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Protecting expert advice for the public: promoting safety and improved communications

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Abstract

The drivers of the harassment and intimidation of researchers are complex, widespread, and global in their reach and were being studied across many disciplines even before COVID-19. This policy briefing reviews some of the scholarship on this wide-ranging problem but focuses on what can be done to help ensure that Canadians fully benefit from the work of Canada's researchers while also preserving the security and safety of those researchers. It identifies policies and actions that can be implemented in the near term to gather information on the problem, better frame public research communications, and ensure that mechanisms are readily available to support researchers who are threatened. The policy briefing is concerned with researchers, but these behaviours are also harming journalists, politicians, public health communicators, and many others more fully in the public eye than researchers. Some recommendations here may help to address this wider problem.

Key words: research policy, knowledge mobilization, intimidation, expert advice, safety

Key terms

Academic MD:	university faculty conducting research in medicine who are also qualified physicians
Disinformation:	faulty information that is distributed to deceive or manipulate
Doxxing:	public sharing of private information, especially contact and location details
Knowledge mobilization:	sharing academic research to academic and especially non-academic audiences
Knowledge transfer:	roughly synonymous with knowledge mobilization, but more focused on the use of academic research by practitioners and (or) private organizations
Misinformation:	faulty information that is shared without an apparent intent to deceive or manipulate
Open access:	research publications that are available freely online (as distinct from print material in libraries or digital material behind paywalls)

OPEN ACCESS

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Peer review:	the practice of sending research articles to multiple expert readers for independent assessment to ensure that published research meets high standards of accuracy, analysis, and evidence
Social media:	online platforms, including Facebook, Twitter, Instagram, YouTube, TikTok, Pinterest, and SnapChat, where content can be freely shared as well as “liked” or re-shared to other followers or members of a networked group

Executive summary

COVID-19 has highlighted the extent to which researchers who publicly share their expertise and research results face harassment and personal threats. The intimidation of experts has recently garnered significant media attention, but it is a problem that has affected the safety, well-being, and work of those who produce knowledge for some time. There is significant risk not only to researchers, but also to the public if the threat of intimidation prevents researchers from sharing knowledge and expertise. Our central concern in this policy briefing is to assess the context and develop recommendations that will help ensure that researchers and the public can more safely and effectively engage with each other.

Transparency, accountability, open communication, and debate are essential to democracy. Orchestrated attacks on researchers that seek to silence or discredit them threaten not only individual scholars but also public trust in evidence-based scholarship. These attacks may also damage public dialogue, undermine the quality of policy-related discussion, and compromise public action if the environment becomes so hostile that experts can no longer publicly or openly share the results of their research.

Why do researchers not just stay away from the public domain, publishing their work only in academic books and journals? In varying degrees, the answer is this: engaging with the public is a key part of the work academics do and an important contribution to a vibrant and open society. Universities have long recognized work outside of the institution that serves the public interest, including academics’ participation in government committees, consulting, policy development, partnerships with industry, and so on. In recent years, the scope of scholarly public engagement has broadened, primarily through online technologies that facilitate wider and faster communications of research in cost-effective ways. Research councils, publishers, and postsecondary institutions actively endorse this broader distribution of scholarly evidence and advice as a benefit to Canadians, to democracy, and to robust public debate.

At the same time, the institutional and public benefits of recognizing and resourcing these activities take place in the context of an increasing and uneven level of risk to individual researchers, particularly for women and BIPOC scholars (Black, Indigenous, and People of Colour). Scholars from these groups are more severely targeted, and scholarship on pressing or highly debated issues is often the most likely to draw attacks, including, for instance, research on racism, gender, climate change, and vaccines—and just about anything to do with COVID-19. While many of these issues may not be as polarizing in Canada as in the United States, Canada-based scholars are nevertheless being attacked for providing evidence that is inconsistent with certain political positions or beliefs, and not just by Canada-based individuals. This is correlated with larger cultural shifts—including the increasing importance of online interactions, growing mistrust of public institutions, more inflammatory rhetoric in various parts of the public sphere—that are addressed in a growing body of scholarship that informs this briefing, but are not its focus.

After reviewing some of the context and scholarship on harassment and threats against researchers, this policy briefing turns to policies and actions that can be implemented in the near term: to gather information on the problem (**recommendations 2 and 3**); to better frame public research communications (**recommendations 1, 4, 5, and 6**); and to ensure that mechanisms are readily available to support researchers who are threatened (**recommendation 7**). The drivers of the harassment and intimidation of researchers are complex, widespread, and global in their reach. Nonetheless, we can do more to ensure that Canadians fully benefit from the work of Canada's researchers while also preserving the security and safety of those researchers. Given the federal government's key role in funding research, and the diversity of research and postsecondary environments among the provinces, our focus is on federal and institutional capacity to address these problems. However, provinces, media, social media companies, and other research-related groups also need to consider the dangers as well as the benefits of the present environment and should have a role in making it better.

Our mandate focusses on researchers, but we are well aware that these types of behaviour are also harming journalists, politicians, public health communicators, and many others more fully in the public eye than researchers. **Recommendation 3** in particular may help to address this wider problem, and it is our hope that the other recommendations will also support better policies in other sectors.

Introduction

COVID-19 has highlighted the extent to which researchers who publicly share their expertise and research results face harassment and personal threats. The intimidation of experts has recently garnered significant media attention, but it is a problem that has affected the safety, well-being, and work of those who produce knowledge for some time. There is significant risk not only to researchers, but also to the public if the threat of intimidation prevents researchers from sharing knowledge and expertise. Our central concern in this policy briefing is to develop recommendations that will help ensure that researchers and the public can more safely and effectively engage with each other.

Transparency, accountability, open communication, and debate are essential to democracy. Orchestrated attacks on researchers that seek to silence or discredit them threaten not only individual scholars but also public trust in evidence-based scholarship. It may also damage public debate, undermine the quality of policy-related discussion, and compromise public action if the environment becomes so hostile that experts can no longer publicly or openly share the results of their research.

The RSC policy briefing, *Let's Do Better: Public Representations of COVID-19 Science* (Bubela et al. 2020), outlined a number of paths towards better scientific information that we can group together under a few broad headings: robust peer review is an essential means of ensuring high-quality information in academic publications; public communications of research results, whether by researchers, journalists, or others, should be carefully contextualized to indicate whether it has been peer reviewed and to outline any limits on the study, such as small sample size or elements that could not be assessed; and researchers should monitor media take-up and speak out if their work is inaccurately represented.

Our policy briefing builds on this work, but considers both a broader array of disciplines and a more narrow focus on the position of scholars, particularly in relation to their working environment and the public arena. As the RSC policy briefing on Higher Education has already noted, "Academic freedom is crucial to the full exercise of every scholar's capacity to inquire, explore, and assess, including in contributions to peer review and oversight of academic activities, from scholarly societies to post-secondary institutions to governments. It is coupled with a responsibility to be rigorous and

participate in collegial debate. Vigorous debate is as vital to higher education and research as it is to democratic institutions” (Brennan et al. 2021, p. 7). Moreover, “Academic freedom is . . . also, in extreme cases, what in other contexts is called whistle-blower protection, vital to public confidence in public institutions” (Brennan et al. 2021, p. 35). Academic freedom is thus critical in part because it supports open debate and oversight, necessarily intersecting with forums that will be public to varying degrees, whether a meeting of a university senate or a debate between experts in a webinar or over social media.

