# GOING VIRAL: A QUALITATIVE ANALYSIS OF THE ANTI-VACCINE MOVEMENT & SOCIAL MEDIA

by

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ABSTRACT

In the recent years of the rise of Web 2.0, health information has become more accessible. With this shift has come a reliance on social media to inform and educate the masses on vaccines. With the introduction of the Covid-19 vaccine, the conversation surrounding vaccines moved to the forefront of the United States' zeitgeist from late 2021 to early 2022. In this research, I conducted a case study on the communication surrounding vaccines on social media while examining specific Facebook groups that advance the misinformation surrounding vaccines. I examined over 300 posts from four public Facebook groups in order to determine how the Covid-19 vaccines and vaccines in general were being discussed. Through qualitative content analysis, multiple strategies were revealed that illuminated how the masses on Facebook utilize social media to participate in anti-vaccination culture.

*Keywords*: Vaccines, Anti-vaccine, Covid-19, Social Media, Facebook, Qualitative

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# CHAPTER ONE: INTRODUCTION

The Internet has become a place where anybody can contribute content via blogging, photo-sharing, video uploading, and more. The creation and sharing of user-generated content supported by applications are what drive social media (Kata, 2012). Social media is a powerful force for influencing the masses by providing a platform through which users may sway public opinion on fundamental health practices such as vaccines within large public spheres. The anti-vaccination movement has gained traction in recent years due to the prevalence of social media such as Facebook groups and parenting blogs as well as other platforms such as YouTube, Twitter, and Pinterest (Tangherlini et al., 2016). Individuals turn to social media for vaccination advice which impacts health decisions and influences whether people vaccinate themselves or their children (Kata, 2012). In this thesis, I review the research that has been done on the conversation surrounding vaccines on social media while also examining specific Facebook groups that advance the misinformation surrounding vaccines. There is no shortage of Internet groups dedicated to this topic, but I focus on the research that has been conducted on these groups' mobility of their anti-vaccination beliefs. It is through social media that these groups have permeated the public sphere and influenced the conversation surrounding public health.

Understanding the role of persuasive storytelling at the Internet scale provides useful insight into how people discuss vaccinations (Tangherlini et al., 2016). Health in society is a broad topic and by focusing on the portrayal of vaccines, more can be gleaned

from their tactics. This research is important because the misinformation that has been spread about vaccines in the past few years has led to a rise in diseases such the measles, mumps, and whooping cough - diseases that were previously nearly eradicated from the United States (Guidry et al., 2015). In past nearly two years, Covid-19 has pervaded the discussion on public health on a global level. In 2021, as the Covid-19 vaccine became available to the genreal public in the United States, it widened the dichotomy between vaccine advocates and anti-vaxxers furthering the polarity of these two sides. By studying the discourse within anti-vax groups, we can better understand how the public receives its information and therefore learn how to combat it. The purpose of this research is to examine the relationship between social media, health communication, and the anti-vaccination movement. With my research question being *how do these four Facebook groups reveal a pattern of anti-vax communication in social media*, I seek to collect data examining four Facebook groups whose posts aim to persuade audiences against vaccines.

In this research my goal is to examine the data collected from Facebook posts to determine the techniques employee by users propagating anti-vaccination sentiments. First, through the review of literature in Chapter Two, I examine key aspects that relate to social media, health communication, vaccine hesitancy, Covid-19, and race. This review of relevant literature is crucial to understanding the functions of social media, advocacy, and power which is significant when discussing anti-vaccine culture. In Chapter Three, I discuss my method, a case study completed through a a qualitative analysis under an interpretivist lens. Chapter Four presents my findings through a detailed analysis of the data collected by the case study. And finally, in Chapter Five, I discuss the limitations of

this study, explore the implications of anti-vaccination through this research, and offer insight on potential areas of future research.

# CHAPTER TWO: LITERATURE REVIEW

## Web 2.0 and the Rise of Social Media

The Internet provides an incredible resource for the wealth of human knowledge. In its early development, content was only given by the provider or host of websites (Kata, 2012). Though the exact definition of the term "Web 2.0" is debated, its meaning is generally derived from comparison against the first generation of the Internet – Web 1.0 (Kata, 2012). The main difference between the two is the amount of interaction and user-generated content; whereas Web 1.0 content was controlled by the provider, Web 2.0 allows users to create information (Kata, 2012). User-generated content can be viewed as the various forms of media, whether it be text, images, audio, video, or a combination of some or all of these elements that are created, added and made available online by Internet users (Obar, Zube, & Lampe, 2012). Anybody can contribute content via blogging, photo sharing, video uploading, and more. The creation and sharing of user-generated content is supported by applications known as social media e.g. YouTube, Blogger, Facebook, Twitter, etc.

Perhaps the most significant entity born from Web 2.0 is social media. Kaplan and Haenlein (2009) define social media as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and allow the creation and exchange of user-generated content. Social media is globally ubiquitous, penetrating the population regardless of education, race/ethnicity, or health care access (Chou et al., 2009). It enables users to display their association with other users, creating a visible

network of social connections that can be traversed. We are living in the middle of a remarkable increase in our ability to share, cooperate with one another, and take collective action, all outside the framework of traditional institutions and organizations (Shirky, 2008). On Facebook, this is realized through the processes of "friending" other users and "liking" pages, allowing users to grow and articulate their social network and create a sense of community (Boyd & Ellison, 2007). It is through this community that ideas, recommendations, and opinions are shared.

As more members join social networks, communication channels grow exponentially more diverse, and the possibility of spreading inaccurate or problematic information grows right along with that (Hawn, 2009). Web 2.0 places carefully scrutinized evidence next to the opinions of crusaders, critics, and conspiracy theorists, potentially weakening messages from qualified experts (Kata, 2012). Scientific knowledge is no longer transmitted solely through a one-way channel of communication from scientific communities to "lay" readers through the knowledge transmission "chain" (Beacco et al., 2002). People have the ability to bypass the experts and perform their own research on various subject matters.

The Internet makes it easy to fall into a trap of self-referencing and mutually reinforcing links that can fool users into believing there are many who share their beliefs, when in reality it may only be a small, committed group (Kata, 2012). Through the use of social media, certain groups are able to mobilize their message in efforts to effect change. The focus is often the development and maintenance of a form of social relationship between actors, individuals, and parties, with the goal of participating together in mobilization activities within the political realm, such as interest formation, community

building, and forms of action (Obar et al., 2012). This is not only because public conversations spread awareness about advocacy issues but also because they often provoke deliberation about how they should be addressed (Obar et al., 2012). Until recently, advocacy organizations were forced to circumnavigate media gatekeepers to stimulate public conversation about their causes. However, the advent of social media offers all advocacy organizations the potential to stimulate far-ranging conversations that spread rapidly across diverse groups of people (Bali, 2016). Social media has the power to connect people, but conversely, it may contribute to the dissemination of falsities.

## Social Media & Health Communication

\Social media facilitates health communication in many beneficial ways. Users can engage and educate others by sharing medical histories, treatment successes, and failures, or experienced side-effects of medicine. This creates increased participation of patients as “active contributors" in their own care, and their subsequent empowerment. It also creates the emergence of online communities and social networking, the sharing and collaboration of knowledge, and the personalization of healthcare (Kata, 2012). Essentially, Web 2.0 lets patients engage in their own medical contributions. While medical knowledge was previously bound to textbooks and journals, the Internet allows access to the “school of lay medicine”, shifting the focus of power from doctors as the authority of a patient's care to the patients themselves (Kata, 2012). The traditional focus of power has evolved from doctors as sole directors of patient care to shared decision-making between health professionals and individuals who wish to be active participants in their own health decisions (Dubé et al., 2013). By engaging and sharing with others, social media has created a community of health networking.

Through social media, people can be empowered, informed, and engaged (Hawn, 2009). With millions of people using Facebook every day, the popular social media site has become a network of health discussion. Facebook's vast and global membership means that it represents a significant medium through which contemporary discourses are produced and consumed, including those around health and illness (Hunt & Koteyko, 2015). The use of Facebook's technological affordances also opens new frontiers of participation in health discourse that blur distinctions between public and private genres of discourse (Hunt & Koteyko, 2015). Along with promoting aspects of self-care, the health discourses on certain Facebook groups are bound together with contemporary discourses of personal responsibility and normalized self-surveillance in relation to 'expert advice' from health professionals and commercial organizations (Hunt & Koteyko, 2015). These recent forms of discourse have brought about a change in the status of science so that science has now become an object of debate in the public arena (Beacco et al., 2002). What was once perhaps indisputable as scientific fact is now up for debate on Twitter pages and Facebook forums.

In the health communication community, there is a widespread assumption that recent advances in Internet technologies (Web 2.0), particularly social media, have transformed the pattern of communication, including health-related communications (Chou et al., 2009). With the increase of user-generated content, information sharing is seen as more democratic and patient-controlled, enabling users to exchange health-related information that they need and therefore making the information more patient/consumer-centered (Chou et al., 2009). However, the participatory nature of social media entails an open forum for information exchange, therefore increasing the possibility of wide

dissemination of noncredible, and potentially erroneous, health information (Chou et al., 2009). Emphasis on user-generated content has combined with characteristics of the current postmodern medical paradigm, creating a new environment for sharing health information (Kata, 2012). Any person with a social media account can potentially be part of any conversation regarding health information.

Social media allows connection and community through the sharing of experiences and stories. However, it can also perpetuate group think which reinforces already-held beliefs. Online communities have a strong tendency toward groupthink that often results in shared trust between community members (Tangherlini et al., 2016). People find comfort and camaraderie in hearing that others have gone through the same experiences as themselves. Given the persuasive nature of personal experience, storytelling plays a central role in exposing people to ideas and converting people to particular beliefs. People are inclined to believe first-hand accounts from members of their community, as opposed to official pronouncements (Tangherlini et al., 2016). One of many important factors that may determine whether advocacy organizations stimulate large social media conversations is how the content of their messages fits into pre-existing discourse about an advocacy issue (Bali, 2016). In the case of anti-vaccination groups, these people seek to confirm their already-held beliefs regarding the perceived dangers of vaccinations.

## Vaccine Hesitancy

Vaccination programs have aided in the reduction of mortality and morbidity associated with a variety of infectious diseases, and are credited with the eradication of poliomyelitis in the Americas as well as the worldwide eradication of smallpox (Dubé et

al., 2013). Vaccination programs rely on a high level of uptake to be successful in reducing the prevalence and incidence of vaccine-preventable diseases (Dubé et al., 2013). In addition to providing direct protection for vaccinated individuals, high vaccination coverage rates provide indirect protection for the entire community, known as herd immunity, by slowing the spread of vaccine-preventable diseases thereby lowering the risk of infection among those who remain vulnerable in the community (Dubé et al., 2013).

Vaccine hesitancy refers to delay or refusal of vaccination despite the availability of vaccination services (MacDonald, 2015). It is complex and context-specific, varying across time, place, and vaccines (MacDonald, 2015). This hesitancy is a behavioral phenomenon measured against an expectation of reaching a specific vaccination coverage goal, given the immunization services available (MacDonald, 2015). It is an individual behavior influenced by a range of factors, such as knowledge or past experiences (Dubé et al., 2013). Vaccine hesitancy is also the result of broader influences and should always be viewed in the historical, political and socio-cultural context in which vaccination occurs (Dubé et al., 2013). It is difficult to have a comprehensive picture of vaccine hesitancy at the population level because hesitancy is not directly related to vaccine uptake. Vaccine-hesitant individuals may accept all recommended vaccines in a timely manner, but still have significant doubts in doing so (Dubé et al., 2013). Reluctance can also vary depending on the vaccine (for example, one may be hesitant about the flu vaccine but confident about all other vaccines), with newer vaccines causing more hesitancy (Dubé et al., 2013). A recent example of this is the Covid-19 vaccination which was introduced and widely dispersed in 2021.

Vaccine-hesitant individuals have been defined as a heterogeneous group in the middle of a continuum ranging from total acceptors to complete refusers (Larson et al., 2014). These "hesitant" individuals may refuse some vaccines but agree to others, delay vaccines, or accept vaccines but are unsure of doing so (Larson et al., 2014). According to MacDonald (2015) vaccine hesitancy is influenced by the following factors:

a. Communication and media environment
b. Influential leaders, immunization program gatekeepers, and anti- or pro-vaccination lobbies
c. Historical influences
d. Religion/culture/gender/socio-economic
e. Politics/policies
f. Geographic barriers
g. Perception of the pharmaceutical industry
h. Personal, family, and/or community members' experience with vaccination
i. Beliefs, attitudes about health, and prevention
j. Knowledge/awareness
k. Health system and providers – trust and personal experience
l. Risk/benefit (perceived, heuristic)
m. Immunization as a social norm vs. not needed/harmful
n. Risk/benefit (epidemiological and scientific evidence)
o. Introduction of a new vaccine or new formulation or a new recommendation for an existing vaccine
p. Mode of administration
q. Design of vaccination program/mode of delivery (e.g., routine program or mass vaccination campaign)
r. Reliability and/or source of supply of vaccine and/or vaccination equipment
s. Vaccination schedule
t. Costs
u. The strength of the recommendation and/or knowledge base and/or attitude of healthcare professionals

Many industrialized countries have successfully eliminated or eradicated numerous vaccine-preventable diseases and, consequently, many people, including medical professionals, have not seen the devastating effects of these diseases in their respective countries (Machingaidze & Wiysonge, 2021). This could lead to complacency, altered risk calculations, and limited collective responsibility about vaccination decision-

making (Machingaidze & Wiysonge, 2021). The ongoing resurgence of vaccine-preventable illnesses has led the World Health Organization to name vaccine hesitancy as one of the top ten threats to global health in 2019 (Puri et al., 2020). Despite government and health organizations' recommendations, an estimated 13% of parents choose to either delay or refuse vaccines for their children (Glanz et al., 2013).

