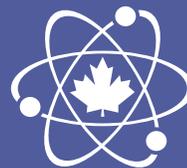# Information Overload:

EXPLORING THE CHALLENGES PEOPLE FACE
NAVIGATING A SEA OF INFORMATION

CANADIAN ASSOCIATION OF SCIENCE CENTRES
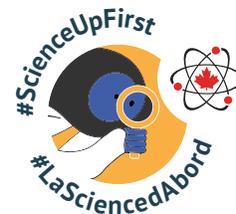ASSOCIATION CANADIENNE DES CENTRES DE SCIENCES

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ACKNOWLEDGMENTS

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INTRODUCTION:

THE IMPACT OF THE INFORMATION EXPLOSION

Have you ever encountered information that left you feeling confused or unsure about what to believe?

With the rise of misinformation and disinformation in recent years,[1] this is becoming a common experience for many people. To better understand the impact of this trend, we conducted a research study that combined quantitative and qualitative methods. Our aim was to gain insights into how people perceive and react to misinformation and disinformation, and how this affects their views on information and science.

In this report, we're excited to share the results of our study, which shed light on the ways in which people engage with information, and the challenges and opportunities that exist for organizations needing to communicate important facts about topics that matter.

Whether you're a science communicator, researcher, member of the public, policy maker, or strategic partner, this report provides an accessible overview of our key findings and offers important insights into how we can all work together to fight the spread of misinformation and disinformation.

METHODOLOGY

We engaged 1,646 people from across Canada who were 18 years old and older. They also met the following criteria:

- No rejectors of science
- Innately curious; information seekers; want to be "in the know" more often than not
- Seek information on social media, broadcast (podcasts/radio/tv), online, print, family/friends
- Must select Health and Science topics among their topics of interest and/or concern
- Mix of gender, education, income, ethnicity
- Geographic mix of urban and rural

Our research was carried out in two phases between April 2022 and March 2023.

Through our research, we aimed to gain insights into Canadians' attitudes, beliefs and perceptions of information and misinformation. Ultimately, we wanted to learn whether and how those beliefs impact how they feel about science. Additionally, we looked for any opportunities that organizations and information providers may have to communicate important facts about topics and issues of particular concern that matter most to people.

Phase 1—Quantitative and qualitative

Our goal in Phase 1 was to understand the problem. We focused on gaining a better understanding of how people think and feel about misinformation and disinformation. This helped us further identify the influence these beliefs have on the issues and topics people care about most, specifically in health and science.

- **National online survey:**
  - 1,500 Canadians, ages 18+
- **Focus groups:**
  - 40 people
  - 7 two-hour groups
  - Age segments represented: 18-24-, 25-34-, 35-49-, and 50-60-year-olds
  - Conducted in English and French
  - Deeper discussions around issues identified in quantitative survey

Phase 2—Qualitative study

Leveraging Phase I insights and knowledge, Phase 2 delved deeper into how people's attitudes and perceptions toward misinformation impact their views on information, the sources they rely on, and their overall perception of science.

- **Asynchronous online focus groups:**
  - 90 people
  - English (18-49-year-olds)
  - French (18-35-year-olds)
- **In-depth interviews:**
  - 16 people
  - Invited from above online focus groups

KEY FINDINGS:

UNDERSTANDING PEOPLE'S ATTITUDES, BELIEFS, AND PERCEPTIONS TOWARD INFORMATION

We live in a world where information is abundant and readily available. Our research has shown that such abundance has given way to information fatigue—a trend that is having a massive impact on people's attitudes toward information.[2] While people are better informed than ever before, they are also more skeptical.[3,4] Rather than being fearful, people are frustrated—and they are looking for new ways to navigate the sea of information they encounter every day.