Engaging with the public is also a key part of the work academics do and is an important contribution to a vibrant and open society. Universities have long recognized work outside of the institution that serves the public interest, including participation in government committees, consulting, policy development, partnerships with industry, and so on. In recent years, the scope of scholarly public engagement has broadened, primarily through online technologies that facilitate wider communications of research in cost-effective ways. This broader distribution of research is actively encouraged by research councils, publishers, and postsecondary institutions.

The institutional and public benefits of recognizing and resourcing these activities, however, take place against an increasing and uneven level of risk to the individual researchers. Women and BIPOC scholars can be more heavily targeted and in terms of the language of hate, while scholarship on pressing or highly debated issues is often the most likely to draw attacks, including, for instance research on racism, gender, climate change, and vaccines—and just about anything to do with COVID-19.

The intimidation of scholars is, of course, is correlated with larger cultural shifts that are being widely studied by scholars around the world as well as debated in public forums, including, but not limited to, the increasing importance of online interactions, growing mistrust of public institutions, more inflammatory rhetoric in various parts of the public sphere, significant changes to news media (from the 24-h news cycle to digital formats, including streaming and written articles with open comment forums), and the impact of social media on socialization, politics, and identity. These intersect with a wide range of discriminatory discourses, against various sexualities and gender identities as well as body types (from ableism to anti-fatness), skin tones, ethnicities, faiths, and nationalities, and particular political flashpoints, from ongoing conflicts around the world to climate change to elections to what and how children are taught in schools. Many of these flashpoints endure while others quickly emerge and fade. Our focus here, however, is specifically on practical measures to assess and address the intimidation of Canada-based academics.

These attacks remind us that scholars are not just vehicles for conducting research and framing it for public consumption. They can also be the public face of that research in a complicated realm where evidence-based debate on some issues can quickly become a magnet for *ad hominem* attacks that focus on a researcher’s identity, status, and relationships, including both real and imagined ties to a corporation, government, or political party. Such attacks are fundamentally efforts to discredit scholarship by representing a researcher not as an expert who aims to be comprehensive and objective but as someone who is biased because they are defined by their allegiance to a group. These tactics move the debate from the message to the messenger, and seek not only to discredit individual researchers but also to deflect and distract—it is noise that drowns out the sound of evidence and meaningful debate.

In this policy briefing, our focus is on ways of supporting researchers when they engage in public discussions across the various media platforms now available to us, from open-access publications, to op-eds, to social media, to news media and their comment forums, and to podcasts, as well as public roles, such as on committees or expert panels. By using the term “researchers”, we include not only

full-time faculty (“professors”) but also part-time faculty, postdoctoral fellows, graduate students, and other researchers who, by virtue of their roles in public institutions, work in environments where contributing to public information and debate is highly valued. Communications staff in higher-education institutions often have key roles to play in sharing knowledge, but they are also responsible for promoting a particular institution—its researchers, its academic programs, its funding achievements. To support credible, high-quality research communications, this work needs to be done under the direction of researchers whose academic obligations center accuracy, transparency, and completeness.

Defining the problem: abuse of facts, abuse of faculty

There are numerous studies of online violence and its real-world consequences. [Gelms \(2021\)](#) provided a useful overview of “online harassment research” and, like [Ferber \(2018\)](#), also detailed her own experience as well as that of others. [Grimes et al. \(2020\)](#) attempted a taxonomy to try to sort through the various kinds of attack that raise concern. These include malicious complaints, intimidation, threats of physical violence, and death threats that can extend to family members as well ([Ferber 2018](#), p. 309).

Concerns about harassment and safety among researchers have increased during the COVID-19 pandemic, especially with the “shift to online learning” ([Hango 2021](#), pp. 2–3). BIPOC and women leaders have faced increased racism, sexism, and other forms of harassment ([Calasanti and Gerrits 2021](#)). “Technology-facilitated violence and abuse” has increased in part because of efforts to silence “antiracist protest” that has effectively mobilized online ([Bailey et al. 2021](#)). We should be mindful of the degree to which COVID-19-related intimidation and disinformation invokes well-established discourses of hate and inequality (see, e.g., [Gelms 2021](#), p. 3 for a survey of some of the scholarship on this point). The problem of large-scale intimidation tied to expertise on equity issues pre-dates the pandemic and reaches at least as far back as “Gamergate” (2014), in which women online gamers, game developers, media critics and researchers were targeted in what can be understood as “the mainstreaming of the ideology and tactics of the ‘alt-right’ ” ([Massanari 2018](#), p. 2).

Canadians’ desire to understand the pandemic and its consequences is an opportunity to advance wider knowledge on a range of matters of urgent public interest, but it is challenging for anyone to navigate the massive and multimedia flows of content—from in-person conversation to social media, from blogs to traditional news media, from press releases on peer-reviewed studies to carefully designed pitches for quack medicines. This environment also means that, however careful researchers are, the use and selective sharing of information is difficult to control, especially when the topic intersects with disinformation campaigns where abusing information is grounded in practices of verbal abuse and threats against individual researchers, experts, or other perceived authorities as well as efforts to discredit them.

On social media especially, those attempting to discredit researchers may claim that researchers are not neutral but biased or mouthpieces for larger industry or political agendas—a tactic that has historically been employed in misinformation campaigns ([Ceccarelli 2011](#); [Nazar and Pieters 2021](#)). As a tactic, it can operate without proportion as well as without fact. Academic MDs, for example, have been accused of being “in the pocket of Big Pharma” just for supporting vaccination. Endorsing a widely accepted public health measure is substantively different from conducting and publishing research that is supportive of a biopharmaceutical intervention’s safety and (or) effectiveness. Financial (as opposed to intellectual) conflicts of interest have been consistently shown to influence biomedical research in significant ways ([Bekelman and Gross 2003](#); [Bero and Grundy 2016](#)). But not all biopharmaceutical research is pharma funded and, even when it is, disclosure of the funding source—in combination with the underlying research data—can prompt an interrogation of whether

the funding source actually compromised the research design or how the researchers may have adopted other measures to preserve the integrity of their findings (Bero 2017; McCoy and Emanuel 2017). The slur “in the pocket of Big Pharma” cannot simply be set aside, because there are real issues in medical research that need to be addressed to ensure the independence and quality of research. This is also true of other fields: for instance, Engineering and Business can intersect with “Big Oil”. But when the charge is detached from the specifics of funded research and applied only because the researcher works in a related field, it is at best a distraction from the real issues.

In addition to attacks that focus on the integrity of individual researchers, disinformation campaigns also undermine public knowledge and debate. Specifically, disinformation campaigns can inhibit deeper discussion about the strengths and weaknesses of research, and wrongly equate information that is fully consistent with academic consensus with falsified or otherwise faulty scholarship. Readers can, with the best of intentions, amplify faulty information simply by resharing, and be unaware of the background algorithms that push faulty information into their social media feeds or the ways that online business models amplify extremist discourses and disinformation (Bartow 2009; Ryan et al. 2020). Research can also be attacked via fabricated academic conflicts: global climate change researchers, for example, have been regularly attacked using manipulative filtering of evidence or by researchers whose expertise lies far outside the field. It is a common bait-and-switch rhetorical strategy: muddle together well-established views with fringe views as if they are all equally well-supported, and then use that muddling to elevate the fringe view or slur the well-established view or both. Simply put: whether stated or implied, the goal of these kinds of efforts is not to advance transparency and accountability in research but to disrupt meaningful, evidence-based public discussion.