When evaluating the risks and benefits of vaccination in general, the risks may be overestimated and may seem more immediate and tangible as compared to the more abstract potential benefits of disease prevention (Puri et al., 2020). Individuals who refuse or are hesitant to be vaccinated often share a particular view about health (Dubé et al., 2013). This might include a preference for natural immunity, the belief that exposure to vaccine-preventable diseases aid in building a strong immune system, the belief that exposure to disease can be controlled, or the belief that good hygiene and personal habits can render vaccination unnecessary (Dubé et al., 2013). The decision not to vaccinate is reversible, but the opposite is not true (Dubé et al., 2013). Many studies have found that people are more afraid of the risks connected with taking action—i.e., getting an "unsafe" vaccine—than the risks involved with doing nothing (Dubé et al., 2013). Among the contributors to vaccine hesitancy is misinformation regarding the benefits, medicinal composition, and adverse effects of vaccination which limits patient understanding and overall buy-in (Puri et al., 2020).

Some people who have doubts and worries regarding vaccine safety employ a completely different decision-making paradigm or hold a distinct set of beliefs surrounding health and illness (Dubé et al., 2013). The majority of anti-vaccination campaigners' arguments are part of a larger phenomenon known as "denialism" (Dubé et

al., 2013). Denialism is described as "the use of rhetorical arguments to create the illusion of a valid debate where none exists, with the end purpose of rejecting a statement on which there is scientific consensus" (Dubé et al., 2013). Diethelm and McKee (2009) have shown that denialists use similar tactics to deny evolution, climate change, or falsely assert the fact that vaccines cause autism, by relying on "conspiracy theories," using unscientific experts, purposefully selecting only supportive evidence, and discrediting all other, creating impossible expectations of what research can deliver, or using logical fallacies.

## Vaccine Content on Social Media

As patients increasingly consult the Internet and peer networks for health information, growing interest has emerged in the role of interactive social media in public health promotion (Puri et al., 2020). Social media allows users to “follow” or “like” other users or groups to keep updated with their postings and self-select streams of content relevant to their interests, while simultaneously rejecting content with which they do not agree (Puri et al., 2020). As a result, each user develops a unique network of content and interactions within the broader network. Such self-selection may allow individuals to aggregate and cluster within ideologically distinct sub-communities commonly known as “echo chambers” (Puri et al., 2020). In contrast to traditional media, content posted need not undergo editorial curation nor scientific vetting and may represent a more complex mixture of evidence and personal opinion (Puri et al., 2020).

With the wide availability of smartphones, more people can now access the Internet and social media in industrialized countries (Machingaidze & Wiysonge, 2021). Although this can be a great tool for self-education, which is a key component of

vaccination decision-making, it also presents several challenges in the form of misinformation (including anti-vaccine messaging) and incomplete information, as well as inconsistent and complicated scientific information that may be difficult to understand (Machingaidze & Wiysonge, 2021). This inundation of information can lead to misunderstanding and miscommunication of health-related topics.

Pro- and anti-vaccine content may also naturally segregate into distinct communities, possibly due to self-selection on social media amalgamating like-minded communities (Puri et al., 2020). These communities perpetuate misinformation while reinforcing existing views. Puri et al. (2020) found that irrespective of platform, there were no significant differences between the spreading patterns of information considered questionable compared with that deemed reliable. The existing evidence suggests that exposure to such content may directly influence vaccination opinions and drive downstream vaccine hesitancy (Puri et al., 2020).

Content appears to transfer between users who share similar sentiments regarding vaccination but rarely across those with differing opinions, suggesting the structure of such platforms may give the illusion of debate, but in practice mainly serves to reinforce previously-held opinions rather than the consideration of new ones (Puri et al., 2020). Studies of the content of vaccination-related websites or social media networks have revealed that information is of varying quality, with inexact content predominating (Dubé et al., 2013). For example, in a study simulating a patient's search for advice on the potential link between MMR and autism using the Google search engine, Scullard, Peacock, and Davies (2010) reported that only 51% of the websites provided the correct

information about the fact that no association has ever been demonstrated between MMR vaccination and autism.

## How Social Media Contributes to Vaccine Hesitancy

Looking at the history of vaccination in the United States and the United Kingdom, media have played a role in keeping vaccination scares alive, even in the face of strong evidence of the safety and effectiveness of vaccines (Dubé et al., 2013). Many scientific studies have demonstrated the negative influence of media controversies on vaccine uptake (Dubé et al., 2013). In addition to traditional media, the Internet has offered an opportunity for vocal anti-vaccination activists to spread their message (Dubé et al., 2013). Many consider that the omnipresence of anti-vaccination content on the Internet has contributed to broader and faster dissemination of rumors, myths, and inaccurate beliefs regarding vaccines that have had a negative impact on vaccine uptake (Dubé et al., 2013). Even if health professionals are still frequently consulted by the majority of individuals with health concerns, the Internet has become a continual source of misinformation (Dubé et al., 2013) The success of vaccines in eradicating some diseases, and greatly reducing morbidity and mortality in other infectious diseases continue to be overshadowed by the growing anti-vaccine movement (Guidry et al., 2015). The popularity and pervasiveness of the Internet today have facilitated the transmission of such beliefs in the form of the storytelling applications of social media. By using vivid tales and striking pictures, social media has the potential to spread disinformation (Puri et al., 2020). Quantitative material from evidence-based medical literature on pro-vaccine platforms, on the other hand, may be less evocative than human experiences from social media (Puri et al., 2020). Certain users, such as those with a

cognitive disability, older age, lesser literacy, and less digital literacy, have been shown to be more vulnerable to these emotional appeals of social media (Puri et al., 2020).

Anti-vaccination websites are likely to use emotional appeals, including personal stories accompanied by photos, which can increase risk perceptions and decrease vaccination intentions (Guidry et al., 2015). While such storytelling may be compelling and help anti-vaccination protests persist despite a lack of scientific support, identifying and analyzing these tactics and tropes is not only an important exercise in critically evaluating medical advice found online but also a necessary step in ensuring individuals searching online are not misinformed (Kata, 2012). However social media is often a place where self-proclaimed "experts" tout conflicting messages; with the notion that multiple "truths" based on different worldviews are equally valid; evidence-based advice from qualified vaccine experts becomes just another opinion among many (Kata, 2012). Any new parent joining these sites, irrespective of their orientation to vaccination, is exposed to stories that activate the idea of vaccination as a threat and exemption as a strategy (Tangherlini et al., 2016). This framework is one where vaccines pose a threat to children, and parents are crucial in their role as protectors (Tangherlini et al., 2016). Parents know that they are often seen negatively for opting out of vaccines (Reich, 2015). Yet they believe they are operating in the best interests of their child.

Even for parents who may not have initially believed that vaccines are harmful, the persistent circulation of stories about the potential harmfulness of vaccinations and the efficacy of the strategy of exemption to protect children from this alleged threat could convert some parents to embracing these beliefs (Tangherlini et al., 2016). Although variability in access to health care is an important factor influencing vaccine coverage

rates, vaccination refusal also directly affects these rates and is a significant contributor to outbreaks—especially where vaccination refusal is geographically clustered and population immunity is compromised (Dunn et al., 2015). Outbreaks of pertussis and measles are known to spread through populations where rates of vaccination refusal are high (Dunn et al., 2015).

In comparing users' perceptions of vaccine risks among those exposed to control websites versus vaccine-critical websites, Betsch et al. found that even brief exposure – as little as five-to-ten minutes – to vaccine-critical websites increased the overall perception of vaccine risk in comparison to exposure to control websites (Betsch et al., 2010).

Seeing vaccination as a social norm has the potential to boost vaccine acceptance. The significance of the subjective norm, or the fact that those you respect are being vaccinated or have their children vaccinated, is a factor in vaccine acceptability (Dubé et al., 2013). People vaccinate their children because it appears to be the standard among their peers. Vaccine acceptance may also be linked to social responsibility or considering vaccination as a personal responsibility to preserve herd immunity. In order to achieve high vaccine coverage, some countries have introduced laws to require children to be vaccinated before school entry (Dubé et al., 2013). Policies that mandate vaccination have always been controversial. However, there seems to be an increasing trend of opposition toward mandatory vaccination, as shown for instance by the increase in exemption rates in the United States (Dubé et al., 2013).

## Covid-19 & Current Conversation Surrounding Vaccine Hesitancy

The conversations surrounding vaccines have been further amplified by the Covid-19 pandemic. Although the reluctance of people to receive safe and recommended available vaccines was already a growing concern before the Covid-19 pandemic (Machingaidze & Wiysonge, 2021). Vaccine hesitancy still remains high during the Covid-19 pandemic and the reasons for vaccine refusals are several (Troiano & Nardi, 2021). This phenomenon represents an important problem, because increasing hesitancy leads to falls in coverage and often precedes an infectious disease outbreak (Troiano & Nardi, 2021). Promoting the uptake of vaccines (particularly those against Covid-19) will require understanding whether people are willing to be vaccinated, the reasons why they are willing or unwilling to do so, and examining the most trusted sources of information in their decision-making (Machingaidze & Wiysonge, 2021).

The data shows that vaccine acceptance is explained mainly by an interest in personal protection against Covid-19, whereas concerns about side effects are the most common reasons for hesitancy (Machingaidze & Wiysonge, 2021). Other common reasons for refusal of the Covid-19 vaccine were as follows: being against vaccines in general, concerns about safety/thinking that a vaccine produced in a rush is dangerous, considering the vaccine useless because of the harmless nature of Covid-19, general lack of trust, doubts about the efficiency of the vaccine, and the belief to be already immunized (Troiano & Nardi, 2021).

Li, Bailey, Huynh, and Chan (2020) examined the top YouTube videos identified via searches of “COVID-19” and “coronavirus” with 27.5% of videos containing non-factual information and had already accrued over 60 million views. Additionally, Chan,

Jamieson, and Albarracin (2020) conducted a recent study of anti- and pro-vaccine clips on YouTube identifying words such as “chemical,” “mercury,” and “toxic” in anti-vaccine content and “hospital,” “chronic,” and “unvaccinated” in pro-vaccine material. Similarly, an analysis of tweets showed factors containing words such as “cdcwhistleblower” and “coverup” posted by anti-vaccine users and topics containing “risk,” “health,” “chronic,” and “science” posted by pro-vaccine users (Chan et al., 2020). These studies demonstrate that linguistic analyses can identify alternative types of vaccine content on social media (Chan et al., 2020). It is through studying this type of content that the connections can be made regarding communication patterns of anti-vaccine social media.

## Vaccines, Race, & Accessibility

Prior research indicates that age, sex, race/ethnicity, money, and education are all sociodemographic characteristics that link to vaccine hesitancy (Willis et al., 2021). Racism within the medical establishment is ongoing, and Black/African Americans do not need extensive knowledge of the history of medical racism to inform their view of vaccines when many only need to consider recent experiences (Willis et al., 2021). Distrust of the medical establishment by Black/African Americans is often traced back to the Tuskegee syphilis study, but the distrust is deeply rooted beyond a single incident and is predicated on centuries of racist exploitation by medical researchers and doctors (Willis et al., 2021).

In recent months, it has become clear that Covid 19 is disproportionately burdening racial and ethnic minority groups in the US (Zalla et al., 2021). The fact that racialized minorities are more susceptible to certain diseases is not due to chance or

biology; rather, it is a result of structural racism (Zalla et al., 2021). According to Bailey et al. (2017), structural racism outlines the interrelated, historically entrenched, and culturally strengthened ways in which racial discrimination is nurtured in nations through "mutually reinforcing inequitable structures." Many inequitable systems have collaborated to create infectious disease disparities by determining where people can live, work, and play, putting communities of color at higher risk of pathogen exposure, infection, and mortality once afflicted (Zalla et al., 2021). During a pandemic, residents of minority areas are more likely to use public transportation to get to work and to satisfy basic requirements like food and water (Zalla et al., 2021). They are also less likely to live near a Covid-19 testing location and are more likely to receive poor medical care if they need Covid-19 treatment. A health double standard has been institutionalized as a result of such policies and practices.

Understanding determinants of Covid-19 vaccine hesitancy is important in ensuring broad uptake of the Covid-19 vaccine and in reducing health disparities (Willis et al., 2021). Trust in vaccines in general, race/ethnicity, and fear of Covid-19 infection are important factors shaping Covid-19 vaccine hesitancy, with Black/African Americans reporting significantly more vaccine hesitancy (Willis et al., 2021). Public health messaging for the Covid-19 vaccine must consider the role of people's fears of infection, general trust in vaccines, and the historical and ongoing mistreatment of many racial/ethnic minorities (Willis et al., 2021).

