

Courts of Justice Act

**ONTARIO
SUPERIOR COURT OF JUSTICE**

BETWEEN:

RANDY HILLIER

Applicant

-and-

**HER MAJESTY THE QUEEN IN RIGHT
OF THE PROVINCE OF ONTARIO**

Respondent

**AFFIDAVIT OF DR. KEVIN BARDOSH SWORN THE
14th DAY OF SEPTEMBER, 2022**

I, Dr. Kevin Bardosh, of the [REDACTED]

[REDACTED] MAKE OATH AND SAY AS FOLLOWS:

1. I have personal knowledge of the facts and matters hereinafter deposed to by me, except where same are stated to be based upon information and belief, and those I do verily believe to be true.
2. I am a medical anthropologist and implementation scientist with expertise in infectious disease, public health, agricultural systems and global development. Medical anthropology is the study of social, cultural, economic and political factors that affect health and medicine.
3. My publications have focused on how individuals and communities respond to public health programs, including risk perceptions, human behavior, community participation and the evaluation of real-world outcomes. This has also included a focus on public health policy, program design and implementation and how experts

and professionals implement policy and interact with the public. In general, my publications have shown that when policy is implemented with diverse community input and accountability, this improves population health and trust in medicine.

4. I am currently an Affiliate Assistance Professor in the School of Public Health, University of Washington, USA; an Honorary Lecturer at the Edinburgh Medical School, University of Edinburgh, UK; an Honorary Associate at the Royal Melbourne Institute of Technology, Australia; and a consultant to the Hispaniola Special Health Program, The Carter Center, USA.
5. Previously, from 2016-2018, I was a Research Assistant Professor at the University of Florida in the department of Anthropology and the department of Environmental & Global Health.
6. I have worked in more than 20 countries, including Canada, on health and development research programs.
7. I have (co) authored 45 peer-reviewed publications. This includes a peer-reviewed publication in *BMJ Global Health* titled “The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good.”
8. I am the editor of two books: (2019) *Locating Zika: Social Change and Governance in an Age of Mosquito Pandemics*. Routledge, Health and Anthropology series and (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge: London. Pp. 239. As well I have contributed to 13 book chapters.
9. I have received numerous research grants including a Wellcome Trust Fellowship

and Gates Foundation Grand Challenge grant.

10. I am a reviewer for numerous academic journals including: Social Science & Medicine, PLoS Neglected Tropical Diseases, BMJ Global Health. I have also been a grant reviewer for: the Canadian Institutes of Health Research, Wellcome Trust and Department of Health and Social Care, United Kingdom.
11. I have been an invited guest speaker at numerous International Conferences including conferences on Covid-19 where I spoke about lockdown policies and public trust as well as the unintended consequences of vaccine policies.
12. During the Covid-19 pandemic, I have been involved in research on lockdown policies in Haiti, Vietnam, Kenya, the Philippines and Uganda and vaccine policies in North America and Europe. This work has not yet been published but 5 academic publications are currently in draft form and will be submitted to academic journals by the end of 2022. I am the first author of two of the papers, titled, "*Was lockdown worth it? Community perspectives and experiences of the Covid-19 pandemic in remote southwestern Haiti*" and "*The effect of Covid-19 pandemic lockdowns on wet markets and food systems in Kenya, Philippines and Vietnam.*"
13. In 2019, I led a high-level analysis for global funders (partially funded by the Canadian Institutes for Health Research) on opportunities to build capacity for social science expertise in pandemic response. This included recommendations to consider the social harms of public health policies. I was involved in discussions at a global level, including at the World Health Organization (WHO) headquarters in Geneva, about how to improve emergency response programs.
14. I have been directly involved in synthesizing social science research during

epidemic response for Ebola in West Africa (2015), Zika in the Americas (2016) and Ebola in the Democratic Republic of Congo (2018-19).

15. My qualifications are set out in the attached Curriculum Vitae (“CV”) and marked as **Exhibit “A”** to this my Affidavit.
16. I have extensively reviewed peer-review studies on the social harms, or unintended consequences, of Covid-19 restrictions in Canada.
17. I have been asked by counsel for the Applicants to prepare a report as an expert witness to provide my professional opinions on the following questions:
 1. What was the impact of Covid-19 restrictions on both mental and physical health of Canadians?
 2. What was the socioeconomic impact of Covid-19 restrictions including but not limited to impact on education, employment, minorities and vulnerable groups including the elderly?
 3. What was the impact of restrictions on the use of outdoor facilities and outdoor gatherings?
 4. What other important impacts did pandemic restrictions have on Canadians?
18. My signed Acknowledgement of Expert’s Duty to this Honourable Court as an expert is attached as **Exhibit “B”** to this my Affidavit.
19. I acknowledge that in preparing this report and providing expert evidence, the Applicants’ counsel explained that my role is to assist the court to determine the matters in issue. I further acknowledge that it is my duty to provide evidence that is

fair, objective and non-partisan and to opine only on matters that are within my areas of expertise. This duty prevails over any obligations that I may owe to any party on whose behalf I am engaged.

- 20. Attached hereto and marked as **Exhibit “C”** to this my Affidavit is a copy of my report which I adopt and sets out the information and assumptions on which my opinion is based and a summary of my opinion.
- 21. Where I have relied on a document or data in forming my opinion, I have set out the citation to that document or data in the endnotes.

SWORN REMOTELY by videoconference)
 by Dr. Kevin Bardosh at [REDACTED])
 [REDACTED])
 [REDACTED], before me at the)
 [REDACTED])
 [REDACTED] this ___ day of September,)
 2022 in accordance with O.Reg. 431/20)
 Administering Oath or Declaration Remotely)

[REDACTED]

HENNA PARMAR
Barrister & Solicitor

DR. KEVIN BARDOSH

This is **Exhibit “A”** referred to in the
Affidavit of **Dr. Kevin**
Bardosh sworn before me virtually
this 14th day of September, 2022.

Barrister and Solicitor in the
Province of Ontario

Kevin Louis Bardosh, PhD, MSc

Affiliate Assistant Professor
School of Public Health
University of Washington, Seattle, USA

(September, 2022)

BIOGRAPHICAL STATEMENT

Dr. Kevin Bardosh (PhD, University of Edinburgh) is a medical anthropologist and implementation scientist with expertise in infectious disease, public health, agricultural systems and global development. He has worked in more than 20 countries on health and development programs and (co) authored 45 peer-reviewed publications and edited two books. He has received numerous research grants, including a *Wellcome Trust Fellowship* and a *Gates Foundation Grand Challenge* grant. Kevin is currently an *Affiliate Assistance Professor* in the School of Public Health, University of Washington USA; an *Honorary Lecturer* at the Edinburgh Medical School, University of Edinburgh UK; a *Honorary Associate* at the Royal Melbourne Institute of Technology Australia; and a *Consultant* to the Special Health Program, The Carter Center USA.

PANDEMIC RESEARCH ACTIVITIES

Dr. Bardosh was involved in the Ebola epidemic response in West Africa (2015), Zika in the Americas (2016) and Ebola in the Democratic Republic of Congo (2018-19). In 2019, he led a high-level analysis for global funders (partially funded by the Canadian Institutes for Health Research) on opportunities to build capacity for social science expertise in pandemic response. During the Covid-19 pandemic, he led research on the social harms of lockdown policies in Haiti, Vietnam, Kenya, the Philippines and Uganda and on Covid-19 vaccination policy in North America, Europe and Africa.

CURRENT POSITIONS

2021-present	Honorary Associate , School of Global Urban and Social Studies, Royal Melbourne Institute of Technology (RMIT), Melbourne, Australia
2019-present	Affiliate Assistant Professor , Center for One Health Research (COHR), School of Public Health, University of Washington, Seattle, USA
2018-present	Honorary Lecturer , Division of Infection and Pathway Medicine, Edinburgh Medical School, University of Edinburgh, UK
2018-present	Consultant . The Carter Center, Special Health Programs, USA

Publications available at: <https://scholar.google.com/citations?user=JjEgJcIAAAAJ&hl=en>

PREVIOUS ACADEMIC POSITIONS

2016-2018	Research Assistant Professor , Department of Anthropology; Department of Environmental & Global Health, University of Florida, USA.
2016-2018	Research Associate , Digital Global Health Research Group, Faculty of Medicine, University of British Columbia, Canada
2014-2016	Research Fellow , Division of Infection and Pathway Medicine, Edinburgh Medical School, University of Edinburgh, UK
2014-2016	Postdoctoral Fellow , Dept. of Infectious Diseases & Immunology, College of Veterinary Medicine, Emerging Pathogens Institute, University of Florida, USA
2010-2014	MSc Program Tutor , Global Development Challenges Postgraduate Program, School of Social and Political Science, University of Edinburgh, UK

RESEARCH GRANTS

Current

2022-2025	Principal Investigator . <i>Global Animal Health Governance & Biosecurity Network</i> , Australian Center for International Agricultural Research, \$1,300,000.
2022-2023	Co-Investigator . <i>Mapping Infectious Disease Networks & Activities in the European Union</i> . European Center for Disease Prevention & Control. \$70,000.
2021-2023	Principal Investigator . <i>Anthropology and Infectious Disease in the Anthropocene</i> . Wenner-Gren Foundation for Anthropological Research, \$20,000
2021-2026	Co-Investigator . <i>Discovery and Exploration of Emerging Pathogens – Viral Zoonoses (DEEP VZN)</i> . USAID, \$150,000,000
2021-2024	Co-Investigator . <i>Investigating & developing interventions to mitigate food borne parasitic disease in Lao PDR</i> , ACIAR \$500,000
2019-2023	Co-Investigator . <i>Cholera Transmission Dynamics & Control in Goma, Democratic Republic of Congo</i> . National Institutes of Health USA, \$3,600,000

Past

2020-2021	Principal Investigator . <i>Rapid Impact Assessment of COVID-19 on Wet Market Reforms: Vietnam, Kenya, Philippines</i> , ACIAR \$150,000
2021	Co-Investigator . <i>Ukraine One Health Policy and Legal Gap Assessment</i> . Jacobs Engineering Group and Defense Threat Reduction Agency, \$50,000.
2020	Co-Investigator . <i>Molecular, clinical and socio-epidemiological analyses of COVID-19 in China</i> . National Science Foundation of China, \$35,000.
2020	Co-Investigator . <i>A mixed methods study to improve MDA for Lymphatic Filariasis in Uttar Pradesh, India</i> . COR-NTD/USAID/DFID, \$200,000
2020-2021	Principal Investigator . <i>A framework for assessing agricultural extension and public health approach</i> , ACIAR \$150,000.
2019-2021	Principal Investigator . <i>Improving Mass Drug Administration for Lymphatic Filariasis After TAS Failure in Nepal</i> . COR-NTD/USAID/DFID, \$250,000
2020-2021	Co-Investigator . <i>Community participatory action research to increase MDA coverage in Benin for Onchocerciasis</i> . COR-NTD/USAID/DFID, \$300,000
2019	Co-PI . <i>Determining Gaps in the Social Science Field of Epidemic Preparedness, Response and Recovery</i> . Wellcome Trust, DFID and CIHR, £36,000
2019-2020	Co-Investigator . <i>Consolidating practice in social science research for Ebola in the DRC</i> . Wellcome Trust (with WHO & UNICEF), £200,000.
2018-2020	Co-Investigator . <i>Maternal Transmission of Trypanosomiasis in Uganda, South Sudan and Nigeria</i> . National Institute of Health Research, TIBA Fund, £500,000
2018-2020	Co-Investigator . <i>Scenario and Livestock Systems Analysis to Support Policy Interventions in Asia and Africa</i> . Gates Foundation & USAID, \$580,000.
2018-2020	Co-Investigator . <i>Campylobacter Genomics and Environmental Enteric Dysfunction in Ethiopia</i> . Gates Foundation & USAID, \$1,500,000
2017-2021	Research Fellowship . <i>Disease Surveillance and Response Networks in Viral Hotspots</i> . Wellcome Trust Society and Ethics Division, \$400,000.

2017-2018	Co-Investigator <i>A Randomized Control Trial of an mHealth Diarrheal Disease Management Tool in Bangladesh.</i> NIH and icddr,b, \$500,000
2016	Principal Investigator. <i>Testing the Feasibility of an Innovative Vector Control System in Haiti.</i> University of Florida SEED grant, \$25,000
2015-2016	Co-PI. <i>Integrating LF, Malaria and Cholera Elimination Efforts in Haiti.</i> Gates Foundation Grand Challenges Exploration Grant, \$100,000
2015	Co-investigator. <i>Mapping Livestock Movements and Trading Networks in Uganda.</i> UK Department of International Development, \$30,000
2014-2015	PI. <i>Literature Review on Community-based Adaptation to Vector-Borne Disease.</i> Tropical Disease Research Unit, WHO, \$15,000
2014	Co-investigator. <i>Policy Consultations for Animal and Human Trypanosomiasis in Zambia.</i> National Environmental Research Council UK, £32,000
2010-2015	Social Science Research Coordinator. <i>Integrated Control of Neglected Zoonoses in Africa, ICONZ.</i> European Union Seventh Framework, \$7,000,000
2009-2013	Research Assistant. <i>Stamp out Sleeping Sickness Public-Private Partnership, Uganda.</i> UK Department of International Development, \$1,000,000

CONSULTING EXPERIENCE

Past

2019-2021	Research Consultant. Anthrologica, London, UK.
2019-2020	Research Consultant. NTD Program, RTI International, Washington DC
2017-2018	Vector Control Technical Consultant, Haiti. Abt Associates, Washington DC
2017	Zika response in Latin America evaluation leader. UNICEF & USAID, USA.
2016	Evaluation Consultant. WelTel International mHealth Society.
2015	Senior Researcher, Liberia. Save the Children International Ebola Response.
2013-2014	Technical Consultant. Social Finance, London
2013	Research Consultant. International Livestock Research Institute, Kenya.

EDUCATION

2010-2014	PhD, International Development. School of Social and Political Science, University of Edinburgh, UK
2009-2010	MSc, Africa and International Development. School of Social and Political Science, University of Edinburgh, UK
2002-2006	BA, History & Philosophy of Science. University of British Columbia, Canada

BOOK PUBLICATIONS

- Bardosh K** (ed) (2019) *Locating Zika: Social Change and Governance in an Age of Mosquito Pandemics.* Routledge, *Health and Anthropology* series.
- Bardosh K** (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa.* Routledge: London. Pp. 239.

PEER REVIEWED PUBLICATIONS

45. **Bardosh, K.**, de Figueiredo, A., Gur-Arie, R., Jamrozik, E., Doidge, J., Lemmens, T. et al. (2022). The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good. *BMJ Global Health*, 7(5), e008684.
44. Hernandez, J., Meisner, J., **Bardosh, K.**, & Rabinowitz, P. (2022). Prevent pandemics and halt climate change? Strengthen land rights for Indigenous peoples. *The Lancet Planetary Health*, 6(5), e381-e382.
43. Bloomfield, L. S., Tracey, C., Mbabazi, E., Schultz, R. L., Henderson, R., **Bardosh, K.**, Paige, S. (2022). Research Participation Influences Willingness to Reduce Zoonotic Exposure in Uganda. *EcoHealth*, 1-16.