These disruptions can also extend to the direct intimidation of researchers. Here, we use the term “intimidation” to refer to activity that can reasonably be viewed as an effort to silence, discredit, or harm. The term is used here to capture a range of such behaviour that has been directed at experts, from persistent verbal abuse to unfounded charges of impropriety (such as conflict of interest or bias), pressuring an employer to take action against a researcher, SLAPP lawsuits (Strategic Lawsuits Against Public Participation), doxxing (the sharing of private details, such as e-mail or home addresses), and threats of violence or other harms.

Researchers and the larger context

Online harassment and threats are all too common. The European Union, for example, has noted “the emergence of cyber violence against women and girls (VAWG) as a growing global problem with potentially significant economic and societal consequences” (EIGE 2017; see also, e.g., Sobieraj 2020; Gelms 2021), and Canada is part of these wider trends (Burlock and Hudon 2018). During the COVID-19 pandemic, right-wing extremist online activity has increased in Canada and pandemic disinformation comprises a significant part of that activity (Owen 2020; Hart et al. 2021). A new international statement, signed by Canada, recognizes the ties between hate and disinformation during the pandemic (“Cross-Regional Statement”; see also United Nations 2021). This so-called “infodemic” has included widespread attacks against physicians (Basky 2021; CMA 2021), public-health officials (O’Dette 2021), and journalists (Canadian Assoc. of Journalists 2020; Canadaland 2021), as well as health researchers and related scholars (Bernstein 2021; Makri 2021; Petterson and Beaumont 2021). This is a global problem to which Canada is not immune (Nogrady 2021), and the situation has become dire enough that new federal legislation, Bill C-3, has been crafted to criminalize the intimidation of health care workers.

White supremacy, misogyny, misinformation and disinformation campaigns, political polarization, and organized harassment all contribute to an online culture of hate and violence that has significant impacts on people’s lives and employment, as scholars were noting even before COVID-19

(see, e.g., [AAUP 2017](#); [Massanari 2018](#); [Ferber 2018](#)). More traditional forms of intimidation are also still in play. In Canada, this has included attacks on the credibility of experts by governments and the media (see, e.g., [Jeffrey and Yousif 2019](#); [National Post 2021](#); [Franklin 2021](#)).

What distinguishes researchers, for our purposes here, is the effect of such harassment on Canada's capacity for robust, evidence-based public discussion. Evidence suggests that academics use the same tactics as other Canadians to protect themselves from intimidation, including "Increased security settings, avoiding certain social media platforms, outsourcing readings of comments to others, self-censorship" ([Veletsianos et al. 2018](#), p. 4698; see [AngusReid 2016](#)), all of which have the effect of limiting scholars' public engagement. We aim to zero in on such intimidation not simply because it is undermining the quality of public discussion, but also because there is growing evidence that it is affecting the safety, well-being, and work of those who are producing knowledge, sharing their expertise, and supporting public debate.

One recent study of harassment of scholars noted that the two most likely "triggers contributing to online harassment" were "teaching activities" and a social media post ([Gosse et al. 2021](#), p. 271). In 2015, public posts threatened women faculty and students in sociology and women's studies at one Canadian university with gun violence and even included instructions on getting firearms ([Cornwell 2015](#); [Daro 2015](#); [National Post 2015](#)). The posts closely echoed the 1989 murders of 14 women at the École Polytechnique. Ultimately, the police concluded there was "no credible threat", in the sense of no plan to carry out these threats ([Chiose 2015](#)). But such threats still cause harm—classes were cancelled, lives disrupted, university administration and police time consumed, and rifts caused within the community over how to evaluate and react to these threats. Individuals feared for their personal safety, and the message of hate was heard loud and clear. It was also not an isolated incident but emerged within a large framework of anti-women social values and changes, anti-intellectualism, cultural discourses, and the practices of extremism.

In the sections that follow, we explore the central issues involved with the intimidation of researchers who share their expertise. In the first two sections, we underscore the value of their public engagement, describe the types of activities that comprise this engagement, and explain how the characteristics of digital-era communications render such engagement potentially more risky for scholars. In the third section, we make recommendations to the three main groups responsible for, and with an interest in, protecting public advice and the researchers who contribute it: the Tri-Agency, the federal government, and the postsecondary sector. In addition to considering ways of better supporting researchers who do public-facing work so that they can do so more safely and effectively, we also suggest remedies for extreme cases in which scholars have been intimidated for their work in the public domain.

1. Public engagement in a digital context: promise and pitfalls

The ecology scientist ... was slammed with more than 1,300 tweets. Critics called him anti-Canadian, foreign funded, and an Arab with obvious Middle Eastern oil connections. Some told him to "get out of my country" and "fall down a set of stairs." ([M. Prystupa, National Observer, 2015](#))

1.1. What is public engagement and what is its value?

Scholars' public engagement has historically taken several forms, distinguishable by the intended audience. At one end of the spectrum are public advisory activities that are tailored to more exclusive, often elite groups of professionals or subject-area experts and to support evidence-based policy and

governance. Here we group activities such as scholars' participation in government advisory boards, task forces, or review committees; academics' testimonies in parliamentary hearings, provision of government-commissioned studies, and reports; and academics' contributions to government consultations, ministerial roundtables, Royal Commissions, and policy initiatives. At the other end of the spectrum are research-informed activities that target the public writ large and that are in turn conducted in open forums and through more accessible communication channels, such as the comments section on a news article, for instance, or replies to a twitter thread. In this category we include such work as op-eds, media interviews, participation in public awareness campaigns, contributions to community forums and education sessions, and public policy advocacy campaigns. Contributions can fall along multiple points along this spectrum: a task force that produces a report for government but then talks to news media about the report is providing multiple points of access to at least some of the information, for instance.

By engaging in these activities, researchers can generate many valuable public benefits. Scholars' engagement with the public can enrich public dialogue and counter misinformation. It can also highlight the perspectives of under-represented populations and provide context on issues that may not be widely visible. On a very practical level, researchers sharing their expertise with society can help equip individuals with the information they need to make wise decisions and can provide a richer evidence base to guide the work of a range of decision-makers, from private organizations to governments. Public policy makers in particular benefit from academics' advice, given waves of public sector cutbacks and managerial reforms that have in many cases significantly gutted policy expertise and capacity in the public sector (Bakvis 2000; Savoie 2013). Academics also offer expertise that is, through various mechanisms, held to high standards of objectivity and rigor. Academic freedom and the broad goal of advancing knowledge also mean that scholars can engage issues that might be beyond the explicit mandates of civil servants or politicians.

