

Digital monitoring of vaccine disinformation: a comparative analysis between the United States and the United Kingdom

Monitoreo digital de la desinformación sobre vacunas: un análisis comparativo entre Estados Unidos y el Reino Unido

Originales

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Abstract

Introduction: This article analyses the digital spread of vaccine-related disinformation, particularly following the covid-19 pandemic, and its impact on public health in the United States and the United Kingdom. **Objectives:** To compare the volume and nature of search queries related to disinformation narratives about vaccines in both countries, classifying terms and proposing communication-based recommendations. **Methodology:** Google Ads Keyword Planner was used to collect and analyse English-language search data (April 2024-March 2025), normalized per million inhabitants and grouped into six thematic categories. **Results:** A total of 848 keywords were identified. The United Kingdom showed a higher number of searches per capita. The dominant narratives were “dangerous vaccines” and “vaccines and autism”, with cultural differences observed in other topics. **Conclusions:** Digital monitoring reveals distinct patterns of public interest in each country and underscores the need for context-sensitive communication strategies to effectively combat vaccine disinformation.

Keywords: Disinformation; Vaccines; Digital behaviour; Google Ads Keyword Planner; International comparison.

Resumen

Introducción: Este artículo analiza la difusión digital de desinformación sobre vacunas, en particular tras la pandemia de la covid-19, y su impacto en la salud pública en Estados Unidos y el Reino Unido. **Objetivos:** Comparar el volumen y la naturaleza de las búsquedas relacionadas con narrativas de desinformación sobre vacunas en ambos países, clasificando términos y proponiendo recomendaciones basadas en la comunicación. **Metodología:** Se utilizó el Planificador de Palabras Clave de Google Ads para recopilar y analizar datos de búsqueda en inglés (abril de 2024 a marzo de 2025), normalizados por millón de habitantes y agrupados en seis categorías temáticas. **Resultados:** Se identificaron 848 palabras clave. El Reino Unido mostró un mayor número de búsquedas per cápita. Las narrativas dominantes fueron “vacunas peligrosas” y “vacunas y autismo”, observándose diferencias culturales en otros temas. **Conclusiones:** El monitoreo digital revela patrones distintivos de interés público en cada país y subraya la necesidad de estrategias de comunicación contextualizadas para combatir eficazmente la desinformación sobre vacunas.

Palabras clave: Desinformación; Vacunas; Comportamiento digital; Planificador de palabras clave de Google Ads; Comparación internacional.

Introduction

The digital ecosystem has become the main battleground for the spread of vaccine-related disinformation, a phenomenon that accelerated sharply in the aftermath of the covid-19 pandemic (Morejón-Llamas, 2023; Barrientos-Báez et al., 2024). Social media platforms (e.g., Facebook, Twitter, Instagram, TikTok), instant-messaging apps (WhatsApp, Telegram), and specialized online forums —driven by engagement-maximizing algorithms— tend to amplify sensational or controversial content, providing fertile ground for misleading narratives about purportedly “dangerous” vaccines, hidden microchips, infertility risks, or covert corporate agendas (Noguera Vivo et al., 2023; Ballesteros-Aguayo & Ruiz del Olmo, 2024). Echo-chamber effects and filter-bubble dynamics further insulate users within ideologically like-minded communities, reinforcing antivaccine beliefs without exposure to corrective information (Kata, 2010). Moreover, recommendation systems often prioritize posts that generate strong emotional reactions—outrage, fear, or indignation—over balanced, evidence-based reporting. This creates a feedback loop in which extreme or conspiratorial content receives disproportional visibility, even when it is flagged as questionable by fact-checkers. Requiring often from specialized methodologies and mindset, as some suggested by Eysenbach (2002).

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Every time a new technology emerges and is woven into the fabric of society, it brings with it a cascade of paradigm shifts. In this regard, the rise of the Internet has done more than merely broaden our access to information, it has fundamentally remade our very understanding of the world around us and, above all, has revolutionized the ways in which we communicate with one another (Barón et al., 2021). Within this sprawling digital environment, social networking platforms stand out as keystones: so integral have they become that, today, virtually all facets of human interaction (friendships, professional collaborations, even casual conversations) are inseparable from their influence. Indeed, data from Statista (2023) (Bustos Díaz & Martín-Vicario, 2024) indicate that in North America, and particularly in the United States, over seventy percent of the population now engages with these networks on a regular basis, underscoring their deep penetration into everyday life. Yet this unprecedented connectivity comes with new responsibilities and new vulnerabilities for information consumers, platform designers, and public health authorities alike (Lomba et al., 2021).