Here's what we learned from our quantitative and qualitative studies:

People perceive misinformation and disinformation differently

At the outset, it was crucial to determine people's understanding of the terms "misinformation" and "disinformation." It became clear very quickly that people distinguish between the two based on intent. They describe misinformation as false, inaccurate, or misleading information that is spread unintentionally, without intent to harm. Conversely, they perceive disinformation as intentionally misleading or false information shared with the intention of deceiving and convincing others to believe falsehoods. This definition aligns with terminology used by the **Canadian Centre for Cyber Security**.[5]

Skepticism, cynicism and pessimism continue to prevail among people's emotions

Faced with conflicting information from so many sources, people find it nearly impossible to decide what and whom to trust. They feel forced to accept information at face value in what they refer to as "a world of clicks and views." People don't trust the source and consequently the information it presents. Mainstream media is considered to be the least objective source, with 18-24-year-olds the least trusting of all groups.
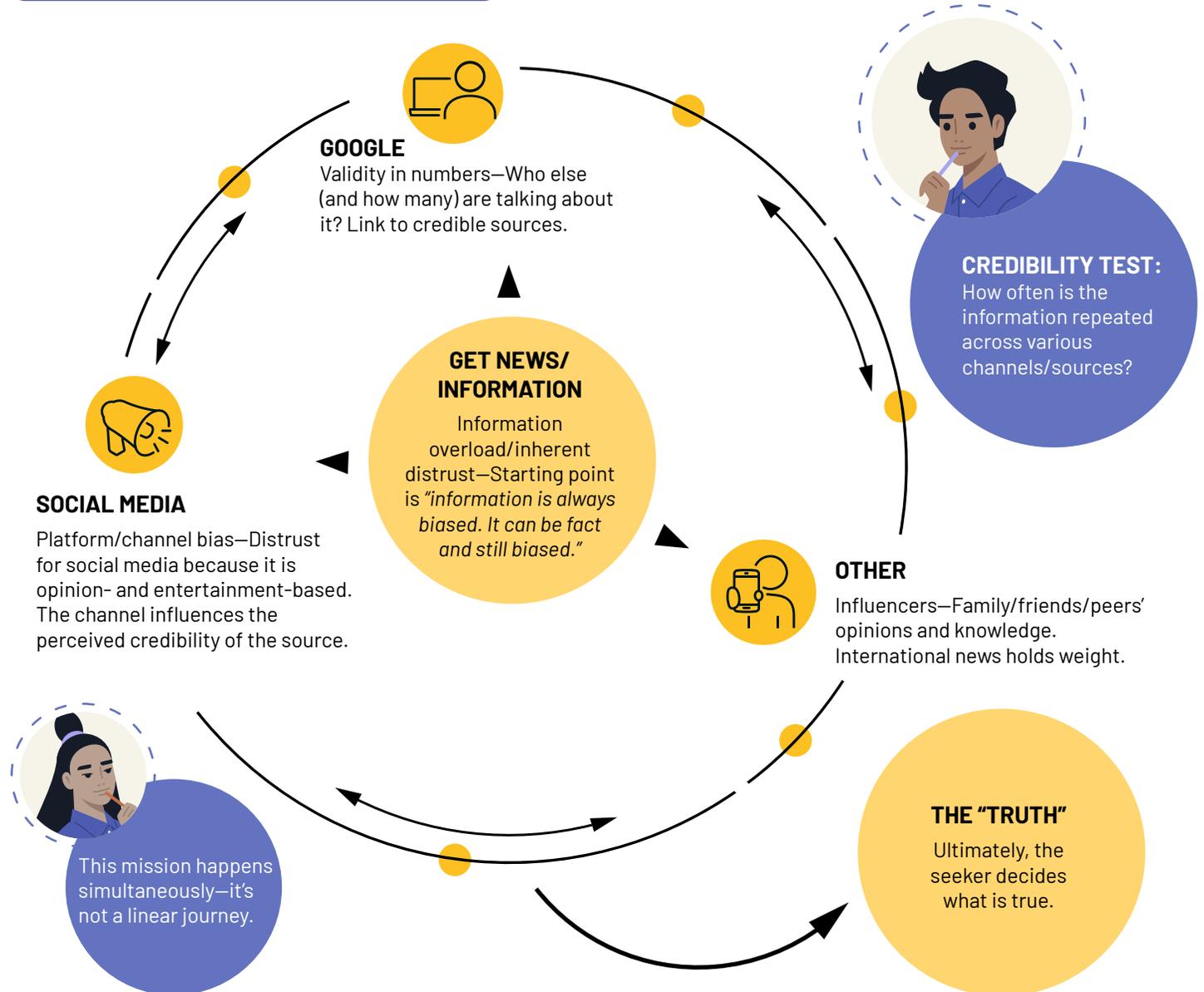
People decide the truth for themselves