Looking forward, analyses of racial and ethnic disparities in Covid-19 mortality should be grounded in an understanding of how racial health inequities are produced in the US (Zalla et al., 2021). Important methodological choices should be guided by

conceptual frameworks that reflect how health risks and health-promoting resources are distributed in our population (Zalla et al., 2021). Racial/ethnic discrepancies illustrate past and current skepticism in the medical establishment, as well as communities of color's continued experiences of racism and discrimination (Willis et al., 2021). Trustworthiness comes before trust, and racism in medical organizations has a long history of preventing trust (Warren et al., 2020). It takes time and effort to build trust within institutions and the medical community has a long road ahead for progress to be made.

# CHAPTER THREE: METHOD & PROCEDURE

## Method

### Interpretivism

Interpretivism is a methodological paradigm used in qualitative research that recognizes the personal nature of the human experience. Due to interpretivism's subjective nature, it accepts that people create their own physical and social worlds (Kroeze, 2012). Interpretivist studies are idiographic as they try to make sense of unique phenomena (Kroeze, 2012). Observation and analysis conducted by the researcher will be influenced and interpreted in a unique way. Interpretivist research endeavors to acquire meaning and understanding while focusing on reality as a human construction that can only be understood subjectively (Kroeze, 2012). It is through this subjectivity that meaning is derived.

The purpose of interpretivist research is to understand how members of a social group, through their participation in social processes, enact their particular realities and endow them with meaning, and to show how these meanings, beliefs, and intentions help to constitute their actions (Goldkuhl, 2011). Obtaining insight and understanding of unique situations and the human issues relating to these is the main goal of interpretivism (Kroeze, 2012). Rather than attempt to influence how communication occurs, an interpretivist paradigm aims to understand what communication means to the subject and how that forms collective realities and generates societal practices. Because interpretivism considers that realities are created through symbolic interaction, viewing

the interactions naturally rather than through an experiment or organized procedure provides a more accurate result (Krauss, 20015).

Interpretivism acknowledges the interconnection of the researcher and the subject matter. How a researcher collects and interprets the data is shaped by what the researcher values and will therefore hold influence (Fink, 2016). Since no researcher can distance themselves from the social reality being studied it is important to take note of the context in order to make sense of the phenomena and to create knowledge about them (Kroeze, 2012). It is a perspective that acknowledges that we are organisms functioning as part of reality and it is impossible for us to ever stand outside it (Greeff, 2015). The researcher is not outside the observable reality but rather an active participant. The principle of interaction between researchers and participants believes that understanding is an emergent process because researchers and research participants interact and influence each other in a bi-directional way (Kroeze, 2012). The researcher's observations and analysis will be affected by their own perspective and experiences. Through an interpretivist paradigm, the researcher is not only examining a phenomenon but the researcher is inseparably studied as well.

In an interpretivist study, the generalizations derived from experience are dependent upon the researcher, their methods, and the interactions with the subject of study, while the validity of the research depends on its plausibility, consistency, and logical reasoning (Myers, 2009). The core idea of interpretivism is to work with these subjective meanings already there in the social world; that is to acknowledge their existence, to reconstruct them, to understand them, to avoid distorting them, to use them as building blocks in theorizing (Goldkuhl, 2011).

An interpretivist paradigm works to understand phenomenon in the context in which it is happening (Dean, 2018). Interpretivists often turn towards a humanized and reflexive approach in the attempt to understand subjective realities (Dean, 2018). By acknowledging their own positionality, researchers an interpretivist paradigm goes further than simply acknowledging the existence of a phenomenon and instead encourages the researcher to study the characteristics of the meaning-making process (Dean, 2018).

Thematic Analysis

Thematic Analysis is a qualitative research method used for identifying and analyzing patterns of meaning in a dataset (Braun & Clarke, 2006). These studied patterns point to themes that are in turn interpreted by the researcher as it relates to the research question at hand. Through focusing on meaning across a data set, thematic analysis allows the researcher to see and make sense of collective or shared meanings and experiences (Braun & Clarke, 2012). Within thematic analysis, there are four main principles: acknowledging theoretical and philosophical assumptions, determining a theme, detailed descriptions of an expansive data set, and determining whether to use an inductive or theoretical thematic analysis (Braun & Clarke, 2006).

Themes are patterns of explicit and implicit content and they refer to a specific pattern of meaning found in the data (Joffe, 2012). Thematic analysis tends to draw on both types of themes. Often one can identify a set of manifest themes, which point to a more latent level of meaning. The deduction of latent meanings underpinning sets of manifest themes requires interpretation (Joffe, 2012). Thematic analysis facilitates the gleaning of knowledge of the meaning made of the phenomenon under study by the

groups studied and provides the necessary groundwork for establishing valid models of human thinking, feeling, and behavior (Joffe, 2012). However, thematic analysis is among the most systematic and transparent forms of such work, partly because it holds the prevalence of themes to be so important, without sacrificing depth of analysis (Joffe, 2012). Thus, thematic analysis not only forms the implicit basis of much other qualitative work but also strives to provide a more systematic, transparent form of it (Joffe, 2012).

Thematic analysis permits the researcher to combine analysis of the frequency of codes with analysis of their meaning in context, thus adding the advantages of the subtlety and complexity of a truly qualitative analysis (Joffe & Yardley, 2004). The person analyzing communications must make inferences, but these should be made by systematically and objectively identifying characteristics of the text (Joffe & Yardley, 2004).

Thematic analysis offers a way into qualitative research that teaches the mechanics of coding and analyzing qualitative data systematically, which can then be linked to broader theoretical or conceptual issues (Braun & Clarke, 2012). In thematic analysis, a theme of a coding category can refer to the manifest content of the data, that is, something directly observable (Joffe & Yardley, 2004). An inductive approach to data coding and analysis is a bottom-up approach and is driven by the contents of the data (Braun & Clarke, 2012). This means the codes and themes derive from the content of the data themselves; what is mapped by the researcher during analysis closely matches the content of the data (Braun & Clarke, 2012). In contrast, a deductive approach to data coding and analysis is a top-down approach, where the researcher brings to the data a series of concepts, ideas, or topics that they use to code and interpret the data (Braun &

Clarke, 2012). This means the codes and themes derive more from concepts and ideas the researcher brings to the data. What is mapped by the researcher during analysis does not necessarily closely link to the semantic data content (Braun & Clarke, 2012).

Braun and Clarke (2012) delineate six phases of the thematic analysis approach:

Phase 1: Familiarizing Oneself with the Data
Phase 2: Generating Initial Codes
Phase 3: Searching for Themes
Phase 4: Reviewing Potential Themes
Phase 5: Defining and Naming Themes
Phase 6: Producing the Report

This multi-step system is used in a multitude of disciplines and fields when applying thematic analysis in various events and subject matters. By first familiarizing oneself with the data, the researcher begins an immersive and active process that reveals the depth of the data (Braun & Clarke, 2006). Then, by generating initial codes, the researcher will associate interpreted data that is associated with themes (Joffe & Yardley, 2004). Once the initial codes are generated, the researcher must sort them by associating the codes with potential themes (Braun & Clarke, 2006). The fourth step of reviewing the themes requires the researcher to sift through their data and determine if the initial themes are actually themes (Braun & Clarke, 2006). The next step of defining and naming themes involves associating specific meaning to that theme and data. This step includes writing an analysis of the goal and purpose of each theme and how and why it will be used (Braun & Clarke, 2006). Finally, the researcher must assemble a report of the findings. This report should include the data and analysis, while also showing the validity and importance of the research and interpretation of the data (Braun & Clarke, 2006).

## Procedure

I conducted a case study of Facebook posts associated with anti-vaccination subject matter. As a social media platform, Facebook has given rise to the propagation of shared ideas and beliefs fostering community and discussion. However, Facebook also is a destination for echo chambers and confirmation bias. In my study, I specifically examined vaccines as the subject matter of the posts in order to identify communication patterns. These aspects of Facebook provided me with a case study rich with data. This case study was completed by utilizing Braun and Clarke's (2006) framework for conducting thematic analysis, which is detailed above.

### Data Collection

Facebook was the primary source of data collection for this study. Facebook's vast user base and accessibility make the platform a functional tool for studying anti-vaccination communication. Using screenshots from Facebook posts, I set the parameters of the posts that were collected. The posts I collected contained topics relating to terms such as "vaccine," "anti-vax," "mandate," "jab," "Covid" and "government". The timeframe of the posts span from October 18th, 2021 until January 16th, 2022.

I began by searching for Facebook groups that contained key terms such as "vaccine" and then narrowed my search to groups with blatant anti-vaccine content. All screenshots were public posts or public comments within a post. The specific Facebook groups from which I collected screenshots were: *Parents Against Vaccines*, *America against mandatory vaccine*, *fjb STOP MANDATE MAN NOW!*, and *Healthcare workers refusing vaccine*. Utilizing an interpretivist paradigm encourages me to observe and gather data from a source where anti-vaccination communication is prominently

transmitted. I did this in order to illuminate the particular strategies of anti-vax messaging on social media.

Coding and Analysis

I collected 315 Facebook posts that were within my established parameters. I screenshotted each post and numbered them from 1 to 315. While I was compiling these posts, I took note of reoccurring terms, themes, and sentiments which resulted in eight initial codes. Using a spreadsheet, I numbered and sorted each post in my first round of coding. After reviewing the initial sequence of coding, I refined my initial codes eliminating similar and repetitive themes which gave me six total codes. Finally, I reviewed each code list to evaluate the message of each post. All six codes contained multiple strategies of their argument. I used posts that illustrated these strategies to indicate the overall message within the code.

## Summary

By using thematic analysis, researchers pursue knowledge of how people communicate their own physical and social worlds through experience. It is through this shared communication that human experience is studied. Thematic analysis offers a mode of opportunity to view how people experience the world and how they communicate their experiences with others. Depending on the aim of the researcher, it is possible that their study of these phenomena could influence or create further discourse in the studied field. For example, Kordzadeh and Young (2018) used thematic analysis to explore hospitals' use of Facebook to educate the community on health topics and increase patient loyalty. Mogaji and Farinloye (2019) studied attitudes towards brands and advertisements using qualitative and thematic analysis of social media data. By studying user-generated

content on social media, researchers gain insight into perceptions and attitudes of specific phenomena. This makes thematic analysis a beneficial method when studying how people construct meaning through interaction and participation of experience.

Thematic analysis is a useful tool for studying social media due to its ability to reveal deeper meaning within texts, images, and other content. It involves reading data as data means not simply absorbing the surface meaning of the words on the page, but reading the words actively, analytically, and critically, and starting to think about what the data mean (Braun & Clarke, 2012). Behind the data are the stories of the people creating and sharing these texts on social media as they interact with each other, shape their social realities, and how that influences how they communicate.

# CHAPTER FOUR: ANALYSIS

In early 2021, the FDA approved Covid-19 vaccines developed by three companies: Pfizer/BioNTech, Moderna, and Johnson & Johnson. Frontline workers and eligible vulnerable populations were the first groups offered the vaccine. As the vaccine became more widely available to the general American populace, issues such as mandates in the school and workplace began to emerge. The validity of the vaccine and its effectiveness were also questioned as well as the speed at which the vaccine was introduced. Many people were quick to voice their opinions on social media with Facebook groups being a particular vehicle for discussion. The reactions to the Covid-19 vaccines (and the politics surrounding them) within four specific Facebook groups which I examined depict an overall resistance to the vaccine for various reasons. The types of media shared in these Facebook groups include memes, photos, political cartoons, Tik Tok videos, and Twitter screenshots. The dates of the posts ranged from October 3rd, 2021 to January 16, 2022. The conversation around vaccines is ever-evolving and I am looking at a snapshot in time examining the zeitgeist of late 2021 to early 2022.

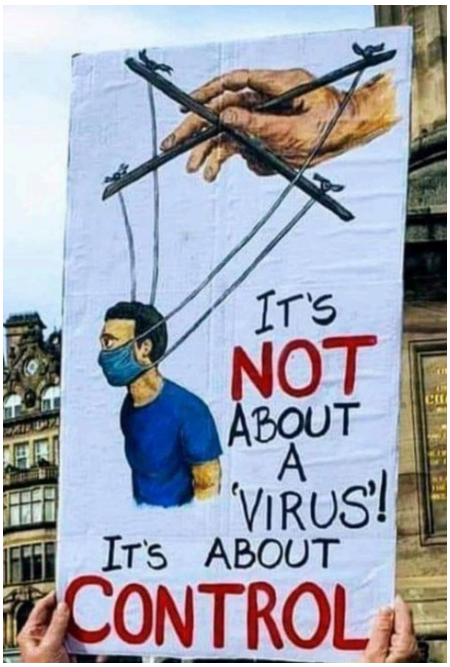
Using thematic analysis through an interpretivist paradigm, I examined these artifacts of media. The patterns and themes that emerged tell a story of severe backlash against the Covid-19 vaccine and vaccines in general. Using Braun and Clarke's (2012) thematic analysis approach, I sorted the posts into the following categories: Government Control, Patriotism/Individualism, Rejection of Science, Intellectual Superiority, Health, and Big Pharma Profiting. Some of the posts that I collected had themes that could have

been categorized into multiple themes. Using an interpretivist approach, I added it to the category which seemed the best fit overall with the message it conveys.

