

ENVIRONMENTAL HEALTH RESEARCH SCAN

WITH COVID-19 SECTIONS

VOL 5 (11) NOVEMBER 2021



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Environmental Health (EH) Research Scan: Aims and Scope

NCCEH's EH Research Scan aims to expand awareness of topics in environmental health, in line with NCCEH's vision to be the indispensable online resource for environmental health practitioners and policy-makers across Canada. "We focus on health risks associated with the physical environment and identify evidence-based interventions to mitigate those risks." This review is not official or peer reviewed. It does not cover all research, news, and information, and NCCEH is not responsible for the accuracy of the content from media or databases. How to access the items? Click on the link related to each entry and it should take you to the item. Not all links are open access; some are abstract links where paid journal subscription is required. **COVID-19 Publications** are listed in the sections above and there are also **COVID-19 Additional Topics** at the end of this issue.

EDITOR PICKS

A rapid review of the use of physical barriers in non-clinical settings and COVID-19 transmission [evidence review]

Angela Eykelbosh, Knowledge Translation Scientist, NCCEH

“This rapid review looks at 1) the existing guidance or recommendations on implementing physical barriers in various non-clinical settings and 2) the evidence on their utility in preventing COVID-19 transmission, alone or in combination other public health measures.” .. more.



Wastewater-based epidemiology: current uses and future opportunities as a public health surveillance tool [journal article]

Juliette O’Keeffe, Knowledge Translation Scientist, NCCEH

“This paper provides an overview of the range of applications of WBE over the past two decades, how it has been used to inform public health responses, and considerations for more integrated approaches to WBE based on a review of the literature.”.. more.



Radon [topic page]

Anne-Marie Nicol, Knowledge Translation Scientist, NCCEH

“Radon levels indoors are influenced by:

- *Geography, as uranium and radon levels vary naturally in soils across the country*
- *Household construction methods and architectural design*
- *Natural ventilation options and ventilation systems” more – see topic page.*



Public health responses for long-term evacuation and recovery (resources)

National Collaborating Centres for Public Health (NCCPH)

“The long-term effects of natural disasters, evacuation, and prolonged displacement on individuals and communities largely go unrecognized and responsibilities for supporting recovery remain unclear. Responding to these knowledge gaps, the NCCPH led a joint project to clarify the role of public health to address the long-term health and social impacts of evacuations due to natural disasters.”more



Mobilizing environmental data to build healthier cities for all [webinar]

Jeffrey Brook, Eleanor Setton, Dany Doiron



Public health and law enforcement in partnership: What does the public need to know about illegal cannabis? [webinar]

Kim Shelford, Hovan Baghdassarian, Rachel Huggins, Angela Eykelbosh



ENVIRONMENTAL HEALTH RESEARCH SCAN

SELECTED STAFF PUBLICATIONS

NCCEH

1. Eykelbosh A. **A rapid review of the use of physical barriers in non-clinical settings and COVID-19 transmission [evidence review [evidence review]]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 Nov 17. Available from: <https://ncceh.ca/documents/evidence-review/rapid-review-use-physical-barriers-non-clinical-settings-and-covid-19>.
2. National Collaborating Centre for Environmental Health. **NCCEH eNews (Oct 2021): Public health and law enforcement in partnership: What does the public need to know about illegal cannabis?** more... Vancouver, BC: NCCEH; 2021 10 21 Oct 21. Available from: <https://tinyurl.com/wkps6464>.
3. National Collaborating Centre for Environmental Health. **Radon [topic page]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 Nov 4. Available from: <https://ncceh.ca/environmental-health-in-canada/health-agency-projects/radon>.
4. O’Keeffe J. **Wastewater-based epidemiology: current uses and future opportunities as a public health surveillance tool [journal article]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 Nov 03. Available from: <https://doi.org/10.5864/d2021-015>.
5. Young C. **Putting radon on the map: A new and interactive tool for British Columbia [blog]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 11 16 Nov 16. Available from: <https://ncceh.ca/content/blog/putting-radon-map-new-and-interactive-tool-british-columbia>.

Webinars

1. Brook J, Setton E, Doiron D. **Mobilizing environmental data to build healthier cities for all [webinar]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 Sep 29. Available from: <https://ncceh.ca/content/webinar-recording-mobilizing-environmental-data-build-healthier-cities-all-canue>.
2. Shelford K, Baghdassarian H, Huggins R, Eykelbosh A. **Public health and law enforcement in partnership: What does the public need to know about illegal cannabis? [webinar]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 Oct 26. Available from: <https://ncceh.ca/content/webinar-recording-public-health-and-law-enforcement-partnership-what-does-public-need-know>.

BCCDC

1. Henderson SB, McLean KE, Lee M, Kosatsky T. **Extreme heat events are public health emergencies**. BC Medical Journal. 2021;63(9). Available from: <https://bcmj.org/bccdc/extreme-heat-events-are-public-health-emergencies>.

INDIGENOUS ENVIRONMENTAL HEALTH

1. Golzadeh N, Barst BD, Baker JM, Auger JC, McKinney MA. **Alkylated polycyclic aromatic hydrocarbons are the largest contributor to polycyclic aromatic compound concentrations in traditional foods of the Bigstone Cree Nation in Alberta, Canada.** Environmental pollution (Barking, Essex : 1987). 2021;275:116625. Available from: <https://doi.org/10.1016/j.envpol.2021.116625>.
2. Hansen CB, Larsen CVL, Bjerregaard P, Riva M. **The effect of household crowding and composition on health in an Inuit cohort in Greenland.** Scand J Public Health. 2021;49(8):921-30. Available from: <https://journals.sagepub.com/doi/abs/10.1177/1403494820929496>.
3. Hillier SA, Taleb A, Chaccour E, Aenishaenslin C. **Examining the concept of One Health for indigenous communities: A systematic review.** One Health. 2021;12:100248. Available from: <https://www.sciencedirect.com/science/article/pii/S2352771421000380>.
4. Riley T, Anderson NE, Lovett R, Meredith A, Cumming B, Thandrayen J. **One Health in Indigenous Communities: A Critical Review of the Evidence.** Int J Environ Res Public Health. 2021;18(21):11303. Available from: <https://www.mdpi.com/1660-4601/18/21/11303>.
5. US Climate Resilience Toolkit. **Tribal nations.** United States Global Climate Change Research Program; 2021. Available from: <https://toolkit.climate.gov/topics/tribal-nations>.

AGRICULTURAL OPERATIONS

BIOLOGICAL AGENTS

1. Barnes M, Gatti E, Rich K. **Assessing the relevance of parks in a multi-sectoral park-health programme.** Managing Sport and Leisure. 2021:1-17. Available from: <https://doi.org/10.1080/23750472.2021.1932563>.
2. Chen K, Zhang T, Liu F, Zhang Y, Song Y. **How Does Urban Green Space Impact Residents' Mental Health: A Literature Review of Mediators.** Int J Environ Res Public Health. 2021;18(22):11746. Available from: <https://www.mdpi.com/1660-4601/18/22/11746>.
3. Cottagiri SA, De Groh M, Srugo SA, Jiang Y, Hamilton HA, Ross NA, et al. **Are school-based measures of walkability and greenness associated with modes of commuting to school? Findings from a student survey in Ontario, Canada.** Can J Public Health. 2021;112(2):331-41. Available from: <https://doi.org/10.17269/s41997-020-00440-0>.
4. Frumkin H. **COVID-19, the Built Environment, and Health.** Environ Health Perspect. 2021;129(7):075001. Available from: <https://ehp.niehs.nih.gov/doi/abs/10.1289/EHP8888>.
5. Manso M, Sousa V, Silva CM, Cruz CO. **The role of green roofs in post COVID-19 confinement: An analysis of willingness to pay.** Journal of Building Engineering. 2021;44:103388. Available from: <https://www.sciencedirect.com/science/article/pii/S2352710221012468>.
6. Mathias S, Daigle P, Dancause KN, Gadais T. **Forest bathing: a narrative review of the effects on health for outdoor and environmental education use in Canada.** Journal of Outdoor and Environmental Education. 2020;23(3):309-21. Available from: <https://doi.org/10.1007/s42322-020-00058-3>.
7. Moitra S, Foraster M, Arbillaga-Etxarri A, Marín A, Barberan-Garcia A, Rodríguez-Chiaradia DA, et al. **Roles of the physical environment in health-related quality of life in patients with chronic**

- obstructive pulmonary disease.** Environ Res. 2022;203:111828. Available from: <https://www.sciencedirect.com/science/article/pii/S0013935121011221>.
8. Nguemni Tiako MJ, Stokes DC. **Who is Biking for? Urban Bikeshare Networks' Responses to the COVID-19 Pandemic, Disparities in Bikeshare Access, and a Way Forward.** The Yale journal of biology and medicine. 2021;94(1):159-64. Available from: <https://pubmed.ncbi.nlm.nih.gov/33795993>.
 9. Nguyen P-Y, Astell-Burt T, Rahimi-Ardabili H, Feng X. **Green Space Quality and Health: A Systematic Review.** Int J Environ Res Public Health. 2021;18(21):11028. Available from: <https://www.mdpi.com/1660-4601/18/21/11028>.
 10. O'Connell TS, Howard RA, Hutson G. **The Impact of COVID-19 on Outdoor Recreation Participation in Canada.** St. Catharines, ON: Brock University; 2020 Jun. Available from: <https://brocku.ca/brock-news/2020/06/brock-study-shows-dramatic-impact-of-covid-19-on-active-canadians/>.
 11. Ortegon-Sanchez A, McEachan RRC, Albert A, Cartwright C, Christie N, Dhanani A, et al. **Measuring the Built Environment in Studies of Child Health—A Meta-Narrative Review of Associations.** Int J Environ Res Public Health. 2021;18(20):10741. Available from: <https://www.mdpi.com/1660-4601/18/20/10741>.
 12. Papadopoulos A, Pons W, Young I. **Tomorrow's healthy environments: 30 years later.** Environ Health Rev. 2021;64(1):11-3. Available from: <https://pubs.ciphi.ca/doi/abs/10.5864/d2021-007>.
 13. Pinheiro MD, Luís NC. **COVID-19 Could Leverage a Sustainable Built Environment.** Sustainability. 2020;12(14):5863. Available from: <https://www.mdpi.com/2071-1050/12/14/5863>.
 14. Psyllidis A, Duarte F, Teeuwen R, Salazar Miranda A, Benson T, Bozzon A. **Cities and infectious diseases: Assessing the exposure of pedestrians to virus transmission along city streets.** Urban Studies. 2021. Available from: <https://journals.sagepub.com/doi/abs/10.1177/00420980211042824>.
 15. Schelske O. **Biodiversity and the Benefits for Human Health.** Zurich, Switzerland: Swiss Re Institute; 2021 Oct. Available from: <https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-biodiversity-benefits-for-human-health.html>.
 16. Shin JC, Parab KV, An R, Grigsby-Toussaint DS. **Greenspace exposure and sleep: A systematic review.** Environ Res. 2020;182:109081. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31891829>.
 17. Vermes J. **Prescribing nature: Research suggests the outdoors are good for your mental health.** 2021 Sep 6. Available from: <https://www.cbc.ca/radio/thecurrent/the-current-for-sept-6-2021-1.6163980/prescribing-nature-research-suggests-the-outdoors-are-good-for-your-mental-health-1.6163985>.
 18. Wang Y. **A walk in the park? How spending time in nature can boost mental health.** 2021. Available from: <https://www.utoronto.ca/news/walk-park-how-spending-time-nature-can-boost-mental-health#:~:text=The%20initiative%2C%20started%20by%20the,satisfaction%2C%20according%20to%20the%20program>.