People have begrudgingly assumed the sole responsibility of deciding what's true rather than "blindly trusting" what they read. In attempting to ensure they are not being misled or influenced by false or biased information, they have taken on a far more active role by critically analyzing information and evaluating its credibility and reliability. Personal beliefs, values and experiences also play an increasingly important role in shaping people's perception of the truth.

The information-seeking journey is not linear

The complexity of the information landscape has resulted in an information-seeking process that is not as straightforward as it was before. Instead, people describe a dynamic and iterative process that involves multiple stages, including exploration, searching, refining, evaluating and re-evaluating as they gain a better understanding of their topic and more trust in the information they find.

THE INFORMATION-SEEKING JOURNEY

GOOGLE
Validity in numbers—Who else (and how many) are talking about it? Link to credible sources.

CREDIBILITY TEST:
How often is the information repeated across various channels/sources?

GET NEWS/ INFORMATION
Information overload/inherent distrust—Starting point is *"information is always biased. It can be fact and still biased."*

SOCIAL MEDIA
Platform/channel bias—Distrust for social media because it is opinion- and entertainment-based. The channel influences the perceived credibility of the source.

OTHER
Influencers—Family/friends/peers' opinions and knowledge. International news holds weight.

This mission happens simultaneously—it's not a linear journey.

THE "TRUTH"
Ultimately, the seeker decides what is true.

A single source of information is no longer enough

Increased skepticism has led to a growing mistrust of traditional news sources and a rise in alternative sources of information.[3,6] People now choose to access multiple sources of information in their attempt to feel more confident while staying informed. By diversifying their sources, they believe they can avoid being influenced by biased or unreliable information. And although Canadian media sources hold a higher level of credibility than U.S. media, it is global media that now holds even higher credibility among all age groups in Canada. The most trusted sources of information? Family and friends. Despite their popularity, social media sites like Twitter, LinkedIn, and TikTok rank last for credibility.

There is a simple, clear recipe for a trusted source

People have a clear vision of what makes a source of information trustworthy and can easily describe cues of trustworthiness. These include the reputation of the source (whether the source is well-known and respected), the source's expertise and credentials, the level of objectivity and impartiality demonstrated, and the presence of verifiable evidence and sources. Participants also frequently mentioned the importance of transparency and openness, wanting sources to be forthcoming about their methods, potential biases, and partners/funding sources.

Trusted source checklist:

- Facts, not opinion
- Evidence-based
- Confident, clear, data-driven language and tone
- Experts with relevant credentials (e.g. immunologist not "just a doctor")
- Transparent, authentic, no hidden agenda
- Unbiased sponsors/partners
- Proven track record

Tackling misinformation is becoming more difficult

While many people believe they can spot misinformation, they often lack confidence in their ability to do so. That feeling is influenced by several factors:

- **Volume of sources:** From social media to news media to websites to friends and family, people are overwhelmed by information sources and struggling to determine what is reliable, credible and trustworthy.
- **Lack of trust:** People doubt the information and consequently, the source, especially if it contradicts what they believe. They also have difficulty trusting sources unfamiliar to them, who are not reputable, and whose partners/sponsors are not considered trustworthy.
- **Confirmation bias:** It can be difficult to change someone's beliefs, which is why many people tend to believe information that confirms what they already believe.
- **Viral sharing:** The speed at which information spreads only creates more distrust and doubt—just because the same information is repeated, does it make it true?

