



Mapping the network of community relationships crucial to extreme heat planning in South Vancouver and Marpole

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Disclaimer

This report was produced as part of the UBC Sustainability Scholars Program, a partnership between the University of British Columbia and various local governments and organizations in support of providing graduate students with opportunities to do applied research on projects that advance sustainability and climate action across the region.

This project was conducted under the mentorship of City of Vancouver staff and advised by South Vancouver Neighbourhood House and Marpole Neighbourhood House. The opinions and recommendations in this report and any errors are those of the author and do not necessarily reflect the views of City of Vancouver, Marpole Neighbourhood House, South Vancouver Neighbourhood House or the University of British Columbia.

Territory Acknowledgment

I moved to Vancouver in September and am very grateful to be an immigrant-settler on the unceded ancestral lands of the xwməθkwəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and Səlilwətaʔ/Selilwitulh (Tsleil-Waututh) Nations.

As a student in the Indigenous Community Planning program, I understand how Indigenous communities are at the forefront of responding to extreme climate events and I have tried my best to embed their perspectives into this report.

Acknowledgments

Thank you to Nadia Carvalho and Katia Tynan for graciously guiding me through this work. I felt wholeheartedly supported throughout this project. I am grateful for the compassion, patience and knowledge that you shared with me.

Thank you to Jeannie Furmanek for always being willing to hop on a call with me and I am continuously impressed by your dedication to community. Further, thank you to Mimi Rennie for welcoming me to South Vancouver Neighbourhood House and your support.

Thank you to Nilda Borrino for the continued support through this project, especially during the busy summer months. I am thankful to the staff at Marpole Neighbourhood House for hosting me and sharing their experiences with me – Linh Lam, Tracy and Deedee.

Thank you to all the interviewee participants. The knowledge and experiences shared with me deeply informed this report.

Executive Summary

Purpose & Methodology:

The purpose of this research is to better understand the breadth and depth of relationships and networks that coordinated actions across multiple sectors during extreme heat events in South Vancouver and Marpole. The methodology was social network analysis, which is an analytical tool to map and measure relationships between organizations. This included conducting semi structured interviews with 10 individuals from local organizations, a comprehensive literature and policy review and observational data.

Findings:

An interactive social network map was created for each neighbourhood house and can be accessed [here for South Vancouver](#) and [here for Marpole](#).

The social network analysis demonstrated that local, place-based organizations are the first to respond to extreme heat events in a quick, coordinated and community-based manner. Due to their knowledge of the neighbourhood, they are able to quickly mobilize and organize outreach, resource sharing and ad-hoc check ins. These organizations were usually non-profits, municipal government services, grassroots and faith-based organizations. Marpole Neighbourhood House and South Vancouver Neighbourhood embody a centralized approach and has many connections for outreach. The target groups for outreach are newcomers and migrants and socially isolated individuals in single family homes.

Recommendations for Short Term Implementation

1. Implement and Maintain a Community-Led Neighbourhood Level Emergency Preparedness Collaborative
2. Implement a Flexible Funding Model
3. Develop Tailored Programs for Identity Based Groups
4. Expand Cool Kits Distribution:
5. Homebound Check-In Program:
6. Develop a Transportation Program for Seniors
7. Implement Peer-to-Peer Support Program
8. Engage Faith-Based Organizations
9. Provide Mental Health Supports for Frontline Workers
10. Embed Culturally Appropriate & Seniors Lenses

Recommendations Based for Coordination

11. Clarify Roles and Enhance Collaboration Between Government Agencies
12. Enhance Coordination through an Online Dashboard with Shared Resources and Contacts
13. Implement a Flexible Monitoring and Evaluation Program
14. Organize a Social Media Program to Highlight Community Organizations

Recommendations for Long Term Implementation

- 15. Address Inequalities in South Vancouver and Marpole
- 16. Advocating Higher Levels of Government to Prioritize Extreme Heat Planning and Response
- 17. Allocate Capital Funds
- 18. Support Long-Term Planning

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1. Introduction

1.1. Background

Extreme heat events are occurring more often with more social, economic and environmental impacts. These events impact vulnerable populations first and disproportionately. South Vancouver and Marpole represent two areas of the city with high amounts of newcomers, racialized groups, seniors and low-income populations. These areas also experienced a large concentration of heat related emergency room visits during the June 2021 heat waves.¹

Over the past two summers, South Vancouver and Marpole Neighbourhood Houses played a crucial role in supporting vulnerable populations such as seniors, people with disabilities and new immigrants during extreme heat events. City of Vancouver's Vancouver Emergency Management Agency (VEMA) and Social Policy & Projects department held 2022 Heat Planning sessions to develop unique, capacity-based plans for extreme heat with partners between June and October. This led to an innovative community-led approach to emergency management which considered the needs of each neighbourhood over a standardized top-down approach often used in emergency management.

The intent of this research is to better understand the breadth and depth of relationships and networks that coordinated actions across the multiple sectors during extreme heat events, particularly during the heat planning lessons learned sessions. This can include innovative partnerships with local businesses, other non-profits, grassroots organizations and mutual aid networks such as the Neighbourhood House working with local building managers where vulnerable population live to create a cooling room.

The methodology used was social network analysis, a literature review and observational visits to the neighbourhood. I visited both Neighbourhood Houses and attended events, when possible, to build relationships with the staff and get to know the neighbourhood. Further, I conducted interviews with different actors to understand their relationship to each other during extreme heat events in 2022 and their experience responding to extreme heat events. Based on these interviews, I created two interactive social network analysis maps for each Neighbourhood House.

After interviewing front line staff, the most important takeaway for this research to me is that we will not make it through these emergencies alone. The relationships between different government agencies, faith-based organizations and nonprofits saved the lives of vulnerable people. The most vulnerable populations to extreme heat events are socially isolated individuals especially seniors without ties to community members. It is life saving to be involved in your community.

¹ City of Vancouver. (2022). Updates to Extreme Heat Response Plans <https://vancouver.ca/files/cov/2022-06-15-updates-to-extreme-heat-response-plans-for-2022.pdf>

1.2 Research Questions & Objectives

This research examines two primary questions:

Question 1: How did the networks and relationships between Neighbourhood Houses, service providers, and businesses grow, change, and be strengthened as a result of extreme heat planning in 2022 through 2023?

- Which connections already existed? How did they change? Which connections were strengthened? Which connections were new?

Question 2: How can these networks and relationships be leveraged to deepen collaborative and equitable neighbourhood-scale planning?

The research objectives for this research project are:

- Identify extreme heat planning networks, as well as changes, growth, and adaptation of networks during the course of emergency planning
- Further the City of Vancouver's understanding of networks to leverage to deepen collaborative and equitable neighbourhood-scale planning
- Provide recommendations on building and strengthening networks between service providers and other neighbourhood-based groups

1.3 Positionality

I am first generation Punjabi woman who is able bodied with a Canadian citizenship. I moved to Vancouver at the start of September 2022 to study Community and Regional Planning specializing in Indigenous Community Planning at the University of British Columbia. While the Punjabi Market was a key destination for our family when they were visiting from out of town, South Vancouver and Marpole were not areas I visited often. This was a gap in my understanding of Vancouver was clear to me when I began this project, and I was grateful to spend intentional time in the neighbourhoods. However, as an individual who has lived and worked in similar areas, I was able to utilize my cultural and social competences and similarities to gain a greater insight. For example, I understand working within community requires adaptability and flexibility as often research can add unnecessary pressure to community organizations.

Research is not apolitical nor objective process hence my positionality does inform the research process. I actively embedded reflectivity into my data analysis process by understanding that the researcher, the method, and the data are interconnected.² Through this interconnectedness, I am able to understand the research objectives to a stronger degree as I am not viewing any aspect of the research project in isolation.

² Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, ahead-of-print(ahead-of-print), 1–25. <https://doi.org/10.1080/14780887.2020.1769238>

2.0 Background

2.1 Context: Extreme Heat Events and Response in July 2021

In late June 2021, Vancouver experienced an unprecedented heat dome or which is otherwise known as an extreme heat event (EHE). A heat dome is when an “an area of high pressure stays over the same area for days or even weeks, trapping very warm air underneath - rather like a lid on a pot.”³ During the week of the extreme heat event, June 25 to July 1, temperatures reached over 40°C. The BC Coroners Service investigated more than 800 deaths that occurred in the EHE and 619 of these deaths were identified as being heat-related.⁴ According to the Death Review Panel, majority of the deceased were “older adults with compromised health due to multiple chronic diseases and who lived alone.”⁵ Further, the report also discovered 56% of the group who passed away lived alone and lived in socially and materially deprived neighbourhoods than the general population. This sentiment was echoed by South Vancouver Neighbourhood House staff who shared the low-income seniors who lived in senior housing were well connected to community resources and had regular check ins. However, seniors who were isolated in single family homes or basement suites were more at risk during extreme heat events because they remained unknown to community organizations. The Report concluded that ensuring vulnerable populations are identified and supported is one key approach to reduce heat related deaths. After this event, many municipalities across British Columbia sprung to action in updating and expanding their heat emergency plans.⁶

Vancouver Coastal Health created this map which demonstrates that a large majority of heat-related hospital emergency visits during the 2021 EHE were concentrated near South Vancouver and Marpole area [see figure 1].⁷ Further, due to the proximity of Burnaby Hospital to the eastern Vancouver border, it is possible that many ill individuals went there instead. However, the data is not available, but it can be assumed the figures may be higher. When compared to the urban

³ Pg. 4. British Columbia Coroners Service . (2022). *Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021*. 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

⁴ British Columbia Coroners Service. (2022). *Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021*. 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

⁵ British Columbia Coroners Service. (2022). *Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021*. 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

⁶ BC Centre for Disease Control. “Municipal Heat Response Planning in British Columbia, Canada.” www.bccdc.ca, 2017, [www.bccdc.ca/resource-](http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Health-Environment/BC%20Municipal%20Heat%20Response%20Planning.pdf)

[gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Health-Environment/BC%20Municipal%20Heat%20Response%20Planning.pdf](http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Health-Environment/BC%20Municipal%20Heat%20Response%20Planning.pdf).

⁷ City of Vancouver. (2022). *Updates to extreme heat response plans for 2022* .

<https://vancouver.ca/files/cov/2022-06-15-updates-to-extreme-heat-response-plans-for-2022.pdf>

forest canopy gaps, South Vancouver and Marpole are areas with less than 10% coverage [see figure 2].⁸ Vancouver Park Board utilized the urban forest canopy gap map with other spatial indicators to create Initiative Zones which highlight areas in need of resources which include South Vancouver and Marpole. There are many factors which can lead to disproportionate impact of extreme heat events including lack of canopy, being service poor and higher number of vulnerable populations. This is the case for South Vancouver and Marpole.

Map 1: Concentration of heat-related hospital emergency room visits during 2021 Heat Dome event (Source: Vancouver Coastal Health)

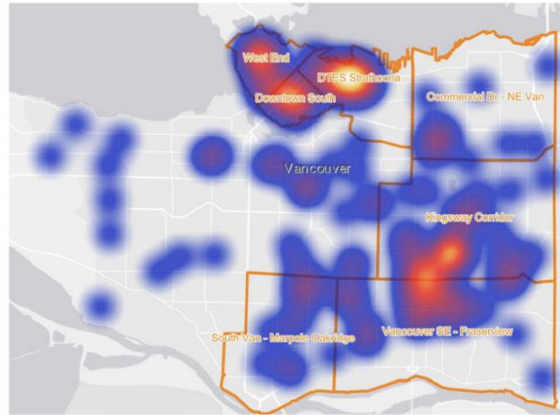


Figure 1 Map of Concentration of Heat-Related Hospital Emergency Room Visits during 2021 Heat Dome Event. From Vancouver Coastal Health

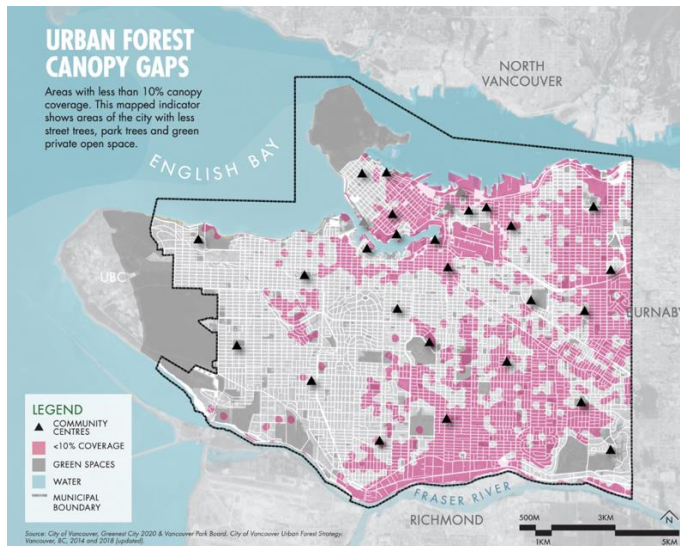


Figure 2 Map representing Urban Forest Canopy Gaps in Vancouver. From Vancouver Park Board.

⁸ Vancouver Park Board. (2020). VanPlay Strategic Bold Moves - Equity Chapter <https://vancouver.ca/files/cov/vanplay-strategic-bold-moves-equity-chapter.pdf>

2.2 2022 Heat Planning Lessons Learned Review

In December of 2022, staff from the City of Vancouver’s Vancouver Emergency Management Agency (VEMA) and Social Policy hosted a “2022 Heat Planning Lessons Learned” sessions with key partners in the City’s Resilient Neighbourhood Program (RNP). The Resilient Neighbourhood Program is a program to build the capacity of local nonprofits to support and amplify current initiatives building resilience at the neighbourhood level. The goals of the session were to:

- Gather information on individual and community experiences of extreme heat in 2022.
- Formally inventory the various approaches taken by community partners to support neighbourhoods for extreme heat in 2022.

