Mapping the social city

Comparing a geospatial and community approach to social infrastructure in Notre-Dame-de-Grâce, Montréal

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Supervised Research Project
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Summary / Abstract

This research began with an attempt to identify areas of inadequate access to social infrastructure (“deserts”) in the Notre-Dame-de-Grâce (NDG) neighborhood of Montreal, using geospatial analysis of publicly available data. However, the limitations of this method soon became clear. While geospatial analysis can reveal where physical infrastructure is lacking, it reveals nothing about how social infrastructure is activated and maintained. These are the intangible features that make social infrastructure valuable for the community.

In view of this deficit, the research was expanded to include a deeper examination of the work of the *Conseil communautaire NDG* (NDG Community Council), the *Table de quartier* for NDG, whose work strengthens the non-visible networks that make social infrastructure function in NDG. Together, these two approaches—geospatial mapping and examination of the community-sector role—offer a more complete picture of the state of social infrastructure and its support and valuation on the neighborhood scale.

As an entity that is both dependent on, and a provider of social infrastructure in the neighborhood, the NDG Community Council is uniquely poised to understand the social landscape of the neighborhood, and what spaces are the most important to residents.

The results of this study show that there are areas in NDG where residents lack access to certain kinds of social infrastructure. In sum, geospatial tools offer valuable insights into the spatial distribution of facilities; they should be paired with local, grounded knowledge to reflect how social infrastructure is experienced.

Résumé

L’objet de cette étude avait pour but d’identifier les zones où les infrastructures sociales sont insuffisantes (i.e., zones désertiques d’infrastructure sociale) dans le voisinage de Notre-Dame-de-Grâce (NDG) à Montréal en utilisant l’analyse géospatiale avec les sources de données publiques. Toutefois, les limites de cette méthode sont rapidement apparues. Bien que l’analyse géospatiale puisse révéler les manques d’infrastructure matérielle, elle ne renseigne pas sur le niveau et la qualité de l’infrastructure sociale intrinsèque. Ce sont pourtant ces caractéristiques immatérielles qui rendent l’infrastructure sociale précieuse pour la communauté.

Face à ce constat, la recherche a été élargie pour inclure une analyse plus détaillée du travail du Conseil communautaire NDG, la Table de quartier de NDG, dont les actions renforcent les connexions locales qui font fonctionner l’infrastructure sociale dans le quartier. Ensemble, ces deux approches — la cartographie géospatiale et l’analyse du rôle du milieu communautaire — offrent un portrait plus précis du niveau d’infrastructure sociale ainsi que de sa qualité et de sa valorisation à l’échelle locale.

En tant qu’entité à la fois dépendante de l’infrastructure sociale du quartier et fournisseur de celle-ci, le Conseil communautaire NDG est au cœur des préoccupations des résidents et le plus à même de savoir ce qu’il leur convient. En conclusion, les résultats de cette étude montrent que s’il existe, à NDG, des zones où les résidents n’ont pas accès à certains types d’infrastructures sociales, c’est après analyse des besoins locaux.

En résumé, les outils géospatiaux offrent un éclairage précieux sur la répartition spatiale des équipements ; ils doivent cependant être combinés à une connaissance locale et ancrée sur le terrain pour refléter une vision cohérente de l’infrastructure sociale sur le terrain.

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1 Introduction

In June 2025, the City of Montreal adopted the final version of its *Plan d'urbanisme et de mobilité 2050* (2050 Urban Planning and Mobility Plan; PUM). This plan outlines the City's urban planning strategy for the next 25 years. One of the ten key directions in the plan is to "[r]einforce the availability of community life spaces to support equity and neighborhood life" (Ville de Montréal, 2025). These "community life spaces" (*lieux de la vie collective*) are recognized as "particularly important places that bring Montrealers together, so they can be active, and benefit from the city's quality of life […]" Although the plan does not explicitly refer to it as such, these spaces, which include parks, libraries, and other civic amenities are examples of spaces that fit definitions of "social infrastructure." Social infrastructure is increasingly acknowledged as an essential part of cities. A strong network of social infrastructure is believed to improve community resilience during climate disasters and hazards, improve mental health, reduce social isolation, and lead to improved quality of life and civic belonging.

This key direction in Montreal's principal urban-planning strategy reflects municipal-level awareness of the importance of spaces and facilities accessible to the community. It implies that such spaces and facilities are a form of essential infrastructure. At the same time, however, questions remain about how this infrastructure is defined, measured, and distributed. Research from the fields of sociology and urban geography suggest that social infrastructure extends beyond the civic amenities outlined in Montreal's new urban plan. Social infrastructure can be any of "the physical places and organizations that shape the way people interact" (Klinenberg, 2018). Thus, social infrastructure includes many other third spaces (i.e., places outside of the home or work)—public and private, secular and religious, that can facilitate social connection and cohesion.

This supervised research project (SRP) began as an attempt to identify social infrastructure deserts in Notre-Dame-de-Grâce (NDG), a neighborhood in the western part of Montreal. Using a method similar to those used to identify food and transit deserts, the initial goal was to map "social infrastructure deserts," areas with limited access to social infrastructure. However, over the course of the research, some limitations of using a purely geospatial approach became apparent. While spatial methods can identify areas with relatively poor access to social infrastructure facilities—and can even be used for certain kinds of targeted interventions, mapping alone may fail to capture important dynamics of social infrastructure that make the spaces meaningful to residents. It can also over- and underestimate the density of relevant social infrastructure in areas of interest

Recognizing these limitations, the research was broadened in scope to include some ground truthing and to explore the role of NDG's *Table de quartier* in identifying and responding to social infrastructure gaps and social needs within the neighborhood. *Tables de quartier* are community-based organizations institutionalized by the City of Montreal to bring together residents, community organizations, and local government to address local priorities such as poverty reduction, housing, and social inclusion.

The following questions guide this research project:

1) How is social infrastructure distributed in NDG, and which areas can be considered underserved?
2) What are the strengths and limitations of geospatial mapping for assessing the distribution of social infrastructure and for identifying social-infrastructure deserts?
3) How do the community sector and the public sector identify and approach social-infrastructure provision in underserved areas?

This report contains seven chapters. Following this introduction, the second chapter presents a literature review that examines how social infrastructure is defined and measured across academic, policy, and community contexts. It also explores the recognized benefits of strong social infrastructure. The third chapter explores the institutional and policy landscape of social infrastructure in Montreal and NDG, with a focus on the City of Montreal and the NDG Community Council (Council). The fourth chapter outlines the methodology used in this study. The fifth chapter presents findings from: (a) geospatial analysis, highlighting areas with low physical access to various types of social infrastructure; (b) examination of more particular activities of the Council; and (c) ground-truthing social infrastructure in NDG. The sixth chapter discusses the strengths and limitations of geospatial and community-sector assessment of social infrastructure, especially for identifying social infrastructure deserts. It also discusses how the public and community sectors approach the provision of social infrastructure. The final chapter presents conclusions in the form of recommendations for planning practice.

2 Literature review

2.1 What is social infrastructure?

Understanding social infrastructure--how it is defined, what types of spaces it takes, what benefits it produces, and how it is measured--are important starting points for this SRP.

Academic literature provides no single, agreed-upon definition of social infrastructure. While different definitions of social infrastructure have been used across various disciplines for decades (Joshi & Aldrich, 2025; Latham & Layton, 2022), the definition put forth by American sociologist Eric Klinenberg in his book *Palaces for the People* is gaining popularity. Klinenberg emphasizes the importance of social networks and connection in communities and defines social infrastructure as "the physical places and organizations that shape the way people interact" (Klinenberg, 2018). Social infrastructure encompasses spaces where individuals can connect with others, feel part of the community, and build relationships with one another (Klinenberg, 2018). According to Klinenberg, social infrastructure can be formal or informal, secular or religious, public or private.

What is most important for Klinenberg is that social infrastructure enables social capital to form. More specifically, social infrastructure enables the forming of: ties within similar groups of individuals (i.e., bonding social capital); connections between different groups of individuals (i.e., bridging social capital); and relationships between individuals and institutions (i.e., linking social capital) (Fraser, 2021). All of these relationships are enabled (e.g., formalized or fostered) through group membership and organizations or even impromptu encounters among individuals.

This definition by Klinenberg is important but is just one of several. Latham and Layton (2022) studied and categorized existing uses of "social infrastructure" in the field of urban geography. They identified four theoretical approaches:

1) Viewing people as infrastructure, where informal social networks sustain urban life in the absence of formal systems.
2) Recognizing how hard infrastructure (e.g., water, sanitation, and energy) interacts with social life, shaping inequalities and sparking activism.
3) Understanding infrastructures of social care, such as healthcare and education, and the often-undervalued labor that supports them.
4) Highlighting spaces that enable social connection, like parks, cafés, and sidewalks, which foster community and resilience.

The last two theoretical approaches to social infrastructure incorporate components that are essential for the social well-being of a community. Additionally, both these theoretical approaches include a spatially or physically measurable component. Enneking (2025) found that the distinction between these last two theoretical approaches (i.e., infrastructures of social care and infrastructures that enable social connection) was "somewhat contrived" (p. 10), observing that spaces which offer socialization often also provide essential social services.

Consistent with Enneking, contemporary framing of social infrastructure by public actors tends to blend what Latham and Layton had defined as two distinct concepts. For example, the City of Montreal's "community life spaces" has a strong focus on sociality, but also includes spaces in the community, which provide social services. The official definition of "community life spaces" from the glossary of the PUM (Ville de Montréal, 2025) is:

Term referring to community facilities (schools, libraries, cultural centers, museums, pools, arenas, ice rinks, sports fields, and community spaces, etc.) and public spaces (parks, plazas, streets, alleys, etc.). They consist of unifying and inclusive spaces offering resources in terms of health, education, culture, sport, relaxation, resilience, sociability, and leisure, contributing to the development of inclusive and resilient neighborhoods.

In this context, it is instructive to take note of some social-infrastructure adjacent terms and concepts that have appeared in the literature. While "social infrastructure" emerged in the last decade to encompass the places for sociality and social well-being, sociologists and urban planners have long been interested in studying and understanding social dynamics within cities. Earlier, related concepts include: micro-publics (Amin, 2002; seen in Knibbe & Horstman, 2019) and prosaic publics (Hall, 2012), third places (Oldenburg, 1989). The work of William H. Whyte (1980) and Jan Gehl (2006), whose research on public places and social interaction, is closely tied to these concepts as well. More recently, bumping spaces (Farmer et al., 2024), places for social connection (Huron Perth Public Health, 2024), community infrastructure (Office of the Prime Minister of Canada, 2024), and spaces of sociability (Horgan et al., 2022) have appeared.

In view of the foregoing context, the definition of social infrastructure preferred for this project is the one set forth in the 2023 report from the United States Office of the Surgeon General: "the programs (such as volunteer organizations, sports groups, religious groups, and member associations), policies (like public transportation, housing, and education), and physical elements of a community (such as libraries, parks, green spaces, and playgrounds) that support the development of social connection."

This definition recognizes that social infrastructure is not limited to physical spaces and also includes programming and policy to support the community. Social infrastructure, according to this definition, has built, social, and institutional components.

2.2 Which kinds of spaces does social infrastructure include?

Because there is imperfect consensus on the definition of “social infrastructure,” the facilities and other spaces to be included as social infrastructure also vary. The inclusion of particular spaces often depends on who is defining the term—academics, municipalities, community groups, or residents themselves. Most commonly, social infrastructure is thought to include physical spaces that support social connection, services, and community belonging.

2.2.1 Spaces included *ad hoc*

In *Palaces for the People,* Klinenberg (2018) himself admits that he defines social-infrastructure spaces “capaciously.” Klinenberg’s definition of social infrastructure includes:

Public institutions, such as libraries, schools, playgrounds, parks, athletic fields, and swimming pools, are vital parts of the social infrastructure. So too are sidewalks, courtyards, community gardens, and other green spaces that invite people into the public realm. Community organizations, including churches and civic associations, act as social infrastructures when they have an established physical space where people can assemble, as do regularly scheduled markets for food, furniture, clothing, art, and other consumer goods. Commercial establishments can also be important parts of the social infrastructure, particularly when they operate as what the sociologist Ray Oldenburg called "third spaces," places (like cafés, diners, barbershops, and bookstores) where people are welcome to congregate and linger regardless of what they've purchased.

Table 2-1 lists types of spaces that have been included in different enumerations of social-infrastructure spaces, in published research and municipal-government policy documents. The spaces are organized from most to least frequently included. Notably, libraries and community centers appear in all the definitions reviewed here.

Table 2-1: Social infrastructure spaces

	Academic				Government			
	Fraser et al. (2022): Boston, United States	**Australian Urban Observatory: Australia**	**Yhee et al. (2021): Namdong-gu, South Korea**	**Nelson et al. (2024): Los Angeles**	**City of Vancouver, Canada**	**City of London, England**	**City of Parramatta, Australia**	**City of Montreal, Canada**
Libraries	X	X	X	X	X	X	X	X
Community centers	X	X		X	X	X	X	X
Parks	X		X	X	X	X	X	X
Schools		X	X	X	X	X	X	X
Health facilities		X (GPs, maternal, child, family health centers)			X (health centers, Indigenous wellness centers)	X (primary, community, acute care facilities)	X (hospitals and health care facilities)	X
Sports facilities		X	X			X	X (indoor and outdoor recreation, sports grounds)	X
Child and afterschool care		X	X			X	X	
Places of worship	X			X	X	X		
Cafés	X			X	X			
Community gardens	X				X		X	
Cultural centers					X		X	X
Public meeting space (incl. town halls)	X			X				X
Aged-care facilities		X					X	
Art gallery		X			X			
Barbershop	X			X				
Beauty salon	X			X				
Bookstore	X			X				
Museum		X						X
Plazas					X			X
Public swimming pools		X					X	
Restaurants				X	X			

Social service centers				X	X		
Streets							X
Streetscape features (benches, drinking fountains, public restrooms, lights)			X				
Aboriginal friendship centers				X			
Affordable housing						X	
Alcoholic drinking establishments			X				
Bicycle repair shop			X				
Cemeteries and crematoria					X		
Cinemas and theaters	X						
Community kitchen				X			
Dentists	X						
Game store			X				
Grocery			X				
Markets		X					
Neighborhood houses				X			
Pharmacies	X						
Public-transit stops			X				
Stadiums				X			
Subsidized and co-workspaces						X	

The rows of Table 2-1 show commonly recognized categories of social-infrastructure spaces. These listed categories are by no means exhaustive, however, even for a fixed definition of social infrastructure. Interestingly, municipally sourced enumerations, including those from the City of Montreal (viz., community life spaces), the City of London (2021), and the City of Parramatta (2020), include mostly municipally owned or managed spaces. Moreover, as the basic definition of social infrastructure may vary across different studies and municipalities, what counts, from one perspective, as a

community social hub or other socially significant space may not count from another perspective.