## Themes

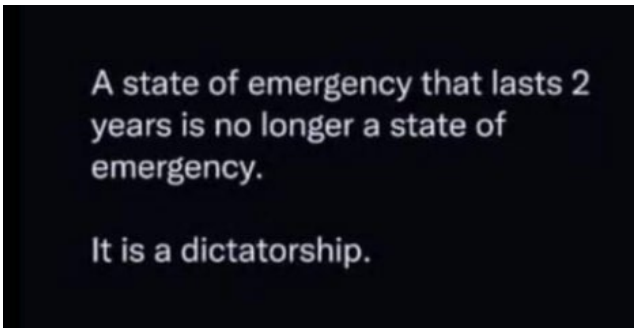
### Government Control

Comprising thirty percent of the collected posts, messages of government control were predominant. The patterns within this theme mention the taking away freedoms, "war on choice," lockdowns, mandates, propaganda, President Biden, other politicians, and the United States Supreme Court. Mentions of communism and fascism were also heavily present in the imagery. One of the posts depicts a person wearing a medical mask with the mask strings being held above by a marionette crossbar. With the accompanying caption "It's not about a 'virus'! It's about control", the intent of the post is meant to associate vaccines with government control. The overall tropes within this category held notions of the US government being too involved in personal medical decisions. Connotations of compliance and conformity were commonplace in this theme.




**Picture 1**

A post from one of the groups promotes the idea that the current Covid-19 pandemic has stretched the powers of government into a dictatorship situation. The underlying message asserts that the current state of the United States has evolved into an authoritarian regime due to the mandates and directives that have been communicated by the government.




**Picture 2**

Many of the collected posts depicted the Biden administration as despotic power forcing vaccines onto the public. The two Pictures below exemplify this notion with Picture 3 showing a policing force "breaking" down a door with a farcically large needle.

While Picture 4 is a meme depicting a character yelling at President Biden and Vice President Harris indicating the anger toward vaccine mandates.

**Picture 3**

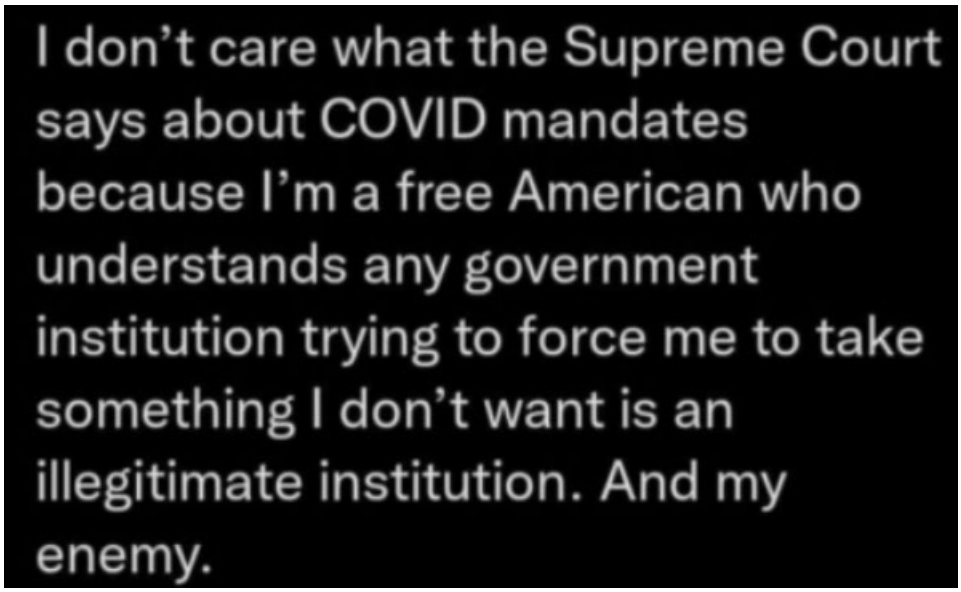

**Picture 4**

The Picture below is meant to illustrate how the government supposedly is using the spread of fear to maintain control over the masses. Specifically, the donkey, representing the Democratic party, is at the center of this cartoon. The image is asserting

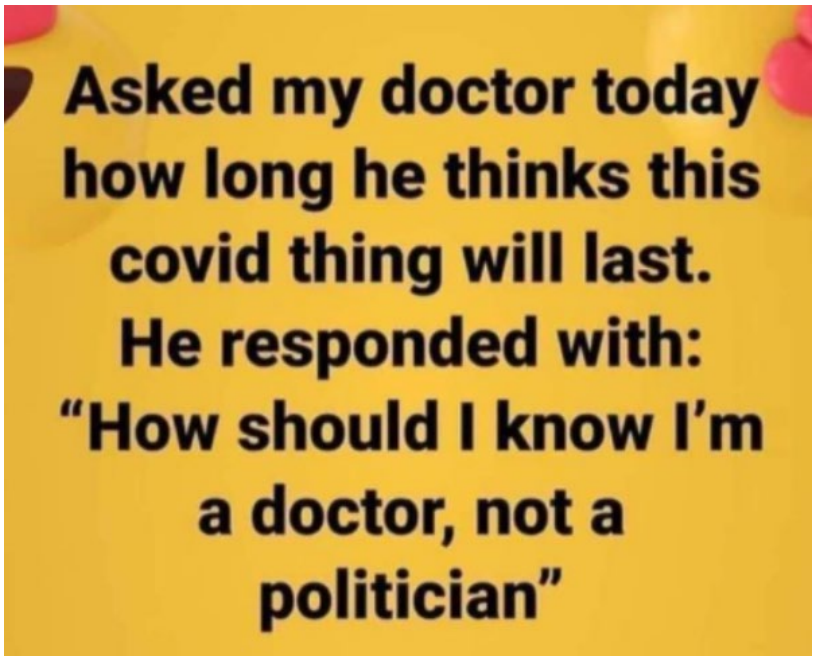
that one political party in the United States has used the Covid-19 pandemic as a means of control.


**Picture 5**

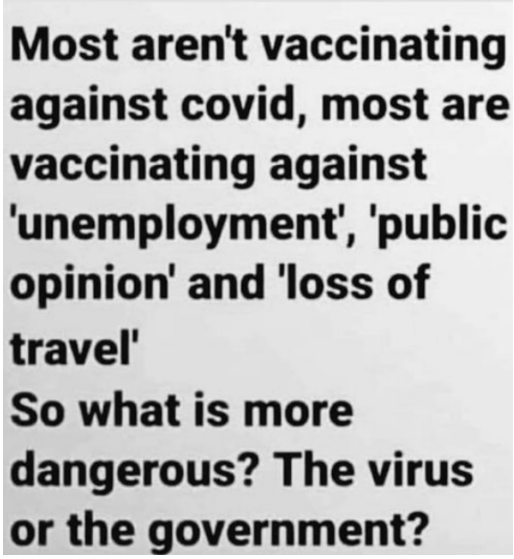

**Picture 6**




**Picture 7**




**Picture 8**

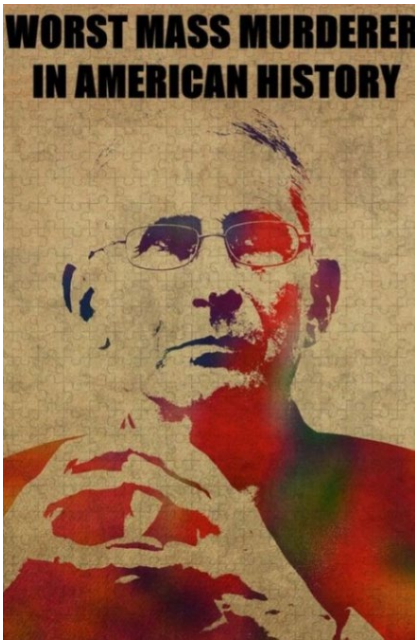



**Picture 9**

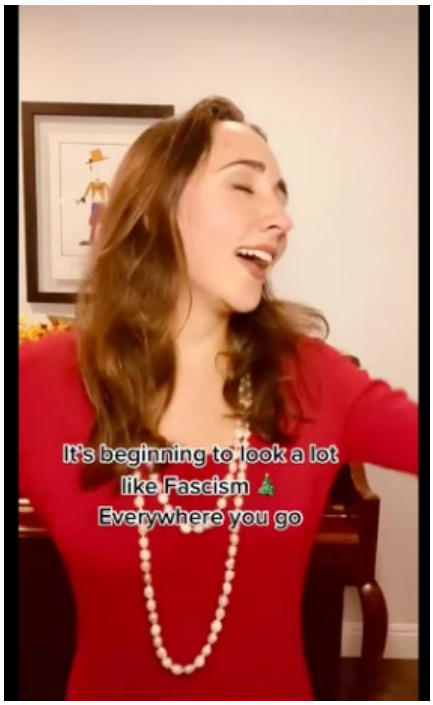
Imagery of politicians conspiring to keep the public under control were also heavily present in this theme. Unfavorable depictions of White House Press Secretary Jen Paski and Chief Medical Advisor Anthony Fauci were shown as being part of a deceitful government meant to placate the public.


**Picture 10**


**Picture 11**




**Picture 12**




**Picture 13**


**Picture 14**


"It is all about power and control!"
The Final Variant is COMMUNISM!
Passports will not be temporary
"Vaccinated" definition is misleading
Ivermectin WORKS!
HCQ does, too!
Invalid tests create fear
COVID "cases" based on 90 percent false PCR tests
"Vaccinated" spread COVID
The Jab causes variants
Vaccines don't reduce risk
COVID injuries not reported
The "Vaccinated" contract the COVID variants readily
Masks don't work, are unnecessary, breed bacteria.

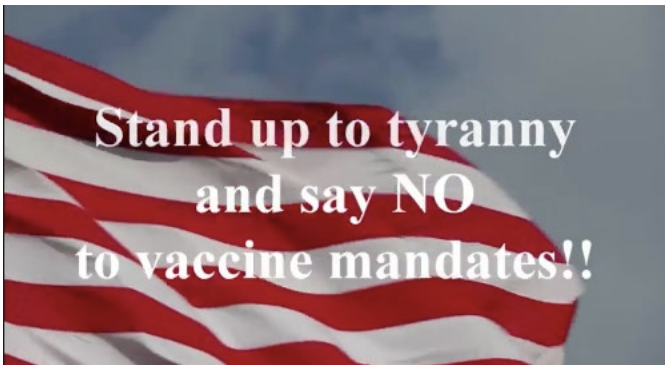
**Picture 15**

Patriotism & Individualism

While closely linked to the government control category, the distinct category of patriotism and individualism emerged as its own entity at 13%. Touting messages of noncompliance, anti-tyranny, choice above all, this category includes imagery of cowboys, guns, bald eagles, the American flag, and references to the American Revolution. Picture 16 below reads “refusing to obey nonsensical bullshit laws is how we formed this entire fucking country in the first place” accompanied by a rendering of the Boston Tea Party. This category contains ideals of the USA being founded on the ideals of freedom and anti-despotism.


**Picture 16**

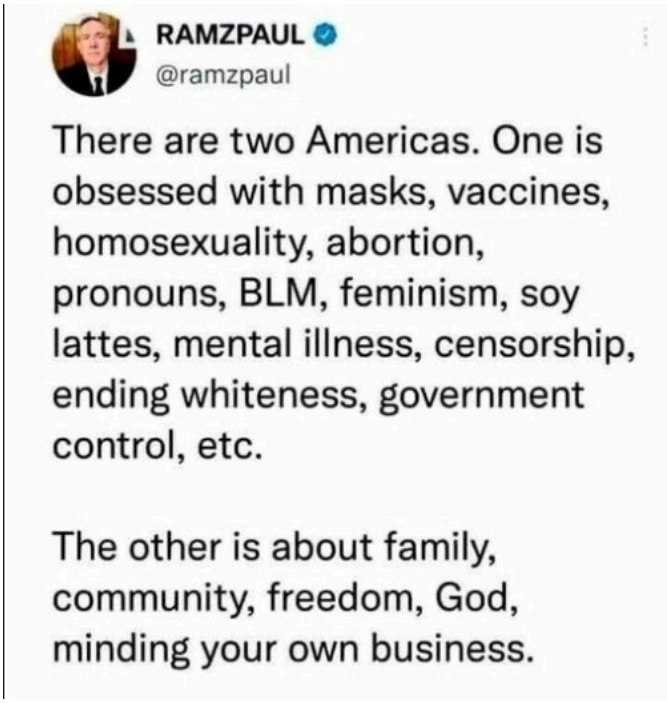
Pictures 17 and 18 specifically mention freedom anti-tyranny. Furthermore, both images make use of the American flag demonstrating that patriotism is an essential component in anti-vaccination communication.



