

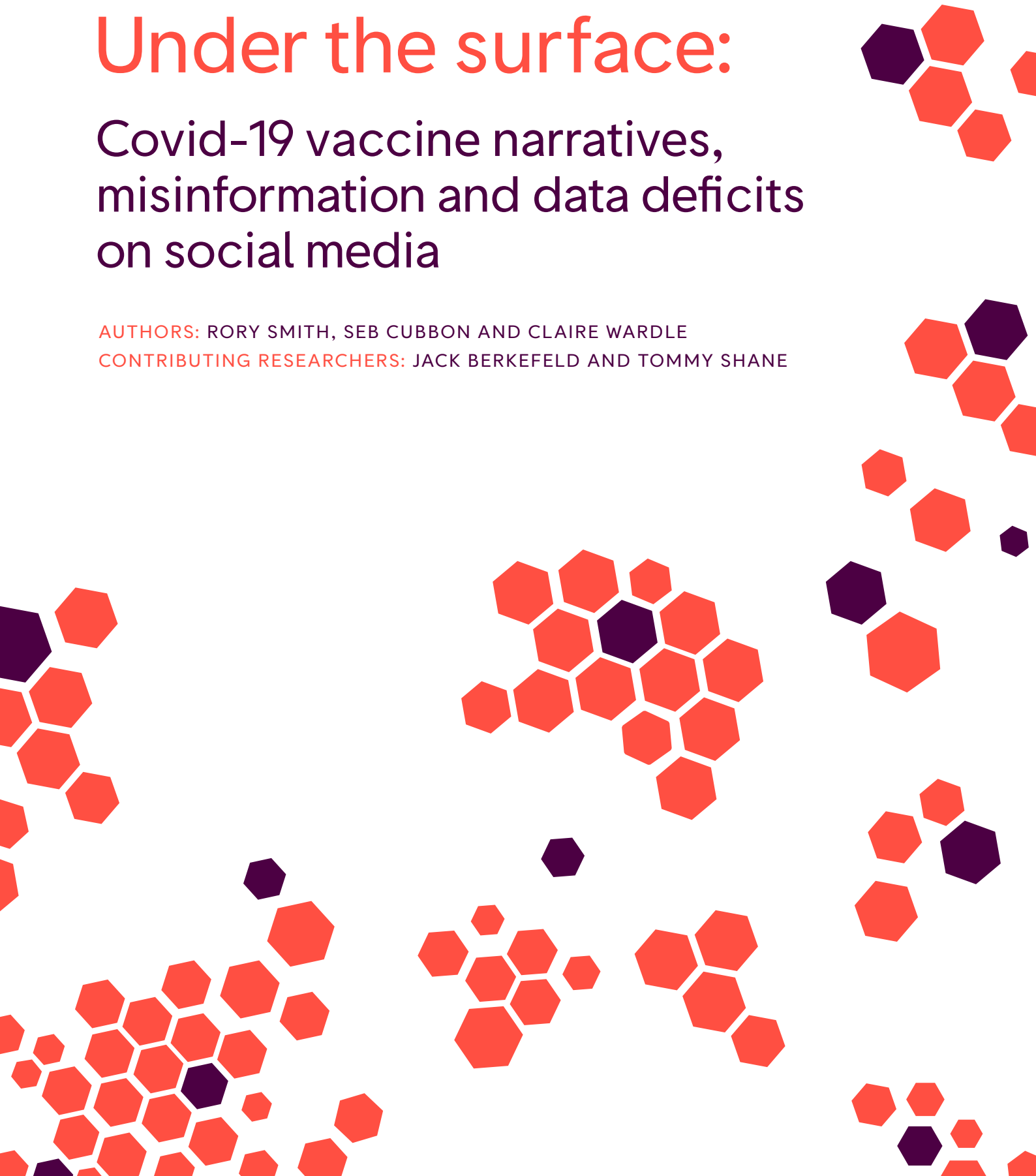
Executive summary

Under the surface:

Covid-19 vaccine narratives, misinformation and data deficits on social media

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Mapping competing vaccine narratives across English, Spanish and Francophone social media

This research demonstrates the complexity of the vaccine information ecosystem, where a cacophony of voices and narratives have coalesced to create an environment of extreme uncertainty. Two topics are driving a large proportion of the current global vaccine discourse, especially around a Covid-19 vaccine: the “political and economic motives” of actors and institutions involved in vaccine development and the “safety, efficacy and necessity” concerns around vaccines.

