



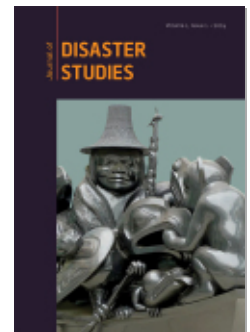
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Extreme Heat in the Home

Understanding the 2021 Pacific Northwest Heat Wave through the British Columbia Coroners Report

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Abstract: *In 2021, there was an unprecedented heat wave across the Canadian province of British Columbia that led to the deaths of 619 people, almost all of whom died in their homes. This research note focuses on a report from the BC Coroners Service that explores quantitative data on who died during the heat dome and puts forward key recommendations for future events. We argue that this report focuses too heavily on the immediate causes of death and suffering and does not thoroughly address the important structural factors of inequality that underpin how people experience heat in their homes. Drawing on political ecology, we highlight housing injustice and tenancy in British Columbia as key structural components of inequality, and discuss unaffordability and individual contexts that contribute to how people experience heat events differently across scales and geographies. We also discuss debates around recent policies on air conditioning and the Material and Social Deprivation Index. We conclude that while the Coroners Service report has made valuable contributions to statistical knowledge, its conclusions and recommendations do not go far enough to address the underlying structural factors of housing insecurity.*

Keywords: *housing justice, heat dome, British Columbia, political ecology, geographies of home*

Resumen: *En 2021, se produjo una ola de calor sin precedentes en la provincia canadiense de Columbia Británica que provocó la muerte de 619 personas, casi todas fallecidas en sus hogares. Esta nota de investigación se centra en un informe del Servicio de Médicos Forenses de Columbia Británica que explora datos cuantitativos sobre quiénes murieron durante la ola de calor y presenta recomendaciones clave para eventos futuros. Sostenemos*

que este informe se centra demasiado en las causas inmediatas de muerte y sufrimiento y no aborda a fondo los importantes factores estructurales de desigualdad que subyacen a cómo las personas experimentan el calor en sus hogares. Basándonos en la ecología política, destacamos la injusticia habitacional y el arrendamiento en Columbia Británica como componentes estructurales clave de la desigualdad y discutimos la falta de asequibilidad y los contextos individuales que contribuyen a cómo las personas experimentan los eventos de calor de manera distinta a través de escalas y geografías. También discutimos los debates en torno a las políticas recientes sobre aire acondicionado y el Índice de Privación Material y Social. Concluimos que si bien el informe del Servicio de Médicos Forenses ha realizado contribuciones valiosas al conocimiento estadístico, sus conclusiones y recomendaciones no abordan suficientemente los factores estructurales subyacentes de la inseguridad habitacional.

Palabras clave: *justicia habitacional, domo de calor, Columbia Británica, ecología política, geografías del hogar.*

초록 : 2021년, 캐나다 브리티시컬럼비아주(B.C.주) 전역에 전례 없는 폭염이 발생했다. 이 폭염으로 인해 619명이 사망했으며, 거의 모든 사망자가 자택에서 사망했다. 본 연구 노트는 폭염으로 사망한 사람들에 대한 정량적 데이터를 조사하고 향후 사건에 대한 주요 권장 사항을 제시한 B.C.주 Coroners Service의 보고서를 중심으로 작성되었다. 우리는 이 보고서가 사망과 고통의 직접적인 원인에 지나치게 의존하고 있으며, 사람들이 가정에서 폭염을 경험하는 방식을 뒷받침하는 불평등의 중요한 구조적 요인을 철저히 다루지 않았다고 주장한다. 본 연구는 정치 생태학적 접근 방식을 사용하여 B.C. 주의 주택 불평등과 임차 문제를 불평등의 주요 구조적 요인으로 강조하고, 사람들이 규모와 지리적인 요인에 따라 폭염을 다르게 경험하는 데 기여하는 금전적 부담과 개별적인 맥락에 대해 논의한다. 또한 최근 냉방 관련 정책과 물질 및 사회적 박탈 지수(Material and Social Deprivation Index)를 둘러싼 논쟁에 대해서도 논의한다. 우리는 B.C. 주 Coroners Service 보고서가 이 사건에 대한 통계적 지식에 귀중한 기여를 했지만, 그 결론과 권고가 주거 불안의 기저에 있는 구조적 요인을 다루기에는 충분하지 않다고 결론 짓는다.