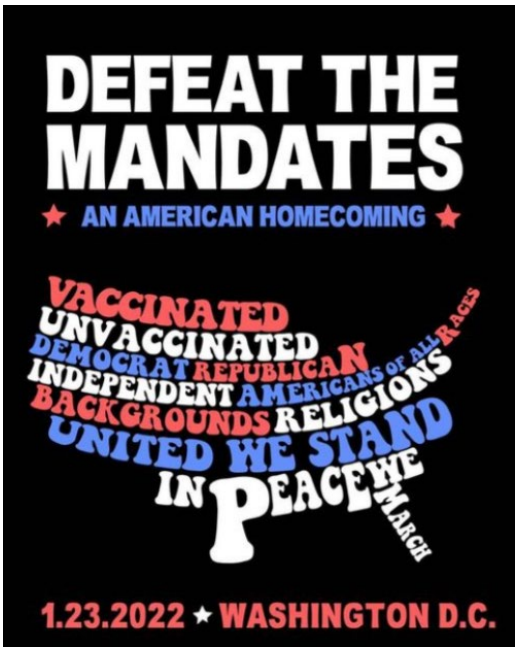

**Picture 17**


**Picture 18**

The screenshot of the Tweet below was posted in one of the groups I examined. It asserts that the United States is fundamentally divided on major issues and priorities. Specifically, it states that citizens should be more concerned with freedom and God than social issues.

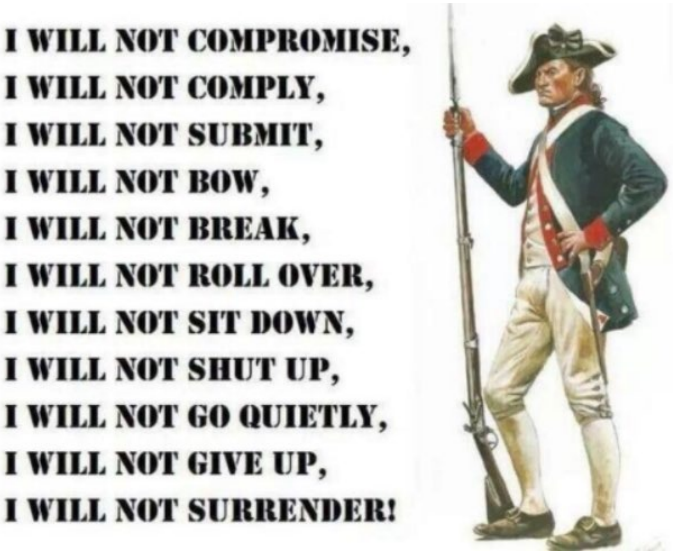



**Picture 19**




**Picture 20**


**Picture 21**




**Picture 22**


**Picture 23**


**Picture 24**

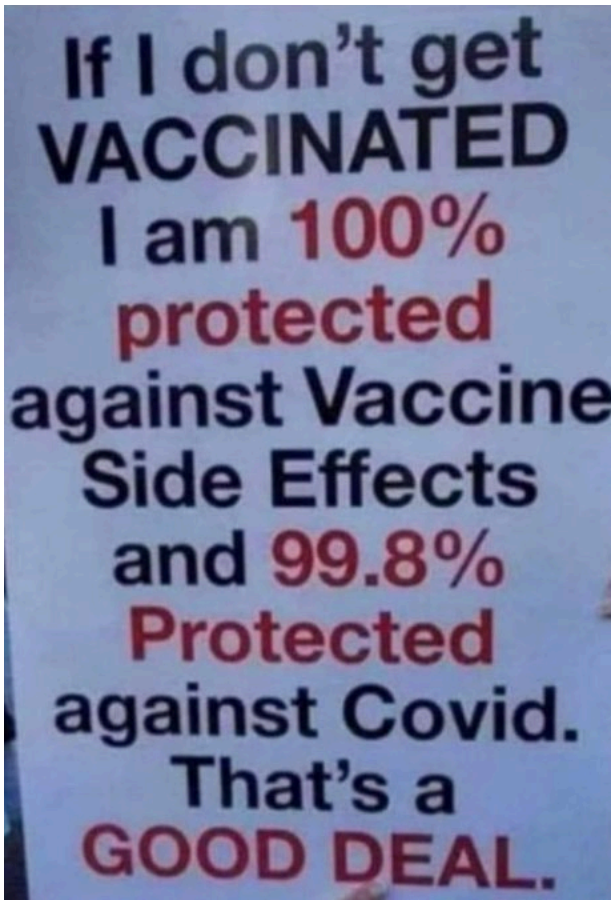
**Picture 25**

Rejection of Science

Twenty-eight percent of collected posts were associated with a denial of legitimate science regarding vaccines. The posts contained words and imagery asserting the notion that the Covid-19 vaccine is not effective, masks are ineffective in protecting individuals, the Covid-19 vaccine alters human DNA, or the long-term side effects of the vaccine are unknown. One specific post depicted a man raising a glass in toast accompanied with the caption “Here’s to all my friends going into 2022 with all their DNA still intact. Cheers!” This overtly implies that the Covid-19 has the ability to alter human DNA.


**Picture 26**

Another post, a screenshot of a Tweet, stated “If I don’t get VACCINATED I am 100% protected against Vaccine Side Effects and 99.8% protected against Covid-19. That’s a GOOD DEAL.” This category encompasses posts that essentially argue the notion that the vaccine is more dangerous than the actual virus and people should instead take their chances on getting the virus since it has a relatively low mortality rate.




**Picture 27**

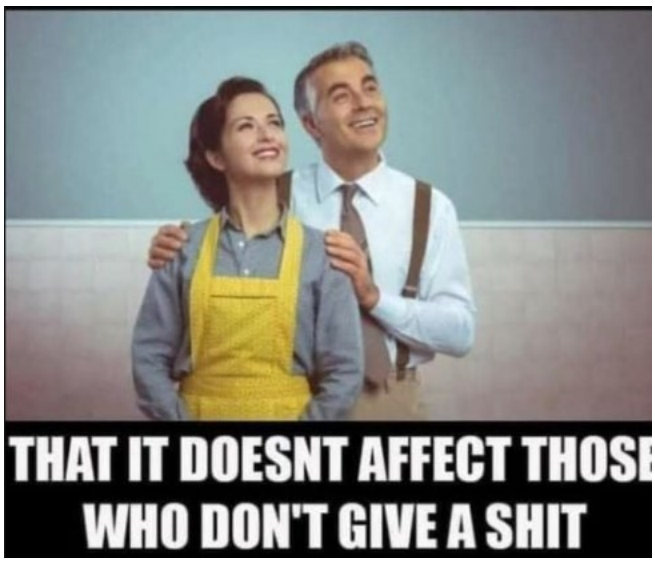
Despite the evidence that masks and vaccines are effective in combating Covid-19, many posters in the Facebook groups I examined propagated the opposite sentiments. In the Picture below, the image explicitly states that mask mandates and the Covid-19 were both ineffective in preventing cases while also mocking the idea of continuing to use those two methods of prevention.


**Picture 27**

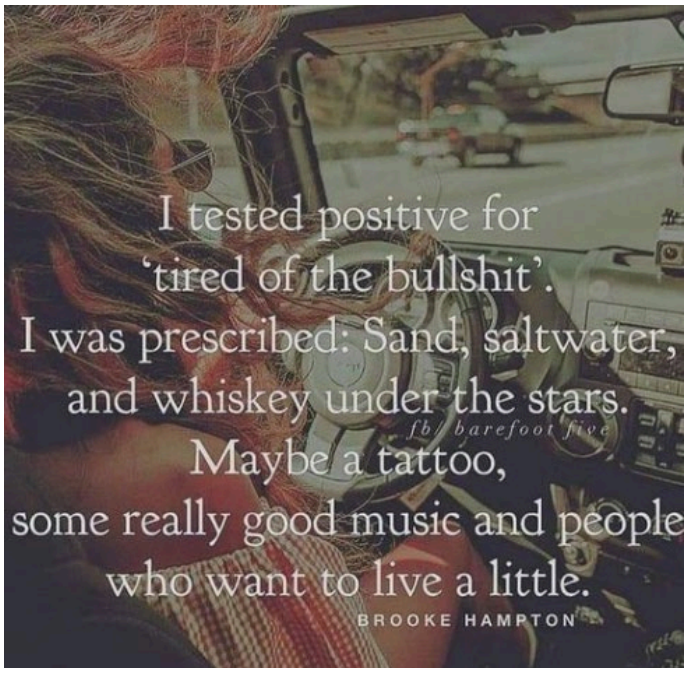

**Picture 28**


**Picture 29**

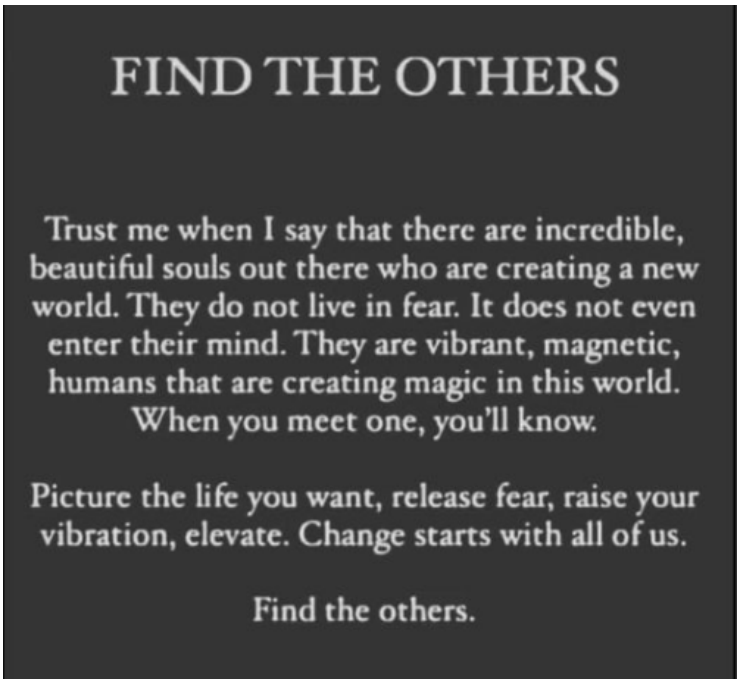
Pictures 30, 31, and 32 contain messaging that those individuals who do not care about the Covid-19 pandemic will remain unaffected. This is objectively false as the Covid-19 is known to be highly contagious and can affect anyone. The denial of how the virus is spread exemplifies this theme of rejection of science.




**Picture 30**




**Picture 31**




**Picture 32**

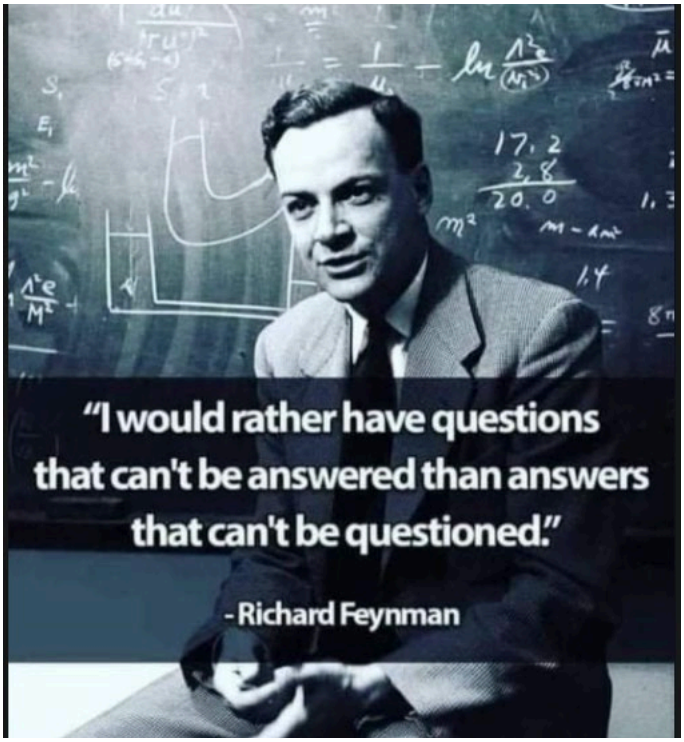
Picture 33 shows a fictional timeline given from the World Health Organization mocking the effectiveness of the vaccine. With each new month, the messaging regarding the efficacy of the Covid-19 vaccine diminishes with the overall gist that it is not completely ineffective. This post rejects the notion of evolving science and disparages the benefit of the Covid-19 vaccine.


**Picture 33**

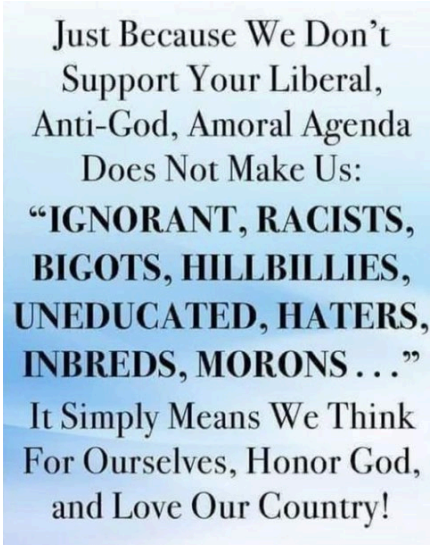
Intellectual Superiority

Facebook posts containing images and mentions of intellectual superiority made up twenty-two percent of the total collected in my sample. They contained topics of questioning authority, being "too smart to be controlled," mentions of sheep, following

the herd, etc. There were many arguments questioning things instead of blindly following as well as mentions of "doing my own research" and "think for myself."