Narratives challenging the safety of vaccines have been perennial players in the online vaccine debate. Yet this research shows that narratives related to mistrust in the intentions of institutions and key figures surrounding vaccines are now driving as much of the online conversation and vaccine skepticism as safety concerns. This issue is compounded by the complexities and vulnerabilities of this information ecosystem. It is full of “data deficits” — situations where demand for information about a topic is high, but the supply of credible information is low — that are being exploited by bad actors. These data deficits complicate efforts to accurately make sense of the development of a Covid-19 vaccine and vaccines more generally. When people can’t easily access reliable information around vaccines and when mistrust in actors and institutions related to vaccines is high, misinformation narratives rush in to fill the vacuum. The findings should act as a wake-up call as the world waits for a Covid-19 vaccine and sees routine immunization rates drop.

This is an executive summary. For detailed insights into vaccine online mis and disinformation, the tactics used by anti-vaccine interest groups and an in-depth analysis of the dominant narratives driving vaccine conversations in English, Spanish and Francophone communities, please see the full report.

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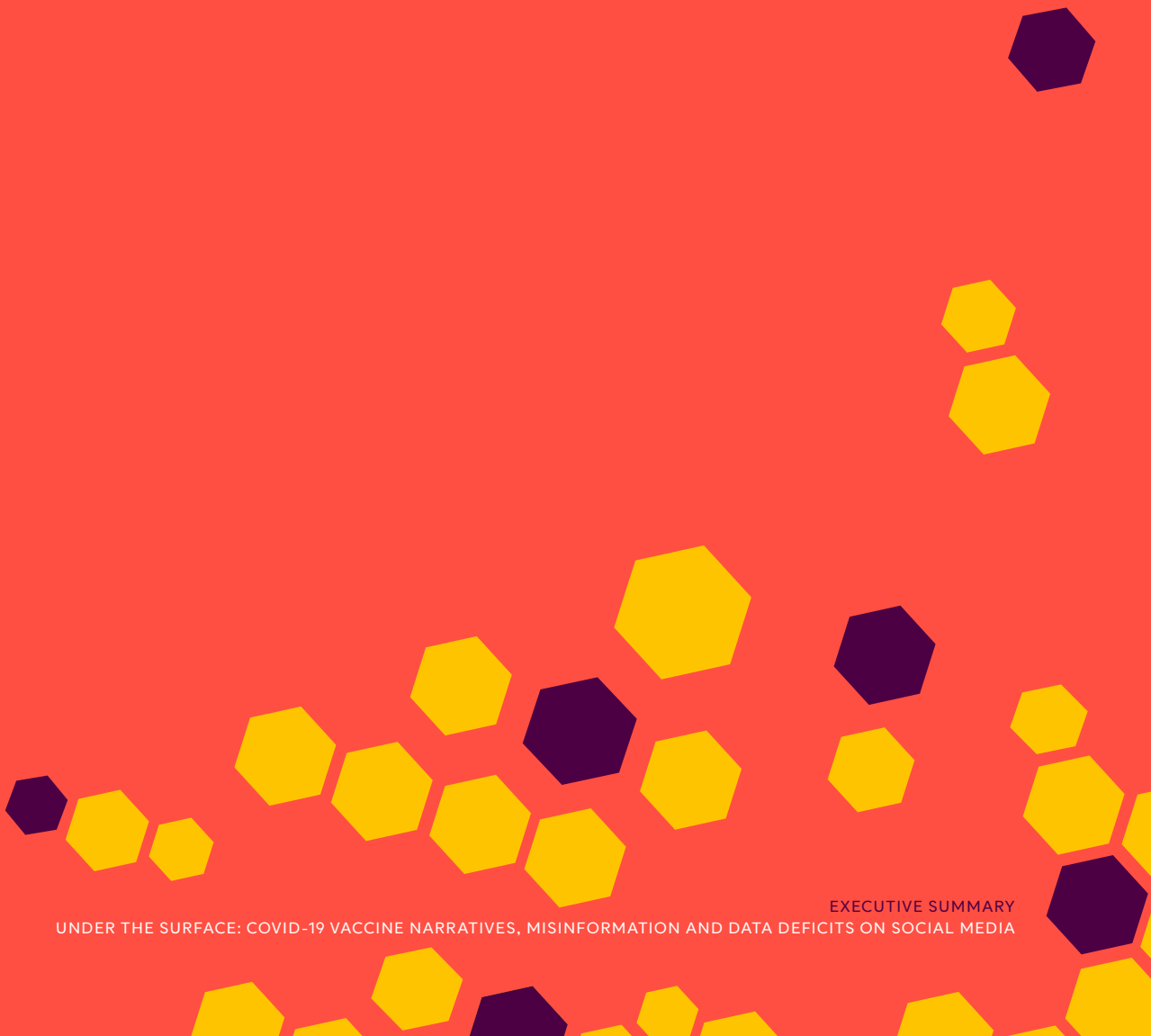
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Executive summary