TRUSTED SOURCE CHECKLIST

People sort information into three categories based on relevance

Our study revealed people tend to sort information into three distinct groups based on their level of understanding and perceived value of the information. Respondents also revealed that each level of understanding elicits a range of emotions, some quite profound and internalized, depending on the level of relevance. Feelings people described for each group were distinct and insightful:

INFORMATION I DON'T UNDERSTAND, DON'T NEED, OR DON'T CARE ABOUT.

- Uncertain
- Incompetent
- Impatient
- Frustrated
- Annoyed
- Cynical
- Confused
- Like a failure
- Overwhelmed
- Skeptical
- Lied to
- Foolish

INFORMATION I UNDERSTAND BUT DON'T NECESSARILY FIND USEFUL.

- Neutral
- Peaceful
- Knowledgeable
- Good
- Content
- Clarity
- Understanding
- Intelligent
- Reassured
- Comfortable

INFORMATION I UNDERSTAND AND I CAN USE.

- Confident
- Optimistic
- Excited
- Accomplished
- Eager
- Important
- Motivated
- Enthusiastic
- Supportive
- Proud
- Passionate

This means for information to be valuable it must be both understandable and relevant to their lives. Most people find themselves stuck in the second group, in a loop of constant searching for more information they understand that is also useful.

Knowledge is power, but confidence is key

People generally possess a reasonable level of understanding regarding today's crucial issues. Despite their understanding, they often lack the confidence to use this knowledge effectively. This implies they may not feel equipped to engage in meaningful discussions or act on issues they understand. Their lack of confidence in the information prohibits them from applying the learning.

We asked respondents to consider a variety of topics and rank them within the three groups of understanding. While there was some overlap, respondents felt most confident about the topics of Environment, Housing Crisis, Health, and Mental Health. The topics are ranked in order of confidence.