**Picture 34**




**Picture 35**

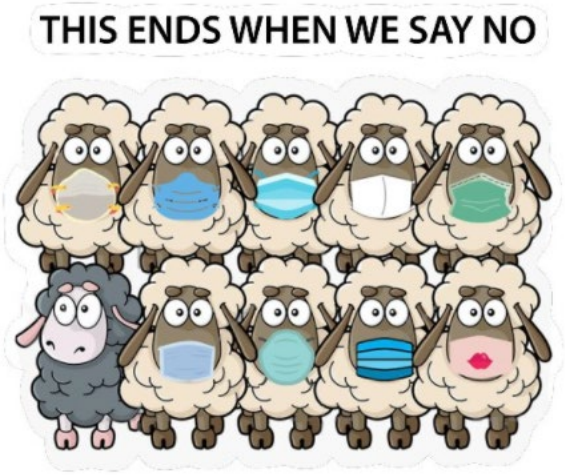
Another trope within this category was parenting. The idea of a parent knowing what is best for their child over medical professionals was predominant. One image showed a photo of a small child holding a sign reading “I am not a science experiment” implying that vaccines are experimental. It suggests parents are making the conscious choice to alleviate children of any “unethical” medical experimentation in the form of vaccines. The use of cherubic white children is plainly meant to visually evoke a specific emotion.


**Picture 36**

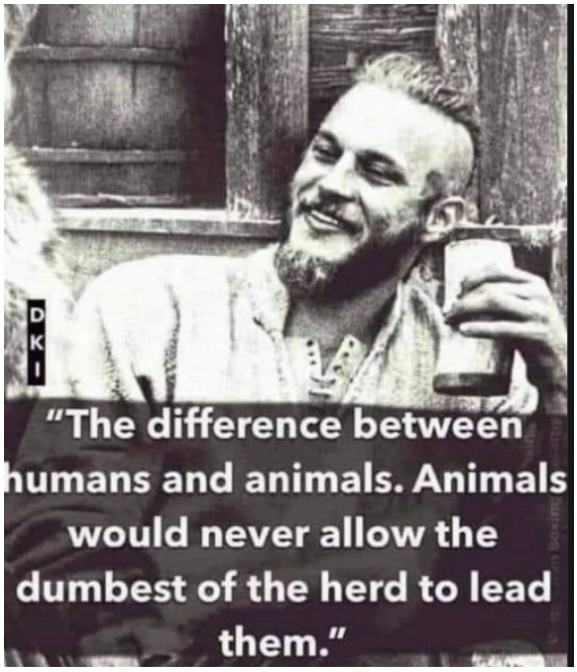

**Picture 37**


**Picture 38**

The concept of sheep and herds were prevalent in this theme. These types of posts illustrated that those who wear masks or receive the Covid-19 vaccine are simply following directives instead of thinking for themselves. Imagery of lions and other animals convey sentiments of superiority of not "following the herd." This implies intellectual superiority over those individuals who hold differing beliefs about Covid-19.




**Picture 39**




**Picture 40**


**Picture 41**

Picture 42 depicts a fictional image of Bill Gates and Dr. Anthony Fauci running from an angry mob. The message gleaned from this post is that the mob has done their own research and no longer buys into the alleged lies perpetrated by the US government and businesses. This bold claim asserts that some people are able to discern truth from lie through differing research. In that same vein, Picture 43 implies that those citizens who are “paying attention” are the intelligent ones as they actually question the directives that come from the government.


**Picture 42**


**Picture 43**

Health

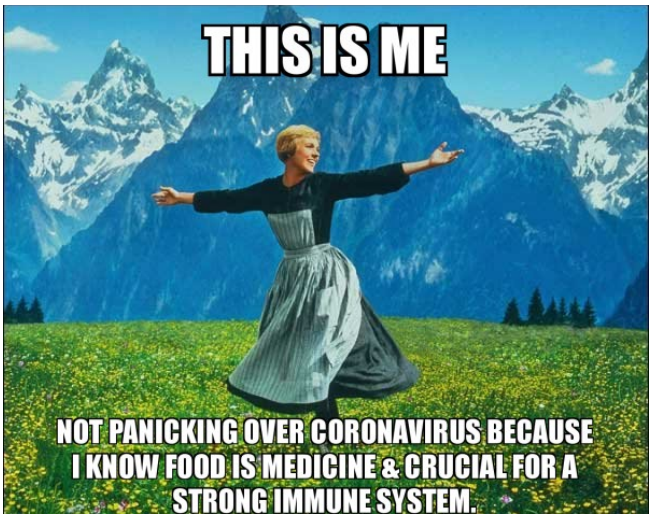
A focus on health is another category within the posts with four percent having subject matter of immune systems, alternative medicine, and natural immunity. This category is similar to the aforementioned *Rejection of Science* but it differs in a few ways. None of the posts grouped with this category overtly deny that Covid-19 exists or that the vaccines are effective and safe. Instead, these posts downplay the severity of Covid-19 comparing it to the common cold or flu.


**Picture 44**

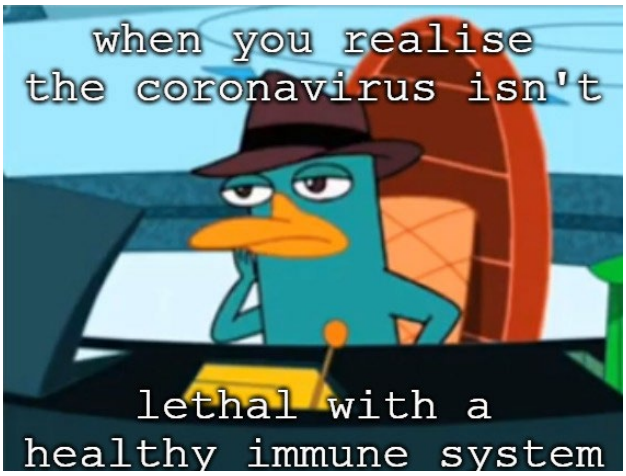

**Picture 45**


**Picture 46**

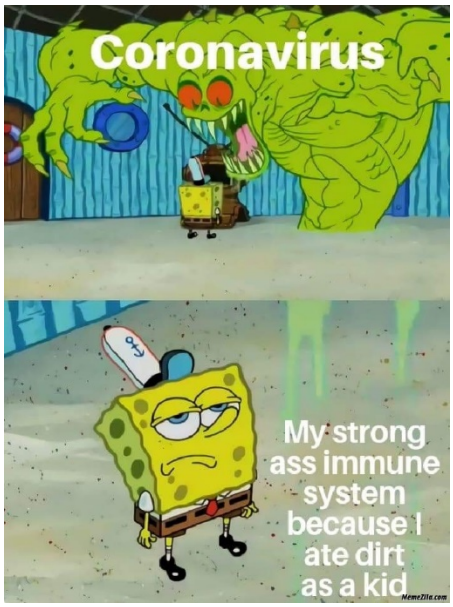
The media within this theme had direct statements of natural immunity as well as immune systems capable of fighting Covid-19.




**Picture 47**




**Picture 48**




**Picture 49**

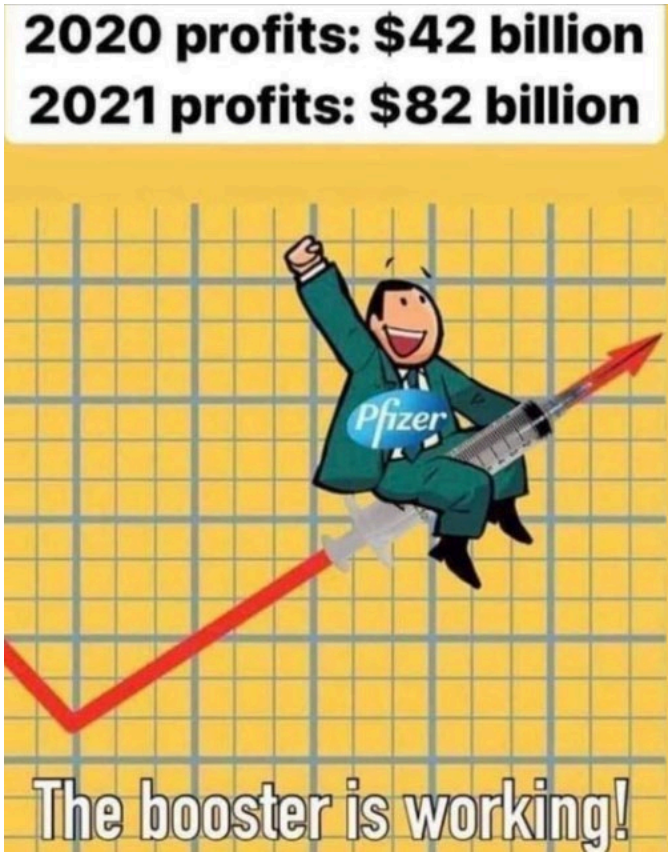

**Picture 50**


**Picture 51**

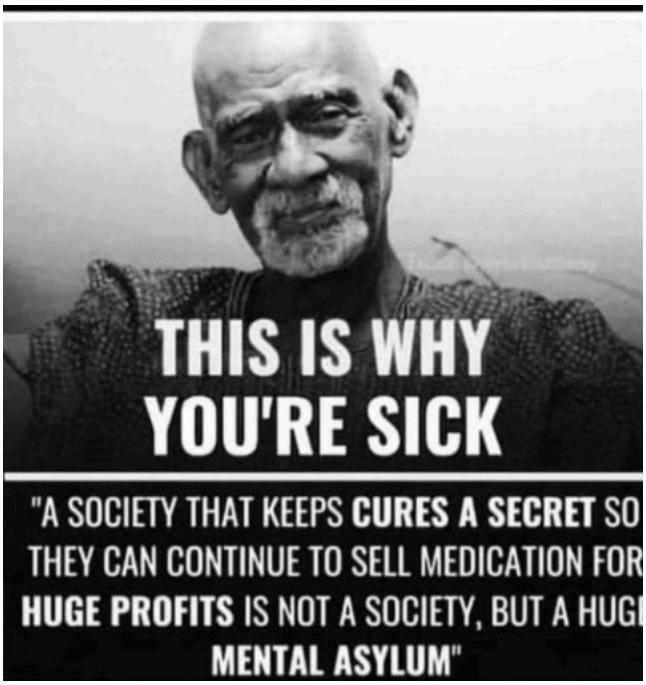
Big Pharma Profiting

Finally, at three percent of my data is the smallest category of "Big Pharma" profiting from the Covid-19 vaccine and vaccines in general. This argument contends that certain people are financially prospering from the money to be made from vaccines. The three companies that developed the vaccines are pushing them onto the American public purely for profit. For example, Picture 53 compares the money Pfizer made in 2020 and 2021 saying they have doubled due to the vaccine. Accompanied by the caption "The booster is working!" the image insinuates that pharmaceutical companies are benefiting enormously. Their argument is Big Pharma wants the government to keep pushing the public to get vaccinated to keep the government's faucet flowing to Big Pharma.