Executive summary

Overview

The outbreak of the novel coronavirus revealed both the sheer scale of misleading or false health claims online and the life-threatening impacts these can have.¹ While scientists are frantically working to manufacture a safe and effective vaccine for Covid-19, online misinformation has contributed to many people's reluctance across the globe to take a vaccine to protect them from the virus.² We have reached a pivotal and hypersensitive crossroads where increasing rates of vaccine skepticism may not only jeopardize the effectiveness of a potential Covid-19 vaccine, but that of vaccines more broadly, and even levels of trust in institutions connected to science and medicine.³

To understand and effectively tackle problematic vaccine discourse, it isn't enough to monitor and verify individual pieces of vaccine-related content.⁴ We have to understand that individual pieces of content create larger attitude-shaping narratives, and these narratives fall into even larger, overarching topics that steer conversations. Therefore, we need methodologies designed to map these key themes and identify the dominant narratives within them in a systematic and comprehensive manner.

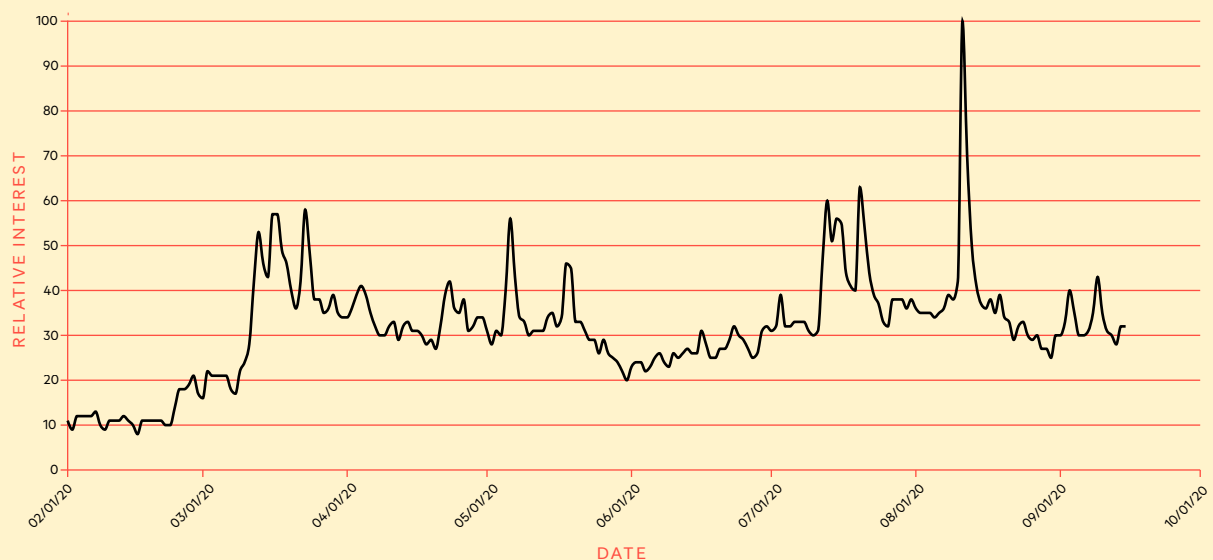
Uncovering these narratives, both positive and negative, is critical to assisting journalists, researchers and public communication experts wishing to report and act on potentially problematic vaccine discourse. However, online discourse is complex, even within one language or cultural context. But with the borderless social web, understanding which narratives are crossing borders and taking hold, and which are language- or culture-specific are critical elements to this question. For targeted and thus effective responses, we need to understand the global flows of online narratives.