42. Annan, E., Guo, J., Angulo-Molina, A., Yaacob, W. F. W., Aghamohammadi, N., Guetterman, T., **Bardosh, K.**, Haque, U. (2022). Assessing community readiness to engage in dengue fever surveillance using unmanned aerial vehicles. *Travel Medicine and Infectious Disease*, 102360.
41. Doidge, J. C., de Figueiredo, A., Lemmens, T., & **Bardosh, K.** (2022). Study authors don't consider waning SARS-CoV-2 immunity after vaccination in their model. *CMAJ*, 194(24), E847-E847.
40. Lane, J., Means, A., **Bardosh, K.**, Shapoval, A., Vio, F., Anderson, C., & Mudender, F. (2021). A Comparative Analysis of COVID-19 Physical Distancing Policies in Botswana, India, Jamaica, Mozambique, Namibia, Ukraine, and the United States. *Globalization and Health*, 17(1), 1-12.
39. Torres, I., Sippy, R., **Bardosh, K.**, Bhargava, R., Lotto-Batista, M., Bideaux, A. E., & Stewart-Ibarra, A. M. (2021). Chronic Kidney Disease in Ecuador: An Epidemiological and Health System Analysis of an Emerging Public Health Crisis. *PLoS One*, 17(3), e0265395.
40. Baker, M. C., **Bardosh, K.**, Fitch, E., Mbabazi, P. S., Mwingira, U., Direny, A., ... & Krentel, A. (2021). Incorporating qualitative research methods into the monitoring and evaluation of neglected tropical disease programmes: a scoping literature review. *International health*, 13(6), 504-513.
39. El Joueidi, S., **Bardosh, K.**, Musoke, R., Tilahun, B., Abo Moslim, M., Gourlay, K., Lester, R. (2021). Evaluation of the implementation process of the mobile health platform 'WelTel' in six sites in East Africa and Canada using the modified consolidated framework for implementation research (mCFIR). *BMC medical informatics and decision making*, 21(1), 1-15.
38. Kasozi, K. I., Laudisoit, A., Osuwat, L. O., Batiha, G. E. S., Al Omairi, N. E., Aigbogun, E., **Bardosh, K.**, et al. (2021). A Descriptive-multivariate analysis of community knowledge, confidence, and trust in COVID-19 clinical trials among healthcare workers in Uganda. *Vaccines*, 9(3), 253
37. Keys, H., Ureña, K., Reyes, J., **Bardosh, K.**, Pell, C., Puello, J., ... & Noland, G. S. (2021). Rapid ethnographic assessment for potential anti-malarial mass drug administration in an outbreak area of Santo Domingo, Dominican Republic. *Malaria journal*, 20(1), 1-13.
36. McCoy, K. D., Weldon, C. T., Ansumana, R., Lamin, J. M., Stenger, D. A., Ryan, S. J., **Bardosh, K.** et al. (2021). Are malaria transmission-blocking vaccines acceptable to high burden communities? Results from a mixed methods study in Bo, Sierra Leone. *Malaria journal*, 20(1), 1-12.
35. Chen, D., McKune, S. L., Singh, N., Yousuf Hassen, J., Gebreyes, W., **Bardosh, K.** et al. (2021). Campylobacter Colonization, Environmental Enteric Dysfunction, Stunting, and Associated Risk Factors Among Young Children in Rural Ethiopia: A Cross-Sectional Study From the Campylobacter Genomics and Environmental Enteric Dysfunction (CAGED) Project. *Frontiers in Public Health*, 8.
34. **Bardosh K.**, de Vries D, Abramowitz S, Thorlie A, Cremers A, Kinsman J, Stellmach D (2020) Integrating the social sciences in epidemic preparedness and response: A strategic framework to strengthen capacities and improve Global Health security. *Globalization & Health* 16(1), 1-18.
33. Biswas D, **Bardosh K.** Hossin R, Rahman M, Nelson E (2020) An Ethnographic Exploration of Diarrheal Disease Management in Bangladeshi Public Hospitals: From Problems to Solutions. *Social Science & Medicine* 260, 1131185.
32. Mtuy, T. B., **Bardosh, K.**, Ngondi, J., Mwingira, U., Seeley, J., Burton, M., & Lees, S. (2020). Understanding hard-to-reach communities: local perspectives and experiences of trachoma control among the pastoralist Maasai in northern Tanzania. *Journal of Biosocial Science*, 1-20.

31. Kasozi, K. I., MacLeod, E., Ssempijja, F., Mahero, M. W., Matama, K., Musoke, G. H., **Bardosh, K.** et al. (2020). Misconceptions on COVID-19 Risk Among Ugandan Men: Results From a Rapid Exploratory Survey, April 2020. *Frontiers in public health*, 8, 416.
30. Khan A, Mack J, Salimuzzaman M, Zion MI, Hasnat S, Ball R, Maples S, Rashid MM, Jobayer C, Sarker SA, Biswas D, Hossin R, **Bardosh KL**, Begum Y, Ahmed A, D. Pieri, Raghu PS, Jain R, Sai S, Teegala S, Haque F, Rahman M, Levine AC, Qadri F, Flora S, Gurka M, Nelson EJ (2019) Electronic decision-support improves diarrheal disease guideline adherence (mHealth Diarrhea Management, mHDM, Trial): a cluster randomized controlled trial. *The Lancet Digital Health* 2, no. 5 (2020): e214-e215.
29. **Bardosh K**, Hussein J, Sadik E, Yousuf J, Ketema M, Ibrahim M, McKune S and Havelaar A. (2019) Chicken eggs, childhood stunting and environmental hygiene: an ethnographic study from the Campylobacter genomics and environmental enteric dysfunction (CAGED) project in Ethiopia. *One Health Outlook*, 2(1), 1-15.
28. Rabinowitz P, Pappaioanou M, **Bardosh K**, & Conti, L. (2018). A Planetary Vision for One Health. *BMJ Global Health*, 3(5), e001137.
27. **Bardosh K** (2018) Towards a Science of Global Health Delivery: A Socio-Anthropological Framework to Improve the Effectiveness of Neglected Tropical Disease Interventions. *PLoS Neglected Tropical Diseases*, 12(7): e0006537.
26. Tilaun B, Smillie K, **Bardosh K** et al. (2018) Comprehensive Implementation Science Study to Identify Barriers and Facilitators of 13 mHealth Projects in North America and Africa: Study Protocol for 5-year Implementation Science Study. *JMIR Research Protocols*, 7(7), e162.
25. **Bardosh K**, Murray M, Khaemba AM, Smillie K, Lester R (2017) Operationalizing mHealth to improve patient care: a qualitative implementation science evaluation of the WelTel texting intervention in Canada and Kenya. *Globalization and health*, 13(1), 87.
24. **Bardosh K**, Jean L, Beau De Rochars V, et al. (2017) *Polisyè Kont Moustik*: A culturally competent approach to larval source reduction in the context of lymphatic filariasis and malaria elimination in Haiti. *Tropical Medicine and Infectious Disease*, 2(3), 39.
23. **Bardosh, K**, Scoones J, Grace D, Kalema-Zikusoka G, et al. (2017) Engaging research with policy and action: what are the challenges of responding to zoonotic disease in Africa? *Phil. Trans. R. Soc. B*, 372(1725), 20160172.
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21. Hamill L, Picozzi K, Fyfe J, von Wissmann B, Wastling S, **Bardosh K**, et al. (2017) Evaluating the impact of targeting livestock for the prevention of human and animal trypanosomiasis, at village level, in districts newly affected with *T. b. rhodesiense* in Uganda. *Infectious Diseases of Poverty* 6:16.
20. Ducrotoy M. & **Bardosh K** (2017). How do you get the Rose Bengal Test at the point-of-care to diagnose brucellosis in Africa? *Acta Tropica*, 165, 33-39.
19. Hattendorf J, **Bardosh K**, et (2017) One Health and its practical implications for surveillance of endemic zoonotic diseases in resource limited settings. *Acta Tropica*, 165, 268-273.
18. Spiegel S, Bompani B, **Bardosh K**, Gray H, Smith J. (2017) Decolonizing Online Development Studies? Emancipatory Aspirations and Critical Reflections – a Case Study. *Third World Quarterly*, 1-21.
17. Welburn, S, Coleman P, and **Bardosh K**. (2017) Novel Financing for Neglected Tropical Diseases – Development Impact Bonds Applied to Sleeping Sickness and Rabies Control. *PLoS Neglected Tropical Diseases* 10(11).
16. Fyfe J, Picozzi K, Waiswa C, **Bardosh K**, and Welburn S. (2016). Impact of Mass Chemotherapy in Domestic Livestock for Control of Zoonotic *T. b. rhodesiense* Human African Trypanosomiasis in Eastern Uganda. *Acta Tropica*, 165, 216-229.

15. **Bardosh K**, El Berbri I, Ducrotoy M, Bouslikhane M, Ouafaa F, Welburn S (2016) Zoonotic Encounters at the Slaughterhouse: Pathways and Possibilities for the Control of Cystic Echinococcosis in Northern Morocco. *Journal of Biosocial Sciences*, 48: 92-115.
14. Acup C, **Bardosh K**, Picozzi K, Waiswa C, and Welburn S. (2016). Factors Influencing Passive Surveillance for *T. b. rhodesiense* Human African Trypanosomiasis in Uganda. *Acta Tropica*, 165: 230-239.
13. **Bardosh K** (2015) Deadly Flies, Poor Profits and Veterinary Pharmaceuticals: Sustaining the Control of Sleeping Sickness in Uganda. *Medical Anthropology* 34(4): 338-352.
12. **Bardosh K** (2015) Achieving “Total Sanitation” in Rural African Geographies: Poverty, Participation and Pit Latrines in Eastern Zambia. *Geoforum* 66:53-63.
11. Ducrotoy MJ, Azami HY, El Berbri I, Bouslikhane M, Fihri OF, Boué F. and **Bardosh K**. (2015) Integrated Health Messaging for Multiple Neglected Zoonoses: Approaches, Challenges and Opportunities in Morocco. *Acta Tropica* 152: 17-25.
10. Abramowitz S, McLean K, McKune S, **Bardosh K**, Fallah M, Monger J, Tehoungue K, Omidian P (2015) Community-Centered Responses to Ebola in Urban Liberia: The View from Below. *PLoS Neglected Tropical Diseases* 9(4).
9. Widyastuti W, **Bardosh K**, Sunandar, Basri C, Basuno E, Jatikusumah A, and Gilbert J. (2015) On Dogs, People, and a Rabies Epidemic: Results from a Sociocultural Study in Bali, Indonesia. *Infectious Diseases of Poverty* 4(1): 1-18.
8. Okello AL, Beange I, Shaw A, Moriyón I, Gabriël S, **Bardosh K**, et al. (2015) Raising the Political Profile of the Neglected Zoonotic Diseases: Three Complementary European Commission-Funded Projects to Streamline Research, Build Capacity and Advocate for Control. *PLoS Negl Trop Dis* 9(3).
7. Abramowitz S, **Bardosh K**, Leach M, Hewlett B, Nichter M, Vinh-Kim K (2015) Social Science Intelligence in the Global Ebola Response. *The Lancet* 385(9965): 330.
6. **Bardosh K** (2014) Global Aspirations, Local Realities: The Role of Social Science Research in Controlling Neglected Tropical Diseases. *Infectious Diseases of Poverty* 3:35.
5. **Bardosh K**, Inthavong P, Veunghang S, Okello A (2014) Controlling Parasites, Understanding Practices: The Biosocial Complexity of a One Health Intervention for Neglected Zoonotic Helminths in Northern Lao PDR. *Social Science and Medicine* 120:215-223.
4. **Bardosh K**, Sambo M, Sikana L, Hampson K, Welburn SC (2014) Eliminating Rabies in Tanzania? Local Understandings and Responses to Mass Dog Vaccination in Kilombero and Ulanga Districts. *PLoS Negl Trop Dis* 8(6): e2935.
3. Okello A, **Bardosh K**, Smith J, and Welburn S (2014) One Health: Past Successes and Future Challenges in Three African Contexts. *PLoS Neglected Tropical Diseases* 8(5).
2. Selby R, **Bardosh K**, Picozzi K, Waiswa C, and Welburn S (2013) Cattle Movements and Trypanosomes: Restocking Efforts and the Spread of *Trypanosoma Brucei Rhodesiense* Sleeping Sickness in Post-conflict Uganda. *Parasites & Vectors* 6: 281
1. **Bardosh K**, Waiswa C, and Welburn S (2013) Conflict of Interest: Use of Pyrethroids and Amidines against Tsetse and Ticks in Zoonotic Sleeping Sickness Endemic Areas of Uganda. *Parasites & Vectors* 6:204.

BOOK CHAPTERS

13. **Bardosh K**. Understanding the Global Zika Response: Biographical Sketches of an Emergent Pandemic. In Bardosh K (ed) (2019) *Locating Zika: Social Change and Governance in an Age of Mosquito Pandemics*. Routledge.
12. Henderson R & **Bardosh K**. Counting Zika: Insidious Uncertainties and Elusive Epidemic Facts. In Bardosh K (ed) (2019) *Locating Zika: Social Change and Governance in an Age of Mosquito Pandemics*. Routledge.
11. Stewart-Ibarra A, Henderson R, Heydari N, Borbor-Cordova M, Fujii Y, and **Bardosh K**. Tracking *Aedes Aegypti* in a Hotter, Wetter, More Urban World: Capacity Building,

- Disease Surveillance and Epidemiological Labor in Ecuador. In Bardosh K (ed) (2019) *Locating Zika: Social Change and Governance in an Age of Mosquito Pandemics*.
10. Aragrande M, **Bardosh K**, et al. Chapter 3: One Health Evaluation Framework. In Ruegg S and Hasler B (ed) (2019) *Handbook for One Health Implementation*.
 9. Ryan S, **Bardosh K**, et al. The Social Drivers to Vector-Borne Diseases. In (ed) *Current Knowledge of Vector-Borne Diseases in a Changing World*. Oxford University Press.
 8. **Bardosh K**. Unpacking the Politics of Zoonosis Research and Policy. In Bardosh K (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge. Pp.1-20.
 7. Valeix S, Stein C, and **Bardosh K**. Knowledge Flows in One Health: The Evolution of Scientific Collaboration Networks. In Bardosh K (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge. Pp. 38-57.
 6. **Bardosh K**, Leach M, Wilkinson A. The Limits to Rapid Response: Structural Violence and the West African Ebola Epidemic. In Bardosh K (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge. Pp. 74-94.
 5. Millstone E, Odame H, Okumu O. & **Bardosh K**. Stepping Towards a Policy Response to Rift Valley Fever: Pastoralists & Epidemic Preparedness in Kenya. In Bardosh K (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge. 95-116.
 4. Ducrotoy M, Okello A, Welburn S, and **Bardosh K**. Living Laboratories: The Politics of ‘Doing’ Brucellosis Research in Northern Nigeria. In Bardosh K (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge. Pp. 176-195
 3. **Bardosh K**. Imagined Futures: New Directions for One Health. In Bardosh K (ed) (2016) *One Health: Science, Politics and Zoonotic Disease in Africa*. Routledge. Pp. 196-207.
 2. Romanelli C, Lendrum D, Cooper D, Maiero M, **Bardosh K**, et al. Integrating Health and Biodiversity: Strategies, Tools and Further Research. In Romanelli C, et al. (2015) *Connecting Global Priorities: Biodiversity and Human Health*. United Nations Convention on Biodiversity and World Health Organisation Press. Pp. 258-271.
 1. **Bardosh K**. Welcome and Scene Setting. In Okello A, et al. (2015) *From Advocacy to Action: Report from the 4th International Meeting on Neglected Zoonotic Diseases*. World Health Organization Press. Pp. 7-11.

TEACHING EXPERIENCE

Undergraduate

Global Health Culture (2017); The Anthropology of Infectious Disease (2017)

Postgraduate

An Introduction to One Health (2020); One Health Policy and Practice (2018, 2019, 2020, 2021); The Anthropology of Infectious Disease (2017); Global Development Challenges (2013; 2014); The Roots of African Poverty and Development (2011; 2013); Politics and Theories of International Development (2011; 2013); Analyzing Development Aid (2012; 2013)

GRADUATE STUDENTS

University of Florida: 3 past PhD students

University of Edinburgh: 6 past MSc students and 2 current PhD students

External PhD examiner or advisor: University of Glasgow; Durham University; London School of Hygiene and Tropical Medicine.

WORKSHOP AND CONFERENCE LEADER

2020 *Interactive Prototyping Workshop: How can Foresight and Futures Planning be used to Address Antimicrobial Resistance in the Livestock Sector?* USAID Feed the Future Innovation Lab for Livestock Systems. Oct 7, 2020. [Online]

2017 *Zika Frontiers Symposium: Understanding Social Change & Governance in the Age of Mosquito Pandemics*. Emerging Pathogens Institute, University of Florida. May 1-2, 2017.

- 2014 *Recherche sur les processus politique pour “Une Sante”: Théorie et méthodes* [In French]. Département de Pathologie et de Santé Publique Vétérinaires, Institut Agronomique et Vétérinaire Hassan II, Morocco. February 17-20, 2014.
- 2013 *Participatory Methods in Veterinary Public Health Workshop*. Department of Veterinary Medicine and Public Health, Sokoine University of Agriculture, Tanzania. May 6-9, 2013.
- 2013 *Qualitative Methods for Veterinary Public Health Workshop*. Centre for Indonesian Veterinary Analytical Studies, Bogor, Indonesia. February 3-6, 2013.
- 2011 *Qualitative Research Methods: Theory and Practice Workshop*. Department of Paraclinical Studies, School of Veterinary Medicine, University of Zambia, Zambia. May 2-6, 2011.
- 2011 *Global Health Governance and African Health Systems: Issues, Actors and Outcomes*. Annual Centre of African Studies Conference, University of Edinburgh. 31 May, 2011.

