

# Understanding online conflict and vaccine hesitancy

Using a new social media listening tool to analyze AstraZeneca-related conversations on Reddit

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## EXECUTIVE SUMMARY

Public health authorities now must respond not only to pandemics but also [infodemics](#)—the rapid spread of true and false information that undermines efforts to address public health emergencies. However, monitoring and responding to information that is shared on social media is not only time-consuming, it's also hampered by our limited understanding of how online communities interact and make sense of information.

As part of our work at the [Digital Democracies Institute \(DDI\)](#), part of the [Bridge Research Consortium \(BRC\)](#), we have developed an AI-based social listening tool to signal conflict – debate and disagreement – in online discussions. Using this tool, we conducted a case study of Reddit conversations among Canadian communities about the Oxford-AstraZeneca COVID-19 vaccine. We reveal that people often engaged in nuanced discussions to make sense of vaccine information amid misinformation, evolving evidence, and public confusion.



Reddit communities actively moderate misinformation, engage with information from credible sources, and foster dialogue on anxieties and uncertainties through healthy disagreement.

Based on emerging findings, five recommendations are proposed for how public health can better understand and leverage social media to communicate effectively, build public trust in vaccines, and respond to evolving public health concerns.

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## What's at stake?

Social media is among the most common ways people are getting public health [information](#). As the COVID-19 pandemic has made clear, however, the rapid and overwhelming spread of true, false and misleading information online can drive vaccine hesitancy, [even among health-care professionals](#). Emerging data from the BRC's *Vaccine Behaviours, Attitudes and Perceptions* survey reveals that 43% of respondents in Canada (n=2400) find it harder to differentiate between true and false information since the COVID-19 pandemic. This makes it crucial for public health communicators to understand the social media ecosystem they are a part of.

Monitoring social media and knowing how best to communicate online can be a challenge amid unfolding public health emergencies and privacy concerns associated with [infoveillance](#). For instance, most social media companies refuse to share pertinent data, making it difficult to understand the effects of health and risk communication. Official posts from public health agencies are often targeted by coordinated attack campaigns, inhibiting the ability to observe how social media users organically talk about controversial topics like vaccination. Further, most social media analysis has relied overwhelmingly on Twitter (now X) due to its prior openness to researchers. This, however, is an incomplete picture of Canadians'

information ecosystem. [Canadians' use of polarizing platforms like X has decreased from 42% in 2020 to 37% in 2025.](#)

Ongoing large-scale surveys and targeted experiments that study the effects of misinformation and social media use may not reflect how people actually use social media. What has emerged is a view of social media that focuses on loud opposition to vaccination and hostility to public health institutions.

Focusing on anti-vaccine sentiment on polarized platforms overlooks spaces where Canadians engage with each other to work through their concerns, uncertainty, and questions about public health. Understanding these spaces—*sites of productive conflict*—is key to understanding legitimate concerns driving vaccine hesitancy and addressing these concerns before they become vaccine denial.

## Research approach

### CASE STUDY

We deployed our custom AI-based social listening tool and qualitative methods to analyze Reddit conversations among Canadians about the Oxford-AstraZeneca (AZ) COVID-19 vaccine. These discussions primarily took place between March and June 2021, when the first reports of vaccine-induced side effects emerged, in response to which Canada's National Advisory Committee

on Immunization (NACI) recommended the vaccine be suspended for people below the age of 55. These events seeded doubts and debates about vaccine safety and access. This case study offers key insights into how Canadian social media communities negotiated questions of risk, uncertainty, and shifting scientific guidance on vaccination.

### **SOCIAL MEDIA PLATFORM**

Reddit is [a rapidly growing, politically balanced platform popular with younger users](#), who often tend to be [vaccine hesitant](#). Reddit's users often participate in multiple communities ("subreddits") that reflect where they live, including national, provincial, and metropolitan or local communities. Studying Reddit gives us insight into extended conversations among users, which allows different perspectives on controversial topics to emerge.

### **METHOD**

Our social listening tool uses [a custom trained AI model](#) to automatically score social media posts and comments extracted from Reddit, X (formerly known as Twitter), Bluesky, YouTube, Instagram, and other platforms, for the content's likelihood to drive conflict—dispute or disagreement—among social media users.