As explored in greater detail in Section 2.3.5, the most widely recognized categories of social infrastructure aim to be relevant to a wide range of residents. It should not be overlooked, however, that different groups and identities may value, and benefit unequally from, different forms of social infrastructure. The variation can be based on differences in age, culture, or (in some contexts) social status.

For instance, although it may be unusual to include alcoholic drinking establishments, generally, in enumerations of social infrastructure, Cabras and Mount (2017) highlighted the role of pubs as essential social infrastructure in rural Ireland: providing spaces for community bonding, cultural exchange, and local support networks. Other enumerations include public baths in Japan, and bars serving the LGBTQ+ community in London (Campkin, 2020). Latham and Layton (2019) explored additional examples of context- and community-specific social infrastructure sites.

2.2.2 Spaces included according to framework

With increasing interest in social infrastructure, more and more cities and urban researchers have begun to establish frameworks to guide policy, research, and other thinking on social infrastructure. These frameworks are generally used to categorize social infrastructure based on the kinds of activities and/or behaviors it facilitates, and on the kinds of social capital it enables. As a first in Canada, the City of Vancouver officially adopted a standalone social infrastructure strategy in 2021. The strategy included studying the spatial distribution of social infrastructure in the city and highlighted the need to ensure that Vancouver residents have access to a variety of types of social infrastructure. The categories enumerated in the Vancouver framework (City of Vancouver, 2021, p. 15) include spaces to:

1) Play, learn, and grow (e.g., civic community centers, parks, schools, libraries, community gardens, art galleries);
2) Spaces to heal, connect belong (e.g., health centers, Indigenous wellness, aboriginal friendship centers, cultural centers, neighbourhood houses, social service centers, places of worship, online social platforms); and
3) Spaces to gather (e.g., cafés, community kitchens, restaurants, stadiums, plazas & public space, markets).

More recently, a team of researchers at Gehl People (2024) proposed their own framework for categorizing and understanding social infrastructure. They proposed three categories of social infrastructure, which include:

1) Havens: spaces for people to gather around a shared identity (e.g., churches);

2) Hubs: spaces for people to connect across different backgrounds (e.g., community centers);
3) Hangouts: spaces for people of all backgrounds to just be (e.g., parks).

The City of Vancouver framework and the Gehl framework both emphasize the function of social infrastructure rather than the physical form. Both groups also highlight the importance of having a variety of different kinds of social infrastructure easily accessible to residents.

2.3 Importance of social infrastructure

There is a growing body of research pointing to the benefits and importance of social infrastructure. It is proposed that social infrastructure contributes to both individual and community well-being. This section explores and presents evidence for how and why social infrastructure is beneficial. The beneficial effects explored here relate to (1) reduced social isolation, (2) improved quality of life, (3) improved mental health of individuals and (4) disaster and hazard resilience. The literature review, while non-exhaustive, provides illustrative examples. A recurring theme in the cited studies is that social infrastructure has direct and indirect benefits.

2.3.1 Social isolation

Social infrastructure is also widely recognized as a key tool for addressing social isolation and loneliness, which have been described as public health crises in their own right. In 2023, the U.S. Surgeon General released the influential report, *Our Epidemic of Loneliness and Isolation,* which detailed the rising rates of loneliness and social isolation and their associated public health impacts. These impacts include an increased risk of premature death and a higher likelihood of developing a range of physical and mental health conditions (Office of the U.S. Surgeon General, 2021, p. 8).

Research suggests that the mere presence of social infrastructure is not enough to reduce isolation. For example, in South Korea, Kim and Kim (2024) found that the presence of most types of social infrastructure—such as parks, cultural and sports facilities, welfare centers, and places of worship—did not lead to lower levels of self-reported social isolation. The authors argued that it is more important to consider the "networked nature of social infrastructure," including the specific programming and design of spaces.

Rhubart and Li (2025), in their analysis of rural areas in the United States, found that regular use of certain types of social infrastructure—specifically, spending more than 10 minutes in certain food establishments, salons and barbershops, and places of worship—was associated with lower rates of self-reported loneliness. Interestingly, this

relationship did not hold for more “traditional” social infrastructure, such as libraries, fitness or recreation centers, or community centers.

Some researchers, including Klinenberg, have emphasized the importance of streetscape features or “transition spaces” like benches, bus stops, and sidewalks as social infrastructure. However, Sugiyama et al. noted that while qualitative studies supported the importance of these transition spaces, quantitative studies did not consistently find the same association.

This research suggests that social infrastructure is essential for reducing social isolation, but its overall effectiveness depends on more than just the presence of physical spaces. The first of six pillars in the national strategy outlined by the Office of the U.S. Surgeon General is to strengthen social infrastructure. Importantly, the report highlights that both physical spaces and the programming that activates them are both critical components. This idea is supported in the literature reviewed here.

2.3.2 Quality of life

Beyond the targeted outcomes of health or disaster resilience, social infrastructure has a role in shaping how people feel about their neighborhood and life. Multiple studies have linked access to social infrastructure with higher subjective well-being and a strong sense of belonging in their community.

For example, Jeffres et al. (2009) conducted a national survey of adults in the United States and found that the presence of third places was associated with higher self-rated quality of life. Similarly, Davern et al. (2017) found that Australian residents who lived closer to a range of social infrastructure types reported higher subjective well-being.

In Montreal, a 2020 survey by Firth et al. found that residents who visited more third places, namely sports facilities and restaurants, had higher rates of self-reported well-being. Of interest, visiting parks, cultural places, and places of worship was not associated with greater social well-being within the sampled adults. However, the authors noted that the non-representative nature of the sample and the correlational design of the study limit the generalizability of these findings and preclude causal inferences.

In contrast to the small sample of individuals surveyed by Firth et al., over 200,000 participants were surveyed globally as part of the much larger Global Flourishing Study. The researchers distinguished flourishing from traditional measures of social well-being, as flourishing includes subjective as well as more objective components, including happiness, health, meaning, character, relationships, and financial security, with social well-being being a key component. A significant finding from this study was

that there was a consistent positive association between religious service attendance and adult flourishing (VanderWeele et al., 2025).

Like the literature on mental health, the relationship between green space and subjective well-being is particularly well studied (Gillooly & Tripathy, 2024). For example, Jennings and Bamkole (2019) explored the relationship between social cohesion and urban green space. Reviewing existing evidence, the authors emphasized that green spaces could foster social cohesion by providing spaces for social interaction, building trust, and enhancing a sense of community, all of which contribute to subjective well-being.

Similarly, an empirical study by Kweon et al. (1998) found that greater use of green spaces by older adults was associated with stronger social ties and a sense of community.

Finally, while it is convenient to assess the various forms of social infrastructure collectively, the need for diverse categories of social infrastructure should not be overlooked. This feature was emphasized by Latham & Layton (2019), but also in the contexts of other popular urban-planning directions, including the “complete communities” and the “15-minute city” concepts. Indeed, different types of spaces will be important to different groups of people; thus, it is vital that communities maintain a diversity of social infrastructure so that all residents can find community.

2.3.3 Mental health

The effects of social infrastructure on mental health have also been investigated. Social infrastructure contributes to mental health and well-being in at least two ways: by providing restorative environments that can reduce stress, and by facilitating social connections, which themselves protect against psychological distress.

Green space, in particular, has received significant attention in the public health literature and there is a general consensus that greenspace positively influences mental health (Gillooly & Tripathy, 2024). Research by Markevych et al. (2017) identified the pathways through which greenspace can improve mental health, including: reducing harmful exposures (e.g., noise, pollution, heat), providing calming and restorative environments, by encouraging physical activity, and finally through fostering social cohesion. Review articles written by Bratman and coauthors (2019) and Tran, Sabol, and Mote (2022) found strong evidence that exposure to greenspaces is associated with reduced symptom severity and lower incidence of certain kinds of psychiatric disorders, including depression, anxiety and attention deficit hyperactivity disorder.

An empirical study in Vancouver, British Columbia found that publicly accessible nature in the area was associated with higher self-reported sense of community, and a higher

sense of community were associated with lower rates of major depressive disorder, negative mental health, and psychological distress (Rugel et al., 2019).

The mental-health benefits are not limited to parks and greenspaces. Social infrastructure, more generally, can directly and indirectly contribute to positive mental health of individuals. Other kinds of social infrastructure, including community centers, libraries, and other gathering spaces, provide added opportunities for social connection which in turn can improve an individual's mental health. For example, Stahlmann et al. (2022) conducted a cross-sectional sample of 12,624 children across over 100 municipalities in Germany. The researchers specifically looked at the relationship between access to youth-specific social infrastructure facilities and mental health problems. The conclusion of this study was that access to fewer social infrastructure facilities was associated with higher rates of mental health problems.

2.3.4 Resilience to disasters and hazards

Klinenberg's original exploration of social infrastructure focused on the 1995 Chicago heat wave. Klinenberg identified two adjacent neighborhoods that shared many underlying demographic characteristics. However, Klinenberg found that the neighborhood with more social infrastructure, the community with more social connection and community organizations—saw fewer fatalities during the heatwave. Importantly, Klinenberg found that it was not only the formal community spaces that led to reduced fatalities, but also informal spaces and neighborhood networks.

Researchers have explored the role of social infrastructure in the contexts of other disasters and hazards. Fraser (2021) studied the relationship between social infrastructure and resilience to COVID-19. Through his research, Fraser found that city blocks in Fukuoka, Japan with more social infrastructure had lower rates of COVID-19 infection, even when accounting for social vulnerability and healthcare facility capacity. However, Fraser found that different types of social infrastructure had different impacts on the spread of COVID-19. Specifically, Fraser found that social infrastructure such as parks, libraries, and public educational sites, which allow for social distancing, were associated with lower rates of COVID infection than public meeting centers, community centers, where people gather more densely.

Also studying Japan, Aldrich (2023) found that the mortality rates among persons aged 65 and older during the 2011 tsunami were lower in areas with more social-infrastructure facilities.

Social infrastructure plays a critical role in supporting communities during climate-related emergencies and natural disasters. Directly, it provides designated spaces where people can seek refuge—such as cooling and warming centers during extreme

temperatures, gathering areas in case of tsunamis, and shelters for tornado protection. Indirectly, social infrastructure can foster strong social networks, where neighbors check in on one another and provide aid to each other during times of crisis.

2.3.5 Group identities and social infrastructure

As noted above, particular groups of residents have different needs for social infrastructure and may value differently the various kinds of social infrastructure found within their communities. This review considered the likely variances in three important demographic groups: immigrants, seniors, and children.

Immigrants

With respect to immigrants, physically visible social infrastructure—i.e., social infrastructure that is both visible and perceived to be accessible—is particularly important. Typical examples of social-infrastructure spaces that are physically visible are libraries and community centers. A study across several small cities in Canada found that public libraries and community centers were the most common places that immigrants visited to socialize outside of their homes (Zhuang and Lok, 2023). Libraries often provide immigrants with services that can facilitate integration into their new communities (Zhuang and Lok, 2023). Indeed, many libraries, including those in Montreal, have programming specifically intended to facilitate integration of immigrant communities—e.g., language-learning opportunities. Some libraries also curate their collections according to the needs of immigrant residents, e.g., by subscribing to foreign newspapers and periodicals (Paola Picco, 2008).

Other examples of social infrastructure that are visible to immigrants include ethnic-oriented businesses such as restaurants, cafés, hair salons, and places of worship. These spaces enable immigrants of similar backgrounds to meet, enabling immigrants to connect with people from their own cultural or linguistic background (Zhuang and Lok, 2023; Wessendorf and Gembus, 2024). These spaces can support integration in a more gradual, less formal way, where newcomers can meet immigrants who have been living longer in their communities, and who may be willing to share their experiences of adjustment.

Older adults

Among older adults, access to social infrastructure is particularly important, as older adults are more likely to experience social isolation or loneliness, which in turn increases their risk of developing mental health problems (Office of the U.S. Surgeon General, 2021). A systematic review by Sugiyama et al. (2023) found that the presence of community facilities, open spaces, and local businesses was consistently associated with higher levels of social engagement among seniors. According to Sugimaya, many of these more popular forms of social infrastructure–such as libraries, parks, places of worship, and community centers—are important for seniors. Apart from the specific kinds of facilities relevant to seniors, other research stresses the importance of dedicated programming for this age group. Regularly scheduled activities, including social groups, volunteer opportunities, and classes have been shown to be particularly effective in reducing social isolation among older adults (Yarker, 2019). In urban design, features including short walking distances and benches are often discussed together with social infrastructure for older adults.

Children

Schools are the most obvious sites of social infrastructure for children. Play areas in parks, sports facilities, and community centers are also recognized, however. These spaces also have a key role for the child's well-being (Woolcock, 2019). Accessing social infrastructure has positive effects on mental health: accessing third places was found to result in lower occurrences of behavioral problems (Hosokawa et al., 2025). Moreover, children who have access to, and who play in, greenspaces like parks get more physical activity than those who primarily rely on driveways and roadways for spaces for recreation (Lin et al., 2023).

Naturally, children of different ages require different levels of supervision, younger children need more supervision. For this and other reasons, the urban/street layout has a big effect on what is accessible to children (No et al., 2022). Furthermore, parents' perceptions about the "neighbourhood connectivity" (network ties between adults and children) is "significantly associated with children's likelihood of playing in threshold and transitory third places." (Lin et al., 2023).

The findings above indicate that neighborhoods require spaces for children to play near the home, and further require a positive social landscape, e.g., to ensure safety and responsible supervision, especially for younger children. Meanwhile teenagers prefer other kinds of spaces, particularly ones where they can just "hang out" without being perceived as causing trouble (Williams & Pocock, 2009), including parking lots, malls, and other "marginal spaces" (McAllister, 2008).

2.4. Measuring social infrastructure

While social infrastructure inherently includes a physical component, it is only recently that GIS software has been used to study social infrastructure (Davern et al., 2017). Rather, it has more commonly been measured in terms of the social capital it creates (Fraser, 2021) and by using other qualitative measures (Fraser et al., 2022).

However, with each passing year additional researchers and professional planners study the geospatial distribution of social infrastructure. One tool used frequently in Australia is the Social Infrastructure Index developed by the Australian Urban Observatory (AUO). The index represents 16 different types of infrastructure (e.g., Table 1-1) and assigns each neighborhood a score from 0 to 16 based on how many of the different types are located within a specified distance (typically 1 km). The binary scoring system—1 for present, 0 for absent—produces the overall index value (AUO, 2021). This straightforward method is easily replicable, so it can be repeated across different urban areas for easy comparison of the results.

In 2021, researchers from the University of Liverpool and the Liverpool City Region Combined Authority adapted the Australian Urban Observatory's Social Infrastructure Index to study the landscape of social infrastructure in the St. Helens and Liverpool City Region in England. Rather than using the AUO's index, these researchers looked at catchment areas around social infrastructure facilities. Parts of the surveyed region that fell outside the catchment areas of one or more of the various types of social infrastructure were called "social-infrastructure deserts." The social-infrastructure deserts were compared against socio-demographic and economic indicators to identify spatial inequities which could then be used to inform planning priorities.