키워드: 주거 정의, 열돔, 브리티시 컬럼비아, 정치 생태학, 주거의 지리

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In January 2024, the US National Oceanic and Atmospheric Administration reported that 2023 was the world's hottest year on record.¹ The effects of a warming world are devastating. Scientists argue that between 1991 and 2018, 37 percent of global heat-related deaths are attributable to anthropogenic

1 "2023 Was the World's Warmest Year on Record, By Far," National Oceanic and Atmospheric Administration (NOAA), January 12, 2024, <https://www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far>.

climate change.² While global statistics are useful in raising awareness and calling for action, equitable climate action must wrestle with localized effects and inequalities. An important site to begin such work is with the critical analysis of the agencies tasked with documenting and locating the causes of climate-induced heat-related deaths. In this research note, we look at the example of the unprecedented heat wave in Canada's westernmost province, British Columbia, in 2021. This catastrophic event was later determined to be the deadliest weather event in the history of the Canadian settler state.³ We offer a critical reading of a specific report: "Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021". Released by the BC Coroners Service a year after the heat wave, the report found that 619 people died from this climate change-induced extreme weather event. Drawing on the tools of political ecology, along with inspiration and expertise of community partners and social movements for housing and climate justice in British Columbia, we argue that the report's quantitative focus on the experience of heat and its omission of structural contributors to injustice limits the power of its recommendations to protect British Columbians in future extreme weather events. Specifically, we focus on one main structural factor that the report does not engage with adequately: experience of heat in the home, where home is the site of intersecting crises. Transformed from a refuge to a site of precarity, many British Columbia homes are not only unsafe due to climate change but also unaffordable, as the province remains a frontline of a national and international housing crisis. Increasingly, unaffordable and tenuous housing markets affect the experiences of extreme temperatures in the home.⁴ In this context, we try to respond to the crucial question raised by Zoe Hamstead's "critical heat studies" framing: How might a focus simply on temperature readings and quantitative markers of experience during the 2021 heat dome "obscure political dimensions of heat inequity, even as it reveals patterns of uneven temperature in the built environment"?⁵

2 A. M. Vicedo-Cabrera, N. Scovronick, F. Sera, et al., "The Burden of Heat-Related Mortality Attributable to Recent Human-Induced Climate Change," *Nature Climate Change* 11, no. 6 (June 2021): 492–500, <https://doi.org/10.1038/s41558-021-01058-x>.

3 Frances Bula, "June Heat Wave in B.C. Was Deadliest Weather Event in Canadian History," *Globe and Mail*, September 16, 2021, <https://www.theglobeandmail.com/canada/british-columbia/article-june-heat-wave-in-bc-was-deadliest-weather-event-in-canadian-history/>.

4 Hillary Angelo, Key MacFarlane, James Sirigotis, and Adam Millard-Ball, "Missing the Housing for the Trees: Equity in Urban Climate Planning," *Journal of Planning Education and Research*, January 28, 2022, 0739456X211072527, <https://doi.org/10.1177/0739456X211072527>.

5 Zoé A. Hamstead, "Critical Heat Studies: Deconstructing Heat Studies for Climate Justice," *Planning Theory & Practice* 24, no. 2 (2023): 157, <https://doi.org/10.1080/14649357.2023.2201604>.

We highlight specific geographies of home, sidelined in the report, that shape how people experienced the heat dome. We discuss the entanglements of the larger landscape of unaffordability in Vancouver and the experiences of landlord–tenant relationships and built environment at the individual unit and building level. We discuss the index used in the report to address socioeconomic disparities, pointing to how housing is left out of this measure. With appreciation for the important information and effort that went into the report, this short intervention seeks to complicate the underlying assumption in the report: that with enough warning and governmental support, individual people and households can control their living situations to keep themselves safe in future heat events. We find that without considering the region's ongoing rental housing crisis and difficulties that tenants might face in changing their individual situations to protect themselves, the resulting recommendations and understandings define the problem of housing and heat too narrowly, leading to ineffective policy at best and to more devastating loss of life at worst. While many research, policy, and government documents now exist on the 2021 heat dome, we analyze the Coroners report because of its authoritative conclusions and its social and political importance. We understand this report as authoritative in that its recommendations are used to inform heat-related policy in British Columbia and in Canada and North America more broadly as heat waves continue to occur. Furthermore, we see the report as socially and politically important because of its commemorative power, serving as the primary public and accessible document for future readers on who died during this catastrophic event and why. Overall, we seek to highlight the complex landscapes of urban heat waves and call for further attention to be given to the structural factors that form and exacerbate the experience of heat waves in these authoritative documents.⁶

Death Panel Review: The 2021 Heat Dome

From June 25 to July 1, 2021, a mass of hot air settled across the Pacific Northwest of Canada and the United States, what scientists call a “heat dome,” created by a high-pressure system that stays stationary over a specific area and traps warm and hot air underneath.⁷ The heat dome was felt widely across the whole province of British Columbia, even stretching into Alberta in the east and Yukon in the north. This event also affected communities in Oregon,

6 As researchers with the University of British Columbia's Centre for Climate Justice, we draw on initial findings from our Housing Justice in a Climate Emergency project, focused on understanding vulnerable tenants' experiences of extreme weather, to supplement our analysis of the report.