This digital transformation has coincided with the emergence of what scholars term “pseudo-content”, discursive events or prefabricated narratives that are carefully crafted to fit audience interests but that, upon closer inspection, lack any genuine substance or relevance (Aguaded & Romero-Rodríguez, 2015, p. 50). Such content proliferates because sensationalism and controversy drive engagement in algorithm-driven feeds, incentivizing creators to prioritize virality over veracity. Click-bait headlines, doctored images, and deepfake videos become powerful vectors for falsehoods that are designed to be shared before fact-checkers can respond, broadening the window of exposure. Confronted with this reality, it is only natural to ask: are we, as individuals and as societies, equipped to distinguish fact from fabricated sensationalism? Over the past few years, the proliferation of pseudo-content has morphed into a serious societal challenge, one that generates widespread confusion, undermines public confidence in democratic institutions, and, most alarmingly, surged during the covid-19 pandemic in the form of a myriad of false and misleading claims. Consequently, forging robust strategies to foster digital literacy and critical thinking has never been more urgent (Bustos Díaz & Martín-Vicario, 2024; Catalán-Matamoras, 2024).

Despite coordinated efforts by authorities such as the World Health Organization (WHO) and the U.S. Department of Health and Human Services (HHS) to bolster vaccine confidence (Encinillas García & Martín Sabarís, 2023), these deceptive narratives not only endure but evolve in response to political debates, new vaccine roll-outs, and public-health policy announcements. The WHO's "infodemic management" framework emphasizes the need to track, analyze, and respond in real time to online disinformation, yet the sheer scale of user-generated content often outpaces institutional capacity (WHO, 2021; Cinelli et al., 2020). The resurgence of preventable diseases—measles, for example—has been partly attributed to this erosion of trust fuelled by disinformation (Cortés Torres et al., 2025). Against this backdrop, "infodemiology" approaches that analyze online search behaviour (van der Linden, 2021; Quian, 2023) have emerged as vital tools: each query for "vaccine causes infertility" or "vaccine and autism" serves as a proxy measure of public concern or exposure to false claims. Moreover, search patterns can reflect not only consumption of misinformation but also attempts at fact-checking or myth-debunking, offering nuanced insights to shape more targeted and effective communication strategies (van der Linden, 2021; Martín Sáez & Miranda García, 2024; Aceituno Silva, 2024).

Infodemiology, however, faces its own methodological challenges, with many studies actually using epidemiological terminology and contagion graphs (Eysenbach, 2020; Cinelli et al., 2020; Johnson et al., 2020): data from Google Ads Keyword Planner, for instance, are aggregate and lack demographic granularity, making it difficult to parse motivations or to distinguish between genuine believers and sceptical fact-seekers (Johnson et al., 2020; Yamaguchi et al., 2020). Additionally, reliance on English-language searches can undercount minority-language communities, which may harbour distinct narratives or respond differently to health advisories. Which we have attempted to address in this case. Nevertheless, by normalizing search volumes per million inhabitants and by grouping terms into thematic categories—such as "Dangerous Vaccines," "Autism Myths," "Infertility Rumors," "Microchip Conspiracies," and "Poison Theories"—researchers can draw meaningful comparisons across cultural contexts.

This study undertakes a comparative examination of these digital engagement patterns in two English-speaking contexts with markedly different health-care systems and media landscapes: the United States and the United Kingdom. The U.K.'s publicly funded National Health Service (NHS) and its tradition of centralized public-health messaging contrast with the patchwork of state and private actors that characterize the U.S. system, potentially shaping how and why disinformation takes root (Walpole, 2019). By analyzing a full twelve-month period (April 2024–March 2025), we aim to capture both transient spikes—triggered by high-profile policy debates or epidemic alerts—and underlying trends, thereby informing the design of culturally attuned, context-sensitive interventions to combat vaccine disinformation on a global scale. In doing so, we contribute to the emerging field of comparative infodemiology, offering evidence-based recommendations for public-health communicators, policymakers, and platform designers who seek to safeguard trust in vaccines and, ultimately, to protect population health against the twin threats of disease and deception.

Objectives

General Objective

To evaluate the evolution of public interest in vaccine-related disinformation by comparing average monthly search volumes between the United States and the United Kingdom over the most recent twelve-month period.

Specific Objectives

- To quantify average monthly search volumes for terms associated with vaccine disinformation using data from Google Ads Keyword Planner.

- To identify temporal patterns in search behaviour, including peaks or declines in specific narratives.
- To categorize disinformation terms into thematic clusters to enable comparative analysis.
- To offer evidence-based recommendations for improving communication strategies aimed at countering vaccine-related disinformation.

Methods

Study Design and Data Source

This study adopts a digital observational design based on secondary data extracted from Google Ads Keyword Planner, a tool that estimates search volume trends based on real user behaviour on Google Search. The focus was limited to searches conducted in English within the territories of the United States and the United Kingdom. The time frame covered April 2024 to March 2025, representing the most recent complete year of data available.

Keyword Selection

The analysis began with the selection of a seed topic, “Vaccines and Immunological Treatments”, based on its critical relevance in public health and its exposure to disinformation during and after the covid-19 pandemic. From this seed, the research team compiled an initial list of disinformation-related keywords, including terms such as “dangerous vaccine”, “vaccine autism”, “microchip covid vaccine”, and others.