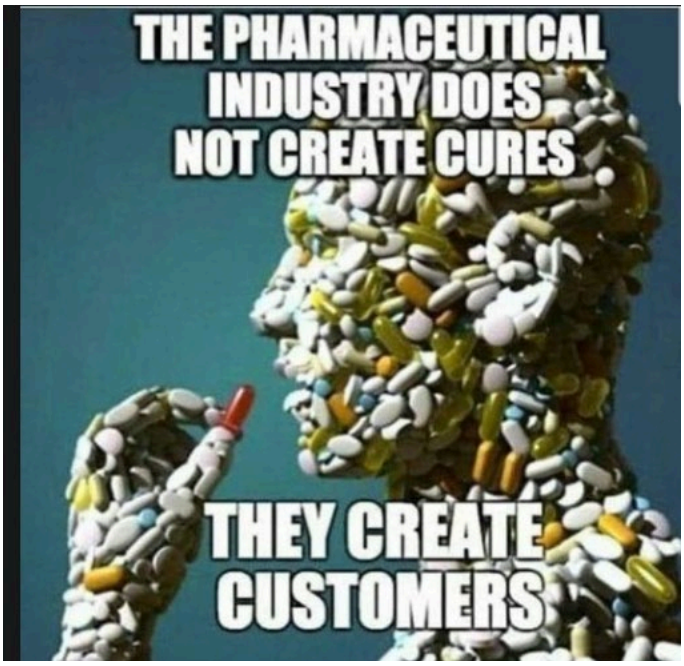

**Picture 52**



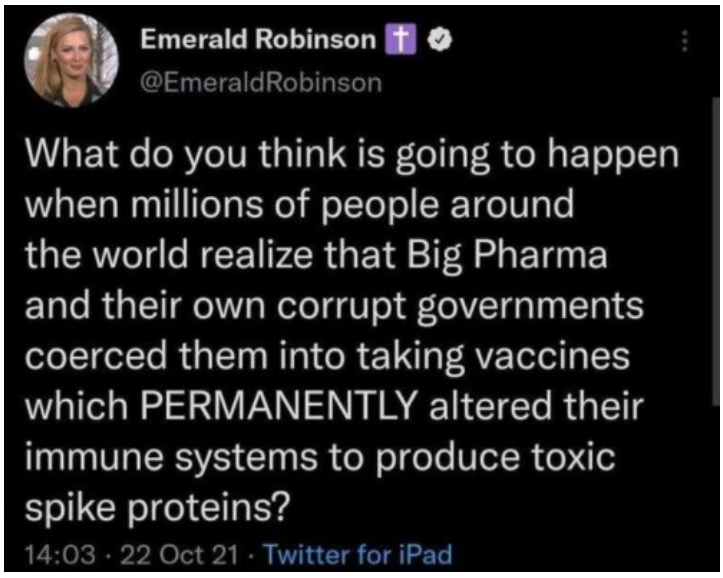

**Picture 53**



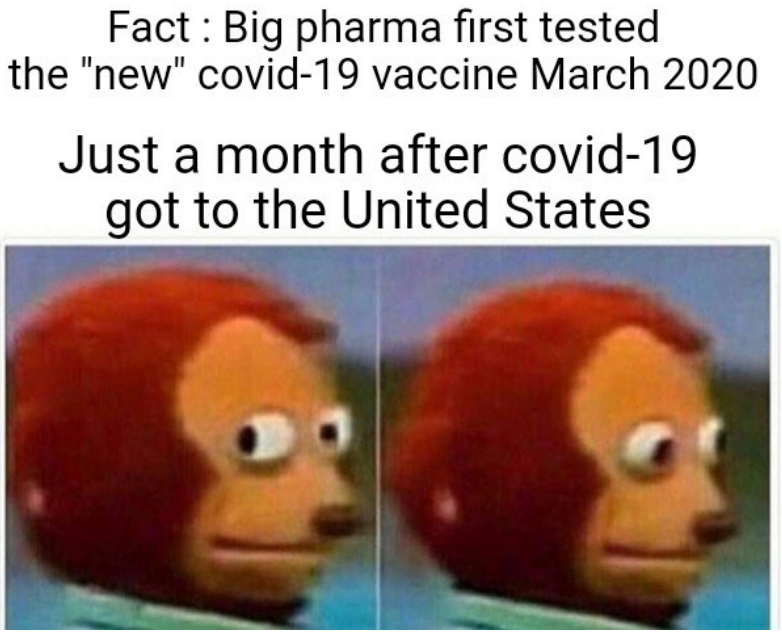

**Picture 54**




**Picture 55**



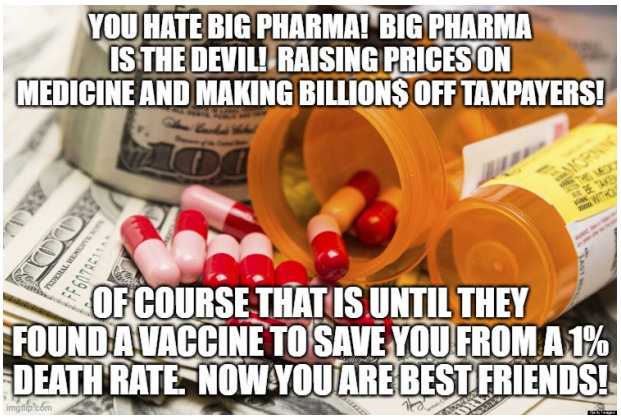

**Picture 56**




**Picture 57**


**Picture 58**


**Picture 59**




**Picture 60**


**Picture 61**

# CHAPTER FIVE: DISCUSSION & CONCLUSION

## Implications

The arguments used throughout the collected Facebook posts represent the various techniques that anti-vaxxers deploy. These techniques are government control, patriotism and individualism, rejection of science, intellectual superiority, health, and the notion of pharmaceutical companies profiting from vaccines. Each technique represents a specific strategy deployed by Facebook users offering insight into anti-vaccination messaging. By examining these posts, I identified and explained the communication phenomenon that takes place within this component of social media. Examining these six types of communication within these Facebook posts enables me to detect the exact tactics utilized. This, in turn, aids in combatting the misinformation spread about vaccines. The ability to recognize misleading arguments that captivate audiences by emotional appeals, anecdotes, or flawed reasoning, rather than through evidence, is a crucial exercise in critical thinking about vaccinations.

The anti-vaccination movement's arguments are often deceptive, because not only are their complaints phrased in non-controversial language like "informed consent," "health freedom," and "vaccine safety," but they also take advantage of the appeal of unrestricted access to knowledge through the Internet. Patients' empowerment and shared decision-making, in which individuals play a more active part in their healthcare, are combined with invitations to conduct one’s own research before vaccination. Patient self-advocacy, like access to health information, is a good influence. It empowers patients to

advocate for themselves and consider other solutions. The source of the information, on the other hand, should be considered and weighed in terms of its legitimacy and validity.

Accessibility & Race

These six identified strategies, viewed in a larger socio-cultural phenomenon, illuminate the particular whiteness of anti-vax messaging on social media. The whiteness of the space which I studied must be taken into consideration. The Facebook groups I examined were predominantly white spaces. The profile pictures of the posters in these groups appeared to be mainly white bodies. The people depicted in the memes and photos of the posts were also mostly white men, women, and children. Despite the diverse population of the United States, the conversations surrounding vaccines are mainly white-focused. As a Facebook user since 2009, the view of the platform that I have curated has given me a very specific newsfeed.

My own positionality as a researcher must be acknowledged. Using an interpretivist lens, I reflect on the fact that my own experiences and positionality affected my research. As a white woman studying predominantly white spaces, I am not able to speak to the personal experiences that people of color and/or disabled people have with vaccines. I am an able-bodied, healthy, white woman who has never suffered from any chronic affliction. Raised in an upper-middle class household, I have always had access to healthcare. I have always had access to medical education through schooling, books, medical providers, the Internet, etc. I grew up in a family that embraces vaccines as part of standard healthcare. The yearly flu shot is easily accessible to me within my community. My employment status allows me to work from my home and limit contact with the general public. For all the reasons listed above, I am statistically unlikely to die

from Covid-19 or to suffer any long-term negative effects from the virus. Furthermore, I reside in a part of the United States that has had a relatively low mortality rate due largely in part to the low population density.

However, I am able to discern that the conservations surrounding vaccines are taking place in predominantly white spaces despite the fact that illness and disease affect all people. It must also be noted that people of color experience illness and disease differently than white people. For example, persons who are Black are contracting Covid-19 at higher rates and are more likely to die from the virus (Yancy, 2020). The infection rate is more than 3-fold higher than that in predominantly white counties (Yancy, 2020). Moreover, this death rate for predominantly Black counties is six-fold higher than in predominantly white counties (Yancy, 2020). Even though these data are preliminary and further study is warranted, the pattern is irrefutable: underrepresented minorities are developing Covid-19 infection more frequently and dying disproportionately (Yancy, 2020).

The disparity seen in Covid-19 cases among white and non-white people is due to several factors. According to the Agency for Healthcare Research and Quality, Black, Hispanic, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander patients receive lower-quality medical care than white patients for 30%–40% of quality measures (Marcelin et al., 2021). Given the known risk factors for Covid-19 complications, the confluence of hypertension, diabetes, obesity, and the higher prevalence of cardiovascular disease among Black persons, these communities have been hugely affected by the pandemic (Yancy, 2020). The communities where many Black people reside are in poor areas characterized by high housing density, high crime rates, and poor

access to healthy foods (Yancy, 2020). Furthermore, being able to maintain social distancing while working from home, telecommuting, and accepting a furlough from work but indulging in the plethora of virtual social events are issues of privilege (Yancy, 2020). In certain communities, these privileges are simply not accessible. Unlike the known risk factors for which physicians and others can stridently offer clear advice regarding prevention, these concerns—the burden of ill health, limited access to healthy food, housing density, the need to work, the inability to practice social distancing—cannot be well-articulated as clear, pithy, and easily actionable items (Yancy, 2020). These social determinants arise from long-standing systemic racism and health inequity, including disparities in healthcare access, employment and work conditions, transportation, incarceration, and housing circumstances (Marcelin et al., 2021).

## A History of Trauma

Although the Covid-19 pandemic has amplified these racial and ethnic inequities, it has also highlighted the historical and current factors contributing to distrust of healthcare institutions by BIPOC communities (Marcelin et al., 2021). A critical factor of this distrust is the deep and justified lack of trust that many Black Americans have for the health care system in general and clinical research in particular (Warren et al., 2020). Alsan, Wanamaker, and Hardeman (2020) discuss the phenomenon of peripheral trauma as it relates to Black Americans and medicine. Peripheral trauma suggests exposure to racially or ethnically targeted events predicts adverse physical and mental health outcomes among minority groups, even among members not directly targeted (Alsan et al., 2020). In cases where the medical profession is the perpetrator of such actions, health

effects may be even more pronounced as targeted groups experience both the stress of targeting and heightened mistrust of the medical profession (Alsan et al., 2020).

The Tuskegee Study of Untreated Syphilis in the Negro Male (TSUS) affected more than just the study's direct victims; lower healthcare utilization and higher mortality extended to the generation of Black men who identified with those victims (Alsan et al., 2020). To the extent ongoing medical mistrust among Black Americans is rooted in this historical exploitation, the peripheral trauma of TSUS spans generations (Alsan et al., 2020). Lasting four decades, the study began in 1932 with approximately 600 poor and mostly illiterate Black men, two-thirds of whom had syphilis (Alsan et al., 2020). Effective treatments were withheld from the participants as the long-term effects were studied. It is not known how many of the infected men died of syphilis-related causes, as opposed to competing causes; dozens of spouses and children had been infected with the disease as well (Alsan et al., 2020). A nine-million-dollar settlement was reached in 1974 for the study's victims, and the US government belatedly issued an official apology in 1997 (Alsan & Wanamaker, 2018). Minority patients are susceptible to peripheral trauma from racially or ethnically targeted events in the broader society, and the Tuskegee Study of Untreated Syphilis is a case study that offers a window into the negative effects of such targeted exploitation on health (Alsan et al., 2020).

This legacy of trauma also includes a history of forced sterilization practices exerted on women in Indigenous communities without informed consent at the hands of Indian Health Services (IHS) physicians (Marcelin et al., 2021). Thousands of Native American women were subjected to involuntary sterilizations by the IHS in the 1960s and 1970s, causing deep psychological and cultural harm to the women, their families,

and their communities (Nuriddin, Mooney, White, 2020). Sterilization abuse continued for incarcerated women. After reports of forced sterilizations in California prisons, the state launched an investigation and determined that at least 144 incarcerated women were illegally sterilized between 2006 and 2010. Of those sterilizations, 24% were on Black women and 37% were on Latinx women (Nuriddin et al., 2020).

Vaccine Hesitancy

In the realms of public health and disease intervention in the United States, there are myriad examples of people of color being historically penalized, oppressed, and harmed (Nuriddin et al., 2020). The reluctance of these communities to receive the Covid-19 vaccine is widespread. Many individuals from BIPOC communities have expressed reluctance or barriers to receiving the available Covid-19 vaccines, with several national surveys reporting rates of reluctance ranging from 25% to 50% (Marcelin et al., 2021). Among those expressing reluctance, reasons include safety concerns related to a lack of sufficient time for vaccine development, a lack of trust in or having doubts about the government or the healthcare system, and high rates of concern that the development of the vaccine did not take their needs into account (Marcelin et al., 2021).

Addressing These Hesitancies

The United States has yet to adequately comprehend that overcoming racism is not the responsibility primarily of Black people; the racist ideas and practices that constitute today's "structural racism" were created, and have been sustained, primarily by white people (Warren et al., 2020). It would be wrong, as well as ineffective, to ask Black communities to simply be more trusting. Clinicians, investigators, and pharmaceutical companies must provide convincing evidence — sufficient to overcome the extensive

historical evidence to the contrary — that they are, in fact, trustworthy (Warren et al., 2020).

Approaches to address vaccine hesitancy must include culturally appropriate messaging that acknowledges that their experiences as healthcare workers and healthcare consumers may differ from those of their white counterparts (Marcelin et al., 2021). Tailored education campaigns must be pursued which should be based on in-depth analysis of norms, beliefs, misinformation, and preconceived notions prevalent in any given community that may be culturally or geographically distinct (Marcelin et al., 2021). For example, in the Navajo Nation, traditional healers were instrumental in leading the way with Covid-19 vaccine messaging by choosing to be vaccinated first in the community, along with healthcare workers, President Jonathan Nez, and other community leaders (Marcelin et al., 2021). This transparent, coordinated strategy emphasized clear, unified messaging in both English and Navajo languages, and it included utilization of digital and social media channels, all of which influenced an increased uptake of vaccines in this community (Marcelin et al., 2021).