BUILT ENVIRONMENT

CHEMICAL AGENTS – METALS, GENERAL

General

1. Schindler M, Weatherhead K, Mantha H. **The Release of Incidental Nanoparticles During the Weathering of Gunshot Residue in Soils of a Shooting Range in Ontario, Canada.** The Canadian Mineralogist. 2020;59(1):69-89. Available from: <https://doi.org/10.3749/canmin.1900092>.
2. Fausak L, Watkinson AD, Dy K, Lavkulich L. **Assessment of metal contamination in soil and vegetation along the Arbutus Greenway in Vancouver, British Columbia.** Plant and Soil. 2021;464(1):593-604. Available from: <https://doi.org/10.1007/s11104-021-04983-0>.
3. Negev M, Barnett-Itzhaki Z, Berman T, Reicher S, Cohen N, Ardi R, et al. **Hazardous chemicals in outdoor and indoor surfaces: artificial turf and laminate flooring.** J Expo Sci Environ Epidemiol. 2021. Available from: <https://doi.org/10.1038/s41370-021-00396-4>.
4. Nicole W. **Youth in Action: Local Teens Help Assess Chemical Exposures from Household Cleaning Products.** Environ Health Perspect. 2021;129(10):104002. Available from: <https://ehp.niehs.nih.gov/doi/abs/10.1289/EHP10190>.
5. Viveiros B, Caron G, Barkley J, Philo E, Odom S, Wenzel J, et al. **Cake Decorating Luster Dust Associated with Toxic Metal Poisonings — Rhode Island and Missouri, 2018–2019.** Morbidity and Mortality Weekly Report (MMWR). 2021;70(43):1501–4. Available from: <https://www.cdc.gov/mmwr/volumes/70/wr/mm7043a2.htm>.

Nanoplastics, Microparticles

1. Imani SM, Ladouceur L, Marshall T, Maclachlan R, Soleymani L, Didar TF. **Antimicrobial Nanomaterials and Coatings: Current Mechanisms and Future Perspectives to Control the Spread of Viruses Including SARS-CoV-2.** ACS Nano. 2020;14(10):12341-69. Available from: <https://pubs.acs.org/doi/10.1021/acsnano.0c05937>.
2. Moore R. **Microplastics in the Beaufort Sea Beluga Food Web:** Simon Fraser University; 2020. Available from: <https://summit.sfu.ca/item/20241>.
3. Revell LE, Kuma P, Le Ru EC, Somerville WRC, Gaw S. **Direct radiative effects of airborne microplastics.** Nature. 2021;598(7881):462-7. Available from: <https://doi.org/10.1038/s41586-021-03864-x>.

CHEMICAL AGENTS – PESTICIDES

CHEMICAL AGENTS – SHALE GAS

CHILDREN’S ENVIRONMENTAL HEALTH

1. Fyfe-Johnson AL, Hazlehurst MF, Perrins SP, Bratman GN, Thomas R, Garrett KA, et al. **Nature and Children’s Health: A Systematic Review.** Pediatrics. 2021;148(4). Available from: <https://doi.org/10.1542/peds.2020-049155>.
2. Mygind L, Kurtzhals M, Nowell C, Melby PS, Stevenson MP, Nieuwenhuijsen M, et al. **Landscapes of becoming social: A systematic review of evidence for associations and pathways between interactions with nature and socioemotional development in children.** Environ Int.

2021;146:106238. Available from:

<https://www.sciencedirect.com/science/article/pii/S0160412020321930>.

3. Teich N, Stallmach A, Bruns T. **Greenspace in Childhood: A New Avenue to Prevent Inflammatory Bowel Disease?** *Am J Gastroenterol*. 2021;116(9):1964-5. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/33958517>.

CLIMATE CHANGE

1. Arpin E, Gauffin K, Kerr M, Hjern A, Mashford-Pringle A, Barros A, et al. **Climate Change and Child Health Inequality: A Review of Reviews**. *Int J Environ Res Public Health*. 2021;18(20):10896. Available from: <https://www.mdpi.com/1660-4601/18/20/10896>.
2. Brodie N, Silberholz EA. **Progress in understanding climate change's effects on children and youth**. *Curr Opin Pediatr*. 2021;33(6):684-90. Available from: https://journals.lww.com/co-pediatrics/Fulltext/2021/12000/Progress_in_understanding_climate_change_s_effects.20.aspx.
3. Cady TJ, Rahn DA, Brunsell NA, Lyles W. **Conversion of Abandoned Property to Green Space as a Strategy to Mitigate the Urban Heat Island Investigated with Numerical Simulations**. *Journal of Applied Meteorology and Climatology*. 2020;59(11):1827-43. Available from: <https://journals.ametsoc.org/view/journals/apme/59/11/JAMC-D-20-0093.1.xml>.
4. Henderson SB, McLean KE, Lee M, Kosatsky T. **Extreme heat events are public health emergencies**. *BC Medical Journal*. 2021;63(9). Available from: <https://bcmj.org/bccdc/extreme-heat-events-are-public-health-emergencies>.
5. Lee C. **Climate Sensitive Urban Design of Public Open Spaces for Winter Cities: Edmonton, Canada**: College of Engineering/Engineering Practice School 2020. Available from: <https://space.snu.ac.kr/handle/10371/169416>.
6. Lin BB, Ossola A, Alberti M, Andersson E, Bai X, Dobbs C, et al. **Integrating solutions to adapt cities for climate change**. *The Lancet Planetary Health*. 2021;5(7):e479-e86. Available from: [https://doi.org/10.1016/S2542-5196\(21\)00135-2](https://doi.org/10.1016/S2542-5196(21)00135-2).
7. Reed G, Gobby J, Sinclair R, Ivey R, Matthews HD. **Indigenizing Climate Policy in Canada: A Critical Examination of the Pan-Canadian Framework and the ZÉN RoadMap**. *Frontiers in Sustainable Cities*. 2021;3(78). Available from: <https://www.frontiersin.org/article/10.3389/frsc.2021.644675>.
8. Romanello M, McGushin A, Di Napoli C, Drummond P, Hughes N, Jamart L, et al. **The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future**. *The Lancet*. 2021. Available from: [https://doi.org/10.1016/S0140-6736\(21\)01787-6](https://doi.org/10.1016/S0140-6736(21)01787-6).
9. Stern N, Patel I, Ward B. **Covid-19, climate change, and the environment: a sustainable, inclusive, and resilient global recovery**. *BMJ*. 2021;375:n2405. Available from: <https://www.bmj.com/content/bmj/375/bmj.n2405.full.pdf>.
10. Tilstra MH, Tiwari I, Niwa L, Campbell S, Nielsen CC, Jones CA, et al. **Risk and Resilience: How Is the Health of Older Adults and Immigrant People Living in Canada Impacted by Climate- and Air Pollution-Related Exposures?** *Int J Environ Res Public Health*. 2021;18(20):10575. Available from: <https://www.mdpi.com/1660-4601/18/20/10575>.
11. Yan B, Chebana F, Masselot P, Campagna C, Gosselin P, Ouarda TBMJ, et al. **A cold-health watch and warning system, applied to the province of Quebec (Canada)**. *Sci Total Environ*. 2020;741:140188. Available from: <https://www.sciencedirect.com/science/article/pii/S0048969720337098>.

COMMUNICABLE AND INFECTIOUS DISEASES

See **Covid 19 subsections** in this issue and in the **COVID-19 Additional Topics and Guidance** section at the end of this issue (e.g., Occupational Guidance, Transit, Transmission)

DRINKING WATER

1. Akhbarizadeh R, Dobaradaran S, Schmidt TC, Nabipour I, Spitz J. **Worldwide bottled water occurrence of emerging contaminants: A review of the recent scientific literature.** *J Hazard Mater.* 2020;392:122271. Available from: <https://doi.org/10.1016/j.jhazmat.2020.122271>.
2. Health Canada. **Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Cyanobacterial Toxins.** Ottawa, ON: Government of Canada; 2021 Jan 13. Available from: <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-cyanobacterial-toxins-document.html>.
3. Lamy M-C, Sanseverino I, Niegowska M, Lettieri T. **Microbiological Parameters under the Drinking Water Directive. Current state of art on somatic coliphages and Clostridium perfringens and spores.** Brussels, Belgium: European Commission; 2021. Available from: [file:///C:/Users/mwiens/Downloads/final_jrc_tech_report_dwd_06.04.20_final_pdf\(4\).pdf](file:///C:/Users/mwiens/Downloads/final_jrc_tech_report_dwd_06.04.20_final_pdf(4).pdf).
4. Song Y, Pruden A, Edwards MA, Rhoads WJ. **Natural Organic Matter, Orthophosphate, pH, and Growth Phase Can Limit Copper Antimicrobial Efficacy for Legionella in Drinking Water.** *Environ Sci Tech.* 2021;55(3):1759-68. Available from: <https://pubs.acs.org/doi/10.1021/acs.est.0c06804>.

EMERGENCY PREPAREDNESS

1. Gibbs L, Marinkovic K, Nursey J, L. AT, Tekin E, Ulubasoglu M, et al. **Child and Adolescent Psychosocial Support Programs Following Natural Disasters—a Scoping Review of Emerging Evidence.** *Curr Psychiatry Rep.* 2021;23(12):82. Available from: <https://doi.org/10.1007/s11920-021-01293-1>.
2. Halabut R, Birchall SJ. **Wildfire risk and response in Jasper National Park, Alberta: Application of an adaptation readiness framework.** *The Canadian Geographer / Le Géographe canadien.* 2021. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/cag.12702>.
3. Hassan QK, Rahaman KR, Ahmed MR, Hossain SM. **Examining Post-Fire Perceptions of Selected Mitigation Strategies after the 2016 Horse River Wildland Fire in Alberta, Canada.** *Applied Sciences.* 2021;11(21):10155. Available from: <https://www.mdpi.com/2076-3417/11/21/10155>.
4. Heaney E, Hunter L, Clulow A, Bowles D, Vardoulakis S. **Efficacy of Communication Techniques and Health Outcomes of Bushfire Smoke Exposure: A Scoping Review.** *Int J Environ Res Public Health.* 2021;18(20):10889. Available from: <https://www.mdpi.com/1660-4601/18/20/10889>.
5. Khalafzai M-AK, McGee TK, Parlee B. **Spring flooding and recurring evacuations of Kashechewan First Nation, northern Ontario, Canada.** *International Journal of Disaster Risk Reduction.* 2021;63:102443. Available from: <https://www.sciencedirect.com/science/article/pii/S2212420921004040>.
6. Kim E-Y, Han S-W. **Development of Psychological First Aid Guidelines for People Who Have Experienced Disasters.** *Int J Environ Res Public Health.* 2021;18(20):10752. Available from: <https://www.mdpi.com/1660-4601/18/20/10752>.
7. Lalani N, Drolet JL, McDonald-Harker C, Brown MRG, Brett-MacLean P, Agyapong VIO, et al. **Nurturing Spiritual Resilience to Promote Post-disaster Community Recovery: The 2016**