Using the Keyword Discovery function of Google Ads Keyword Planner, the list was expanded through automatic suggestions derived from user search behaviour. Only keywords with an average monthly search volume of 10 or more were retained to ensure analytic robustness and relevance. All terms were manually reviewed to ensure contextual accuracy. In cases of semantic ambiguity, inclusion was based on consensus among the three researchers, prioritizing terms clearly aligned with disinformation narratives.

Corpus Refinement Criteria

General Criteria

To ensure the thematic integrity of the keyword corpus, several filtering criteria were applied across all categories:

- Exclusion of explicitly academic terms: Searches involving platforms like PubMed or Google Scholar were excluded, as they likely represent scholarly inquiry rather than engagement with disinformation.
- Exclusion of educational platform references: Keywords referencing services like Quizlet or Wikipedia were removed unless they reflected genuine disinformation narratives.
- Removal of non-human or veterinary vaccine terms: Terms related to animal vaccines were excluded to maintain a human public health focus.
- Normalization of linguistic variants: Common morphological variants (e.g., plural/singular forms or typical spelling errors) were consolidated when they contributed meaningfully to the representation of real-world search behaviour.
- Inclusion of debunking terms: Keywords that directly refuted disinformation narratives (e.g., “no link between vaccines and autism”) were retained, as they provide insight into the societal response to disinformation.

Category-Specific Criteria

Keywords were grouped into six thematic categories:

- Dangerous Vaccines: Terms implying vaccines are harmful.
- Vaccines and Autism: Terms linking vaccines to autism, including both affirming and debunking phrases.
- Vaccines and Infertility: Terms suggesting vaccines cause fertility issues.
- Microchips in Vaccines: Keywords referencing alleged microchip implantation.
- Vaccine Conspiracy Theories: Broad queries suggesting organized deception or hidden agendas.
- Vaccines as Poison: Expressions framing vaccines as toxic or deadly substances.

Terms that failed to clearly reflect disinformation narratives, or that exhibited low semantic clarity or analytic utility, were excluded from the final dataset.

Data Normalization

Given the significant population size differences between the United States and the United Kingdom, raw search volume comparisons could be misleading. Therefore, all search volumes were normalized per million inhabitants using official 2024 population estimates (U.S. Census Bureau: 340,110,988; Office for National Statistics UK: 68,265,209). This metric allows for proportional comparisons, ensuring that differences in public engagement are not simply reflections of demographic scale.

Theoretical Framework

The theoretical framework used to solidify the results and justify the general methodology and aim of the study was as follows. Health-related disinformation has become one of the most significant challenges for public health in the 21st century (Martín Sáez & Miranda García, 2024; Aceituno Silva, 2024). Vaccines—one of the most effective scientific advances in disease prevention (Caballero Cifuentes et al., 2023)—have been a recurrent target of false narratives that circulate widely in digital environments. The World Health Organization (WHO) has defined this phenomenon as part of an “infodemic”, an overabundance of information that includes rumours, conspiracy theories, and falsehoods, which hinder informed decision-making by the public (Quin, 2023). For this article’s purposes, we must point out that, according to Oxford English Dictionary, “misinformation” is a noun, existing since 1587, and means “wrong or misleading information” while “disinformation” is a verb since 1955 and means “the dissemination of deliberately false information”. Moreover both terms the authors have often seen used interchangeably, and, in some languages outside of English, both words are often translated to the same terms depending on context. We’ll use them both in the more accurate way possible. But when using expressions like “the viral spread of misinformation” the whole noun phrase could be shortened to just “disinformation” just as well. For, even when a good part of this phenomenon’s success is due to unwilling viral spreaders, it undoubtedly starts and is stoked by actors with a stake on it is success: economic, political, social, etc. (Noguera Vivo et al., 2023).

In a post-truth environment, objective reality is not merely shaded or reinterpreted—it is systematically suppressed, displaced by narratives crafted to serve particular interests.

Theories of post-truth and the attention economy offer key explanatory frameworks for understanding the viral spread of misinformation. False content often appeals to intense emotions, such as fear or outrage, which increases its capacity to spread on social media (Ballesteros-Aguayo & Ruiz del Olmo, 2024). In the case of vaccines, these narratives tend to focus on unfounded risks, such as alleged severe side effects or debunked associations, like the link to autism (Noguera Vivo et al., 2023).

Several studies have shown that repeated exposure to dis/misinformation can significantly influence attitudes toward vaccination, reducing the intention to vaccinate, even among individuals with high levels of education (Encinillas García & Martín Sabaris, 2023). Furthermore, it has been demonstrated that anti-vaccine narratives not only circulate explicitly but also appear disguised as “legitimate concern”, which contributes to their normalization (Aceituno Silva, 2024).

