

2023 Trends in COVID-19 Vaccine Opposition

Introduction

Vaccines are critical tools in the fight against infectious diseases. However, increasing vaccine hesitancy and opposition, amplified by misinformation during the COVID-19 pandemic, pose threats to the progress achieved in public health. Social media has become a primary means to discuss and share health information and is one of the leading platforms for the spread of misinformation about vaccines.^{1,2,3,4,5} Rates of vaccination for COVID-19 and routine vaccines are on the decline, both in the United States and globally. For example, only 22.6% of U.S. adults over 18 and 14% of children have received the latest COVID-19 vaccine.⁶ Confidence in COVID-19 vaccine safety has also declined: One survey found that in September 2023, 57% of adults felt the COVID-19 vaccine was generally safe, down from 73% in November 2021.^{7,8,9} As deaths and hospitalizations from COVID-19 continue to impact communities, increasing confidence in vaccines is critical for safeguarding public health.

Since 2019, The Public Good Projects (PGP) has monitored conversation about vaccines across a variety of social and digital media platforms. By tracking the spread of facts and misinformation, PGP aims to identify prevailing narratives, sentiment trends, and misinformation patterns. This helps in the development of targeted interventions and communications strategies to address misconceptions and improve public understanding and trust in vaccines. This report details the trends in 2023 discussions about COVID-19 vaccines, identifying both persistent, recurring themes from previous years and new themes that emerged within the year. The goal is to equip public health professionals with information to help navigate future discussions around COVID-19 vaccines.

Methods for Data Collection

Data are collected into PGP's monitoring platforms from keyword searches created by PGP analysts. The vaccine search query contains hundreds of keywords that are organized into complex Boolean search string queries. Analysts update the query frequently to reflect the natural evolution of public discourse and to filter out irrelevant data. The information automatically collected, aggregated, and presented on data dashboards is from publicly available sources, meaning that they are accessible by anyone through a simple internet search. To classify conversation as referencing vaccine opposition, PGP analysts manually coded a random sample of 1,000 posts, generating a keyword query specific to negative views.¹⁰ This keyword list is continuously reviewed and updated to ensure accuracy. Analysts then developed a targeted query incorporating specific terms, phrases, and hashtags directly related to COVID-19 vaccination discourse. This specialized query was constructed to capture the nuances and specific language used when discussing COVID-19 vaccines, distinguishing it from general vaccine conversation. Once data were collected, they were analyzed to understand dominant conversation themes within



COVID-19 vaccine opposition. For the purposes of this paper, the phrase vaccine opposition is used to define a spectrum of negative attitudes, general hesitancy, adverse events, misleading or false content, misinformation, and other concerns or distrust in the COVID-19 vaccines. Further details about the data collection and thematic analysis process have been documented in scientific journals.¹¹

Recurring Themes in 2023

The following section explores the top five recurring themes that drove vaccine opposition in 2023, by volume of conversation.

Sudden Deaths

The release of the [debunked](#) documentary “Died Suddenly” in November 2022 prompted a substantial increase in discussions around alleged sudden deaths associated with vaccines. Prior to the film, sudden death mentions averaged about 20,100 per month. This surged to an average of 133,900 mentions per month in 2023. This narrative broadly included unexpected fatalities of both private individuals and public figures, and was linked to various alleged causes, including the [anti-vaccine myth about “turbo cancer”](#) and unrelated cardiac issues. The discourse spread across multiple platforms, with a notable presence on X (formerly Twitter).

What we can learn from conversation about sudden deaths

This narrative has entrenched itself in the mainstream vaccine opposition discourse and shows no signs of fading in the near future. While it had seen some decline towards the end of 2023, mentions of sudden deaths still averaged over 55,000 per month in early 2024, accounting for 3 to 7% of all vaccine opposition discourse. The documentary not only popularized the claim but may have also transformed it into a broader movement against vaccines. [Despite substantial evidence that there is no link](#) between COVID-19 vaccines and sudden death, the narratives persist.

Cardiac Complications

Discussions about cardiac complications following vaccination, particularly myocarditis and pericarditis, continue to be a major focus within vaccine opposition conversation, with over 3.9M mentions recorded in 2023. When discussed, these side effects are often presented as more common and severe than scientific data supports. In reality, the [benefits of COVID-19 vaccination outweigh the rare risk of myocarditis](#), even in young males. Throughout 2023, the conversation peaked following incidents involving specific athletes, such as the cardiac arrest of [Bronny James](#), son of NBA star LeBron James. This incident fueled over 66,000 specific mentions and over 200,000 broader cardiac discussions in late July. Some posts in this theme accused health agencies like the CDC of concealing myocarditis risks, while others misrepresented research findings to claim such events are widespread even though they are not. Discussions often included unverified personal stories or general warnings about the dangers of myocarditis.