There were 12 community partners who attended these 2 sessions including South Vancouver and Marpole Neighbourhood House who were able to collaborate and learn from other organizations.⁹ I was able to attend one session this summer and I saw the collaborative nature of the sessions firsthand. For example, one organization was creating scripts for their wellness checks and shared it with other organizations after the session to prevent duplicate work. In conclusion, the City of Vancouver and community partners worked together to provide a wide range of heat actions and programming to support residents disproportionately impacted by extreme heat events.

2.3 City of Vancouver’s Heat Response

The City of Vancouver has an extreme heat response plan which includes communicating with local partners about the different scales of heat events. In 2022, the City of Vancouver had 3 Level 1 Heat events. In response to lessons learned from the 2021 Heat Dome as well as pre-planning efforts in 2022, the City took the following actions:

- “Provided support to residents in staying cool at home by the distribution of over 1,900 cool kits through community partners and City non-market housing.
- Provided Indoor Cooling Centres & Culturally Safe Cool Spaces throughout the city. This included 39 Cooling Centres at both civic and non-civic locations.
- Increased outdoor cooling through shaded parklets, increased tree canopy, 16 misting stations, and spray parks.
- Increased access to drinking water through permanent and temporary water fountains and bottled water distribution.
- Increased community partnerships and collaborations through 12 service agreements and 9 Resilient Neighbourhood Grants, as well as coordination calls and information sharing.

⁹ Vancouver Emergency Management Agency. (2023). RESILIENT NEIGHBOURHOODS PROGRAM 2022 COMMUNITY-LED EXTREME HEAT RESILIENCE. <https://vancouver.ca/files/cov/extreme-heat-resilience-report-2022.pdf>

- Provided extensive public information to residents via maps, heat tips, alerts, and resources that was translated into top 7 languages of the Vancouver area.”¹⁰

2.4 Marpole Neighbourhood House

Marpole is a medium-density riverfront community with high rates of expected growth. According to the 2016 census, 67% of the population is a visible minority and the largest groups include Chinese, Filipino, and South Asian.¹¹ There are higher densities with apartment dwellings near transit services and neighbourhood centers but a significant amount of single family homes as well. Due to its complex urban fabric, Marpole experiences polarization between lower income residents as it has the third highest low-income rate in Vancouver but the recent development has seen increasing displacement. The figure below demonstrates how 89% of net new households counted in the 2016 census compared to the 2011 NHS are rented households [see figure 3].¹² Similar to South Vancouver, 60% of the population was born outside of Canada and the Indigenous population rate is lower than city average [see figure 4].¹³

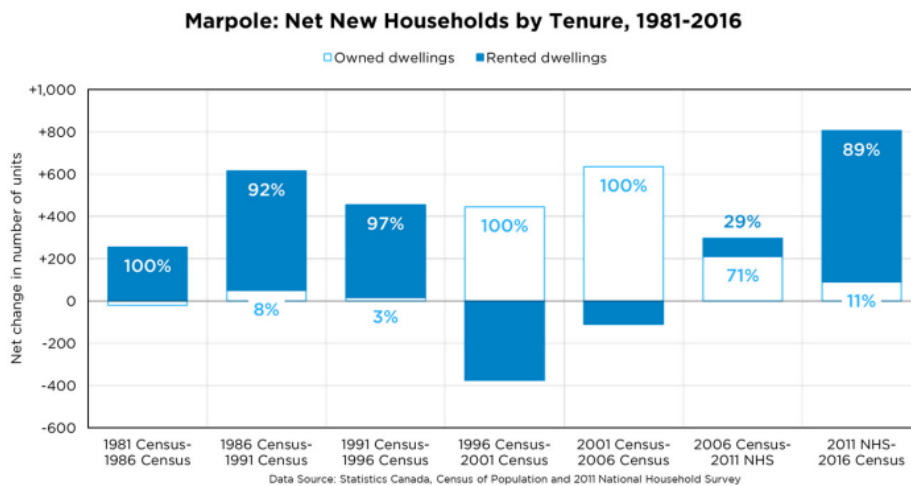


Figure 3 Graph of Net New Households by Tenure, 1981-2016. From Marpole Neighbourhood Social Indicators Profile.

¹⁰ Vancouver Emergency Management Agency. (2023). RESILIENT NEIGHBOURHOODS PROGRAM 2022 COMMUNITY-LED EXTREME HEAT RESILIENCE. <https://vancouver.ca/files/cov/extreme-heat-resilience-report-2022.pdf>

¹¹ City of Vancouver: Social Policy and Projects. (2020). Marpole Neighbourhood Social Indicators Profile. <https://vancouver.ca/files/cov/social-indicators-profile-marpole.pdf>

¹² City of Vancouver: Social Policy and Projects. (2020). Marpole Neighbourhood Social Indicators Profile. <https://vancouver.ca/files/cov/social-indicators-profile-marpole.pdf>

¹³ City of Vancouver: Social Policy and Projects. (2020). Marpole Neighbourhood Social Indicators Profile. <https://vancouver.ca/files/cov/social-indicators-profile-marpole.pdf>

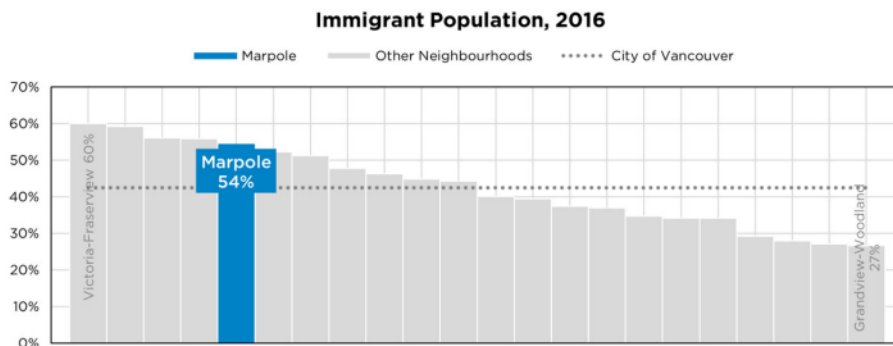


Figure 4 Graph of Immigrant Population, 2016. From *Marpole Neighbourhood Social Indicators Profile*.

Marpole had a community plan enacted in 2014 to address short term and long range growth. The priorities have been locating new developments in higher density areas, enhancing public open spaces, providing sustainable transit and supporting a range of affordable housing.¹⁴ However, Marpole has similar unmet needs as South Vancouver. There is a lack of arts and cultural spaces and poor access to healthcare services [see figure 5].¹⁵

Map of community healthcare delivery in Vancouver

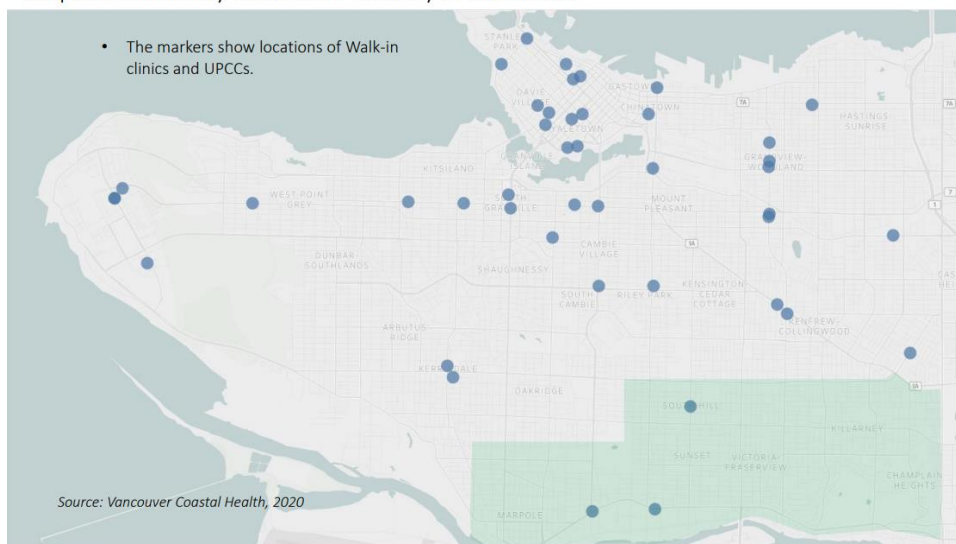


Figure 5 Map of Community Healthcare Delivery in Vancouver. From *South Vancouver & Marpole Neighbourhood Equity Report*.

Despite access to the Marine Drive station on the Millennium Line, the majority of Marpole residents still do not live in high transit score areas due to the lack of rapid bus transit. There is also a lack of access to all ages and abilities bike lanes and less options for active transportation.

¹⁴ City of Vancouver. (2014). "Marpole Community Plan." Vancouver.ca, vancouver.ca/home-property-development/marpole-community-plan.aspx.

¹⁵ Holden, M. et al. (2021). *South Vancouver & Marpole Neighbourhood Equity Report*. Urban Studies Program and Faculty of Health Sciences, Simon Fraser University in Partnership with South Vancouver Neighbourhood House and Marpole Neighbourhood House. <https://www.langaravoices.ca/wp-content/uploads/2022/11/SVNH-neighbourhood-equity-report-2021.pdf>

Shown below, half of Marpole residents spend 30+ minutes commuting to work and the walkability score is lower than city wide [see figure 6].¹⁶



Figure 6 Transit Graphs for South Vancouver. From South Vancouver & Marpole Neighbourhood Equity Report.

According to the “Spaces to Thrive: Vancouver Social Infrastructure Strategy - Current State Databook”, Marpole is part of the South Corridor and has about 5% of the social non-profits in the sample [see figure 8].¹⁷ The Cambie Corridor has expected growth in housing and populations which require additional social infrastructure commitments. The organizations in the area tend to focus on broad-reach services such as children, families, seniors and youth. Lastly, by centering density and henceforth amenities in certain neighbourhoods, there is a growing divide in Marpole.

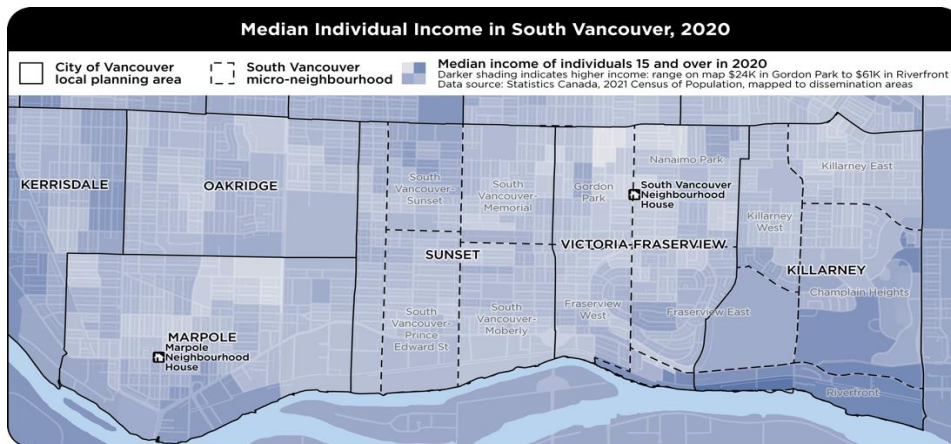


Figure 7 Map of Medium Individual Income in South Vancouver, 2020. From City of Vancouver.

¹⁶ Holden, M. et al. (2021). South Vancouver & Marpole Neighbourhood Equity Report. Urban Studies Program and Faculty of Health Sciences, Simon Fraser University in Partnership with South Vancouver Neighbourhood House and Marpole Neighbourhood House. <https://www.langaravoice.ca/wp-content/uploads/2022/11/SVNH-neighbourhood-equity-report-2021.pdf>

¹⁷ City of Vancouver. (2023). Current State Databook.

<https://vancouver.ca/files/cov/social-infrastructure-strategy-current-state-databook-2023.pdf>



Figure 8 Map of South Corridor Non Profit Organizations. From Current State Databook for the Social Infrastructure Strategy.

Further, there is an income division between high rise condos near the Skytrain station and the older multi-story buildings below 70th avenue. However, the main caveat for this data is that it heavily impacted by COVID supports by utilizing 2021 census data. It does represent a high-level picture of the diversity of incomes in the neighborhood [see figure 7].

Marpole Neighbourhood House’s mission is to provide a safe space and opportunities for community members to build capacity and a better neighbourhood.¹⁸ Due to a flood in 2013, Marpole Place, which a long serving community resource which provided free meals and activities for seniors, disabled and homeless populations, meant the community struggled to find spaces to host their events.¹⁹ Marpole Neighbourhood House took a slower and more inclusive approach to create programming as they want to hear about community needs first. They have relationships with several local organizations as service providers including YMCA Work BC and Marpole Oakridge Family Place²⁰ The house hosted 7 direct programs and 7 programs through partners including emergency food distribution and all age programming for preteens and seniors in 2021-2022.²¹ Due to the recent opening of Marpole Neighbourhood House, it is still developing

¹⁸ Marpole Neighbourhood House. “History, Mission and Vision.” Marpole Neighbourhood House, www.marpolenh.org/about/history-mission-vision/.

¹⁹ Marpole Neighbourhood House. “History, Mission and Vision.” Marpole Neighbourhood House, www.marpolenh.org/about/history-mission-vision/

²⁰ Vancouver is Awesome (2019, May 30). *Vancouver’s first Neighbourhood House in more than a decade opens in Marpole*. Vancouver Is Awesome. <https://www.vancouverisawesome.com/local-news/marpole-neighbourhood-house-vancouver-1943908>

²¹ Marpole Neighbourhood House. (2021). Annual Report. <https://tinylink.onl/dfe5>.

its programming and relationships with the community. However, the community has been really excited by the opportunity to rent and use space for their programming. There is a misting station outside the Neighbourhood House and often the space acts as a cooling or warming center during extreme weather events. It is an important space for the community to foster a sense of belonging and promote community development.