According to Warren et al., (2020), there are several measures the medical community can take to earn and deserve increased trust regarding vaccines, specifically the Covid-19 vaccine. First, trial sponsors and regulatory agencies can ensure that the informed-consent process is exemplary, including ensuring that all relevant aspects of the design and conduct of the clinical trials are maximally transparent (Warren et al., 2020). Second, acknowledge that all clinical research depends on people who are willing to accept the risks posed by trial participation in order to improve the health of the people who come after them. Black participants who agree to enroll in these trials have a right to

expect and trust that Black communities will have fair access to vaccines and treatments once they become available (Warren et al., 2020). Third, uphold the pledge submitted by nine pharmaceutical companies that they will "stand with science" and not submit a vaccine for approval until it has been thoroughly vetted for safety and efficacy. Finally, to earn and deserve trust from prospective trial participants, it must be ensured that they will receive appropriate medical care if they are injured as a result of receiving an experimental vaccine (Warren et al., 2020). In addition to often lacking access to health care, Black people are also disproportionately likely to be uninsured, and pharmaceutical sponsors in the United States are not required to provide compensation to people who experience research-related injuries (Warren et al., 2020).

To be effective, this effort would need to be firmly grounded in grassroots involvement of individuals and organizations with solid, well-earned reputations for trustworthiness in Black and other minority communities, including respected elected representatives, trusted local and national faith leaders, community advocates, and others (Warren et al., 2020). Active, ongoing, and fully bidirectional collaboration, learning, and communication will be essential. Public health officials and healthcare professionals should openly address past and ongoing injustices with empathy and reassurance based on scientific evidence (Marcelin et al., 2021). Although the urgency of the pandemic is spurring efforts toward trust and transparency, without a sustained effort of community engagement, any gains in trust may be lost (Willis et al., 2021).

### Language Surrounding Vaccines

Another aspect to be addressed regarding vaccine hesitancy among non-white communities is the language surrounding it. The language of herd immunity is part of the

problem (Jones & Helmreich, 2020). A herd usually describes domesticated animals, especially livestock. Herd animals like cows, goats, or sheep are sacrificed for human consumption. Few humans want to be part of that kind of herd. The term "herd immunity" became a fixture of epidemiology by the 1930s (Jones & Helmreich, 2020). Discussions of herd immunity for influenza, polio, smallpox, and typhoid appeared in textbooks, journals, and public health reports in England, Australia, and the USA (Jones & Helmreich, 2020). The idea also intersected with eugenic notions of racial difference at a time when eugenic racism was ascendant in the United Kingdom and the United States (Jones & Helmreich, 2020). Herd immunity took on fresh prominence in the 1950s and 1960s as new vaccines raised crucial questions for public health policy (Jones & Helmreich, 2020). Herd immunity asks the question: what share of a population had to be vaccinated to control or eradicate a disease? Ongoing and uncritical usage of terms such as "herd immunity" during this pandemic exemplifies the durability of language that intersects with eugenics and dehumanization (Jones & Helmreich, 2020). The animal connotations of "herd immunity" must be overcome by encouraging the use of "population immunity" instead (Jones & Helmreich, 2020). Changing the label of herd immunity might remove the connotations but not fix the problem.

Media Communication & Vaccines

Health messages can influence attitudes, which in turn guide people's decisions about what to do, including whether or not to vaccinate against the disease (Chan et al., 2020). People who view vaccines favorably are more likely to get vaccinated than those who hold unfavorable attitudes. These pro-vaccine and anti-vaccine attitudes may be shaped by content consumed from social media. Social media posts questioning the need

for vaccines, for instance, may lead people to form negative attitudes toward vaccination and then cause people not to vaccinate (Chan et al., 2020). It is through this consumption of media that opinions and beliefs are shaped. There is a growing recognition that news and social media channels can be exploited to shape individual views through evidence and misinformation (Dunn et al., 2017). While the value of news and social media as a population intervention to positively influence health behaviors has been examined, the impact that socially-shaped misinformation has on decision-making and health outcomes is an emerging concern (Dunn et al., 2017). Much of the public's knowledge about science comes not from perusing scientific journals but from accounts conveyed by media and by the stories they tell (Ophir & Jamieson, 2021).

### Storytelling Through Science

The media, which remain a primary source of scientific information, often fail to recognize the role retractions and failed replications play in scientific progress (Ophir & Jamieson, 2021). Scientists make mistakes, some intentional and some not, and the public benefits from journalistic coverage of such failures. One could argue that such mistakes are a healthy part of the scientific process (Ophir & Jamieson, 2021). However, the public may view this as being given false or inaccurate information. Science is ever-evolving as more tests and developments come about through the scientific method. In order to make sense of science, people often gravitate toward anecdotes and stories to form and/or reaffirm already-held opinions. These opinions may be formed through social circles. However, discussions with family and friends may further vaccine misinformation and hesitancy (Chan et al., 2020). For example, people seek and circulate health information among family and friends, and this creates an information bubble (i.e.,

reading news or information that supports what people already believe in) that can pose challenges for public health announcements and physician recommendations (Chan et al., 2020).

Because science predominately seeks to share information on abstract and recurring phenomena, the specific nature of storytelling is less likely to be an appropriate format for science education (Kaplan & Dahlstrom, 2017). Audiences are dreamers, dangerously incapable of distinguishing fiction from truth, opinion from knowledge, story from history, and fantasy from reality (Kaplan & Dahlstrom, 2017). Simplifying the complex nature of science might yield an inaccurate result.

The belief that the dissemination of more facts with greater accuracy will overcome deficiencies of public understanding and win acceptance of science, an assumption underlying the deficit model of science communication, has long been discredited as naïve and ineffective (Kaplan & Dahlstrom, 2017). The proponents of scientifically unsupportable views are not suffering from a deficit of data; they are animated by an alternative portrayal that is constitutive of their identity and cultural affiliation and independent of empirical disconfirmation (Kaplan & Dahlstrom, 2017). Science does not intrinsically trump stories (Kaplan & Dahlstrom, 2017).

Kuru et al. studied the effects of vaccine hesitancy-inducing communication. They posited that accounts about vaccine side effects, even when accurate, can lead to overgeneralization and fuel hesitancy by leading the public to draw inaccurate inferences about the prevalence and severity of side effects (Kuru et al., 2021). Individual cases of vaccine side effects, even if true, may elicit false inferences, and the media's reliance on dramatic and vivid cases may lead to overestimation of risks that are relatively rare (Kuru

et al., 2021). Media coverage of such stories without proper contextualization can be misleading and has the potential to influence public opinion (Kuru et al., 2021). This explains how individual accounts of vaccine side effects could be more influential than statistical information about their prevalence (Kuru et al., 2021). For example, anecdotal information about side effects leads to lower intentions to vaccinate than does statistical information about them (Kuru et al., 2021).

Combating Misinformation

Studies on misinformation have revealed that corrections do not necessarily remove misperceptions and misinformation and that their effectiveness depends on individual differences in motivation and educational level (Kuru et al., 2021). Hesitancy-inducing anecdotes may be counteracted with two types of correction strategies: (a) statistical information that is usually delivered by experts or (b) accounts about people who are pro-vaccine and who share their experiences (Kuru et al., 2021). Studies of the positive and counterproductive effects of attempts to reduce misinformation have generally concluded that correcting misinformation is challenging (Kuru et al., 2021). Moreover, by eliciting more thinking about the earlier misinformation, corrections can make it more familiar and accessible (Kuru et al., 2021). In that situation, corrections can amplify the initial effect of the misinformation, causing message recipients to be more misinformed after than before the correction (Kuru et al., 2021). In other cases, simply providing correct information fails to counter the emotional effects of misinformation (Kuru et al., 2021).

Positives of Media

While the dissemination of science via entertainment does indeed have the potential to distort its content, it also has the power to capture attention, increase engagement, and promote the understanding of science (Kaplan & Dahlstrom, 2017). If used correctly, the efficient information-processing pathway can increase comprehension of scientific content and convey its relevance to human experience while remaining accurate and representative (Kaplan & Dahlstrom, 2017). Discussing vaccines with family and friends may correct inaccurate information found on social media (Chan et al., 2020). For example, discussing vaccination with family and friends predicts college students' positive dispositions toward vaccination, and norms can have positive influences on actual vaccination as well (Chan et al., 2020). In short, introducing more diverse contents through discussions with family friends can be useful in correcting misinformation (Chan et al., 2020).

## Limitations

When researching a phenomenon, a case study condenses its vast scope into a single observation of a singular event that occurs within it. A case study gives context through an in-depth analysis. This method allows for direct observation of the phenomenon through data gathering and in-depth analysis, as well as exploration of how it works in practice. The study of persons who live within a phenomenon can be a useful representation of the event's complexity. Case studies are particularly beneficial for conducting further study since they provide material that can be referred to and elaborated upon.

Case studies offer a unique technique of studying qualitative data that cannot be replicated. Depending on who is conducting the case study, the researcher's approach to data collection, sorting, and analysis will change. When performing scientific study, the ability to duplicate a phenomenon distinguishes it from being a one-time occurrence or a coincidence. If many studies produce comparable results, then there is evidence of the phenomenon's existence outside of an isolated vacuum, and it is acknowledged as a lived reality within society. This helps to limit the influence researcher bias, which is an inevitable part of the process.

Another limitation of research that should be taken into consideration is the timeframe I examined. I studied a snapshot in time (late 2021/early 2022) where the discussion surrounding vaccines and Covid-19 was constantly changing. From when I began this study to when I concluded it, the conversation regarding the Covid-19 vaccine shifted in prevalence. As Covid cases fluctuated, the discourse regarding vaccines changed as well. With the introduction of the booster provided by Pfizer-BioNTech, Moderna, and Johnson & Johnson, issues of a yearly shot or schedule also emerged.

## Areas for Future Research

### Other Social Media Platforms

This case study illustrates a particular type of communication on a specific media platform. The posts found in these Facebook groups were assembled in a community of like-minded individuals who share similar views. There is a need for case studies that collect and analyze data from Facebook feeds instead of groups. Facebook has a distinct newsfeed algorithm that shows users articles, ads, posts, etc., that they might not necessarily elect to view. Unlike Facebook groups which involve an action to join, a

newsfeed is an amalgamation of other users posts. Other social media platforms such as Twitter, Instagram, and YouTube should also be studied in order to gain a clearer sense of how social media as a whole affects vaccine hesitancy. YouTube, in particular, has censored certain videos surrounding vaccine misinformation in the wake of the Covid-19 pandemic.

As social media platforms become more widespread globally, public health issues about the impact of anti-vaccination content on vaccine denial are growing. This further jeopardizes the acceptance of new vaccinations, such as the continuing endeavor to create an effective Covid-19 vaccine. Future research in this subject should concentrate on designing and analyzing effective vaccine uptake tactics as well as promoting evidence-based health literacy.

Covid-19

Continued research on Covid-19 vaccine acceptance and hesitation should be a priority in the battle against this pandemic. The whole world shares a combined responsibility in battling Covid and the greatest weapon at our disposal is vaccines. The causes for vaccine uptake and resistance to Covid-19 remain multifaceted. As new variations arise and new vaccines enter the market, it will be critical to strike a careful balance between presenting what is known and addressing the unknowns. Researchers and pharmaceutical companies should be as open as possible, with research findings on Covid-19 vaccinations made publicly available. The communication from governments as well as non-governmental organizations should contain a united and cohesive message.

## Conclusion

Through this research, I identified communication techniques and determined how the masses on Facebook perpetuate anti-vaccination propaganda, addressing the research question: *how do these four Facebook groups reveal a pattern of anti-vax communication in social media*. This research illustrates the ways in which anti-vaccination messaging is propagated through social media, specific Facebook groups. The four groups I examined were key in analyzing how social media reinforces certain already-held beliefs while also exposing users to misinformation.

Through qualitative content analysis I identified common themes that appeared in specific Facebook groups regarding the Covid-19 vaccine and vaccines in general. This analysis determined that Facebook users utilize six specific strategies to spread vaccine misinformation communicate with one another about vaccines. By engaging within these groups, Facebook users are not only contributing to the conversation surrounding vaccines, but they are also taking action. They are shaping the discussion and understanding that people have about vaccines. This study delves deeper into the process, determining how dialogue occurs and how the general public participates in the practice on Facebook. Determining these "hows" contributes to a better understanding of what anti-vaccination communication entails for individuals who engage in it, as well as the tools used.

This research is significant because it builds upon information already known about vaccine hesitancy. By completing this research, I examined the techniques used by anti-vaccination individuals within social media which can be utilized for future research when studying this type of communication. These techniques are comprised of

government control, patriotism and individualism, rejection of science, intellectual superiority, health, and the notion of pharmaceutical companies profiting from vaccines. These specific Facebook groups were chosen specifically due to the current climate of Covid-19. The amount of data that was collected from the Facebook posts discussing anti-vaccination provided a rich data set that produced the information needed to determine how these transmissions take place on Facebook. These Facebook groups were a prime choice for the study of anti-vaccine communication research not only because of the breadth of available data, but also because Facebook plays a pivotal role in establishing norms and reinforcing beliefs. This research presents the opportunity for people on and off social media to understand the power that Facebook has in determining individual's options and actions.

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