In this context, the analysis of digital behaviour—especially through search engines like Google—becomes a key tool for monitoring trends in public interest and detecting the penetration of disinformation narratives in various populations (Roinco López et al., 2024). Online searches reflect both exposure and social curiosity or concern about certain topics, serving as indirect indicators of public opinion (Barrientos-Báez et al., 2024).

Thus, methodologies based on data mining and keyword analysis (Salleras et al., 2011) provide a rigorous and up-to-date approach to identifying patterns of digital information consumption, classifying predominant themes, assessing their temporal evolution (Tasente & Tanase, 2023) or conducting sentiment analysis (Quintana Gómez, 2021). These techniques, combined with a comparative perspective between countries, allow for the exploration of the sociocultural dimension of disinformation and the development of recommendations tailored to specific national contexts.

In short, it is important to emphasize that combating disinformation requires more than censorship or fact-checking (Conde, 2024; Montiel Torres & Teruel Rodríguez, 2024; Barrientos-Báez et al., 2024b): it involves the development of culturally sensitive communication strategies that incorporate principles of neurocommunication, media literacy, and digital resilience to strengthen public trust in health institutions.

Post-truth represents far more than a simple, calculated bending of facts; it constitutes an assault on the very freedom of individuals to think, decide and act for themselves. In a post-truth environment, objective reality is not merely shaded or reinterpreted—it is systematically suppressed, displaced by narratives crafted to serve particular interests. This strategy undermines our autonomy, for when citizens can no longer reliably distinguish truth from falsehood, they lose the meaningful basis upon which to form independent judgments and make informed choices (Rietdijk, 2024). Moreover, post-truth effectively erases the public sphere as a genuine forum for open discourse and collective advancement (Maureira-Velásquez & González-García, 2024).

Where once debate, exchange of ideas and reasoned argument served to knit communities together, post-truth reduces the public realm to a battleground of competing spin and manipulation. In doing so, it destroys the very space in which citizens might recognize one another as equals—necessary ground for identity formation and mutual understanding. Without that recognition, each individual remains isolated, deprived of the social mirror through which we come to see ourselves as part of a larger community. At its core, post-truth silences rational deliberation and structured discussion, the bedrock processes by which a healthy political sphere emerges. When emotional appeals, conspiracy-laden rumours or outright fabrications overshadow evidence-based dialogue, the mechanisms of democratic decision-making grind to a halt (Peinador, 2024).

Policies are no longer shaped by careful weighing of arguments or empirical data but by the loudest, most sensational claims, a recipe for chaos rather than collective progress. Additionally, post-truth exploits the fragmentation of media channels and the ubiquity of social networks, where algorithmic reinforcement amplifies sensational content and discourages critical scrutiny. As disinformation cascades through peer-to-peer networks, it corrodes civic trust, stokes polarization, and breeds cynicism about any source of authority. Educators, journalists and civil society must therefore develop resilient defences, media literacy, fact-checking initiatives, and transparent communication, to rebuild a shared foundation of facts. Ultimately, post-truth poses a direct, existential threat to democracy itself. By undermining trust in institutions, in expert knowledge and in the very possibility of shared facts, it fractures the social cohesion necessary for democratic governance. When citizens cannot agree on the basic terms of reality, meaningful participation, accountability and civic engagement become impossible. In this way, post-truth not only prevents democracy from flourishing—it actively dismantles the foundations upon which free societies are built (Silva García, 2024).

Results

Volume and Distribution of Disinformation-Related Keywords

A total of 598 unique disinformation-related keywords were identified for the United States and 249 for the United Kingdom. These were grouped into six thematic categories: Dangerous Vaccines, Vaccines and Autism, Vaccines Poison, Vaccine Conspiracy Theories, Microchips in Vaccines, and Vaccines and Infertility. The distribution by category reveals notable asymmetries between the two countries.

Table 1. Number of keywords per thematic category, by country

TOPIC	USA Keywords	United Kingdom Keywords
Dangerous vaccines	302	140
Vaccines and autism	178	63
Vaccines poison	55	13
Vaccine conspiracy theories	35	22
Microchips in vaccines	14	7
Vaccines and infertility	14	4
TOTAL	598	249

Source: Own elaboration

The category Dangerous Vaccines dominated in both regions, accounting for over half the total keywords: 302 in the United States and 140 in the United Kingdom. Vaccines and Autism ranked second, with 178 terms in the U.S. and 63 in the U.K., indicating the persistent influence of this narrative. The remaining categories showed lower keyword diversity but were consistently present in both contexts.

Temporal Trends in Search Volumes

Search volumes were analysed monthly from April 2024 to March 2025. The United Kingdom registered a total of 648,280 searches across all categories, while the United States reached 732,730.