What we can learn from conversation about cardiac complications

Cardiac complications, though rare, are a focal point in vaccine discourse due to their serious nature and the FDA’s [warning](#) issued in June 2021. Public health professionals should be prepared for ongoing discourse following any



detection of safety signals, especially if such events could impact youth, making the issue seem more urgent. When public figures, especially athletes, experience cardiac incidents, there is an inevitable surge in discourse attributing these events to COVID-19 vaccinations, regardless of the individuals' actual vaccination status. Trending social media posts also either ignore or deliberately neglect to inform the public that the risk of myocarditis is [higher after a COVID-19 infection](#) than after vaccination.

Vaccine Efficacy

The false narrative that COVID-19 vaccines are ineffective and offer no public health benefit persisted within conversation throughout 2023. In reality, the CDC continues to [recommend](#) COVID-19 vaccines because the vaccines remain effective at protecting against serious illness. Contrary claims manifested in various forms, including the promotion of natural immunity over vaccination, false assertions that vaccines cause side effects without providing any protection, and [unsubstantiated claims](#) that vaccinated individuals are more likely to contract COVID-19 than the unvaccinated. In 2023, discussions surrounding vaccine inefficacy appeared in about 1.5 million mentions.

What we can learn from conversation about vaccine efficacy

Discourse on COVID-19 vaccine efficacy often intertwines with other misinformation narratives or broader inflammatory statements designed to provoke public reaction. Efficacy has been a recurring theme in general vaccine conversation for decades. This 'stacking' of misinformation may occur because vaccine efficacy is a consistent element in opposition arguments. It is likely to remain a focal point in discussions about vaccines for years to come.

Vaccine Mandates

Opposition to vaccination mandates has been a substantial theme in vaccine discourse, persisting even after the decline and end of federal mandates in May 2023.¹² Over the year, more than 4.1 million mentions reflected this sentiment. Under this broad theme, several subthemes emerged: celebrations of the end of existing mandates, policies or legislation prohibiting future mandates, calls for retribution for those allegedly harmed by mandates, connections between alleged vaccine injuries and mandates, and general anti-mandate sentiments.

What we can learn from conversation about vaccine mandates

A perception of COVID-19 vaccine mandates as overreaching and unnecessary has led to widespread policy changes aiming to ban future mandates, especially as fears of their reinstatement grow during any increase in COVID-19 cases or new outbreaks. As of January 2024, 18 states have [enacted legislation](#) to exempt individuals from COVID-19 vaccine mandates. This ongoing discourse, despite the absence of current mandates, suggests that politicians feel pressured to act, potentially leading to policies that limit the ability of public health agencies to respond in future health crises.

Alternative Treatments and Detoxification

Early in the COVID-19 pandemic, alternative treatments like hydroxychloroquine (HCQ) and ivermectin were touted as preventive or curative measures against severe illness. Despite a lack of scientific support, the fact that clinical trials [halted HCQ](#) use due to cardiac complications, and that ivermectin proved [ineffective](#) with a risk of adverse



events, these treatments continue to be promoted online. A narrative has evolved to position these treatments as alleged remedies for vaccine injuries, purportedly authorized by health officials to allow emergency use of COVID-19 vaccines. In 2023, mentions of HCQ or ivermectin in relation to vaccine opposition exceeded 1.1 million mentions, with an additional 200,000 mentions of other substances or detoxification methods.

What we can learn from conversation about alternative treatments and detoxification

The promotion of alternative treatments and detoxification methods has deep roots in the pandemic's early days, gaining traction through endorsements by influential figures and sustained by ongoing legal challenges. This discourse shows the lengths to which people will go to protect themselves, often due to distrust of official health recommendations, and the lasting influence of public figures who promote ineffective treatments.

New Themes in 2023

In addition to the persistent themes discussed above, analysts observed the emergence of several new narratives in 2023. While the introduction of new themes is not uncommon, they typically surface briefly before fading away. Identifying the new themes that persist offers insights into the transformation of misinformation narratives over time.

SV40 and DNA Contamination

Discovered in monkeys in the early 1960s, SV40 (Simian Virus 40) is known to cause tumors in animals and has raised concerns about its potential to induce cancer in humans. Although some studies suggest that SV40 can transform human cells and is linked to certain cancers, large epidemiological studies have not confirmed a direct causal relationship between SV40 exposure and increased human cancer risk. Between 1955 and 1963, SV40 was inadvertently present in polio vaccines, though evidence is still inconclusive in linking the virus to cancer in humans. In March 2023, false claims circulated on social media that SV40 was detected in the DNA sequence of COVID-19 vaccines, allegedly causing various cancers, including so-called “turbo cancers.” These discussions resurged in September 2023 when a doctor testified before the South Carolina Senate about SV40 contamination, a claim that gained further attention after a state Surgeon General cited it in a letter to the FDA. The FDA published a [response](#) denying the allegations and reaffirmed the COVID-19 vaccines' safety in late December. Mentions of SV40 or related terms were recorded over 375,000 times in 2023.