2.5 Heat Response in Marpole

There is a challenge to access community spaces in Marpole hence Marpole Neighbourhood House had a pressing responsibility to respond to extreme heat events in the area. The MNH staff attended the Heat Planning workshops and appreciated the proactive approach to heat planning. Nilda Borrino, the executive director of Marpole Neighbourhood House shared that they were able to implement a few initiatives that were shared by different organizations in attendance.

In response to the extreme heat events, Marpole Neighbourhood House created a hydration station which was a fridge outside of the facility stored with free water, electrolyte drinks and ice packs. The fridge was very well used, and a challenge to keep stocked. The MNH worked closely with Marpole Mutual Aid society to create mutual shared responsibility with the fridge so residents could donate and also take cooling supplies. MNH became a cooling center and expanded their open hours to serve more residents. However, the extended hours were not well used by the community as accessing the Neighbourhood House versus cooling in place may be difficult for vulnerable populations. The misting station outside of the Neighbourhood House was well used the entire summer.

In Marpole, often seniors lived in older three or four storey buildings which posed a challenge for seniors with mobility issues, the focus was to find ways to support those individuals to be in their own spaces and get the resources to them. Hence, MNH organized a “How to Cool in Place” workshops and one workshop was hosted by the University of British Columbia. The outreach coordinator did check ins with vulnerable seniors, provided site made cooling kits and provided ad hoc transportation to seniors to appointments.

The Marpole Neighbourhood House prioritizes seniors and residents with precarious housing for their extreme heat response. Marpole Neighbourhood House is utilizing a collaborative approach for future emergency planning as it is working with The Marpole Family Centre, Marpole Library and St Augustan Church to create senior emergency response program with support from a United Way grant.

2.6 South Vancouver Neighbourhood House

South Vancouver encompasses three neighbourhoods, Killarney, Victoria-Fraserview, and Sunset. South Vancouver Neighbourhood House recently launched the “Reframing South

Vancouver Initiative which was created to elevate the voices of racialized newcomers and other historically disadvantaged groups to advocate for systematic change.²² This approach uses a neighbourhood equity and anti-racism lens. Through asset mapping, South Vancouver residents demonstrated that South Vancouver is actually comprised of 11 micro-communities with different and distinct needs and identities.²³ Often framing South Vancouver as one community has diminished the specific and place-based needs of the community and resulted in fewer services and resource allocation.²⁴ Simon Fraser University partnered with South Vancouver Neighbourhood House produced a research report on neighbourhood inequity which highlighted the key concerns of resource provision in South Vancouver.²⁵

The map below demonstrates the median individual income in South Vancouver for 2020 including the 11 micro-communities created through asset mapping [see figure 9]. The 2020 income data is heavily impacted by COVID-19 income supports, so the median income may have been lower.

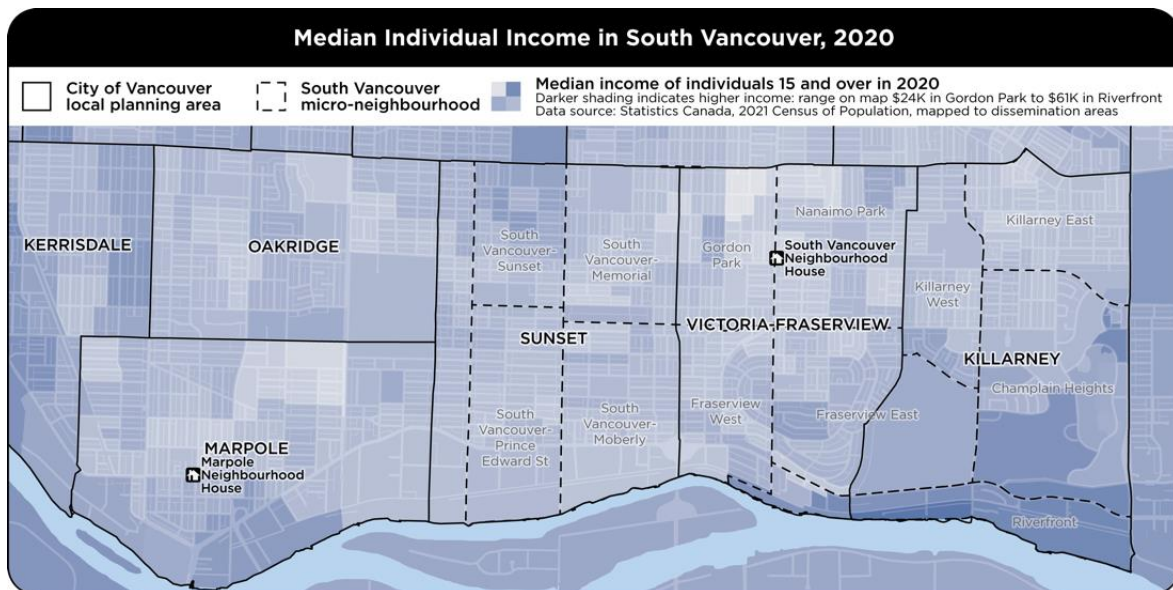


Figure 9 Map of Median Incomes in South Vancouver, 2020. From City of Vancouver.

²² South Vancouver Neighbourhood House & LevelUp Planning Collaborative Inc. (2023). South Vancouver Neighbourhood House - Reframing South Vancouver Initiative Evaluation Report . https://drive.google.com/file/d/1r9ydlfGmpTQ64oCZflhN3_fr1xj9ouRV/view

²³ South Vancouver Neighbourhood House & LevelUp Planning Collaborative Inc. (2023). South Vancouver Neighbourhood House - Reframing South Vancouver Initiative Evaluation Report . https://drive.google.com/file/d/1r9ydlfGmpTQ64oCZflhN3_fr1xj9ouRV/view

²⁴ South Vancouver Neighbourhood House & LevelUp Planning Collaborative Inc. (2023). South Vancouver Neighbourhood House - Reframing South Vancouver Initiative Evaluation Report. https://drive.google.com/file/d/1r9ydlfGmpTQ64oCZflhN3_fr1xj9ouRV/view

²⁵ Holden, M. et al. (2021). South Vancouver & Marpole Neighbourhood Equity Report. Urban Studies Program and Faculty of Health Sciences, Simon Fraser University in Partnership with South Vancouver Neighbourhood House and Marpole Neighbourhood House. <https://www.langaravoice.ca/wp-content/uploads/2022/11/SVNH-neighbourhood-equity-report-2021.pdf>

South Vancouver is a diverse, vibrant community with many multi-generational homes, a variety of household types, ethnic grocers and many different languages spoken. It has over 100,000 residents which was about one fifth of City of Vancouver’s population.²⁶ According to the 2016 census, 80% of the population is a visible minority compared to the city-wide average of 52% and the largest groups are Chinese, South Asian and Filipino, shown in figure 1.²⁷ Further, 60% of the population was born outside of Canada, 51% of households have children at home and 1.4% of the population are Indigenous population which is less than the city average [see figure 10].²⁸ All three of South Vancouver neighbourhoods have a lower Indigenous population rate than city average. South Vancouver Neighbourhood House is particularly important to newcomers in the community as 92% of the people accessing the Neighbourhood House first language is not English.²⁹ Further, many disadvantaged groups live in South Vancouver as 53% of the population is immigrants, 18% of Vancouver’s seniors live here and 15% of the seniors are low income. South Vancouver has a lower median personal income and a higher average household size than city wide.³⁰ The majority of residents work within sales, services and blue-collar industries and Victoria-Fraserview has a high number of individuals who did not receive formal education.³¹

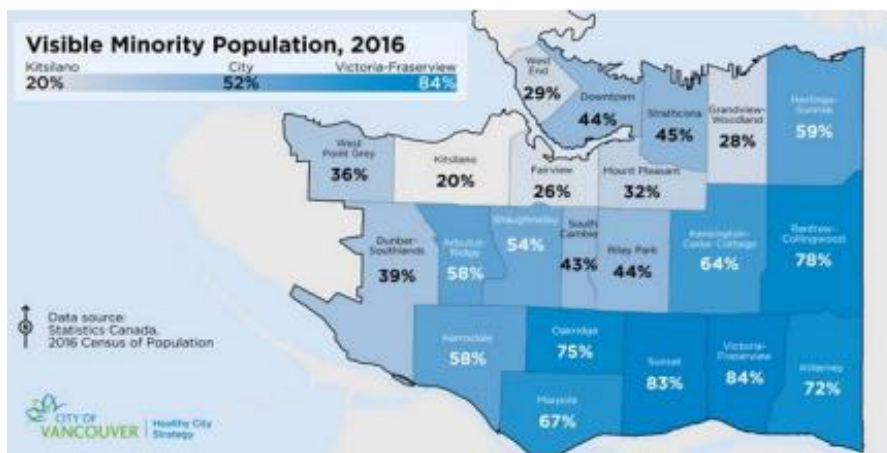


Figure 10 Map of Visible Minority Population, 2016 in Vancouver. From City of Vancouver.

²⁶ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.

²⁷ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.

²⁸ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.

²⁹ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.

³⁰ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.

³¹ City of Vancouver: Social Policy and Projects. (2020). Victoria-Fraserview Neighbourhood Social Indicators Profile. <https://vancouver.ca/files/cov/social-indicators-profile-victoria-fraserview.pdf>

South Vancouver has consistently experienced gaps and disadvantages in services, social infrastructure and resource allocation compared to other neighbourhoods in Vancouver. According to the “Spaces to Thrive: Vancouver Social Infrastructure Strategy - Current State Databook”, Killarney, Victoria-Fraserview, and Sunset are referred to the South East.³² The South East has one of the lowest numbers of social non-profits in the city as it only has 7 organizations out of the 400 organizations sampled, about 2% and four of them are located in Victoria-Fraserview [see figure 11 & 12].³³ This area has a very low concentration of food resources such as farmer markets or gardens. When looking at the number of social service spaces and nonprofit organizations compared to the number of disadvantaged groups residing in the area which was highlighted above, there is a clear gap.



Figure 11 Map of Vancouver Social Service Spaces. From Current State Databook for the Social Infrastructure Strategy

³² City of Vancouver. Social Policy. VANCOUVER SOCIAL INFRASTRUCTURE STRATEGY SPACES to THRIVE. <https://vancouver.ca/files/cov/social-infrastructure-strategy-current-state-databook-2023.pdf>

³³ City of Vancouver. (2023). Current State Databook. <https://vancouver.ca/files/cov/social-infrastructure-strategy-current-state-databook-2023.pdf>

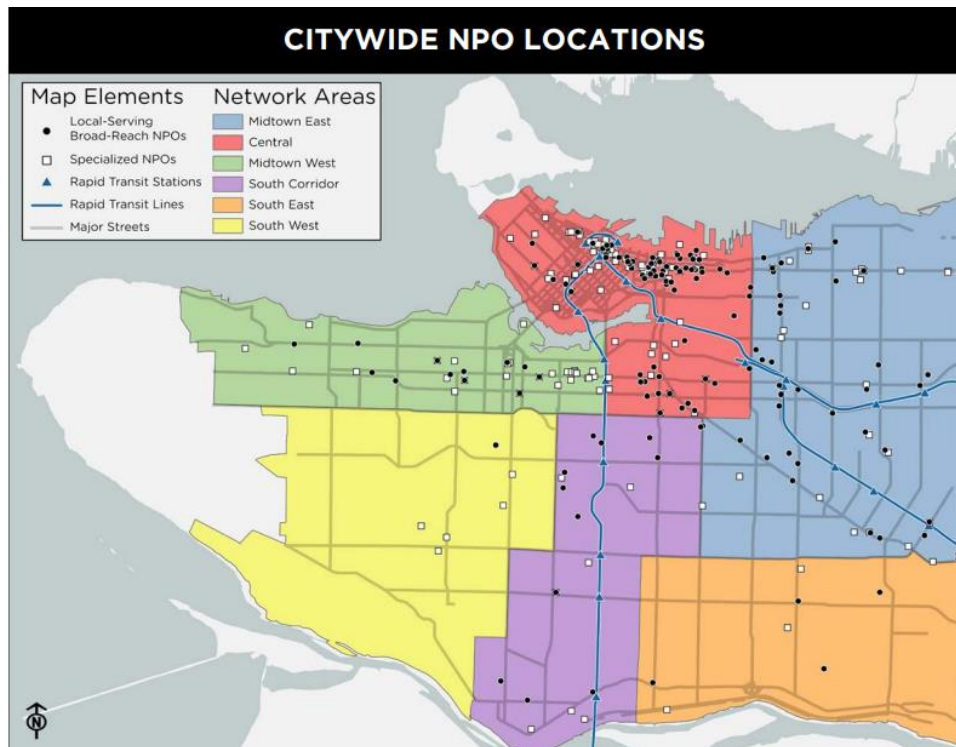


Figure 12 Map of Non-Profit Organizations in Vancouver. From Current State Databook for the Social Infrastructure Strategy.

There is no community plan for any of the three South Vancouver neighbourhoods. The Vancouver Plan is meant to fill the gaps neighbourhoods without plans, but this does not support local neighbourhood level planning. Community Amenity Contributions are a neighbourhood financing tool as developers provide in kind or cash contributions to expand city facilities to offset the growth caused by the development. This approach can prioritize neighbourhood planning in areas of rezoning and development activities. Due to this, CACs in South Vancouver are negotiated on a case-by-case basis since the neighbourhood does not have a plan. For example, in 2021, there were 75 CAC projects completed city wide and zero were in South Vancouver.³⁴ This does not necessarily mean that South Vancouver residents are advocating for development or rezoning activity as many residents are from marginalized groups and at risk from displacement. However, it does provide one possible reason for the lack of investment and resource allocation in South Vancouver.

The transit score is lower in South Vancouver neighbourhoods compared to city average, there are longer commute times and there are no Mobi stations in South Vancouver.³⁵ There are fewer

³⁴ City of Vancouver. Annual Reports on Development Contributions. 2022, vancouver.ca/files/cov/2022-04-27-annual-reports-on-development-contributions.pdf.