The approach of identifying "social-infrastructure deserts" was again proposed by Driggins and Marquis (2024) in a recent issue of the American Planning Association's *Planning* magazine. The authors recommend a two-stage process: first, categorizing different types of social infrastructure, and then mapping them to visualize service provision. By defining and analyzing the areas that fall beyond the reach, or catchment areas, of one or more kinds of social-infrastructure spaces, they too defined "social-infrastructure deserts," regions where there is a scarcity of accessible social infrastructure and are areas that deserve attention by municipal planners.

The concept of "deserts," generally, is not new in urban planning; it is proven to be a useful way to spatialize inequities. Likely the most common application of this concept relates to "food deserts," areas where residents have limited access to healthy, affordable food due to a scarcity of grocery stores. Deserts can be analyzed in relation to race, income, or other inequities. More recently, the concept of transit deserts has been used by researchers and municipal planners. Transit deserts were first introduced

in 2013 by Junfeng Jiao and Maxwell Dillivan, adapted from the food desert concept. The authors describe transit deserts as areas where the supply of public transit does not meet the demand for public transit in that area.

Desert mapping is useful in urban planning. Geospatial maps can be a strong communication tool for showing spatially inhomogeneous inequity. Food-desert mapping, for instance, has been used to inform public and community-sector programs, interventions, and placement of food banks. Transit-desert mapping has been used by transit agencies to rationally expand existing transit routes to under-served neighborhoods. In principle, the mapping of social-infrastructure deserts could be used to identify neighborhoods where additional social-infrastructure spaces may help to alleviate social isolation and the related harms noted above.

However, some have argued that even the food desert concept oversimplifies the issue of food access, focusing attention primarily on physical barriers while neglecting underlying social and political factors (Widener, 2018). Social infrastructure deserts may face the same oversimplification problem. A space may exist on a map but may not actively provide benefits to the community for any of a number of different reasons. Facilities will only be valuable if they are, for example, accessible, culturally relevant, and safe.

3 Policy and planning context

This chapter describes the policy and planning context of social infrastructure in NDG.

3.1 Social infrastructure in Montreal policy

The *Plan d'urbanisme et de mobilité 2050* (2050 Urban Planning and Mobility Plan; PUM) serves as Montreal's primary framework for guiding urban development and transportation strategy over the next 25 years. The draft of the third version of the plan was released in 2024 and officially adopted in June 2025. The document is not strictly a policy document, but also outlines the City's strategic plan under which planning projects and decisions will have to comply in the coming decades. In addition to the overall vision and objectives, some specific targets are also included.

The PUM uses the term *lieux de la vie collective* (collective life spaces) to describe the built and natural environments that support community life. The spaces specified in the plan (Figure 1) include libraries, community centers, outdoor plazas, parks and plazas—which fit with other municipal definitions of social infrastructure as observed in Section 2.2.

Under Objective 6 of the PUM, the City describes its intention to improve both the overall supply of and access to community life spaces. There are four sub-components under this objective:

1) Increase the supply of places based on local vulnerabilities and needs
2) Strengthen resilience and contact with nature in community life spaces
3) Ensure quality and flexibility of community life spaces
4) Strengthen the vocation of community life spaces as inclusive spaces of civic appropriation

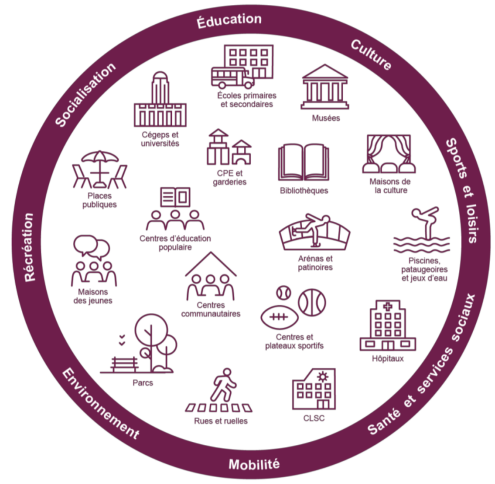

Figure 2-25 Types de lieux de la vie collective et diversité de leurs fonctions

Figure 3-1: Collective life spaces

Source: Plan d'urbanisme et de mobilité 2050, Ville de Montréal, p. 203

The City described their intention to prioritize the development of social infrastructure in areas that currently have relatively poor access to social infrastructure and are socio-economically vulnerable. This analysis involved comparing access to social infrastructure facilities with underlying sociodemographic characteristics to determine the level of prioritization. To identify these areas, the City of Montreal conducted a geospatial analysis, producing a map where Census dissemination areas are colored based on the level of prioritization. This map is shown below as Figure 2: access to social infrastructure in Montreal. The City combined this analysis with a measure of socio-demographic vulnerability to identify "prioritized opportunity sectors," areas to be given the highest priority in social-infrastructure planning and development. None of the highest-priority areas are located in NDG, but there are areas of NDG identified by the City as having "highly elevated needs."

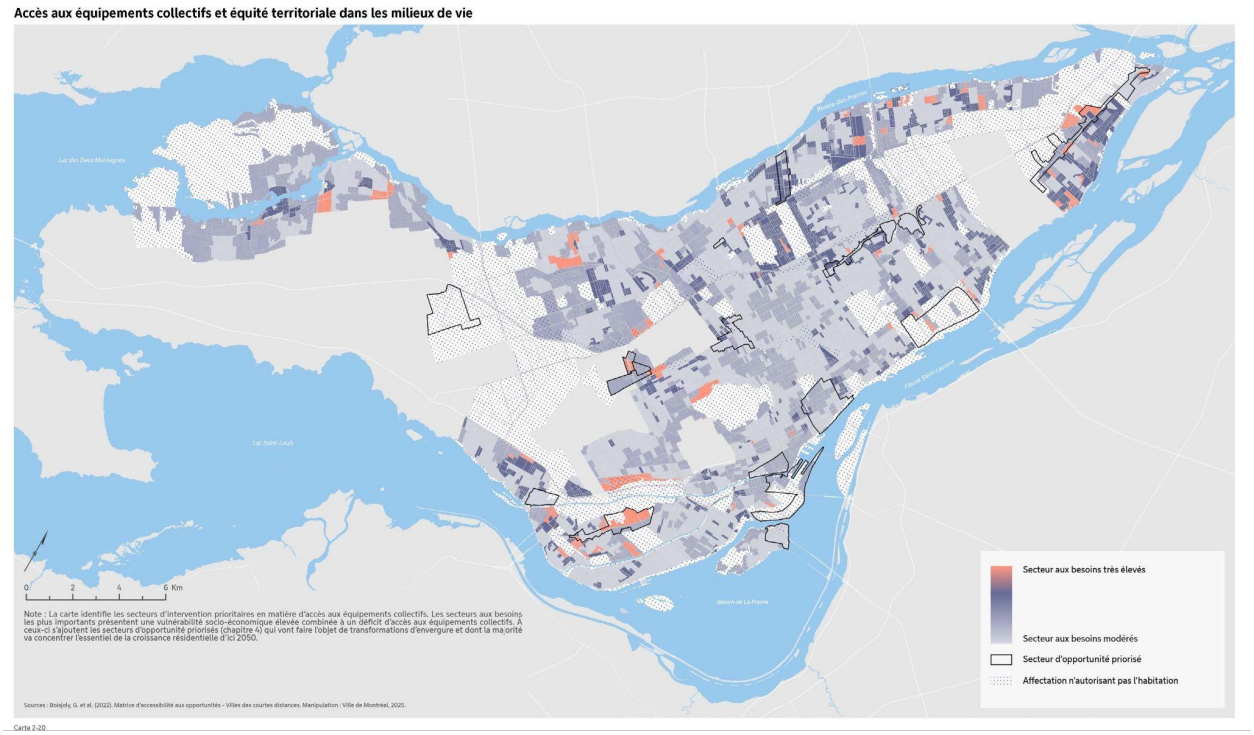

Figure 3-2: Access to collective life spaces in Montreal

Source: Plan d'urbanisme et de mobilité 2050, Ville de Montréal, p. 211

In addition to the direct provision of social infrastructure—for example, in the form of libraries, plazas, parks, and community centers—the City has described other actions to strengthen social infrastructure. For example, the Green Alley program allows residents to nominate their street to be transformed into a green alley.

Regarding collaboration with community and non-profit organizations, the plan does recognize community organizations as potential strategic partners in the provision of community life spaces (Ville de Montréal, 2025, p. 223). However, the PUM does not include detailed measures or strategies on how the City plans to support these organizations. Compared to other aspects of the plan (such as specific targets for new library facilities and green alley conversions), the language used to describe how the City will approach collaborations with non-profits and community organizations is quite general. Significantly, there are no specific details on funding commitments, specific approaches to partnerships, or mechanisms for ensuring long-term, affordable access to spaces for these organizations.

3.2 The Table de quartier model

One of the key actors implicated in the sphere of social development and planning in each neighborhood of Montreal is that neighborhood's *Table de quartier* (or "neighborhood round table").

Montreal's *Table de quartier* system is a unique example of city-supported, neighborhood-scale governance. Each *Table de quartier* is a non-profit organization, which, under that mandate, is officially recognized by the City in order to address social issues and improve quality of life in a given neighborhood. More specifically, the *Tables de quartier* are mandated to address inequalities, reduce poverty and social exclusion. In total, there are 32 *Tables de quartie*r in Montreal, each operating autonomously within a defined geographic area, and collectively coordinated by the *Coalition montréalaise des Tables de quartier*.

The *Tables de quartier* bring together a range of actors (including residents, community organizations, institutions, political actors, and business), to identify and collaborate on shared priorities in the neighborhood. As each *Table de quartier* operates autonomously, there is significant variation among the *Tables*. Each *Table* has its own internal governance structure; offers different services; and sets its own priorities for its neighborhood, developing activities and action plans.

While the *Tables de quartier* were originally created to be consultation and mobilization bodies (i.e., concertation and mobilization), many *Tables de quartier* have expanded their scope of work to also provide services to the community, often in collaboration with other community organizations but sometimes independently.

The *Tables de quartier* are not explicitly mentioned in the PUM, however, they exemplify the type of partner that could be important to the City when designing and strategizing locations for social infrastructure. Through their partnerships and direct work in the

community, the *Tables de quartier* have been able to develop close ties with and have deep knowledge of their communities.

The preferred definition of social infrastructure for this project included three aspects: programs, policies, and physical elements. With regard to social infrastructure in Montreal, the City primarily focuses on the physical elements in the PUM—capital investments, and specific locations and facilities. Meanwhile, the mission of each *Table de quartier* is more inline with improving the networks that are essential for social infrastructure to work—focusing on the programmatic aspect of social infrastructure.

3.3 The NDG Community Council

The NDG Community Council (*Conseil communautaire de Notre-Dame-de-Grâce)* serves as the *Table de quartier* of NDG. Founded as a citizens' group in 1942, the Council was formed to address social issues and to advocate for community needs (Conseil Communautaire NDG, n.d.). The mandate of the Council divides its current activities into three roles: consultation, mobilization, and service provision.

In 2006, the Council began to identify "priority sectors" within the neighborhood. The priority sectors of NDG are areas where residents face higher levels of social isolation and encounter greater barriers to accessing social services. These sectors were identified by the Council through a combination of direct engagement with residents, feedback from partner organizations, and internal and external studies that analyzed various socioeconomic and environmental factors, including income and neighborhood conditions. As of June 2025, there are six priority sectors within the neighborhood (see Figure 3-3). The six priority sectors in NDG have different histories, different socioeconomic and demographic compositions, and were subject to different factors that led to current conditions in the neighborhood. However, the Council has identified that all these sectors have greater social needs than other areas of the neighborhood.

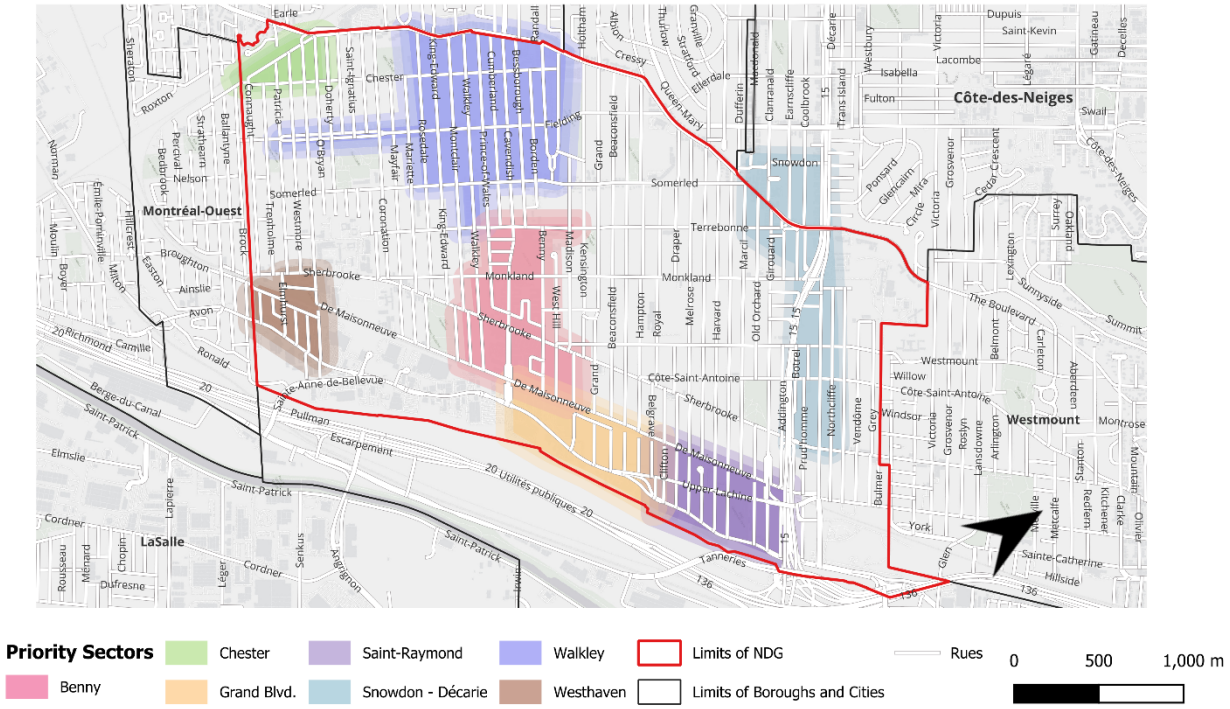

Figure 3-3: The NDG Community Council's Priority Sectors

Source: The NDG Community Council, 2025

The Council's priority sectors predate many of the City's indexes and spatial analysis featured in the PUM. However, staff and partners of the Council did consult data, including Census, public health, and City-provided datasets. Also, qualitative sources, including direct engagement with residents and other community-sector and institutional actors, were weighted more heavily.