- Alberta Wildfire in Canada.** *Frontiers in public health.* 2021;9:682558-. Available from: <https://pubmed.ncbi.nlm.nih.gov/34368055>.
8. National Center for Healthy Housing. **Wildfire interviews: Summary and key takeaways.** Columbia, MD: National Center for Healthy Housing; 2021 Aug. Available from: <https://nchh.org/resource-library/report-wildfire-interviews-summary-and-key-takeaways.pdf>.
 9. National Collaborating Centres for Public Health. **Public health responses for long-term evacuation and recovery (resources).** National Collaborating Centre for Healthy Public Policy; 2021. Available from: https://nccph.ca/projects/public-health-responses-for-long-term-evacuation-and-recovery?utm_source=Cyberimpact&utm_medium=email&utm_campaign=E--Bulletin-October-2021.
 10. National Collaborating Centres for Public Health. **Out of the ashes: Ashcroft Indian Band and the elephant hill wildfire. Insights for public health responses to long-term evacuation.** National Collaborating Centre for Healthy Public Policy; 2021. Available from: <https://nccph.ca/projects/public-health-responses-for-long-term-evacuation-and-recovery/out-of-the-ashes-ashcroft-indian-band-and-the-elephant-hill-wildfire>.
 11. National Collaborating Centres for Public Health. **From the floodwaters: Siksika Nation and the bow river flood. Insights for public health responses to long-term evacuation.** National Collaborating Centre for Healthy Public Policy; 2021. Available from: <https://nccph.ca/projects/public-health-responses-for-long-term-evacuation-and-recovery/from-the-floodwaters-siksika-nation-and-the-bow-river-flood-insights>.
 12. National Collaborating Centres for Public Health. **Health & social impacts of long-term evacuation due to natural disasters - First Nations communities. A summary of lessons for public health.** National Collaborating Centre for Healthy Public Policy; 2021. Available from: <https://nccph.ca/projects/public-health-responses-for-long-term-evacuation-and-recovery/health-social-impacts-of-long-term-evacuation-due-to-natural-disasters>.
 13. Pawer S, Rajabali F, Zheng A, Pike I, Pursell R, Zargaran A, et al. **Socioeconomic factors and substances involved in poisoning-related emergency department visits in British Columbia, Canada.** *Health Promot Chronic Dis Prev Can.* 2021;41(7-8):211-21. Available from: <https://pubmed.ncbi.nlm.nih.gov/34427419/>.

ENVIRONMENTAL HEALTH SURVEILLANCE

1. Brakefield WS, Ammar N, Olusanya OA, Shaban-Nejad A. **An Urban Population Health Observatory System to Support COVID-19 Pandemic Preparedness, Response, and Management: Design and Development Study.** *JMIR Public Health Surveill.* 2021;7(6):e28269. Available from: <https://doi.org/10.2196/28269>.
2. Zare Jeddi M, Virgolino A, Fantke P, Hopf NB, Galea KS, Remy S, et al. **A human biomonitoring (HBM) Global Registry Framework: Further advancement of HBM research following the FAIR principles.** *Int J Hyg Environ Health.* 2021;238:113826. Available from: <https://www.sciencedirect.com/science/article/pii/S1438463921001413>.

ENVIRONMENTAL PLANNING

1. See **'BUILD BACK BETTER'** section in COVID section (second part of this scan)

FOOD

Safety

1. Boyd E, Trmcic A, Taylor M, Shyng S, Hasselback P, Man S, et al. **Escherichia coli O121 outbreak associated with raw milk Gouda-like cheese in British Columbia, Canada, 2018.** Canada communicable disease report = Relevé des maladies transmissibles au Canada. 2021;47(2):11-6. Available from: <https://pubmed.ncbi.nlm.nih.gov/33746616>.
2. Coulombe GV, Catford A, Martinez-Perez A, Buenaventura E. **Outbreaks of Escherichia coli O157:H7 Infections Linked to Romaine Lettuce in Canada from 2008 to 2018: An Analysis of Food Safety Context.** J Food Prot. 2020;83(8):1444-62. Available from: <https://doi.org/10.4315/JFP-20-029>.
3. Keener L. **Foodborne Parasites: An Insidious Threat to Food Safety and Public Health.** Food Safety Magazine. 2021. Available from: <https://www.traincan.com/foodsafetynews/foodborne-parasites-an-insidious-threat-to-food-safety-and-public-health>.
4. Mpundu P, Mbewe AR, Muma JB, Mwasinga W, Mukumbuta N, Munyeme M. **A global perspective of antibiotic-resistant Listeria monocytogenes prevalence in assorted ready to eat foods: A systematic review.** Veterinary World. 2021;14(8):2219-29. Available from: <https://doi.org/10.14202/vetworld.2021.2219-2229>.
5. Singh M, Sadat A, Abdi R, Colaruotolo LA, Francavilla A, Petker K, et al. **Detection of SARS-CoV-2 on surfaces in food retailers in Ontario.** Current Research in Food Science. 2021;4:598-602. Available from: <https://www.sciencedirect.com/science/article/pii/S2665927121000629>.
6. US Food and Drug Administration. **Fish and Fishery Products. Hazards and Controls Guidance.** Washington, DC: US Department of Health and Human Services; 2021 Jun. Available from: <https://www.fda.gov/media/80637/download>.

Security

1. Oladipo D. **A Novel Pilot Brings Vertical Farms to Public Housing.** 2021 [Oct 26]; Available from: https://www.bloomberg.com/news/articles/2021-10-26/jersey-city-brings-vertical-farms-to-public-housing?srnd=citylab&utm_source=ActiveCampaign&utm_medium=email&utm_content=Top+news%3A++ATF+LEAD+STORY+TITLE&utm_campaign=ATF+Daily+-+Outlook.

GENERAL

Health Policy

1. Leeman J, Boisson A, Go V. **Scaling Up Public Health Interventions: Engaging Partners Across Multiple Levels.** Annu Rev Public Health. 2022;43(1):null. Available from: <https://www.annualreviews.org/doi/abs/10.1146/annurev-publhealth-052020-113438>.

HEALTH EQUITY

1. Abrams EM, Greenhawt M, Shaker M, Pinto AD, Sinha I, Singer A. **The COVID-19 pandemic: Adverse effects on the social determinants of health in children and families.** Ann Allergy Asthma Immunol. 2021. Available from: <https://doi.org/10.1016/j.anai.2021.10.022>.
2. Alexander GK, Brooks V. **Nature-based therapeutics: A collaborative research agenda promoting equitable access and environmental stewardship.** Collegian. 2021. Available from: <https://www.sciencedirect.com/science/article/pii/S1322769621000433>.

3. Anderson V, Gough WA, Agic B. **Nature-Based Equity: An Assessment of the Public Health Impacts of Green Infrastructure in Ontario Canada.** *Int J Environ Res Public Health.* 2021;18(11):5763. Available from: <https://www.mdpi.com/1660-4601/18/11/5763>.
4. Archer R. **The voice of Hong Kong students at the university level in Canada, regarding outdoor experiences and cultural adaptation.** Victoria, BC: University of Victoria; 2021. Available from: <http://dspace.library.uvic.ca/handle/1828/13340>.
5. Bayeh R, Yampolsky MA, Ryder AG. **The Social Lives of Infectious Diseases: Why Culture Matters to COVID-19.** *Frontiers in Psychology.* 2021;12(3731). Available from: <https://www.frontiersin.org/article/10.3389/fpsyg.2021.648086>.
6. de Lannoy L, Rhodes RE, Moore SA, Faulkner G, Tremblay MS. **Regional differences in access to the outdoors and outdoor play of Canadian children and youth during the COVID-19 outbreak.** *Can J Public Health.* 2020;111(6):988-94. Available from: <https://doi.org/10.17269/s41997-020-00412-4>.
7. Geary RS, Wheeler B, Lovell R, Jepson R, Hunter R, Rodgers S. **A call to action: Improving urban green spaces to reduce health inequalities exacerbated by COVID-19.** *Prev Med.* 2021;145:106425. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/33460630>.
8. Hassen N. **Leveraging built environment interventions to equitably promote health during and after COVID-19 in Toronto, Canada.** *Health Promotion Int.* 2021:daab128. Available from: <https://pubmed.ncbi.nlm.nih.gov/34423362>.
9. Jarvis I, Gergel S, Koehoorn M, van den Bosch M. **Greenspace access does not correspond to nature exposure: Measures of urban natural space with implications for health research.** *Landscape Urb Plan.* 2020;194:103686. Available from: <https://www.sciencedirect.com/science/article/pii/S0169204619308618>.
10. Jelks NTO, Jennings V, Rigolon A. **Green Gentrification and Health: A Scoping Review.** *Int J Environ Res Public Health.* 2021;18(3):907. Available from: <https://www.mdpi.com/1660-4601/18/3/907>.
11. Kolimenakis A, Solomou AD, Proutsos N, Avramidou EV, Korakaki E, Karetos G, et al. **The Socioeconomic Welfare of Urban Green Areas and Parks; A Literature Review of Available Evidence.** *Sustainability.* 2021;13(14):7863. Available from: <https://www.mdpi.com/2071-1050/13/14/7863>.
12. Levinger P, Cerin E, Milner C, Hill KD. **Older people and nature: the benefits of outdoors, parks and nature in light of COVID-19 and beyond— where to from here?** *Int J Environ Health Res.* 2021:1-8. Available from: <https://doi.org/10.1080/09603123.2021.1879739>.
13. Levinger P, Hill K. **Embracing nature, parks and outdoor spaces to age well: Covid-19 and beyond.** *Journal on Active Aging.* 2021. Available from: <https://library.olympics.com/Default/doc/EBSCO SPORTDiscus/150658929/embracing-nature-parks-and-outdoor-spaces-to-age-well-covid-19-and-beyond>.
14. Machado S, Goldenberg S. **Sharpening our public health lens: advancing im/migrant health equity during COVID-19 and beyond.** *Int J Equity Health.* 2021;20(1):57. Available from: <https://doi.org/10.1186/s12939-021-01399-1>.
15. Muqueeth S. **Parks: A vital community condition.** Berkeley, CA: University of Berkeley; 2021. Available from: <https://doi.org/10.5070/P537151742>.
16. Olson N, Pauly B. **Homeless encampments: connecting public health and human rights.** *Can J Public Health.* 2021. Available from: <https://doi.org/10.17269/s41997-021-00581-w>.
17. Parent N, Guhn M, Brussoni M, Almas A, Oberle E. Social determinants of playing outdoors in the neighbourhood: family characteristics, trust in neighbours and daily outdoor play in early