³⁵ Holden, M. (2021). South Vancouver & Marpole Neighbourhood Equity Report. Urban Studies Program and Faculty of Health Sciences, Simon Fraser University in Partnership with South Vancouver Neighbourhood House and Marpole Neighbourhood House. <https://www.langaravoice.ca/wp-content/uploads/2022/11/SVNH-neighbourhood-equity-report-2021.pdf>

urgent and primary care facilities while Victoria-Fraserview and Killarney communities have no clinics. There are significantly fewer cultural spaces and public art installations in South Vancouver and zero grants were received from Heritage Canada in 2016-2019.³⁶ The majority of the heritage grants are concentrated in the downtown region [see figure 13].

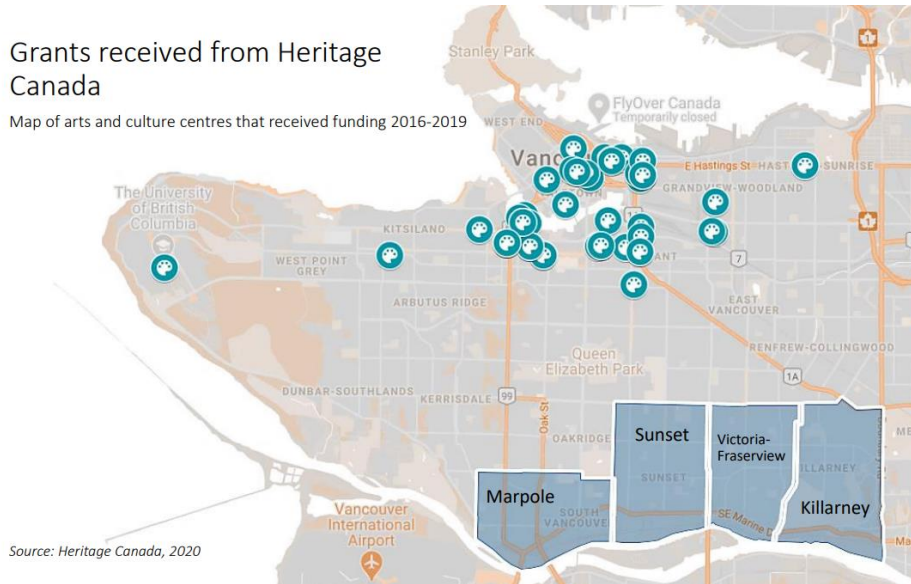


Figure 13 Map of Grants Received from Heritage Canada in Vancouver, 2016-2019. From South Vancouver & Marpole Neighbourhood Equity Report.

There are no misting stations or spray parks in the three South Vancouver neighbourhoods which has problematic implications during extreme heat events.³⁷ There is a lack of Queer, Indigenous, and newcomer services in South Vancouver which requires the Neighbourhood House to try to fill the gap. There are unmet needs for social infrastructure, transit, cultural programming, food security, healthcare and community assets. The Reframing South Vancouver Initiative conducted asset mapping, needs mapping and established Neighbourhood Advisory Committee from September 2021 to March 2023. The Initiative engaged with 1500+ residents and held 40+ engagement sessions, 21 focus groups and 21 community outreach events.³⁸ The findings demonstrated the number of barriers across multiple sectors [see figure 14].

³⁶ City of Vancouver. (n.d.). Cultural Spaces. Open Data Portal. Retrieved May 31, 2023, from <https://tinylink.onl/2c5b>

³⁷ City of Vancouver. (n.d.-b). Stay safe in the summer heat. City of Vancouver. Retrieved May 31, 2023, from <https://vancouver.ca/home-property-development/hot-weather.aspx>

³⁸ South Vancouver Neighbourhood House & LevelUp Planning Collaborative Inc. (2023). South Vancouver Neighbourhood House - Reframing South Vancouver Initiative Evaluation Report. https://drive.google.com/file/d/1r9ydlfGmpTQ64oCZflhN3_fr1xj9ouRV/view

Finding # 1

South Vancouver residents face numerous barriers to community engagement, including:

- lack of community facilities and social spaces
- inaccessibility due to limited transit options
- lack of programs and events
- language and cultural barriers
- lack of immigrant and newcomer support
- safety concerns
- lack of understanding of available resources
- lack of time and money
- lack of social advocacy initiatives in South Vancouver
- distrust in authority
- fear of political participation
- age and digital illiteracy
- limited and high-barrier ways to engage with the City of Vancouver

Figure 14 List of Barriers faced by South Vancouver Residents. From Reframing South Vancouver Initiative Evaluation Report.

There has been considerable investment in South Vancouver which has been led by community organizing. The Sunset Community Centre Association has been advocating for a Sunset Seniors Centre and has succeeded.³⁹ The new centre will include a fitness room, commercial kitchen and outdoor areas for gardening and gathering.⁴⁰ Moreover, Punjabi Market is a 3-block commercial district located in the Sunset neighbourhood and has been a 'destination for South Asian culture and commerce since the 1970s.'⁴¹ The Punjabi Market Collective, a community led group, has been leading Punjabi Market regeneration through hosting a street festival, recording oral history and coordinating a mural project.⁴² The City of Vancouver has been and is continuing to support the Punjabi Market regeneration.

Despite these structural inequalities, South Vancouver Neighbourhood House is considered a broad reach organization which has provided consistent and comprehensive programming. Their vision is to ensure every South Vancouver resident lives in a healthy and engaged community.⁴³ The Neighbourhood House is one of the few organizations in the area that has queer competency

³⁹City of Vancouver. (n.d.-c). Sunset Seniors Centre project. Vancouver.ca. <https://vancouver.ca/parks-recreation-culture/sunset-seniors-centre-project.aspx>

⁴⁰ City of Vancouver. (n.d.-c). Sunset Seniors Centre project. Vancouver.ca. <https://vancouver.ca/parks-recreation-culture/sunset-seniors-centre-project.aspx>

⁴¹ City of Vancouver. (n.d.-b). Punjabi Market. Vancouver.ca. <https://vancouver.ca/home-property-development/punjabi-market.aspx>

⁴² Punjabi Market Collective. (n.d.). History. Punjabi Market Collective. Retrieved October 1, 2023, from <https://www.punjabimarket.ca/history-punjabi-market>

⁴³ South Vancouver Neighbourhood House. (2022). Annual Report 2021-2022. <https://www.southvan.org/wp-content/uploads/sites/7/2022/07/SVNH-Annual-Report-2021-2022.pdf>

training.⁴⁴ In 2021-2022, there were 13,000 unique individuals serviced, 140 programs, 2634 community meals and 15 sites.⁴⁵ It is the second most popular neighbourhood house which has 70% of women accessing their services and an all-ages approach to support seniors and families.⁴⁶ South Vancouver had a critical role in responding to emergencies such as organizing a food bank during the COVID-19 pandemic, delivering cool kits during the extreme heat events and conducting wellness checks on vulnerable individuals. There is a strong sense of belonging created at the Neighbourhood House despite the disproportional resource allocation in South Vancouver.

2.7 Heat Response in South Vancouver

South Vancouver Neighbourhood House (SVNH) staff shared that the heat dome was a launch pad to recognize the extreme heat event planning needs to be more proactive. The shared sentiment was that often when a heat dome hits, it is too late. South Vancouver Neighbourhood House staff participated in the heat planning webinars and appreciated having them as a resource. They also benefited from connecting with different service providers that they may not have worked with before. They felt the workshops were the backbone to their work and provided them with the tools and funding necessary. The printed resources in multiple languages, cool kits and networks of connections were extremely useful.



Figure 15 South Vancouver Neighbourhood House Staff with cool kits and fans that were provided to residents. From South Vancouver Neighbourhood House.

⁴⁴ Holden, M. et al. (2021). South Vancouver & Marpole Neighbourhood Equity Report. Urban Studies Program and Faculty of Health Sciences, Simon Fraser University in Partnership with South Vancouver Neighbourhood House and Marpole Neighbourhood House. <https://www.langaravoices.ca/wp-content/uploads/2022/11/SVNH-neighbourhood-equity-report-2021.pdf>

⁴⁵ South Vancouver Neighbourhood House. (2022). Annual Report 2021-2022. <https://www.southvan.org/wp-content/uploads/sites/7/2022/07/SVNH-Annual-Report-2021-2022.pdf>

⁴⁶ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.



Figure 16 Group of South Vancouver Seniors Posing with DIY Air Filters that were made in a workshop in collaborating with South Vancouver Neighbourhood House, City of Vancouver and Simon Fraser University.

South Vancouver Neighbourhood House hosts various senior programming due to the high number of seniors in the area and the programming is usually culturally aware and language specific and distributed cool kits through various outreach programs [see figure 15]. One program called 'Better at Home' supports elderly residents age in place and provides different services. Through this program, SVNH was already connected with many seniors that are homebound, isolated and less likely to visit cooling centres, so they were able to reach out to these folks and provide information and heat resources. Often the expectations for cooling centers were not aligned with the capacity of the organization as they did not provide activities or food and were just a room in a facility which also difficult for staff to manage. Further, it is much more challenging and for non-English speakers who are unfamiliar with transit systems and new facilities, and taking transit in extreme heat isn't always safe. SVNH is using a multi-pronged approach to address extreme weather that considers personal assets and offers options that can address the unique needs of each individual. So for some, SVNH encourages cooling centres and offer cooling centre maps, if it makes sense and they have transportation to access centres, but for many of the folks they support, and certainly the most vulnerable, cooling in place is a much more realistic focus as they believe these tools will be used more often than cooling centres due to the lower barriers to using cool kits.

The extreme heat event acted like a catalyst to leverage existing partnerships as some partners gladly accepted cooling workshops while other relationships were difficult to start. In South Vancouver, there are low-income senior buildings that are run by societies or nonprofits. The Seniors team actively visited these buildings to organize extreme heat education session in the common room and distribute cool kits. There is a large percentage of non-English speakers in general in our neighbourhoods, hence SVNH try to cover the languages most commonly spoken

and bring outreach staff and volunteers that speak these languages. Cantonese is certainly the most beneficial language according to SVNH staff. Further South Vancouver Senior Council's volunteers also attend these events to offer a senior's lenses. Some seniors find it difficult to access SVNH but the staff remove barriers by bringing programs to the community. This is a good way to start building trusting and strong relationships with community members that may be hard to reach. Some folks are these buildings are active members at SVNH already and the team are hoping to support more marginalized seniors by strengthening these networks.

The SVNH team also responds to ad hoc support calls as many residents will reach out to SVNH staff if they are concerned about a family member, neighbour or community member. SVNH acts like a hub to connect different organizations. They were able to connect Khalsa Aid who was offering air conditioners, to a building manager that wanted some to create an onsite cooling centre. Further, SVNH made the connection to Better Environmentally Sound Transportation (BEST) to pilot shuttles for seniors to access the cooling centers as transportation remains a large barrier. South Vancouver Neighbourhood House partnered with Seniors Hub Council members to create peer-led senior focused presentations and engagement, to teach other seniors how to make their own cool kits at home. The South Vancouver Neighbourhood House also updated their Seniors Hub website with heat information and sent out a special Heat Ready e-newsletter bulletin. They also organized heat events and shared information through their existing programs, including language specific peer-lead workshops with their Cantonese Wellness, South Asian Men's and Women's Wellness, and Intercultural Wellness groups.

South Vancouver is continuing its emergency planning work through hiring additional staff and receiving funding from United Way. In the fall, the SVNH team will be at the seniors buildings every month to inform about risks about winter weather and Falls Prevention. SVNH is looking to understand what is currently in place and do an environmental scan to see what localized next steps and new/existing partnerships might look like.

3.0 Literature Review

3.1 City of Vancouver Policy Landscape

The goals of this project support several strategic planning initiatives by the City of Vancouver. The various policies all recognize the need for place-based relationships for a community-led emergency response.

Spaces to Thrive: Vancouver Social Infrastructure Strategy

The Spaces to Thrive strategy was adopted by City Council in December 2021. The strategy is the first of its kind for the City and is a 10-year policy and partnership framework for City-owned and City-supported social infrastructure. Social infrastructure are physical places and organizations where community members can come together. A few examples include Neighbourhood Houses, community centers, faith-based spaces and libraries. The vision of this strategy is “for all residents to enjoy the highest level of connectedness and well-being through access to basic human needs and equitable, resilient social infrastructure.”⁴⁷ Vancouver’s social infrastructure ecosystem is facing challenges as there are increasing inequalities, insufficient community serving spaces, unsustainable operational funding and community serving spaces continue to be lost. One finding from this strategy is that individual social infrastructure spaces (such as neighbourhood houses) and programs are often part of an ecosystem of services, spaces, and people – acting as a social safety net for equity-denied communities. Hence why mapping the ecosystems is an important action to supporting equitable social infrastructure across the city.

This project supports 2 key policy directions of the strategy:

- Partnerships and Capacity Support: Strengthen the City’s role in partnerships and capacity support for the social sector
- Support What Already Exists: Enable renewal, renovation, replacement, and expansion of

This project directly responds to actions outlined in the Spaces to Thrive strategy to map service areas and networks around the City.

Resilient Vancouver Strategy

Resilient Vancouver is a citywide strategy that was approved by City Council in April 2019. The strategy builds and enhances the capacity of the City of Vancouver to serve diverse communities by reducing chronic stresses, and to withstand and recover from inevitable shocks. The City of Vancouver is a member of the Resilient Cities Network (formerly 100 Resilient Cities) which is a

⁴⁷ City of Vancouver. (2021). Spaces to Thrive: Vancouver Social Infrastructure Strategy. <https://vancouver.ca/people-programs/social-infrastructure-strategy.aspx>

global network of cities that are aiming to become more resilient to the physical, social and economic challenges of the 21st century. Resilience is the “capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and thrive.”⁴⁸ The strategy prioritizes the concept of neighbourhood resilience which empowers hyper local networks of people and organizations to strengthen services and connections day-to-day, and leverage these to respond to emergencies such as extreme heat events [see figure 17].