In Canada, public funding supports postsecondary institutions with government grants that, along with increasingly significant tuition revenues, give academic researchers the time and resources necessary to conduct their research in the first place; this public funding is especially crucial here because Canada is unusually reliant on postsecondary research and development (Brennan et al. 2021, p. 23). Even academic researchers who draw upon other sources of funding depend on university equipment and other infrastructure that is typically supported by these sources, though declines in public funding have put increasing pressure on scholars to find private funding. To promote the public benefits of research work, and in some measure defend against further cuts to public funding, researchers are increasingly expected to engage with the public in general (Grimes et al. 2020, p. 1; Gosse et al. 2021, p. 265) outside of classrooms and direct users of research. But even were it not the case that public funds help pay for academics' research, there remain pressing ethical and practical grounds to justify academics' participation in public debates.

Increasingly research agencies and institutions have been calling for research-based expertise to be shared more widely, whether through open-access publications, knowledge mobilization, and knowledge transfer or by advertising accomplishments on social media. Researchers may reasonably consider public outreach a requirement of their employment and career progress. Physicians have other obligations. For instance, under the Canadian Medical Association Code, there is a "Commitment to Justice" that stipulates physicians "Promote the well-being of communities and populations by striving to improve health outcomes and access to care, reduce health inequities and disparities in care, and promote social accountability" (CMA 2018). Academic MDs and other health care researchers may thus have overlapping obligations to speak under a code of conduct as well as ethical commitments to the "precautionary principle." Under that principle, "action to reduce risk ... need not await scientific certainty" (SARS Commission 2006, p. 10). Action rooted in the

precautionary principle can reasonably extend beyond medical concerns to include such pressing topics as national security, inequality as a driver of poor health outcomes and social division, and environmental risks.

Policy challenges can be complex, fast-moving, and high-stakes, as the ongoing COVID-19 pandemic and the longer-standing climate crisis both illustrate. Where academics possess expertise that might help society better address the threats it faces, or where this expertise may generate public value, conventional scholarly venues can prove too slow and inaccessible for policy makers, stakeholders, and communities in immediate need of quality evidence. The ethical imperative of public engagement is at the heart of action research, community-engaged research, the public dissemination-oriented strand of the open science movement, as well as citizen science initiatives, and the co-production/co-creation tradition. But the push for wider dissemination of information has not been balanced by the supports and protocols that researchers and other professionals need to be able to mobilize knowledge safely as well as effectively.

1.2. The challenges of public engagement in a digital context

Today, scholars' public communications occur in part or in whole online, from blogs to social media posts to video-sharing sites, and through the online channels of traditional media outlets and scholarly publishers. These avenues widely increase access to material at a quick pace. Through open repositories of peer-reviewed published and unpublished early research, members of the general public and policy makers can read articles directly, rather than rely on summaries in news reports, editorials, or testimonies. Researchers also can post brief summaries of their results, policy recommendations or opinions online (via a Twitter thread, for example, or a blog), that others—including people outside their research community—can reply, cite, and forward. This quick release, especially with potential for user-amplification through re-sharing, helps research reach communities in real-time, ensuring that data and contributions do not get stale in the publishing pipeline, and that researchers receive earlier feedback that can improve their work as it develops. Online research dissemination has the potential to vastly increase the influence of research, since a social media post or news item can go “viral” and thus reach a broad, global audience quickly. But the benefits of broader public engagement also come with considerable risks.

First, the faster real-time tempo—in particular that of social media responses to research—means that communication is less finite, deliberate, slow and controlled, than, for example, writing an op-ed or providing testimony in a hearing. The circulation of nonpeer-reviewed preprint scholarship in particular has been a problem during the pandemic as nonacademics have not necessarily understood clearly the tentativeness of such work (Bubela et al. 2020; for a recent example, see Miller 2021). While open access has been growing as a key principle, the Tri-Agency policy on open access clearly specifies “final, peer-reviewed manuscript” (Tri-Agency 2016). The online sharing of papers before they have been validated by peer review can lead to ideas being adopted as correct and shared widely before they have been fully tested and thought through.

Second, the rapid, broad, and often piecemeal circulation, combined with massive storage capabilities that allow content to be discoverable for years or decades, also mean that public research activities, although ephemeral and invisible in some senses, are also more permanent and visible in others. A social media post can come and go amidst the thousands published every second, but online public records and public statements are easily retrievable and can be interpreted out of context. The digital extension of scholarly communication can potentially keep content circulating beyond its academic shelf-life. Tweets can be deleted, but they can also resurface via screenshots and in Twitter archives. It is not always possible to durably link and widely disseminate a refutation or retraction to a post that has gone viral on Facebook.

Third, a researcher's academic work, from conference paper titles to participation in advisory boards, is more discoverable than in the days of print. This has clear benefits in terms of accountability and accessibility, but it also makes researchers' professional and in some cases personal activities and interests more identifiable than before, with contact information easily found online.

Last, the sheer flood of information and the constant movement of information between various social media sites fosters soundbite culture and makes it more difficult to discern important, credible information from irrelevant, dubious, or overly vague information. This significantly complicates our ability to trace the development of our understanding of new problems (such as COVID-19) or what has been validated by subsequent studies versus what has been questioned by further research. The clickbait advertising structure that shapes social media and online news media only muddies the waters further by putting more emphasis on sensational headlines and content, especially in a context where profit is directly dependent on growing a website's audience and capturing that audience's attention for longer periods of time. In this context, questionable or outright discredited research that might have justifiably fallen into oblivion in the pre-digital age can now reach large populations and shape public outcomes. For example, a fabricated and subsequently retracted 1998 study of 12 children vaccinated against measles, mumps, and rubella is still influencing behaviour and contributing to mistrust in the context of the current pandemic (Motta and Stecula 2021).

2. What conditions are needed to support robust and safe scholarly public engagement?

[He] needs a bullet travelling really fast. (Twitter post referring to a Canadian academic MD, 23 July 2021)

As the previous section outlined, the current media ecosystem poses unique challenges to and opportunities for researchers engaging with the public. The digital environment enables more open, fast-paced, personal, and unforeseen interactions. At the same time, that same ecosystem also generates information overload, clickbait, weaponized disinformation, and orchestrated attacks to silence or intimidate researchers. These attacks, which may target social media posts that follow guidelines for knowledge mobilization (Gosse et al. 2021, p. 270), can cross the boundary between public and private, with threats made to researchers' and their families' safety (AAUP 2017; Ferber 2018). These orchestrated attacks tend to target researchers because of their field of study—such as vaccinations or global climate change or social inequality—or who they are (gender, race, sexuality), and often seek to undermine their credibility as well, for instance through allegations of conflict of interest that are not founded or more deeply interrogated through proper investigations.

In the first instance, robust and safe scholarly public engagement requires a critical, engaged, and civil public. Helping members of the public to understand the necessity and fertility of scientific debate is crucial to countering misinformation that cherry-picks scientific evidence or makes any disagreement appear like the grounds for discreditation. Yet, building trust across a diversity of publics may require different strategies and carry trade-offs insofar as gaining the trust of one public in an increasingly polarized society may come at the expense of the trust of another. It is crucial to acknowledge that the forces driving incivility, mistrust (especially of elites—including researchers) and divisive political movements are complex. Addressing these forces is a much larger challenge demanding systemic changes that are beyond the scope of this policy briefing's analysis and recommendations. Nonetheless, there are steps we can take to mitigate the impact of these larger forces and to ensure that Canadians can fully benefit from the work of Canada's researchers while also preserving the security and safety of those researchers.