4 Methods

This chapter describes the data sources and methodology used in mapping the spatial distribution of social infrastructure in NDG. Case studies are commonly used in planning, and research more generally, to provide contextual depth and to explore relationships between variables that can be difficult to isolate quantitatively (Yin, 2009). The presence of a strong *Table de quartier*, with a history of strong community involvement made NDG an ideal site for exploring the landscape of social infrastructure. NDG was chosen in part because of the conspicuous activity of the NDG Community Council, but also because it is a very diverse neighborhood with regards to land-uses, built form, and population.

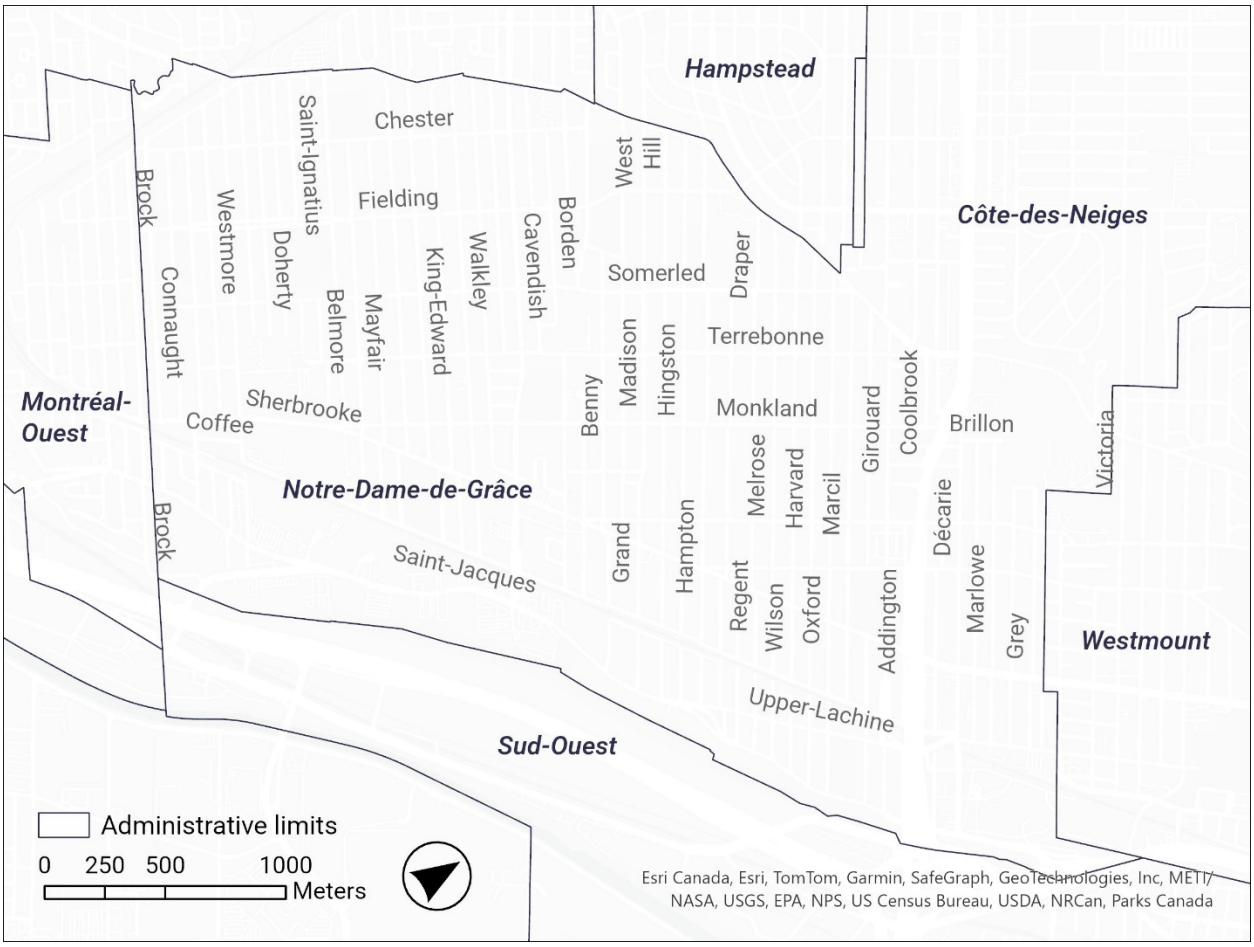

Figure 4-1: The NDG neighborhood

4.1 Data sources

A dataset of social infrastructure facilities in NDG was assembled from publicly available data sources and ArcGIS Pro software. The selection of which facilities to include in the dataset was based on a synthesis of academic and policy sources (explored in Section 2.2). All social infrastructure facilities included in the City of Montreal's "collective life spaces," were included, with the exception of the "streets and alley" category. In addition, other types of social infrastructure—such as places of worship, non-profit community centers (e.g., YMCAs), and certain social businesses were also added to the dataset. Table 4-1 provides a complete list of data sources and included social infrastructure facilities.

Table 4-1: Social infrastructure data sources

Type	Title of data set	Link	Date updated	Publisher
Recreation and sports centers	Installations récréatives, sportives	https://donnees.montreal.ca/dataset/installations-recreatives-sportives-et-culturelles	April 2025	City of Montreal
Greenspaces	Grands parcs, parcs d'arrondissements et espaces publics	https://donnees.montreal.ca/fr/dataset/grands-parcs-parcs-d-arrondissements-et-espaces-publics	April 2025	City of Montreal
Cultural spaces	Lieux culturels municipaux de Montréal	https://donnees.montreal.ca/fr/dataset/lieux-culturels	February 2025	City of Montreal
Social businesses	Locaux commerciaux et statuts d'occupation	https://donnees.montreal.ca/fr/dataset/locaux-commerciaux	January 2025	City of Montreal
Places of worship	Inventaire des lieux de culte du Québec	http://www.lieuxdeculte.qc.ca/carte.php?region=6	November 2024	Conseil du patrimoine religieux du Québec

Type	Title of data set	Link	Date updated	Publisher
Schools	Établissements d'enseignement: PPS_Prive_Etablissements, PPS_Public_Ecole, ES_Universitaire, ES_Collegial	https://www.donneesquebec.ca/recherche/dataset/localisation-des-etablissements-d-enseignement-du-reseau-scolaire-au-quebec/resource/2ae11c05-03b2-4006-bdb2-a49a4fa41c23	April 2025	Ministère de l'éducation du Québec
Health and social service centers	Fichiers cartographiques M02 des installations et établissements	https://www.donneesquebec.ca/recherche/dataset/fichiers-cartographiques-m02-des-installations-et-etablissements	April 2025	Ministère de la santé et des services sociaux

The NDG neighborhood is bordered by four independent municipalities—Westmount to the east, Hampstead and Côte Saint-Luc to the north, and Montreal Ouest to the west. Social infrastructure facilities in these neighborhoods were identified using municipal websites and Google Maps searches. These were geolocated in Google Maps MyMaps and then appended to the social infrastructure dataset in ArcGIS Pro.

4.2. Data Analysis

The dataset used in this analysis was formatted so that each feature corresponds to a unique facility. Information about the facility was included, including the facility's name, type, address, and geocoded coordinates (latitude and longitude). Additional attributes included whether the facility is publicly owned and/or operated and whether it is a secular or religious organization.

The datasets identified in Table 4-1 cover the entire City of Montreal and/or the entire Province of Quebec. These data sets were spatially filtered using ArcGIS Pro to focus exclusively on social infrastructure within 1000 meters of the NDG boundaries.

Socio-demographic data from the 2021 Canadian Census at the dissemination area level was downloaded from Statistics Canada. From this data the population density was calculated.

Maps plotting categorized social-infrastructure spaces and facilities were prepared based on the spatially filtered data. Using the City of Montreal's street network database, catchment areas of 1000 meters were added around each social infrastructure facility. A distance of 1000 meters was chosen based on precedent from the World Health Organization's European Office (Barton and Tsourou, 2000), where a list of basic social services are required within 1000 meters of home for a community of 4000—5000 people. The Australian Urban Observatory's Social Infrastructure Index also used catchment areas of 1000 meters for most kinds of social infrastructure facilities (Australian Urban Observatory, n.d.).

On each map in Section 5, an isolated catchment area has a uniform semi-transparent shading, such that the overlap of two catchment areas is twice as opaque as an isolated catchment area, the overlap of three catchment areas is three times as opaque, etc. This method is illustrated in the graphic to the right, which shows the number of overlapping, idealized catchment areas surrounding three social-infrastructure spaces (dark blue dots). Network (e.g., walking, as opposed to geometric) distance was computed and used in the actual maps, to better reflect accessibility.

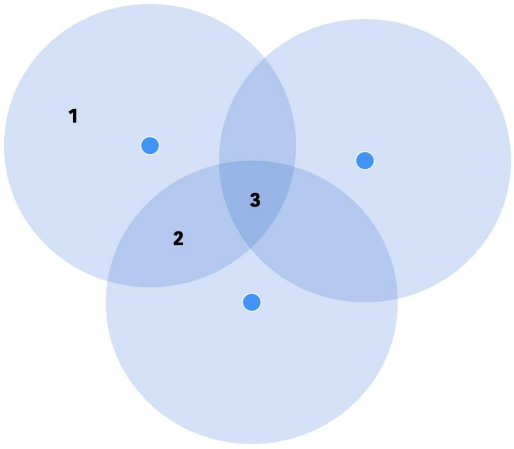

Figure 4-2: Catchment area overlap

Therefore, a greater number of overlapping catchment areas in a specific location indicates that the population in that location has greater access to social infrastructure of that category.

In addition to the social infrastructure facilities and their corresponding catchment areas, each map includes a polygon layer representing the priority sectors. As discussed in Section 3.3, these sectors are areas identified by the NDG Community Council as parts of NDG that a greater social need. By including this layer, the maps make it easier to visually assess the spatial relationship between these areas of need and the level of access to various types of social infrastructure.

5 Findings

The findings are organized into three main parts: first, a geospatial analysis of social infrastructure accessibility in NDG; second, an assessment of the NDG Community Council's role in addressing social infrastructure gaps; and finally, concludes with concluding with supplementary observations from "ground truthing" the data.

5.1 Accessibility to social infrastructure according to Vancouver framework

For mapping purposes, the social-infrastructure spaces in NDG were categorized according to the Vancouver framework, as introduced in Section 2.2.2. The different spatial categories are identified by color in subsequent figures. Orange represents the “play, learn, and grow” category (PLG, e.g., civic community centers, parks, schools, libraries, community gardens, art galleries). Yellow represents the “heal, connect, and belong” category (HCB, e.g., health centers, Indigenous wellness, aboriginal friendship centers, cultural centers, neighbourhood houses, social service centers, places of worship). Green represents the “gather in the private sphere” category (GPS, e.g., cafés, community kitchens, restaurants, stadiums, plazas & public space, markets).

5.1.1 Play, learn, and grow

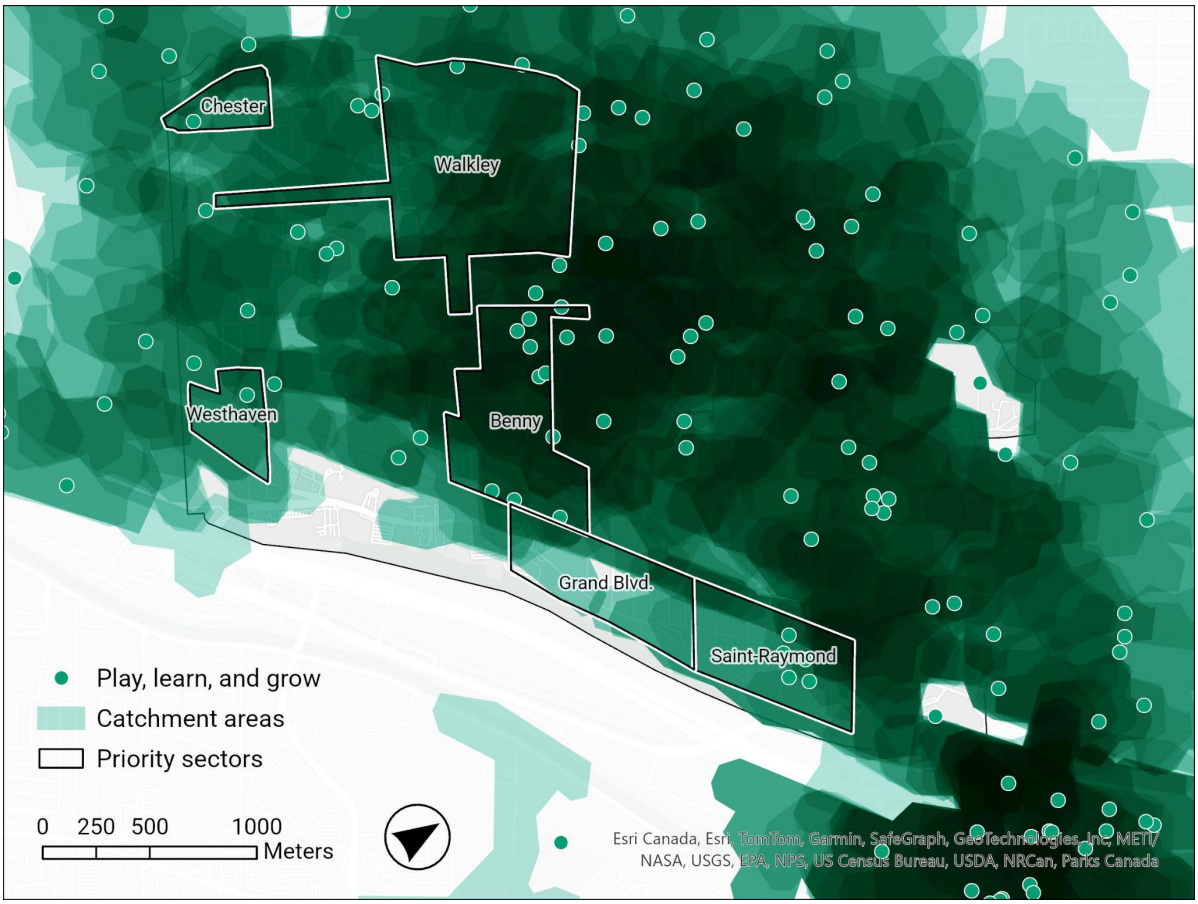

Figure 5-1: Catchment areas around PLG spaces

Figure 5-1 shows that PLG spaces are distributed throughout NDG. Practically every resident of NDG lives within a catchment area of at least one of these spaces. This feature demonstrates immediately a significant limitation of mapping according to a high-level framework which combines many different types of spaces into a single category.

More informative spatial comparisons are revealed by examining some of the subcategories individually. While a high-level analysis suggests broad access to the social infrastructure in the PLG category, disaggregation reveals a more uneven distribution. This unevenness is particularly evident within the NDG Community Council's six priority sectors—areas of the neighborhood with greater social need, as noted in Sections 3.2 and 4.2.