This project supports two priorities of the strategy:

- Resilience Priority 1: Thriving and Prepared Neighbourhoods
- Resilience Priority 2: Proactive and Collaborative City



Figure 17 Resilient Neighbourhoods Program Graphic. From Resilient Vancouver.

Equity Framework: Getting Our House in Order

The City of Vancouver’s Equity Framework was approved by City Council in July 2021. The Equity Framework emerged in 2017 from the need for a nuanced understanding of equity to be shared

⁴⁸ City of Vancouver. (2019). *Resilient Vancouver*. <https://vancouver.ca/files/cov/resilient-vancouver-strategy.pdf>
26

consistently across City departments. The Equity framework commits to equity as an outcome and equity as a process to systemically prioritize the most marginalized in the city.⁴⁹ The Equity Framework states it is the responsibility of each City department to align their work with equity in mind including in the priority area of external community facing functions such as social infrastructure organizations.

This project is explored through an equity lens based on the City's recently adopted Equity Framework, this work will reference the dynamics of these relationships through the interplay between different aspects of identity including race, religion, socio-economic status, immigration status, gender orientation and sexuality.

Climate Adaption Strategy

The Climate Adaptation Strategy was created in 2012 and updated in 2018. The goals of the actions in the strategy are to minimize climate change impacts and enhance Vancouver's capacity to withstand climate change impacts.⁵⁰ The Urban Forest Strategy focuses on reducing the urban heat island effect and tree canopy equity. Further, this project aligns the core action priority of Connected and Prepared Communities.

VanPlay Park Board Strategy

VanPlay is Vancouver's Parks and Recreation Service Master Plan, guides the work of the Vancouver Board of Parks and Recreation. In October 2020, the Park Board Commissioners approved the VanPlay provides a 100-year vision, 25-year outlook and 10-year implementation plan.⁵¹ One strategic bold move for the plan is Initiative Zones which are a geographic priority setting tool to identify historically under-served areas [see figure 18]. Through figuring out indicators for park access gaps, demand for low barrier recreation and urban forest canopy gaps, Initiative Zones were mapped which include South Vancouver and Marpole.

⁴⁹ City of Vancouver (2021). Equity Framework: Getting Our House in Order. <https://vancouver.ca/files/cov/equity-framework.pdf>

⁵⁰ City of Vancouver. (2018). Climate Adaptation Strategy. <https://vancouver.ca/files/cov/climate-change-adaptation-strategy.pdf>

⁵¹ City of Vancouver (2020). VanPlay Park Board Strategy. <https://vancouver.ca/files/cov/vanplay-strategic-bold-moves-equity-chapter.pdf>

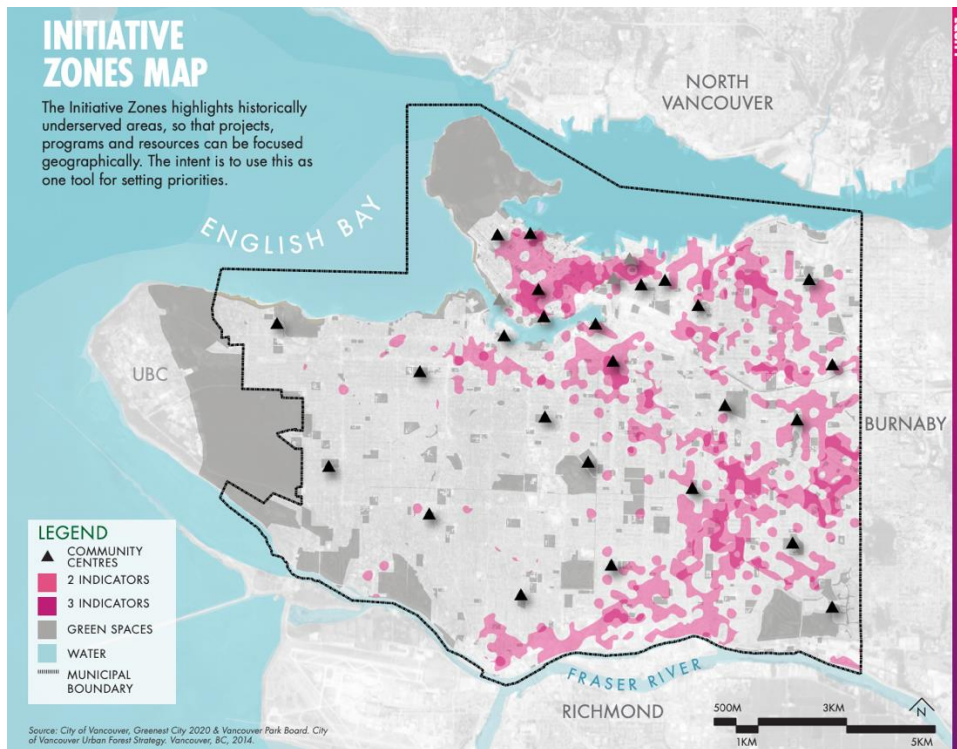


Figure 18 Map of Initiative Zones in Vancouver. From VanPlay.

British Columbia's Policy Response

Currently, there is no policy outlining the province's prevention response to extreme heat. However, the province has implemented many new initiatives including installing 8000 air conditioners over the next 3 years for low-income individuals, supporting long term care facilities to upgrade HVAC systems and introducing the BC Heat Alert and Response System (BC HARS) to broadcast emergency alerts.⁵²

3.2 Community Responses to Extreme Heat Events

It has been demonstrated consistently that extreme heat events and broadly climate emergencies impact vulnerable populations disproportionately and first. This was true in Vancouver's experience with heat domes in 2021 which impacted seniors and seniors living by themselves. South Vancouver has 15% of the senior population in Vancouver and 18% of them are low income.⁵³ This pattern has occurred in different cities across the world as urban centers continue to manage more frequent and more intense extreme heat events. Extreme heat events add pressure and strain on emergency management services, water, energy and transportation

⁵² British Columbia Gov News. (2023). Province Launches New Initiative to Protect People during Extreme Heat Emergencies. news.gov.bc.ca/releases/2023HLTH0095-001044.

⁵³ Social Indicators and Trends: Population Data in Vancouver Neighbourhood House Catchments. (2021). City of Vancouver.

systems as well as food and livelihood.⁵⁴ Extreme heat has impacts on the individual, community, and systems level. In Canada, extreme heat is the leading cause of illness and death from weather-related hazards and in the and the United States, extreme heat kills more people than hurricanes, floods and tornadoes combined.⁵⁵⁵⁶

Preparing Our Home, an Indigenous-led disaster risk and resilience network documented the 2021 heat wave experiences in five British Columbia First Nations.⁵⁷ For the Tsleil-Waututh Nation, an urban Indigenous community, community health was critical in responding to extreme heat. The Community Care practitioners in the Nation provided enhanced wellness checks and discovered that Elders needed to be moved out of the community due to less than satisfactory conditions. There was hesitancy from the Elders as leaving their homes and community was very scary. This echoes the experience of the neighbourhood houses as residents often want to cool in place as venturing outside of their homes can be unnerving. Often, Indigenous communities stress the importance of reciprocal relationships as a key aspect of their way of knowing and doing. The experience taught the disaster risk and resilience network that community is solution as Patrick Michell, former Chief of Kanaka Bar Indian Band shared:

“What are our solutions for extreme heat? When we look at this from an Indigenous perspective, it’s community. First and foremost, we have to look after each other.”

In 1995, Chicago was hit with an extreme heat event which led to the death of 739 residents.⁵⁸ The situation was very similar to Vancouver’s heat dome in 2021 that seniors who lived alone in areas with urban heat effect were majority of the victims. The spatial layout of the city contributed to the different rates of mortality across the city as well as the slow response from city organizations. The mortality rate between white and African American residents were 1.5 to 1 as African American neighbourhoods were social isolated with limited social supports.⁵⁹ Further senior men were more likely to die due to a lack of social connection, which means no neighbours or community organizations were checking in on them. This disaster demonstrated how extreme heat events can be social disasters that are more silent over physically destructive and visible as Erik Klinenberg, the author of *Heat Wave: A Social Autopsy of Disaster in Chicago*, argues:

⁵⁴ UBC Climate Hub. “How to Stay Cool in Extreme Heat.” ubclimatehub.ca/project/how-to-stay-cool-in-extreme-heat/.

⁵⁵ Adams-Fuller, T. (2023, July 1). *Extreme heat is deadlier than hurricanes, floods and tornadoes combined*. Scientific American. <https://www.scientificamerican.com/article/extreme-heat-is-deadlier-than-hurricanes-floods-and-tornadoes-combined/>

⁵⁶ Science. (2021). *Surviving the heat: The impacts of the 2021 western heat dome in Canada*. Government of Canada. <https://science.gc.ca/site/science/en/blogs/science-health/surviving-heat-impacts-2021-western-heat-dome-canada>

⁵⁷ Canadian Climate Institute. (2023, June 12). *Community is the solution*. <https://climateinstitute.ca/publications/community-solution-2021-extreme-heat-emergency-experience-british-columbia-first-nations/>

⁵⁸ Klinenberg, E. (2002). *Heat wave: A social autopsy of disaster in Chicago*. University of Chicago Press.

⁵⁹ Klinenberg, E. (2002). *Heat wave: A social autopsy of disaster in Chicago*. University of Chicago Press.

“Hundreds of Chicago residents died alone, behind locked doors and sealed windows, out of contact with friends, family and neighbors, unassisted by public agencies or community groups. There’s nothing natural about that.”

The “Lived Experience of Extreme Heat in British Columbia” report consulted service providers across the province to develop recommendations for the province. One of the key findings that was shared by all service providers was that social networks are critical to keep people informed, connected and safe.⁶⁰ Health Canada also suggests investing in community response plans will reduce heat illnesses and deaths for most heat-vulnerable populations during an extreme heat event.⁶¹ In the case of heat related risks due to social isolation and age, having a wellness check from a social service and the successful coordination between social services agencies can be the difference between life and death for many vulnerable populations. Lastly, service providers in British Columbia expressed the need for increasing community capacity and support to build emergency response programs.⁶²

3.3 Social Network Analysis

The methodology used for this research project is social network analysis, otherwise known as network mapping. Social network analysis is an analytical tool to map and measure relationships, flows, and interactions between people, groups and organizations [see figure 19].⁶³ Networks are a set of actors and the relationship between them.⁶⁴ The network members or actors are defined as nodes which are tied to each other.⁶⁵ Social network analysis can help understand the big picture of how organizations interact and answer questions about their strength of relationships and their changing dynamics.

⁶⁰ Yumagulova, Lilia, et al. (2022). LIVED EXPERIENCE of EXTREME HEAT in B.C. Final Report to the Climate Action Secretariat. https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/resources/lived_experience_of_extreme_heat_in_bc_final_report.pdf

⁶¹ Health Canada. Heat Alert and Response Systems to Protect Health: Best Practices Guidebook. 2012, www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/climat/response-intervention/response-intervention-eng.pdf.

⁶² Yumagulova, Lilia, et al. (2022). LIVED EXPERIENCE of EXTREME HEAT in B.C. Final Report to the Climate Action Secretariat. https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/resources/lived_experience_of_extreme_heat_in_bc_final_report.pdf

⁶³ Marin, A., & Wellman, B. (2014). Social network analysis: An introduction. The Sage Handbook of Social Network Analysis. SAGE Publications Ltd, <https://doi.org/10.4135/9781446294413>

⁶⁴ Marin, A., & Wellman, B. (2014). Social network analysis: An introduction. The Sage Handbook of Social Network Analysis. SAGE Publications Ltd, <https://doi.org/10.4135/9781446294413>

⁶⁵ Wasserman S., Faust K. 1994. Social Network Analysis: Methods and Applications. Cambridge: Cambridge University Press

Neighbourhood resilience understands that the most successful responses to extreme heat events and climate emergency are through actors and organizations working together. This exercise can expose gaps in actors and relationships as well as opportunities for the Neighbourhood House working together.

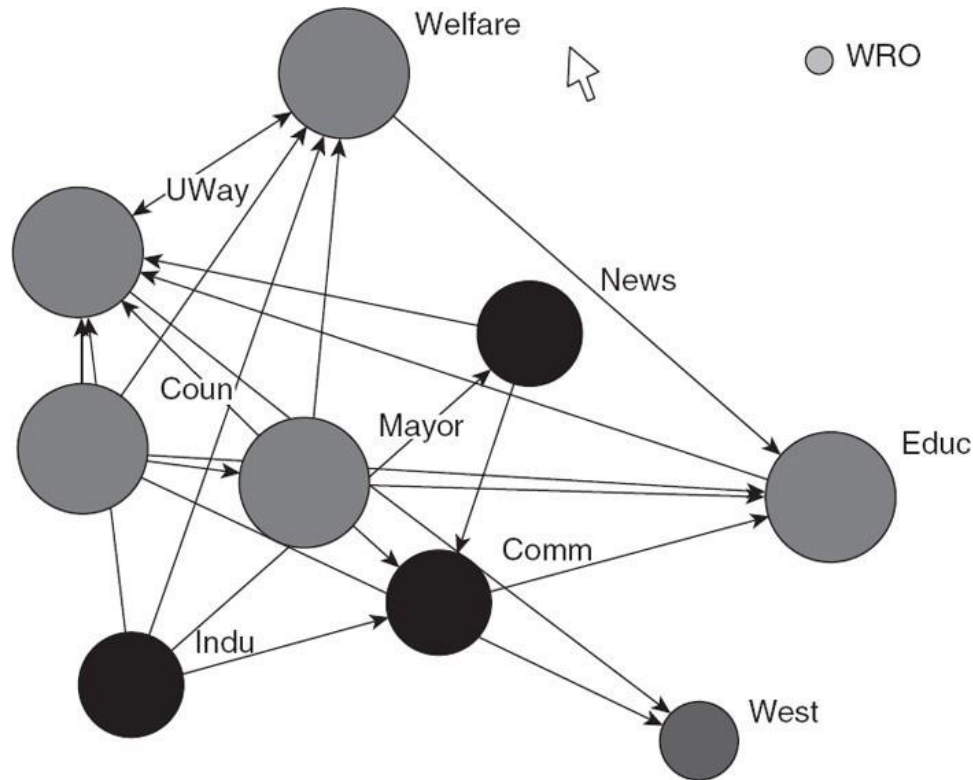


Figure 19 Example of Social Network Analysis. From SAGE Publications.