7 Kirsty McCabe, “What Is a Heat Dome?,” Royal Meteorological Society, August 11, 2021, <https://www.rmets.org/metmatters/what-heat-dome>.

Washington, and California in the United States. The temperatures felt in BC were extreme for the region—the mean local temperature there across the deadliest days of the heat dome (July 27–29) was 36.3°C (97.3°F).⁸ For broader comparison, the mean daily maximum temperature for the months of June, July, and August in the Pacific Northwest in the previous decade was 23.4°C (74.1°F).⁹ Climate scientists found that although this event was still rare by today's climate standards, it was “virtually impossible” without human-caused climate change.¹⁰ Although these temperatures are not necessarily extreme compared with temperatures in historically hotter parts of the world, it was one of the most extreme events ever recorded globally compared to expected norms and temperatures of the region.¹¹ This research shows that due to lack of infrastructure and preparedness, places that do not usually experience such heat are more likely to have catastrophic outcomes during heat waves than areas that more regularly experience such temperatures.¹²

In British Columbia, where homes are not equipped for temperatures of this magnitude and most people do not have indoor cooling mechanisms,¹³ the consequences were deadly, with more than 600 people losing their lives. The official number of deaths—619—were excess deaths determined to be heat-related by the Coroners Service, with 93 percent of those deaths occurring in the week of June 25–July 1. In a notable statistic, 98 percent of the deaths occurred indoors, mainly in people's homes or where they were sheltering temporarily (such as in a hotel or temporary housing).¹⁴ Geographically, despite higher temperatures occurring in the usually hotter eastern parts (Interior) of British

8 Sarah B. Henderson, Kathleen E. McLean, Michael J. Lee, and Tom Kosatsky, “Analysis of Community Deaths during the Catastrophic 2021 Heat Dome: Early Evidence to Inform the Public Health Response during Subsequent Events in Greater Vancouver, Canada,” *Environmental Epidemiology* 6, no. 1 (February 2022): e189, <https://doi.org/10.1097/EEg.0000000000000189>.

9 Vikki Thompson, Alan T. Kennedy-Asser, Emily Vosper, Y. T. Eunice Lo, Chris Huntingford, Oliver Andrews, Matthew Collins, Gabrielle C. Hegerl, and Dann Mitchell, “The 2021 Western North America Heat Wave among the Most Extreme Events Ever Recorded Globally,” *Science Advances* 8, no. 18 (2022): 2. <https://doi.org/10.1126/sciadv.abm6860>.

10 S. Y. Philip, Sarah F. Kew, Geert Jan van Oldenborgh, et al., “Rapid Attribution Analysis of the Extraordinary Heat Wave on the Pacific Coast of the US and Canada in June 2021,” *Earth System Dynamics* 13, no. 4 (2022): 1689–1713, <https://doi.org/10.5194/esd-13-1689-2022>.

11 Thompson et al., “The 2021 Western North America Heat Wave.”

12 Ibid.

13 Matthew Quick and Michael Tjepkema, “The Prevalence of Household Air Conditioning in Canada,” *Health Reports*, July 19, 2023, <https://www150.statcan.gc.ca/n1/pub/82-003-x/2023007/article/00002-eng.htm>.

14 BC Coroners Service, “Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021,” Report to the Chief Coroner of British Columbia (2022),

Columbia, 117 deaths occurred in the city of Vancouver (British Columbia's largest city) and an additional 218 deaths occurred in Metro Vancouver (surrounding municipalities of the city of Vancouver). As for the type of housing where these deaths occurred, 39 percent occurred in multiunit private residences, 34 percent occurred in detached private residences, and 10 percent occurred in social and supportive housing, with smaller percentages in mobile homes and long-term care homes.¹⁵ Notably, prolonged temperatures built up indoors even as it cooled down at night outdoors, and deaths peaked on June 29 after several days of very hot temperatures.¹⁶ Aside from home type, there is little public data on deaths by neighborhood or local geographies narrower than the city or regional health authority level.

Much of the data and information about who died and the factors that led to their deaths comes from or is collected in an initial statistics report released by the BC Coroners Service in November 2021, which reported statistics on age, sex, and location of death.¹⁷ This initial report was followed by a death review panel report (the report we discuss here). Under British Columbia's Coroners Act, the province's chief coroner can convene death review panels at their discretion. The purpose of these panels is to "review the facts and circumstances of death to provide the Chief Coroner with advice on medical, legal, social welfare and other matters that may impact public health and safety and prevention of deaths."¹⁸ In Canada, there are no nationwide death investigation standards; each province is responsible for such activities, with some following the medical examiner model and others using a coroners system. The difference between these systems is province-specific, but at a general level, the difference lies in training and appointment. Medical examiners are trained in a medical specialty and are certified and often appointed by a medical body. Coroners are elected officials who may, but often do not, have medical training.¹⁹ The theoretical and practical differences between these models

https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/extreme_heat_death_review_panel_report.pdf

¹⁵ Ibid., 37–39.

