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Walking the Streets of NDG in Search of Green Equity

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Abstract

It is widely acknowledged that urban nature provides numerous benefits to residents. Yet, research shows that, as with many other amenities, urban green space is often unequally distributed in cities and suburbs disadvantaging racialized and low-income communities. Moreover, planning for green spaces in densifying cities raises various challenges such as avoiding the intensification of existing environmental inequalities, and promoting accessibility to quality green spaces and recreation without overcrowding. Furthermore, the densification of cities might provoke an issue of sprawl by compensation, which suggests that when incomes permit, residents of dense urban areas often opt for owning second homes outside the city to fulfill their desire to be in contact with nature. As the COVID pandemic struck, the importance of urban greenspace was highlighted which greatly increased its popularity. However, COVID has affected various populations differently, with evidence suggesting that it exacerbates existing inequalities. This project aims to analyse these themes in the setting of Notre-Dame-de-Grâce (NDG), a district in central Montréal characterized by the diversity of its housing typologies, public open spaces, ethnocultural characteristics, and income levels. It explores the attitudes of NDG residents to its urban landscape through an environmental equity lens in light of potential effects of the COVID-19 pandemic and its aftermath. By observing people's usage of three NDG parks and by conducting a series of surveys and interviews, various attitudes towards nature and urban greenspaces can be perceived. Thus, the greenspace should respond to different needs and desires and available public space should be optimised to meet those needs.

Résumé

Il est bien connu que la nature urbaine offre de nombreux bienfaits et avantages aux résidents. Pourtant, la recherche montre que les espaces verts urbains sont souvent répartis inéquitablement dans les villes et les banlieues, comme c'est le cas pour de nombreuses autres commodités, ce qui désavantage les communautés racialisées et à faible revenu. De plus, la planification des espaces verts dans les villes en densification soulève de divers défis, tels que la prévention de l'intensification des inégalités environnementales existantes ou la promotion de l'accessibilité aux espaces verts de qualité et aux espaces de loisirs sans engendrer la surutilisation. En outre, la densification des villes pourrait provoquer un problème d'étalement par compensation, théorie qui suggère que les résidents des zones urbaines denses, lorsque leurs revenus le permettent, optent souvent pour posséder des résidences secondaires en dehors de la ville pour satisfaire leur désir d'être en contact avec la nature. En ce qui concerne la nature en ville, l'importance des espaces verts urbains a été soulignée avec le début de la pandémie de la COVID-19, ce qui a considérablement augmenté l'achalandage des parcs urbains. Cependant, la COVID a affecté les différentes populations inégalement exacerbant ainsi les inégalités existantes. Ce projet vise à analyser les thèmes décrits dans le cadre de Notre-Dame-de-Grâce (NDG), un des quartiers centraux de Montréal caractérisé par la diversité de ses typologies de logements, de ses espaces ouverts publics, de ses caractéristiques ethnoculturelles et de ses écarts de revenus. À la lumière des effets potentiels de la pandémie de la COVID-19 et de ses conséquences, les attitudes des résidents de NDG à l'égard du paysage urbain de leur quartier seront explorées d'un point de vue de l'équité environnementale. En observant l'utilisation de trois parcs dans NDG par ses utilisateurs, et en menant une série d'enquêtes et d'entrevues, diverses attitudes à l'égard de la nature et des espaces verts urbains peuvent être perçues dans le secteur. Ainsi, les espaces verts doivent répondre à différents besoins et désirs ainsi que l'espace public disponible pourrait être optimisé pour satisfaire à ces besoins.

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Table of Contents

List of Figures

Introduction

It is widely acknowledged that urban nature provides numerous benefits to residents. Nearby vegetation contributes to improving air quality, mitigating the urban heat-island effect, improving physical health, reducing stress levels, and other positive effects (Nesbitt *et al*., 2018). The conventional wisdom in urban design and landscape planning is that parks and other green spaces are essential components of healthy, resilient urban environments. Yet research shows that, as with many other amenities, urban green space is often unequally distributed in cities and suburbs, disadvantaging racialized and low-income communities (Nesbitt *et al.*, 2018, Wolch *et al*., 2014). Additionally, greenspace governance is also uneven, as lower-income residents are more likely to be excluded (whether intentionally or not) from participatory decision-making processes (Nesbitt *et al*., 2018).

Existing green spaces and greening initiatives in cities clearly contribute to the social and environmental goals of sustainable development. However, compact and dense cities, while addressing environmental issues, sometimes conflict with environmental goals (Haaland & van den Bosch, 2015). In their review, Haaland & van den Bosch (2015) identify various challenges of planning for green spaces in densifying cities such as avoiding the intensification of existing environmental inequalities, promoting accessibility to quality green spaces and recreation without overcrowding, taking into account resident perspectives and preferences, and more. Furthermore, the densification of cities raises the problem of compensation, which suggests that when incomes permit, residents of dense urban areas often opt for owning second homes outside the city to fulfill their desire to be in contact with nature (Strandell, Hall, 2015) or to travel to nature outside the city for other forms of leisure in natural settings, thus contributing to urban sprawl and the issues associated with constantly travelling by car. Naturally, this only applies to those who have the opportunity and resources to do so and is not representative of the whole urban population. It stands to reason, however, that where quality of and access to nature get limited by urban density, there will be demand to seek occasional or regular access to green space where it exists, usually outside the city.