There can be the inclusion of different metrics to measure relationships. This can be measured in a few different ways:

- **Binary:** if a relationship is present or not
- **Types of ties:** Directed ties are those that go from one node to another, while undirected ties exist between two nodes in no particular direction.
- **Degree centrality** is counting the number of connections an element has.
- **Closeness** measures the distance each element is from all other elements.
- **Betweenness** centrality measures how many times an element lies on the shortest path between two other elements.

Social network analysis visualizes relationships and these visualizations can support an understanding of how groups work together.⁶⁶ This includes understanding how groups can work more effectively together to reach their goals. This is important for complex and large programs which cannot be solved by a single actor.⁶⁷ Social network analysis identifies potential partners and opportunities for collaboration while understanding which existing relationships need nurturing. Further through understanding the flow, structure and similarities in the network, social network analysis can support organizations in tailoring their outreach efforts. This can include mutual learning through sharing resources, networks and knowledge to work towards collective impact.

Social network analysis is not a theory or a methodology but is a perspective that provides a way to look at a problem.⁶⁸ Therefore, it can offer answers about relationships but cannot predict inequality or how organizations can ensure success. Further, social network analysis tries to quantify and map relationships which can be very difficult to do due to the elasticity of relationships. Lastly, it can be difficult to integrate different perspectives from different actors into one cohesive map.

An example of a social network analysis is mapping Britannia Community Services Centre COVID-19 pandemic volunteer network [see figure 20].⁶⁹ Britannia Community Services Centre is a seventeen-acre site, located in East Vancouver, made up of gyms, a pool, skating rink, library, seniors centre, teen centre, child care, and a secondary school.⁷⁰ Prior to the pandemic, Britannia was able to maintain a strong culture of volunteerism which was able to be mobilized during the pandemic, through the strength of existing volunteer relationships.⁷¹ Britannia completed a social network analysis of its volunteer community. This map demonstrated the complex but powerful collective force of partners working together on various issues. Britannia is also to understand the nuances of which supported which programs and possible opportunities and gaps to mobilize organizations further.

⁶⁶ Marin, A., & Wellman, B. (2014). Social network analysis: An introduction. The Sage Handbook of Social Network Analysis. SAGE Publications Ltd, <https://doi.org/10.4135/9781446294413>

⁶⁷ Dempwolf, C. S., & Lyles, L. W. (2012). The Uses of Social Network Analysis in Planning: A Review of the Literature. *Journal of Planning Literature*, 27(1), 3- 21. <https://doi.org/10.1177/0885412211411092>

⁶⁸ Marin, A., & Wellman, B. (2014). Social network analysis: An introduction. The Sage Handbook of Social Network Analysis. SAGE Publications Ltd, <https://doi.org/10.4135/9781446294413>

⁶⁹ Britannia Community Services Centre. COMING TOGETHER during a PANDEMIC: A COMMUNITY INQUIRY into BRITANNIA'S COVID-19 RESPONSE. www.britanniacentre.org/database/files/library/COVID_19_Response_v5.pdf.

⁷⁰ Britannia Community Services Centre. COMING TOGETHER during a PANDEMIC: A COMMUNITY INQUIRY into BRITANNIA'S COVID-19 RESPONSE. www.britanniacentre.org/database/files/library/COVID_19_Response_v5.pdf.

⁷¹ Britannia Community Services Centre. COMING TOGETHER during a PANDEMIC: A COMMUNITY INQUIRY into BRITANNIA'S COVID-19 RESPONSE. www.britanniacentre.org/database/files/library/COVID_19_Response_v5.pdf.

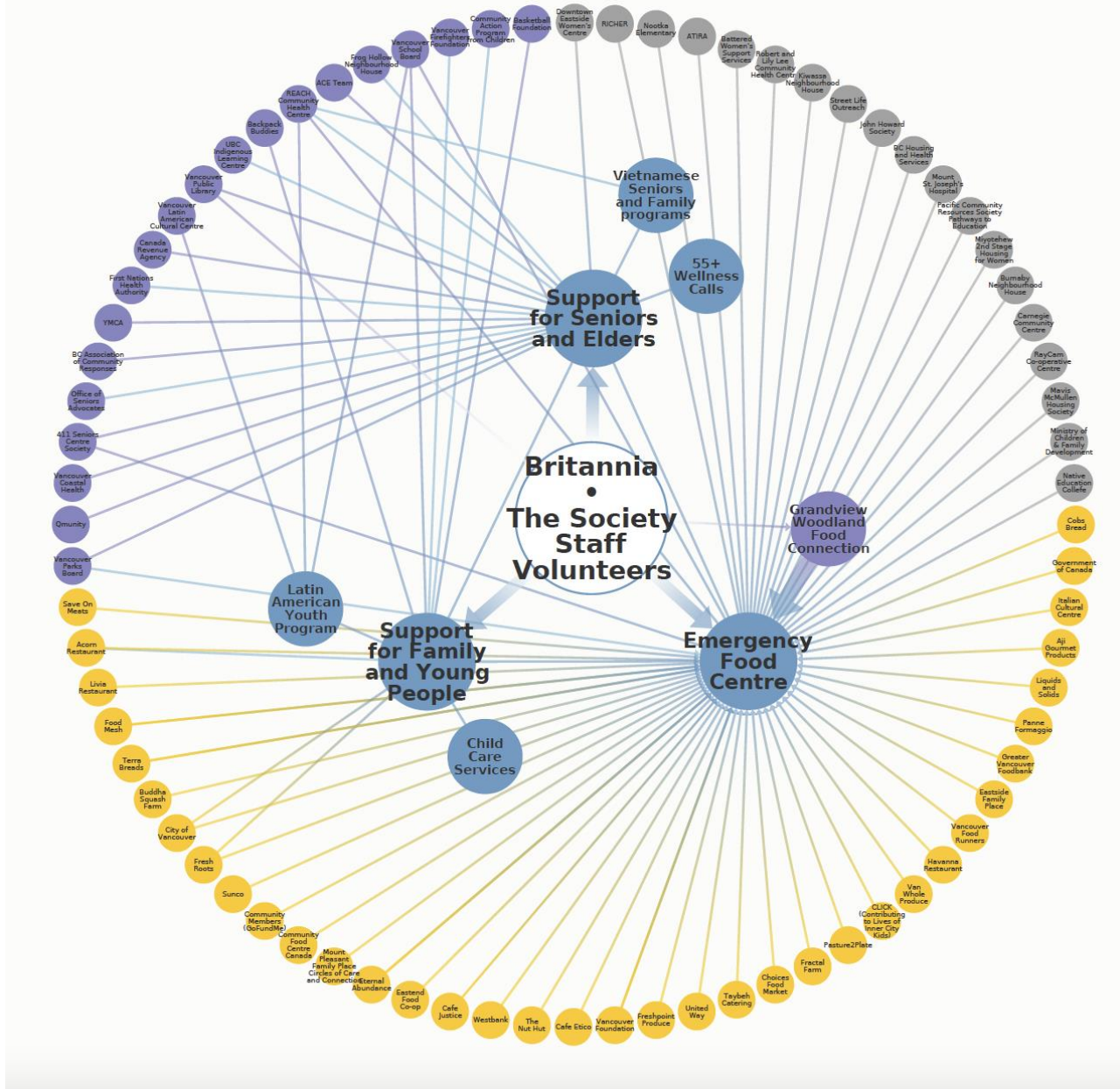


Figure 20 Map of Britannia's COVID-19 Volunteer Response Social Network Analysis. From Britannia Community Services Centre.

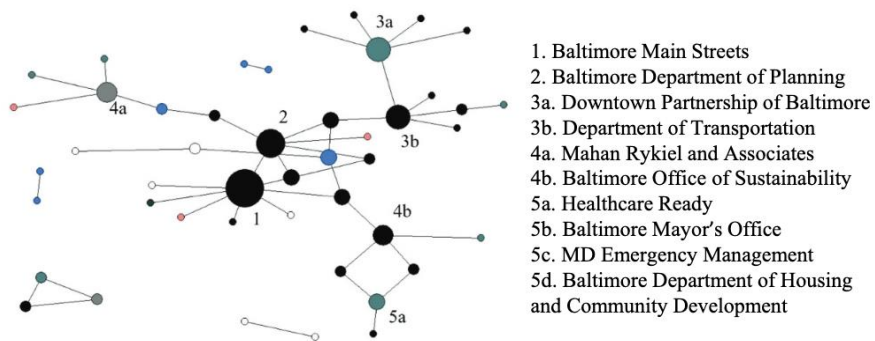


Figure 2. Most connected organizations in Baltimore.

Figure 21 Social Network Analysis Map for Urban Resilience in Baltimore. From Journal of Urban Affairs.

The purpose of this social network analysis was to understand which actors were collaborating in Baltimore on urban resilience.⁷² The study looked at four different cities to understand how structures of collaboration are different and similar [see figure 21]. The social network analysis was used to identify the most central organizations involved in urban resilience governance networks. The methodology was distributing a survey to the most senior employee at individual departments in respective city government organizations. Then additional surveys were sent to the most senior employee in the additional organization that were named as partner. The survey asked how frequently the two organizations collaborate. The social network analysis identified the major players in urban resilience and how they are connected.

⁷² Hannibal, B., Meerow, S., Woodruff, S. C., Roy, M., Gilbertson, P. G., & Matos, M. (2022). Who collaborates on urban resilience? an analysis of flood resilience planning networks in four coastal cities. *Journal of Urban Affairs*, ahead-of-print(ahead-of-print), 1-18. <https://doi.org/10.1080/07352166.2022.2137033>

4.0 Methodology

4.1 Methods for Gathering Information

This project interviewed 10 individuals virtually from different organizations who all responded to extreme heat at the community level in South Vancouver and Marpole. The organizations who were interviewed were:

Organization	Number of Participant Interviews	Category	Geographic Area
South Vancouver Neighbourhood House	2	Non-Profit	South Vancouver
Marpole Neighbourhood House	2	Non-Profit	Marpole
City of Vancouver	2	Government Agency	South Vancouver & Marpole
Seniors Hub Council	1	Volunteer Based Organization	South Vancouver
Moberly Arts Centre	1	Community Centre	South Vancouver
St Augustine's Church	1	Faith Based Organization	Marpole
Fair Haven Homes Society	1	Housing Provider	South Vancouver

I began by interviewing South Vancouver Neighbourhood House and Marpole Neighbourhood House staff. During the interviews, I asked the interviewees to connect me with organizations that they felt were a good fit for this project, hence I used the snowball sampling method.

The interview approach was a mix of two methods but based on semi structured qualitative interviews. The first method was the free recall method and multiple criterion recognition questions for the social network analysis. This can look like:

- What organizations did you work with most?
- What was your experience working with this organization?

The second approach was the multiple criterion recognition questions for the social network analysis. For each actor, I required the following information:

- Name of Organization
- Description
- Relationship (Mutual or Directed)
- Category of Organization
- Closeness (1-5)
- New or Old Relationship
- Type of Heat Response Support
- Experience

I explained how defining closeness is not a perfect science but to think about how often you contact this organization and the level of trust between the two organizations.

The goal of the second part of the interview is to support the development of recommendations. This included open-ended questions on Neighbourhood House staff's experience with extreme heat planning. This looked like:

- As a result of working through the lens of a heat emergency, was there anything new that was discovered, open any door or highlight anything new that may not know of? Would any of the learning translate or transfer to non-emergency program?
- What support and resources would you require to fully respond to extreme heat events?

At the start of each interview, I introduced myself, the project and explained consent and privacy to the interviewees. I explained how the report that I will write will be owned by the City of Vancouver, Marpole Neighbourhood House and South Vancouver Neighbourhood House. If I include any stories or direct quotes from the interviewee, I asked permission to include them. Further, the answers to the interview were kept on the City of Vancouver's private SharePoint site.

I visited South Vancouver and Marpole area around twice every two weeks to attend events at the house, using the space to do work or explore the neighbourhood. This experience allowed me to learn more about the neighbourhoods that my project is focused on through experiencing them over simply doing desktop research.

Further, I conducted a literature review on academic articles about social network analysis, community responses to extreme heat events and a policy landscape review.

4.2 Social Network Analysis Approach

There are two approaches to social network analysis which are whole network and egocentric networks. This study will use the egocentric network approach with centering the Neighbourhood House as the focal actor. The data will focus on the nodes that are related to the ego (the neighbourhood house) and the relationship between those nodes.

The network members or known as nodes or actors are the local organizations which responded to the extreme heat event planned in 2022-2023. I identified the nodes through interviewing different actors.

The methodology takes an event-based and relation-based approach as the boundaries of the network would those who participated in the 2022-2023 extreme heat response. The geographic boundaries of this study are Vancouver area.

4.3 Data Analysis

For the creation of the social network analysis maps, I utilized an Excel spreadsheet to organize the information about each actor. Further, the map was created on Kumu, which is an online software for social network analysis and various forms of mapping. The company is American owned and data collected through this program is stored on servers located in the United States. Since the project and the resulting network maps does not involve any confidential information the decision was made to use this program because of the lack of risk presented. As a student, I received access to three private projects for free and there is a program for non-profits to receive the software at a discount.