¹⁶ Henderson et al., "Analysis of Community Deaths," 1–3.

¹⁷ BC Coroners Service, "Heat-Related Deaths—Knowledge Update," BC Coroners Service (2021), https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/statistical/heat_related_deaths_in_bc_knowledge_update.pdf.

¹⁸ BC Coroners Service, "Death Review Panel Reports & Information—Province of British Columbia," Province of British Columbia, last updated November 7, 2023, <https://www2.gov.bc.ca/gov/content/life-events/death/coroners-service/death-review-panel>.

¹⁹ Diane Kelsall and Matthew J. Bowes, "No Standards: Medicolegal Investigation of Deaths," *Canadian Medical Association Journal* 188, no. 3 (2016): 169, <https://doi.org/10.1503/cmaj.160041>.

exceed this research note; in the context of British Columbia, it is important to note that the Coroners Service has been a highly charged and very public government institution because of its role in reporting on and providing recommendations to combat the province's toxic-drug supply crisis.²⁰ In British Columbia, the chief coroner (2011–2024), Lisa Lapointe, is trained in law and was appointed by the lieutenant governor to run independent investigations into deaths.²¹ The chief coroner can seek advice from an array of experts and community members through death review panels, which allows them to situate immediate causes of death in a larger context. This is the context in which the report we analyze was created. The panel was headed by a chair, Michael Egilson, who has chaired a number of other death review panels for youth deaths and toxic drug overdoses, with more than twenty panel members, including medical professionals, health officers, emergency management professionals, government housing representatives, city planners, and members of nonprofit organizations focused on low-income populations.²²

As stated in the report, the BC Coroners Service investigated more than 800 deaths during the week of the heat dome, with 619 deaths caused by extreme heat, identified through physical assessment, medical records, post-mortem testing, and interviews with people in the decedent's life. This investigative protocol is noted in the report as "currently being refined and updated" to better include "scene, environment, and additional data."²³ The death review panel was convened by the chief coroner on April 20, 2022, to "identify actions to improve public safety and prevent future deaths" based on this information.²⁴

The fifty-three-page report from the panel was released on June 7, 2022, almost a year after the fatal heat dome. The report also updated the number of official heat-related deaths from 595 to 619. The findings are written in accessible language and were extensively covered in BC media—it is clear that its authors saw its readership as wide-ranging. There is an emotional and commemorative component with the following statement: "This report is dedicated to the families, friends and communities of those who lost their lives

20 Dirk Meissner, "B.C.'s Chief Coroner Exits, Frustrated and Disappointed with Government's Response to Overdose Crisis," *Globe and Mail*, December 13, 2023, <https://www.theglobeandmail.com/canada/british-columbia/article-bcs-chief-coroner-exits-frustrated-and-disappointed-with-governments/>.

21 Public Safety and Solicitor General, "Chief Coroner's Statement on Future with BC Coroners Service," *BC Gov News*, December 6, 2023, <https://news.gov.bc.ca/releases/2023PSSG0087-001928>.

22 BC Coroners Service Report, 3.

23 Ibid., 11–12.

24 Ibid., 12.

from the impact of the extreme heat event. May their memories endure in our actions to prevent similar deaths in the future.”²⁵

In addition to the 98 percent of deaths occurring indoors, a few of the key statistics concerning who died during the heat dome are: (1) 67 percent of people who died were over the age of seventy; (2) 80 percent of the people who died had three or more existing health conditions; (3) most people who died did not have indoor cooling mechanisms in their homes, with only 7.4 percent of people who died confirmed to have indoor cooling mechanisms other than fans; and (4) more than 60 percent of people who died had seen a medical professional within the month prior to their death.²⁶ In addition to key statistics, the report concerns itself with recommendations, specifically (1) a provincial heat alert response system, (2) identifying and supporting vulnerable populations during future events, and (3) establishing longer-term strategies to reduce people’s risk. This focus on recommendations and effects is reflected by the multidisciplinary panel that was consulted.