Methodology overview

To examine online narratives about vaccines, First Draft collected social media posts from Twitter, Instagram, Facebook Pages and public Facebook Groups that included the words “vaccine” or “vaccination” in English, Spanish and French from June 15, 2020 to September 15, 2020. We focused on these three months because in June attention shifted to the race to develop a Covid-19 vaccine.

Vaccine interest over time

We chose June 15 as our starting point as this marked an inflection point when interest in vaccines, specifically the development of different Covid-19 vaccines, began to increase.



Over this period, we gathered a total of 14,394,320 posts on Twitter, Instagram, Facebook Pages and public Facebook Groups that included the words “vaccine” or “vaccination” in English, Spanish and French.

While this number is important to note, only a fraction of these posts received a serious level of engagement. We therefore pulled out this subsection of posts for deeper analysis. The dataset included the top 100 posts (as measured by engagement) on each platform and in each language, resulting in a sample of 1,200 of the most engaged-with posts related to vaccines. Between them, these 1,200 posts generated a total of 13,136,911 interactions.

Source: Google Trends.
 'Relative interest' is described by Google in the following way: "Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term."

The most popular posts on Instagram and Facebook Pages tend to be dominated by established news sources. In order to capture organic social media conversations as opposed to media reports, we removed verified accounts from Facebook Pages and Instagram in our sample. (See Methodology section for more information).

Though these posts spanned only three languages, the Facebook Pages we analyzed were located in 41 countries.⁵

Dominant vaccine narratives

We categorized posts according to six topics, which were based on a new typology that First Draft designed to capture the different ways in which vaccines are framed in online conversations (see table 1). This gave us an overview of the dominant topics of conversation and showed us whether these differed across languages. A combination of quantitative and qualitative methods was then employed to uncover the key competing vaccine narratives within these frames.

In this report, we detail the narratives and trends unique to each language, as well as the overarching vaccine narratives that appeared across languages. In addition, we explore various features of information disorder related to vaccines, including tactics and key data deficits that are already being filled in with vaccine misinformation.

Table 1

Topic	Description	
	Development, provision and access	Posts related to the ongoing progress and challenges of vaccine development. This also includes posts concerned with the testing (clinical trials) and provision of vaccines as well as public access to them.
	Safety, efficacy and necessity	Posts concerning the safety and efficacy of vaccines, including how they may not be safe or effective. Content related to the perceived necessity of vaccines also falls under this topic.
	Political and economic motives	Posts related to the political and economic motives of actors (key figures, governments, institutions, corporations, etc.) involved with vaccines and their development.
	Conspiracy theory	Posts containing well-established or novel conspiracy theories involving vaccines. ⁶
	Liberty and freedom	Posts pertaining to concerns about how vaccines may affect civil liberties and personal freedom.
	Morality and religion	Posts containing moral and religious concerns around vaccines, such as their composition and the way they are tested.