After identifying the actors, I was able to map them. On the social network analysis map, I have used visual indicators to represent different indicators. These indicators are:

- The shape of the actor represents the type of actor
- The solid line between connects represents an old relationship and a dashed line represents a new relationship
- The width of a connection represents the strength of a relationship.
- The distance between focal actor (Neighbourhood House) represents the closeness of the connection.

I do not have information about connections that I did not interview. For example, Jeannie Furmanek, the Manager of Community Based Services at SVNH, shared with me that Ginintuan Seniors Brigade of BC Society reached out to her through the Seniors Hub Council for extreme heat training for Filipina seniors through Senior Hub Council. I do not know the relationships between Ginintuan Seniors Brigade of BC Society and Senior Hub Council so the visual indicators are not used.

Further, I have included the description of each actor as well as highlighting the target groups serviced, their experience in responding to extreme heat and tags which categorize the type of extreme heat response.

For the recommendations, I completed a reflective thematic analysis where I reviewed my interview notes and searched for themes. The six steps for this process were collecting data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and writing the report.⁷³ I am attempting to embed reflexivity into my data analysis practice by understanding that the themes that arise are informed by positionality.⁷⁴

4.4 Limitations & Recommendation

One limitation of this study was the compressed time frame, I managed to complete 10 interviews within 3 months. However, there were organizations that were critical to extreme heat response work that I did not get to interview. For future work, I recommend interviewing the South Vancouver Senior's Council, Jewish Senior's Alliance, Simon Fraser University and University of British Columbia as well as Mike Lee, MLA for Vancouver-Langara. I was also unable to interview any City run community centers, except for one satellite spot. Further, since I was connected with the seniors' team at SVNH, hence there is a strong representation of seniors organizations on the SVNH map compared to childcare programming. MNH programming also focused on seniors and unhoused people, hence the organizations are skewed towards those groups. In an ideal world, I would be able to interview each partner organization to understand their community networks, however this was not possible.

Further, social network analysis embeds the subjectivity of the answers within the work as the social network analysis map is a high-level understanding of a certain time. Within this work, scope can be difficult to manage as holding interview participants to a singular time frame could be difficult. Further, it was difficult to ensure the collaborations were extreme heat specific. For

⁷³ Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, ahead-of-print(ahead-of-print), 1–25. <https://doi.org/10.1080/14780887.2020.1769238>

⁷⁴ Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, ahead-of-print(ahead-of-print), 1–25. <https://doi.org/10.1080/14780887.2020.1769238>

future studies, I would expand the scope to extreme heat and extreme cold or climate emergencies in general as the work done by organizations is much more holistic.

Lastly, any research project has the possibility of data errors. I mitigated this issue through holding a follow up meeting with South Vancouver and Marpole Neighbourhood Staff and emailed the participants with any follow up questions.

4.5 Reflections on Methodology

I am grateful that Nadia Carvalho, my mentor encouraged me to visit the sites and tour through the neighbourhoods that make up South Vancouver as I do not think I would have the deeper understanding of the place that I do have now. Further, building relationships with Neighbourhood House staff was essential to the success of this project and allows me to feel more confident in the work. Doing the interviews with different partners over zoom was the most preferred option by interviewees, but I do think visiting the different sites would have had added additional information. Lastly, it was difficult to quantify relationships as relationships are so fluid and ever-changing as well as subjective, I often found doing interviews, interviewees would ask how I would define a mutual relationship and it would be different in a lot of cases.

5.0 Findings

This section will be split into two parts: (1) findings from the social network analysis and (2) findings from the open-ended questions about collaborative neighbourhood level planning. This project interviewed 10 individuals from different groups who all experienced extreme heat events.

I thoroughly enjoyed interviewing the participants as they were thoughtful and gracious in sharing time with me to provide insights on their experience with extreme heat planning. It was clear that each participant cared deeply about the wellbeing of their community. I will be highlighting the collective knowledge shared which will contribute to informing the recommendations.

5.1 Findings on Social Network Analysis for Marpole Neighbourhood House

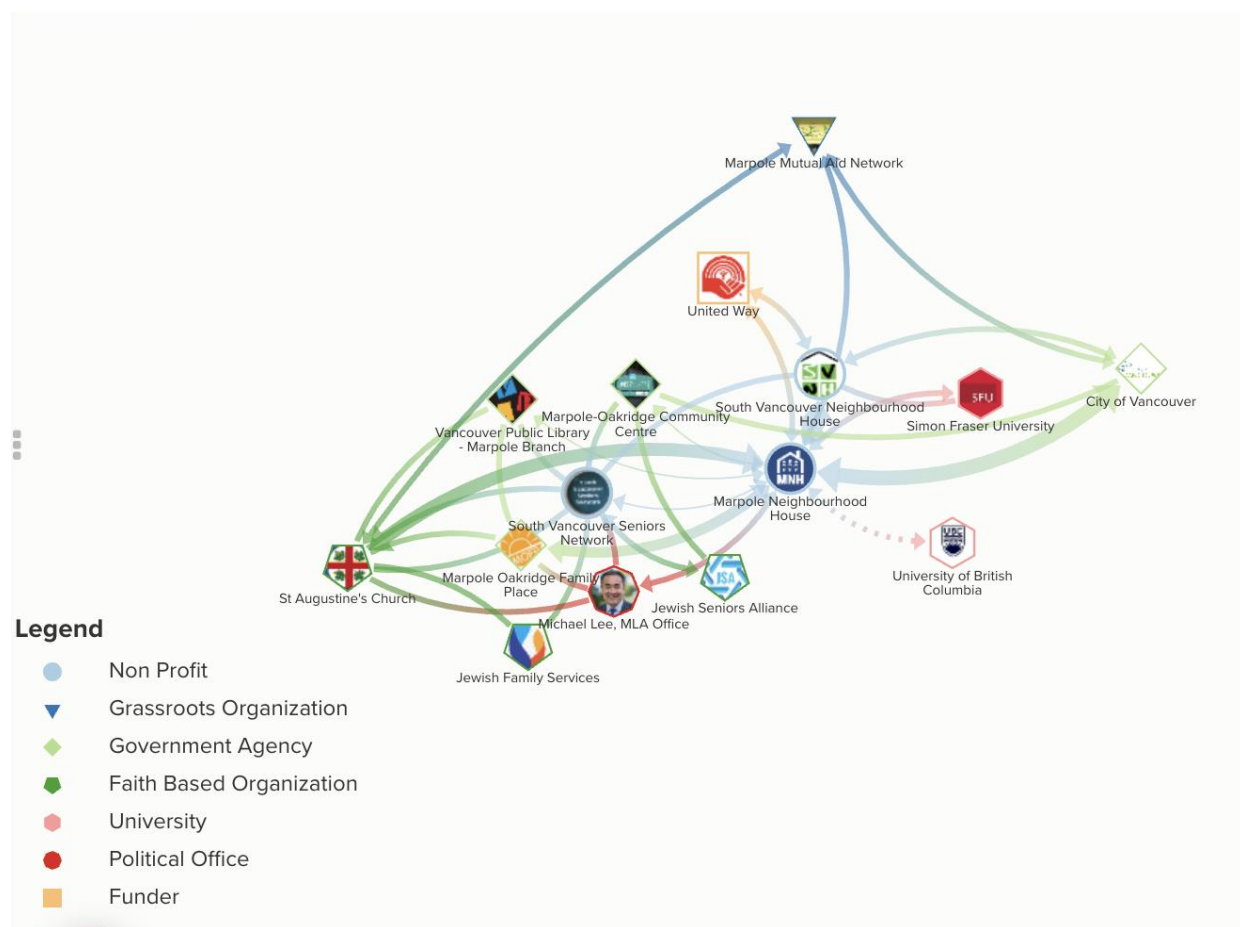


Figure 22 Social Network Analysis Map for Marpole

Link to interactive map: <https://embed.kumu.io/6f75dba4ae9b556f12cfab2558fd0420>

In this network analysis, Marpole Neighbourhood House serves as the central hub connecting various actors. The primary actors involved are non-profit organizations, faith-based groups, and government agencies, while universities have fewer and more distance connections. Notably, there is a lack of representation from businesses, healthcare providers, elementary schools, and Sikh, Buddhist and Muslim organizations. There is a lack of connection to country wide or province wide organizations or networks as well as higher level of governments including regional organizations.

According to degree centrality, which is counting the number of connections an actor has, Marpole Neighbourhood House, South Vancouver Seniors Network and St Augustine Church are ranked the highest in order. This analysis highlights the influence of local ties, as organizations operating within the Marpole area are closely interconnected, whereas those with operations elsewhere have fewer connections. Further, betweenness centrality measures how many times an element lies on the shortest path between two other elements. MNH lies on the shortest path for the highest level of actors. The following actors are South Vancouver Seniors Network and St Augustine Church.

The South Vancouver Seniors Network plays a pivotal role as an anchor for these organizations through involving various entities working on senior-related issues, including extreme heat outreach. South Vancouver Seniors Network is co-organized by Marpole Oakridge Centre and Jewish Seniors Alliance with support from Mike Lee MLA office. Since the network is so place based, it is able to connect multiple organizations with weekly meetings on zoom and monthly gatherings. Further, the map showcases how many connections feed in and out of St. Augustine's Church which represents an organization that could be prioritized more for outreach. This demonstrates the power of initiating connections through one collective issue and the resulting complex relationships that can emerge.

Based on the interviews, Marpole Neighbourhood House staff shared that they struggle to reach socially isolated individuals and newcomer communities. This social network analysis demonstrates that Marpole Neighbourhood House should consider expanding its engagement efforts to include migrants and newcomers' organizations in the area, however there may be no local organizations due to Marpole's underserved experience.

5.2 Findings on Social Network Analysis for South Vancouver Neighbourhood House

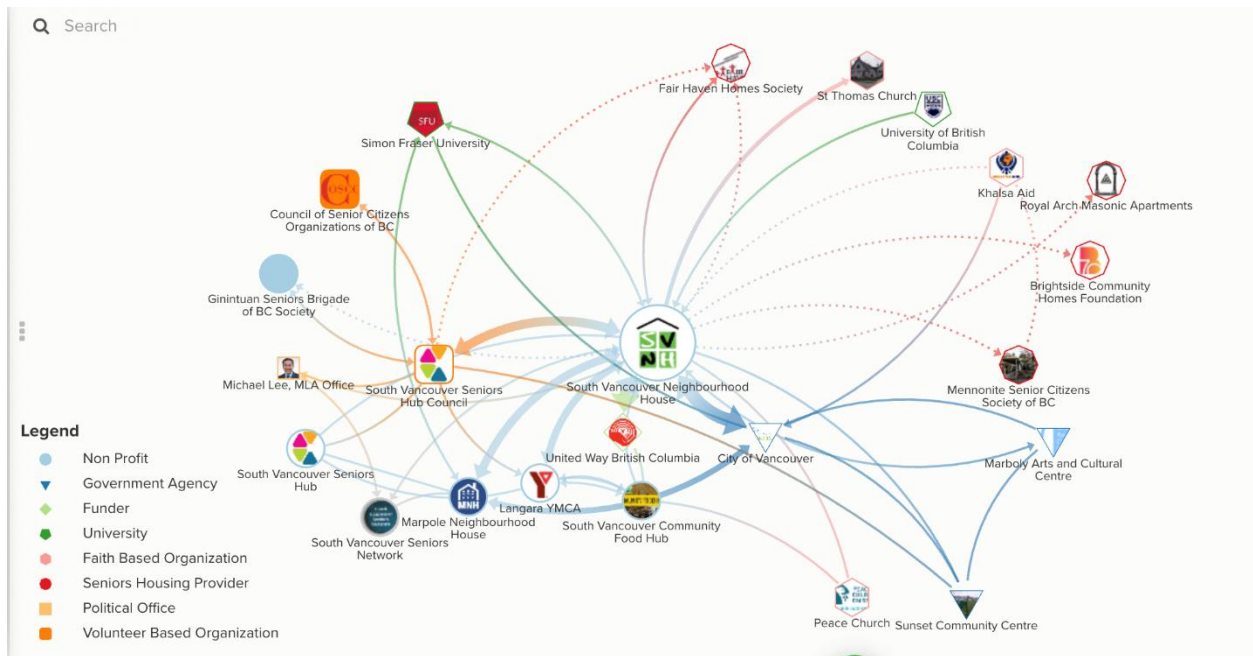


Figure 23 Social Network Analysis Map for South Vancouver

Link to interactive map: <https://embed.kumu.io/3189a67b8389177d35bb55d5d18960b3>

Conversely, South Vancouver Neighbourhood House employs a hub-and-spoke model or a centralized, resulting in numerous single connections, such as the one with Peace Church for food hub outreach. South Vancouver has established newer connections represented by dashed lines, indicating proactive outreach to senior housing providers. By reaching out to the housing providers, SVNH has been able to connect with more seniors at once as one housing residence has 150 residents. Further, residents are able to communicate and share with each other through everyday discussions or facilitated peer to peer relationships. However, it also exhibits several one-off connections that are not directly linked to the main hub.

For between centrality, South Vancouver Neighbourhood House, South Vancouver Seniors Hub Council and City of Vancouver are the highest in order. These three actors behave as connectors

in the community. For degree centrality, it is South Vancouver Neighbourhood House, South Vancouver Seniors Hub Council and South Vancouver Community Food Hub. South Vancouver Seniors Hub Council is able to connect with seniors-based organizations through shared lived experience and common goals. Further, they often connect these organizations to South Vancouver Neighbourhood House which demonstrates the importance of identity-based organizations.

Notably, there is a lack of representation from higher-level government organizations and healthcare providers. There could also be an increased role for City of Vancouver community centres to take a lead role in educating about extreme heat risk. Universities often support through research projects which can build a longer-term relationship and provides a skillset that the Neighbourhood House does not always have capacity for. South Vancouver Neighbourhood House should consider reaching out to the following groups: coops, migrants and newcomers' groups, and socially isolated seniors in single-family homes.