- childhood. *Can J Public Health*. 2021;112(1):120-7. Available from: <https://doi.org/10.17269/s41997-020-00355-w>.
18. Pinault L, Christidis T, Toyib O, Crouse DL. **Ethnocultural and socioeconomic disparities in exposure to residential greenness within urban Canada**. *Health Rep*. 2021;32(5):3-14. Available from: <https://www150.statcan.gc.ca/n1/pub/82-003-x/2021005/article/00001-eng.htm>.
 19. Rigolon A, Browning MHEM, McAnirlin O, Yoon H. **Green Space and Health Equity: A Systematic Review on the Potential of Green Space to Reduce Health Disparities**. *Int J Environ Res Public Health*. 2021;18(5):2563. Available from: <https://www.mdpi.com/1660-4601/18/5/2563>.
 20. Rodgers C. **Nourishing and protecting our urban 'green' space in a post-pandemic world**. *Environmental Law Review*. 2020;22(3):165-9. Available from: <https://journals.sagepub.com/doi/abs/10.1177/1461452920934667>.
 21. Sax DL. **Expelled from the garden? Understanding the dynamics of green gentrification in Vancouver, British Columbia** [Text thesis]2021. Available from: <https://open.library.ubc.ca/collections/24/items/1.0401826>.
 22. Scott JL, Tenneti A. Race and nature in the city. **Engaging youth of colour in nature-based activities, A Community-based Needs Assessment for Nature Canada's NatureHood** Nature Canada; 2021 Apr. Available from: <https://naturecanada.ca/wp-content/uploads/2021/04/Race-Nature-in-the-City-Report.pdf>.
 23. Spencer LH, Lynch M, Lawrence CL, Edwards RT. **A Scoping Review of How Income Affects Accessing Local Green Space to Engage in Outdoor Physical Activity to Improve Well-Being: Implications for Post-COVID-19**. *Int J Environ Res Public Health*. 2020;17(24). Available from: <https://www.ncbi.nlm.nih.gov/pubmed/33322829>.
 24. Spotswood EN, Benjamin M, Stoneburner L, Wheeler MM, Beller EE, Balk D, et al. **Nature inequity and higher COVID-19 case rates in less-green neighbourhoods in the United States**. *Nature Sustainability*. 2021. Available from: <https://doi.org/10.1038/s41893-021-00781-9>.
 25. White KR. **A comparison of greenspace metrics and measurement methods, walkability, and social and material deprivation in Metro Vancouver** [Text thesis]2021. Available from: <https://open.library.ubc.ca/collections/24/items/1.0402572>.
 26. Zhang W. **Designing for unhoused people: An inclusive public space strategy**. 2021. Available from: <https://open.library.ubc.ca/collections/42591/items/1.0397293>.

HEALTH IMPACT ASSESSMENT

1. Gamache S, Diallo T, Lebel A. **The use of health impact assessments performed in Quebec City (Canada) – 2013–2019: Stakeholders and participants' appreciation**. *Environ Impact Assess Rev*. 2022;92:106693. Available from: <https://www.sciencedirect.com/science/article/pii/S0195925521001438>.
2. Noble B. **Chapter 19: Strategic environmental assessment in Canada**. In: Fischer TB, González A, editors. *Handbook on Strategic Environmental Assessment Research Handbooks on Impact Assessment series*: Elgar; 2021. Available from: <https://www.elgaronline.com/view/edcoll/9781789909920/9781789909920.00033.xml>.

INDOOR AIR

1. Aviv D, Chen KW, Teitelbaum E, Sheppard D, Pantelic J, Rysanek A, et al. **A fresh (air) look at ventilation for COVID-19: Estimating the global energy savings potential of coupling natural ventilation with novel radiant cooling strategies.** *Applied energy.* 2021;292:116848-. Available from: <https://pubmed.ncbi.nlm.nih.gov/33776191>.
2. Gopalakrishnan P, Kavinraj M, Vivekanadhan, Jeevitha N. **Effect of indoor air quality on human health-A review.** *AIP Conference Proceedings.* 2021;2408(1):030005. Available from: <https://aip.scitation.org/doi/abs/10.1063/5.0072656>.
3. Subpiramaniyam S. **Outdoor disinfectant sprays for the prevention of COVID-19: Are they safe for the environment?** *Sci Total Environ.* 2021;759:144289. Available from: <https://www.sciencedirect.com/science/article/pii/S0048969720378207>.
4. Xia X, Chan KH, Lam KBH, Qiu H, Li Z, Yim SHL, et al. **Effectiveness of indoor air purification intervention in improving cardiovascular health: A systematic review and meta-analysis of randomized controlled trials.** *Sci Total Environ.* 2021;789:147882. Available from: <https://www.sciencedirect.com/science/article/pii/S0048969721029533>.

NUISANCE CONTROL

OUTDOOR AIR

1. Chen H, Kaufman JS, Olaniyan T, Pinault L, Tjepkema M, Chen L, et al. **Changes in exposure to ambient fine particulate matter after relocating and long term survival in Canada: quasi-experimental study.** *BMJ.* 2021;375:n2368. Available from: <https://www.bmj.com/content/bmj/375/bmj.n2368.full.pdf>.
2. Diener A, Mudu P. **How can vegetation protect us from air pollution? A critical review on green spaces' mitigation abilities for air-borne particles from a public health perspective - with implications for urban planning.** *Sci Total Environ.* 2021;796:148605. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/34271387>.
3. Gogna P, King WD, Villeneuve PJ, Kumarathasan P, Johnson M, Lanphear B, et al. **Ambient air pollution and inflammatory effects in a Canadian pregnancy cohort.** *Environmental Epidemiology.* 2021;5(5):e168. Available from: [https://journals.lww.com/environepidem/Fulltext/2021/10000/Ambient air pollution and inflammatory effects_in.2.aspx](https://journals.lww.com/environepidem/Fulltext/2021/10000/Ambient_air_pollution_and_inflammatory_effects_in.2.aspx).
4. Lee K, Greenstone M. **Air Quality Life Index. 2021 Annual Update.** Chicago, IL: AQLI; 2021 Sep. Available from: <https://aqli.epic.uchicago.edu/reports/>.
5. Rajagopalan S, Landrigan PJ. **Pollution and the Heart.** *N Engl J Med.* 2021;385(20):1881-92. Available from: <https://www.nejm.org/doi/full/10.1056/NEJMra2030281>.
6. Trieu J, Yao J, McLean KE, Stieb DM, Henderson SB. **Evaluating an Air Quality Health Index (AQHI) amendment for communities impacted by residential woodsmoke in British Columbia, Canada.** *J Air Waste Manag Assoc.* 2020;70(10):1009-21. Available from: <https://doi.org/10.1080/10962247.2020.1797927>.

PERSONAL SERVICE ESTABLISHMENTS

1. Simcoe Muskoka District Health Unit. **COVID-19 guidance for personal service settings**. Simcoe, ON: Simcoe Muskoka District Health Unit; 2021 Oct 28. Available from: https://www.simcoemuskokahealth.org/docs/default-source/COVID-/covid-19-guidance-for-personal-service-settings_aoda-web.pdf?sfvrsn=12.

PEST CONTROL

PHYSICAL AGENTS

1. Gong X, Fenech B, Blackmore C, Gulliver J, Hansell A. **Association between noise annoyance and mental health outcomes - A systematic review**. London, UK: UK Health Security Agency; 2021. Available from: <https://researchportal.phe.gov.uk/en/publications/association-between-noise-annoyance-and-mental-health-outcomes-a->.
2. Roswall N, Pyko A, Ögren M, Oudin A, Rosengren A, Lager A, et al. **Long-Term Exposure to Transportation Noise and Risk of Incident Stroke: A Pooled Study of Nine Scandinavian Cohorts**. *Environ Health Perspect*. 2021;129(10):107002. Available from: <https://ehp.niehs.nih.gov/doi/abs/10.1289/EHP8949>.
3. Willsher K. **French couple who said windfarm affected health win legal fight**. *The Guardian*. 2021 Nov 8. Available from: <https://www.theguardian.com/world/2021/nov/08/french-couple-wins-legal-fight-wind-turbine-syndrome-windfarm-health>.

RADIATION

1. British Columbia Centre for Disease Control. **New interactive map estimates local health risk due to indoor radon levels in BC**. Vancouver, BC: BCCDC; 2021 [updated Nov 4]; Available from: <http://www.bccdc.ca/about/news-stories/stories/2021/new-interactive-radon-map>.
2. Carrion-Matta A. **Assessing Indoor Exposures to Particulate Matter and Radon**: Harvard University; 2021. Available from: <https://dash.harvard.edu/handle/1/37369482>.
3. Felicioni L, Lupíšek A, Jiránek M. **Embodied Energy and Global Warming Potential of Radon Preventive Measures Applied in New Family Houses**. *Sustainability in Energy and Buildings* 2021: Springer; 2022. p. 57-68. Available from: https://link.springer.com/chapter/10.1007%2F978-981-16-6269-0_5.
4. Khan SM, Gomes J, Krewski DR. **Radon interventions around the globe: A systematic review**. *Heliyon*. 2019;5(5):e01737. Available from: <https://doi.org/10.1016/j.heliyon.2019.e01737>.
5. National Collaborating Centre for Environmental Health. **Radon [topic page]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 11 04 Nov 4. Available from: <https://ncceh.ca/environmental-health-in-canada/health-agency-projects/radon>.
6. Sim WMB, Zeng MX, Rojas-Garcia A. **The effectiveness of educational programmes in promoting sun protection among children under the age of 18: a systematic review and meta-analysis**. *J Eur Acad Dermatol Venereol*. 2021;35(11):2154-65. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/jdv.17599>.
7. Yanchao S, Bing S, Hongxing C, Yunyun W. **Study on the effect of air purifier for reducing indoor radon exposure**. *Appl Radiat Isot*. 2021;173:109706. Available from: <https://doi.org/10.1016/j.apradiso.2021.109706>.

8. Yarmoshenko I, Malinovsky G, Vasilyev A, Onishchenko A. **Seasonal Variation of Radon Concentrations in Russian Residential High-Rise Buildings**. *Atmosphere*. 2021;12(7):930. Available from: <https://doi.org/10.3390/atmos12070930>.
9. Yarmoshenko I, Zhukovsky M, Onishchenko A, Vasilyev A, Malinovsky G. **Factors influencing temporal variations of radon concentration in high-rise buildings**. *J Environ Radioact*. 2021;232:106575. Available from: <https://doi.org/10.1016/j.jenvrad.2021.106575>.
10. Young C. **Putting radon on the map: A new and interactive tool for British Columbia [blog]**. Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 11 16 Nov 16. Available from: <https://ncceh.ca/content/blog/putting-radon-map-new-and-interactive-tool-british-columbia>.