Conflict likelihood scores (CLS) calculated by this model range from 0 to 1; the higher the CLS, the more likely that post is to stoke conflict among social media users. The tool can also reveal which information sources,

keywords or topics, and time periods were linked to conflict. It offers an aggregate view of spikes in online conflict as they happen.

The social listening tool was deployed to analyze 4287 AZ-related Reddit posts and comments made on Canadian subreddits between January 2020 and December 2022, focusing on discussions of the vaccine's 2021 rollout, side effects, and suspension. We also **qualitatively** analyzed these posts to identify how Reddit users engaged in conflict around the AZ vaccine: who they targeted, the stances they took, what kinds of authority they called on, their rhetorical and response strategies, the aims or values they articulated, and the sentiments they expressed.

## **Key findings**

Canadian Reddit communities were able to curtail factually unsupported opposition to the AstraZeneca vaccine, while sustaining conversation on Canadians' uncertainties and anxieties about the vaccine and its rollout.

### **1. Reddit users relied heavily on credible sources (see Figure 1):**

- 63% of all posted links referenced federal, provincial, or international public health agencies, mainstream news (CBC, CTV, Global News), or scientific publications.
- PHAC and Health Canada materials were the second most common source linked in AZ discussions.

- [PHAC's dynamic COVID-19 information portal](#) was the single most frequently linked page across all AZ- and pandemic-related conversations, sustaining discussion throughout the years 2020 to 2022. Community moderators also linked to this page when they deleted misinformation.
- 24.4% of pandemic-related posts and comments were deleted by a moderator, of which at least 32.5% were targeted especially for spreading misinformation.

## 2. Conflict on Reddit was moderately low, but persisted when Reddit users debated the risks of vaccination.

- The average likelihood of conflict in AZ conversations was **moderately low** (CLS  $\approx$  0.31). However, **15.53%** of all posts and comments exhibited a **high likelihood of conflict** (CLS  $>0.75$ ).
- Subjects of conflict include **risks**:
  - of taking the AZ vaccine, based on available information about its **safety and efficacy**;
  - that the federal and provincial governments' vaccine rollout and communication adversely impact **vaccine access**, limiting vaccine uptake;
  - that governmental and public health communication strategies would stoke **vaccine hesitancy**.

- Types of conversations in which conflict **escalated**:
  - Users attacking each other for allegedly making factually inaccurate claims
  - Users correcting or clarifying the factual accuracy of a claim without attacking each other
  - Criticizing political actors such as the federal or provincial government, public health bodies like the NACI, or the news media, for contributing to diminished vaccine uptake
- Types of conversations in which conflict **de-escalated**:
  - Sharing factually accurate information without editorializing
  - Acknowledging the value of the information shared by another user
  - Disengaging from a contentious conversation, typically by refusing to continue it or rejecting the value of the conversation.

## 3. Conflict—dispute and disagreement—stemmed from different ways of conceiving risk, rather than anti-vaccine ideology.

These risks were discussed in the context of navigating public health measures instituted during the pandemic—vaccine mandates, lockdowns and curfews—as Canadians sought to return to daily life: to work, family visits, and social interaction.

# Recommendations for public health

## **1. Strengthen credible information pathways already used by the public.**

Social media users, such as those on Reddit, consistently rely on PHAC, Health Canada, mainstream media, and scientific sources. PHAC should continue to deliver high quality messaging, while also expanding what sites it analyzes to better understand Canadians' engagement and questions (see recommendation #5).

## **2. Support community moderation and fact-based engagement.**

Active moderation and user-driven fact-checking practices help curb misinformation and sustain productive conversation. Public health agencies could work with moderators and communities to amplify accurate information and clarify emerging uncertainties.

## **3. Emphasize communal benefits in risk communications.**

Online communities in Canada negotiate vaccine risk through conversations regarding what "normal life" looks like. Risk communications can move beyond simply framing vaccination as an individual risk-benefit decision and instead highlight evidence showing how it enables Canadians to engage meaningfully in community life.

## **4. Recognize conflict as a diagnostic tool, not a failure.**

Conflict reflects genuine engagement with uncertainty—not just misinformation or opposition. Public health agencies should interpret such conflict as an opportunity to understand evolving concerns and anxieties, and as moments to offer information.

