messages, it hints at how conflicting messages can be perceived as lies.

Science

Besides "lies" and "truth," the term "science" is also frequently used, and these expressions reveal that the public expects "science"- health messages to remain apolitical, consistent and accurate. This tweet says:

["The state of "science" in 2021:1. The CDC publishes flawed study whose claims are contradicted by its own data 2. Agenda-driven "scientists" make no effort to investigate or correct the errors in this study; just repeat the conclusion 3. Media propagates claims to build fear"]- Event 3, March 30, 2021

This tweet demonstrates denials of the CDC (and its data) and accusing the scientists who worked for the CDC of being influenced by hidden agenda. Again, this tweet does not provide further details on which claims/data are contradictory. Nevertheless, it shows that the public expects science/scientists to be not agenda-based, self-correcting, and consistent. Furthermore, when tweets like this say

[“mandating cloth masks is anti-science”],

it means that the person believes mask-wearing does not follow the system of knowledge applied in general truths. When it says, "Fauci isn't science," the message appropriates the concept of science as it is a system of thinking (science/not science) to a person.

[“Calling out Fauci is not anti-science. Mandating cloth masks is anti-science. Keeping kids out of school is anti-science. Locking down stores is anti-science. Closing beaches is anti-science. Refusing to gather post-vax is anti-science. Fauci isn't science. He is a fraud.”]- Event 4, June 3, 2021

Moreover, the term "fraud" is used to describe Fauci. Compared to the term "liar," "fraud" refers to a form of actions that Fauci has done, such as "keeping kids out of school" for his benefit. The term "fraud" reveals a more aggressive attitude than "liar." These recurring tweets that mention science contribute to the public's high expectations on science and what scientists should provide to the public in a pandemic crisis; further research on how public expectations and opinions on science and scientists can enrich our understandings of public trust in health authorities.

We (us) VS They (them)

To investigate how the public locates their trust in the health care system, Abelson et al. (2009) find that people tend to separate themselves from other actors within the health care system. By positioning themselves as the outsider of the system, a sense of profound vulnerability is shown. By analyzing the transcripts gathered from interviews, some participants also portray the government and the doctors as an alliance, and others position themselves as alliances to the health provider against the government. By examining how people position themselves concerning the CDC, Fauci and the government can help us to examine their attitudes toward the CDC and Fauci through the tweets.

As suggested in this tweet, the "US CDC" was framed as another party they," but it does not tell how they position themselves.

[" This is frustrating: the US CDC is still misrepresenting the action of mRNA vaccines. They do not simply "display" the protein at the surface of the invaded cell, which would be much preferable"]- Event 3, March 31, 2021

Many tweets do not suggest how the public situates themselves in the system. However, some tweets reveal how the public perceives relationships between the CDC, the politicians and other actors by paying attention to the positionalities. Such as this tweet:

["It's hard for the CDC to get the public to follow their advice as U.S. cases continue to rise. Because Trump, the GOP and Fox constantly undermine what scientists, doctors and public health experts have to say. They're preying on fools and cult mentality."]-Event 2, June 5, 2020

This tweet forms two alliances: Trump, the GOP and Fox as the group with "cult mentality" and "scientists, doctors and public health experts" –(the CDC) as the group who should advise the public. None of the tweets suggest the CDC and Fauci in the same alliance with Trump. For tweets mentioning the democrats or democratic party, the tweets do not position Fauci and CDC in the same group with the political party. Many tweets also show suspicion of Fauci and CDC's relationship with the party. As this tweet shows:

["I'm going out on a limb here. But it sure seems like Democrats used Dr. Fauci to weaponize the pandemic against Trump."]- Event 3, March 30, 2021

In all the tweets that mention both CDC and Fauci, the messages position these two figures as one group, such as

["As a general rule, whatever CDC/Fauci says—believe the opposite"] and

["Moving on with life. Idc what fauci or the CDC says anymore. They can talk into the abyss all they want. Everybody living."]-Event 4, June 2, 2021

Other than the CDC and Fauci, Gates is also portrayed as an alliance with the health authorities. However, senses of trust and distrust are shown in these tweets that associating Gates and the CDC. One tweet says:

[Gates is the top donor to @WHO, @CDCgov & all other global health initiatives. @gatesfoundation is the single most influential entity on the planet for global health strategies & masterplans. Those who receive his money chant the mantra without hesitance.]-Event 1, March 10, 2020

This tweet reveals skeptics in gates foundation and its relation to the CDC by claiming gates foundation as "the single most influential entity to global health strategies," this tweet reveals skeptics in gates foundation and its relation to the CDC. While this tweet holds skepticism on Gates foundation:

[" Hey there, It is a noble use of money, although I do not believe charity can fix runaway income Inequality, nor should it replace paying taxes to fund the CDC/NIH or policies like paid sick leave or guaranteed healthcare. Billionaires are not a personal thing, and it is a structural thing!]-Event 1, March 11, 2020

Nevertheless, both of these tweets reveal the public attitudes towards the CDC but do not comment on the credibility of the CDC, simply commenting on the Gates foundation.