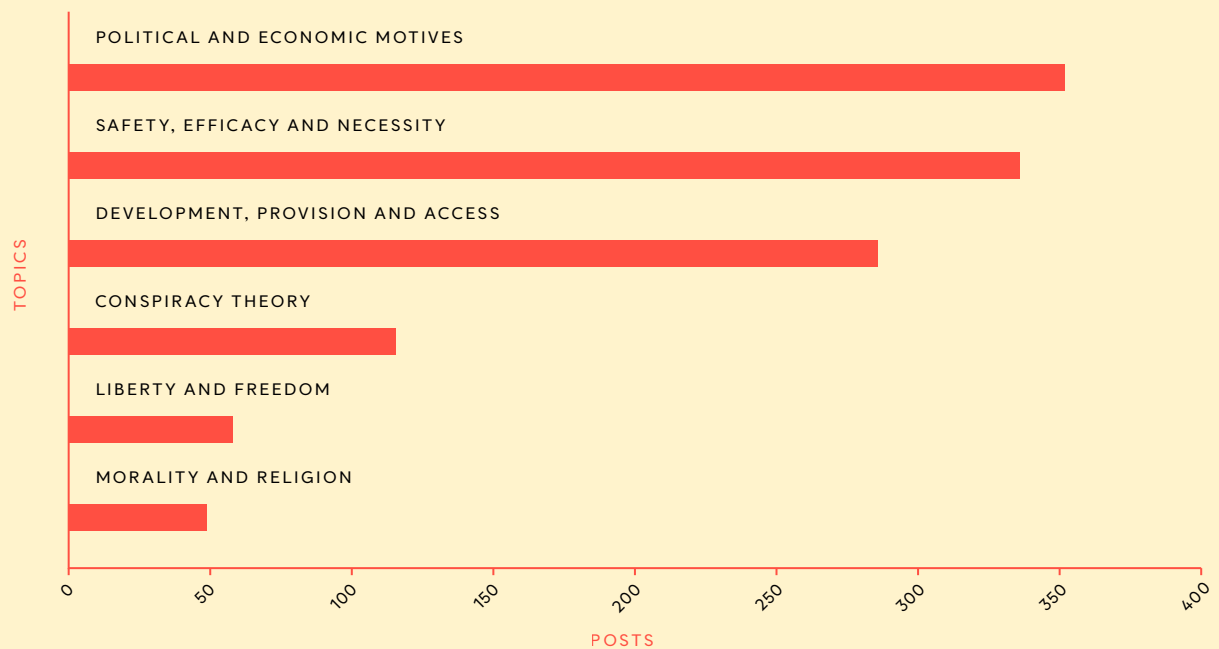
Key findings

1) REVIEW OF THE LANDSCAPE

→ **Thematic breakdown:** Among the 1,200 posts we analyzed, two topics were dominant across all three language communities: 1) those that referred to the “political and economic motives” behind vaccines; 2) those that referred to the safety and necessity of vaccines.

The topics of conversations driving online vaccine discourse

Narratives related to mistrust of institutions and key figures around vaccines (which fall under the topic Political and Economic motives) are driving as much of the online conversation as safety concerns.



Source: First Draft Research

For a breakdown of the differences across English, French and Spanish, go to page 30.

→ **Language differences:** Though two themes were found in content posted in the three languages, some were unique to a specific language. For example, “liberty and freedom” was unique to English, and “morality and religion” was unique to Spanish. Furthermore, many of the most dominant narratives, even within the two dominant topics of conversations across languages, were often unique to each language community.

- **Visuals play an important role:** Photos and videos accounted for 51 per cent of all content in the dataset. This figure underrepresents the true number of photos and videos. It is a conservative number as tweets with both a link and preview image were categorized as a link.
- **Platform differences:** Instagram and unverified Facebook Pages drove the debate. Together, the two platforms accounted for 71 per cent of the 13 million interactions (as measured by likes, shares, emoji reactions, retweets) generated by the 1,200 sampled posts. These two platforms also accounted for 84 percent of the 720,916 interactions generated by conspiracy theory-related content.
- **Conspiracy content:** Conspiracy theories about vaccines in general and the Covid-19 vaccine specifically play an outsized role on social media, particularly in Francophone spaces. More posts linked vaccines to conspiracy theories than moral issues and religious and civil liberties concerns combined. And these conspiracy theories were not limited to fringe groups. They resonated with the “Yellow Vest” movement, libertarians, New Age groups, highly popular anti-government groups and more conventional audiences, with key terms such as “microchipping” and “deep state” becoming increasingly popular.

2) TACTICS

- **Data deficits around vaccine ingredients and technologies:** There are significant data deficits concerning vaccine ingredients and novel vaccine technologies, such as mRNA vaccines. These deficits are being filled by unreliable individual accounts and alternative news outlets that are spreading disinformation to drive down confidence in vaccines.
- **“Zombie” content:** Previously debunked falsehoods and conspiracy theories about vaccines and long-standing anti-vaccination narratives are reappearing to fit the current health crisis and erode trust in a Covid-19 vaccine and vaccines more generally.