Figure 5-2: Distribution of parks and greenspace in NDG

Figure 5-2 shows the distribution of parks and greenspace in NDG. There are 17 parks and plazas within Notre-Dame-de-Grace, and an additional 19 in adjacent areas less than 1000 meters from the neighborhood. The areas with the highest park access are central and northern NDG, adjacent to the border with Côte Saint-Luc. Almost the entirety of Notre-Dame-de-Grâce has access to at least one park space. The exceptions to this are areas south of the Canada Pacific Railway line, including three of the Council's priority sectors. Most of the Westhaven and Saint-Raymond sectors only have one greenspace within close proximity. Additionally, roughly half of the Grand priority sector falls outside of the catchment area of any greenspace. Along the southern border of the Notre-Dame-de-Grâce borough is the Saint-Jacques Escarpment, a 97,000 square-meter greenspace. (However, as discussed further below, there are few points of entry to the park, making it relatively inaccessible, even for residents living nearby.)

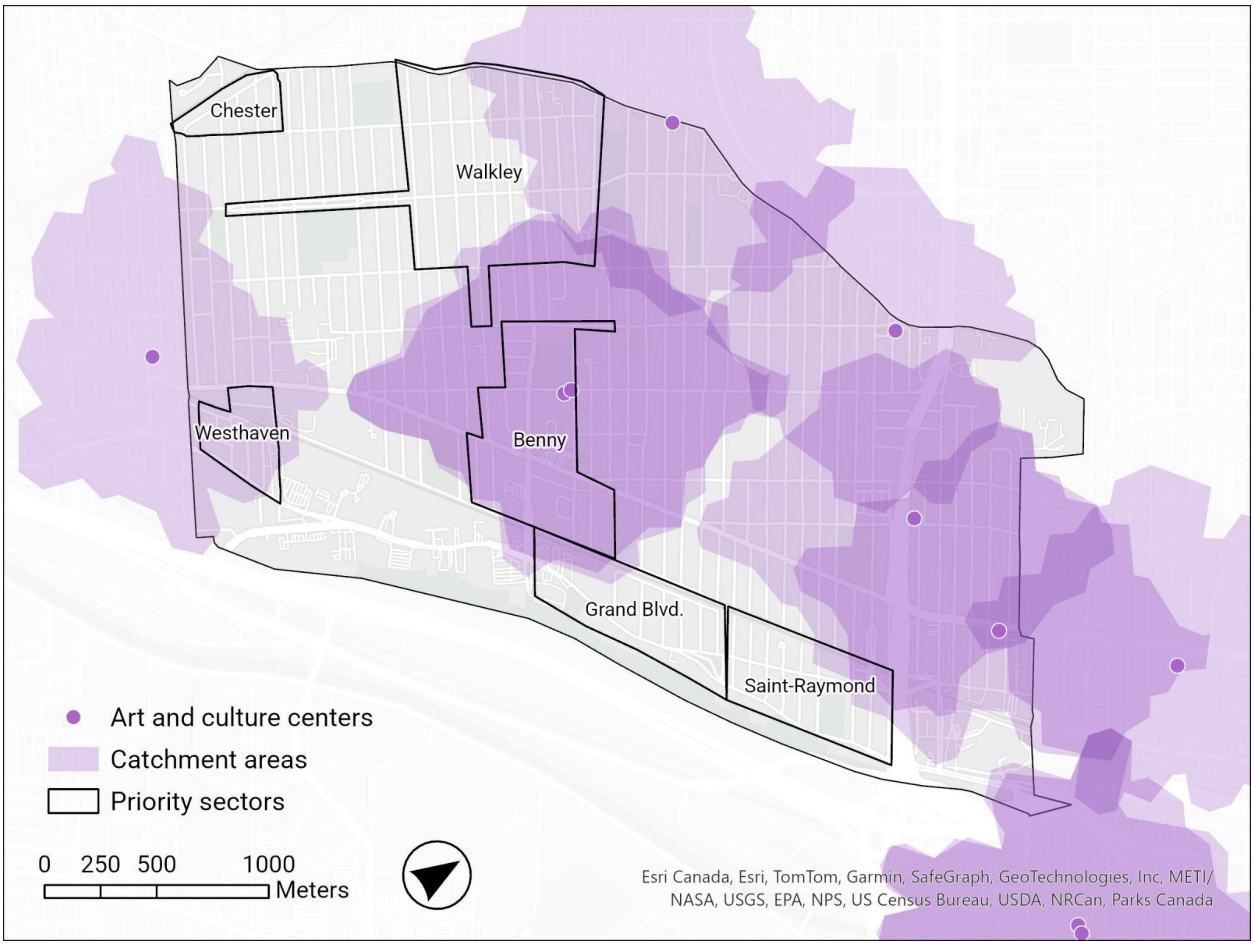

Figure 5-3: Distribution of art and cultural spaces in NDG

Figure 5-3 shows a map of art and cultural spaces in NDG. There are two main public spaces serving the neighborhood—the Benny and the Notre-Dame-de-Grâce libraries. Either in the same building or in a building immediately adjacent to these libraries are *maisons de la culture*—cultural centers that offer space for local art exhibitions, concerts, and other performances owned by the city. Residents living south of the Canadian Pacific railroad and in the north part of NDG do not have these kinds of spaces available within 1000 m. Looking at the priority sectors defined by the Council, three of the sectors (Chester, Grand Boulevard, and Saint Raymond) do not have access to the art and cultural spaces. The only library within the 1000-meter catchment area of the Westhaven sector is located in the independent municipality of Montreal-West.

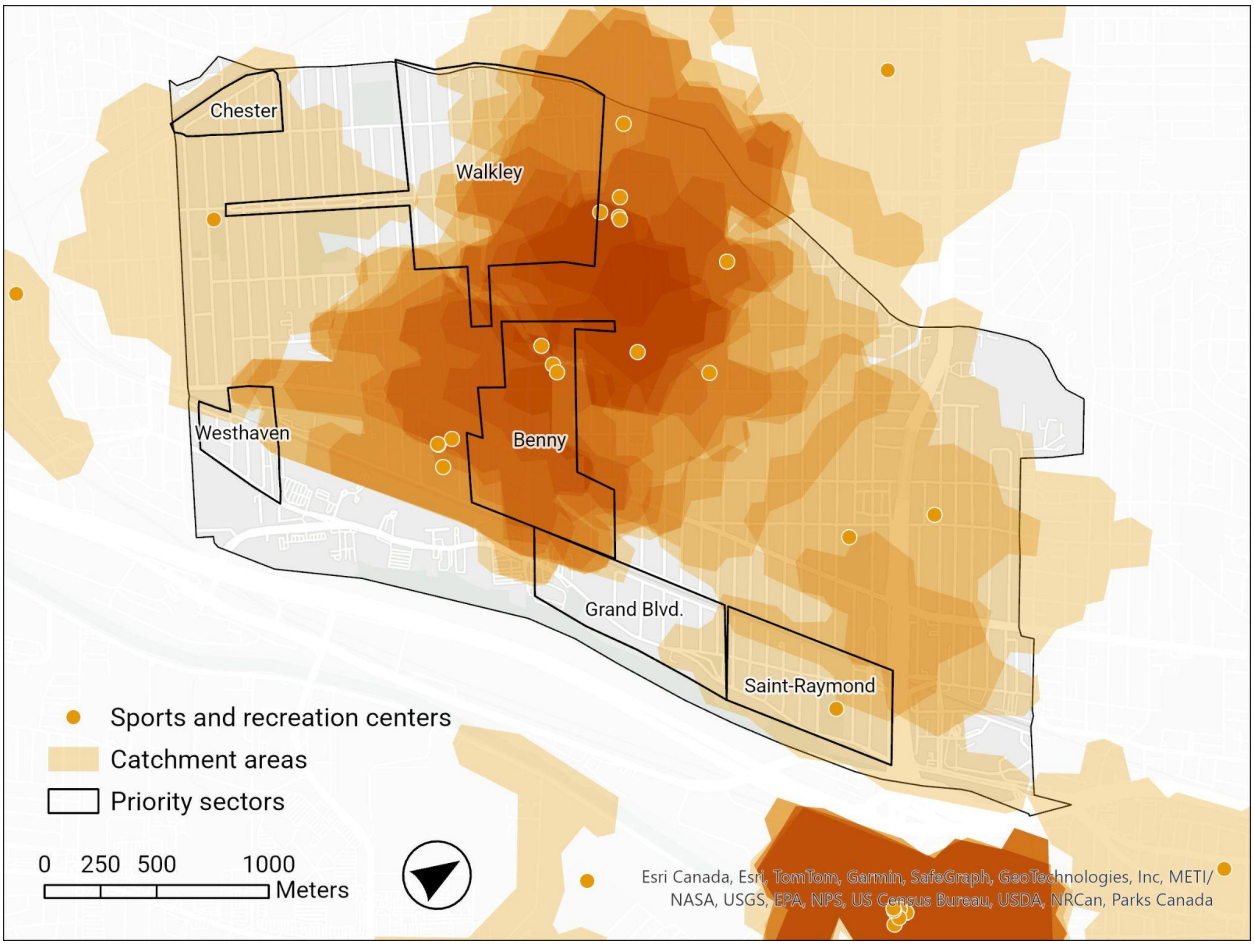

Figure 5-4: Distribution of sport and recreation spaces in NDG

Figure 5-4 shows sports and recreation facilities. These include both publicly operated as well as not-for-profit facilities, such as YMCAs, are included. Specific facilities include arenas, pools, and indoor gymnasiums. Sports and recreation offerings are located primarily in the central part of NDG. Residents in the Westhaven area and Chester and Grand Boulevard sectors have comparatively few options for sports and recreational facilities in their areas, while residents in the Benny sector have many options close by.

5.1.2 Heal, connect, and belong

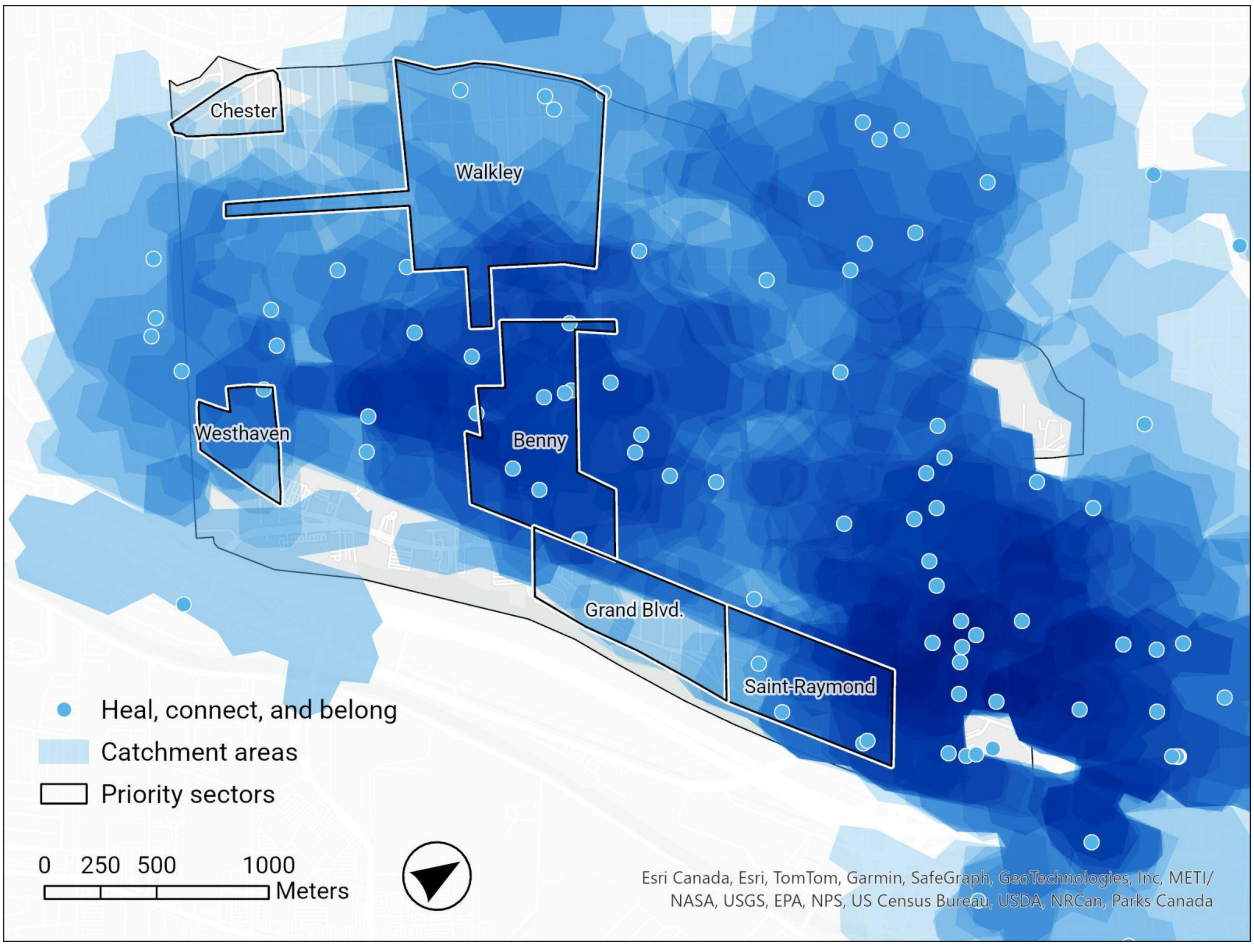

Figure 5-5: Catchment areas around HCB spaces

Figure 5-5 shows the catchment areas surrounding HCB spaces in NDG. Again, this category from the Vancouver framework may be slightly too broad to support detailed conclusions based on mapping, but some areas of the neighborhood have a clear disadvantage. In particular, neither Chester nor Grand have any HCB spaces within their limits. Chester and Grand also have relatively poor access to HCB facilities located in adjacent areas.

The disparity in this category is more clearly evident from looking at health and social services in particular.