However, the report was subject to political controversies in its production as key voices were left out. Specifically, Gabrielle Peters, a disabled writer, policy analyst, and member of the Vancouver City Planning Commission, explained in an interview how she was initially consulted as a panel member, but her main request—that existing health care programs be expanded before the next summer to include air conditioners as medical devices for vulnerable, low-income people—was ignored.²⁷ The only recommendation that ended up in the final report related to the life-saving potential of air conditioning is that by December 1, 2022, the Ministry of Health would “conduct a review into issuing cooling devices as medical equipment accessible to persons most at risk of dying during an extreme heat event, and make public the findings of the review.”²⁸ In an op-ed published in *The Maple*, Peters writes, “The legacies of ableism, racism and policy decisions that enhance the lifestyles and life expectancies of wealthier residents do the exact opposite to poorer people. The inequity of our society leads to inequitable impacts from the heat. These factors combine with policies that fail to include disabled human needs as part of human needs.”²⁹ This critique underscores the need to focus on under-

²⁵ Ibid., 2.

²⁶ Ibid., 5.

²⁷ Brishti Basu, “‘They Were Trying to Figure Out How to Stay Alive’: Disability Advocates Slam Heatwave Response,” *Capital Daily*, June 7, 2022, <https://www.capitaldaily.ca/news/disability-advocates-slam-heatwave-response>.

²⁸ BC Coroners Service Report, 32.

²⁹ Gabrielle Peters, “Alone in the Dome: Disabled People, Many Poor, Struggled to Survive B.C.’s Fatal Heat Wave,” *Maple*, September 5, 2021, <https://www.readthemaple.com/alone-in-the-dome-disabled-people-many-poor-struggled-to-survive-b-c-s-fatal-heat-wave/>.

lying inequities and voices of those who are most affected by heat events in the final iterations of such reports. Despite its stated purpose to contextualize the event, the report still focuses heavily on the immediate causes of death (such as increased temperatures and medical conditions). The neglect of structural concerns of climate and housing injustice is especially stark in the case of the 2021 heat dome. This is important because the report not only serves as the objective measure of what happened but also becomes a historic reference defining the problem and its causes, especially as it is used to inform and make policy recommendations for addressing future heat events.

Placing the Report within the Landscape of Vancouver's Housing Injustice

With the overwhelming number of people who died in their homes, the report places itself within the home, pointing to inadequate ventilation, the waning effectiveness of low-cost solutions such as fans in extreme heat, and the lack of data on effects of indoor heat. Some of the recommendations include distributing a health guide for heat conditions, creating a rebate program, updating the BC Building Code in 2024 to incorporate passive and active cooling into new buildings and home renovations, and looking at restoring the urban tree canopy (with no clear commitments).³⁰ The report also recommends a coordinated provincial heat alert and response system and public messaging on self-care, with the assumption that people can buy their own supplies to survive if they have enough time to prepare. This public messaging did take place in 2022, but as one tenant expressed: "It wasn't until last year that I even saw the heat warnings, and then they seemed kind of late. Like don't put it the night before! I found I was getting better information from the app on my phone."³¹

The immediate factor of heat is linked to what Gregg Mitman calls a larger "ecology of injustice that structures urban life,"³² in this case with British Columbia's housing crisis at its center. The specific recommendations to support vulnerable populations in future events are predicated on the idea that with enough warning, people will have the ability and means to change their risk level by controlling the temperature of their homes and accessing life-saving cooling mechanisms. However, with the example of housing in Vancouver, this level of control is rarely possible if people rent their homes (which 33 percent of British Columbians and 55 percent of Vancouverites do, according to the official 2021 census data). Tenants by nature are insecure in their housing and Vancouver is the eviction capital of Canada, with about

³⁰ BC Coroners Service Report, 32–33.

³¹ Interview with senior tenant in downtown Vancouver, March 2023.

³² Gregg Mitman, *Breathing Space: How Allergies Shape Our Lives and Landscapes*, *Breathing Space* (New Haven, CT: Yale University Press, 2008), 134, <https://doi.org/10.12987/9780300138320>.

11 percent of people who rent their homes reporting being evicted within the past five years.³³ This is most likely an undercount as there are many precarious housing situations in Vancouver other than formal tenants, such as subletters or those living in transitional housing. Recent discourse on tenancy broadly highlights tenancy as linked to a lack of control over space and housing. Tracey Jeanne Rosenthal from the L.A. Tenants Union writes, “We define a tenant as more than a renter. A tenant is anyone who doesn’t control their own housing.”³⁴ Ricardo Tranjan positions tenancy in terms of class struggle: “Tenants . . . have no choice but to engage in asymmetrical power relations to secure one of the most basic human needs, shelter.”³⁵ In addition to its important political implications, we specifically use the term “tenant” as the term is protected by the Residential Tenancy Act in British Columbia for someone who has the right to possess a rental unit under a tenancy agreement.³⁶

We propose that understanding the distinction between immediate experiences of high temperatures and existing structures of housing precarity and climate vulnerability is helpful for a fuller view of what tensions people faced in their homes, the site of distress and death during the heat dome. As political ecologist Paul Robbins describes, the difference between a political and apolitical ecological analysis is in the attribution of injustice. For Robbins, a political ecology is one that identifies “broader systems rather than blaming proximate and local forces [alone].”³⁷ Without detracting from the vital and important work of identifying the local causes of heat-related deaths, we also see the need to read the report through a political ecology lens. That is, we see the need to situate this report in the structural context of climate injustice in British Columbia: a housing market that often privileges the exchange values of real estate over the use value of home,³⁸ a market that is only made possible

33 Silas Xuereb, “Understanding Evictions in Canada through the Canadian Housing Survey,” UBC Balanced Supply of Housing Research Excellence Center and Housing Research Collaborative (2021), https://housingresearch.ubc.ca/sites/default/files/documents/understanding_evictions_in_canada_2021.pdf.