The compensation theory and people's behaviour regarding the use of green spaces are particularly pertinent in the context of the COVID-19 pandemic and the anticipated adjustment to lifestyles as vaccinations allow for the loosening of restrictions on movement. Some North American cities are already experiencing an increase in mobility toward the metropolitan

outskirts, either to second homes (cottages, cabins, and chalets) in the countryside or to new housing in the suburbs (Bingley, 2020; Haag, 2020). Again, this reaction is prompted, at least in part, by a negative perception of the city in terms of contagion risks and access to greenery and open space and is led by those with resources and opportunity. This anti-urban sentiment is not new and originates with the industrialization of cities leading to the idealization of countryside landscapes (Bruce, 1994). Still today, in Canada for instance, wealthier urban residents choose to occupy waterfront dwellings – referred to as the Canadian "countryside ideal" – outside the city (Luka, 2017). It is also known that COVID has affected various populations differently, with evidence suggesting that it exacerbates existing inequalities (Honey-Rosés *et al*., 2020). Moreover, the pandemic highlights the vital importance of urban greenspaces as an essential quality-of-life element in sustainable cities which were historically shaped by social inequalities. In order to encourage inclusion in urban green spaces, it is initially important to acknowledge and understand the origin of environmental inequalities, resident motivations to interact with urban nature, and the activities in which they engage in those spaces.

This project centres on a case study in the setting of Notre-Dame-de-Grâce (NDG), a district in central Montréal characterized by the diversity of its housing typologies, public open spaces, ethnocultural characteristics, and income levels. It explores the attitudes of its residents to its urban landscape through an environmental equity lens in light of the potential effects of the COVID-19 pandemic and its aftermath. In other words, the goal is two-fold: to explore resident satisfaction with urban green spaces in their neighbourhood and to identify challenges and opportunities in the planning and design of green spaces in NDG. This part of Montréal was originally a suburban extension to the growing city, largely populated by middle-class anglophone households, which urbanized through the 20th century and came to be considered integral to Montréal. Since its demographic makeup changed throughout the years, but its landscapes stayed roughly the same after it got completely urbanized, NDG is an intriguing case study for analysis of satisfaction with green space taking into account environmental equity. Thanks to NDG's anglophone setting, the district offers both a place for established anglophones and a welcoming space for many non-francophone immigrants to settle in and integrate with the community. Nevertheless, social *mixité* in the district appears in the form of poverty clusters in what otherwise appears to be a well-off part of Montréal (Centraide, 2019). Although one might expect that green assets in historically well-to-do neighbourhoods are equitably distributed and maintained, it is important to examine this assumption to see how well they

respond to the needs of various populations and how they are valued by various residents from diverse backgrounds.

It is worth mentioning that NDG in not undergoing any significant processes of densification or major transformations. However, due to NDG's varied urban forms consisting of low-, mid-, and high-rise residential constructions, it is expected that green space provision responds differently to the needs of residents within the changing landscapes. This case study can therefore contribute to the compensation theory discussion with regard to density. Many variables can affect one's desire to experience nature outside of the city or one's ability to feel fulfilled within urban nature; and although this project will not systematically assess all known variables, it will explore which ones are meaningful in the NDG context. As such, this supervised research project tries to identify certain concerns on the part of residents in terms of gaps in environmental justice in NDG by answering the question: How some NDG residents' attitude towards nature affects their living experience in the neighbourhood. To address various factors affecting environmental justice, I will also explore some secondary questions, specifically, regarding

- whether the residents express concerns regarding unequal access to nature in their neighbourhood.
- whether certain factors of environmental justice affect their living situation; and
- whether the COVID pandemic changed their attitudes towards greenspace in their district or in Montréal.

The report is divided into three chapters where several methods are used to assess the issue using a multidimensional approach. In the first chapter, I present a scan and review of contemporary debates with regard to the definition of greenspaces and relationships to nature, environmental justice and spatial exclusion from greenspaces, early evidence of the impacts of COVID-19, and work on "green equity" regarding Montréal. This allowed for the definition of criteria and principles to assess satisfaction with and equitable access to green spaces. To define accessibility to green urban spaces in NDG, I will rely on existing findings from locally conducted researches that I will later complement with qualitative results from of a survey and semi-structured interviews with NDG residents.

In the second chapter, I explore the spatial context of NDG based from an accessibility to green spaces lens. Based on the previous literature review and definition of analysis criteria, I direct

observations of three different parks in NDG are included in my analysis. The goal of the direct observation is not to paint a comprehensive picture of park use in NDG, but to identify potential disparities between expected and actual use that might depend on the park's geographical location, day and time of observation, design, accessibility, and other considerations.