INVITED SPEAKING EVENTS

- 2022 *Wet markets, biosecurity and the COVID-19 pandemic: Lessons from Vietnam, Kenya and the Philippines*. Global Health Security Network, Singapore.
- 2022 *Covid-19 lockdown policies and public trust*. European Center for Disease Control and Prevention, Stockholm.
- 2022 *The Unintended Consequences of Covid-19 Vaccine Policy*. University of Toronto Law Society.
- 2022 *Social Science Research during the Covid-19 Pandemic*. University of St Andrews.
- 2022 *Challenges integrating Social Science during the Covid-19 pandemic*. University of Toronto.
- 2021 *Using Foresight and Futures Thinking in Global Public Health*. University of York.
- 2021 *Potential Unintended Consequences of Covid-19 Policy*. Pasteur Institute, France.
- 2021 *The Unintended Consequences of Banning Wet Markets*. American Society for Hygiene and Tropical Medicine.
- 2021 *Controversies about Wireless Radiation: A media analysis*. Royal Geography Society.
- 2021 *Community Health Councils and Malaria Elimination in Haiti: Lessons in Experimentation*. Vector-borne Disease Control Network, UK
- 2021 *Lessons in Using Rapid Group Ethnography to Understand and Address Barriers to MDA in Benin, India and Nepal*. Coalition for Operational Research on Neglected Tropical Diseases (COR-NTD). USA.
- 2020 *5G in the Time of COVID-19: Corporate Power, Wireless Radiation and Grassroots Resistance in the Fourth Industrial Revolution*. (Re)positioning the discipline of Anthropology in global discourse, University of Nairobi, Kenya.
- 2020 *COVID-19, 5G and the Anatomy of Belief: A Critique of Infodemiology in the Anthropocene*. One World One Health Congress, UK.
- 2020 *COVID-19: Socio-cultural, Economic and Political Representations and their Implications*. International Medical Corps Webinar Series, USA
- 2020 *Rapid Group Ethnography: Experiences and Lessons from Nepal*. Coalition for Operational Research on Neglected Tropical Diseases (COR-NTD). USA.
- 2019 *Social Sciences in Epidemic Response: Overview and Future Considerations*. African Congress for Clinical Trials, Gabon.
- 2019 *Building the Field of Epidemic Social Science: What Needs to Happen Next?* Journée d'étude Anthropologie & Epidémies Emergentes, France.
- 2019 *Towards People-Centered Epidemic Preparedness and Response: From Knowledge to Action*. GLOPID-R Funders Forum on Social Science Research for Infectious Disease Epidemics. Japan.
- 2017 *Risk Communication and Community Engagement in the Global Zika Response*. USAID and UNICEF Zika Response Partners Meeting. USA
- 2016 *Engaging Communities in Larval Source Reduction in Northern Haiti*. Johns Hopkins Center for Communication Programs, Bloomberg School of Public Health. USA.
- 2016 *Introducing the Zika Anthropology Action Network (ZAAN)*. ZikACTION project meeting. University of West Indies, Jamaica.

- 2016 *Beyond Risk Factors: Untangling Power and Politics in Zoonosis Control*. One Health for the Real World: Zoonoses, Ecosystems and Wellbeing. Royal Society of London and Zoological Society of London, UK.
- 2016 *The Polisyte Kont Moustik Initiative in Northern Haiti*. Lymphatic Filariasis Annual Partners Meeting, Port-au-Prince, Haiti.
- 2014 *Critical Social Science and Neglected Tropical Diseases: Understanding Intervention Effectiveness Determinants*. EcoHealth 2014. Montreal, Canada.
- 2013 *The Applicability of Social Theory to the Control of Neglected Diseases*. Annual British Sociology Association Conference. London, UK.
- 2013 *How Can Policymakers Support Community-based Disease Control?* Prince Mahidol Conference: A World United Against Infectious Disease, Bangkok, Thailand.
- 2012 *Conceptualizing Socio-ecological and Technical Systems: What Practical Value for Global Public Health?* EcoHealth 2012. Kunming, China.
- 2011 *"They Need the Business Perspective!" Using Private Veterinarians for Zoonotic Trypanosomiasis Control in Northern Uganda*. Colloquium on Zoonoses and Neglected Infectious Diseases in Africa, Johannesburg, South Africa.
- 2011 *Reflections on the Research Design of a Multi-site Ethnography*. 12th Annual Researching Africa Day Workshop, Oxford University, UK.

BLOGS & BOOK REVIEWS

4. First Ebola, now Zika: The Inconvenient Truths about Emerging Diseases. BioMed Central Blog: <http://blogs.biomedcentral.com/on-health/2016/02/18/first-ebola-now-zika/>
3. Beyond Risk Factors: The All-too-Human World of Zoonotic Pandemics. IDS blog: <https://steps-centre.org/blog/beyond-risk-factors-the-all-too-human-world-of-zoonotic-pandemics/>
2. The Anthropologist will see you now. 2016. University of Florida's Preeminence blog. <http://news.ufl.edu/articles/2015/11/the-anthropologist-will-see-you-now.php>
1. Bardosh, K. (2018). Ebola: How a People's Science Helped End an Epidemic by Richards. London: Zed Books, 2016. Pp. 180. Book review. *The Journal of Modern African Studies*, 56(1), 176-177.

VOLUNTARY PROFESSIONAL SERVICE

- 2020- **Associate Editor**, *Frontiers in Tropical Diseases Journal*.
- 2020- **Member**. Alliance for Pandemic Preparedness, University of Washington.
- 2020- **Advisor**. OsloMet Research Group on the Demography of Historical Influenza Pandemics.
- 2019- **Advisor**. Improving Community Health Outcomes through Research, Dialogue and Systems Strengthening (ICHORDS), COR-NTD and Task Force for Global Health.
- 2019- **Advisor**. Enhancing the Management of Antimicrobial Resistance in Fiji. Funded (\$2 million) by ACIAR, 2019-2023.
- 2022 **Grant Reviewer**. Wellcome Trust Social Science grants, United Kingdom.
- 2022 **Grant Reviewer**. Canadian Institutes of Health Research, Canada.
- 2021 **Grant Reviewer**. Else Kröner-Fresenius-Stiftung (EKFS), Germany.
- 2020 **College of Experts**, Department of Health and Social Care, United Kingdom Research and Innovation Global Effort on COVID-19 (GECO) Health Research Funding Call, UK.
- 2020 **Grant Reviewer**. COVID-19 Rapid Response Call, Science Foundation Ireland.
- 2019-20 **Scientific Committee Member**. SoNAR-GLOBAL capacity building work package, EU.
- 2019 **Grant Reviewer**. Australian Centre for International Agricultural Research (ACIAR).
- 2019 **Grant Reviewer**. Social and Behavioral Interventions, Sabin Vaccine Initiative.
- 2018 **Working Group Co-convenor**. Ebola outbreak in DRC. Global Outbreak Alert and Response Network Research Social Science Network.
- 2018 **Grant Reviewer**. Health Research Council of New Zealand.
- 2017 **Grant Reviewer**. Freiburg Institute for Advanced Studies Fellowships, University of Freiburg, Germany.
- 2017 **Grant Committee Member**. Stars in Global Health Program, Grand Challenges Canada & Canadian Institutes of Health Research

- 2017 **Member.** USAID's Zika Social and Behavior Change Communications Working Group.
2014-17 **Member.** Haiti Public Health Working Group, University of Florida.
2014-17 **Member.** Network for Evaluation of One Health (NEOH). Member of Working Group 1: Evaluation Frameworks in Europe.
2015 **Member.** Ebola Response Anthropology Platform. Member of Working Group 4: Clinical Trials and Experimental Therapeutics

Reviewer: Oxford University Press (Biology book series), Medical Anthropology, Social Science & Medicine, Geoforum, EcoHealth, PLoS Neglected Tropical Diseases, PLoS ONE, Infectious Diseases of Poverty, Philosophical Transactions of the Royal Society B, Vectors and Parasites, Journal of Ethnographic Theory, Global Policy Journal, The Geography Journal, BMC Public Health, BMC Infectious Diseases, Journal of Epidemiology and Global Health, Developing World Bioethics, BMJ Global Health. One Health.

Country Experience: Haiti, Uganda, Zambia, Tanzania, Morocco, Indonesia, Kenya, Lao PDR, Liberia, Ethiopia, Nigeria, Bangladesh, India, Benin, Democratic Republic of Congo, Ecuador, El Salvador, Honduras, Guatemala, Peru, Nicaragua, Dominican Republic, Nepal, Canada, USA.

Global Health Topics: neglected tropical diseases, pandemics, zoonotic diseases, emerging infectious diseases, antimicrobial resistance, One Health, diarrheal diseases, animal health, vector-borne disease, environmental toxins, radiofrequency radiation and electromagnetic radiation, health system strengthening, maternal and child health, HIV/AIDS, nutrition and food security, human resources for health, climate change and health, social and behavior change interventions, interface between biomedical and social sciences.

Languages: English, French (fluent) and Haitian Creole (basic comprehension)

Citizenship: Canadian (full), Hungarian (full), American (Green Card).

Personal life: Married, with three kids (15, 11 & 7 years old).

This is **Exhibit “B”** referred to in the
Affidavit of **Dr. Kevin**
Bardosh sworn before me virtually
this 14th day of September, 2022.

Barrister and Solicitor in the
Province of Ontario

This is **Exhibit “C”** referred to in the
Affidavit of **Dr. Kevin
Bardosh** sworn before me virtually
this 14th day of September, 2022.

Barrister and Solicitor in the
Province of Ontario

The social harms of Covid-19 pandemic restrictions in Canada: A review of social science research, with a focus on Ontario

1. Background

This report is an evidence-based scoping review of 150 academic peer-reviewed studies on the social harms, or unintended consequences, of Covid-19 restrictions in Canada.* Such an analysis has not been performed by any scholarly or government advisory group in Canada, as of September 1, 2022; this report provides the first comprehensive overview of this important topic from a Canadian perspective, using peer-reviewed Canadian studies where data was collected in 2020 and 2021.

The body of this report is divided into two sections:

1. *The impact of restrictions on the mental health and well being of Canadians.* This section is divided into 15 sub-sections
2. *Trust, compliance and social division.* This section is divided into 6 sub-sections.

Each sub-section includes a summary of available research data and my expert opinion.

I use the term ‘*restrictions*’ to mean any government-mandated physical distancing regulation, law or order. This includes stay-at-home orders, non-essential business closures, social gathering limitations, school closures and other related policies. The essential point is that restrictions are different than recommendations or voluntary behaviour change. The former narrow the scope of human agency; the latter allows the public to adapt to their unique life circumstances (considering the inequalities and social differences in our society) and permits individuals and their social networks to flexibly address other non-Covid related human needs. This will be elaborated upon in this report.

To clarify a few terms:

1. I use the term ‘**study**’ to describe a peer-reviewed academic paper based on quantitative data. Most of these studies use statistical analysis.
2. The term “**n**” denotes the sample size (e.g. the number of people interviewed).
3. A ‘**qualitative study**’ is a research study that uses open-ended research methods such as in-depth interviews and focus groups. This data provides vital nuances to human behaviour unavailable in quantitative studies.
4. A ‘**mixed methods**’ study is a study that uses both quantitative and qualitative methods.
5. A ‘**media analysis**’ is a study that systematically collects media articles over a period of time and uses qualitative techniques to analyze them.
6. Whenever I do not mention the study location, the reader should assume that the study is from a pan-Canadian sample.

* A *scoping review* is an academic process of mapping the literature on a particular topic in order to identify key concepts and synthesize major themes and findings.

Overall impact of Covid-19 restrictions in Canada

It is my expert opinion that Covid-19 policy in Canada did not sufficiently consider the adverse impacts of government restrictions on Canadian society. It is also my expert opinion that it is entirely possible that pandemic restrictions in Canada have caused more harm than good. Public policy needs to weigh the stringency by which it attempts to control a pandemic respiratory virus with the detrimental harms that restrictions, imposed across society with little regard for individual circumstances and for lengthy periods of time in 2020 and again in 2021, had on overall population health, education, employment, civil society and all other aspects of Canadian society.

Yet, to the best of my knowledge no cost-benefit analysis has been preformed by the Canadian government on these unprecedented policy decisions. It is my expert opinion that the data and conclusions presented below, which document significant mental and physical health deterioration among Canadians, were well known among the Canadian public by April 2021. The apparent lack of full consideration of these social harms by the Ontario government and public health authority, in April 2021, was unjustified and these considerations should have more fully influenced policy decisions.

By April 2021, Canadians had lived through one year of constant media attention to cases, hospitalizations and deaths; but, in comparison, the lived experience and the accumulating data presented below was given scant attention by the media. It is important to note that, before the pandemic, Canadian schools of public health had become world-renowned for their dedication to the ideals of social justice, human rights and harm reduction. These ideals place what are called the ‘social determinants of health’ at the core of public policy: the living and working conditions that affect disease and human wellbeing, from a holistic perspective rather than a narrow focus on one pathogen. Paradoxically, these same schools of public health had a very difficult time following this approach when it came to the negative consequences of Covid-19 restrictions. Yet, as I show below, academic publications from 150 peer-reviewed studies, representing hundreds of Canadian scholars, show alarming data about the negative consequences of these policies on all aspects of Canadian society.

It is my expert opinion that the scholarly literature I outline below reflects a broad emerging consensus that the stringency and scale of government Covid-19 restrictions undertaken in Canada caused excessive and needless harm to the mental health, physical health and wellbeing of Canadians. These effects will have long-term, negative consequences on the future of Canadian society.

2. The impact of restrictions on the mental health and wellbeing of Canadians

1. Studies show deteriorating mental health in 2020 and 2021

Numerous nationally representative surveys were conducted in 2020-2021 exploring the impact of the pandemic on the mental health of Canadians. These studies consistently found substantial deteriorations in mental health.

An early study across Canada (n=1381, March/April 2020) found that home quarantine was associated with increased psychological distress including panic (35%), depression (37%) and emotional disturbances (44%).¹ In May 2020 (n=3,000) Jenkins et al.² found that 38% of Canadians reported deterioration in mental health since the start of the pandemic; a second study in May 2020 among older adults in Ontario (n=4,879) found 43% felt lonely at least some of the time during lockdown and 8% always or often.³ A study (n=594) by Morin et al.⁴, using pre-pandemic 2018 data for comparison, found that the first lockdown in Quebec increased insomnia and significantly worsened sleep quality, fatigue and depression. McAuliffe et al.⁵ found 6% of respondents (n=7,002) reported suicidal thoughts in the last 2 weeks in late 2020, more common among those experiencing stress related to finances, relationships, Covid-19 exposure and substance use. For example, 13% of those who lost their jobs due to pandemic measures reported experiencing suicidal thoughts in the last 2 weeks. A 14-day home quarantine period has also been associated with higher odds of suicide ideation and deliberate self-harm, as found by Daly et al.⁶ in May 2020. A study in June 2020 (n=3,779) found a 14% rate of moderate-severe generalized anxiety disorder (GAD) among Canadian adults (17% in women and 10% in men).⁷ A nationally representative survey by Liu et al.⁸ (n=6,592) found that the prevalence of suicide ideation was 4% in spring 2021 across a Canadian sample, much higher than the 2.7% baseline in 2019.

Unlike natural disasters, the pandemic was a prolonged emergency and deteriorations in mental health appear to have increased with time as the pandemic and emergency government mandates continued.⁹ A large nationally representative study (n=18,936) found that life satisfaction, community belonging and self-rated mental health were lower

¹ Best et al. (2021). The psychological impact of COVID-19 in Canada: Effects of social isolation during the initial response. *Canadian Psychology/Psychologie canadienne*, 62(1), 143.

² Jenkins et al. (2021). A portrait of the early and differential mental health impacts of the COVID-19 pandemic in Canada: Findings from the first wave of a nationally representative cross-sectional survey. *Preventive Medicine*, 145, 106333.