34 Tracey Jeanne Rosenthal, “101 Notes on the LA Tenants Union (You Can’t Do Politics Alone),” in *Housing Justice in Unequal Cities*, edited by Ananya Roy and Hilary Malson (Los Angeles: Institute on Inequality and Democracy at UCLA, 2019), 52, <https://escholarship.org/uc/item/4kq1jodf>.

35 Ricardo Tranjan, *The Tenant Class* (Toronto: Between the Lines, 2023), 16.

36 BC Residential Tenancy Act, https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/02078_01#division_d2e30 (accessed September 8, 2023).

37 Paul Robbins, *Political Ecology: A Critical Introduction*, 2nd ed. (New York: John Wiley & Sons, 2012), 13.

38 David Madden and Peter Marcuse, *In Defense of Housing: A Politics of Crisis* (New York: Verso Books, 2016).

through the historical and ongoing enclosure and taking of Indigenous land.³⁹ These structural conditions have strong effects on people's day-to-day lives and more specifically in the social and material fabric of their homes. These power-laden structural conditions occur not only on a broader rental market level but seep down from the larger geographies of unaffordability and financialization to the individual geographies of people's units and their relationships with their landlords.⁴⁰

We highlight this lack of control inherent in tenancy relationships because it has specific bearing on how programs emerging from the report have played out. As called for, the BC Ministry of Health's "Review of Cooling Mechanisms as Medical Devices for Vulnerable Populations" was published in June 2023. It contains information on existing cooling mechanism programs in British Columbia and even notes that for many retrofit and tax incentive programs, the lack of information in the report on whether people owned their homes makes it "difficult to estimate the efficacy of rebate programs in reducing future potential deaths related to extreme heat deaths."⁴¹ In addition, this review highlights that on June 27, the BC government announced their plan to spend C\$10 million to distribute 8,000 air conditioners by summer 2025 through BC Hydro's Energy Conservation Assistance Program to those who can show financial need and/or meet criteria that they are medically heat-vulnerable.⁴² However, since its rollout began, this program has proved problematic to access for renters with the air conditioner (despite

39 Clifford Atleo and Jonathan Boron, "Land Is Life: Indigenous Relationships to Territory and Navigating Settler Colonial Property Regimes in Canada," *Land* 11, no. 5 (2022): 609, <https://doi.org/10.3390/land11050609>; Nicholas Blomley and Right to Remain Collective, "Law and Property Relations: Contesting the 'Outlaw' Zone," in *Housing Justice in Unequal Cities*, edited by Ananya Roy and Hilary Malson (Los Angeles: Institute on Inequality and Democracy at UCLA, 2019), 79–84.

40 Gideon Kalman-Lamb, "The Financialization of Housing in Canada: Intensifying Contradictions of Neoliberal Accumulation," *Studies in Political Economy* 98, no. 3 (2017): 298–323, <https://doi.org/10.1080/07078552.2017.1393911>; Penny Gurstein and Andy Yan, "Beyond the Dreams of Avarice? The Past, Present, and Future of Housing in Vancouver's Planning Legacy," in *Planning on the Edge*, edited by Penny Gurstein and Tom Hutton (Vancouver: University of British Columbia Press, 2019), 215–46.

41 BC Ministry of Health, "Review of Cooling Devices as Medical Equipment for Vulnerable Populations during an Extreme Heat Event," BC Ministry of Health (June 28, 2023), 11, https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/review_of_cooling_devices_as_medical_equipment_for_vulnerable_populations_during_an_extreme_heat_event_june_2023.pdf.

42 BC Hydro, "Energy Conservation and Assistance Program," <https://www.bchydro.com/powersmart/residential/rebates-programs/savings-based-on-income/free-product-install-and-advice.html> (accessed August 13, 2023).

specifically being a portable unit) being tied to the unit and with any renters being required to get landlord permission to access the program. Some landlords are opposing the air conditioners, leaving tenants no options to access the program.⁴³ This prompted Vancouver Coastal Health and Fraser Health authorities (covering Metro Vancouver) to issue nonbinding guidance for landlords and building managers to allow tenants to have air conditioners for their health.⁴⁴ Despite the government program attempting to address the pressing factors of high temperatures and income barriers, the structural landscape of landlord-tenant relationships undermined program accessibility.