More can be done, for instance, to invest in a national media space that supports training journalists to cover scientific research in a comprehensive manner. Such an investment could also support broader public education on scholarship and the culture of engaging in debate over research. The drive to gain attention in an increasingly saturated ecosystem has driven niche coverage and has meant that nuance and complexity are often stripped from reporting. Print news stories have shrunk over time and radio and television segments have become shorter, with content often being recycled instead of deepened over a demanding 24-h news cycle. Journalists themselves are more likely to be precariously employed on terms that operate as a disincentive for deep dives into questions that are important but not of wide interest. The quick production and turnaround of stories can favor skewed or exaggerated reporting of research, or the uncontextualized repetition of content from other contexts, as well as shape the selection processes for determining newsworthiness.

Social media and tech companies have a role to play as well. Social media platforms are incentivized to promote content that expands their user base and that keeps users on their sites for longer periods of time; the recent revelations of former Facebook employee Frances Haugen underscore that misinformation and polarizing content tend to best meet these profit-expanding objectives, ensuring that they are thus prioritized and amplified by algorithmic design. Here there may be growing calls for Canada to use the Digital Charter and continue to pursue legislation to regulate tech companies to ensure they play their role in supporting open and safe public debate. In addition, while most platform governance policy debates in Canada have focused on policing speech and content moderation, the post-Haugen policy conversation increasingly suggests that more direct regulation and policing of these firms' core business model is needed and could be achieved by legislation that requires firms to transparently disclose data on user behaviour and algorithmic design and effects.

But social media is not the only “wild west” of the digital era. Blogs, unregulated repositories (such as ResearchGate and Academia.edu), and so-called predatory journals (which are typically not properly peer reviewed) can all contribute to blurring the distinctions between credible scholarship and untested claims. In the early days of the internet, experts spoke about information quality in terms of the “signal-to-noise ratio”: the monetization of content, rather than information (see, e.g., Gallagher 2018, p. 177), is pushing that ratio closer and closer to zero. Efforts to resist that decline include promising interventions such as *The Conversation*, which aims to publish articles with “academic rigour, journalistic flair” and has clearly stated gate-keeping measures: “We only allow authors to write on a subject on which they have proven expertise, which they must disclose alongside their article. Authors' funding and potential conflicts of interest must be disclosed” (Conversation 2021). But whether such initiatives can counter-balance the growing amount of digital “noise” remains to be seen.

We also need to acknowledge that changes in federal and provincial funding over the last several decades have contributed to making postsecondary institutions, teaching hospitals, and other important public institutions that conduct research more dependent on donors, government goodwill, and commercialization activities to sustain themselves. This has raised concerns over academic freedom (especially to advance knowledge based on expertise rather than external influence), the integrity of the academic mission to teach and advance knowledge and, most pertinently here, conflicts of interest. These concerns are not esoteric but have also reached broad public audiences. For instance, CBC investigative reporting in 2015 exposed the role of a corporation at one Canadian institution and “sparked a national conversation about the appropriateness of corporate sponsorship”; the scandal raised broader concerns about “institutional corruption inside academia whereby normalized functions of an institution cause harm and break public trust” (McCartney and Gray 2018, pp. 300, 320).

This interference not only undermines the practices that support high-integrity scholarship (see, e.g., CBC 2021; Gessen 2021; McQuaig 2021) but also contributes to skepticism about the integrity

and quality of academic scholarship. Legitimate concerns about the independence of the postsecondary sector may also be fuelling or at least facilitating misinformation and disinformation that relies on unsubstantiated claims of financial conflicts of interest. In other words, concerns about incidents in the sector may be generalized in ways that contribute to suspicion of individuals connected to the sector.

Debate can also be muddled by a focus on the researcher rather than the research itself, which is typically subject to multiple layers of review. Centering commentary on the scholar rather than the scholarship, for instance, facilitates *ad hominem* arguments rather than evidence-based criticisms, as well as confusion about expertise. Institutions' communications offices can reinforce this confusion by centering an individual faculty member's profile and including personal details, rather than stressing expertise and addressing the collaborative dimensions of knowledge production and peer review. For instance, university "news" items that seek to convert the advancement of knowledge into an individual's story—common clichés include connecting research to a childhood experience or a hobby—may be good marketing but they also reinforce flawed generalizations about research, such as the myth of the solitary hero-scientist or the assumption that research is rooted in personal interest.

Researchers can be more mindful of these potential pitfalls too. They should also be aware of the importance of explaining not only the limits on their conclusions in a particular study (Bubela et al. 2020) but also the parameters of their expertise, including what is knowable within the terms of their discipline. Chemistry has no tools to explain the stock market, for instance.

Researchers also need to attend to the ways in which personal and scholarly boundaries can be blurred. If a scholar identifies as a researcher in their social media profile, then are they always speaking as a researcher with a responsibility to meet the highest academic standards, including staying within their field? But staying within a field is not always a simple proposition. Under collective agreements and other documents in the postsecondary sector, academic freedom typically includes the right to criticize institutional decisions. A professor does not need a PhD in Accounting to criticize university financial reporting as a basic fact of working conditions. There are also fields in which expertise is more widely applicable than a specialization might suggest. A scholar of 19th-century Canadian history may have relevant expertise on Reconciliation or racism in the 21st century because culture is transmitted over centuries and the tools for analyzing it remain fundamentally the same.

And, of course, the media, social, cultural, and political environments we currently inhabit are also themselves likely to change in the months and years ahead. The myriad ways that research can be read, understood, and redistributed in the complicated and fluid field of public discourse will require significant and ongoing investigation, consultation, and problem-solving. There are feasible steps that can be taken in the near-term to develop policies that will promote safer, effective, and responsible research dissemination. To this end, we focus our recommendations below on capacity to achieve change in the near-term in these three key areas: (a) Tri-Agency research policies and grant frameworks which shape scholarly activity, (b) federal resources to address threats and harassment, and (c) researcher and institutional measures to protect scholarship and improve lines of communication.

3. Policy proposals

3.1. Funding agencies

Jessica said that “compared to some of the other people who got harassed, mine was relatively minor,” although she received death threats and was doxed. (Veletsianos et al. 2018, p. 4701).

As [Veletsianos et al. \(2018\)](#) noted, there is a tendency for academics to view harassment and intimidation as “the price to pay if you want a voice in things, and you’re going to have to learn to get over it” (p. 4700). Wanting a voice does not just happen in a vacuum. Traditional avenues for public-facing work continue to be recognized in researchers’ annual reports and can be baked into expectations for faculty in many fields, affecting everything from competitions for jobs to career progress to recognition by professional and academic bodies. Moreover, under federal research grant requirements in many programs, scholars in Canada also perceive it as the price of being competitive in a funding application necessary to support their research. This relatively new aspect of Canada’s research ecosystem would benefit from a more nuanced approach, building on what we have learned over the last decade.