- **Bill Gates:** Bill Gates continues to play a central role in global vaccine conversations online. He appeared in 6 per cent of the total posts. However, unlike at the peak of the Covid-19 pandemic, where he was at the heart of many conspiracy theories, his political and economic interests as well as his overall credibility and trustworthiness as a public health expert are now at the heart of online conversations. Organizations' links to Gates are used to poison their legitimacy and undermine trust in the vaccines they are working to develop.
- **Laundering news headlines:** Anti-vaccination pages, groups and accounts are laundering vaccine-related headlines from legitimate news stories and repurposing them to fit their own anti-vaccination agenda.

3) NETWORKED COMMUNITIES

- **Ideologically incongruous communities** — Libertarians, traditional anti-vaxxers, New Age groups, QAnon adherents and others are uniting around safety and necessity concerns of a Covid-19 vaccine. The combination of these issues alongside mandatory vaccines is bringing very disparate communities together to oppose a future Covid-19 vaccine.

TOPICS



Political & economic motives

Trust in the political and economic motives of key figures, governments, institutions, corporations, etc., involved with vaccines



Safety, efficacy & necessity

Whether vaccines are perceived to be safe, effective, or needed.



Development, provision & access

The progress and challenges of vaccine development, including trials as well as who gets them, when and how.



Conspiracy theory

Well-established or novel conspiracy theories involving vaccines.



Liberty & freedom

How vaccines are perceived to affect civil liberties and personal freedom.



Morality & religion

Moral and religious concerns around vaccines, such as their composition and the way they are tested.

POSTS (1,200)

353

EN: 32.86%
ES: 39.66%
FR: 27.47%

337

EN: 41.83%
ES: 27.29%
FR: 30.86%

287

EN: 22.29%
ES: 43.2%
FR: 34.49%

116

EN: 29.31%
ES: 13.79%
FR: 56.89%

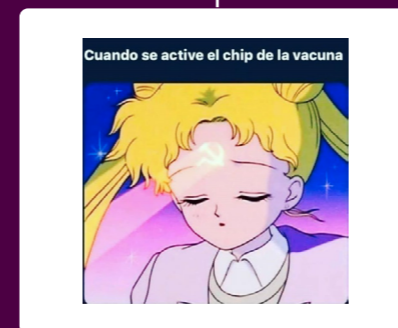
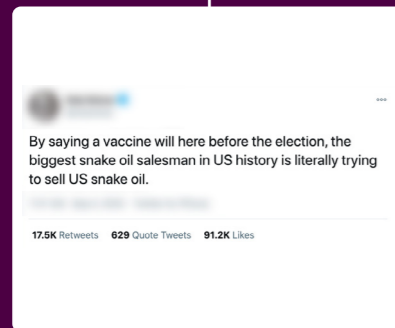
58

EN: 62.06%
ES: -
FR: 37.93%

49

EN: 18.36%
ES: 57.14%
FR: 24.48%

EXAMPLES



NARRATIVES

- Concentrated financial interests drive vaccine development and undermine its safety
- Bill Gates, and institutions and vaccines associated with him, cannot be trusted
- Leaders are promoting vaccines for political gains
- Corrupt governments and media outlets serve as mouthpieces for Big Pharma
- Governments and media are manipulating coronavirus fears to advance a pro-vaccine agenda
- Politicians, institutions and governments are incompetent and cannot be trusted
- Free-market capitalism, not socialism, is facilitating the development of a Covid-19 vaccine

- The Covid-19 vaccine is the silver bullet solution and a ticket to a return to normality
- A healthy immune system is more powerful than a vaccine
- A Covid-19 vaccine is unnecessary
- A Covid-19 vaccine isn't necessary given the effectiveness of hydroxychloroquine
- mRNA vaccines and GMOs aren't safe
- You poison your body with drugs and alcohol, so you can take the vaccine
- Vaccines are often dangerous and may even be lethal

- Russia has won the race to find a Covid-19 vaccine
- The Russian vaccine is safe and effective and a great hope in the fight against coronavirus
- The Oxford/AstraZeneca Covid-19 vaccine is safe and effective

- Vaccines are tools to microchip and control entire populations
- Vaccines are means to control populations and reach a transhumanist dystopia
- Vaccines serve as tools for human engineering and depopulation programs

- It starts with a mask, moves to vaccines and ends in total control
- Mandatory vaccines are "railroading our rights" and freedoms

- The 'blood of Christ' is the only vaccine against Covid-19
- God has the power to enlighten scientists to discover a coronavirus vaccine