In addition, as the BC Ministry of Health's review pointed out, the report's focus on rolling out rebate programs for passive and active cooling measures targeted at low-income households only applies easily to homeowners; it does not apply to tenants or those who do not have the ability to easily modify their living spaces.⁴⁵ However, in the climate of high housing unaffordability, there are also fears from housing advocates that improvements such as requiring installation of heat pumps or air conditioning without adequate tenant protections could lead to rent increases that put pressure on tenants. Robert Patterson, a lawyer and tenant advocate with the BC Tenant Resource and Advisory Centre, has referred to this as a way to potentially put tenants through a process of "in-home gentrification," where rents could be raised above the guidelines through additional rent increases for upgrades.⁴⁶ In a housing landscape that is increasingly unaffordable, wracked with evictions and upgrade-oriented rent increases, and prioritizes profit over people, the report simply does not go far enough to understand that rebate programs and programs that do not address the power dynamics in people's homes will not allow for many of the most vulnerable people to access cooling mechanisms, especially not quickly. Once a document is in the policy realm, it is even more important to understand the barriers to implementing those suggestions and create policies that do not potentially cause more harm.

43 Nono Shen, "Landlord Consent Keeps Some BC Renters from Getting Free AC Units," *Vancouver Sun*, August 7, 2023, <https://vancouversun.com/news/local-news/bc-renters-landlord-consent-free-air-conditioners>; Amy Judd and Julie Nolin, "Renters in B.C. Building Told They Can't Have Air Conditioners," *Global News*, July 24, 2023, <https://globalnews.ca/news/9848854/bc-renters-air-conditioners-letter/>.

44 Vancouver Coastal Health, "New Public Health Guidance for Landlords and Stratas Encourages Removal of Rules against Air Conditioning," July 20, 2023, <https://www.vch.ca/en/press-release/new-public-health-guidance-landlords-and-stratas-encourages-removal-rules-against-air>.

45 BC Coroners Service Report, 33.

46 Interview with Robert Patterson from Tenant Resource and Advisory Centre, February 2023.

Understanding Inequality through the Material and Social Deprivation Index

The report does try to address larger inequalities and how they may have played out during the 2021 heat dome, but through the narrowly defined lens of “material and social deprivation.” It specifically uses the Material and Social Deprivation Index, which emerged from the Canadian province of Quebec in the 1990s. This index acts as a “proxy for lacking information on socioeconomic status of individuals in administrative databases.”⁴⁷ Essentially, because health databases often do not gather socioeconomic data, information on material and social deprivation is gathered after the fact, based on geographic areas such as neighborhoods.⁴⁸ In this overlay of data, people’s particular circumstances blend into the wider assumptions and landscape of their postal codes. Robert Pampalon and colleagues note: “Despite their widespread use, they [deprivation indexes] have seldom been explicitly validated.”⁴⁹ “Material deprivation” refers to neighborhoods with “poorer housing locations and construction, less green space and less recreation areas than in other parts of the community . . . [and] are associated with lower education and income levels”; socially deprived neighborhoods are where “people are more likely to live alone, be a single parent, separated, divorced or widowed.”⁵⁰ These data are displayed as a count of people divided into five quintiles (each representing 20 percent of the population) from quintile 1 (least deprived) to quintile 5 (most deprived).

One of the key points missed by the Material and Social Deprivation Index is that it does not gather data on type of tenure, meaning that there is no official data on whether the people most affected by the heat dome owned or rented their homes. Referencing the lack of control inherent in tenancy, data on tenancy and homeownership is key for understanding the options available for people to modify or make changes in their homes to keep themselves safe in an extreme weather event. More detailed indices, such as the Social Vulnerability Index (created in the context of the United States), focuses more on vulnerability than deprivation and highlights the importance of incorporating the specifics of built environment and renter status into understanding vulnerability

47 “Material and Social Deprivation Index,” INSPQ, <https://www.inspq.qc.ca/en/deprivation/material-and-social-deprivation-index> (accessed March 10, 2023).

48 Robert Pampalon, D. Hamel, P. Gamache, and G. Raymond, “A Deprivation Index for Health Planning in Canada,” *Chronic Diseases in Canada* 29 (2009): 178–91, <https://doi.org/10.24095/hpcdp.29.4.05>.

49 Robert Pampalon, D. Hamel, P. Gamache, A. Simpson, and M. D. Philibert, “Validation of a Deprivation Index for Public Health: A Complex Exercise Illustrated by the Quebec Index,” *Chronic Diseases and Injuries in Canada* 34, no. 1 (2014): 12, <https://doi.org/10.24095/hpcdp.34.1.03>.