Table 2. Monthly search volume per category in the United Kingdom

Topic	2024									2025		
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Dangerous vaccines	22,3	22,04	19,97	18,26	18,34	18,87	18,37	17,59	16,56	19,96	24,95	25,9
Microchips in vaccines	280	250	170	130	300	260	330	270	290	390	280	310
Vaccine conspiracy theories	920	870	620	620	620	790	1,07	960	800	700	740	710
Vaccines and autism	28,99	22,34	22	22,79	28,18	34,86	30,36	47,03	38,88	48,01	56,27	75,6
Vaccines and infertility	90	70	110	40	110	90	80	90	50	130	70	90
Vaccines poison	1,97	2,74	2,67	1,97	2,02	1,44	1,35	1,08	1,06	1,18	1,21	1,42
Total	54,55	48,31	45,54	43,81	49,57	56,31	51,56	67,02	57,64	70,37	83,52	104,03

Source: Own elaboration

Table 3. Monthly search volume per category in the United States

Topic	2024									2025		
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Dangerous vaccines	14,43	13,43	12,52	12,49	12,37	12,66	12,99	12,39	14,83	18,79	19,56	15,96
Microchips in vaccines	300	250	170	290	290	320	280	290	480	640	770	510
Vaccine conspiracy theories	860	700	660	700	930	970	830	1,63	940	1,02	910	940
Vaccines and autism	9,28	9,07	9,8	11,76	14,68	12,12	15,43	14,32	17,92	22,97	34,13	24,21
Vaccines and infertility	6,51	6,02	6,02	7,82	9,03	7,32	6,32	6,01	8,52	11,84	14,06	11,84
Vaccines poison	8,74	8,69	8,62	10,33	10,34	10,38	22,67	15,67	18,79	18,7	22,71	27,56
Total	40,12	38,16	37,79	43,39	47,64	43,77	58,52	50,31	61,48	73,96	92,14	81,02

Source: Own elaboration

The peak month in the U.K. was February 2025, with 92,140 searches, mainly driven by spikes in Vaccines and Autism and Vaccines Poison. The U.S. reached its highest volume in March 2025 (104,030), although this surge was almost entirely attributable to Vaccines and Autism.

Category-Specific Dynamics

- Vaccines and Autism emerged as the most dominant narrative in both countries. In the U.K., the category accumulated 202,770 searches (31.3% of total), peaking in February 2025 (34,130). The U.S. followed a similar but less pronounced trajectory, with 475,310 searches (65% of total).
- Dangerous Vaccines was the second most searched category in both contexts, with relatively stable volumes across the year and a final increase in March 2025.
- Vaccines Poison displayed a particularly sharp rise in the U.K. during the final quarter, suggesting possible viral events or coordinated campaigns.
- Vaccines and Infertility showed marginal presence in the U.S. (1,020 searches), but significantly higher activity in the U.K. (114,320), indicating a specific local concern.

- Microchips in Vaccines and Vaccine Conspiracy Theories remained low in volume but stable in both countries, representing a latent presence of broader conspiratorial thinking.

Normalized Comparisons: Searches per Million Inhabitants

To account for population differences, a normalization index was applied. Across the entire period, the U.K. consistently showed significantly higher disinformation-related searches per million inhabitants compared to the U.S.

Table 4. (Searches per million inhabitants, by category and month)

		2024									2025		
Topic		Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Dangerous vaccines	UK	1053	980	914	912	903	924	948	904	1082	1371	1428	1165
	USA	65.6	64.8	58.7	53.7	53.9	55.5	54.0	51.7	48.7	58.7	73.4	76.2
Microchips in vaccines	UK	22	18	12	21	21	23	20	21	35	47	56	37
	USA	0.8	0.7	0.5	0.4	0.9	0.8	1.0	0.8	0.9	1.1	0.8	0.9
Vaccine conspiracy theories	UK	63	51	48	51	68	71	61	119	69	74	66	69
	USA	2.7	2.6	1.8	1.8	1.8	2.3	3.1	2.8	2.4	2.1	2.2	2.1
Vaccines and autism	UK	677	662	715	858	1071	885	1126	1045	1308	1676	2491	1767
	USA	85.2	65.7	64.7	67.0	82.9	102.5	89.3	138.3	114.3	141.2	165.4	222.3
Vaccines and infertility	UK	475	439	439	571	659	534	461	439	622	864	1026	864
	USA	0.3	0.2	0.3	0.1	0.3	0.3	0.2	0.3	0.1	0.4	0.2	0.3
Vaccines poison	UK	638	634	629	754	755	758	1655	1144	1371	1365	1657	2011
	USA	5.8	8.1	7.9	5.8	5.9	4.2	4.0	3.2	3.1	3.5	3.6	4.2
Total	UK	2928	2785	2758	3167	3477	3194	4271	3672	4487	5398	6725	5913
	USA	160.4	142.0	133.9	128.8	145.7	165.6	151.6	197.1	169.5	206.9	245.6	305.9

Source: Own elaboration

For example, in February 2025, the U.K. registered 6,725 searches per million inhabitants, while the U.S. recorded only 245.6. The largest disparities were found in Dangerous Vaccines, Vaccines and Autism, and Vaccines Poison, each of which showed ratios 10 to 30 times higher in the U.K. than in the U.S.

