Commentary

Erosion of Trust, Polarization, and Changing Public Perceptions of Vaccines

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Public perception of vaccines reflects a complex interplay of historic progress, evolving societal values, and persistent challenges in public health communication. While widespread immunization remains one of modern medicine's crowning achievements, attitudes toward vaccines are shaped by a legacy of scientific advancements, institutional trust dynamics, and cultural narratives. Despite enduring support for childhood immunizations as a public health imperative, evidenced by broad consensus on school vaccination requirements, shifts in confidence among certain groups highlight vulnerabilities in public understanding. Lingering misconceptions about vaccine safety, amplified by fragmented information ecosystems, coexist with a majority belief in their life-saving benefits. The tension between individual autonomy and collective responsibility continue to shape societal attitudes, underscoring the delicate balance between scientific consensus and the forces that challenge it. At its core, the discourse reveals a paradox: even as vaccines remain a cornerstone of disease prevention, their perceived value is increasingly contested in ways that mirror broader societal debates about expertise, equity, and institutional accountability.

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1. Historical Context and Trends in Vaccine Acceptance

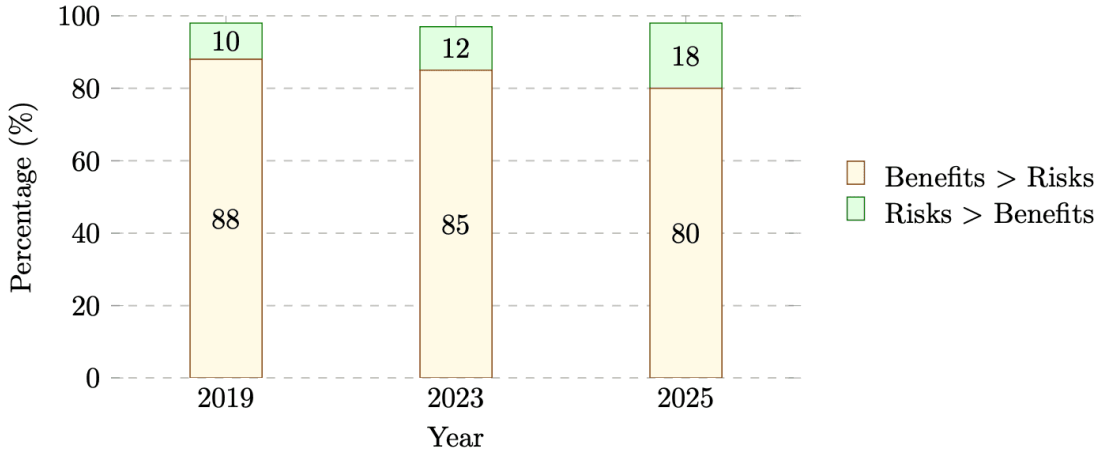

Figure 1. The declining confidence in measles, mumps, and rubella (MMR) vaccines over time, highlighting a trend of increasing medical skepticism influenced by institutional distrust. According to data from the KFF Tracking Poll (2019–2025), while 80% of adults still believe that the benefits of MMR vaccines outweigh the risks in 2025, 18% express concerns about vaccine safety, marking a significant rise from 10% in 2019. This shift mirrors historical patterns of fear and mistrust, reminiscent of the dynamics seen during the medieval plague era, where fear of unseen dangers overshadowed evidence-based reasoning.

Figure 1 illustrates a gradual decline in confidence in measles, mumps, and rubella (MMR) vaccines, consistent with broader concerns about medical trust reported in survey studies. Data from the KFF Tracking Poll (2019–2025)[1] shows that while eight in ten adults (80%) still affirm the benefits of MMR vaccines outweigh risks in 2025, this consensus has softened from 88% in 2019. The decline in vaccine confidence reflects broader historical patterns in which institutional failures, such as those seen in the asbestos and opioid crises, have contributed to public skepticism toward scientific and medical authorities. Parental behavior underscores this shift: 17% now report delaying or skipping some childhood vaccines, almost doubling since 2023. The rise of a "malleable middle", one in five adults (18%) who question vaccine safety, echoes medieval plague-era dynamics, where fear of invisible threats displaced evidence-based causality. These trends mirror the central thesis: distrust, once seeded by institutional failure, metastasizes into a self-sustaining force, endangering collective immunity while sustaining pseudoscientific markets.