³ Savage et al. (2021). Loneliness among older adults in the community during COVID-19: a cross-sectional survey in Canada. *BMJ open*, 11(4), e044517.

⁴ Morin et al. (2022). Prevalent, incident, and persistent insomnia in a population-based cohort tested before (2018) and during the first-wave of COVID-19 pandemic (2020). *Sleep*, 45(1), zsab258.

⁵ McAuliffe et al. (2021). Correlates of suicidal ideation related to the COVID-19 Pandemic: Repeated cross-sectional nationally representative Canadian data. *SSM-Population Health*, 16, 100988.

⁶ Daly et al. (2021). Associations between periods of COVID-19 quarantine and mental health in Canada. *Psychiatry research*, 295, 113631.

⁷ Lin et al. (2022). Generalized anxiety disorder during COVID-19 in Canada: gender-specific association of COVID-19 misinformation exposure, precarious employment, and health behavior change. *Journal of Affective Disorders*, 302, 280-292.

⁸ Liu et al. (2022). Prevalence of suicidal ideation among adults in Canada: Results of the second Survey on COVID-19 and mental health. *Health reports*, 33(5), 13-21

⁹ Zajacova et al. (2020). Mental health and economic concerns from March to May during the COVID-19 pandemic in Canada: Insights from an analysis of repeated cross-sectional surveys. *SSM-population health*, 12, 100704.

in the spring of 2021 compared to fall of 2020.¹⁰ A study that tracked depression and anxiety in Ontario parents (n=2,439) between spring of 2020 and 2021 found increased depression over time.¹¹ A study with adolescents in British Columbia (n=1,755) found reduced optimism, lower life satisfaction and greater sadness in 2021 compared to 2020.¹² Ying et al.¹³ used time series analysis to study changes in 46 mental health medications dispensed in Alberta and found immediate and significant increases in 8 medications; the increase was sustained over the first 13 months of the pandemic.

Expert opinion: Studies consistently show alarming mental health deterioration during the pandemic among Canadians, including psychological distress, insomnia, depression, fatigue, suicide ideation, self-harm, anxiety disorders and life satisfaction. Many studies also show that mental health continued to decline in 2021 compared to 2020. As I discuss in more detail in subsequent sub-sections, pandemic restrictions implemented by the Canadian government played a significant role in this deterioration.

2. Mental health services were disrupted while demand increased

Studies show that demand for mental health services increased during the pandemic but that services struggled to meet increased demand. A qualitative study from Ontario during the first half of 2021 found that mental health concerns among youth (16-24 years) increased substantially but that services and supports simultaneously decreased with significant gaps in care and equitable access.¹⁴ A second qualitative study from early 2021 in Quebec found that virtual mental health service delivery was only effective for certain population groups and that many facilities had substantial gaps in services.¹⁵ A study published in the *Journal of the American Medical Association* (JAMA) found that emergency department visits for acute mental health issues in children and adolescents in Ontario increased by 41-62% starting in February 2021.¹⁶ A separate study found a 10-15% monthly increase in mental health service utilization starting in February 2021 in Ontario, especially among adolescent females.¹⁷ This trend was also found in a study from Montreal, where mean monthly mental health-related emergency department visits increased by 69% during the pandemic period compared to pre-pandemic, especially with

¹⁰ Capaldi et al. (2022). Self-rated mental health, community belonging, life satisfaction and perceived change in mental health among adults during the second and third waves of the COVID-19 pandemic in Canada. *Health Promotion & Chronic Disease Prevention in Canada: Research, Policy & Practice*, 42(5).

¹¹ Zhang et al. (2022). Mental Health Help-Seeking in Parents and Trajectories of Depressive and Anxiety Symptoms: Lessons Learned From the Ontario Parent Survey During the COVID-19 Pandemic. *Frontiers in psychology*, 13.

¹² Gademann et al. (2022). Early Adolescents' Experiences During the COVID-19 Pandemic and Changes in Their Well-Being. *Frontiers in public health*, 10.

¹³ Ying et al. (2022). Dispensing patterns of mental health medications before and during the COVID-19 pandemic in Alberta, Canada: An interrupted time series analysis. *The International Journal of Psychiatry in Medicine*, 00912174221084818.

¹⁴ Kourgiantakis et al. (2022). Navigating inequities in the delivery of youth mental health care during the COVID-19 pandemic: perspectives of youth, families, and service providers. *Canadian Journal of Public Health*, 1-11.

¹⁵ Spagnolo et al. (2022). Perceptions on barriers, facilitators, and recommendations related to mental health service delivery during the COVID-19 pandemic in Quebec, Canada: a qualitative descriptive study. *BMC primary care*, 23(1), 1-14.

¹⁶ Saunders et al. (2022). Changes in hospital-based care seeking for acute mental health concerns among children and adolescents during the COVID-19 pandemic in Ontario, Canada, through September 2021. *JAMA Network Open*, 5(7), e2220553-e2220553.

¹⁷ Saunders et al. (2022). Utilization of physician-based mental health care services among Children and adolescents before and during the COVID-19 pandemic in Ontario, Canada. *JAMA pediatrics*, 176(4), e216298-e216298.

girls.¹⁸ In general, those with pre-existing psychiatric diagnoses experienced greater deterioration and greater stress from social isolation.

Expert opinion: Studies show increases in the demand for mental health services in Canada, especially in 2021 and among younger girls. Studies suggest large gaps in the ability for the Canadian medical system to meet the needs of this rising demand. It is highly likely that data from 2022 will show that the increase in mental health service demand has continued to increase. There is often a lag-time between mental health deterioration and clinical presentation and it is likely to take many years to fully understand the scale and impact of the negative effects of pandemic restrictions on the mental health of Canadians.

3. Socio-economic stress, isolation and lifestyle changes caused by pandemic restrictions were the main drivers to mental health deterioration

Studies consistently show that individuals with pre-existing social and economic vulnerabilities experienced greater mental health deterioration in Canada during the pandemic.^{19 20 21 22} This suggests that the socio-economic stress caused by pandemic restrictions played a greater role in mental health deterioration compared to fear and concern about the virus itself. A study (n=3,183) from Quebec in June 2020 showed that different classes of individuals experienced pandemic restrictions differently, with some benefiting from the disruption to normal routines, spending more time with family and gaining financially by new work arrangements.²³ By comparison, other groups suffered disproportionately, especially racial/ethnic minorities, the unemployed, those experiencing family conflict, essential workers and those with pre-existing disabilities and mental health conditions. A large-scale study with adults found that the odds of depression increased two-times during the first year of the pandemic compared to pre-pandemic period, with higher rates among those with lower socioeconomic status, poor health, loneliness and family conflict.²⁴ Another study from Quebec (n=594) found that increases in insomnia, fatigue and depression were associated with living alone, self-isolating, greater screen-time, reduced physical exercise, higher financial stress and lower social support.⁵

Expert opinion: Overall, studies consistently show that individuals with pre-existing social and economic vulnerabilities experienced greater mental health deterioration. This suggests that socio-economic stress as well as social isolation and lifestyle changes

¹⁸ Beaudry et al. (2022). A comparative analysis of pediatric mental health-related emergency department utilization in Montréal, Canada, before and during the COVID-19 pandemic. *Annals of general psychiatry*, 21(1), 1-10.

¹⁹ Jenkins et al. (2021). A portrait of the early and differential mental health impacts of the COVID-19 pandemic in Canada: Findings from the first wave of a nationally representative cross-sectional survey. *Preventive Medicine*, 145, 106333.

²⁰ Beland et al. (2021). Determinants of family stress and domestic violence: lessons from the COVID-19 outbreak. *Canadian Public Policy*, 47(3), 439-459.

²¹ Lin et al. (2022). Generalized anxiety disorder during COVID-19 in Canada: gender-specific association of COVID-19 misinformation exposure, precarious employment, and health behavior change. *Journal of Affective Disorders*, 302, 280-292.

²² Zajacova et al. (2020). Mental health and economic concerns from March to May during the COVID-19 pandemic in Canada: Insights from an analysis of repeated cross-sectional surveys. *SSM-population health*, 12, 100704.

²³ Frounfelker et al. (2021). COVID-19 experiences and social distancing: Insights from the theory of planned behavior. *American Journal of Health Promotion*, 35(8), 1095-1104.

²⁴ Raina et al. (2021). A longitudinal analysis of the impact of the COVID-19 pandemic on the mental health of middle-aged and older adults from the Canadian Longitudinal Study on Aging. *Nature Aging*, 1(12), 1137-1147.

caused by Canadian government restrictions (e.g. stay-at-home orders and bans on outdoor gatherings) played a much greater role in mental health deterioration compared to fear about catching the virus itself. This conclusion is also supported by the research presented below.

4. Government policies created unemployment and destroyed small businesses

Studies show that government restrictions had detrimental effects on employment and small businesses, especially those deemed ‘non-essential.’ Canada had historic surges in unemployment that reached 13% in the first wave of the pandemic; by the last quarter of 2021, Canada had sustained a 1.6% decrease in GDP per capita, a 23% increase in the debt-to-GDP ratio and a 2.5% change in the inflation rate in comparison to 2019 levels.²⁵ A survey in January 2021 by the *Canadian Federation of Independent Businesses* found that only 47% of small businesses were fully open and estimated that 7% to 21% of Canadian businesses (71,000 to 222,000) were at risk of closing due to the pandemic.²⁶ A study in Ottawa during the third wave in 2021 found that 30% of nightclubs/bars, 15% of cafes/restaurants, and 10% of retail stores were closed and about half of these did not reopen by the end of September 2021.²⁷ A study on the food retail and service sector found that restaurants in urban cores were hit the hardest and that the hospitality sector had lost over \$20 billion in 2020 alone.²⁸ Haider and Anwar²⁹ estimated that telework reached a peak of 40% of the Canadian workforce in March-April 2020 and was much more common among university-educated workers located in downtown cores in the knowledge economy. Studies also show that telework was experienced more negatively by some sectors of the economy³⁰ and based on worker characteristics.³¹

The Canadian government developed multiple financial assistance programs in an effort to mitigate these economic effects. A policy analysis of these income support programs found that equity and stakeholder input was often lacking in implementation, which predominately emphasized efficiency objectives.³² A study on cultural and creative sectors noted that most individuals did not qualify for the Canada Emergency Response Fund (CERB) in March 2020 and although the Canada Recovery Benefit (CRB) did expand financial assistance, some groups remained ineligible: contract workers, freelancers, self-employed persons, and entrepreneurs.³³ A qualitative study in Manitoba found that income support programs were viewed as contributing to recruitment and

²⁵ Razak et al. (2022). Canada’s response to the initial 2 years of the COVID-19 pandemic: a comparison with peer countries. *CMAJ*, 194(25), E870-E877.

²⁶ CFIB (2021). See: <https://www.cfib-fcei.ca/en/media/news-releases/181000-canadian-small-business-owners-now-contemplating-pulling-plug-putting-24>

²⁷ Rigobon et al. (2022). Business Closures and (Re) Openings in Real-Time Using Google Places: Proof of Concept. *Journal of Risk and Financial Management*, 15(4), 183.

²⁸ Music and Charlebois (2022). Consumer perceptions about food retail and services during the first wave of COVID-19 in Canada: An exploratory study. *Cogent Social Sciences*, 8(1), 2072556.

²⁹ Haider and Anwar (2022). The prevalence of telework under Covid-19 in Canada. *Information Technology & People*, in press.

³⁰ Boulet and Parent-Lamarche (2022). Paradoxical Effects of Teleworking on Workers’ Well-Being in the COVID-19 Context: A Comparison Between Different Public Administrations and the Private Sector. *Public Personnel Management*, in press.

³¹ Doberstein and Charbonneau (2022). Alienation in Pandemic-Induced Telework in the Public Sector. *Public Personnel Management*, in press.

³² Koebel et al. (2021). Public policy in a time of crisis: A framework for evaluating Canada’s covid-19 income support programs. *Canadian Public Policy*, 47(2), 316-333.

³³ Wall-Andrews et al. (2021). Support Mechanisms for Canada’s Cultural and Creative Sectors during COVID-19. *Journal of Risk and Financial Management*, 14(12), 595.

retention challenges in the grocery sector.³⁴ Talbot and Ordonez-Ponce³⁵ conducted a content analysis of bank policies during the first wave in Canada and found that 40% of large banks were doing very little to help their stakeholders.

Expert opinion: Pandemic policies required many Canadians to sacrifice their source of income, savings and business. Temporary economic support policies provided relief but people did fall between the cracks of income support. Business closures were widespread and lockdowns in 2021 further reduced business confidence. For small business owners, restrictions contributed to the destruction of their livelihood. Many of these individuals would have viewed this sacrifice as unjustified, especially in 2021. Economists are still debating many of the economic effects across different sectors. An important long-term consideration is the increase in debt and inflation, which have likely compounded the current economic crisis and might lead to future austerity policies and cuts in government spending.

5. Young people saw the greatest deterioration in mental health due to pandemic restrictions

Studies consistently show that *younger age* was the single largest factor associated with greater mental health deterioration during 2020-2021 in Canada. The pandemic created a *generational paradox*: those most severely affected by the virus were less likely to be severely affected by government restrictions and social disruptions, and vice versa.

For example, a large-scale study found that older age was associated with better mental health and social connectedness scores during the fall of 2020.³⁶ A study in 2020 with adults (n=280) from Ontario and Alberta found that factors linked to Covid-19 hospitalization risk (e.g. older age and pre-existing health conditions) were less relevant to mental health deterioration compared to factors associated with the negative consequences of pandemic restrictions (younger age, living alone, lost income).³⁷ A third study (n=7,008) found that being older, having a higher income, and having employment security was associated with better mental health during the pandemic.³⁸

By contrast, studies found much higher mental health deterioration among younger age groups. A study (n=1,280) during the fall of 2020 found that 58% of Canadians 18-29 years old reported unmet mental health needs; higher odds were reported by men, those who lost income due to pandemic restrictions, those living in rural areas and people who had experienced ethno-racial discrimination.³⁹ A study in Manitoba (December 2020)

³⁴ Riediger et al. (2022). Policy responses to the COVID-19 pandemic in the Manitoba grocery sector: a qualitative analysis of media, organizational communications, and key informant interviews. *BMC Public Health*, 22(1), 1-13.

³⁵ Talbot and Ordonez-Ponce (2022). Canadian banks' responses to COVID-19: A strategic positioning analysis. *Journal of Sustainable Finance & Investment*, 12(2), 423-430.

³⁶ Gregory et al. (2021). Mental health and social connectedness across the adult lifespan in the context of the COVID-19 pandemic. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, 40(4), 554-569.

³⁷ Lowe et al. (2022). COVID-19 pandemic mental health trajectories: Patterns from a sample of Canadians primarily recruited from Alberta and Ontario. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*.

³⁸ Plett et al. (2022). The impact of provincial lockdown policies and COVID-19 case and mortality rates on anxiety in Canada. *Psychiatry and Clinical Neurosciences* 76(9).

³⁹ Coulaud et al. (2022). Young Adults' Mental Health and Unmet Service Needs in the Context of the COVID-19 Pandemic Across Canada and France. *Community Mental Health Journal*, 1-11.

found over half of adolescents and young adults reported increased stress/anxiety and depression they associated with the pandemic; consumption of alcohol/cannabis and social conflict had increased substantially.⁴⁰ A review of 21 unpublished Canadian surveys (March 2020-2021) with tens-of-thousands of university students found deteriorating mental health, financial stress and large increases in concern about the future.⁴¹ A study with first year undergraduate students in Ontario found an increase in depression, anxiety, insomnia, and self-harm among the 2020–2021 cohort (compared to past years), which coincided with remote learning and pandemic restrictions.⁴² Anxiety, depression and suicide ideation increased in female students: from one-third to half of the respondents. The study concluded that: “*studying under pandemic conditions had a negative impact on student well-being, social relationships and school connectedness, quality of learning experience, leisure activities, and optimism about future prospects.*” An additional study with Canadian university students (n=3,013) found that 79% reported worries about the long-term impacts of disruptions on their job prospects and academic performance.⁴³ Students were concerned about the impact of social isolation and reductions in support services and means of coping.