RECREATIONAL AND SURFACE WATER

1. Alberta Health Services. **Public health guidelines for water reuse and stormwater use**. Edmonton, AB: AHS; 2021 Jan. Available from: <https://open.alberta.ca/dataset/6a57d29c-d437-4dd9-94e3-d96bedc01bb4/resource/d533afcb-2933-43da-9199-eea030148c00/download/health-public-health-guidelines-water-reuse-stormwater-use-2021.pdf>.
2. Climate Atlas of Canada. **Waterborne Disease and Climate Change**. Climate Atlas of Canada; Available from: <https://climateatlas.ca/waterborne-disease-and-climate-change>.
3. Health Canada. **Cyanobacteria and their Toxins in Recreational Water: Guideline Technical Document for Public Consultation**. Ottawa, ON: Government of Canada; 2020 Nov 20. Available from: <https://www.canada.ca/en/health-canada/programs/consultation-cyanobacteria-toxins-recreational-water/document.html>.
4. Health Canada. **Guidance document for consultation: Recreational water quality: Physical, aesthetic and chemical characteristics**. Ottawa, ON: Government of Canada; 2021 Aug 11. Available from: <https://www.canada.ca/en/health-canada/programs/consultation-guidelines-recreational-water-quality-physical-aesthetic-chemical-characteristics/document.html>.
5. Heasley C, Sanchez JJ, Tustin J, Young I. **Systematic review of predictive models of microbial water quality at freshwater recreational beaches**. *PLoS ONE*. 2021;16(8):e0256785. Available from: <https://doi.org/10.1371/journal.pone.0256785>.
6. Kenny T-A, Archambault P, Ayotte P, Batal M, Chan HM, Cheung W, et al. **Oceans and human health—navigating changes on Canada’s coasts**. *FACETS*. 2020;5(1):1037-70. Available from: <https://www.facetsjournal.com/doi/abs/10.1139/facets-2020-0035>.
7. Landrigan PJ, Stegeman JJ, Fleming LE, Allemand D, Anderson DM, Backer LC, et al. **Human Health and Ocean Pollution**. *Annals of global health*. 2020;86(1):151-. Available from: <https://pubmed.ncbi.nlm.nih.gov/33354517>.
8. Lin G, Xu X, Wang P, Liang S, Li Y, Su Y, et al. **Methodology for forecast and control of coastal harmful algal blooms by embedding a compound eutrophication index into the ecological risk index**. *Sci Total Environ*. 2020;735:139404. Available from: <https://doi.org/10.1016/j.scitotenv.2020.139404>.
9. McKee AM, Cruz MA. **Microbial and Viral Indicators of Pathogens and Human Health Risks from Recreational Exposure to Waters Impaired by Fecal Contamination**. *Journal of Sustainable Water in the Built Environment*. 2021;7(2):03121001. Available from: <https://ascelibrary.org/doi/abs/10.1061/JSWBAY.0000936>.

10. Pita P, Ainsworth GB, Alba B, Anderson AB, Antelo M, Alós J, et al. **First Assessment of the Impacts of the COVID-19 Pandemic on Global Marine Recreational Fisheries.** *Frontiers in Marine Science.* 2021;8(1533). Available from: <https://www.frontiersin.org/article/10.3389/fmars.2021.735741>.
11. Tiwari A, Oliver DM, Bivins A, Sherchan SP, Pitkänen T. **Bathing Water Quality Monitoring Practices in Europe and the United States.** *Int J Environ Res Public Health.* 2021;18(11):5513. Available from: <https://pubmed.ncbi.nlm.nih.gov/34063910>.
12. Wood SA, Kelly LT, Bouma-Gregson K, Humbert J-F, Laughinghouse IV HD, Lazorchak J, et al. **Toxic benthic freshwater cyanobacterial proliferations: Challenges and solutions for enhancing knowledge and improving monitoring and mitigation.** *Freshwater Biology.* 2020;65(10):1824-42. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/fwb.13532>.
13. Zamyadi A, Glover CM, Yasir A, Stuetz R, Newcombe G, Crosbie ND, et al. **Toxic cyanobacteria in water supply systems: data analysis to map global challenges and demonstrate the benefits of multi-barrier treatment approaches.** *H2Open Journal.* 2021;4(1):47-62. Available from: <https://doi.org/10.2166/h2oj.2021.067>.

RISK ASSESSMENT, COMMUNICATION

1. Heaney E, Hunter L, Clulow A, Bowles D, Vardoulakis S. **Efficacy of Communication Techniques and Health Outcomes of Bushfire Smoke Exposure: A Scoping Review.** *Int J Environ Res Public Health.* 2021;18(20):10889. Available from: <https://www.mdpi.com/1660-4601/18/20/10889>.

SENIORS' ENVIRONMENTAL HEALTH

1. Kadowaki L, Lalji K, Cohen M. **Chapter 25. Improving community health and social services. A British Columbia case study.** In: Rootman I, Edwards P, Levasseur M, Grunberg F, editors. *Promoting the Health of Older Adults: The Canadian Experience: Canadian Scholars' Press; 2021 Jul.* Available from: <https://canadianscholars.ca/books/promoting-the-health-of-older-adults>.

TOBACCO, CANNABIS

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario). **Health Impacts of Waterpipe Smoking and Exposure (evidence brief).** Toronto, ON: PHO; 2021 Sep. Available from: https://www.publichealthontario.ca/-/media/documents/e/2021/eb-waterpipe-smoking-exposure.pdf?sc_lang=en.

WASTE

1. Mathavarajah S, Melin A, Dellaire G. **SARS-CoV-2 and wastewater: What does it mean for non-human primates?** *Am J Primatol.* 2021:e23340. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/ajp.23340>.
2. O'Keeffe J. **Wastewater-based epidemiology: current uses and future opportunities as a public health surveillance tool [journal article].** Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 11 03 Nov 03. Available from: <https://doi.org/10.5864/d2021-015>.
3. Peng Y, Wu P, Schartup AT, Zhang Y. **Plastic waste release caused by COVID-19 and its fate in the global ocean.** *Proceedings of the National Academy of Sciences.* 2021;118(47):e2111530118. Available from: <https://www.pnas.org/content/pnas/118/47/e2111530118.full.pdf>.

4. Wang H, Liu S, Zhang C, Wan Y, Chang H. **Occurrence and mass balance of emerging brominated flame retardants in a municipal wastewater treatment plant.** *Water Res.* 2020;185:116298. Available from: <https://www.sciencedirect.com/science/article/pii/S0043135420308344>.

ZOONOSES

1. Cameron L, Rocque R, Penner K, Mauro I. **Public perceptions of Lyme disease and climate change in southern Manitoba, Canada: making a case for strategic decoupling of climate and health messages.** *BMC Public Health.* 2021;21(1):617. Available from: <https://doi.org/10.1186/s12889-021-10614-1>.
2. Coad L, Willis J, Maisels F, Funk S, Doughty H, Fa JE, et al. **Impacts of taking, trade and consumption of terrestrial migratory species for wild meat.** Norway: Prepared for the Secretariat of the Convention on Migratory Species (CMS) by the Center for International Forestry Research (CIFOR); 2021 Sep. Available from: https://www.cms.int/sites/default/files/CMS_Report_impacts_wild_meat_terrestrial_migratory_species.pdf.
3. Keatts LO, Robards M, Olson SH, Hueffer K, Insley SJ, Joly DO, et al. **Implications of Zoonoses From Hunting and Use of Wildlife in North American Arctic and Boreal Biomes: Pandemic Potential, Monitoring, and Mitigation.** *Frontiers in Public Health.* 2021;9(451). Available from: <https://www.frontiersin.org/article/10.3389/fpubh.2021.627654>.
4. Kuchipudi SV, Surendran-Nair M, Ruden RM, Yon M, Nissly RH, Nelli RK, et al. **Multiple spillovers and onward transmission of SARS-Cov-2 in free-living and captive White-tailed deer (*Odocoileus virginianus*).** *bioRxiv.* 2021:2021.10.31.466677. Available from: <https://www.biorxiv.org/content/biorxiv/early/2021/11/01/2021.10.31.466677.full.pdf>.
5. McCubbin KD, Anholt RM, de Jong E, Ida JA, Nóbrega DB, Kastelic JP, et al. **Knowledge Gaps in the Understanding of Antimicrobial Resistance in Canada.** *Frontiers in Public Health.* 2021;9(1523). Available from: <https://www.frontiersin.org/article/10.3389/fpubh.2021.726484>.
6. National Environmental Health Association. **Vector Control and Preparedness.** NEHA; 2021; Available from: <https://www.neha.org/node/62289>.
7. Petrovan SO, Aldridge DC, Bartlett H, Bladon AJ, Booth H, Broad S, et al. **Post COVID-19: a solution scan of options for preventing future zoonotic epidemics.** *Biol Rev.* 2021;96(6):2694-715. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/brv.12774>.
8. Shannon G, Gresham A, Barton O. **White-tailed deer found to be huge reservoir of coronavirus infection.** *The Conversation*; 2021 Nov 8. Available from: <https://theconversation.com/white-tailed-deer-found-to-be-huge-reservoir-of-coronavirus-infection-171268>.
9. United Nations. **Eating wild meat significantly increases zoonotic disease risk: UN report.** UN; 2021 Sep 15. Available from: https://news.un.org/en/story/2021/09/1099952?utm_source=UN+News+-+Newsletter&utm_campaign=832a9c8faf-EMAIL_CAMPAIGN_2021_09_15_04_35&utm_medium=email&utm_term=0_fdbf1af606-832a9c8faf-107155585.
10. Valencak TG, Csiszar A, Szalai G, Podlutzky A, Tarantini S, Fazekas-Pongor V, et al. **Animal reservoirs of SARS-CoV-2: calculable COVID-19 risk for older adults from animal to human transmission.** *GeroScience.* 2021. Available from: <https://doi.org/10.1007/s11357-021-00444-9>.



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COVID-19 ADDITIONAL TOPICS & GUIDANCE



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- [TRANSMISSION](#)
- [SPECIAL - BUILD BACK BETTER](#)

GUIDANCE (for ‘Occupational Guidance’ – see separate topic heading)

Cleaning

1. Chiappa F, Frascella B, Vigezzi GP, Moro M, Diamanti L, Gentile L, et al. **The efficacy of ultraviolet light-emitting technology against coronaviruses: a systematic review.** *J Hosp Infect.* 2021;114:63-78. Available from: <https://doi.org/10.1016/j.jhin.2021.05.005>.
2. Hanratty J, Bradley DT, Miller SJ, Dempster M. **Determinants of health behaviours intended to prevent spread of respiratory pathogens that have pandemic potential: A rapid review.** *Acta Psychol (Amst).* 2021;220:103423. Available from: <https://www.sciencedirect.com/science/article/pii/S0001691821001736>.
3. Sang AWY, Moo CG, P. Samarakoon SMB, Muthugala MAVJ, Elara MR. **Design of a Reconfigurable Wall Disinfection Robot.** *Sensors.* 2021;21(18):6096. Available from: <https://www.mdpi.com/1424-8220/21/18/6096>.