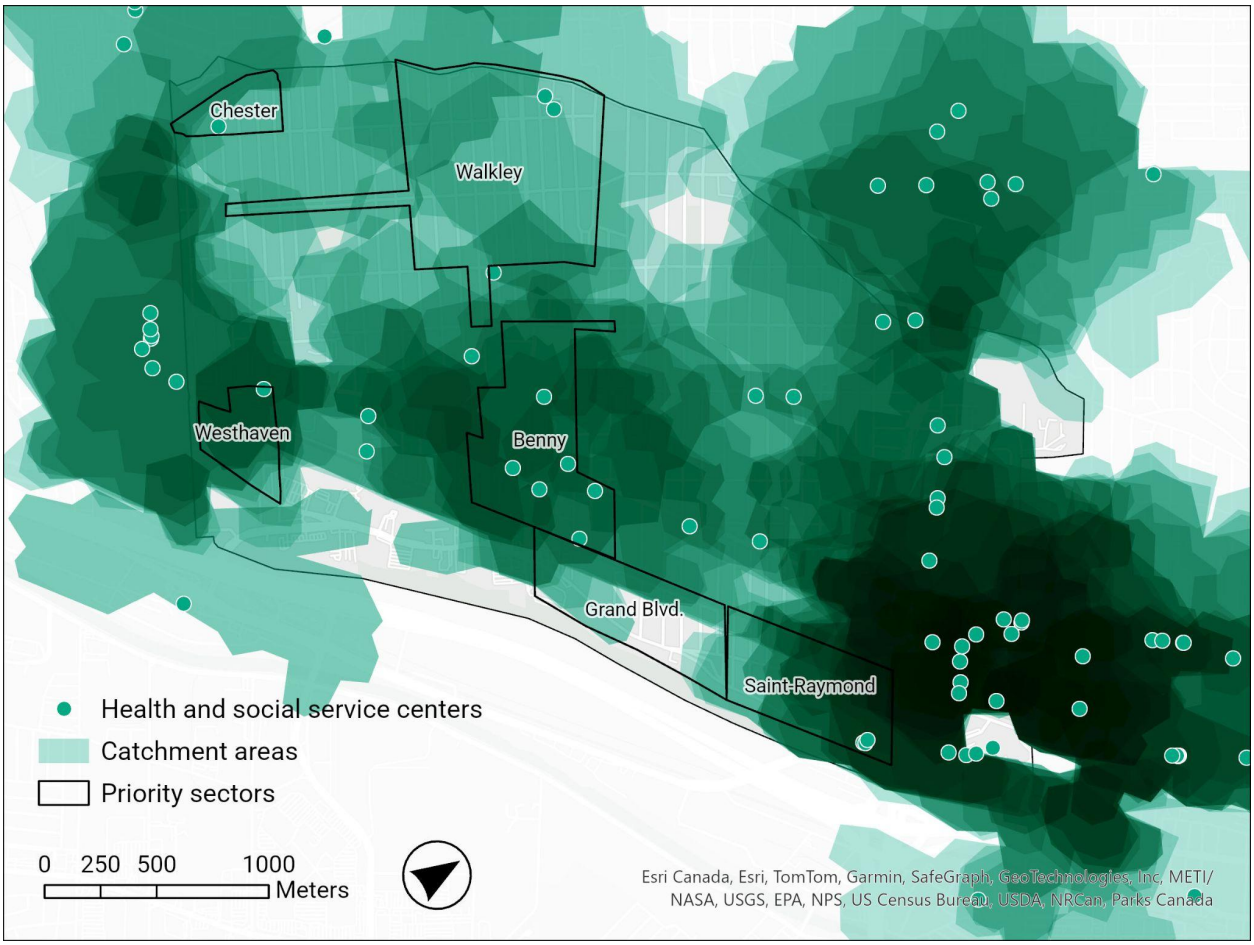

Figure 5-6: Distribution of health and social facilities in NDG

Figure 5-6 shows the distribution of health and social services in NDG. There are many healthcare facilities throughout NDG. Notably, the McGill University Health Center (MUHC) Glen site is located at the southwestern corner of NDG. Serving as a major regional hospital, this hospital draws visitors from around Montreal Island. Other health facilities can be found on major roads in the area.

5.1.3 Gather in the private sphere

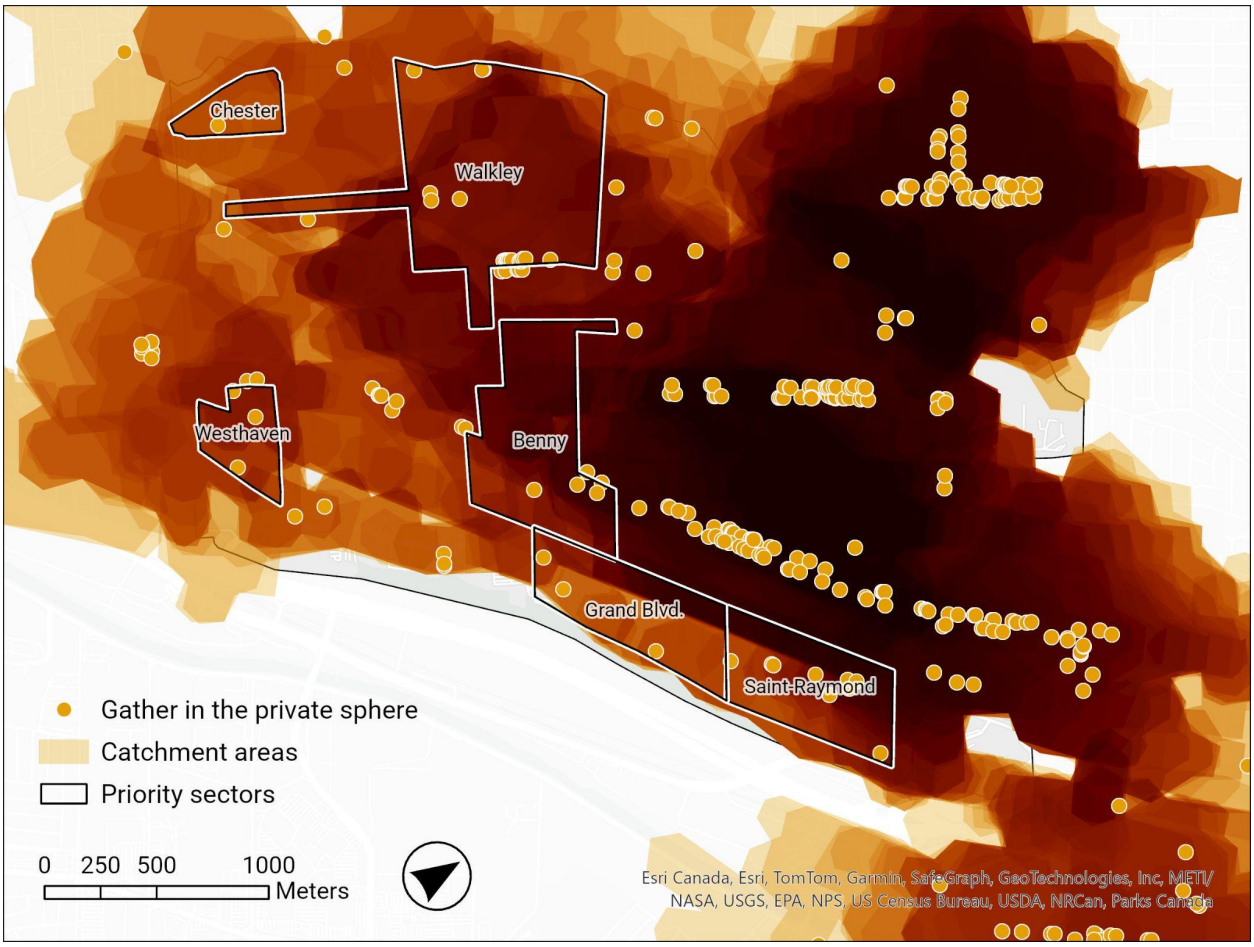

Figure 5-7: Catchment areas around GPS spaces in NDG

Figure 5-7 shows the catchment areas around GPS spaces in NDG. This category of Vancouver's social infrastructure framework includes primarily privately-owned establishments, for example, cafes, restaurants, markets, and stadiums. For this category, although the catchment areas again cover most of NDG, it is quite clear that practically all the GPS services are aligned on major thoroughfares. Accordingly, residents that live farthest from the thoroughfares will have fewer opportunities to gather in the private sphere.

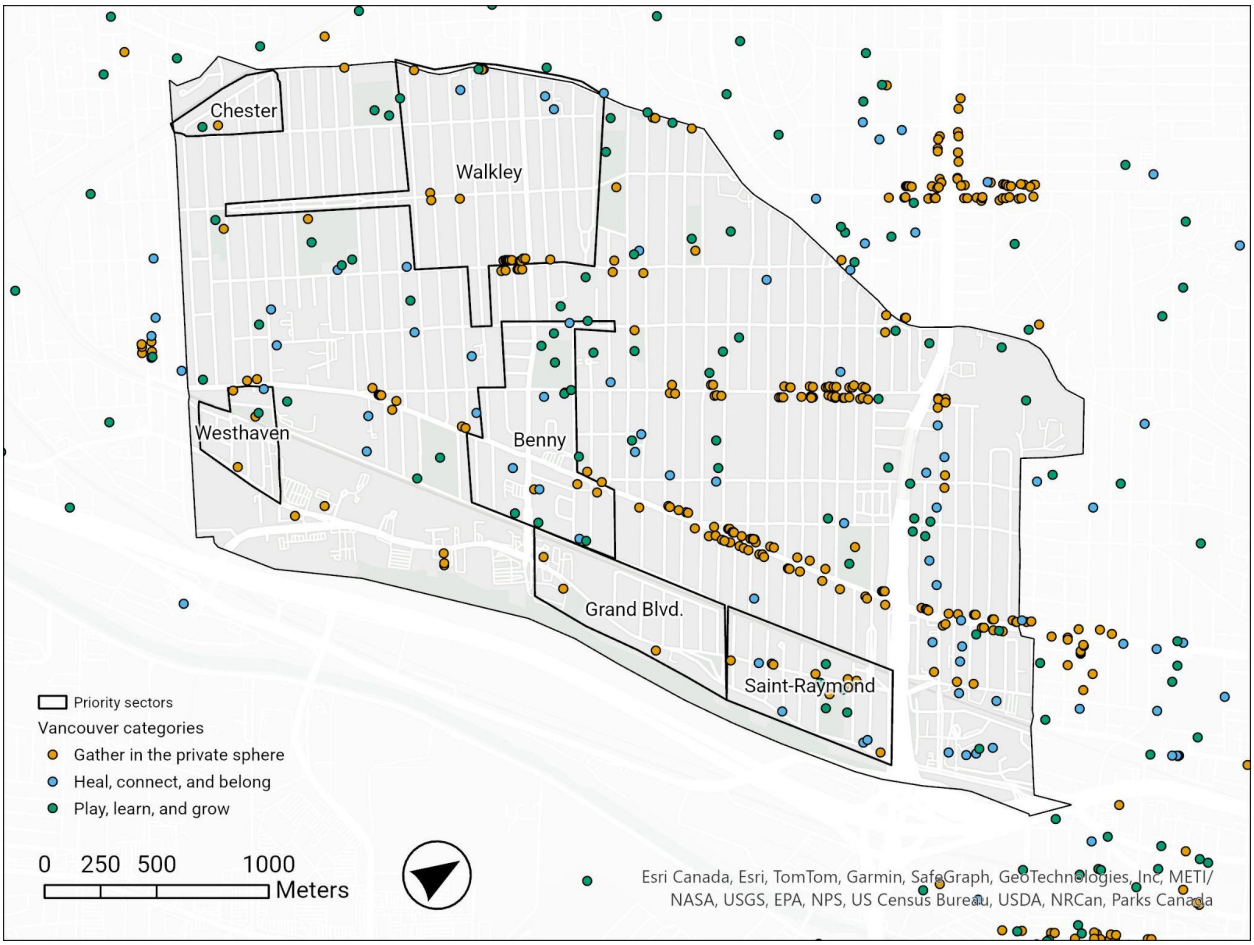

Figure 5-8: Map of all social infrastructures in NDG

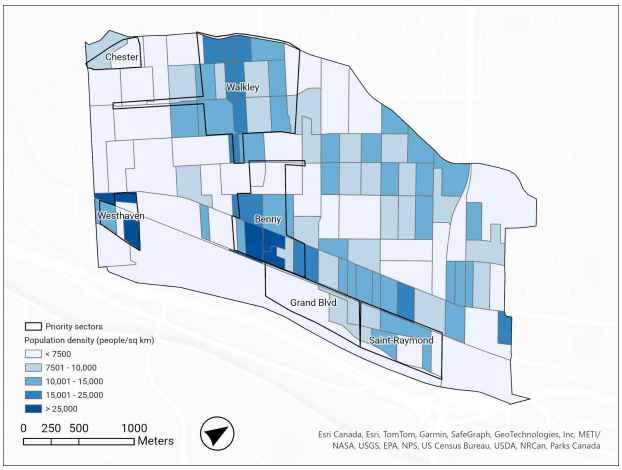

Figure 5-9: Map of population density of NDG

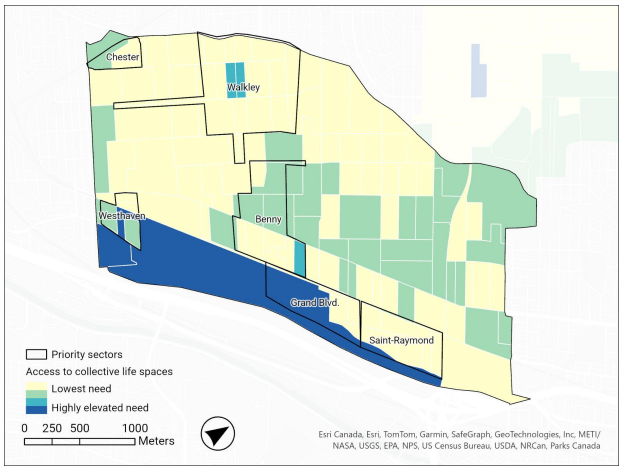

Figure 5-10: Map of collective life spaces need

5.2 Identifying areas of concern geospatially

Figure 5-8 shows all categories of social infrastructure in NDG as examined in this research with the NDG Community Council's priority sectors outlined and labeled. Figures 5-9 and 5-10 provide a comparison against population density and areas in NDG identified by the City of Montreal as underserved, respectively.

The geospatial-mapping portion of this study identifies the Grand Boulevard and Westhaven neighborhoods as being relatively underserved, and the Council likewise identified both of these areas as priority sectors.

The literature reviewed in Section 2.3 suggests that access to and use of social infrastructure can help address issues like poor mental health, social isolation, and low quality of life—precisely the types of challenges that are prevalent in these sectors. Therefore, these two areas would benefit from more social infrastructure.

However, the overall level of agreement between the Council's priority sectors and social infrastructure deserts was imperfect. This finding suggests that the priority sectors cannot be fully replicated by an analysis of the physical presence of social infrastructure alone. A clear example of this is found in the Benny Farm area. While this study's geospatial analysis reveals Benny Farm to have the highest density of social infrastructure overall, the Council has identified it as a priority sector. This disconnect highlights that the Council's criteria for a priority sector include other factors not captured by a simple geospatial analysis, such as social isolation, poverty, or programmatic accessibility, which underscores the limitations of a geospatial-only approach.

Furthermore, a comparison with the City of Montreal's plan reveals additional nuance. The City's PUM map, which identifies "opportunity sectors" (areas needing more social infrastructure), shows none in NDG. This is an important finding in itself, as it contrasts with the findings here, that there is an uneven need for social spaces around the neighborhood. Figure 5-10's darkest blue area, representing the City's highest-need areas, partially overlaps with the Council's Grand Boulevard priority sector. However, a large part of that area extends into largely commercial or industrial spaces with low population density.