Expert opinion: Studies consistently show that younger age was the single largest factor associated with greater mental health deterioration during 2020-2021 in Canada. The pandemic created a *generational paradox*: those at low risk of bad clinical outcomes from the virus were the most severely affected by government restrictions. Lockdown policies and other government restrictions have played a major role in the alarming mental health crisis in Canadian young adults.

6. Families with young children faced unique mental health stresses as a result of restrictions

The mental health and wellbeing of families, especially those with young children, were also disproportionately impacted by pandemic restrictions in Canada. While some families benefited from spending more time with each other and explored new opportunities together,⁴⁴ this was dependent on the quality of parent-child relationships, balance of work-life-care responsibilities and pre-existing household socio-economic conditions.⁴⁵ ⁴⁶A large-scale study (n=3,000) in May 2020 found that 44% of parents with children under 18 reported worse mental health due to the pandemic, with increased alcohol consumption, suicidal thoughts, feelings of un-safety from physical/emotional

⁴⁰ Salmon et al. (2022). Pandemic-related experiences, mental health symptoms, substance use, and relationship conflict among older adolescents and young adults from Manitoba, Canada. *Psychiatry Research*, 311, 114495.

⁴¹ Houlden and Veletsianos (2022). A synthesis of surveys examining the impacts of COVID-19 and emergency remote learning on students in Canada. *Journal of Computing in Higher Education*, 1-24.

⁴² King et al. (2022). The impact of the COVID-19 pandemic on the mental health of first-year undergraduate students studying at a major Canadian university: a successive cohort study. *The Canadian Journal of Psychiatry*, in press.

⁴³ Appleby et al. (2022). Impact of the COVID-19 pandemic on the experience and mental health of university students studying in Canada and the UK: A cross-sectional study. *BMJ open*, 12(1), e050187.

⁴⁴ Waboso et al. (2022). ‘We can play tag with a stick’. Children’s knowledge, experiences, feelings and creative thinking during the COVID-19 pandemic. *Children & Society*, in press.

⁴⁵ Spadafora et al. (2022). From full day learning to 30 minutes a day: A descriptive study of early learning during the first COVID-19 pandemic school shutdown in Ontario. *Early childhood education journal*, 1-13.

⁴⁶ Zak et al. (2022). The protective role of internal/external factors on Covid-19 related stressors among resource parents. *Developmental Child Welfare*, in press.

domestic violence and inter-family conflict.⁴⁷ Craig et al.⁴⁸ found that pandemic stay-at-home orders in 2020 had caused 25% of youth and 11% of caregivers to experience “extreme” stress within their families, with 2–8% of respondents reported physical maltreatment in their homes. Mohanty et al.⁴⁹ found pandemic-related stressors eroded family cohesion and exacerbated family conflict among a sample in Ontario during the first wave (n=933). Studies have shown that pandemic restrictions widened the gender employment gap for women.⁵⁰ ⁵¹A qualitative study in British Columbia in 2020 found that the interruption in childcare during the pandemic increased unpaid (and often unrecognized) care burdens for mothers, negatively impacted wellbeing and limiting their participation in paid work.⁵²

Expert opinion: Studies show that the mental health and wellbeing of Canadian families, especially those with young children, were disproportionately impacted by lockdowns and pandemic restrictions. Families are the backbone of Canadian society and increases in alcohol consumption, suicidal thoughts, physical/emotional domestic violence and inter-family conflict, as reported in the studies listed above, are likely to have long-term harmful consequences. Furthermore, studies show that pandemic policies have exasperated the gender employment gap for women, who predominately assumed greater childcare responsibilities due to school and work closures.

7. Pandemic stress from restrictions affected child development and education with future consequences

Social disruptions caused by the pandemic and government policies created psychosocial stress that are likely to outlive the pandemic and impact the future of Canadian society. A study during the first wave in Toronto (n=1,398) found over 65% of children and adolescents experienced deterioration in at least one mental health domain: depression 37–56%, anxiety 31–50%, irritability 40–66%, attention 40–56%, hyperactivity 23–56% and obsessions/compulsions 13–30%.⁵³ By comparison only 19–31% experienced improvement in at least one domain. Emotional outbursts, rapid mood and personality changes, and disruption to sleep patterns were reported. A study published in the *Journal of the American Medical Association* found that public health measures in Canada (March 1 to November 30, 2020) increased eating disorder diagnoses and hospitalizations in Canadian teenagers.⁵⁴

⁴⁷ Gadermann et al. (2021). Examining the impacts of the COVID-19 pandemic on family mental health in Canada: findings from a national cross-sectional study. *BMJ open*, 11(1), e042871.

⁴⁸ Craig et al. (2022). Roles of family stress, maltreatment, and affect regulation difficulties on adolescent mental health during COVID-19. *Journal of family violence*, 37(5), 787-799.

⁴⁹ Mohanty et al. (2022). COVID-19-related stressors, family functioning and mental health in Canada: Test of indirect effects. *Family Relations*, 71(2), 445-462.

⁵⁰ Fuller and Qian (2021). Covid-19 and the gender gap in employment among parents of young children in Canada. *Gender & Society*, 35(2), 206-217.

⁵¹ Haney and Barber (2022). The extreme gendering of COVID-19: Household tasks and division of labour satisfaction during the pandemic. *Canadian Review of Sociology/Revue canadienne de sociologie*.

⁵² Smith (2022). From “nobody’s clapping for us” to “bad moms”: COVID-19 and the circle of childcare in Canada. *Gender, Work & Organization*, 29(1), 353-367.

⁵³ Cost et al. (2022). Mostly worse, occasionally better: impact of COVID-19 pandemic on the mental health of Canadian children and adolescents. *European child & adolescent psychiatry*, 31(4), 671-684.

⁵⁴ Agostino et al. (2021). Trends in the incidence of new-onset anorexia nervosa and atypical anorexia nervosa among youth during the COVID-19 pandemic in Canada. *JAMA network open*, 4(12), e2137395-e2137395.

Haeck and Larose⁵⁵ estimated that school shutdowns in Canada would increase the performance gap among students by 30%. Unfortunately, there are no available pan-Canadian studies that allow us to evaluate learning outcomes pre- and post-pandemic. Based on evidence from Europe and America, Haeck and Larose⁵⁶ hypothesize that academic setbacks will be significant, long-lasting and be felt most severely among vulnerable students: disadvantaged children, those with special needs and low performers. A review of these effects in Ontario concluded that: “*the unequal distribution of school closures and pandemic-associated hardships, particularly affecting low-income families in which racialized and Indigenous groups, newcomers and people with disabilities are overrepresented, appear to be deepening and accelerating inequities in education outcomes, wherever data have been collected.*”⁵⁷

Expert opinion: Public health policies created significant psychosocial stress among adolescents and children at crucial points in their development. Studies that show increases in child behavioural problems and negative student learning may impact the future of Canadian society in unpredictable and negative ways. Available studies are limited but the data cited above is not reassuring.

8. Minorities and vulnerable social groups were disproportionately impacted by restrictions

Research studies consistently show that specific marginalized and vulnerable social groups experienced disproportionate mental health and socio-economic impacts from pandemic restrictions.⁵⁸ These include those with pre-existing mental health disorders and disabilities, homeless people, those at risk of domestic violence or addiction, low-income families and minority groups, such as First Nations and immigrant communities. A study with people with disabilities and chronic health conditions in June 2020 (n=1,027) found that roughly 40% reported increased anxiety and stress, which was associated with financial struggles due to the pandemic, concerns about contracting the virus and increases in loneliness.⁵⁹ A systematic review of Canadian studies found that the pandemic may have slightly increased household food insecurity: the prevalence of food insecurity ranged from 14-17% in the general population but was highest among households who had lost their jobs or stopped working due to Covid-19 (24-39%).⁶⁰ A large-scale study (n=3,000) found that indigenous groups and ethnic minorities were over two times more likely to report fears about physical or emotional domestic violence during May 2020.⁶¹ A qualitative study with Indigenous health and social care providers

⁵⁵ Haeck and Lefebvre (2020). Pandemic school closures may increase inequality in test scores. *Canadian Public Policy*, 46(S1), S82–S87.

⁵⁶ Haeck and Larose (2022). What is the effect of school closures on learning in Canada? A hypothesis informed by international data. *Canadian Journal of Public Health*, 113(1), 36–43.

⁵⁷ Gallagher-Mackay et al. (2021). COVID-19 and education disruption in Ontario: Emerging evidence on impacts. *Law and Society Faculty Publications*: https://scholars.wlu.ca/laso_faculty/1

⁵⁸ Jenkins et al. (2022). Mental Health Inequities Amid the COVID-19 Pandemic: Findings From Three Rounds of a Cross-Sectional Monitoring Survey of Canadian Adults. *International Journal of Public Health*, 123.

⁵⁹ Pettinicchio et al. (2021). Findings from an online survey on the mental health effects of COVID-19 on Canadians with disabilities and chronic health conditions. *Disability and Health Journal*, 14(3), 101085.

⁶⁰ Idzerda et al. (2022). What is known about the prevalence of household food insecurity in Canada during the COVID-19 pandemic: a systematic review. *Health Promotion & Chronic Disease Prevention in Canada: Research, Policy & Practice*, 42(5).

⁶¹ Jenkins et al. (2021). A portrait of the early and differential mental health impacts of the COVID-19 pandemic in Canada: Findings from the first wave of a nationally representative cross-sectional survey. *Preventive Medicine*, 145, 106333.

found considerable declines in interpersonal connections with family, community organizations and social networks as a result of restrictions; indigenous families on reserves were more resilient than those in urban settings.⁶² Roberts⁶³ documented the response to a Covid-19 outbreak in a Canadian prison in BC in April 2020 and found that the public health response subjected prisoners to “*torturous conditions that were psychologically harmful.*”

Studies consistently show negative repercussions of pandemic restrictions on social groups at risk of abuse, violence and drugs. Williams et al.⁶⁴ found that 45% of sampled child maltreatment investigators and forensic interviewers across Canada reported reduced caseloads during May-July 2020 and increased job stress. Covid-19 precautionary measures influenced the willingness of children to disclose abuse and negatively affected the ability to build rapport with at-risk children. Three qualitative studies at Ontario shelters found that Covid-19 rules inhibited the ability for staff to care for traumatized women and children, who reported significant reductions in their mental health and wellbeing as well as a corresponding crisis in staffing and morale.⁶⁵⁶⁶⁶⁷ Two additional qualitative studies with sexual and partner violence workers across Canada found that increased isolation and poverty as well as a reduction in services heightened vulnerability.⁶⁸⁶⁹ Similar results were found in an additional qualitative study with adults who use social and housing services in Toronto (July-Oct 2020).⁷⁰ A survey in Montreal from May-December 2020 (n=227) with people who use drugs found increased difficulties finding shelter and accessing addiction treatment and health services, placing them at increased exposure to harmful environments.⁷¹ McRae et al.⁷² found a doubling of upper extremity infections among intravenous drug users in Hamilton, Ontario, in 2020, reflective of the reduction in harm reduction services.

Expert opinion: Marginalized and vulnerable social groups experienced disproportionate mental health and socio-economic impacts from pandemic restrictions. These groups have less voice in society to influence government policy. Service organizations that support groups at risk of abuse, domestic violence and drug addiction experienced

⁶² Richmond et al. (2022). The health impacts of social distancing among Indigenous People in Ontario during the first wave of COVID-19: The health impacts of social distancing. *International Journal of Indigenous Health*, 17(1).

⁶³ Roberts, D. (2022). CSC’s COVID-19 Response: Inside Canada’s First Federal Penitentiary Outbreak at Mission Medium. *Journal of Prisoners on Prisons*, 30(1), 100-116.

⁶⁴ Williams et al. (2022). The impact of COVID-19 on Canadian child maltreatment workers. *Children and Youth Services Review*, 138, 106492.

⁶⁵ MacGregor et al. (2022). Experiences of Women Accessing Violence Against Women Outreach Services in Canada During the COVID-19 Pandemic: a Brief Report. *Journal of Family Violence*, 1-9.

⁶⁶ Mantler et al. (2022). Navigating multiple pandemics: A critical analysis of the impact of COVID-19 policy responses on gender-based violence services. *Critical Social Policy*, in press.

⁶⁷ Wathen et al. (2022). “We’re so limited with what we actually can do if we follow all the rules”: a qualitative study of the impact of COVID-19 public health protocols on violence against women services. *BMC public health*, 22(1), 1-14.

⁶⁸ Michaelsen et al. (2022). Service provider perspectives on how COVID-19 and pandemic restrictions have affected intimate partner and sexual violence survivors in Canada: a qualitative study. *BMC women's health*, 22(1), 1-13.

⁶⁹ Michaelsen et al. (2022). Looking at COVID-19 effects on intimate partner and sexual violence organizations in Canada through a feminist political economy lens: a qualitative study. *Canadian journal of public health*, 1-11.

⁷⁰ Mejia-Lancheros et al. (2022). Differential impacts of COVID-19 and associated responses on the health, social well-being and food security of users of supportive social and health programs during the COVID-19 pandemic: A qualitative study. *Health & Social Care in the Community*.

⁷¹ Minoyan et al. (2022). Self-reported impacts of the COVID-19 pandemic among people who use drugs: a rapid assessment study in Montreal, Canada. *Harm Reduction Journal*, 19(1), 1-10.

⁷² McRae et al. (2022). Upper Extremity Infection Related to Intravenous Drug Use: Considering the True Cost of the COVID-19 Pandemic and Lockdown. *HAND*, in press.

reductions in their capacity and were negatively affected by pandemic restrictions imposed by the government. Government policies led to the closure of physical spaces that vulnerable people depend on, disrupted social support networks and eliminated resources people rely upon. The lack of face-to-face meetings meant that social workers and families lost touch with vulnerable people. Canadian pandemic policies, largely because of their stringency and length of enforcement, ran counter to the stated principles of equity and social justice.

9. Excess mortality data shows a complicated picture, with drug overdoses being significantly increased

Data on excess mortality in Canada (March 2020-October 2021) shows greater excess deaths from non-Covid-19 related causes (34,299 deaths) compared to Covid-19 related deaths (28,285).⁷³ One major cause of the increased deaths among Canadians involves increases in drug overdoses during the pandemic. In Ontario, Dmetrichuk et al.⁷⁴ found more than 1,500 excess drug-related deaths in 2020 alone. Lee et al.⁷⁵ found 465 excess drug overdose deaths in BC, from March-September 2020; by comparison, there were 258 Covid-19 deaths during this period. This study compared drug overdoses and Covid-19 mortality by age: drug overdose deaths were in those under 60 years old, while most Covid-19 deaths were in those over 60. Both studies suggest that excess drug overdoses are linked to increased mental health deterioration, opioid consumption, suicide and/or reduction in harm reduction services due to pandemic restrictions. This dynamic relationship can help explain why official suicide rates in 2020, which were projected to increase,⁷⁶ did not significantly increase according to official national statistics.^{77 78} Excess mortality data is still emerging; for example, national suicide statistics from 2021 are currently unavailable.

Expert opinion: The data on excess mortality is alarming and suggests that more people may have died in Canada from increases in non-Covid related conditions compared to Covid-19 during the pandemic period. Pandemic restrictions (e.g. stay-at-home orders, business closures, bans on outdoor gatherings, etc) that contributed to the overall mental and physical deterioration of Canadians during this time contributed to this excess mortality. Understanding the different causes of this alarming increase will require more time and the existing number of publications are limited. However, the available data on drug overdoses paints a dismal picture. It is also important to keep in mind that increases in mental health deterioration and chronic disease risk factors take many years to be observed since they alter the long-term health and wellbeing of a population.

⁷³ McGrail (2022). Excess mortality, COVID-19 and health care systems in Canada. *CMAJ*, 194(21), E741-E745.

⁷⁴ Dmetrichuk et al. (2022). Retrospective study of non-natural manners of death in Ontario: Effects of the COVID-19 pandemic and related public health measures. *The Lancet Regional Health-Americas*, 7, 100130.

⁷⁵ Lee et al. (2022). Comparing mortality from covid-19 to mortality due to overdose: A micromort analysis. *Journal of affective disorders*, 296, 514-521.

⁷⁶ McIntyre and Lee (2020). Projected increases in suicide in Canada as a consequence of COVID-19. *Psychiatry research*, 290, 113104.

⁷⁷ McIntyre et al. (2021). Suicide reduction in Canada during the COVID-19 pandemic: lessons informing national prevention strategies for suicide reduction. *Journal of the Royal Society of Medicine*, 114(10), 473-479.