Discussion

The comparative analysis of digital search trends in the United States and the United Kingdom reveals several noteworthy patterns about the public's engagement with vaccine-related disinformation. Firstly, the two dominant narratives (Dangerous Vaccines and Vaccines and Autism) account for the lion's share of both keyword diversity and search volume in both countries. This suggests that, despite robust scientific evidence and widespread public-health messaging, fear of adverse effects and misconceived autism links continue to resonate strongly with online audiences. These findings echo prior work showing the durability of the autism myth in antivaccine discourse (Noguera Vivo et al., 2023) and underscore the need to renew efforts to communicate clear, evidence-based information about vaccine safety.

When normalized per million inhabitants, the UK's search intensity consistently outpaces that of the US across all six disinformation categories. This disparity may reflect differing media ecosystems and sociopolitical contexts: for example, the UK's tabloid press and online forums have historically amplified concerns about state-

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mandated vaccination and bodily autonomy, whereas US coverage often frames vaccine debates more in terms of individual rights versus community responsibility. The particularly sharp spike in Vaccines Poison searches in late 2024 in the UK coincided with a high-profile parliamentary debate on vaccine mandates, suggesting that policy discussions can catalyze bursts of disinformation engagement.

The category Vaccines and Infertility exhibited a striking contrast: marginal interest in the US (barely over 1,000 searches in a year) but sustained and significant attention in the UK (over 114,000 searches). This may signal culturally specific anxieties around reproductive health and vaccine ingredients in the British context—an area where public-health communicators should target tailored myth-busting campaigns. Meanwhile, although Microchips in Vaccines and broad Conspiracy Theories remain lower-volume topics, their persistent presence indicates a steady undercurrent of distrust that could be amplified during future health crises.

Methodologically, our study illustrates the strengths and limitations of leveraging Google Ads Keyword Planner for infodemiology. The tool provides timely, aggregate indicators of public curiosity, but lacks demographic granularity (e.g., age, socioeconomic status) and excludes non-English searches, potentially undercounting minority-language populations in both countries. Furthermore, search data reflect interest more than belief—a spike in “vaccine autism” searches may include users seeking to refute the myth as much as those who subscribe to it. Future work could combine search-trend analysis with sentiment or social-media engagements to distinguish querying motives.

Finally, the clearly delineated cultural differences underscore that one-size-fits-all communication strategies are unlikely to succeed. Public-health agencies must design context-sensitive interventions: in the UK, for instance, campaigns could partner with trusted local figures to address infertility rumors, while in the US they might reinforce existing confidence in established vaccine-autism debunking resources.

Conclusions

Persistent Core Narratives. “Dangerous vaccines” and “vaccines and autism” remain the most searched disinformation topics in both the US and the UK, highlighting their entrenched position in public discourse despite extensive debunking.

Higher Per-Capita Engagement in the UK. After normalizing for population, the UK records significantly greater search volumes for all disinformation categories, suggesting stronger cultural and media-driven amplification of antivaccine narratives.

Category-Specific Insights.

- **Vaccines Poison:** Sudden late-2024 spike in the UK aligns with policy debates, indicating that high-profile events can rapidly intensify disinformation interest.
- **Vaccines and Infertility:** Low US engagement contrasted with substantial UK concern calls for targeted reproductive-health reassurance in British communications.
- **Methodological Takeaways.** Google Ads Keyword Planner offers a fast, cost-effective window into public search behavior but should be complemented by deeper sentiment and demographic analyses to fully understand motivations and beliefs.
- **Implications for Communication.** Effective counter-disinformation strategies must be locally tailored: leveraging trusted messengers, aligning message framing to region-specific anxieties, and integrating digital monitoring with on-the-ground outreach.

In sum, digital monitoring of vaccine disinformation provides actionable intelligence for public-health communicators. By recognizing both universal fears and country-specific spikes, stakeholders can craft more precise, timely, and culturally attuned interventions, thereby strengthening vaccine confidence and safeguarding population health.

Authors' contributions

The authors also participated in the preparation of the manuscript and approved the final version submitted.

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Data availability statement

The data presented in this study can be requested from the corresponding author.

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Conflict of interest

The authors declare no conflict of interest.