2. Political Polarization and Vaccine Perceptions

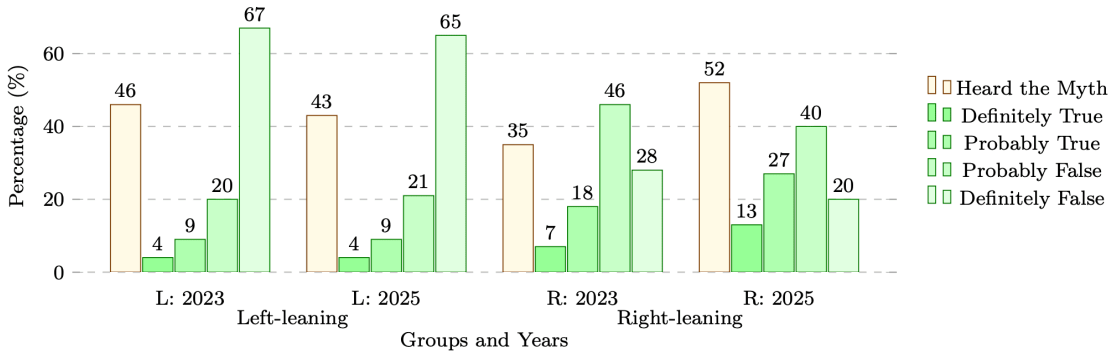

Figure 2. "Do you think that it is definitely true, probably true, probably false, or definitely false that more people have died from COVID-19 vaccines than have died from the COVID-19 virus?" The answers show a shift in vaccine skepticism across political ideologies. Between 2023 and 2025, the proportion of right-leaning individuals who expressed belief in the claim that COVID-19 vaccines caused more deaths than the virus itself increased from 25% to 40%, according to survey data. This trend aligns with broader shifts in institutional trust, which have also been observed in past public health controversies, such as responses to the asbestos and opioid crises. Meanwhile, left-leaning groups remained stable at 13%; a stasis framed not as resilience but as a fragile equilibrium in an era where distrust, once weaponized, calcifies into identity. The data underscores asymmetrical polarization: rejection of the myth plummeted among right-leaning respondents (74% to 60%), while left-leaning groups maintained near-consensus (≈87%), echoing historical divides between communities that embraced germ theory and those clinging to supernatural blame. (Source: KFF Tracking Poll.)

The Figure 2 underscores a deepening ideological divide in public health perceptions, reflecting the broader thesis on the cyclical nature of distrust. The data reveals a stark polarization: between 2023 and 2025, the proportion of right-leaning individuals endorsing the myth that COVID-19 vaccines caused more deaths than the virus itself surged from 25% to 40%. This shift is reminiscent of historical instances where fear and uncertainty have led to alternative explanations for disease causation, such as during the medieval period when some communities attributed plague mortality to witchcraft rather than environmental or biological factors; a well-known pattern of substituting systemic causality with ideologically convenient narratives. Meanwhile, left-leaning groups exhibited relative stability, maintaining a consistent 13% acceptance of the myth, a persistence framed not as resilience but as a precarious equilibrium in an era of weaponized skepticism.

The asymmetry in myth rejection proves equally telling. While ≈87% of left-leaning respondents consistently dismissed the claim as "probably" or "definitely false," their right-leaning counterparts saw a notable erosion, with outright rejection dropping from 74% to 60%. This divergence echoes historical precedents like the Radithor scandal, where institutional opacity allowed radioactive tonics to masquerade as health elixirs until their lethality became undeniable. Here, algorithmic ecosystems contribute to the rapid spread of vaccine-related misinformation, shaping public discourse in ways that can frame vaccine hesitancy as a form of dissent against perceived institutional overreach.

These political asymmetries align with international findings on vaccine acceptance dynamics. A comparative longitudinal study (Martinelli & Veltri, 2023) revealed that while cross-sectional correlations between perceived risk, institutional confidence, and vaccine acceptance exist at both individual and country levels, no significant longitudinal associations emerged within countries over time[2]. This suggests that short-term fluctuations in confidence-building campaigns, even during peak pandemic urgency, may fail to counteract entrenched ideological polarization, as seen in the widening U.S. partisan gaps between 2023–2025.