⁷⁸ Isnar and Oremus (2022). Examining the association between the COVID-19 pandemic and self-harm death counts in four Canadian provinces. *Psychiatry research*, 310, 114433.

10. The elderly and those in care facilities were isolated and felt abandoned

Studies show deteriorating mental and physical conditions in long-term care (LTC) facilities, which experienced the greatest Covid-19 mortality but also the most stringent physical distancing regulations.

Four studies explored the perspective of LTC residents, staff and families in Ontario, Canada and largely came to the same conclusions. A study by Badone⁷⁹ showed that both residents and workers in Ontario's long-term care system were marginalized by policies that eroded dignity and personhood. Residents felt "warehoused" and "treated like a piece of meat", as increased Covid-19 safety guidelines created "zones of abandonment" that isolated them from the outside world. Prior to the pandemic, the structural weaknesses and cost cutting at LTC (staff shortages, routine lapses in care, bad management) were mitigated by time-intensive activities undertaken by family members (feeding, hygiene, social support). Many LTC residents felt that the strict isolation to prevent Covid-19 at all costs did not sufficiently consider the adverse impacts this had on their other human needs. A second study in late 2020/early 2021 across 235 long-term care homes in Ontario found that lockdowns deteriorated physical, mental and cognitive wellbeing and disconnected residents from their social connections; residents emphasized that lockdowns had been "unfair", unnecessarily limiting contact with family members and changing their motivation for living.⁸⁰ A third study with essential family caregivers found that individuals experienced collective trauma due to prolonged separation, uncompassionate interactions with staff, inability to care for loved ones and feelings of powerlessness.⁸¹ Families were unable to access their relatives to provide care until September 2020 and even then with strict safety rules. Many LTC homes hired extra security to monitor compliance during visits, making family members feel like "the new enemy." A fourth study concluded that: "*isolating individuals who were sick, fragile, and biologically and socially vulnerable...reproduced inequities and risk for those in need of medical care, advocacy, and social companionship.*"⁸²

These findings are similar to other Canadian studies. A mixed methods study at a long-term care home in BC found that pandemic strategies were perceived to be analogous to incarceration.⁸³ Two studies with LTC staff and caregivers from BC and Alberta found that heavy workloads and inadequate staffing levels contributed to negative mental health impacts among staff and caregivers.⁸⁴ ⁸⁵ Colucci et al.⁸⁶ found that quality of life,

⁷⁹ Badone (2021). From crudeness to catastrophe: COVID-19 and long-term care in Ontario. *Medical Anthropology*, 40(5), 389-403.

⁸⁰ Saad et al. (2022). Health Equity Implications of the COVID-19 Lockdown and Visitation Strategies in Long-Term Care Homes in Ontario: A Mixed Method Study. *International journal of environmental research and public health*, 19(7), 4275.

⁸¹ Chu et al. (2022). "It's the worst thing I've ever been put through in my life": the trauma experienced by essential family caregivers of loved ones in long-term care during the COVID-19 pandemic in Canada. *International Journal of Qualitative Studies on Health and Well-being*, 17(1), 2075532.

⁸² Rangel et al. (2022). Biopower under a state of exception: stories of dying and grieving alone during COVID-19 emergency measures. *Medical Humanities*, in press.

⁸³ Staempfli et al. (2022). Unintended consequences of pandemic management strategies on residents and family in one long-term care home in British Columbia: A patient-supported qualitative study. *Innovation in aging*, 6(5), igac036.

⁸⁴ Havaei et al. (2022). The Impact of Pandemic Management Strategies on Staff Mental Health, Work Behaviours, and Resident Care in One Long-Term Care Facility in British Columbia: A Mixed Method Study. *Journal of Long-Term Care*, in press.

⁸⁵ Lane et al. (2022). Prevalence and correlates of anxiety and depression in caregivers to assisted living residents during COVID-19: a cross-sectional study. *BMC geriatrics*, 22(1), 1-12.

⁸⁶ Colucci et al. (2022). COVID-19 lockdowns' effects on the quality of life, perceived health and well-being of healthy elderly individuals: A longitudinal comparison of pre-lockdown and lockdown states of well-being. *Archives of gerontology and geriatrics*, 99, 104606.

perceived health and wellbeing declined during lockdown in 2020 among a sample of 72 healthy elderly persons in Quebec.

Expert opinion: The studies on the experience of elderly residents, family members and staff at long-term care facilities in Canada strongly converge in their conclusions. These studies argue that the level of stringency involved in Covid-19 restrictions and safety rules, especially blanket visitation bans, promoted prolonged isolation that deteriorated the physical and mental health of the elderly. These were perceived as inhumane and a policy mistake that should not be repeated in the future.

11. Public health restrictions decreased physical exercise and increased weight gain

Studies show that lockdowns and other restrictions decreased physical exercise and increased weight gain among Canadian adults. A national study (n=1,098) found significant variation in physical activity levels in May 2020: 40% of inactive individuals became less active while 33% became more active.⁸⁷ Women were found to have been significantly less physically active than men and experienced more barriers to exercising.⁸⁸ Using fitness trackers in March/April 2020 (n=121), Woodruff et al.⁸⁹ found decreased physical activity associated with a large increase in work-related stress and sedentary screen-time use. An online survey (n=2,078, June–October 2020) with Canadians living with obesity found that more than half decreased healthy eating and exercise and that 60% reported weight gain (average of 6 kg), with 40% gaining more than 5% of their body weight.⁹⁰ A modeling study predicted that 5,324 additional cancer deaths might occur in Canada by 2042 due to weight gain alone.⁹¹

Expert opinion: Lockdowns and other restrictions contributed to weight gain among many Canadians, which contributed to deteriorating mental and physical health. Policies restricted the ability for people to exercise by closing gyms, parks and structured sports and by limiting time spent outdoors and with friends and family. Not everyone has access to fitness equipment or can easily be motivated to exercise indoors. Weight gain is a significant risk factor for many chronic diseases. Available studies from Canada are limited but studies from the United States have shown that weight gain has remained high in 2021 and 2022. Longer-term studies are needed to explore the implication of increased sedentary behaviour during the pandemic on the health of Canadians.

12. Children reduced their physical activity levels and time spent outdoors

Studies also show that children reduced their physical activity levels and time outdoors

⁸⁷ Lesser and Nienhuis (2020). The impact of COVID-19 on physical activity behavior and well-being of Canadians. *International journal of environmental research and public health*, 17(11), 3899.

⁸⁸ Nienhuis and Lesser (2020). The impact of COVID-19 on women's physical activity behavior and mental well-being. *International journal of environmental research and public health*, 17(23), 9036.

⁸⁹ Woodruff et al. (2021). Stress, physical activity, and screen-related sedentary behaviour within the first month of the COVID-19 pandemic. *Applied Psychology: Health and Well-Being*, 13(2), 454-468.

⁹⁰ Glazer and Vallis (2022). Weight gain, weight management and medical care for individuals living with overweight and obesity during the COVID-19 pandemic (EPOCH Study). *Obesity Science & Practice*, in press.

⁹¹ Murphy et al. (2022). Projected Impact of Weight Gain During the COVID-19 Pandemic on the Future Burden of Cancer in Canada. *Frontiers in Oncology*, 12.

during the pandemic. A study in April 2020 found that parents from all provinces of Canada reported decreased time spent outdoors and in outdoor play among children/adolescents, which was associated with the stringency of restrictions on access to outdoor spaces (the greatest declines were found in Ontario).⁹² This trend continued in a follow-up study in October 2020, despite loosening of outdoor space restrictions.⁹³ A second study compared child movement behaviour between the first (March 2020) and second (October 2020) wave in Canada and found that the percentage of children/youth who followed the 24-hour movement guidelines remained well below pre-pandemic levels;⁹⁴ by October 2020, only 3% meet these guidelines compared to 15% in 2019.^{95*} A small study with Ontario children living with obesity found that body weight and body mass index (BMI) had increased significantly in boys but not girls during the pandemic period compared to 2019.⁹⁶ A study by Caldwell et al.⁹¹ in October 2020 found that children decreased their time outdoors, in outdoor play/sports and walking/biking outdoors in all provinces; the authors concluded that this reflected the dependency of Canadian children on structural sports (which remained closed for much of the pandemic). A qualitative study by Riazi et al.⁹⁷ found that the closures of parks and playgrounds, loss of structured sports and new parent schedules restricted outdoor opportunities in Ontario and BC. Outdoor play providers found adapting to the ever-changing Covid-19 restrictions very challenging, as reported by de Lannoy et al.⁹⁸

Expert opinion: Restrictions contributed to significant reductions in physical activity and time spent outdoors among Canadian children and adolescents. This contributed to deteriorating mental and physical health. Policies restricted the ability for children and adolescents to visit playgrounds, parks and to gather outside together. Canadian children and adolescent are highly dependent on structured outdoor and sports activities to live a healthy, active lifestyle. Policies that restricted access to sports had detrimental effects on child and adolescent physical activity levels. This may have long-term consequences on weight gain and exercise behaviours among Canadians under 18 years old.

13. Social isolation increased negative food, drug, sleep and screen habits

Studies show that pandemic restrictions increased other unhealthy behaviors that are associated with chronic disease risk factors. Simjanoski et al.⁹⁹ found an association between unhealthy lifestyle behaviours and symptoms of depression and anxiety during

⁹² de Lannoy et al. (2020). Regional differences in access to the outdoors and outdoor play of Canadian children and youth during the COVID-19 outbreak. *Canadian Journal of Public Health*, 111(6), 988-994.

⁹³ Caldwell et al. (2022). Regional differences in movement behaviours of children and youth during the second wave of the COVID-19 pandemic in Canada: follow-up from a national study. *Canadian Journal of Public Health*, 1-12.

⁹⁴ Moore et al. (2021). Few Canadian children and youth were meeting the 24-hour movement behaviour guidelines 6-months into the COVID-19 pandemic: Follow-up from a national study. *Applied Physiology, Nutrition, and Metabolism*, 46(10), 1225-1240.

* The new Canadian 24-h movement guidelines recommend that children and youth spent 60 min in moderate/vigorous physical activity and several hours in light physical activity. The guidelines also recommend low levels of sedentary behaviours (no more than 2 hours of recreational screen time) and 8-11 hours of uninterrupted sleep.

⁹⁶ Patel et al. (2022) Weighing in on COVID-19: The impact of the pandemic on children and adolescents with obesity participating in a weight management program. *Pediatric Obesity*, e12948.

⁹⁷ Riazi et al. (2021). "You can't go to the park, you can't go here, you can't go there": Exploring parental experiences of COVID-19 and its impact on their children's movement behaviours. *Children*, 8(3), 219.

⁹⁸ de Lannoy et al. (2022). Environmental Scan of Child and Youth Outdoor Play-Based Projects, Programs, Activities and Services Available in Canada During the COVID-19 Pandemic. *Children, Youth and Environments*, 32(1), 84-127.

⁹⁹ Simjanoski et al. (2022). Lifestyle Behaviors, Depression, and Anxiety Among Individuals Living in Canada During the COVID-19 Pandemic. *American Journal of Lifestyle Medicine*, in press.

lockdown in July 2020. A study from Ontario (n=2,157) in April-July 2020 found that adults had doubled the amount of recommended recreational screen time (from 3 to 6 hours/day).¹⁰⁰ A large-scale study across Canada at three time points in 2020 found that younger adults with children were more likely to report an increase in chronic disease risk factors including junk food, sweets, alcohol and greater screen-time use.¹⁰¹ Maximova et al.¹⁰², studying children (n=1,095) across 20 schools in socioeconomically disadvantaged communities in northern Canada, found that students reported declines in physical activity, sleep routines, increased screen time and snacking in 2020. Similar results were found in Manitoba.¹⁰³ ¹⁰⁴ Studies also suggest that recreational drug use increased; a study in late 2020 found that 16% and 5% of adults self-reported an increase in alcohol and cannabis consumption compared to before the pandemic, especially among those with pre-existing mental health issues.¹⁰⁵ A longitudinal study with young adults in Quebec found that increased cannabis, alcohol, and smoking usage in 2021 were associated with lower education and living alone.¹⁰⁶ Shaheen et al.¹⁰⁷ found an increase in alcoholic cirrhosis admissions in Albertan hospitals between 2018 and 2020.

Expert opinion: Government restrictions (e.g. stay-at-home orders, bans on outdoor gatherings, business closures, etc) contributed to significant increases in unhealthy lifestyle behaviours. Increases in negative food, drug, sleep and screen habits are well-established risk factors for chronic diseases and general ill health. These behaviors compounded the mental and physical deterioration among Canadians. The stringency of government restrictions was a major factor in this increase. Had government taken a less stringent approach, many of these effects could have been minimized. The fact that public health policy created unhealthy lifestyle behaviors is a reflection of the lack of a holistic approach to the pandemic among Canadian public health authorities.

14. Nature and outdoor gatherings became critical coping strategies for mental health

A report of Canadian experiences with parks and green spaces during the pandemic found that they experienced a rapid increase in visitation in 2020 as people sought to compensate for lost physical activity and negative mental health impacts.¹⁰⁸ A national

¹⁰⁰ Shillington et al. (2021). Ontario adults' health behaviors, mental health, and overall well-being during the COVID-19 pandemic. *BMC Public Health*, 21(1), 1-15.

¹⁰¹ Andreatchi et al. (2022). Changes in chronic disease risk factors and current exercise habits among Canadian adults living with and without a child during the COVID-19 pandemic. *Health Reports*, 33(4), 3-13.

¹⁰² Maximova et al. (2022). Perceived changes in lifestyle behaviours and in mental health and wellbeing of elementary school children during the first COVID-19 lockdown in Canada. *Public health*, 202, 35-42.

¹⁰³ Afifi et al. (2022). Education-Related COVID-19 Difficulties and Stressors during the COVID-19 Pandemic among a Community Sample of Older Adolescents and Young Adults in Canada. *Education Sciences*, 12(7), 500.

¹⁰⁴ Potvin et al. (2022). Sleeping through a lockdown: How adolescents and young adults struggle with lifestyle and sleep habits upheaval during a pandemic. *Behavioral Sleep Medicine*, 1-17.

¹⁰⁵ Varin et al. (2021). At-a-glance-Measuring self-reported change in alcohol and cannabis consumption during the second wave of the COVID-19 pandemic in Canada. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, 41(11), 325.

¹⁰⁶ Sylvestre et al. (2022). A longitudinal study of change in substance use from before to during the COVID-19 pandemic in young adults. *The Lancet Regional Health-Americas*, 8, 100168.

¹⁰⁷ Shaheen et al. (2022). Impact of the COVID-19 pandemic on hospitalizations for alcoholic hepatitis or cirrhosis in Alberta, Canada. *Clinical Gastroenterology and Hepatology*, 20(5), e1170-e1179.

¹⁰⁸ Eykelbosh and Chow (2022). Canadian green spaces during COVID-19: Public health benefits and planning for resilience. Available: <https://cnse.ca/sites/default/files/NCCEH%20Canadian%20greenspaces%20and%20COVID-19%20-%20FINAL%20March%2011%202022.pdf>

study (n=1,098) in 2020 found that individuals who spent more time in outdoor physical activity had lower anxiety than those who spent less time in outdoor physical activity.¹⁰⁹

When asked how parents helped cope with stress during the pandemic, a study in May 2020 (n=3,000) found that the most frequent response was ‘going for a walk/outside exercise’ (59%).¹¹⁰ A media analysis in Ontario found outdoor spaces were viewed as important coping strategies to address the growing mental health crisis; they were framed as sources of hope, joy and signs of a functional society.¹¹¹ A qualitative study in Manitoba found that physically distanced visits played an important role in allowing older adults to cope with isolation and loneliness.¹¹² A second qualitative study with older adults in urban Vancouver highlighted the importance of neighbourhood relationships to address loneliness, which included recruiting walking partners, holding face-to-face encounters and spending time in common spaces.¹¹³ But Canadians have not had equal access to outdoor space for play, social gatherings, sports and time in nature during the pandemic. A study in April 2020 found that neighbourhoods with many apartments and roads, and less outdoor green space, were associated with lower odds of outdoor activity.¹¹⁴ A second study from Alberta found that parks and interurban pathways were viewed as essential to supporting mental and physical health during the pandemic but were unequally distributed, limiting their access for certain population groups.¹¹⁵

Expert opinion: The studies above show the importance that Canadians attached to outdoor activities for mental and physical health during the pandemic. The accumulative scientific knowledge about mental and physical health unanimously shows the myriad benefits of being outside – in nature, with friends and family, and for sports, exercise and leisure. By April 2021, there was ample evidence about the alarming deterioration in mental and physical health among average Canadians. There is no evidence that this was taken into consideration or influenced the decisions to impose additional restrictions.