References

- Aceituno Silva, D. (2024). Ciudadanía digital, fake news y la desinformación: Uso de la estrategia SIFT y el desarrollo del razonamiento cívico online en la escuela. *European Public & Social Innovation Review*, 9, 1-22. <https://doi.org/10.31637/epsir-2024-964>
- Aguaded, I., & Romero-Rodríguez, L. M. (2015). Mediamorfosis y desinformación en la infoesfera: Alfabetización mediática, digital e informacional ante los cambios de hábitos de consumo informativo. *Education in the Knowledge Society*, 16(1), 44-57. <https://www.redalyc.org/articulo.oa?id=535554757004>
- Ballesteros-Aguayo, L., & Ruiz del Olmo, F. J. (2024). Vídeos falsos y desinformación ante la IA: El deepfake como vehículo de la posverdad. *Revista de Ciencias de la Comunicación e Información*, 29, 1-14. <https://doi.org/10.35742/rcci.2024.29.e294>
- Barón Pulido, M., Duque Soto, Á., Mendoza Lozano, F., & Quintero Peña, W. (2021). Redes sociales y relaciones digitales, una comunicación que supera el cara a cara. *Revista Internacional de Pedagogía e Innovación Educativa*, 1(1), 123-148. <https://doi.org/10.51660/ripie.v1i1.29>
- Barrientos-Báez, A., Caldevilla-Domínguez, D., & García-García, E. (2024). Neurociencia y la politización del fandom. In J. C. Rodríguez Rodríguez (coord.), *Sociedad 4.0: Desafíos y oportunidades para el nuevo milenio* (pp. 7-34). Dykinson.

Barrientos-Báez, A., Caldevilla-Domínguez, D., & Morláns Lanau, M. (2024). Neurocomunicación y TIC: Implicaciones coyunturales pospandemia en el ámbito sanitario. In U. Cuesta; A. Barrientos-Báez and V. Cuesta Díaz (Eds.), *Comunicación y salud: El gran reto del siglo XXI* (pp. 129-143). Fragua.

Bustos Díaz, J., & Martín-Vicario, L. (2024). Alfabetización mediática en un mundo hiperconectado: de las redes sociales a la Inteligencia Artificial. [Media literacy in a hyperconnected world: from social networks to Artificial Intelligence]. *European Public & Social Innovation Review*, 9, 01-17. <https://doi.org/10.31637/epsir-2024-1241>

Caballero Cifuentes, L., Quivio Cuno, R., Morales Romero, G., Gutiérrez Guadalupe, S., & Barrientos-Báez, A. (2023). Influence of statistical tools in data journalism in universities // Influencia de las herramientas estadísticas en el periodismo de datos en universidades. *Visual Review. Revista Internacional de Estudios Visuales y Cultura*, 15(1), 1-9. <https://doi.org/10.37467/revvisual.v10.4621>

Catalán-Matamoros, D., Langbecker, A., & Elías, C. (2024). Investigación sobre comunicación en covid-19 y principales hallazgos. *Revista Española de Comunicación en Salud, Suplemento(1)* 67-77. <https://doi.org/10.20318/recs.2024.8325>

Cinelli, M., Quattrociocchi, W., Galeazzi, A., Valensise, C. M., Brugnoli, E., Schmidt, A. L., Zola, P., Zollo, F., & Scala, A. (2020). The covid-19 social media infodemic. *Scientific Reports*, 10, 16598. <https://doi.org/10.1038/s41598-020-73510-5>

Conde, M. A. (2024). Explorando las tendencias y tácticas de control en internet: Un análisis global de los bloqueos y censura en redes sociales. *Revista Comunicación SEECI*, 57, 1-19. <https://doi.org/10.15198/seeci.2024.57.e870>

Cortés Torres, J. E., Saldaña Moreno, C. E., Mendoza Moncada, J. S., & Perdomo Pineda, J. D. (2024). El chatbot aplicado a salud: Una revisión bibliométrica. *Revista Comunicación y Salud*, 15, 1-18. <https://doi.org/10.35669/rcys.2025.15.e355>

Encinillas García, M., & Martín Sabarís, R. (2023). Desinformación y salud en la era precovid: Una revisión sistemática. *Revista Comunicación y Salud*, 13, 1-15. <https://doi.org/10.35669/rcys.2023.13.e312>

Eysenbach, G. (2002). Infodemiology: The epidemiology of (mis)information. *American Journal of Medicine*, 113(9), 763-765. [https://doi.org/10.1016/S0002-9343\(02\)01473-0](https://doi.org/10.1016/S0002-9343(02)01473-0)

Eysenbach, G. (2020). How to fight an infodemic: The four pillars of infodemic management. *Journal of Medical Internet Research*, 22(6), e21820. <https://doi.org/10.2196/21820>

Johnson, N. F., Velásquez, N., Restrepo, N. J., Leahy, R., Gabriel, N., El Oud, S., Zheng, M., Manrique, P., Wuchty, S., & Lupu, Y. (2020). The online competition between pro- and anti-vaccination views. *Nature*, 582, 230-233. <https://doi.org/10.1038/s41586-020-2281-1>

Kata, A. (2010). A postmodern Pandora's box: Anti-vaccination misinformation on the Internet. *Vaccine*, 28(7), 1709-1716. <https://doi.org/10.1016/j.vaccine.2009.12.022>

Loomba, S., de Figueiredo, A., Piatek, S. J., de Graaf, K., & Larson, H. J. (2021). Measuring the impact of covid-19 vaccine misinformation on vaccination intent in the UK and USA. *Nature Human Behaviour*, 5, 337-348. <https://doi.org/10.1038/s41562-021-01056-1>