50 BC Coroners Service Report, 34.

to environmental hazards.⁵¹ This index, developed in the early 2000s by Susan Cutter and colleagues, specifically seeks to understand how social vulnerability emerges in the context of wider environmental hazards and looks at factors such as gender, race, age, renter status, access to medical services, and social dependence.⁵² By incorporating indices with structural elements attuned to the context of British Columbia's housing vulnerability, index-based approaches could more saliently address the underlying concerns for the heat dome's context of indoor deaths, rather than obscuring this further.

In general, index-based approaches to inequality also often miss the differences of experience on an individual level. As Pampalon writes of the Material and Social Deprivation Index, "The deprivation index has its limitations. It is not an individual measure of socioeconomic conditions, but rather a measure of the conditions seen at the neighbourhood level."⁵³ In the work the authors are currently doing with University of British Columbia's Centre for Climate Justice, we have heard that these smaller scales of experience are crucial. Even in individual buildings, the directionality of units, which floor in the building people live on, window types and ventilation, and individual informal agreements with landlords around installation of cooling mechanisms change the experience of heat across units. One of our participants shared her experience living in a top-floor, southwest-facing unit (one of the hottest units geographically because of sun exposure): "What I realized is when I walked downstairs into the lobby, it was probably about a ten-degree difference. It was substantial. The people living on the north side in the ground floor units, they were uncomfortable but it was not like what we were going through. This was life and death stuff up here."⁵⁴

This echoes earlier findings from Richard Keller in his landmark study of the 2003 Paris heat wave that even on the level of individual buildings, the experience of heat can be vastly different. Keller identifies that many victims "shared important geographic and social circumstances that put them at inordinate risk. Not least of these was a vertical geography prescribed by poverty: each of these victims . . . lived in rooms directly beneath the roofs of their buildings . . . where they baked to death during the unprecedented heat wave. Their deaths are inseparable from the poverty that pushed them into such precarious housing."⁵⁵

51 Susan L. Cutter, Bryan J. Boruff, and W. Lynn Shirley, "Social Vulnerability to Environmental Hazards," *Social Science Quarterly* 84, no. 2 (2003): 242–61, <https://doi.org/10.1111/1540-6237.8402002>.

52 Ibid., 248–49.

53 Pampalon et al., "A Deprivation Index," 185.

54 Interview with senior tenant in south Vancouver, March 2023.

55 Richard C. Keller, *Fatal Isolation: The Devastating Paris Heat Wave of 2003* (Chicago: University of Chicago Press, 2015), 96.

The Material and Social Deprivation Index does not provide data on this scale, instead overlaying assumptions about income, class, and access to services onto specific geographies. In its reliance on numbers and general data, it overlooks the stories of specific experience that can illuminate what factors specifically proved to be harmful or fatal. These smaller geographies and stories of specific experience can be crucial for understanding how socioeconomic dynamics affected experience during the heat dome, as well as what solutions will be most important moving forward. To its credit, the report does acknowledge the shortcomings of purely quantitative expressions of the heat dome: “Although this report lists many statistics, each data point is an individual life. The people who died were people who, for myriad reasons, were overcome by the effects of extreme heat.”⁵⁶ It is important that this acknowledgment be followed up with the appropriate action to take structural factors into account in the recommendations.

Conclusion: Remembering the “Ecology of Injustice” of the Heat Dome

“May their memories endure in our actions to prevent similar deaths in the future.” As a commemorative and policy piece, the report lives in a difficult place—it seeks to both memorialize and respond to the traumatic events of the 2021 heat dome. But as the heat bore down on British Columbia, it was not on an equal landscape of privilege and access to cooling. The report does not adequately explore the underlying landscape of home that affects how people experience these events, especially as the data show that heat builds up dangerously indoors. A view toward incorporating more equity and justice lenses into health work in the future could help provide a fuller picture of the social and political landscape of this extreme heat event.

This short dive into the report has presented some key debates around this official document and how a deeper understanding of the housing crisis and existing inequities is necessary, especially when the understanding of the report is used to inform and build policies for future events. As housing justice and climate justice researchers, our current and future work with the Centre for Climate Justice seeks to respond to some of the issues we have raised here. We are gathering stories of how people experience climate change–induced extreme weather events to better understand how housing and other structural concerns inform people’s experiences and options during these events.

As the climate crisis continues to unfold in British Columbia and elsewhere, we must return to documents such as the Coroners Service Report to complicate official narratives and understand what pieces are left out. With a fuller understanding of “the ecology of injustice” in British Columbia and

56 BC Coroners Service Report, 12.

other contexts experiencing extreme weather events, we can push for transformative policies that do not perpetuate the inequalities they seek to remedy, and in the process, remember and enact justice for those who suffered and lost their lives in this tragic event.

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