3. Erosion of Trust in Health Institutions

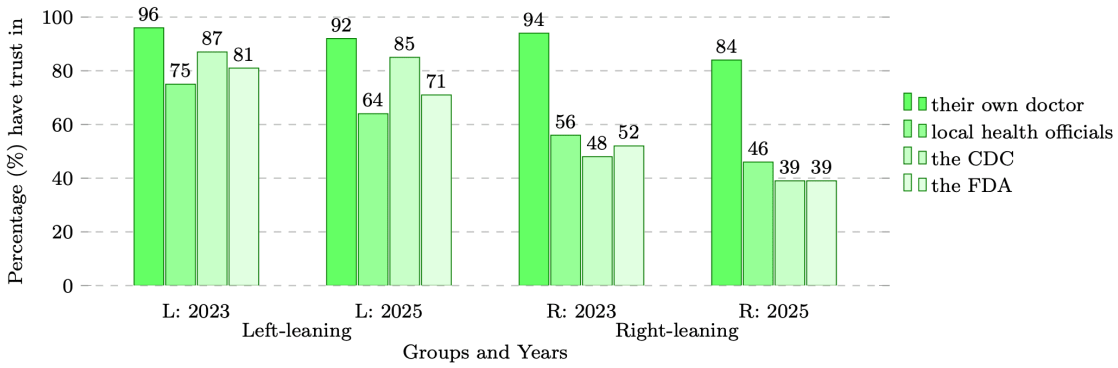

Figure 3. Diverging Partisan Trust in Health Institutions (2023-2025): Bar chart illustrating declining confidence in healthcare authorities across political groups, with pronounced deterioration among right-leaning adults. Trust in federal agencies shows stark ideological polarization: left-leaning trust in the CDC remains high at 85% in 2025, compared to a 9-point right-leaning decline (48% to 39%). The FDA experiences the sharpest partisan divide, with right-leaning trust plummeting 13 points (52% to 39%) versus a 10-point left-leaning decrease (81% to 71%). While personal physicians retain highest trust overall, right-leaning confidence drops 10 points (94% to 84%) compared to a 4-point left-leaning decline. These widening gaps—exceeding 45 percentage points for federal agencies—reflect deepening systemic distrust with critical implications for public health policy. (Source: KFF Tracking Poll.)

The 2025 KFF Tracking Poll on Health Information and Trust highlights significant declines in public confidence toward key health institutions, particularly among right-leaning individuals. Trust in the CDC has fallen from 66% in June 2023 to 61% in 2025, while trust in the FDA and state/local health officials dropped more sharply; from 65% to 53% and 64% to 54%, respectively. Trust in personal physicians remains the highest (85%), though this marks an 8-point decline since 2023, driven largely by diminishing confidence among right-leaning adults (down 10 percentage points). Partisan fractures are stark (Figure 3): 85% of left-leaning adults trust the CDC, compared to just 39% of right-leaning adults. Similarly, 71% of left-leaning individuals trust the FDA versus 39% of their right-leaning counterparts. These disparities highlight a growing divergence in trust toward federal agencies and scientific experts, with survey data indicating differing levels of skepticism across political groups.

Ultimately, the data crystallizes the central contention: distrust, particularly when linked to past institutional failures, can become self-perpetuating and may be exploited by various actors for different

purposes[3]. From medieval mercury peddlers to modern ‘wellness’ influencers, historical patterns suggest that public uncertainty about health risks can sometimes be leveraged commercially, with fear playing a role in consumer behavior. The data not only provides a snapshot of vaccine attitudes but also reflects broader societal divisions, where pseudoscience can gain traction amid declining institutional trust.

4. The Fallacy of Perfect Protection

When an informed vaccinated person tries to explain the importance of vaccinations to encourage others to get vaccinated, it is often met with the retort, "What are you afraid of—you’re vaccinated!" This response reflects a common sentiment among some individuals who believe that vaccination should eliminate any fear of disease. They argue that those who have received their vaccines should feel secure and confident in their protection against potential health risks. However, this perspective oversimplifies the complexities of vaccine efficacy and public health. While vaccines significantly reduce the risk of contracting diseases, they do not provide absolute immunity[4]. For instance, even highly effective vaccines may leave certain individuals vulnerable, particularly those who are immunocompromised or whose immunity may wane over time[5]. The assumption that vaccination guarantees complete safety distorts the sense of community by allowing individuals to rationalize their refusal to get vaccinated, relieving them of guilt for undermining herd immunity. It becomes a way of coping with the reality that their actions, driven by personal beliefs, however erroneous, are ultimately working against the collective good and endangering others for the sake of individual choices.

5. Binary Thinking and Risk Assessment

Hence, this statement ("What are you afraid of—you’re vaccinated!") can inadvertently dismiss the legitimate concerns of individuals who may still feel anxious about their health despite being vaccinated. It overlooks the nuanced realities of vaccine effectiveness and the critical importance of collective responsibility in maintaining herd immunity. By framing the conversation in such binary terms, it risks alienating those who are hesitant or fearful, rather than fostering a constructive dialogue about the benefits and limitations of vaccines. In essence, while the sentiment behind "What are you afraid of—you’re vaccinated!" aims to reassure, it also highlights a systemic misunderstanding of how vaccines function within the broader context of public health[6]. This misunderstanding can be detrimental, as it

may lead to a lack of awareness about the ongoing need for vigilance and community engagement in vaccination efforts.

A critical examination of the binary framing of vaccines as either "100% effective or worthless" reveals the oversimplification that often accompanies public discourse. This perspective fails to consider the real-world implications of risk reduction. For instance, MMR vaccination has been shown to lower the likelihood of measles infection from 90% to just 3%[7]. Such statistics underscore the importance of recognizing the nuanced realities of vaccine efficacy rather than adhering to an all-or-nothing mentality. An analogy to medieval logic can further illustrate this point: one might ask, "If avoiding cats didn't entirely stop the Black Death, why bother controlling rodents?" This comparison serves to emphasize the importance of taking proactive measures, even when complete prevention is unattainable.