The Tri-Agency consists of the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council of Canada (SSHRC). While there are a number of other provincial and federal granting agencies and programs, the Tri-Agency is the cornerstone of federal support for research in Canada. CIHR defines “knowledge translation” as “A dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system” ([CIHR 2020](#)), but SSHRC’s current “Guidelines for Effective Knowledge Mobilization” do not stress improvement. They begin, “These guidelines are intended to help applicants and grant holders incorporate knowledge mobilization activities . . . into their SSHRC-funded research, to maximize the impact of social sciences and humanities research” ([SSHRC 2019](#)). It encourages the collection of metrics: “At the outset of their project, applicants should develop indicators to gauge the success of their knowledge mobilization plan. Examples include: citation indicators, the number of newsletter/blog subscribers, and the number of recommendations to policy-makers that have been adopted” ([SSHRC 2019](#)). The “Guidelines” do not address safety or scholarly responsibility, the central concerns here. If “Impacts are long-term outcomes or effects that take the form of changed thinking or behaviours,” then there is no clear distinction between, for instance, promoting vaccine hesitancy and reducing vaccine hesitancy: impact is a measure of influence, not benefit. Metrics such as “number of newsletter/blog subscribers” can create perverse incentives for sensational claims or Google bombing (manipulating online content so that it appears higher in a Google search).

About the same time that knowledge mobilization took off the Tri-Agency instituted more rigorous requirements for policies at Canadian institutions on “Misconduct in Research”. The goal was to reinforce “the highest standards of integrity in research and scholarship” ([Tri-Agency 2012](#)), a timely move in light of recent events: in early 2010, a significant scandal involving academic misconduct came to a head in the United Kingdom with the full retraction of a 1998 article that incorrectly linked one type of vaccine to autism but not before the misinformation was widely distributed and influential ([Dobson 2003](#); [Motta and Stecula 2021](#)). The research community has not reflected fully enough on the possible unintended consequences of linking grant funding to the promotion of research findings via knowledge mobilization, including the risks attached to sharing information inappropriately or before full peer-review. Reflection is required and needs to include careful attention to the ways in which a general knowledge mobilization requirement can work against equity, diversity, and inclusion (EDI), accessibility, and decolonization initiatives in the research and postsecondary sectors because of the targeting of BIPOC and women scholars and of the research that seeks to understand and address such discrimination and hate.

At present, scholars perceive increasing pressures to develop ambitious public knowledge mobilization plans as part of highly competitive grant programs and in other cases to satisfy their institution’s prioritization of knowledge mobilization. While knowledge mobilization is essential at

supporting open science and informed publics, it is also important to continue to recognize that some kinds of research knowledge are not of much general interest and that other work may not be “suitable for unfettered online distribution” for safety or security reasons (Wright 2014). Funding agencies and institutions need to acknowledge that, in some cases, it is appropriate and beneficial for research to be shared only within a given academic discipline or specialists, through participation in scholarly conferences and workshops, and via the peer-reviewed publication process. In other cases, knowledge mobilization might be best conducted between a researcher and a group of particular stakeholders, such as specific policy makers or community groups, or via contributions to grey literature.

The definition of knowledge mobilization and translation adopted by Tri-Agency funding bodies continues to include these sorts of more traditional, less “open” activities. Yet, these activities are in some cases perceived as mundane or insufficiently ambitious given the digital media sphere and the space it provides for novel and broadly accessible forms of public engagement, perhaps partly because of a focus on metrics to understand achievement—number of visitors to a blog may look like a more definable success than behind-the-scenes progress on policy development. Instead of fixating solely on the opportunities for engagement that exist online or through news media, we instead advocate for the recognition of a more expansive, pluralistic, and traditional understanding of knowledge mobilization. This will help signal that not every scholar needs to feel compelled to wade into highly public, competitive, and often risky online fora to satisfy perceived knowledge mobilization requirements.

The Tri-Agency is in a position not only to refine its policies and requirements on knowledge mobilization but also to gather better information on the extent of intimidation. It already has a national system in place to regularly collect information from scholars, via the “end of grant” report that all recipients of Tri-Agency funding must complete. As part of that report, funding recipients are asked to describe their knowledge mobilization activities; recipients could also be asked to report on the engagement their work has received, both positive and negative. In amending that reporting researchers could note threats or harassment they encountered as a result of the knowledge mobilization activities they undertook within the scope of the grant. Such reporting will only capture the experiences of those who have received Tri-Agency funding, but nevertheless could be usefully collected and assessed to develop better advice for, and requirements of, grant-holders.

Encouraging a more nuanced approach to knowledge mobilization will rest in part on funding bodies instructing those reviewing grant applications to remain mindful that it is not always reasonable or even beneficial to expect a scholar to engage in online mobilization activities. These activities may be a poor fit for the research in question. The researcher may have good reasons to want to avoid the risks that such engagement invites (especially where the researcher has experienced online threats or harassment before or is likely to experience this given the subject they study and (or) their demographic profile). It is also important for researchers themselves to take stock of the demands they are placing on themselves and colleagues with respect to public engagement. At the end of the day, researchers adjudicate funding and other metrics in the system. Strong signaling from above is a key step but it will only be effective if those on the ground apply it.

We therefore recommend

1. that the Tri-Agency (encompassing CIHR, SSHRC, and NSERC) strike a multidisciplinary task force that represents the diversity of research in Canada as well as includes experts from directly relevant fields (such as social media, scientific communication, and ethics), to develop a more robust and nuanced framework for knowledge mobilization. Safety must be considered not only as a general concern but also in relation to evidence that threats can be significantly shaped by misogyny, white supremacy, and other forms of targeted hate.

The task force's work, especially if it draws on "end of grant" accounts of knowledge mobilization activities and the responses, may also provide evidence and conceptual support for **recommendation 5**, below.

3.2. Federal interventions

One-in-four who have been harassed on social media say their experiences have had real-world consequences, and more than six-in-ten Canadians say they have self-censored online in hopes of avoiding such abuse. ([AngusReid 2016](#))

Experiences of threats and harassment often go unreported and undocumented or, when they are reported, they are not compiled with other reports. One way to stem the flow of abuse researchers face is to generate more precise information on the extent and characteristics of harassment, threats, and other risks that scholars face when they wade into public debates. With this information, researchers and academic institutions, not to mention the broader public, will be in a much better position to develop responses that tackle these barriers to scholarly public engagement.

To gain insight on the broader experiences of researchers it would be relatively straightforward and very useful to include questions on harassment and threats experienced in knowledge mobilization efforts to the Survey of Postsecondary Faculty and Researchers conducted by Statistics Canada and first launched in 2019 ([Statistics Canada 2021](#)). It has been collecting data on harassment within institutions but does not currently inquire about the kinds of public intimidation that we address here. If re-administered in future waves, the Survey is uniquely well-positioned to consider the problem in the context of EDI because it tracks differences across key demographics of race, gender, and sexual orientation. Research shows these are the same groups that experience increased harassment and more severe threats when engaging publics. Further data will also support ongoing research in various related fields (including digital ethnography, social cohesion, knowledge mobilization and research impact, and social media), with implications and potential benefits beyond the postsecondary sector.

We therefore recommend

2. that Statistics Canada implement follow-up waves and expand the Survey of Postsecondary Faculty and Researchers to collect data on harassment, intimidation, and other threats from outside of scholars' institutions.

But persistent harassment and disinformation campaigns do not stop at campus gates and can cut across sectors, involving government, public institutions, private organizations, and individuals in various professions and roles. Better policies and measures to assess threats and respond to security concerns require better information across all sectors, and could be collected through a tool like Canada's Spam Reporting Centre which already collects some related information.