15. Technology was an inadequate substitute for physical connection

A range of studies on work, school, social life and funerals reveal the limitations to virtual life and communication that accelerated during the pandemic period to facilitate government lockdowns and restrictions.

¹⁰⁹ Lesser and Nienhuis (2020). The impact of COVID-19 on physical activity behavior and well-being of Canadians. *International journal of environmental research and public health*, 17(11), 3899.

¹¹⁰ Gadermann et al. (2021). Examining the impacts of the COVID-19 pandemic on family mental health in Canada: findings from a national cross-sectional study. *BMJ open*, 11(1), e042871.

¹¹¹ Norman et al. (2022). ‘Essential for the soul’?: leisure as a flashpoint during COVID-19 lockdowns in Ontario, Canada. *Annals of Leisure Research*, 1-20.

¹¹² Herron et al. (2021). Conversations in times of isolation: Exploring rural-dwelling older adults’ experiences of isolation and loneliness during the COVID-19 pandemic in Manitoba, Canada. *International Journal of Environmental Research and Public Health*, 18(6), 3028.

¹¹³ Ottoni et al. (2022). “We see each other from a distance”: Neighbourhood social relationships during the COVID-19 pandemic matter for older adults’ social connectedness. *Health & Place*, 102844.

¹¹⁴ Mitra et al. (2020). Healthy movement behaviours in children and youth during the COVID-19 pandemic: Exploring the role of the neighbourhood environment. *Health & Place*, 65, 102418.

¹¹⁵ McCormack et al. (2022). Neighbourhood environment facilitators and barriers to outdoor activity during the first wave of the COVID-19 pandemic in Canada: A qualitative study. *Cities & Health*, 1-13.

A few studies explored the mental health implications of relying on digital connection. A large-scale survey (n=5,320) by Gregory et al.¹¹⁶ found that, contrary to their expectations, the frequency of technology-assisted communication used during the pandemic did not help moderate the associations between loneliness and mental health in the fall of 2020; they concluded that technology did not sufficiently fulfil people's emotional needs for social connectedness. A study tracking depression and anxiety of parents in Ontario (n=2,439) between May/June 2020 and 2021 found that 20% of parents with unmet mental health needs cited telehealth as a barrier.¹¹⁷

A few studies explored the reliance on technology for the elderly, hospital patients and in funeral settings. A qualitative study in Manitoba in 2020 found that remote digital connection was not possible for older adults who lacked digital skills or internet service; those who did connect online still reported that remote connection failed to meet their needs for physical touch.¹¹⁸ Two qualitative studies on funerals during the pandemic found that conversations via phone or video chats, virtual religious services and virtual funerals represented important but ultimately incomplete experiences.¹¹⁹ ¹²⁰The human need for mourning was 'filtered' and 'cut-off' due to the barrier of physical distancing, and this influenced the grief process. A qualitative study with spiritual care providers in Ontario noted the benefits of virtual platforms but also the challenges with meeting the need for physical touch, mental health and the processing of grief.¹²¹

Studies also explored the limitations in digital learning. Houlden and Veletsianos¹²² synthesized 21 unpublished Canadian surveys (n=155,000 students) on the impacts of emergency remote learning among university students in Canada (March 2020-2021). They reported that many surveys found students felt this had reduced the value of higher education, that the approach was not effective, home work environments were stressful and difficult and that they experienced fewer learning opportunities due to reduced class options, poor course design and pedagogy and lack of access to labs and libraries. A qualitative study with speech-language pathologists found that clinicians lacked knowledge, skills and experience in telepractice and recommended hybrid options to flexibly address unique individual circumstances.¹²³ ¹²⁴A study from Manitoba (n=494) with young adults found that online learning created less interaction with friends and

¹¹⁶ Gregory et al. (2021). Mental health and social connectedness across the adult lifespan in the context of the COVID-19 pandemic. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, 40(4), 554-569.

¹¹⁷ Zhang et al. (2022). Mental Health Help-Seeking in Parents and Trajectories of Depressive and Anxiety Symptoms: Lessons Learned From the Ontario Parent Survey During the COVID-19 Pandemic. *Frontiers in psychology*, 13.

¹¹⁸ Herron et al. (2021). Conversations in times of isolation: Exploring rural-dwelling older adults' experiences of isolation and loneliness during the COVID-19 pandemic in Manitoba, Canada. *International Journal of Environmental Research and Public Health*, 18(6), 3028.

¹¹⁹ Dennis et al. (2022). Sacrifice and solidarity: a qualitative study of family experiences of death and bereavement in critical care settings during the pandemic. *BMJ open*, 12(1), e058768.

¹²⁰ Guité-Verret et al. (2021). Expressing grief through metaphors: family caregivers' experience of care and grief during the Covid-19 pandemic. *International Journal of Qualitative Studies on Health and Well-Being*, 16(1), 1996872.

¹²¹ Kuepfer (2022). Supporting Spirits in Changing Circumstances: Pandemic Lessons for Long-Term Care and Retirement Homes. *Religions*, 13(7), 584.

¹²² Houlden and Veletsianos (2022). A synthesis of surveys examining the impacts of COVID-19 and emergency remote learning on students in Canada. *Journal of Computing in Higher Education*, 1-24.

¹²³ Kwok et al. (2022). Factors influencing the success of telepractice during the COVID-19 pandemic and preferences for post-pandemic services: An interview study with clinicians and parents. *International Journal of Language & Communication Disorders*.

¹²⁴ Kwok et al. (2022). The process of telepractice implementation during the COVID-19 pandemic: a narrative inquiry of preschool speech-language pathologists and assistants from one center in Canada. *BMC health services research*, 22(1), 1-9.

classmates, greater worrying about grades, less interaction with teachers and excessive screen time.¹²⁵

Expert opinion: It is important to note that without our current digital technology, the stringency and length of pandemic restrictions would have been politically and socially unfeasible in Canada. Society has changed dramatically since the 1918 influenza pandemic; yet studies show significant limitations with the assumption that all Canadians can seamlessly, and for many months at a time, work from home, transition to ‘virtual school’, meet social needs via online platforms and grieve the loss of a loved one through a screen. Such a social circumstance is completely unique in human evolution and the unintended consequences of a compulsory transition to a ‘digital’ society, through government enforced social isolation, are completely unknown. The studies listed above show the unmet needs of people for friendship, the grief process, religious and spiritual relations, student learning and special needs (e.g. speech and language pathology). The available studies are limited and there are likely many additional problems and issues that Canadians faced. Nonetheless, the data presented in this report suggests that by April 2021, many Canadians had deep psychological needs for physical human connection, needs that could not be adequately meet solely through a screen.

¹²⁵ Afifi et al. (2022). Education-Related COVID-19 Difficulties and Stressors during the COVID-19 Pandemic among a Community Sample of Older Adolescents and Young Adults in Canada. *Education Sciences*, 12(7), 500.

3. Trust, compliance and social division

1. Changing rules created confusion and promoted distrust

Studies suggest that pandemic restrictions have exasperated a divide in trust in Canada that runs along socioeconomic lines and was compounded by the stress and uncertainty associated with changing mandatory government rules over time. A unique study by Wu et al.¹²⁶, following a Canadian cohort from 2019-2021, found that people who had *less* trust in society (in general) before the pandemic lost more trust (roughly 20% lost and never recovered trust during the pandemic period); by contrast, those with *more* pre-existing trust *gained* more trust. Trust was significantly correlated with socio-economic status. Fullerton et al.¹²⁷ conducted a qualitative study in December 2020 and found that the main barrier to adhering to public health measures were: high levels of inconsistency, the downplaying of uncertainty and a lack of transparency by government and government scientists. A study of Canadian print media in 2020 explored these issues; Capurro et al.¹²⁸ noted substantial levels of: mixed messages from government, high levels of uncertainty, a politicization of leadership and scientific data, tensions and ambiguity in what was (and was not) considered ‘evidence’ and duelling experts with different opinions that complicated the idea of a ‘scientific consensus’ about pandemic control approaches.

While studies on mask guidance show that the public was receptive to changing guidelines, in the sense that masks were widely adopted despite previously being recommended against¹²⁹, a qualitative study (April-May 2020) found that shifting guidelines on masks *did* foster mistrust and scepticism about the scientific basis of government policies.¹³⁰ * Particular cases of leaders breaking the rules were flashpoints in the media; e.g. officials returning from Caribbean vacations or spending time with extended family while telling the public to only travel for ‘essential reasons’ and meet with people from their immediate household.¹³¹ To cite one example, from Ontario:

“Reopening plans were also supposed to come with clear, easy-to-follow, science-based instructions on social guidelines. Instead, the Premier announced last week that domestic cleaners may now enter your home, but your grandma or sister still may not. The directive remained that Ontarians must stay two metres away from people outside of their households, even though Mr. Ford had two of his

¹²⁶ Wu et al. (2022). Socioeconomic stratification and trajectories of social trust during COVID-19. *Social Science Research*, 102750.

¹²⁷ Fullerton et al. (2022). Challenges and recommendations for COVID-19 public health messaging: a Canada-wide qualitative study using virtual focus groups. *BMJ open*, 12(4), e054635.

¹²⁸ Capurro et al. (2021). Communicating scientific uncertainty in a rapidly evolving situation: a framing analysis of Canadian coverage in early days of COVID-19. *BMC Public Health*, 21(1), 1-14.

¹²⁹ Sheluchin et al. (2020). Public responses to policy reversals: the case of mask usage in Canada during COVID-19. *Canadian Public Policy*, 46(S2), S119-S126.

¹³⁰ Zhang et al. (2021). Public health messages about face masks early in the COVID-19 pandemic: Perceptions of and impacts on Canadians. *Journal of Community Health*, 46(5), 903-912.

* On 29 January 2020, Dr. Tam told Canadians that masks were “pointless” and “risky”; it was not until April 2020 that Canada recommended masks in public. The WHO also originally stated that there was ‘no evidence for or against masks’ and only reversed this recommendation in May 2020. Initial recommendations focused largely on cloth masks, although the expert consensus then shifted to surgical and N95 masks.

¹³¹ Capurro et al. (2021). Communicating scientific uncertainty in a rapidly evolving situation: a framing analysis of Canadian coverage in early days of COVID-19. *BMC Public Health*, 21(1), 1-14.

daughters – who live outside of his household – over at his home to celebrate Mother’s Day.” (Globe and Mail article, May 2020, cited in Capurro et al.¹³¹.

An Ontario study (n=1,435) found a substantial reduction in the public’s perception of the effectiveness of government to address the pandemic, from 88% in April 2020 to only 23% in April 2021.¹³² While over 85% self-reported that they continued to comply with physical distancing, reduced movement and indoor masking guidelines, the perceived importance of these guidelines reduced and the level of actual compliance was not measured. In a qualitative study with women in Ontario shelters, the most common topic was: the questioning of Covid-19 safety rules (e.g. pointing out inconsistencies), arguing about the difficulties of implementing the rules (or their impractical nature) and describing ways to break, bend or loosen the rules.¹³³

Expert opinion: Trust in government and society is one of the most fundamental aspects of a functioning democracy. Government needs to earn and maintain the trust of its citizens through transparency, accountability and proportionate public policy, among many other things. Surprisingly, there are few Canadian studies on trust during the pandemic. By comparison, other countries have accumulated a rich body of insights about changing public attitudes. Nonetheless, the available studies show similar issues: that pandemic restrictions furthered public distrust among specific social groups and especially among those with lower socio-economic status. This ‘trust inequality’ has been influenced by an array of factors but specific policy decisions and poor communication by government scientists and the media play an important role. Factors mentioned by the studies listed above include: inconsistency, downplaying of uncertainty, over-confident recommendations, a lack of transparency, mixed messages, leadership failures, poor public communication and a lack of engagement with dissenting scientific opinion. Again, the apparent lack of balancing Covid-19 control with the deteriorating mental and physical health and wellbeing of Canadians likely played a significant role in furthering distrust in the reasonableness and scientific robustness of pandemic policies in Ontario in April 2021.

2. Pandemic policies negatively affected civil society and democratic accountability

Studies suggest that pandemic measures eroded the robustness of civil society and democratic accountability in Canada. A comparative global study found that Canadians experienced some of the most restrictive pandemic measures among all high-income countries: we had the most sustained stringency policies on internal movement, public events, public gatherings, workplace closures and international travel control; the second longest duration of school closures (51 weeks) and were the only country in the G10 that sustained a moderate to severe degree of restrictions after spring 2020, as measured by the *Oxford Pandemic Stringency Index*.¹³⁴

¹³² Levitt et al. (2022). Public health guideline compliance and perceived government effectiveness during the COVID-19 pandemic in Canada: Findings from a longitudinal cohort study. *The Lancet Regional Health-Americas*, 9, 100185.

¹³³ Wathen et al. (2022). “We’re so limited with what we actually can do if we follow all the rules”: a qualitative study of the impact of COVID-19 public health protocols on violence against women services. *BMC public health*, 22(1), 1-14.

¹³⁴ Razak et al. (2022). Canada’s response to the initial 2 years of the COVID-19 pandemic: a comparison with peer countries. *CMAJ*, 194(25), E870-E877.

Yet, a policy review by Khoury et al.¹³⁵ found that elected officials and civil society have had little input into how the Canadian government used emergency powers; they found that existing constitutional, criminal and private law did not provide sufficient opportunities to facilitate much-needed accountability during the public health emergency. For example, provincial and federal governments did not have to disclose their pandemic response plans to the public or the reasons for particular decisions; nor were they required by law to evaluate the health, social and economic consequences of any emergency response.

A report by the Citizen Lab, University of Toronto¹³⁶, found that emergency pandemic laws allowed private companies to collect, use and disclose personal information without first obtaining consent (e.g. downplaying human rights protections). The report noted that this provided private companies, such as Google and Apple, the opportunity to play a role in guiding and directing public health measures; for example by providing mobility tracking data to government. Gidengil et al.¹³⁷ conducted a psychology experiment in May 2020 with participants from Quebec (n=2,322). They found that substantial numbers were willing to condone increases and/or abuses of executive power regarding lockdown policies, which increased based on the level of anxiety regarding the perceived health and economic threat of Covid-19. They postulated that this was influenced by the psychological need for individuals to seek out ‘strong leaders’ that promised safety and security, which may precede respect for democratic norms.

There are only a handful of studies on the effect of the pandemic on civil society. A study by Mirnasl et al.¹³⁸ found that pandemic mitigation measures adversely affected administrative and public participation in environmental policymaking in Ontario. A second qualitative study showed significant disruptions in plans, morale and activities in grassroots organizations in Ontario, although examples of innovation and adaptability were also found.¹³⁹ In a media analysis, Rangel et al.¹⁴⁰ showed that the family members of isolated elderly people attempted to raise public support in 2020 to address the substandard care at long-term care facilities but that concerns about peaceful assembly rules during the pandemic inhibited civic action. Particular business sectors and civil society groups, including the Catholic Church, tried to lobby the government to influence restrictions on social gatherings and other government policies; it is unclear if any were successful.

¹³⁵ Khoury et al. (2022). Governments’ accountability for Canada’s pandemic response. *Journal of Public Health Policy*, 1-12.

¹³⁶ Ballard et al. (2021) Pandemic Privacy: A Preliminary Analysis of Collection Technologies, Data Collection Laws, and Legislative Reform during COVID-19. See: <https://tspace.library.utoronto.ca/handle/1807/111328>

¹³⁷ Gidengil et al. (2022). COVID-19 and Support for Executive Aggrandizement. *Canadian Journal of Political Science/Revue canadienne de science politique*, 55(2), 342-372.

¹³⁸ Mirnasl et al. (2022). Assessing policy robustness under the COVID-19 crisis: an empirical study of the environmental policymaking system in Ontario, Canada. *Journal of Environmental Policy & Planning*, 1-15.