In sum, geospatial-only analysis suggests that not all areas of NDG have equal access to social infrastructure. More specifically, it shows a lower density of social infrastructure within or adjacent to Chester, Westhaven, and Grand Boulevard sub-neighborhoods. However, the central parts of the neighborhood, including the Benny and Walkley priority sectors, appear to be well-served by existing social infrastructure of various categories.

5.3. The role of the Council in addressing gaps in social infrastructure in NDG

This section reports additional findings relevant to the assessment of social infrastructure in NDG, gathered not from geospatial mapping but from examining the activities of the NDG Community Council. This involved the researcher speaking directly with Council staff and reviewing materials published by the Council, including the annual reports and website. While "social infrastructure" is not a term used routinely by Council staff, it is abundantly clear that the Council's work is both directed to and influenced by the availability of social infrastructure in NDG. More specifically, the Council is:

1) an important provider of social infrastructure in NDG;
2) a reliable observer and reporter on the state of social infrastructure in NDG; and
3) a stakeholder in social infrastructure, in the sense that it relies on access to existing social infrastructure to support its work.

5.3.1 Provider of social infrastructure

- **Through leveraging relationships with local businesses**—the Council provides social infrastructure in priority sectors and elsewhere, by establishing networks among neighborhood residents and between the residents and local businesses. The Council hosts community meals during the winter holiday season, specifically intended to help individuals who may not have family in the area or would otherwise be spending that time alone. In particular, the yearly "December Together" series of events leverage extensive partnerships between the Council and local businesses. Community meals such as these allow residents to meet their neighbors and otherwise network. Finding space to host the holiday meals has been challenging in certain areas. Near the Grand Boulevard priority sector, the Council made use of one of its business partnerships and was able to host a community dinner at a local restaurant. The Council also uses their relationship with a local business to address food security. Recently, a local bakery has donated surplus bread and other baked goods as part of the local Food Security Coalition, organized by the Council, from which volunteers help to cut and package bread to be distributed free of charge, to residents.
- **Through the direct provision of space**—the Council provides practice space for musicians and music groups representing ethnic demographics within NDG. Examples include a traditional Iranian music group that meets weekly in the NDG offices. The Council also organizes semi-structured "Conversation Groups" where individuals wishing to learn French or English are able to practice with

other NDG residents, guided by a volunteer. The Council operates a weekly bingo, “Cafe rencontre,” from their offices and provides snacks for the residents in attendance. This event is particularly important for addressing senior isolation in the neighborhood, particularly for those who may be experiencing food insecurity. As one example of a service provided throughout Montreal, the Council also hosts *Bonhomme à lunettes*, a mobile service that distributes low-cost eyewear from a mobile clinic.

- **Through small-scale physical interventions**—thein a targeted approach the Council visits social housing buildings in NDG, where communal facilities are often in place but are sometimes underused. The Council commits representatives there to run activities and groups, thereby facilitating interaction among persons who might otherwise be isolated (due to underutilization of the facilities). In some instances, the Council has advocated for and implemented physical improvements to social-housing properties, including a community garden in a social-housing building in the Grand priority sector. The Council has collaborated with city government to install street furniture and other amenities outside of the Westhaven Community Centers, thereby providing additional outdoor space for residents to gather.

5.3.2. Observer and reporter on social conditions

The Council provides a coordinating voice for residents on the social problems in NDG. As described by the Council, the priority sectors of NDG are areas where residents face higher levels of social isolation and encounter greater barriers to accessing social services. As of June 2025, there are six priority sectors within the neighborhood: Chester, Walkley, Westhaven, Benny, Grand, and Saint-Raymond. It is the opinion of the Council that significant social need exists currently in these areas.

Informed by their own priority-sector model and by information from the City, from their own membership, and from partner organizations, the Council targets outreach and other initiatives. In the course of this work, information is gathered, both systematically and incidentally, which further refines the Council’s unofficial assessment of the social atmosphere of NDG.

Significantly, the Council is able to communicate what they learn in the priority sectors to other community organizations, to planners, institutions (e.g., public health body) and to elected officials including the City. In this manner, Council observations may have the effect of correcting erroneous or misleading conclusions by those outside of the community. Thus, it is appropriate to acknowledge the Council’s work as an important “ground-truthing” activity. With respect to this study, the priority-sector assignments of the Chester and Westhaven (and to some extent Walkley and Grand) areas support the

geospatial analysis reported here. On the other hand, the priority-sector assignment of Benny refutes it.

5.3.3 Stakeholder in social infrastructure

As is the case for most community organizations, the *Tables de quartier* generally have a small brick-and-mortar footprint. Accordingly, most of the Council's own initiatives operate out of existing social infrastructure in NDG.

Council employees periodically visit priority-sector areas and host "resident assemblies," where they can share information about resources and services available to residents. They also seek input from the residents on neighborhood issues. In some priority sectors, these events are hosted at community centers. However, in certain areas (e.g., Chester where there is no community center), the resident assemblies are held in a parking lot of a local school. Other services offered by the Council (e.g., free tax clinics) and events organized by the Council are typically held in whatever community facility is available.

In a sense, these operational details may seem to be obvious or expected for community organizations. They reveal an important synergy, however. Social activity, with the possible exception of online activity, relies on the ability of people to physically gather. Despite the institutional knowledge and expertise of community organizations, people cannot gather without suitable physical space. Thus, community organizations often find themselves to be reliant on the civic and private sectors to allow their physical spaces to be used (sometimes repurposed) for desirable organization activities.

5.4 Supplementary ground truthing

To assess the accuracy of social infrastructure locations identified via the Google Maps API, Fraser et al. (2022) conducted in-person visits to verify ("ground-truth") the data. The researchers sampled one-square-kilometer areas across Boston, identifying locations that were missing from the dataset and evaluating the physical layout of identified sites to determine whether they physically had space for social encounters.

This research included limited ground-truthing of selected social-infrastructure facilities. Examples were chosen to highlight discrepancies between official spatial data and on-the-ground realities of social infrastructure. The examples underscore the limitations of geospatial mapping. The examined spaces are listed in this section according to category and further discussed in the following section.

5.4.1 Invisible social infrastructure

Social infrastructure in this category includes spaces and facilities that clearly meet the defining criteria but were not listed in the publicly available data sets of Table 4-1.

a) **French conversation group:** One example of social infrastructure that was invisible to mapping is a French conversation group organized entirely by residents of NDG. This group primarily communicates through the Facebook page, *French Conversation in NDG* and meets weekly at the Benny Library. However, when space at the Benny Library is not available, the group meets at Phoenix Books, a local bookstore which opens its space after hours to host the group.

b) **Cricket in the Walkley Community Centers parking lot:** On Wednesday mornings at 6:30 AM, a group gathers in the parking lot of the Walkley Community Centers to practice cricket. Despite having a large population of immigrants from cricket-playing (Commonwealth) nations, the borough has only one cricket pitch located within its boundaries. This example shows how residents repurpose underused spaces to fit their needs.

5.4.2 Exclusive social infrastructure

Social infrastructure in this category includes spaces and facilities which are community-oriented by design but may only be inviting or accessible to a limited group of residents. Though such spaces may qualify as social infrastructure *per se*, plotting them on par with more inclusive spaces may defeat the objectives of geospatial social-infrastructure mapping. In other words, these spaces may represent forms of exclusion that would not be visible on a map.

c) **Rencontres community garden:** One of three allotment-style community gardens in NDG, Rencontres allows individuals or households to maintain an assigned plot after applying and advancing through a waitlist. In the garden, there are shared amenities including a tool shed and seating area. However, access to the garden is restricted, locked by a key/code, making it a resource only for those with assigned plots. Other forms of urban agriculture, for example, collective gardening, where everyone works on one single large garden, could offer a more inclusive form of social infrastructure, albeit with a higher level of coordination, organization, and public investment.

d) **Montreal-West Public Library:** The only library located within 1,000 meters of the Westhaven sector is the Montreal-West Public Library, situated in the independent suburb of Montreal-West. Despite its name, Montreal-West is not a

municipal public library in the conventional sense; rather, it is a municipally funded library, operating as a non-profit. As a result, it does not follow the same access rules as other public library networks and is authorized to limit which patrons can use the facility. By contrast, the Westmount Public Library—located in an independent municipality on the eastern edge of NDG—is generally free and open to all users, regardless of residency.

5.4.3 Capacity constraints

Social infrastructure in this category includes spaces and facilities which, though publicly accessible and well-recognized, face significant practical capacity-related constraints, including staffing or space constraints. Accordingly, the level of access to these facilities may not meet expectations based on geospatial mapping.

e) **NDG Sports Centers Pool:** On one of the hottest days of summer 2025, the pool at the NDG Sports Centers closed between 10:00 AM and 12:00 PM for a regularly scheduled staff break. While administrative closures of public facilities are to be expected, this example shows that mapped social infrastructure may not always be available when residents need them most.

f) **Walkley and Saint-Raymond Community Centers:** The Saint-Raymond and Walkley Community Centers are managed by a non-profit organization in partnership with the City of Montreal. Both centers offer year-round programming at affordable prices to NDG residents. During the summer, these centers operate summer camps. To address security and competing use, these community centers are not always open to the general public while the summer camps operate.

5.4.4 Inadequate conditions

Sometimes the condition or amenity level limits the level of socialization a facility can support.

g) **Chalet in MacDonald Park:** Many of Montreal's parks have chalets with restrooms, water fountains, and sometimes multi-purpose rooms. The chalet in Park MacDonald (technically in Côte-des-Neiges but accessible to residents of the northeastern part of NDG) is not equipped with or part of the free Montreal WiFi available at other public buildings, including many chalets. The lack of WiFi amenity limits what kinds of activities and/or groups can operate in this space.

5.4.5 Underused or inaccessible spaces

Social infrastructure in this category includes spaces and facilities that are inaccessible to residents.

h) **The *Falaise Saint-Jacques*** is the largest green space in NDG and forms the southern border of the neighborhood. However, it is difficult even to find one of the few points of entry to the park, making the park practically inaccessible from NDG. The green space itself has a few trails that run the length of the escarpment. Nevertheless, the lack of accessibility from NDG is a significant barrier and one which is totally invisible to geospatial mapping. Indeed, a person examining Figure 4-2 in this report may conclude, erroneously, that NDG residents (especially in Westhaven, Grand, or Saint-Raymond) have ready access to this valuable green space. As it stands, the escarpment is currently underutilized by NDG residents. Moreover, it was closed from fall 2024 and remains closed as of June 2025 due to erosion concerns.

i) **The NDG Park Chalet:** The City of Montreal recently contracted with a private organization to manage the public meeting chalet in Notre-Dame-de-Grâce Park for the summer. While many residents enjoy the programming and activities organized by this group, other community groups were less appreciative because they were forced to seek out alternative locations for their meetings that were previously hosted in the chalet.

5.4.6 Ephemeral spaces

Social infrastructure in this category includes spaces that are created because of transient opportunities and/or needs.

j) The main commercial artery of NDG has **two parklets: Place Charles-Este (at Sherbrooke and Madison) and Place Guy-Viau (at Sherbrooke and Royal).** These small spaces are very popular, particularly during the summer when people can be seen using them at all times of the day. Knowing the popularity of these spaces, the Borough effectively expanded the area of these spaces by closing off small sections of abutting streets, adding more chairs and tables for people to sit and gather. The ability of outdoor spaces to provide places for encounters is highly dependent on the season and weather.

Examples in each of these categories were discovered in NDG within a relatively short period of time. These observations support the conclusion that geospatial mapping, no matter how complete and skillfully executed, may fail to capture some important social infrastructure spaces and may overestimate the relevance of others.

6 Discussion

6.1 Discussion of findings

6.1.1 Geospatial mapping and ground truthing

Geospatial mapping is an effective tool for visualizing spatial inequities. In the present context it is especially useful for identifying areas that lack access to facilities and spaces of a particular kind. It can be used, therefore, to pinpoint potential locations for new civic facilities, for instance. The mapping exercises in this study do reveal uneven social infrastructure in NDG.

Two different approaches were taken in order to ground the geospatial analysis of Sections 5.1 and 5.2. The ground-truth findings presented in Section 5.3 reflect the community-organization perspective of NDG Council, while those presented in Section 5.4 were gathered outside of that context.

An important hypothesis of this research was that areas of sparse social infrastructure, according to geospatial mapping, would coincide with the priority sectors identified by the NDG Community Council. Some of the underserved areas, including Chester and Westhaven, aligned with the Council's priority sectors. However, other areas, like the Benny area, presented a contradiction: a high density of social infrastructure alongside continued social needs, as identified by the Council.

This finding underscores the need to distinguish areas of verifiably low social need from areas that have a high density of social infrastructure. The Benny Farm example illustrates this perfectly.

Benny Farm, originally developed as a social housing for veterans returning from World War II, had significant and persistent social needs. In response to this need, the government decided to cluster recreation, health, and library facilities in the area. Perhaps this distinction can be understood temporally, instead of spatially: driven by public policy and community interest, services may concentrate responsively in areas where the need was historically greatest.

Today, the Benny Sector has the highest concentration of low-income residents in NDG and, despite a high physical density of social infrastructure, continues to be identified as a priority sector. This apparent paradox, however, reinforces a key finding from ground-truthing social infrastructure. While the facilities are physically present, the Council has concluded that residents face significant barriers to using the existing amenities: facilities are inaccessible due to limited hours, capacity constraints, and culturally

irrelevant programming. This finding demonstrates that a "social infrastructure desert" is not solely defined by the absence of buildings, but also by the factors that make existing facilities functionally unavailable to the population that needs them most.

Outside of the Council context, this research identified six broad categories liable to cause variance between the density of social infrastructure assessed by geospatial mapping and the quality of the social atmosphere experienced by residents. The categories recognize spaces invisible to mapping, mapped spaces that functionally exclude certain residents, mapped spaces with hidden capacity limitations or inadequate facilities, mapped spaces that are underused or inaccessible for various reasons, and ephemeral spaces that would defy any form of mapping. Examples in each of these categories were readily identified in NDG through visits to the facilities and spaces themselves.

6.1.2 What mapping misses

The complicating features outlined above make ground-truthing activities especially important if conclusions are to be drawn from geospatial data. Based on the examples given in Section 5.4, and others like it, there are evident limitations to measuring social infrastructure by geospatial mapping exclusively.

More generally, while maps can show where libraries, parks, and community centers are located, they cannot easily capture aspects of social infrastructure such as:

1) the quality of facilities;
2) the accessibility of the facilities (e.g., physical, psychosocial, operational accessibility);
3) the types of programming of the facilities;
4) hours of operation;
5) safety getting to and from the facilities; and
6) the extent to which facilities are actually used.

For instance, a community center or park may appear on the map as a facility serving a given neighborhood. But whether it functions as meaningful social infrastructure depends on its desirability, on whether it is truly accessible to residents, and on how it is programmed. Spaces are only infrastructure when they are activated and meaningful to those who use them.