6. Case Studies in Vaccine Hesitancy

Even a vaccine with 97% efficacy can leave vulnerable populations, such as the immunocompromised, at risk, particularly as immunity wanes over time[8]. The tragedy in Samoa, where low vaccination rates led to devastating measles outbreaks despite individual protections, serves as a sobering case study. It illustrates that collective immunity is crucial to safeguarding those who cannot be fully protected by vaccines. Furthermore, historical parallels can be drawn with profit-driven wellness grifters, such as those promoting "detox" products, who exploit public distrust in institutional safeguards. This mirrors the exploitation seen during the Radithor era, when scams involving radioactive tonics preyed on vulnerable individuals.

Embedded within these trends is the recurring theme of distrust commodification[3]. The increasing prevalence of vaccine skepticism among some political groups bears similarities to past cases in which public uncertainty about health risks has intersected with profit-driven misinformation, such as the Purdue Pharma opioid controversy[9]. However, further research is needed to demonstrate direct parallels. Social media platforms operate as digital marketplaces where engagement-driven algorithms can contribute to the spread of fear-based narratives, potentially reinforcing cycles of skepticism and distrust. This dynamic finds historical resonance in Samoa's 2019 measles outbreak, where colonial medical betrayals were repackaged by grifters selling "detox" regimens as acts of cultural resistance.

The limitations of time-bound confidence-building efforts mirror broader patterns. Research across 23 countries found that longitudinal gains in perceived vaccine safety or pandemic severity did not predict

increased COVID-19 vaccine acceptance[2]. This reinforces lessons from Samoa: lasting behavioral change requires addressing both contextual institutional distrust (e.g., colonial medical legacies) and persistent socioeconomic barriers, rather than relying solely on transient risk communication.

7. Digital Media's Role in Shaping Vaccine Narratives

In today's digital landscape, social media often rewards absolutist claims, such as the notion that "Vaccines either work or don't!" This dynamic fosters a culture that prioritizes simplicity over the nuanced statistical literacy required to understand vaccine efficacy[10]. It stands in stark contrast to the iterative self-correction that characterizes scientific progress[11], as evidenced by the decades-long struggle to address corporate denialism during the asbestos crisis. The persistence of misinformation in the face of evolving evidence highlights the challenges of fostering a well-informed public discourse.

8. Conclusion

This analysis reveals a concerning trajectory in public attitudes toward vaccines between 2019 and 2025, characterized by declining confidence, deepening political polarization, and eroding institutional trust. The data demonstrates that what began as isolated pockets of skepticism has evolved into structured patterns of distrust that mirror broader societal fractures, with potentially profound implications for public health.

These findings illuminate three interconnected phenomena. First, the gradual erosion of vaccine confidence, from 88% believing benefits outweighed risks in 2019 to 80% in 2025, reflects not merely individual hesitancy but systematic alienation from scientific consensus. Second, this erosion has occurred asymmetrically across political lines, with right-leaning individuals increasingly embracing vaccine skepticism (40% now accepting debunked claims about COVID-19 vaccine deaths) while trust in health institutions like the CDC and FDA has plummeted to concerning lows (39%) among this demographic. Third, these trends parallel historical patterns where institutional failures, from asbestos denialism to the opioid crisis, created fertile ground for alternative narratives that repackage skepticism as enlightened resistance[12].

The binary thinking that pervades vaccine discourse ("100% effective or worthless") represents a fundamental misunderstanding of risk assessment and public health strategies. When vaccination is framed as exclusively personal protection rather than collective responsibility, the social contract

underlying herd immunity unravels. The tragic example of Samoa's measles outbreak demonstrates how quickly preventable diseases resurge when communal immunity falters.

Digital ecosystems have accelerated these dynamics, with engagement-driven algorithms amplifying absolutist claims over nuanced statistical literacy. Like medieval mercury peddlers or radioactive tonic salesmen of the early 20th century, modern "wellness" influencers exploit institutional distrust to commodify fear; transforming legitimate concerns about corporate malfeasance into profitable skepticism of scientific consensus. The future of vaccine acceptance hinges not on silencing skepticism but on fostering resilient communities where scientific literacy coexists with institutional humility. In an era where distrust has become both political currency and commercial commodity, restoring the collective social contract around public health may require reimagining how scientific expertise engages with public concerns. As Martinelli and Veltri's (2023) multinational analysis demonstrates, increasing perceived risk or confidence alone may prove insufficient to boost vaccine uptake over time. This underscores the need for dual strategies: combating algorithmic amplification of absolutist narratives while addressing the structural inequities and institutional failures that transform skepticism into identity-driven resistance.

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