We therefore recommend

3. that the federal government initiate, in collaboration with the Canada Research Coordinating Committee and other relevant agencies, discussions of a nationwide coordinated approach to gathering information about online threats and harassment across sectors.

Another challenge for research in Canada is the splintering of it by province and between institutions that are normally competitors for grant dollars, donors, and students. This not only makes it structurally difficult to move quickly to gather research advice, but also requires a level of on-the-fly innovation that may further inhibit public confidence, as well as lead to other problems. An expert

committee without experience in crisis communications can easily trip up, as we have seen during the pandemic (Kirkey 2021). The Royal Society of Canada's Task Force on COVID-19 and other organizations have been scrambling to fill this gap by connecting researchers to policy and related evidence needs during the pandemic, including public-facing work such as op-eds and webinars, highlighting the need for such a mechanism.

In recent years, other states have launched new government-led organizations to fill this gap in more durable ways than expert panels, special commissions, and other ad hoc committees. The European Union's Civil Protection Knowledge Network centers research collaborations and was launched in 2019; more recently, the EU has turned to the problem of "health security" and created the European Health Emergency Preparedness and Response Authority (HERA). The RSC policy briefing on Higher Education (Brennan et al. 2021) references SAGE in the UK as a possible model: it is transparent, publishing information about membership, meetings, sub-groups, and so on, as well as meeting minutes and advice; it is cross-sectoral as well as multidisciplinary; and it has a flexible structure that connects to sub-groups as required. A made-in-Canada solution could build on these and other initiatives to create a public conduit for research expertise that would facilitate responses to emerging questions rapidly and with more consistency across Canada. This system could allow scholars to share their research with policy makers in a more secure way through a public-facing institution, with relevant communications expertise as well as clear checks on the quality of the information, rather than personal social media profiles. While the introduction of the position of Chief Science Advisor has been important to the re-centering of science in the federal government, an independent emergency system for gathering expert advice, including in the complex and volatile context of emergency communications, would help to make visible the collaborative and process-driven aspects of developing, assessing, and testing knowledge across the Humanities, Social Sciences, and Sciences, as well as support the development of institutional capacity for effective communications at moments of national urgency.

We therefore recommend

4. that the federal government explore the possibility of creating a structure for regularizing quick access to research-based expertise to support government decision-making in rapidly evolving situations. Key elements should include multidisciplinary, transparency, accountability, peer review, and robust public communications, as well as stable funding that ensures independence.

3.3. The postsecondary sector

"Go into the nearest Sociology or Womens Studies classroom next week, and fire bullets into the Professor's head and spray bullets all over the room until all the feminists are dead." (online post, reproduced in Cornwell 2015)

In the face of this multi-layered cultural and social challenge, it is important to put into place policies and practices that can help to improve public trust in academic research. To this end, we argue for clarifying for the public the quality-control mechanisms that govern academics. Academic researchers should also be better supported in their outreach activities, including advice on helping them to define the scope of, and refrain from stepping beyond, their own expertise when speaking as experts. We can also do more to enable the public, journalists, policy makers, and others to more easily evaluate research and its importance.

While there are a growing number of efforts to empower the public to counter disinformation and misinformation, including the World Health Organization's "Mythbusters", the United Nations Verified site, and Canada's Digital Citizen Initiative, it will also help the public if institutions provided

more carefully situated content that stresses peer review, expertise, collaboration, and ethics rather than individual researchers. Postsecondary institutions and associated organizations can play an important role in offering straightforward guidance on how best to engage public audiences and media and how researchers can protect themselves when engaging in these activities as well as where to seek help when these activities put them at risk, as many scholars have already noted (e.g., [Veletsianos et al. 2018](#), pp. 4702–4703). Some institutions are already doing this work and there are many resources online that draw on the available evidence to offer practical steps for online safety (see, e.g., [Science Media Centre 2013](#); [American Historical Association 2019](#); [Gelms 2021](#), p. 6; [Dart Centre 2021](#); [Women’s Media Centre \(n.d.\)](#); [Informed Opinions 2021](#)) as well as workshops and courses, but these tend to be regionally, disciplinarily, or demographically specific: a more robust program would address the specific Canadian context (including applicable laws and funding agency requirements) and for all researchers, as well as adapt to new research on public engagement and safety.

This could be done through institutions’ communications and research services’ departments, and as part of the orientation new researchers receive when they join an institution but should also be available on an ongoing and regular basis, for instance, through half-day workshops twice-yearly as well as handbooks or websites. To develop the most robust training and avoid duplication of effort, institutions should benefit from a national effort to create and share materials and best practices between institutions as expertise is developed.

This kind of training should also include safe ways of supporting colleagues, for instance, by using social media reporting functions to identify abusive posts or reporting threats of violence to the appropriate authorities. These materials would need to be regularly updated to keep pace with technological, social, and other transformations, including shifts in the targeting of particular disciplines and fields of study.

We therefore recommend

5. that the Canada Research Coordinating Committee lead a collaboration that includes Universities Canada, Innovation, Science and Economic Development Canada, and the Chief Science Advisor, as well as communications experts, to develop media-training modules for research staff, research administrators, and researchers of all disciplines to support safety and effectiveness in knowledge mobilization activities. These modules should be freely available to all Canadian postsecondary institutions and there should be mechanisms in place to ensure that they are updated regularly.

Charges of conflict of interest are used to discredit public advice ([Grimes et al. 2020](#), p. 5), but in general there is little public knowledge of the various measures in place to protect the quality of research information. These range from the qualifications of those who conduct the research to the peer review of research results, always with the possibility of retraction or scholarly misconduct charges if problems come to light at a later date. Moreover, there are any number of practices within the sector that are not well-known even to alumni, including regular academic program reviews and accreditation processes ([Brennan et al. 2021](#), p. 10). These are not practices that are regularly reported in the news media, or of general public interest, so there is no particular reason for the public to be aware of these measures or their limits. Nevertheless, efforts to discredit researchers typically rely on that lack of awareness, which easily allows the misrepresentation of a published research article as just one person’s “opinion” rather than the product of a long collaborative process involving colleagues, peer reviewers, editors, and so on, with multiple checks and balances. Academic journals and other forums (such as *The Conversation*) that now clearly record information about funding sources, possible conflicts of interest, and so on point to the importance of being explicit about the steps taken to ensure the integrity of research.

We therefore recommend

6. that all postsecondary institutions have an easily accessible webpage for transparency and accountability to inform the public on standard quality-control mechanisms for academic research and education.

Information that would be available via this webpage could include:

- a. Information regarding the multiple mechanisms in academia to ensure research quality, from peer review to tenure and promotion criteria to conflict of interest policies, as well as mechanisms for addressing occasional violations, such as scholarly misconduct policies;
- b. Information on regular program reviews through senate and certifying professional bodies;
- c. Information on how to find an expert, not just who but also advice on salient issues to consider (e.g., fit of expertise, conflict of interest).

Such measures as media training and public webpages explaining quality control are proactive and should help to mitigate the problem (**recommendations 5 and 6**), but it is crucial to recognize that, especially with funded and state-sponsored disinformation campaigns, we are unlikely to eliminate the kinds of intimidation that are most pernicious and dangerous.