5.2. Inconsistency and Trust

RQ3: How do these comments tell us whether message inconsistency may influence public trust in health authorities?

Kriner & Kreps (2020) suggest that a trade-off in precision in scientific prediction may minimize the erosion of trust in public health authorities among those who lack scientific knowledge. Many tweets collected in our study demonstrate that the public tends to raise skepticism when the data presented by the CDC is inaccurate.

["There are 429 cases of COVID-19 diagnosed cases in the USA, up from 360 this afternoon which was up from 164 yesterday. The number reported by CDC is still 164. It hasn't budged in more than 36 hours. Gee, wonder why folks don't trust the trump administration to tell the truth"]-Event 1, March 10, 2020

This tweet suggests that the public demands a fast update on the cases of COVID-19 from the CDC, and the inconsistency on the data reported could lead to doubtful attitudes towards the health authority. Many other tweets also reveal that the consistency of case numbers of COVID-19 may serve as an indicator of trustworthiness. Like how this tweet raises questions on mask-wearing:

["New York had over 50,000 new covid cases last week, big spike. Still has mask mandates and very high compliance. Texas got rid of statewide mask mandate- which lock downers said was reckless- and the cases keep going down every week. Ask Fauci why, watch him dodge and babble"]-Event 3, March 31, 2020

Although there are several metrics, including case numbers, testing, deaths, hospitalization, and recoveries, used to inform the public about the progress of COVID-19, only case numbers are mentioned in the tweets we collected. Furthermore, this tweet suggests that the public uses metrics, particularly the case numbers, to evaluate whether the pandemic is managed correctly. When the effectiveness of health strategies does not align with the suggested health measure (i.e., when mask-wearing does not lead to a decline in case numbers), such inconsistency may lead to skepticism toward the health authority (Fauci). Moreover, many tweets use numbers to suggest whether the CDC is trustworthy, yet no evidence is provided in their sayings, such as:

["This is a lie and should be flagged as misinformation. Hospitalizations are not increasing for people ages 12 to 17. They're decreasing in all age groups. CDC's own data shows this. This narcissistic nut needs to be dethroned."]- Event 4, June 3, 2021

Other than case numbers, other metrics such as "vaccinate rate" is mentioned. As this tweet says:

["Look, I know what the CDC said about masks, but I also know what the vaccinate rate for this state a whole bunch of y'all liars]- Event 4, June 3, 2021

The message suggests that the person has correlated the previous stance from the CDC and what the CDC says about the vaccination rate. The expression of "y'all liars" suggests that the previous stance or inconsistent message on mask-wearing has hindered their trust in the vaccination rate. This tweet also expresses confusion over which guidelines to follow:

["The mask debate in my vaccinated head is now do I look like a considerate science denier or an inconsiderate person who read the CDC guidelines, I choose consideration AND ignorance, what a time to be alive"]-Event 4, June 2, 2021

The term "considerate science denier" reveals that the CDC guidelines were perceived as "science." Nevertheless, the person chose to ignore the guideline because he/she believes it is more considerate not to follow the CDC's recommendation. This tweet was published, the CDC already announced that the public does not need to wear masks after being fully vaccinated. However, the message suggests that the person does not believe in new mask-wearing guidelines, which may link to the inconsistent message on mask-wearing earlier in 2020. In correspondence to Zhang et al.'s (2021) findings, there was an emerging sense of mistrust connected to the mixed and shifting messages around the use of face masks in Canada. From the tweets we collected from the study, the effectiveness of masks was questioned in some tweets in the early phase of the COVID-19, but the mask-lift after vaccination is also questioned. In both ways, the public shows hesitancy in performing health messages recommended by public health authorities, and our findings cannot fully explain whether the public tends to trust less in health authorities due to inconsistent health messages. However, inconsistencies in metrics of COVID-19 such as

case number and vaccination rate are discussed in many tweets, and most of the tweets show skeptics towards such contradictions.