1 INFORMATION I CAN USE

1. **Environment**
2. **Housing Crisis**
3. **Health**
4. **Mental Health**

2 INFORMATION I UNDERSTAND

1. **Climate Change**
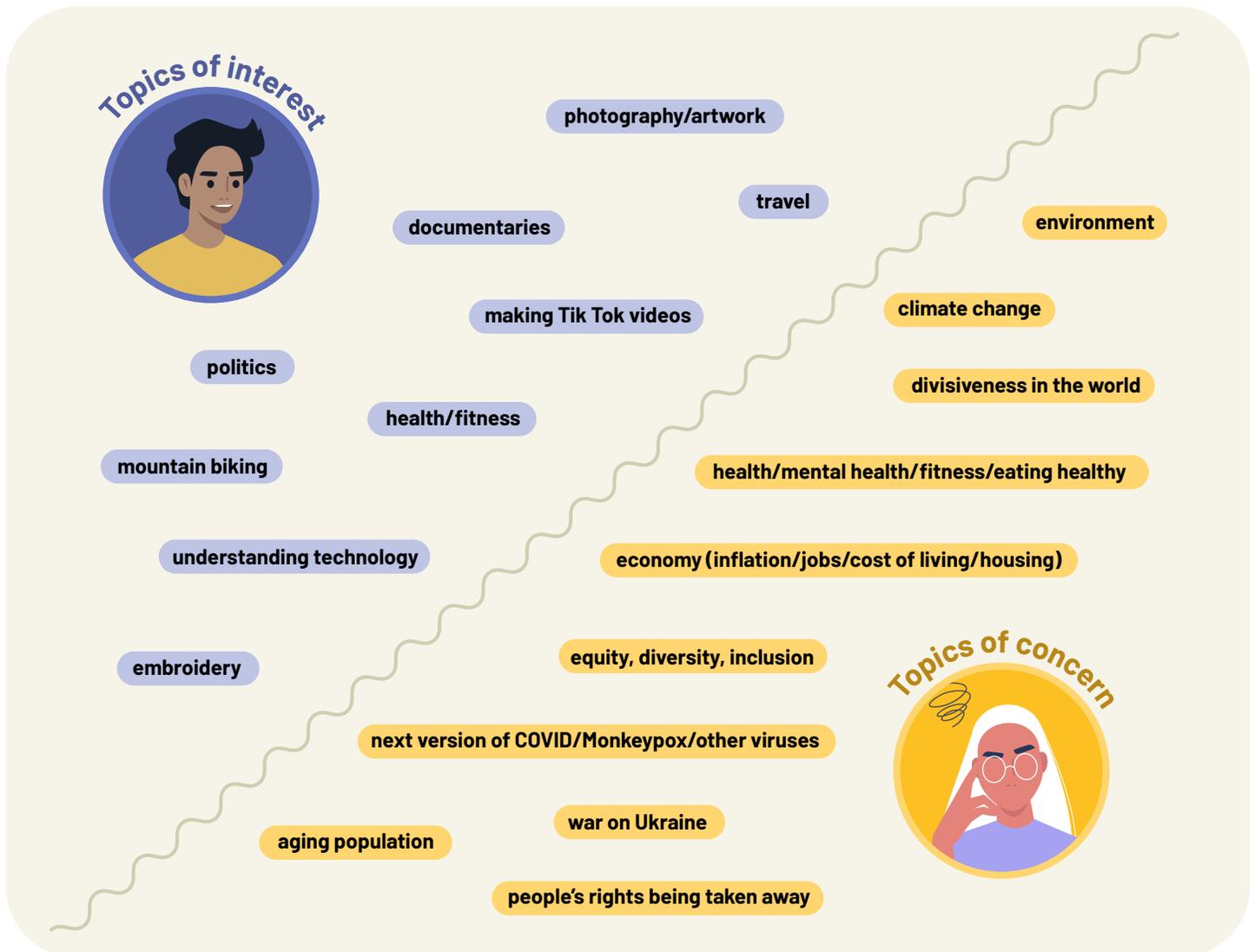2. **Mental Health**
3. **Animal Welfare**
4. **Health**

3 INFORMATION I DON'T UNDERSTAND

1. **Animal Welfare**
2. **COVID-19**
3. **Economy/Politics**
4. **Housing Crisis/Environment**

There is an emotional divide between concerns and interests

People differentiate between topics that concern them and those in which they are interested.

When it comes to issues that concern them they feel anxious or fearful, while the issues they're passionate about make them feel joyful. This emotional response to different topics is important for information sources to keep in mind when communicating.

Topics of interest

photography/artwork

travel

documentaries

environment

making Tik Tok videos

climate change

politics

divisiveness in the world

health/fitness

health/mental health/fitness/eating healthy

mountain biking

understanding technology

economy (inflation/jobs/cost of living/housing)

embroidery

equity, diversity, inclusion

Topics of concern

next version of COVID/Monkeypox/other viruses

aging population

war on Ukraine

people's rights being taken away

Quebecers are more trusting of mainstream media and more concerned about climate change and nutrition

Although beliefs, attitudes and perceptions toward information and sources align nationally overall, there are indications of variances among Quebecers. They are more likely to turn to broadcast media (including television) for news and information, and are significantly more trusting of radio compared with the national audience. They also tend to be more trusting of the news they read (72 per cent compared with 58 per cent of the national audience). And when it comes to their issues of greatest concern, Quebecers index significantly higher for climate change, environmental issues, and nutrition.

UNDERSTANDING PEOPLE'S ATTITUDES, BELIEFS, AND PERCEPTIONS TOWARD SCIENCE

Although many people hold a positive attitude toward science and its role, there are growing concerns that some scientific findings may not be entirely accurate or trustworthy. This worry can be attributed to various factors, including the belief in a lack of transparency in scientific research, campaigns promoting misinformation, and people's tendency to politicize scientific findings. Despite these challenges, the importance of science remains crucial. Addressing these concerns is essential to maintaining people's trust in scientific research and its findings.