This analysis also demonstrates the organization's ability to disseminate information effectively but also highlights the pressure and demands placed on the organization due to its central role in the network. Place-based and broad-based organizations like SVNH are able to prioritize local connections and connect to distant organizations as needed.

5.3 Findings on Collaborative Neighbourhood Level Planning:

The findings below demonstrate the importance of leveraging existing relationships and building new relationships, prioritizing community outreach and securing flexible funding. The key themes were collaboration, communication and adaptivity to address the unique needs of a diverse community.

1) Community Outreach Happens in Person

Marpole Neighbourhood House staff would often visit St Augustine Church to assist with the food hub services and shared information about Marpole Neighbourhood House being a cooling center. Further, Reverend Katherine Hough distributed extreme heat prevention information to the parish which is mostly comprised of seniors. Further, Linh Lam, Program Director, from MNH often walked around the neighbourhood to connect with vulnerable populations. This strengthens the relationship between the organizations and spreads vital information through the community. Community outreach through “pounding the pavement” was the most successful method of connecting with the community, however it required time, thoughtfulness, compassion, and energy. Further, Katia Tynan, Manager of Resilience and Disaster Risk Reduction with the City of Vancouver often visited different community groups in person, regularly delivering cool kits and provide workshops on DIY air filters. Through being a familiar face, Katia

was able to coordinate emergency preparedness with community groups through working at the pace of trust.

Lara Rintoul, the Manager Housing Services from Fair Haven Homes Society managing Vivian Apartments, shared how excited and impressed she was from the visit from the SVNH team. They also bought a Cantonese speaker with them who could communicate with some of the residents in their own language. The SVNH team bought cool kits, printed out handouts, and treats and were stationed in the common area. Lara shared that SVNH went above and beyond and were able to gain the trust of residents through their community centered approach.

2) COVID-19 was a Catalyst for Relationships Based on Emergency Preparedness

During the beginning of the COVID-19 pandemic, the Greater Vancouver Food Bank closed its satellite operations and moved to centralized service in Surrey. Hence, South Vancouver Neighbourhood House and Marpole Neighbourhood House established a temporary emergency food distribution program to provide weekly emergency food access to 450 residents. Through this program, South Vancouver Neighbourhood House with United Way of BC and Langara YMCA developed a food hub model which is supported by local organizations such as Peace Church. During outreach for emergency preparedness, South Vancouver Neighbourhood House staff and volunteers from the Seniors Hub Council were able to visit these sites to share information and distribute cool kits.

The same process happened in Marpole Neighbourhood House as St Augustine Church took over food hub operations and maintained a relationship with Marpole Neighbourhood House. Further, Marpole Mutual Aid Society organizes a free pantry as well.

The relationships built during COVID-19 during times of crisis were valuable assets that were able to be utilized and prioritized during emergency extreme heat preparedness. Relationships that were initially formed during the COVID-19 pandemic were leveraged for other emergency work and demonstrated that crisis collaboration can build trust for future initiatives.

3) Ad-Hoc Check ins on Socially Isolated Individuals

Reverend Katherine Hough from St Augustine Church received a call one day about checking on a vulnerable individual who lived by themselves. The individual was not a member of the parish, but their family was worried about their safety and did not know who else to contact. Reverend Katherine was able to visit this person and check in about their living situation and ensure it was safe for extreme heat events. She is often met with these calls and can rely on Jewish Family Services to assist. Jeannie Furmanek from South Vancouver Neighbourhood House also often receives calls to check on socially isolated individuals from both loved ones and isolated seniors themselves.

Neighbourhood houses, faith-based organizations and non-profits respond to many asks outside of their job description as the community trusts them to check on their loved ones. It is

challenging to reach homebound individuals but essential to community safety and often isolated individuals experienced the transportation barriers so home visits are necessary.

4) Supported by Identity Based Organizations

Marion Hartley, the Chair of the Seniors Hub Council, visited the Senior Housing Buildings with the SVNH team and was able to share about their experiences as a senior utilizing individual coping methods for extreme heat. For example, Marion shared how many extreme heat tips do not consider seniors on fixed income as they suggest purchasing air conditioners. Marion can apply a senior's lenses and supports culturally relevant training as well. Marion shared how some Filipino seniors can be reluctant to apply the extreme heat tips due to their lived experience living in hotter conditions in the Philippines. However, another Filipino senior was able to explain the buildings in Vancouver are unable to be cool like the buildings in the Philippines. Identity based organizations are able to connect with members through shared experience and advocate for the specific needs of their community members.

5) Utilizing an Anchor Organization

South Vancouver Neighbourhood House acts like a hub to facilities connections due to their deep connection to community and local organizations. For example, a staff member from the City of Vancouver Emergency Management team reached out to Jeannie Furmanek from SVNH about Khalsa Aid having additional air conditioners to loan out. Jeannie was able to connect with a fixed income senior housing building to utilize the air conditioners for their residents. This is representative of the collaborative, forward-thinking and problem-solving approach of the Neighbourhood Houses.

Further, the seniors team at SVNH are able to visit satellite locations for outreach as they visit food hub distribution spots once a season with Seniors Hub Council volunteers to share extreme heat information. This approach is successful in relaying information but requires extra staff and flexibility for nonprofit organizations.

Katia Tynan and Nadia Carvalho from City of Vancouver organized the Heat Planning Lessons Learned sessions in 2022 where they were able to multiple community organizations from across the city for educational content on extreme heat events and sharing sessions. This allowed organizations who may not work together to learn from each other and build a relationship that will last outside of the sessions.

6) Unsupportive Funding Models

Responding to extreme heat is a multiple sector issue however through the social network analysis, it was clear government agencies, nonprofits and faith-based organizations are working together for the bulk of the work. Despite this, none of these organizations' mission statements nor operation plans directly mention being first responders to extreme heat events. Hence extreme work is often embedded into senior or community outreach programming and is not

budgeted for. For example, Nilda Borrino and Linh Lam from Marpole Neighbourhood House organized utilizing common spaces inside the Neighbourhood House into a cooling center and stayed late despite having other responsibilities. Further, Nilda Borrino shared that it takes a significant amount of resources to implement an extreme weather strategy. This critically important community services can create a scheduling and financial strain on a neighbourhood house with limited capacity and a small staff team. Extreme heat events due to their intensity and impact on health and wellness take priority but a coordinated approach is required.

Often, extreme heat preparedness work can receive a grant but there is no concrete funding for this work. Each organization approaches extreme heat prevention and response in a different way hence the funding model needs to be flexible. Organizations may need funding for operational, staff time, programming or purchasing supplies. The availability and flexibility of funding sources varied among organizations. Further, higher level of governments are not represented in the social network analysis which means the work is often downloaded on the nonprofit sector without the proper financial support.

City of Vancouver Heat Planning Lessons Learned sessions provided each community partner with a service agreement which allowed them to spend the funds on their unique needs such as staff time or buying supplies. This was appreciated by both neighbourhood houses because the program provided a space for knowledge exchange as well as providing tangible financial means to do the work. City staff have commented that flexibility in funding is important both in building trust with partners, and in enabling emergency response work to evolve as all partners learn better ways of supporting communities.

7) Informal Relationship Building Should be Considered Work

Relationship building is often off the desk work, despite it being crucial to the work of the social service sector. This is shown through the visits to different outreach locations or walks around the neighbourhood to connect with individuals. Moreover, Reverend Katherine often sends letters and makes phone calls to different community organizations to enhance collaboration. There is no formula to building the best relationship, but maintaining on going communication is key. Often, formal relationships have a memorandum of understanding but majority of these relationships which have coordinated extreme heat response have been informal. Hence, they are not directly included in employee's workload.

Both Neighbourhood Houses reported that their relationships with the City of Vancouver and other community groups were strengthened through their extreme heat planning efforts. Katia Tynan at the City of Vancouver, refers to "relationships as trees that keep bearing fruit." Once a relationship is developed and maintained, organizations can collaborate on various initiatives and lend a hand as needed. Further, through developing relationships with government agencies, different groups can navigate the system more effectively and connect with relevant departments.

8) Mental Health Support for Front Line Staff

Often, frontline employees at social services can become burnout or experience emotional tolls as they are handling heavy topics every day. Further, since community members trust social service organizations, the staff are often relied on to respond to crisis outside of their capacity. No interviewee mentioned receiving mental health support for their work as handling climate emergencies can be emotionally taxing work. Moreover, often women are overrepresented in the social service sector which can introduce more vulnerabilities for frontline staff through an intersectional analysis.

9) Lack of Institutional Memory

Throughout these interviews, I learned that relationships and networks between organizations often lie with individual staff members. The South Vancouver Seniors Network is a great example of a formal group of organizations while there are many informal connections as well. Marpole Neighbourhood House does not have a database for volunteers or organizations. Further, often once someone leaves an organization, their relationships to different organizations can go with them as it is unclear if relationships are people to people or organization to organization.

Further, often social services struggle to connect with government agencies due to a lack of knowledge about which department to contact. Through having preexisting relationships, organizations are able to leverage their relationships to receive information faster and be more efficient. Social services can also have their needs met more efficiently if individuals in an organization are able to connect to the right department.

10) Enhanced Collaboration, Adaptability and Effectiveness

Organizations are able to utilize their strengths to effectively respond to extreme heat events as MNH was able to turn into a cooling center or SVNH is able to do a large amount of outreach quickly. Moreover, organizations were able to adapt quickly as climate emergencies look different every time and are experienced differently by different populations. Often, neighbourhood house staff reflected on what worked the year before and embraced flexibility to adjust as needed. However, it is important to note that Marpole and South Vancouver neighbourhoods will still benefit from more investment and services despite the current organizations working so well together for the community.

6.0 Recommendations

Based on the findings of this research project, I can make several recommendations to support neighbourhood level collaborative planning for the prevention and response of extreme heat events to better serve vulnerable populations. These recommendations are for nonprofits, grassroots groups, government agencies, and faith-based organizations.

6.1 Recommendations for Short Term Implementation

1. Implement and Maintain a Community-Led Neighbourhood Level Emergency Preparedness Collaborative

Each neighbourhood, including micro neighbourhoods in South Vancouver, should develop a neighborhood-based heat response network that includes community organizations, faith-based groups, government agencies and residents. This network will act like a social safety net during extreme heat events. This network will support the sharing of resources, adapting to appropriate strategies and increasing communication between organizations.

2. Implement a Flexible Funding Model

There should be the implementation of a flexible funding model that allows organizations to allocate resources based on their different needs. It is crucial to have collaboration with other levels of government for sustained funding.

3. Develop Tailored Programs for Identity Based Groups

Identity based groups understand the lived experience of their members and can disseminate relevant information to them. This can include developing tailored programs specifically designed for vulnerable populations such as seniors and racialized seniors to address their unique needs during extreme heat events.

4. Expand Cool Kits Distribution:

The distribution of Cool Kits to City of Vancouver were extremely appreciated by community partners and the program should be expanded as these kits are crucial for vulnerable populations and should be consistently available.

5. Homebound Check-In Program:

The development of a program that regularly checks in on homebound individuals will support socially isolated individuals, ensure their well-being and provide necessary assistance during extreme heat events.

6. Develop a Transportation Program for Seniors

A transportation program for seniors will prioritize supporting seniors to access cooling centers, attend community programs and access healthcare services.

7. Peer-to-Peer Support

The implementation of a peer-to-peer wellness program will build community capacity, prevent isolation and can be successful with limited organizational support.

8. Engage Faith-Based Organizations

By actively engaging faith-based organizations, a broader audience to share information with can be reached. Faith-based organizations that were not included in the social network analysis were Sikh, Jain, Buddhist and Muslim organizations. Due to cultural differences, they may not be reached through typical approaches such emails hence connecting through a community member may be a more effective approach.

9. Provide Mental Health Supports for Frontline Workers

This program could provide increased access to trauma-informed counselling, cultivating a culture against burnout at the workout and providing paid mental health days for frontline workers.

10. Embed Culturally Appropriate & Seniors Lenses

South Vancouver and Marpole have a large number of immigrants, newcomer and senior populations, hence programs should be tailored to diverse cultural backgrounds and experiences.

6.2 Recommendations Based for Coordination

11. Clarify Roles and Enhance Collaboration Between Government Agencies

The frontline work of emergency preparedness is completed by nonprofit, grassroots and faith-based organizations without sustained funding. There needs to be an evaluation of the different responsibilities of different government agencies about emergency preparedness, so these community led groups are properly supported. Further, government agencies of all levels and sectors should be in consistent communication and collaboration with one another to ensure vulnerable groups are safe during extreme heat events.

12. Enhance Coordination through an Online Dashboard with Shared Resources and Contacts

The development of a database of community resources such as flyers, program delivery plans and community contacts will enhance collaboration and coordination between different organizations. This could also be a platform to ask questions or for assistance between community organizations.

13. Implement a Flexible Monitoring and Evaluation Program

The regular evaluation of the effectiveness of extreme heat planning strategies by community feedback will support adaptive and successful strategies.

14. Organize a Social Media Program to Highlight Community Organizations

The difficult and impactful work of community-led organizations and community leaders is often not publicized. A blog and/or social media post highlighting different community organizations and leaders could amplify best practices of extreme heat work and raise awareness.

6.3 Recommendations for Long Term Implementation

15. Address Inequalities in South Vancouver and Marpole

South Vancouver and Marpole experience extreme neighbourhood inequalities which worsen the vulnerability of its residents. The investment in social infrastructure, transportation, healthcare, and greenspace will reduce the associated risks of being a resident in these neighbourhoods during extreme heat events.

16. Advocating Higher Levels of Government to Prioritize Extreme Heat Planning and Response

There should be sustained advocacy for policies and funding at the city, regional, and provincial levels that prioritize extreme heat planning and response for vulnerable communities.

17. Allocate Capital Funds:

The allocation of capital funds is necessary to support the upgrading of HVAC and cooling systems in older facilities.

18. Support Long-Term Planning

Extreme heat events are not isolated incidents, hence long-term planning needs to be incorporated into community programs to build resilience.

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