While threats of on-campus violence can quickly draw in campus security, police, and administrative decision-makers, other forms of intimidation are more intractable and less likely to be addressed in university policies and supports. As with physical environments like a lab, there is a range of risks attached to work in knowledge transfer and open science. Advisory documents have only started to appear in response to the challenge of supporting experts who, despite an informed and well-intentioned approach to public engagement, find themselves subject to such abuse and threats. The Science Media Centre, for example, has “Advice for Researchers Experiencing Harassment,” and usefully stresses that it is a noisy few who harass, and that many more are listening. This is good advice for “intimidation” on the level of “persistent negative comments on twitter” (Grimes et al. 2020, p. 3). But such advice is inadequate to the task of dealing with explicit threats or doxxing, that is, publishing private information, such as a home address. Similar types of documents are difficult to find or nonexistent among Canadian professional and academic associations, not to mention research institutions and universities.

Without clear policies, it can be unclear where reports of abuse should be directed (information technology (IT) offices or security? local or national police agencies?), and inconsistency of information within a single institution can inhibit the development of good practices as well as effective, prompt support. Consequently, when targeted experts ask their institutions for help they are too often met with nonresponse and inaction, a problem frequently noted in the scholarship. Relevant units, such as security or IT or research offices, can lack the personnel to handle significant incidents, or be ill-equipped to do so because of a lack of laws and policies suited to addressing forms of harassment that are not yet considered criminal.

The digital environment, including the global reach of communications and the role of bad state actors (Prior 2017; de Graffenreid 2018; OSCAR 2021), demands more effective and informed institutional processes. Ferber (2018, p. 311) has noted, “read and save every e-mail” is difficult when there is a “deluge” of “abusive e-mails” and other contacts. Asking those targeted to document their own abuse can be practically impossible as well as traumatizing given the scale of some coordinated attacks as well as the prevalence of gendered and racist threats. Other common suggestions are to shut down social media accounts, change e-mail addresses, and remove online content. This is silencing, and

limits public information as well as interferes with open, civil debate. It is often necessary for personal safety, but it defeats the public interest that lies behind the push for more public engagement.

Laws, policies, and collective agreements need to catch up. While our suggestions above aim to reduce the number of serious cases by improving advice and support to experts who do this kind of outreach, we can also develop more consistency for dealing with the serious cases that will continue to arise given coordinated online attacks and more traditional forms of intimidation. There are no simple solutions here because of the range of behaviour, and scales, involved.

While having institutions issue public statements of support is common advice, for instance, and has been done in Canada to defend academics even from government targeting (Jeffrey and Yousif 2019), Shaw (2020) usefully reminded us that this can also raise the profile of a threat. The Science Media Centre (2013) advises researchers to keep in mind that those who benefit from public scholarship vastly outnumber those who attack scholars, and we should also be mindful that the social media environment is such that much negative chatter dissipates or moves on very quickly. Scholars also have access to conventional social media tools, including blocking and reporting abusive posts; colleagues can help by reporting abusive posts as well, or posting supportive statements with positive hashtags that push back against disinformation. But what about targeted threats?

As Ketchum (2020) found, there is little online evidence of university policies or supports to assist researchers in Canada who are targeted in these ways. Drawing on a range of US documents (Shaw 2020; University of Illinois n.d.-a, n.d.-b; Pennsylvania State 2020; Marwick, Blackwell, and Lo 2016) as well as Ketchum (2020); however, there are a few key elements that emerge in discussions of supporting scholars who are subject to intimidation, harassment, or threats:

- i. Institutions should centre safety and well-being, on terms consistent with occupational health and safety obligations, by ensuring that there are policies and practices in place to ensure that any person being targeted has adequate access to the appropriate resources, such as security, IT support, legal advice, and counselling.
- ii. Institutions should ensure that the targeted expert has continuing, appropriate supports, including meaningful accommodations that recognize the impact of the intimidation in relation to career progress. For individuals in equity-deserving groups in particular, the office responsible for human rights and (or) diversity should also be involved.
- iii. Clear statements of support may be crucial. Statements should reference academic freedom and (or) professional codes of conduct, as appropriate. In many cases, statements can be sent directly to the person who is targeting the expert but, if there is a sustained social media campaign or news media attention, public statements should be considered in consultation with online communications experts and the targeted individual. Social media support from colleagues and the relevant department instead may be more effective in some cases.
- iv. All information on relevant policies and resources should be clearly posted, with notifications to experts as well as managers so that they can find the information and act quickly on the best available advice.

We therefore recommend

7. that all postsecondary institutions have a readily accessible policy and action plan in place to support scholars who are significantly harassed, threatened, or intimidated because of their research or public-facing work. The policy should apply to all faculty, postdoctoral fellows, graduate students, and other researchers.

This policy should include at least the following:

- i. expedited access to all necessary security, IT assistance, health, and legal supports, as well as ongoing support from the diversity office when relevant;
- ii. appropriate statements of support for the scholar that reiterates a strong institutional commitment to the principles of academic freedom and civil, evidence-based debate;
- iii. measures to ensure that such harassment is duly weighed as a factor in career progress, including in processes for appointment, tenure, promotion, and grant applications.

List of recommendations

Funding agencies

Recommendation 1: that the Tri-Agency (encompassing CIHR, SSHRC, and NSERC) strike a multidisciplinary task force that represents the diversity of research in Canada and includes experts from directly relevant fields (such as social media, scientific communication, and ethics) to develop a more robust, concrete, and nuanced framework for knowledge mobilization. Safety must be considered not only as a general concern, but also in relation to evidence that threats can be significantly shaped by misogyny, white supremacy, and other forms of targeted hate.

Federal government

Recommendation 2: that Statistics Canada implement follow-up waves and expand the Survey of Postsecondary Faculty and Researchers to collect data on harassment, intimidation, and other threats from outside of scholars' institutions.

Recommendation 3: that the federal government initiate, in collaboration with the Canada Research Coordinating Committee and other relevant agencies, discussions of a nationwide coordinated approach to gathering information about online threats and harassment across sectors.

Recommendation 4: that the federal government explore the possibility of creating a structure for regularizing quick access to research-based expertise to support government decision-making in rapidly evolving situations. Key elements should include multidisciplinary, transparency, accountability, peer review, and robust public communications, as well as stable funding that ensures independence.

The postsecondary sector

Recommendation 5: that the Canada Research Coordinating Committee lead a collaboration that includes Universities Canada, Innovation, Science and Economic Development Canada, and the Chief Science Advisor, as well as communications experts, to develop media-training modules for research staff, research administrators, and researchers of all disciplines to support safety and effectiveness in knowledge mobilization activities. These modules should be freely available to all Canadian postsecondary institutions and there should be mechanisms in place to ensure that they are updated regularly.

Recommendation 6: that all postsecondary institutions have an easily accessible webpage for transparency and accountability to inform the public on standard quality-control mechanisms for academic research and education.

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Author contributions

JMW, WHKC, AC, MH, and HR conceived and designed the study. JMW, WHKC, AC, MH, and HR performed the experiments/collected the data. JMW, WHKC, AC, MH, and HR analyzed and interpreted the data. JMW, WHKC, AC, MH, and HR contributed resources. JMW, WHKC, AC, MH, and HR drafted or revised the manuscript.

Competing interests

The authors have declared that no competing interests exist.

Data availability statement

All relevant data are within the paper.

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