Face Masks, Non-Pharmaceutical Interventions – General

1. Eykelbosh A. **A rapid review of the use of physical barriers in non-clinical settings and COVID-19 transmission [evidence review].** Vancouver, BC: National Collaborating Centre for Environmental Health; 2021 11 17 Nov 17. Available from: <https://ncceh.ca/documents/evidence-review/rapid-review-use-physical-barriers-non-clinical-settings-and-covid-19>.
2. Karaivanov A, Lu SE, Shigeoka H, Chen C, Pamplona S. **Face masks, public policies and slowing the spread of COVID-19: Evidence from Canada.** *J Health Econ.* 2021;78:102475. Available from: <https://www.sciencedirect.com/science/article/pii/S0167629621000606>.
3. Pollard ZA, Karod M, Goldfarb JL. **Metal leaching from antimicrobial cloth face masks intended to slow the spread of COVID-19.** *Scientific Reports.* 2021;11(1):1-8. Available from: <https://www.nature.com/articles/s41598-021-98577-6>.
4. Richer O, Démésier K, Lafantaisie M, Sauvageau C. **COVID-19 : port du couvre-visage ou du masque médical par la population générale. Revue rapide et questions-réponses.** Montreal, QC: Institut national de santé publique (INSPQ); 2021 Oct. Available from: <https://www.inspq.qc.ca/sites/default/files/covid/2972-couvre-visage-population-covid19.pdf>.
5. Stokes K, Peltrini R, Bracale U, Trombetta M, Pecchia L, Basoli F. **Enhanced Medical and Community Face Masks with Antimicrobial Properties: A Systematic Review.** *Journal of Clinical Medicine.* 2021;10(18):4066. Available from: <https://www.mdpi.com/2077-0383/10/18/4066>.

Policy

1. Alami H, Lehoux P, Fleet R, Fortin J-P, Liu J, Attieh R, et al. **How Can Health Systems Better Prepare for the Next Pandemic? Lessons Learned From the Management of COVID-19 in Quebec (Canada).** *Frontiers in Public Health.* 2021;9(696). Available from: <https://www.frontiersin.org/article/10.3389/fpubh.2021.671833>.
2. Alberta Health Services. **Myths and facts when it comes to wearing masks.** Edmonton, AB: AHS; 2021 Oct 14. Available from: <https://www.albertahealthservices.ca/Blogs/BTH/Posting335.aspx#.YXAnehrMI2w>.
3. Fang Y, Zhu L, Jiang Y, Wu B. **The immediate and subsequent effects of public health interventions for COVID-19 on the leisure and recreation industry.** *Tourism management.* 2021;87:104393-. Available from: <https://pubmed.ncbi.nlm.nih.gov/34276119>.

4. Greenhalgh T, Katzourakis A, Wyatt T, Griffin S. **Rapid evidence review to inform safe return to campus in the context of coronavirus disease 2019 (COVID-19)** [version 1; peer review: awaiting peer review]. Wellcome Open Research. 2021;6(282). Available from: <https://wellcomeopenresearch.org/articles/6-282/v1>.
5. Michie S, West R, Pidgeon N, Reicher S, Amlôt R, Bear L. **Staying ‘Covid-safe’: Proposals for embedding behaviours that protect against Covid-19 transmission in the UK.** British Journal of Health Psychology. 2021;26(4):1238-57. Available from: <https://bpspsychub.onlinelibrary.wiley.com/doi/abs/10.1111/bjhp.12557>.
6. Unwin RJ. **The 1918 Influenza Pandemic: Back to the Future?** Kidney Blood Press Res. 2021;46(5):639-46. Available from: <https://www.karger.com/DOI/10.1159/000519288>.

HOMELESS, VULNERABLE POPULATIONS, HOUSING

MENTAL HEALTH

General

1. Kunzler AM, Stoffers-Winterling J, Stoll M, Mancini AL, Lehmann S, Blessin M, et al. **Mental health and psychosocial support strategies in highly contagious emerging disease outbreaks of substantial public concern: A systematic scoping review.** PLoS ONE. 2021;16(2):e0244748. Available from: <https://doi.org/10.1371/journal.pone.0244748>.
2. Venter ZS, Barton DN, Gundersen V, Figari H, Nowell MS. **Back to nature: Norwegians sustain increased recreational use of urban green space months after the COVID-19 outbreak.** Landscape Urb Plan. 2021;214:104175. Available from: <https://www.sciencedirect.com/science/article/pii/S0169204621001389>.

MULTI-UNIT BUILDINGS

OCCUPATIONAL GUIDANCE

Occupational

PUBLIC FACILITIES

Transportation (see separate category, ‘Transit, Transportation’)

SURVIVAL TIME

TRANSIT, TRANSPORTATION

See related “BUILD BACK BETTER SECTION” – last category in this scan

TRANSMISSION

General

1. Bulfone TC, Malekinejad M, Rutherford GW, Razani N. **Outdoor Transmission of SARS-CoV-2 and Other Respiratory Viruses: A Systematic Review.** J Infect Dis. 2020;223(4):550-61. Available from: <https://doi.org/10.1093/infdis/jiaa742>.

2. Cotman ZJ, Bowden MJ, Richter BP, Phelps JH, Dibble CJ. **Factors affecting aerosol SARS-CoV-2 transmission via HVAC systems; a modeling study.** PLoS Comput Biol. 2021;17(10):e1009474. Available from: <https://doi.org/10.1371/journal.pcbi.1009474>.
3. Gabriele-Rivet V, Spence KL, Ogden NH, Fazil A, Turgeon P, Otten A, et al. **Modelling the impact of age-stratified public health measures on SARS-CoV-2 transmission in Canada.** Royal Society Open Science. 2021;8(11):210834. Available from: <https://royalsocietypublishing.org/doi/abs/10.1098/rsos.210834>.
4. Ji B, Zhao Y, Esteve-Núñez A, Liu R, Yang Y, Nzihou A, et al. Where do we stand to oversee the coronaviruses in aqueous and aerosol environment? Characteristics of transmission and possible curb strategies. Chemical Engineering Journal. 2021;413:127522. Available from: <https://www.sciencedirect.com/science/article/pii/S1385894720336445>.
5. Kriegel M, Hartmann A, Buchholz U, Seifried J, Baumgarte S, Gastmeier P. **SARS-CoV-2 Aerosol Transmission Indoors: A Closer Look at Viral Load, Infectivity, the Effectiveness of Preventive Measures and a Simple Approach for Practical Recommendations.** medRxiv. 2021:2021.11.04.21265910. Available from: <https://www.medrxiv.org/content/medrxiv/early/2021/11/04/2021.11.04.21265910.full.pdf>.
6. Rosca EC, Heneghan C, Spencer EA, Brassey J, Plüddemann A, Onakpoya IJ, et al. **Transmission of SARS-CoV-2 associated with aircraft travel: a systematic review.** J Travel Med. 2021;28(7). Available from: <https://doi.org/10.1093/jtm/taab133>.
7. Schreiber S, Faude O, Gärtner B, Meyer T, Egger F. **Risk of SARS-CoV-2 transmission from on-field player contacts in amateur, youth and professional football (soccer).** Br J Sports Med. 2021:bjsports-2021-104441. Available from: <https://bjsm.bmj.com/content/bjsports/early/2021/10/17/bjsports-2021-104441.full.pdf>.
8. Senatore V, Zarra T, Buonerba A, Choo K-H, Hasan SW, Korshin G, et al. **Indoor versus outdoor transmission of SARS-COV-2: environmental factors in virus spread and underestimated sources of risk.** Euro-Mediterranean journal for environmental integration. 2021;6(1):30-. Available from: <https://pubmed.ncbi.nlm.nih.gov/33585671>.

Outbreaks

1. Cheung E, Low Z, Kang-chung N. **Hong Kong fourth wave: coronavirus outbreak at old North Point building sparks second evacuation in week.** SCMP. 2021 Jan 27. Available from: <https://www.scmp.com/news/hong-kong/health-environment/article/3119482/hong-kong-fourth-wave-covid-19-outbreak-old-north>.
2. News Staff. **NWT's chief public health officer declares COVID outbreak at legislature building.** Powell River Peak. 2021 Oct 10. Available from: <https://www.prpeak.com/coronavirus-covid-19-national-news/nwts-chief-public-health-officer-declares-covid-outbreak-at-legislature-building-4503335>.

Variants, Vaccines

1. Callaway E. **COVID super-immunity: one of the pandemic's great puzzles.** Nature. 2021. Available from: <https://www.nature.com/articles/d41586-021-02795-x>.
2. Mallapaty S. **The search for people who never get COVID.** Nature. 2021. Available from: <https://www.nature.com/articles/d41586-021-02978-6>.
3. Nordström P, Ballin M, Nordström A. **Association Between Risk of COVID-19 Infection in Nonimmune Individuals and COVID-19 Immunity in Their Family Members.** JAMA Internal Medicine. 2021. Available from: <https://doi.org/10.1001/jamainternmed.2021.5814>.

4. Peeples L. **COVID reinfections likely within one or two years, models propose.** *Nature*. 2021. Available from: <https://www.nature.com/articles/d41586-021-02825-8>.
5. Van Beusekom M. **COVID infects all ages in family equally, but immunity plays a role.** University of Minnesota: Center for Infectious Disease Research and Policy; 2021 Oct 11. Available from: <https://www.cidrap.umn.edu/news-perspective/2021/10/covid-infects-all-ages-family-equally-immunity-plays-role>.
6. Wang W, Balfe P, Eyre DW, Lumley SF, O'Donnell D, Warren F, et al. **Time of day of vaccination affects SARS-CoV-2 antibody responses in an observational study of healthcare workers.** medRxiv. 2021:2021.10.28.21265499. Available from: <https://www.medrxiv.org/content/medrxiv/early/2021/10/29/2021.10.28.21265499.full.pdf>.
7. Yonker LM, Boucau J, Regan J, Choudhary MC, Burns MD, Young N, et al. **Virologic features of SARS-CoV-2 infection in children.** medRxiv. 2021:2021.05.30.21258086. Available from: <https://www.medrxiv.org/content/medrxiv/early/2021/08/17/2021.05.30.21258086.full.pdf>.

SPECIAL - BUILD BACK BETTER (Urban design, etc)

1. Abdel-Razek SA, Moanis Y, editors. **Resilient Urban Open Public Spaces in During the Covid-19 Pandemic2021**; Cham: Springer International Publishing. Available from: https://link.springer.com/chapter/10.1007/978-3-030-84311-3_23.
2. Angiello G. **Toward greener and pandemic-proof cities: North American cities policy responses to Covid-19 outbreak.** *Tema-Journal of Land Use Mobility and Environment*. 2021;14(1):105-11. Available from: <https://doi.org/10.6093/1970-9870/8097>.
3. August M, Devani A, Greenberg K, Lauzon M. **Reshaping Canada's Cities After the Pandemic Shockwave.** Montreal, QC: Policy Options IRPP; 2021 Jun. Available from: <https://policyoptions.irpp.org/magazines/june-2021/reshaping-canadas-cities-after-the-pandemic-shockwave/>.
4. Baobeid A, Koç M, Al-Ghamdi SG. **Walkability and Its Relationships With Health, Sustainability, and Livability: Elements of Physical Environment and Evaluation Frameworks.** *Frontiers in Built Environment*. 2021;7. Available from: <https://www.scilit.net/article/98dc4feb5392a16ef88f83fc28b99e20>.
5. Bikes Make Life Better. **A post pandemic bike world explained.** 2021; Available from: <https://bikesmakelifebetter.com/a-post-pandemic-bike-world-explained/>.
6. Bloomberg City Lab. **Can 'Open Streets' Outlast the Pandemic?** Bloomberg. 2021 Apr 29. Available from: <https://www.bloomberg.com/news/articles/2021-04-29/what-s-next-for-the-open-streets-of-the-pandemic>.
7. Brazeau-Béliveau N, Cloutier G. **Citizen participation at the micro-community level: The case of the green alley projects in Quebec City.** *Cities*. 2021;112:103065. Available from: <https://www.sciencedirect.com/science/article/pii/S026427512031413X>.
8. Buonocore MN, Martino MD, Ferro C. **Digital transformation and cities: How COVID-19 has boosted a new evolution of urban spaces.** *Journal of Urban Regeneration & Renewal*. 2021;15(1):95-112. Available from: <https://www.ingentaconnect.com/content/hsp/jurr/2021/00000015/00000001/art00007>.
9. C40 Cities. **31 Mayors Introduce Even More Trees, Parks and Green ...** C40 Cities; 2021 [updated Jul 13]; Available from: <https://www.c40.org/news/urban-nature-declaration/>.
10. Campbell H. **Post-Pandemic Planning: Beyond "Stifling Paradigms".** *Achieving Transformation Requires Grappling with the Tiresome and Low Profile.* *Planning Theory & Practice*. 2021;22(1):3-7. Available from: <https://doi.org/10.1080/14649357.2021.1885868>.