Moreover, accessibility is an essential component of social infrastructure. Some spaces that are considered social infrastructure, and at first glance appear open to the public, can be restricted or managed in ways that limit who can use them. The example of the public meeting chalet in NDG Park is a clear illustration of this idea: while the chalet is

owned by the City of Montreal, its management by a private organization renders the space unusable for certain groups.

Finally, informal and mobile services are typically invisible to geospatial analysis. Services like *Bonhomme à lunettes* (a mobile service, as noted above) operate outside of typical healthcare spaces. Even commercial third places, including cafés and local restaurants, can serve as informal social infrastructure. In the NDG neighborhood, for instance, some restaurants have hosted community events during holidays celebrated in different parts of the world. Naturally it would be a mistake to count every cafe and restaurant as social infrastructure, however, because some may be more transactional and less accommodating to social interactions (either casual or recurring).

In sum, this research found that geospatial analysis is a valuable but incomplete tool for understanding social infrastructure.

6.1.3. Addressing the defects of mapping

Some of the defects noted above can be addressed via supplementary information gathering by local organizations invested in their communities. Community organizations such as *Tables de quartier* possess detailed knowledge that can inform assessment of social infrastructure and even improve programming and activation. Using the NDG Community Council as an example of such an organization, this study showed how the remedy of supplemental information gathering is being applied today in NDG. In particular, this study showed instances of refinement and correction of oversimplified, geospatial-based conclusions as made herein (Chapter 4) and also as made by the City. The Council's knowledge of informal assets, programmatic gaps, and social needs was essential for understanding what the maps could not show. The measurable indicators relied upon by municipal planners, on one hand, and the Council's insight, on the other, shows two *sometimes overlapping but distinct* stories. Community organizations are a resource supplementary to geospatial mapping.

These ideas have been exemplified by the physical presence of the Community Council in NDG: while it appears as a non-profit on the map—and therefore not fitting the City of Montreal's definition of "community life spaces" the office serves as an important hub in the NDG community. The office hosts conversation groups, activities for seniors, and other types of meetings that foster social connection.

These examples highlight a limitation of relying upon any geospatial approach to try to understand the landscape of social infrastructure in a community. While social infrastructure includes physical facilities, there is nuance, and it is important to also know about the qualitative features of the facilities.

6.2 Research limitations

Prior to presenting the conclusions and policy recommendations from this research, several important caveats and shortcomings of the study should be noted.

First, both quantitative and qualitative aspects of the study relied on publicly available data. Such data was believed to be reliable, but no guarantee or error limits were secured. As noted in Table 4-1, all the data appearing in the plots are from concurrent sources from 2024 to 2025. Only the population data appearing in Figure 5-8 are from a 2021 census.

Second, analysis was limited to a single neighborhood (NDG) and a single community organization (the Council) within that neighborhood. Each *Table de quartier* in Montreal operates autonomously, and the activities of the Council may not be generalizable to other neighborhoods.

A valuable extension to this research would be to attempt additional filtering of the geospatial data to assess the relevance of the mapped spaces and facilities to particular groups of residents. Some groups that were considered (Section 2.3.5) include children, seniors, immigrants, and residents that identify with a minority ethnic culture. An objective, systematic basis for filtering the data was searched for but ultimately not found, so the attempt was abandoned. Some qualitative conclusions were drawn, however. Most importantly, if filtering by group were undertaken, it would be important to start with a framework that naturally aligns to the groups of interest. This study settled on the Vancouver framework, which is not ideal to that task, but provides some information.

Facilities and spaces classified as places to “play, learn, and grow” (PLG) are almost entirely age-agnostic and culture-agnostic. For instance, all of the civic community centers in NDG have programming for children and for seniors. Facilities and spaces in the “heal, connect, and belong” (HCB) category are also age-agnostic, and while some HCB spaces such as healthcare facilities and halfway houses are also culture-agnostic, the remainder are quite culture-specific. They include indigenous wellness centers, aboriginal friendship centers, cultural centers, and places of worship, for instance. Thus, by excluding the healthcare facilities and halfway houses, the HCB category could be a reasonable surrogate for culturally relevant social infrastructure. Limited guidance can be found in the “gather in the private sphere” (GPS) category as well. The GPS category, which included restaurants and cafes, corresponded to the category with the highest number of facilities. This category is likely the least relevant to younger children. However, a specific subset of those facilities may be very important to immigrants or individuals with certain cultural identities.

Finally, no formal interviews with residents or stakeholders were conducted. Instead, qualitative insights came from documents published by the NDG Community Council and ground-truthing. Future studies of social infrastructure in NDG could incorporate interviews with residents, or participatory asset mapping to capture residents' perspectives on social-infrastructure access and on which types of social infrastructure are most relevant to NDG residents.

7 Recommendations for policy and planning practice

Social infrastructure is still an emerging area of study in both academic and policy contexts. The geospatial results of this study found that some areas of NDG have a high concentration of social infrastructure, while other areas are moderately or significantly underserved. This was evident in all categories of infrastructure as defined in relevant frameworks.

The geospatial results were somewhat consistent with the "priority sector" assignment by the NDG Community Council, however the agreement was imperfect. The geospatial results were somewhat consistent with the "priority sector" assignment by the NDG Community Council, but the agreement was imperfect. This imperfect alignment, however, serves as a key finding. One of the Council's priority sectors, the Benny neighborhood, coincided with an area of relatively dense social infrastructure on the maps. As explored earlier in this study, this apparent contradiction reinforces the idea that a "social infrastructure desert" is not solely defined by the physical absence of facilities, but also by factors that make existing infrastructure functionally unavailable to the population that needs it most.

The Council has an interesting relationship to social infrastructure, which was explored at some depth. This study shows the Council to be at once an important provider of social infrastructure in NDG, a reliable reporter on the state of social infrastructure in that neighborhood, and a stakeholder in social infrastructure.

Through limited ground truthing, this research identified six broad conditions liable to cause variance between the density of social infrastructure assessed by geospatial mapping and the quality of the social atmosphere experienced by residents. These include: when the space is invisible to mapping, when mapped spaces are functionally exclusive, when mapped spaces have hidden capacity or suitability limits, are underused or inaccessible, or temporary. Spaces of these kinds were readily identified in NDG.

A conclusion of this study is that some of the defects of geospatial mapping can be addressed via supplementary information gathering by local organizations invested in their communities. Community organizations such as *Tables de quartier* possess detailed knowledge that can inform assessment of social infrastructure and even improve programming and activation. The measurable indicators relied upon by municipal planners, on one hand, and the Council’s insight, on the other, shows two sometimes overlapping but distinct stories. Thus, community organizations can be a resource supplementary to geospatial mapping.

As a field in which so much is yet to be explored, there is incomplete consensus on how social infrastructure should be measured and tracked within communities, and how the resulting information can be best used. In that spirit, the following seven recommendations for the public and community sectors are proposed, based on this research. Proposals are directed primarily to planning departments in the public sector and to community organizations but consider the interests of various stakeholders.

7.1 Develop a standalone social infrastructure strategy

In recent years, many large cities have developed standalone social-infrastructure strategies; the City of Montreal should have one too. While Montreal has introduced the concept of “collective life spaces” within its overarching urban plan, this approach is not the same as a dedicated, standalone strategy. A strategy, such as the one developed by the City of Vancouver, is an excellent example. It details Vancouver’s plan for supporting social infrastructure that falls outside of traditional definitions. By expanding its definition of “collective life spaces,” Montreal can better ensure that all its residents have access to spaces and facilities from which they can build community.

The City should involve the community sector in developing its social-infrastructure strategy. As this research has demonstrated, in NDG, the *Table de quartier* of the neighborhood has had a critical role in providing social infrastructure and also relies on existing social infrastructure in order to fulfill its mandates. A determined collaboration between the City of Montreal, *Coalition montréalaise des Tables de quartier*, and other groups that provide formal and non-formal social infrastructure in the City would result in a strategy which is more effective for residents and more efficient for funders, and which gives community organizations and residents a louder voice.

7.2 Ensure equitable and accessible facilities

All kinds of spaces, large and small, programmed and unprogrammed, are all important to the social-infrastructure landscape. Civic facilities are vitally important, however. Facilities operated by the City almost always present lower (financial) barriers to access by residents. While the City of Montreal specified libraries, parks, and green alleys as community life spaces, there are additional categories that could be considered to enable community bonds to strengthen. This research found that within NDG, there are areas with lower access to social infrastructure facilities–namely Chester and Westhaven. While only a small part of Chester is being targeted for “elevated levels of housing intensification” in the PUM, both areas have significant housing projects underway. This research strongly supports an existing feature of the plan, that social infrastructure, a critical resource for communities, should be considered when new

housing projects are underway. Further, the provision of social infrastructure should be considered on par with traditional (physical) infrastructure, where the condition, capacity, and age of the facilities are routinely assessed.

Naturally, some kinds of spaces are easier to site than others due to constraints related to size and location. For example, large healthcare centers and sports complexes, like those needed for cricket, are limited by space and siting requirements. While it is not feasible to expect all neighborhoods to have every kind of facility, the City should prioritize ensuring that all residents have equitable access to the services those facilities provide to the extent they can.

With this in mind, where gaps in social infrastructure become apparent in a neighborhood (via geospatial mapping and/or other assessment), the City and responsible community organizations should supplement outreach and activities in those areas. This approach would help residents achieve security socially, as well as physically, and further the objectives of virtually all stakeholders.

7.3 Co-create with the community

Efforts should be made to ensure that social-infrastructure investments are relevant to the communities they serve.

The demographics of a neighborhood, in addition to its population, can change over time. The example of the cricket practice in the Walkley Community Centers parking lot is a clear indicator that some spaces, publicly owned and clearly intended to serve communities, are adapting too slowly to demographic changes. One possible solution is to plan and design flexible spaces that can be adapted easily and inexpensively as demographics change.

Just as Montreal libraries have shown willingness to adapt their collections for relevance to immigrant communities (Paola Picco, 2008), other public facilities should be just as responsive. Facilities and associated programming should be carefully co-created with, or even led by the community (for example, see Alcaide Manthey, 2024 on the importance of community-led initiatives). This approach would better promote cultural relevance and access.

The City of Montreal has existing policies, including a participatory budgeting process, that allows the community to have a greater role in deciding which forms of social infrastructure will be provided and actively maintained. This is just one approach to participatory social infrastructure planning. Others exist also, and different approaches may be used according to context (Engle et al. 2021).

Naturally the community sector can help facilitate this process. The advantage they offer is that community organizations are liable to interact with groups and individuals that are much less likely to interface with the public sector. Thus, the community organizations can give these residents the voice they deserve and, in so doing, further their mandates.

7.4 More than construction

With respect to social infrastructure in the form of public facilities, the City of Montreal should, beyond ensuring that there is equitable spatial distribution of the infrastructure, also ensure sufficient funding to operate those spaces. Social-infrastructure facilities should have various kinds of programming relevant to people of different ages. Past research has indicated that for older adults, regular programming is particularly important.

In addition, social-infrastructure facilities should be well-maintained–if places are not clean or appropriately updated, conditions may limit their use.

7.5 Incorporate community-defined assets into infrastructure inventories

The best way to know what spaces are desired and used by residents is to ask the residents. Direct engagement with the community is vital to the purpose of learning which spaces are the most important contributors to social infrastructure, and, accordingly, how much social infrastructure a community really has or needs. Information provided by residents can be used to contextualize data that the city already has or collects. Planning departments can survey residents and community organizations to learn about the places that are truly beneficial for community life. In some cases, private spaces (e.g., cafes, places of worship, restaurants) are important sites for social infrastructure. For the good of the community, such spaces should be protected, supported, and maintained in parallel to public spaces.

In Canada, both federal and provincial grants exist to support the strengthening of social infrastructure. For example, some provincial-level funding programs assist religious heritage buildings in retrofitting their spaces to improve accessibility or to convert them for entirely new uses. As demographics shift, certain places of worship may no longer function as social infrastructure to their new community. Cities, community organizations, and non-profits should seek these grants, which can provide opportunities for the buildings themselves to remain community-focused, even if their specific purpose and programming change.

7.6 Support keystone community organizations

Policy makers and planners should recognize community organizations, and particularly *Tables de quartier* like the NDG Community Council, as essential to assessing social infrastructure within their communities. While the City of Montreal already collaborates with and provides funding to these organizations, greater support could be awarded. The City of Montreal should commit to strengthening the role of the *Tables* in neighborhood-level planning and involve them early in the design and siting of social infrastructure projects. The City should fund the mapping, outreach, and activation work of the *Tables*.

Tables de quartier not only support social infrastructure via the coordination activities noted above: they themselves are essential infrastructure, providing networks that link residents, local businesses, institutions, community organizations, and government. As such, *Tables* should receive adequate overall funding from the City. The NDG Community Council has expressed a need for more space and more, consistent funding. The Council needs stable, multi-year core funding, in order to be able to continue to do meaningful work in the community. Funding the activities of fully integrated community organizations, which work efficiently, may reduce pressure on the City to improve social conditions in problem areas.

7.7 Data collection and sharing

The final policy proposal of this research relates to data collection and sharing among the various public- and community-sector actors. The City of Montreal and provincial ministries of Canada create and maintain many datasets, spatial and otherwise, available on open data platforms. The availability of the data demonstrates public-sector transparency and openness to the research process.

Beyond making such data available, however, there is a need to make it accessible. For example, there are some composite spatial indicators of social need available on both the Montreal and Quebec websites, which have interactive interfaces. Unfortunately, these composite indicators combine so many different factors that they fail to clearly tell the story of the needs of any neighborhood. In some instances, it may be more helpful to see the data in a more granular manner, one variable at a time.

In addition to the granularity of the available data, higher priority should be given to supporting more interactive platforms for visualizing the data (e.g., Ma Carte Interactive). Tools such as these allow a user to focus on particular spaces in a neighborhood to determine where gaps in social infrastructure may be. This feature can

be important for community organizations (and even some planners) who may not have access to state-of-the-art geospatial-analysis software.

7.8 Further research

Social infrastructure is context-dependent and dependent further on the perspectives of the individuals or groups that define it. It is therefore very important to learn about which kinds of spaces and which particular spaces are important to the residents they affect. A group of researchers at McGill (i.e., Firth et al., 2020) attempted to examine the importance of third spaces in Montreal in relation to mental health. The survey had limited reach, however. To examine the kinds of social infrastructure that are valuable to the residents of Montreal, a larger-scale survey across Montreal's boroughs could be conducted.

As an example, a survey could request sociodemographic characteristics of residents (e.g., age, immigration status and year; religion, ethnicity, income level). Respondents could be asked about the social-infrastructure spaces in their neighborhood and asked how frequently they use them. Respondents could be asked to comment on the condition or suitability of relevant social spaces and on any barriers to access they may perceive.

Finally, there is a need for more research on how other community organizations implicated in social wellness approach the subject of social infrastructure (or whatever they call it). More specifically, there is a limited amount of scholarship about the *Tables de quartier*, and their role in Montreal. It would be good to understand how different *Tables* operate across the neighborhoods of Montreal.

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