Here's what we learned:

People trust science, but not information presented as science

Call it the "trust in science paradox": People tend to trust scientific information more than other sources, but at the same time are distrusting of information in general. This is because scientific knowledge is perceived as and expected to be objective, impartial and evidence-based. However, an important finding reveals that when sources present information in the name of science, people become much more skeptical about the credibility, accuracy and reliability of that information. This suspicion is the result of using scientific-sounding language (that they don't understand) or citing scientific studies that may not be accurate or relevant to the specific topic. The learning for organizations is to beware of presenting information in the name of science to gain people's trust as it might result in the opposite reaction and increase people's skepticism and level of distrust.

18-24-year-olds are the least trusting group

Younger adults tend to perceive science more negatively, but this is often related to what they consider to be low-quality information (e.g. information they can't understand or from unknown sources) rather than science itself. It is not entirely surprising that this cohort is less trusting of information and sources, given that they have grown up with more access to information and are savvier about evaluating sources.
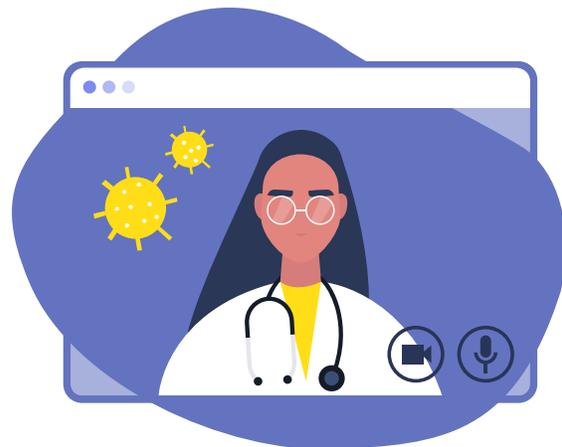
The COVID-19 pandemic has changed our perception of science

The pandemic has significantly impacted people's views about science, both negatively and positively. On the negative side, almost half of people in our qualitative studies have developed a mistrust of science, especially when it comes to vaccines and public health. They describe feeling less eager, less sure of their knowledge and less "in-touch." Misinformation has spread quickly through the media, leading some people to tune out scientific evidence and recommendations. On the positive side, the pandemic has also increased people's awareness and appreciation of the importance of science and scientific research. Many respondents indicated feeling excited, inspired and encouraged by scientific advancements, and driven to become more informed about the scientific process.

INSIGHTS

Our research reveals significant insights that emphasize the importance of having clear, precise and captivating sources of information to tackle the issues of information overload and misinformation when it comes to the role of science in our lives.

Information is in question, not science

People do not distrust science, but rather the scientific information they receive from sources (e.g. social media/news/family/friends). This suggests that people value the evidence-based scientific method and its ability to provide knowledge they can trust. However, people are wary of the quality of information they receive from various sources and are looking for clarity and accuracy. People need to feel better and more confident about information, not science.

People value clarity over truth

Since people have taken on the role of deciding the truth for themselves, what they need from sources is clarity. And for most, clarity is defined by simplicity, focus and transparency. Often, this means providing less, higher quality, easier to consume data rather than inundating people with too much information.

People miss the joy of learning

People are not merely on a truth-seeking or information-collecting journey—instead, they embark on a journey of learning. It is the learning that makes people feel confident about the validity of the information. Today, what people miss most because of their distrust in information and sources is the excitement that comes from learning new information. They are stuck in a searching loop when they would rather be learning new, interesting, useful information. What was once an information gap is now a learning gap.

The challenge is much bigger than combating misinformation

People are looking not only for information, but for a place that inspires critical thinking. They are looking for sources that not only provide them with the information they need but also enable them to think on their own and reach their own conclusions. People want a trusted partner that can help them learn new information about topics that matter most to them. People want sources that can engage them, inspire them and provide the tools and resources they need to make informed decisions.