What we can learn from conversation about SV40

The stickiness of this particular claim can partially be attributed to its foundation in historical facts. The actual contamination of polio vaccines with SV40 provides a “kernel of truth” that lends credibility to current allegations. This historical precedent has been weaponized to foster distrust in modern vaccines by suggesting an unsubstantiated recurring pattern of oversight and contamination. Another compounding factor is a general distrust in vaccine adjuvants; these posts follow a similar pattern to topics such as aluminum or graphene oxide, in which social media users falsely claim the ingredients are harmful to human health and, therefore, need to be withdrawn from the market. This combination of factors has allowed the narrative to reach both medical communities and the general public. The blend of historical truth, scientific and general uncertainty, and institutional acknowledgment creates a potent mix that sustains and amplifies the false SV40 claim.



MRNA in the Food Supply

In 2023, concerns about integrating mRNA technology into the food supply increased. Stemming from a 2021 project at the University of California-Riverside to develop edible vaccines using mRNA, the topic garnered nearly 550,000 mentions in 2023. Discussion peaked in January with unsubstantiated claims that Bill Gates intended to integrate vaccines into the food supply to combat vaccine hesitancy. These claims surged in April, fueled by social media accounts raising fears about mRNA in milk, vegetables, and livestock. Amidst this, Missouri legislators proposed, but did not pass, a bill requiring the labeling of food products containing gene therapy technologies like mRNA. The controversy persisted, with efforts to block funding for further mRNA research in plants and ongoing online opposition linking general mistrust of mRNA to the advancements made by COVID-19 mRNA vaccines. In reality, [COVID-19 vaccines are not being passed through livestock or produce](#).

What we can learn from conversation about mRNA in the food supply

Widespread fears about mRNA technology in the food supply stem from a broader mistrust of mRNA technology. These concerns are also linked to the desire to get vaccinated—similar to the resistance seen against vaccine mandates—as some fear they will forcibly or inadvertently be vaccinated unless protections are put in place. This issue has not only remained a topic of public debate but has also influenced real policy discussions at both state and federal levels. As a result, this theme is likely to persist in the form of ongoing debates, potential new legislation, and persistent mistrust in mRNA technology.

Turbo Cancer

The discourse surrounding the false link between COVID-19 vaccines and cancer, specifically the fake term “turbo cancer,” has been prominent in vaccine opposition narratives. The term “turbo cancer” gained traction in late 2022 due to reports about a Swedish researcher observing aggressive tumors in vaccinated patients. These cancers were noted for their severity and rapid progression. By spring 2023, the term became more common, especially in March when high-profile social media accounts cited alleged new cases in young adults. The narrative suggested a widespread phenomenon, often supported by anecdotal stories of individuals who had allegedly died from these cancers or by research showing similar effects in rats. Discussion peaked in mid-September 2023 when accounts connected “turbo cancer” to SV40. Although mentions declined after this peak, “turbo cancer” continued to be discussed, with over 350,000 mentions throughout 2023 and 71,600 mentions in the first quarter of 2024.

What we can learn from conversation about turbo cancer

The narrative of “turbo cancer” capitalizes on the existing public anxiety surrounding cancer, a disease already fraught with fear, and rising cancer rates that predate the COVID-19 pandemic. The term suggests a heightened severity and accelerated progression, but there’s [no evidence](#) to support any claims that turbo cancer is a real phenomenon. Discussions about turbo cancer often intertwine with other emerging misinformation themes, demonstrating its adaptability. Like vaccine efficacy, it serves as a versatile topic that can be invoked to capture public interest.



Conclusion

The themes explored in this report present unique narratives and challenges that will continue to influence public discourse into 2024 and beyond. While these narratives represent distinct pieces of misinformation, they also intersect. Narratives around sudden deaths, cardiac issues, and vaccine efficacy often influence one another. Recognizing the interplay of themes is important for developing comprehensive messaging strategies that enhance public trust and encourage vaccine uptake. Continued monitoring and research into the evolving information landscape, combined with communications strategies anchored in trust and evidence, are crucial for addressing public concerns and restoring confidence in COVID-19 vaccines and vaccination more broadly.



Endnotes

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