Source: First Draft analysis of 1,200 social media posts (300 from Twitter, 300 from Instagram, 300 from Facebook Pages, 300 from Facebook public Groups), split equally across Spanish (400), English (400), and French (400), in three months between June 15 and September 15, mentioning variations of the keyword 'vaccines'

Recommendations

- **Recommendation No. 1:** We need to stop relying on fact-checking efforts and platforms' content moderation policies to address data deficits. Doing so is reactive, insufficient and potentially counterproductive. For example, greater levels of content moderation could fuel anti-vaccination narratives that claim platforms are attempting a cover-up. They also could encourage key vaccine communities to migrate to alternative platforms that are harder to monitor and research. Proactive messaging that is both compelling and tailored to different audiences is needed.
- **Recommendation No. 2:** Appreciate narratives (and even topic) differences across languages and regions and respond appropriately. And don't create an oversupply of information if there isn't a data deficit.
- **Recommendation No. 3:** Reliable news sources, social media monitoring and research organizations should collaborate to identify and address relevant data deficits, as well as to avoid the oversupply of information on a given topic.
- **Recommendation No. 4:** Narratives stemming from natural health and "New Age" online communities should be monitored more closely. Many of these directly oppose and discredit the concept of immunization and are being picked up by disparate communities on social media.
- **Recommendation No. 5:** Anti-vaccination misinformation narratives have adapted, and will continue to adapt, to the evolving Covid-19 health crisis context. The ability to track the development of problematic vaccine narratives over time will be key to informing proactive efforts at combating novel narratives and filling data deficits.
- **Recommendation No. 6:** Topic modeling and other machine learning technologies enable researchers to analyze large datasets, and the potential remains incredibly promising. But to understand the ways in which narratives are structured and created still requires human analysis and interpretation. While these technologies are relatively sophisticated when it comes to text, they are less useful when it comes to making sense of image and video content, which is a significant portion of what is happening online.
- **Recommendation No. 7:** We need to find a way to acknowledge people's uncertainties and fears, rather than dismiss them, and build bridges between health experts and the vaccine hesitant. Finding a way for health experts to connect with those who are questioning vaccine safety, without validating or amplifying concerns, will be a fundamental component to rebuilding trust in health authorities and institutions.

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2. de Figueiredo, A., Simas, C., Karafillakis, E., Paterson, P., & Larson, H. J. (2020). Mapping global trends in vaccine confidence and investigating barriers to vaccine uptake: a large-scale retrospective temporal modelling study. *The Lancet*, 396 (10255), 898–908. [https://doi.org/10.1016/s0140-6736\(20\)31558-0](https://doi.org/10.1016/s0140-6736(20)31558-0)
3. Eve Dubé et al. found that “risk perception [of vaccines] is often closely linked with ideas of trust in health professionals, in government or in public health institutions” (Dubé, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. (2013). Vaccine hesitancy: an overview. *Human vaccines & immunotherapeutics*, 9 (8), 1763–1773. <https://doi.org/10.4161/hv.24657>). More specifically, vaccine hesitancy has been linked with low trust in institutions like the CDC (e.g., Lee, C., Whetten, K., Omer, S., Pan, W., Salmon, D. (2016). Hurdles to herd immunity: Distrust of government and vaccine refusal in the US, 2002–2003. *Vaccine*, July 25; 34 (34): 3972–8. Leach, M., Fairhead, J. (2007). *Vaccine Anxieties - Global Science, Child Health and Society*. London: Earthscan). In contrast, Wellcome found that “there is a clear positive relationship between overall trust in scientists, as measured by the Wellcome Trust in Scientists Index, and overall attitudes toward vaccines.” (Wellcome. (2019). *Wellcome Global Monitor 2018*. <https://wellcome.org/reports/wellcome-global-monitor/2018/chapter-5-attitudes-vaccines>.)
4. First Draft. (2020). The psychology of misinformation. <https://firstdraftnews.org/long-form-article/the-psychology-of-misinformation/>
5. Facebook Page location data is based on the location of the majority of a Page’s administrators.
6. A conspiracy often features a secret, proactive, planned, multi-stage deception that will involve the harm of a given individual or group of people, often to the benefit of another. A conspiracy theory is a speculative or fantastical claim of the existence of a conspiracy.

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