11. City of Guelph. **Join us for Park Activation fun at Margaret Greene, Exhibition parks.** Guelph, ON: City of Guelph; 2021 Aug 6. Available from: <https://guelph.ca/2021/08/join-us-for-park-activation-fun-at-margaret-greene-exhibition-parks/>.
12. Clean Air Partnership. **Complete streets in the 15 minute city.** Toronto, ON: Clean Air Partnership; 2021 Feb. Available from: <https://www.completestreetsforcanada.ca/wp-content/uploads/2021/02/Complete-Streets-and-the-15-Minute-City.pdf>.
13. Combs TS, Pardo CF. **Shifting streets COVID-19 mobility data: Findings from a global dataset and a research agenda for transport planning and policy.** Transportation Research Interdisciplinary Perspectives. 2021;9:100322. Available from: <https://www.sciencedirect.com/science/article/pii/S2590198221000294>.
14. Conway TM, Khan A, Esak N. **An analysis of green infrastructure in municipal policy: Divergent meaning and terminology in the Greater Toronto Area.** Land Use Policy. 2020;99:104864. Available from: <https://www.sciencedirect.com/science/article/pii/S0264837720302064>.
15. de Lannoy L. **Outdoor play in Canada should continue beyond the COVID-19 pandemic.** The Conversation. 2021. Available from: <https://www.outdoorplaycanada.ca/2021/11/01/the-conversation-outdoor-play-in-canada-should-continue-beyond-the-covid-19-pandemic/>.
16. Devisscher T, van den Bosch M. **Nature and mental health: new initiatives in British Columbia, Canada.** Vancouver, BC: Green4C; 2021. Available from: <https://www.greenforcare.eu/news/nature-mental-health-canada/>.
17. Devlin M. **Ontario offers free provincial park weekday passes all summer long.** 2021 May 28. Available from: <https://dailyhive.com/toronto/ontario-free-parks-day-passes?auto=true>.
18. Diener A, Mudu P. **How can vegetation protect us from air pollution? A critical review on green spaces' mitigation abilities for air-borne particles from a public health perspective - with implications for urban planning.** Sci Total Environ. 2021;796:148605. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/34271387>.
19. Dobson J. **Wellbeing and blue-green space in post-pandemic cities: Drivers, debates and departures.** Geography Compass. 2021;15(10):e12593. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/gec3.12593>.
20. Dodson J, Curtis C, Ashmore D, Woodcock I, Kovacs S. **Innovative responses to urban transportation: current practice in Australian cities.** Australia: Ahuri; 2021 Jul. Available from: <https://www.ahuri.edu.au/research/final-reports/360>.
21. El Khatib S. **Pandemic-Sensitive Livability Indicators at The Neighborhood Scale: The Case of Montreal:** American University of Beirut; 2021. Available from: <https://scholarworks.aub.edu.lb/handle/10938/22247>.
22. Elgheznavy D, Eltarabily S. **Post-Pandemic Cities - The Impact of COVID-19 on Cities and Urban Design.** Architecture Research. 2020;10:75-84. Available from: <http://article.sapub.org/10.5923.j.arch.20201003.02.html>.
23. Environment and Climate Change Canada. **Expanded infrastructure program offers new support for COVID-19 community resilience in British Columbia.** Ottawa, ON: Government of Canada; 2020. Available from: <http://119.78.100.173/C666/handle/2XK7JSWQ/290896>.
24. Fagan M, Comeaux D, Gillies B. **Autonomous Vehicles Are Coming: Five Policy Actions Cities Can Take Now to Be Ready.** Harvard Kennedy School; 2021. Available from: <https://www.hks.harvard.edu/centers/taubman/publications/policy-briefs/avs-are-coming>.

25. Firth CL, Baquero B, Berney R, Hoerster KD, Mooney SJ, Winters M. **Not quite a block party: COVID-19 street reallocation programs in Seattle, WA and Vancouver, BC.** *SSM - Population Health.* 2021;14:100769. Available from: <https://www.sciencedirect.com/science/article/pii/S2352827321000446>.
26. Fischer J, Winters M. **COVID-19 street reallocation in mid-sized Canadian cities: socio-spatial equity patterns.** *Can J Public Health.* 2021;112(3):376-90. Available from: <https://doi.org/10.17269/s41997-020-00467-3>.
27. Frank LD, Hong A, Ngo VD. **Build it and they will cycle: Causal evidence from the downtown Vancouver Comox Greenway.** *Transport Policy.* 2021;105:1-11. Available from: <https://www.sciencedirect.com/science/article/pii/S0967070X21000366>.
28. Gillis K. **Nature-based restorative environments are needed now more than ever.** *Cities & Health.* 2020:1-4. Available from: <https://doi.org/10.1080/23748834.2020.1796401>.
29. Gordon D. **The Revenge of the Cars.** Traffic, car sales, and car rentals are rising, crushing the pandemic-era hope that streets could be reclaimed for pedestrians and bikers. 2021 [Jul 26]; Available from: <https://newrepublic.com/article/163048/cars-pedestrian-biking-covid-streets>.
30. Gouda M, Fan J, Luc K, Ibrahim S, El-Basyouny K. **Effect of Redesigning Public Shared Space Amid the COVID-19 Pandemic on Physical Distancing and Traffic Safety.** *Journal of Transportation Engineering, Part A: Systems.* 2021;147(11):04021077. Available from: <https://ascelibrary.org/doi/abs/10.1061/JTEPBS.0000596>.
31. Government of Manitoba. **Province Expanding Free Provincial Park Entry to July 12 to 18.** Winnipeg, MB: Government of Manitoba; 2021 Jul 6. Available from: <https://news.gov.mb.ca/news/index.html?item=51581>.
32. Government of Newfoundland and Labrador. **Residents in Three Labrador Communities to Benefit from Green and Recreation Infrastructure Investments.** St John's, NL: Government of Newfoundland and Labrador; 2021 May 3. Available from: <https://www.gov.nl.ca/releases/2021/ti/0503n01/>.
33. Grunewald K, Bastian O, Louda J, Arcidiacono A, Brzoska P, Bue M, et al. **Lessons learned from implementing the ecosystem services concept in urban planning.** *Ecosystem Services.* 2021;49:101273. Available from: <https://www.sciencedirect.com/science/article/pii/S2212041621000310>.
34. Hamidi S, Zandiatashbar A. **Compact development and adherence to stay-at-home order during the COVID-19 pandemic: A longitudinal investigation in the United States.** *Landscape Urb Plan.* 2021;205:103952. Available from: <https://www.sciencedirect.com/science/article/pii/S016920462030712X>.
35. Hanzl M. **Urban forms and green infrastructure – the implications for public health during the COVID-19 pandemic.** *Cities & Health.* 2020:1-5. Available from: <https://doi.org/10.1080/23748834.2020.1791441>.
36. Hassankhani M, Alidadi M, Sharifi A, Azhdari A. **Smart City and Crisis Management: Lessons for the COVID-19 Pandemic.** *Int J Environ Res Public Health.* 2021;18(15):7736. Available from: <https://www.mdpi.com/1660-4601/18/15/7736>.
37. Hassen N. **Leveraging built environment interventions to equitably promote health during and after COVID-19 in Toronto, Canada.** *Health Promotion Int.* 2021:daab128. Available from: <https://pubmed.ncbi.nlm.nih.gov/34423362>.
38. Herman K, Rodgers M. **From Tactical Urbanism Action to Institutionalised Urban Planning and Educational Tool: The Evolution of Park(ing) Day.** *Land.* 2020;9(7):217. Available from: <https://www.mdpi.com/2073-445X/9/7/217>.

39. Hertel S, Keil R. **After isolation: Urban planning and the covid-19 pandemic.** ON: Ontario Professional Planners Institute; 2021 Jan 1. Available from: <https://ontarioplanners.ca/blog/planning-exchange/january-2021/after-isolation-urban-planning-and-the-covid-19-pandemic>.
40. Hörcher D, Singh R, Graham DJ. **Social distancing in public transport: mobilising new technologies for demand management under the Covid-19 crisis.** Transportation. 2021:1-30. Available from: <https://pubmed.ncbi.nlm.nih.gov/33907339>.
41. Iassinovskaia K. **How pandemic bike lanes made some Canadian cities more accessible.** CBC News. 2021 Mar 18. Available from: <https://www.cbc.ca/news/science/pandemic-bike-lanes-canada-1.5951863#:~:text=In%20the%20U%20of%20T,parks%20by%206.3%20per%20cent>.
42. Kakderi C, Oikonomaki E, Papadaki I. **Smart and Resilient Urban Futures for Sustainability in the Post COVID-19 Era: A Review of Policy Responses on Urban Mobility.** Sustainability. 2021;13(11):6486. Available from: <https://www.mdpi.com/2071-1050/13/11/6486>.
43. Kaner D. **Our Post-Pandemic Future Could Be a Lot Less Car-Centric.** Chicago, IL: American Planning Association; 2021 Apr 1. Available from: <https://www.planning.org/planning/2021/spring/our-post-pandemic-future-could-be-a-lot-less-car-centric/>.
44. Kleinschroth F, Kowarik I. **COVID-19 crisis demonstrates the urgent need for urban greenspaces.** Frontiers in Ecology and the Environment. 2020;18(6):318-9. Available from: <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/fee.2230>.
45. Lee C. **Making Space for Physical Distancing in Canada's Urban Centers: A Case Study of Vancouver's Slow Streets.** Queen's University; 2021. Available from: <https://qspace.library.queensu.ca/handle/1974/28855>.
46. Lennon M. **Planning and the Post-Pandemic City.** Planning Theory & Practice. 2021:1-4. Available from: <https://doi.org/10.1080/14649357.2021.1960733>.
47. Lightle M. **How Ontario's parks became pandemic lifesavers.** Toronto Observer. 2021 Apr 18. Available from: https://torontoobserver.ca/2021/04/18/parks_covid19_toronto_ontario/.
48. Luo J. **Cultivating Green Space Together: Exploring the Collaborative Planning and Public Engagement of Green Space in Edmonton, Alberta.** Edmonton, AB: University of Alberta; 2021. Available from: <https://era.library.ualberta.ca/items/c0c55e12-7007-46eb-8ed4-899f95aa5855>.
49. Makridis CA, Wu C. **How social capital helps communities weather the COVID-19 pandemic.** PLoS ONE. 2021;16(1):e0245135. Available from: <https://doi.org/10.1371/journal.pone.0245135>.
50. McCunn LJ. **The importance of nature to city living during the COVID-19 pandemic: Considerations and goals from environmental psychology.** Cities & Health. 2020:1-4. Available from: <https://doi.org/10.1080/23748834.2020.1795385>.
51. McNair A, D'Souza D. **COVID-19 in St. James Town: the social determinants of health inequities reflected in Canada's most diverse neighbourhood.** University of Toronto Medical Journal. 2021;98(2). Available from: <https://utmj.org/index.php/UTMJ/article/view/1438/1308>.
52. Moreno C, Allam Z, Chabaud D, Gall C, Pratlong F. **Introducing the "15-Minute City": Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities.** Smart Cities. 2021;4(1):93-111. Available from: <https://www.mdpi.com/2624-6511/4/1/6>.
53. Mouratidis K. **How COVID-19 reshaped quality of life in cities: A synthesis and implications for urban planning.** Land Use Policy. 2021:105772. Available from: <https://www.sciencedirect.com/science/article/pii/S0264837721004956>.
54. Nieuwenhuijsen MJ. **Post-COVID-19 Cities: New Urban Models to Make Cities Healthier.** IS Global Barcelona Institute for Health; 2020 [Oct 29]; Available from:

- <https://www.isglobal.org/en/healthisglobal/-/custom-blog-portlet/post-covid-19-cities-new-urban-models-to-make-cities-healthier/4735173/0>.
55. Nieuwenhuijsen MJ. **New urban models for more sustainable, liveable and healthier cities post covid19; reducing air pollution, noise and heat island effects and increasing green space and physical activity.** *Environ Int.* 2021;157:106850. Available from: <https://www.sciencedirect.com/science/article/pii/S016041202100475X>.
 56. O'Regan AC, Hunter RF, Nyhan MM. "Biophilic Cities": Quantifying the Impact of Google Street View-Derived Greenspace Exposures on Socioeconomic Factors and Self-Reported Health. *Environ Sci Tech.* 2021;55(13):9063-73. Available from: <https://doi.org/10.1021/acs.est.1c01326>.
 57. Palm M, Allen J, Liu B, Zhang Y, Widener M, Farber S. **Riders Who Avoided Public Transit During COVID-19: Personal Burdens and Implications for Social Equity.** *J Am Plann Assoc.* 2021;87:1-15. Available from: <https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-1307404>.
 58. Pandi-Perumal SR, Vaccarino SR, Chattu VK, Zaki NFW, BaHammam AS, Manzar D, et al. **'Distant socializing,' not 'social distancing' as a public health strategy for COVID-19.** *Pathogens and Global Health.* 2021:1-8. Available from: <https://doi.org/10.1080/20477724.2021.1930713>.
 59. Pearson LK, Dipnall J, Gabbe B, Braaf S, White S, Backhouse M, et al. **The potential for bike riding across entire cities: quantifying spatial variation in interest in bike riding.** medRxiv. 2021:2021.03.14.21253340. Available from: <https://www.medrxiv.org/content/medrxiv/early/2021/03/17/2021.03.14.21253340.full.pdf>.
 60. Pitt TM, Aucoin J, HubkaRao T, Goopy S, Cabaj J, Hagel B, et al. **The Relationship of Urban Form on Children and Adolescent Health Outcomes: A Scoping Review of Canadian Evidence.** *Int J Environ Res Public Health.* 2021;18(8):4180. Available from: <https://www.mdpi.com/1660-4601/18/8/4180>.
 61. Pitter J. **Healing Canadian cities for an equitable post-pandemic future.** Montreal, QC: Policy Options IRPP; 2021 Jul 21. Available from: <https://policyoptions.irpp.org/magazines/july-2021/healing-canadian-cities-for-an-equitable-post-pandemic-future/>.
 62. Plummer R, McGrath D, Sivarajah S. **How cities can add accessible green space in a post-coronavirus world.** *The Conversation*; 2020 Jun 11. Available from: <https://theconversation.com/how-cities-can-add-accessible-green-space-in-a-post-coronavirus-world-139194>.
 63. Rhoads D, Solé-Ribalta A, González MC, Borge-Holthoefer J. **A sustainable strategy for Open Streets in (post)pandemic cities.** *Communications Physics.* 2021;4(1):183. Available from: <https://doi.org/10.1038/s42005-021-00688-z>.
 64. San Francisco Metropolitan Transportation Authority. **Slow Streets. Post-Pandemic Slow Street.** San Francisco, CA: SFMTA; 2021 Sep 10. Available from: <https://www.sfmta.com/projects/post-pandemic-slow-streets>.
 65. Sanders D. **The urban cure: How cities seize opportunity from the pandemic crisis to change how they operate for the better.** *Globe and Mail.* 2021. Available from: <https://www.theglobeandmail.com/opinion/article-the-urban-cure-how-cities-seize-opportunity-from-the-pandemic-crisis/>.
 66. Schoder D, Norris M. **The Pandemic and the Public Realm: Adapting Spaces in a Global Pandemic.** *Urban Land*; 2021 [Mar 22]; Available from: <https://urbanland.uli.org/sustainability/the-pandemic-and-the-public-realm-adapting-spaces-in-a-global-pandemic/>.

67. Shahraki AA. **2021The Post-Covid-19 Era Requires Maximum Urban Resilience.** Preprints. 2021. Available from: <https://www.preprints.org/manuscript/202110.0286/v1/download>.
68. Sharifi A, Khavarian-Garmsir AR. **The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management.** Sci Total Environ. 2020;749:142391. Available from: <https://www.sciencedirect.com/science/article/pii/S0048969720359209>.
69. Simon Fraser University News Staff. **An unequal post-pandemic recovery: mapping the aftermath.** Burnaby, BC: Simon Fraser University; 2021 May 17. Available from: <https://www.sfu.ca/sfunews/stories/2021/05/an-unequal-post-pandemic-recovery--mapping-the-aftermath.html>.
70. Singh KK, Katewongsa P, Wijaya N, SCK. **Green, Open Spaces and Transport for Healthy and Sustainable Cities in Asian Developing Countries.** Malaysian Journal of Medicine and Health Sciences. 2021. Available from: https://medic.upm.edu.my/upload/dokumen/2021062815475220_MJMHS_0646.pdf.
71. Slabaugh D, Németh J, Rigolon A. **Open Streets for Whom?** J Am Plann Assoc. 2021:1-9. Available from: <https://doi.org/10.1080/01944363.2021.1955735>.
72. Soliz A. **Creating Sustainable Cities through Cycling Infrastructure? Learning from Insurgent Mobilities.** Sustainability. 2021;13(16):8680. Available from: <https://www.mdpi.com/2071-1050/13/16/8680>.
73. Song X, Cao M, Zhai K, Gao X, Wu M, Yang T. **The Effects of Spatial Planning, Well-Being, and Behavioural Changes During and After the COVID-19 Pandemic.** Frontiers in Sustainable Cities. 2021;3(47). Available from: <https://www.frontiersin.org/article/10.3389/frsc.2021.686706>.
74. Stearns JA, Veugelers PJ, McHugh T-L, Sprysak C, Spence JC. **The Use of a Nonrefundable Tax Credit to Increase Children’s Participation in Physical Activity in Alberta, Canada.** J Phys Act Health. 2021;18(9):1067-73. Available from: <https://journals.humankinetics.com/view/journals/jpah/18/9/article-p1067.xml>.
75. Surico J. **Can Open Streets Be New York’s Future?** The New York Times. 2021 Apr 29. Available from: <https://www.bloomberg.com/news/articles/2021-04-29/what-s-next-for-the-open-streets-of-the-pandemic>.
76. Syvixay J, Cañavera F. **Good planning and social cohesion intersect during the pandemic and recovery.** Montreal, QC: Policy Options IRPP; 2021 Jul 22. Available from: <https://policyoptions.irpp.org/magazines/july-2021/good-planning-and-social-cohesion-intersect-during-the-pandemic-and-recovery/>.
77. Ta M, Shankardass K. **Piloting the Use of Concept Mapping to Engage Geographic Communities for Stress and Resilience Planning in Toronto, Ontario, Canada.** Int J Environ Res Public Health. 2021;18(20):10977. Available from: <https://www.mdpi.com/1660-4601/18/20/10977>.
78. Thiessen D. **Poll shows more Canadians enjoying the outdoors since pandemic.** FortSaskOnline; 2021 Jan 28. Available from: <https://fortsaskonline.com/local/more-canadians-enjoying-the-outdoors-since-covid-19-pandemic-says-the-nature-conservancy-of-canada>.
79. Tian X, An C, Chen Z, Tian Z. **Assessing the impact of COVID-19 pandemic on urban transportation and air quality in Canada.** Sci Total Environ. 2021;765:144270. Available from: <https://www.sciencedirect.com/science/article/pii/S0048969720378013>.
80. Tranter P, Tolley R. **Slaves to speed, we’d all benefit from ‘slow cities’ - The ..** The Conversation. 2021 May. Available from: <https://theconversation.com/slaves-to-speed-wed-all-benefit-from-slow-cities-152756>.

81. Turoń K, Kubik A, Chen F. **Electric Shared Mobility Services during the Pandemic: Modeling Aspects of Transportation.** *Energies.* 2021;14(9):2622. Available from: <https://www.mdpi.com/1996-1073/14/9/2622>.
82. Wang A, Zhang A, Chan EHW, Shi W, Zhou X, Liu Z. **A Review of Human Mobility Research Based on Big Data and Its Implication for Smart City Development.** *ISPRS International Journal of Geo-Information.* 2021;10(1):13. Available from: <https://www.mdpi.com/2220-9964/10/1/13>.
83. Wang D, Tayarani M, Yueshuai He B, Gao J, Chow JYJ, Oliver Gao H, et al. **Mobility in post-pandemic economic reopening under social distancing guidelines: Congestion, emissions, and contact exposure in public transit.** *Transportation Research Part A: Policy and Practice.* 2021;153:151-70. Available from: <https://www.sciencedirect.com/science/article/pii/S0965856421002299>.
84. Wiegill A. Dr. Aggie Weighill is participating in a two-phase research project that aims to develop a more resilient, post-pandemic model of recreation delivery. Vancouver Island University; 2021 Sep 14. Available from: <https://news.viu.ca/viu-professor-studies-how-pandemic-affected-recreation-programming-yukon#>.
85. Wright H, Reardon M. **COVID-19: a chance to reallocate street space to the benefit of children's health?** *Cities & Health.* 2021:1-4. Available from: <https://doi.org/10.1080/23748834.2021.1912571>.
86. Xin M, Shalaby A, Feng S, Zhao H. **Impacts of COVID-19 on urban rail transit ridership using the Synthetic Control Method.** *Transport Policy.* 2021;111:1-16. Available from: <https://www.sciencedirect.com/science/article/pii/S0967070X21002079>.

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