## **5. Expand social media listening to include more online platforms.**

AI-based listening tools can be leveraged beyond traditional monitoring approaches to provide a more complete picture of Canadians' health concerns – supporting public health agencies in determining when to allocate their resources effectively. Approaches should expand to include sites such as Reddit, which offers valuable insight into how Canadians negotiate uncertainty.



# Appendix

Figure 1: Most-linked domains and information sources

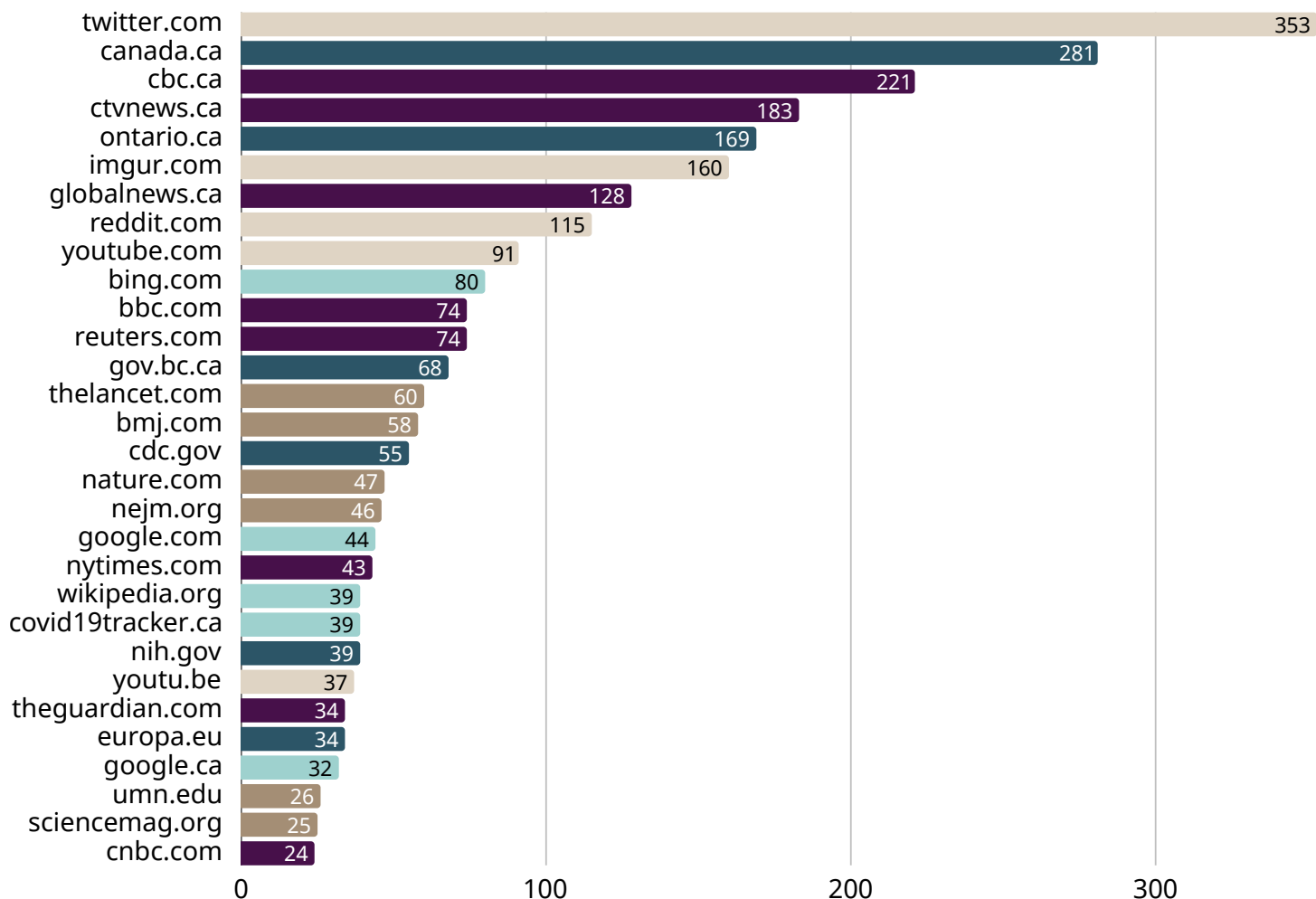


Figure 2: Share of links by category