- Martín Sáez, J. L., & Miranda García, F. J. (2024). Desinformación, credibilidad y covid-19: El caso del programa "Horizonte." *European Public & Social Innovation Review*, 9, 1-16. <https://doi.org/10.31637/epsir-2024-509>
- Maureira-Velásquez, M., & González-García, D. (2024). El modo de existencia digital: ¿un nuevo régimen de verdad?. *Cinta de Moebio*, 81, 137-151. <http://dx.doi.org/10.4067/s0717-554x2024000300137>
- Montiel Torres, M. F., & Teruel Rodríguez, L. (2024). Verificadoras: Mujeres en iniciativas de verificación en los países del sur de la Unión Europea. *Vivat Academia*, 158, 1-22. <https://doi.org/10.15178/va.2025.158.e1548>
- Morejón-Llamas, N. (2023). Características y ejes discursivos de la desinformación y el proceso de fact-checking sobre las vacunas covid-19 en Latinoamérica. (2023). *Revista Española de Comunicación en Salud, Suplemento(1)*, 47-61. <https://doi.org/10.20318/recs.2023.7005>
- Noguera Vivo, J. M., Grandío-Pérez, M. del M., Villar-Rodríguez, G., Martín, A., & Camacho, D. (2023). Desinformación y vacunas en redes: Comportamiento de los bulos en Twitter. *Revista Latina de Comunicación Social*, 81, 44-62. <https://doi.org/10.4185/RLCS-2023-1820>
- Peinador, M. (2024). La memoria en España hoy y el auge global de las nuevas derechas: postfranquismo, postverdad y la debilitación de la democracia. In C. Pfeiffer, C., Ruvituso and N. Welschinger (eds.), *Políticas, representaciones y memorias entre Argentina y Alemania*, 189-202. Iberoamericana Vervuert.
- Quian, A. (2023). (Des)infodemia: Lecciones de la crisis de la covid-19. *Revista de Ciencias de la Comunicación e Información*, 28, 1-23. <https://doi.org/10.35742/rcci.2023.28.e274>
- Quintana-Gómez, Á. (2021). Análisis de los procesos de tratamiento de información en un estudio de análisis de sentimiento utilizando la tecnología de Google. *Vivat Academia*, 154, 41-55. <https://doi.org/10.15178/va.2021.154.e1336>
- Rietdijk, N. (2024). Post-truth politics and collective gaslighting. *Episteme*, 21(1), 229-245. <https://doi.org/10.1017/epi.2021.24>
- Ronco López, M., Peñafiel-Saiz, C., & Echegaray-Eizaguirre, L. (2024). La información pública en torno a vacunas y tratamientos sobre la covid-19: Aproximación a las fuentes documentales de instituciones y organismos. *Revista Latina de Comunicación Social*, 82, 1-31. <https://doi.org/10.4185/rlcs-2024-2119>
- Salleras, L., Domínguez, A., Borrás, E., & Soldevila, N. (2011). Eficacia protectora de las vacunas y efectividad de las vacunaciones: Introducción a la medición de la protección directa e indirecta. *Vacunas*, 12(4), 136-146. [https://doi.org/10.1016/S1576-9887\(11\)70021-8](https://doi.org/10.1016/S1576-9887(11)70021-8)
- Silva-García, K. (2024). ¿Es relevante la distinción entre verdad y posverdad?. *European Public & Social Innovation Review*, 9, 1-13. <https://doi.org/10.31637/epsir-2024-1032>
- Tasente, T., Rus, M., & Tanase, G. (2023). Del brote a la recuperación: Un análisis observacional de la comunicación en línea del gobierno rumano durante y después de la covid-19. *Vivat Academia*, 157, 1-21. <https://doi.org/10.15178/va.2024.157.e1513>
- van der Linden, S., Dixon, G., Clarke, C., & Cook, J. (2021). Inoculating against covid-19 vaccine misinformation. *eClinicalMedicine*, 33, 100772. <https://doi.org/10.1016/j.eclinm.2021.100772>

- Vázquez Chas, L. (2023). Las redes sociales online como amortiguadoras de la soledad durante el confinamiento. *Revista de Comunicación de la SEECI*, 56, 249-264. <https://doi.org/10.15198/seeci.2023.56.e828>
- Walpole S. C. (2019). Health professionals' insights into the impacts of privately funded care within a national health service: A Qualitative Interview Study. *Healthcare Policy*, 15(2), 56-71. <https://doi.org/10.12927/hcpol.2019.26071>
- Yamaguchi Y., Lee D., Nagai T., Funamoto T., Tajima T., & Chosa E. (2020). Googling musculoskeletal-related pain and ranking of medical associations' patient information pages: google ads keyword planner analysis. *Journal of Medical Internet Research*, 22(8), e18684. <https://doi.org/10.2196/18684>