Information sources must be realistic in defining their role in the context of how people feel, and how people define their own role when it comes to information

1 People will **always** check several sources. You cannot be the only "go-to" source

2 People want someone to help them navigate through all the available information

3 People want to spend their time learning, not searching

4 People will decide "the truth"

CONCLUSIONS

The future of information will continue to be shaped by the progress and development of technology, and continued shifts in people's media consumption patterns. Misinformation will continue to be a challenge for all people seeking accurate, reliable scientific information about the world we live in.

What's also clear is where people stand in terms of their expectations and what they value when it comes to addressing misinformation:

TRUST

"I trust you will give me all the information I need, and you trust me to make my own decisions."

People want to be given all the information they need and be trusted to make their own decisions, without being told what to do. They expect transparency and authenticity.

FREEDOM TO THINK

"Help me think for myself...help me think together...don't be an authority."

People prefer to be helped in thinking for themselves rather than being told what to think and believe.

THE JOY OF LEARNING

"There is excitement in new information... in discovering and learning."

People enjoy the excitement of learning new things.

COMMUNITY

"A place where I can engage, learn and trust, without judgment."

People seek a supportive community where they can engage and learn without being judged.

People value trust, the freedom to think and to make their own decisions, the joy of learning and discovering new information, and a sense of community where they can engage and learn without judgment. Those who can create an environment that understands and nurtures those values will be rewarded with loyal partners/communities/audiences who feel informed and equipped to apply the insights to their own lives.
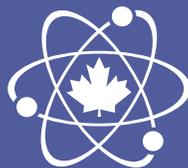
RELEVANT STUDIES

We also examined secondary research from a variety of sources including the Council of Canadian Academies (CCA), the Government of Canada Impact and Innovation Unit (IIU), the Association of Science and Technology Centres (ASTC) and the Ontario Science Centre, as well as other published papers.

Our research findings align with data from these studies. In particular, we'd like to highlight:

- According to a study conducted by CCA in January 2023, misinformation has a negative impact on the public by creating confusion, frustration and mistrust of information. The study also pointed to the increased need for evidence-based information resulting from the pervasive spread of misinformation. The study acknowledged the complexity of addressing misinformation and the need to inspire and enable critical thinking.[1]

- Research conducted by the IIU in 2022 confirmed that although social media is widely accessed by most people (91 per cent of Canadians), it is the least trusted source of information, with Facebook and YouTube being the most commonly used platforms.[7]

- In 2022, ASTC conducted a study about how people want to engage with science. The study revealed that people consider science to be essential to our existence—sparking imagination, embracing wonder, and fostering evolution and progress.[8]

1. **Fault Lines: The Expert Panel on the Socioeconomic Impacts of Science and Health Misinformation**, Council of Canadian Academies (CCA), January 2023

2. **Information overload challenges pandemic control**, Canadian Medical Association Journal, August 2021

3. **Edelman Trust Barometer**, 2021

4. **The rising skepticism of science and how we can solve it**, 3M Science Centre, February 2022

5. **Canadian Centre for Cyber Security**

6. **Canadians' trust in the news media hits a new low**, The Conversation, June 2022

7. **Are Canadians ready for climate action? Insights from the Program of Applied Research on Climate Action (PARCA) in Canada**, Government of Canada Impact and Innovation Unit (IIU), January 2023

8. **Americans' Motivations for and Barriers to Engaging with Science**, Association of Science and Technology Centres (ASTC), September 2022

9. **Reimagining public science education: the role of lifelong free-choice learning**, John H. Falk & Lynn D. Dierking, November 2019

10. **Ontario Science Centre (OSC) Canadian Science Attitudes Research**, Leger, August 2017

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12. **Science Culture: Where Canada Stands,** Council of Canadian Academies (CCA), August 2014

13. **Lessons from the Infodemic: Overcoming communication challenges**, Canadian Diversity, Volume 19, No 1, 2023

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