5.3. Summary

As Gille, Smith and Mays (2017) argue, public trust in the health care system is shaped by four major actors: individuals, the health care system, the state and other societal institutions. In our study, these four actors are all discussed within the tweets: Twitter users (individuals), the CDC and Dr. Fauci (health care system), Trump's administration and democratic party (the state) and Gates foundation and others (other societal institutions). Gille, Smith and Mays (2017) further suggest that we consider physical and online fora as two forms of participation in the public sphere that influence individuals' judgment of trust in the health care system. The study examines the online form of participation through Twitter.

To answer the central research question on whether inconsistency in health messages would hinder public trust, the key events were chosen to testify whether new findings or changing stances in health messages would influence public trust reflected in Twitter comments. The data suggests three significant patterns. First, partisan discussions may have oriented the comments on Fauci and the CDC. Second, the public may expect an alignment between public health messages established by the CDC and WHO's announcements, and inconsistency in such messages can cause the public to be concerned about the accuracy of the CDC data. Third, the public may have different expectations of different health authorities (CDC and Fauci). Further research can separate these two health figures to investigate public trust in science, scientists and health agencies.

More specifically, metrics involved in the reports of COVID-19 serve as a reference for the public to evaluate whether the health authorities deliver truthful information. When case numbers reported by the CDC contradict other information sources, it raises skeptics and doubtful attitudes towards both the CDC and Fauci. The rise and decline of COVID-19 metrics number may serve as indicators for the public to perceive whether the health measure (mask-wearing) is effective.

Chapter 6.

Conclusion

6.1. Conclusion

Public trust in health authorities is vital in guiding the public to adhere to health measures during our current pandemic crisis. Nevertheless, the inherent uncertainties embedded in scientific processes have led to a challenge for health authorities to maintain their trust in crisis communication. Studies in crisis communication have proposed several strategies to deliver inconsistent messages, yet the research on public trust and message inconsistency are scarce. By providing an in-depth analysis of tweets mentioning health authorities during four critical moments that understandings of COVID-19 have shifted, the study aims to enrich the field of crisis communication by providing implications on how public trust can be influenced by inconsistency in health messages.

Firstly, the close reading approach paid attention to terms and words that were used to express distrust and trust in these tweets. Within the tweets, several expressions such as “liar/lies,” “truth,” and “science” are commonly used to present senses of trust/distrust in Twitter discourse, and this finding suggests the potential of understanding public trust by investigating the logic behind these common expressions in trust-related claims.

Secondly, by interpreting how the public positions themselves and other parties through the tweets, the study shows that pre-existing opinions in health authorities may influence their trust in health authorities in crisis communication. Aligned with other large-scale approaches that Trump’s sayings on Twitter play a significant role in pandemic discourse, Trump-related partisan claims influence many trust-related claims on the CDC and Fauci. Therefore, exploring how partisan claims intertwine, influence, and to relate to trust-related claims may enhance our understanding of public trust.

Lastly, the analysis contributes that inconsistent message is correlated with a sense of distrust among the public. Specifically, numbers of pandemic metrics such as vaccination rate and case numbers reported by health authorities (the CDC) may serve as a vital reference for individuals' judgement on whether the health message is consistent. Therefore, further study can examine how inconsistency in numbers may hinder public trust in crisis communication.

6.2. Limitations

The notion of trust is complex, and scholars have implemented various approaches to measure, evaluate, and grasp different layers of understanding of trust. This study situates trust in health authorities as a mechanism that individuals rely on to make sense of the pandemic and make decisions and judgments of health measures during the COVID-19 crisis. This study assumed that public trust could be influenced during these critical events by interpreting Twitter comments on CDC and Fauci at critical events. Twitter comments can reflect how the public perceives the health authorities. In the end, such a hypothesis is not testified as many Twitter comments do not mention the critical events. Nevertheless, the methodology (close reading) still allows us to draw detailed observations on how the public perceives the CDC and Fauci through Twitter comments and other factors that may play a role in constructing the trust mechanism.

As mentioned earlier, Twitter users cannot represent the public and examining Twitter comments can only reveal a partial piece of public trust. With less time and resources restrictions, community research that involves interviews and surveys at the local level may help us understand the concerns and causes that influence public trust in health authorities. The findings from the study can be implemented into survey and interview question designs strategically.

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