¹³⁹ Case and Eady (2022). Crisis and opportunity: the impacts of COVID-19 on water advocacy in Ontario, Canada. *Journal of Community Practice*, 1-20.

¹⁴⁰ Rangel et al. (2022). Biopower under a state of exception: stories of dying and grieving alone during COVID-19 emergency measures. *Medical Humanities*, in press.

Expert opinion: Excessive use of emergency powers during the pandemic has had severe and negative effects across the world on the integrity of democratic institutions, democratic values and human rights. As shown above, there are alarming signals that executive power has been excessively bolstered without adequate channels to ensure parliamentary and citizen input and accountability in Canada. The government does not legally have to impartially review the social consequences of lockdowns. I am not aware of any commission or independent panel that is tasked by government to critically appraise and review the evidence provided in this report. It is entirely possible that the current government will never need to critically account for the mental health and physical health deteriorations cited above.

3. Complete bans on outdoor activities and leisure became a flashpoint for frustration

An academic study of print media articles related to leisure and recreational activities during Ontario's third wave (April to June 2021) offers unique insights into public sentiment and debate at this time.¹⁴¹ The study concluded that leisure became a “public battleground” for legitimate frustration and disagreements about the provincial government's strict bans. Media articles, including by infectious disease physicians, questioned the public health rationale for them, noted how they affected households with lower socio-economic status more severely (e.g. those living in a flat without a garden), pointed out that policies were unevenly and inconsistently implemented and that outdoor bans in 2021 were of dubious scientific rationale given our knowledge of Covid-19 transmission at the time. The study found that the media actively questioned the rationale for closing golf courses, banning youth athletics and forbidding the public to gather outdoors. The study noted that the complete leisure and outdoor bans were among the least publically supported pandemic regulations. This was also influenced by rising public awareness about the negative mental health and wellbeing consequences of the pandemic. Here are two examples of the media debate at the time, cited in the study:

“There were 26 million rounds of golf played last year in Ontario with no known transmission of COVID-19. When Premier Doug Ford announced last Friday that closing golf courses was part of his plan to fight COVID-19 in Ontario, owners didn't know whether to be angry or just dumbfounded. Golf course owners and operators as well as golfers themselves knew it just didn't make any sense, especially when, in literally his next breath, Ford advised Ontarians to get out of the house and go for a walk, albeit socially distanced. Isn't that exactly what the golf courses were offering, course owners argue.” (Hamilton Spectator, April 2021)

“The media could stop inserting pictures of people outdoors in articles about rises in COVID- 19. The visuals imply an incorrect causation: that outdoor gatherings have caused increases in cases, where in reality, being outdoors is much safer and may prevent transmission indoors. Each of us can also resist the temptation to shame-and-blame people gathering outdoors. Almost every weekend last summer, social

¹⁴¹ Norman et al. (2022). ‘Essential for the soul?’: leisure as a flashpoint during COVID-19 lockdowns in Ontario, Canada. *Annals of Leisure Research*, 1-20.

media was filled with tut-tutting at pictures of those congregating outdoors, generally in fairly small groups. Those remonstrations have ramped up again now that spring has arrived. What if we turned the narrative on its head and thanked those people for meeting outdoors rather than indoors? Shaming people for gathering outdoors is likely to drive them indoors” (The Toronto Star, April 2021)

Expert opinion: This sub-section presents the results of a unique study of media articles in Ontario during the April-June 2021 lockdown, specifically focused on government restrictions to outdoor spaces, sports and leisure including restaurants. As noted in the study, these policies appear to be among the least supported by the public during this time. Given these considerations, it is my expert opinion that Canadians who participated in peaceful protests in Ontario in April 2021 were engaging in a reasonable civic activity, voicing their legitimate concerns about the negative effects of pandemic restrictions on the mental and physical health and wellbeing of Canadians. As noted above, the negative effects described in this report are: a) severe and alarming; and b) likely known by many Canadians by this time, after having experienced more than one-year of stringent and constantly changing restrictions on physical contact and social gathering. Those responsible for public health policy have a responsibility to hear the grievances and represent the interests of those who are adversely impacted. In general, democratic and citizen participation is seen as an essential part of ensuring that public health policy is proportionate, ethical and achieves positive population health outcomes. One way to accomplish this, in a democratic society, is for elected politicians to participate in outdoor peaceful protests, where the adverse impacts of emergency pandemic policy can be publically aired and debated. This includes peaceful protests in Ontario in April 2021

4. The media and public debate amplified fear and social polarization

Four studies on media representations in Canada during the pandemic largely converge in their findings; these studies argue that the media and public debate amplified fear and conformity in ways that increased the blaming and shaming of specific groups and reduced the scope of acceptable opinion.

A study of editorial cartoons collected from January to March 2021 identified a clear *moralization framing* regarding Covid-19 restrictions; this divided the population into “the virtuous” rule followers (considered selfless and smart) and the deviants, who questioned or criticized the scientific discourse around specific rules and/or did not respect the rules (these groups were framed as “immoral, self-centered, silly and stupid”).¹⁴²

A second study¹⁴³ of Canadian newspapers in the first few months of the pandemic found that infection control behaviours led to *moral panics*; restrictions and guidelines were framed as a civic duty and morally urgent. Those who failed to comply (the “deviants”) were stigmatized in Canadian media as “*Covidiot*” and presented as a threat to moral

¹⁴² Labbé et al. (2022). Stigma and blame related to COVID-19 pandemic: A case-study of editorial cartoons in Canada. *Social Science & Medicine*, 296, 114803.

¹⁴³ Capurro et al. (2022). Moral panic about “covidiot” in Canadian newspaper coverage of COVID-19. *Plos one*, 17(1), e0261942.

order and public health. During 2020, this focused heavily on young people at parks, beaches and bars in the spring and summer and snowbirds returning from the United States (who were accused of ‘prolonging the pandemic’).

A third media study explored the framing of children during the first wave of 2020 and found that the effects of the pandemic on children and adolescents’ health and wellbeing were overshadowed by discussions of the potential risk they posed to adults.¹⁴⁴ Children were presented “as a risk” (e.g. vector) to vulnerable persons and older adults and media reports emphasized the role of young people’s compliance with public health measures to prevent the spread and save the lives of older persons. In general, this coverage overshadowed and sidelined the negative effects of pandemic restrictions on the mental and physical health of Canadian children (as reported above).

A fourth analysis¹⁴⁵ during the third wave (April-June 2021) in Ontario found that leisure activities (closures of playgrounds, sports activities, golf courses, skateparks) became a ‘safe place’ for the media and public to debate the broader efficacy, negative social impacts and ethics of restrictions (this study was discussed in more detail above).

Expert opinion: There is a large historical and social science literature about how epidemics promote panic, fear, extreme behaviour and the scapegoating of specific social groups. However, sound scientific advice and proportionate and prudent public policy require balanced assessment of the evidence and the consideration of harms and benefits associated with specific decisions. This is inhibited when the media and political groups amplify fear and social polarization. It is also inhibited when the success of government policy is largely dictated by the epidemiological data on one specific pathogen. During the pandemic, reasonable scepticism about lockdowns and restrictions as the only and most effective and ethical approach was routinely vilified and smeared. This included reasonable voices raising concerns about deteriorating mental and physical health documented in this report. What were acceptable public health opinions in 2019 suddenly became the focus of sustained emotive attacks, which contributed to a narrowed range of acceptable policy options in Ontario in April 2021. These decisions neglected to adequately and holistically consider how further restrictions in 2021 would be experienced by Canadians who had already suffered from the adverse effects of government restrictions.

5. Police fines and citizen complaint lines likely increased public conflict

The Canadian response included the use of public complaint lines and police enforcement, raising human rights concerns.¹⁴⁶ The *Policing the Pandemic Mapping Project* (PPMP) found over 10,000 Covid-19 police enforcement incidents across

¹⁴⁴ Ciotti et al. (2022). Super-Spreaders or Victims of Circumstance? Childhood in Canadian Media Reporting of the COVID-19 Pandemic: A Critical Content Analysis. In *Healthcare* 10(1).

¹⁴⁵ Norman et al. (2022). ‘Essential for the soul’?: leisure as a flashpoint during COVID-19 lockdowns in Ontario, Canada. *Annals of Leisure Research*, 1-20.

¹⁴⁶ Mykhalovskiy et al. (2020). Human rights, public health and COVID-19 in Canada. *Canadian Journal of Public Health*, 111(6), 975-979.

Canada between April 1-June 15, 2020, totaling \$13 million in fines.¹⁴⁷ The most common reasons for fines were: breaking physical distancing rules, being in a prohibited space (e.g. closed parks) and participating in a social gathering. A report by the *Canadian Civil Liberties Association*¹⁴⁸ found that people who were fined noted the broad and vague conditions of their enforcement (e.g. walking or running alone through an open park or sitting on a park bench); that students, elderly persons, single parents and the unemployed found paying these fines financially difficult (ranging from \$750-5,000); and that such fines appeared more focused on punishing people than promoting public health.

Federal and provincial governments also established online and phone-based citizen complaint lines where people could report non-compliant behavior, of businesses and individuals. The studies cited above suggest that this expansion of police power was not always viewed as legitimate by the Canadian public and may have reduced trust in, and increased anger at, the police and public health authorities. Many Canadian news articles throughout 2020 and 2021 deplored the use of fines and police to enforce stay-at-home orders and other restrictions; for example, below is an article from the Toronto Star during the April 2021 stay-at-home order in Ontario:

“You know the wheels are coming off lockdown enforcement...and a free society is skating on thin ice when videos appear to show a kid being pushed to the ground by a police officer. What occurred in Gravenhurst is exactly what people were afraid would happen when the province brought in new guidelines to give police power to randomly stop people during the provincewide stay-at home order...Most people thought such interactions could happen on the highways or at border points. Not at a skateboard park. Not in playgrounds. And not involving police and kids.” (Toronto Star, April 2021, cited in Norman et al.¹⁴⁹)

Expert opinion: There is a large body of academic literature on the way that forceful public health policy backfires and promotes reactance and resistance at the community level. It is highly likely, given the evidence presented in this report, that police enforcement of pandemic restrictions, as well as fines and legal processes that were perceived to be unfair, have deteriorated public trust in government and Canadian public health authorities. This includes the prohibition or banning of peaceful protests. The unfortunate irony of this is that the last few decades have been dominated by the ethos of harm reduction, human rights, social justice and community participation in Canadian public health. Our foreign development programs have implemented vast infectious disease programs based on these principles in the global south for HIV, TB, malaria, maternal and child health and neglected tropical diseases. A basic consensus of this work is: the use of restrictions, bans, fines, police and unreasonable and excessive infringement on human rights is ethically, socially and politically wrong. It backfires. Reduces trust.

¹⁴⁷ McClelland Luscombe (2021). Policing the Pandemic: Counter-mapping Policing Responses to COVID-19 across Canada. *Annual Review of Interdisciplinary Justice Research*, 10, 195.

¹⁴⁸ CCLA (2021) Available: <https://ccla.org/wp-content/uploads/2021/06/2020-06-24-Stay-Off-the-Grass-COVID19-and-Law-Enforcement-in-Canada1.pdf>

¹⁴⁹ Norman et al. (2022). ‘Essential for the soul’?: leisure as a flashpoint during COVID-19 lockdowns in Ontario, Canada. *Annals of Leisure Research*, 1-20.

Pushes people underground. Creates anger and polarization. And yet, for the most part, Canadian authorities appear to have ignored these lessons.

6. Studies question the effectiveness of many government public health policies

Studies question the effectiveness of many public health policies undertaken by the Canadian government during the pandemic. A study published in the *International Journal of Infectious Diseases* found that banning public gatherings, closing schools and universities, implementing stay-at-home orders, controlling travel, and restricting business hours did *not* influence the growth of Covid-19 cases in five provinces (including Ontario) in the fall of 2020.¹⁵⁰ The study found only minimal associations between the stringency of public health measures and reductions in case growth during the first wave in early 2020.

After the December 2020 province-wide shutdown in Ontario, schools were the first places to re-open in early 2021. Fitzpatrick et al.¹⁵¹ estimated that during this re-opening phase, elementary and secondary schools only accounted for 0.08% of Covid-19 cases in Ontario (December 26 2020 to February 28, 2021), suggesting that schools contributed a very small fraction to the overall burden of the pandemic.

Expert opinion: There is no currently accepted scientific ‘consensus’ about the effectiveness of lockdowns on Covid-19 mortality.* One of the main disputes is about the relationship between voluntary behavior changes and government restrictions. A great deal of scientific and political thinking about lockdowns since March 2020 has assumed, in complex mathematical models, that humans do not change their behavior voluntarily to adapt to a new dangerous virus. For example, the Imperial model developed by Prof. Neil Ferguson that played a defining role in the American and UK March 2020 lockdowns, never accounted for voluntary behavior changes. The original estimates of millions dead assumed people would carry on as if there was no pandemic. These are alarming blind-spots that continue to be reproduced in various models about the pandemic which claim there was never any other option available except lockdown to satisfactorily control Covid-19. Each model and study has its own limitations and assumptions. For example, Dr. Mark Woolhouse, Professor of Infectious Disease Epidemiology at the University of Edinburgh, UK, and senior member of the UK’s pandemic advisory group, has stated recently:

“Retrospective studies have concluded that the UK epidemic came under control shortly before the March 2020 lockdown began, the marginal benefit of strict stay-at-home orders was small and less drastic interventions can be as effective as lockdown, particularly if they are implemented earlier... I believe that our narrow focus on suppression arose from a widespread failure to accept that COVID-19 is here to stay. Such an extreme and damaging response as lockdown made sense

¹⁵⁰ Vickers et al. (2022). Stringency of containment and closures on the growth of SARS-CoV-2 in Canada prior to accelerated vaccine roll-out. *International Journal of Infectious Diseases*, 118, 73-82.

¹⁵¹ Fitzpatrick et al. (2022). School Reopening And COVID-19 In The Community: Evidence From A Natural Experiment In Ontario, Canada: Study examines school reopening and COVID-19 in Ontario, Canada. *Health Affairs*, 41(6), 864-872.

* In fact, studies comparing lockdowns across different countries have found a large variety of factors influence mortality from Covid-19: population age structure (esp elderly populations); health status of the population (esp chronic diseases); health system capacity; the social determinants of health; t-cell cross reactivity (co-circulating viruses and immunological status); cultural practices; seasonality; and trust in government and social cohesion.

only in the context of a Zero COVID strategy, but in the UK and many other countries that option was no longer realistic by March 2020”¹⁵²

If one compares the Covid-19 mortality rate in the United States between California and New York (two democrat-controlled states that implemented among the most stringent and lengthy restrictions in the world) and Texas and Florida (two republican controlled states, with some of the least stringent and lengthy restrictions), the timing of Covid-19 waves and the overall Covid-19 mortality rate are not drastically different.¹⁵³ This alone should tell us: lockdowns are not a magic bullet for a pandemic respiratory virus. This was the accepted wisdom within the pandemic preparedness community, including at the World Health Organization and in Canada, in 2019. My expert opinion aligns with a recent global meta-analysis by Herby et al.¹⁵⁴ on the relationship between lockdowns and Covid-19 mortality; this study found 4 social and behavioral reasons why lockdowns have not been as effective as originally assumed:

- 1) People respond voluntarily to dangers before state-mandated orders;
- 2) Mandates only regulate a fraction of social contacts; the virus continues to spread in some settings.
- 3) Behavioural responses counteract initial effects; people become tired and non-compliant as time goes on.
- 4) Restrictions have unintended consequences for spread; they can actually increase the risk for some people in long-term care facilities, hospitals, workplaces, homes and indoor places that remain open.

The studies cited above suggest that voluntary behavior change and public policies that support individuals to protect themselves and their families by enhancing human agency, rather than lockdowns and restrictions, could have achieved similar public health benefits in 2021 in Ontario while minimizing the adverse consequences that are described in this report.

¹⁵² Woolhouse (2022). The case against lockdown as a public health intervention. *Journal of the Royal College of Physicians of Edinburgh*, 52(1), 12-13.

¹⁵³ Kerpen et al. (2022). *A Final Report Card on the States' Response to COVID-19*. National Bureau of Economic Research, USA.

¹⁵⁴ Herby et al. (2022). A literature review and meta-analysis of the effects of lockdowns on COVID-19 mortality. *Studies in Applied Economics*, (200).