To assess resident perceptions of green space in NDG, I conducted a survey among NDG residents (also open to other users of NDG green urban spaces) by distributing a questionnaire through the NDG Community Council (NDGCC). The survey focused on evaluating the nature and frequency of outdoor activities inside and outside of the neighbourhood. Additionally, the respondents were asked about the importance of green space for them as well as their satisfaction with NDG's greenspaces. Twenty people responded to the survey, the results of which are presented in chapter three. Finally, I conducted semi-structured interviews with willing survey respondents, asking them the "whys" behind their survey responses, analyses of which are discussed in the last chapter. The interviews were semi-directed and divided into sections, focusing on the current living situation of respondents, their leisure and outdoor activities, and experiences of place in NDG. Thus, in the last chapter I discuss common themes arising in the interviews and the survey in terms of how residents experience urban nature.

Chapter 1 – Literature Review

Definitions of Greenspace

Greenspace is hard to define. Within academic literature, it does not find expression as a specific concept. Researchers in various disciplines such as urban planning, public health, sociology, and ecology study greenspaces through different lenses. What is greenspace if not simply a space that is green? Different researchers define it according to different criteria depending on the qualities of space they seek to evaluate. Thus, greenspace is not simply defined as a space that is green or was greenified, but a place that is defined by its "green" qualities, which might be real (in terms of ecology) as well as perceived (in terms of human appreciation).

In academic literature there is no singular definition for green space; its various definitions are even somewhat contradictory. Greenspace can be defined at the same time as public or private, as urban or natural, or defined by various scales. Two very common interpretations of greenspace that contradict each other are "greenspace as nature" and "greenspace as an urban vegetated space" (Taylor & Hoculi, 2017). The former refers to the concept of wilderness, or a space untouched by humans, one that opposes urbanization. On the opposite side, the second interpretation refers to a part of an urban landscape or a space that is designed and maintained by humans for its green qualities.

Not only is the definition of greenspace subjective, so too is the assessment of its qualities. Researchers measure different factors to assess quality depending on their angle of research, while greenspace users perceive the quality of their space according to their needs. For example, in various studies about physical activity in greenspace, parents have measured the quality of greenspace according to levels of lighting or the presence of play areas, while others measured the quality according to levels of maintenance and the presence of paths. Moreover, groups such as teenagers, who seek to hang out in parks, and parents with young children, reported different quality indicators (Taylor & Hoculi, 2017).

It is therefore important to define the limits of what is considered greenspace. For the sake of this study, the working definition of greenspace will include all urban public spaces that have a presence of vegetation and offer residents the benefits of urban nature in some form. This includes neighbourhood parks, natural parks, community gardens, and other vegetated spaces

formal or informal, green alleys (widely known in Montréal as *ruelles vertes*), and streets benefitting from a tree canopy, but excluding open public hardscapes such as squares and plazas. In NDG, the most commonly encountered greenspaces are neighbourhood parks, green streets, community gardens, and green alleys[1] – although compared to other Montréal districts, NGD has very few in this category.

We will first consider a category presented by Tylor and Hoculi (2017), which they call "greenspace as nature". In this definition, greenspace refers to a natural space, usually remote and unaffected by human activity. Places like this are often described as wild and are idealized for this characteristic. They cannot, however, be considered "wilderness" – as this idea contains conflicting notions, as argued by Cronon in his 1996 essay *The Trouble with Wilderness: Or, Getting Back to the Wrong Nature*. Wilderness, as we understand it today, represents the idealistic concept of a "truly natural" space, one that is untouched by others. At its origins, Cronon argues, it represented spaces of recreation defined by the bourgeoisie, deliberately designated as escapes from the troubles of the capitalist world they had themselves created. Here, wilderness is put in complete opposition with urbanization and civilization, which is deeply self-contradictory, according to Cronon. He notes that outdoor activities in remote places were reserved for and created by urban elites who shared a common wilderness ideal. Hence, wild nature was ironically shaped to fit their wants and needs, often in designated large parks. Moreover, the concept of wilderness purposefully ignores the history of peoples who were already using and modifying these "natural" spaces. As such, the creation of the national parks in America, based on wilderness ideals, led to the dispossession of Native Americans from their lands so that tourists can experience the "illusion of virgin lands" (Byrne & Wolch, 2009; Cronon, 1996).

That being said, wilderness was only idealized when it was remote from the city and where it did not interfere with the city's potential for growth. One example of this phenomenon is the history of the Kitsilano and Musqueam reserves in Vancouver, known today respectively as Vanier Park and the Musqueam Reserve no. 2. The reserves were viewed as wasted space that

[1] Green Alley or "ruelles vertes" are citizen-led projects that aim to redesign back-alley in order to promote social cohesion among neighbours and a greener environment. The movement is supported by the municipality where every district has its own set of regulations and programs. The difference in policy, programs and urban forms in the various districts of Montréal can explain why certain districts contain more green alleys than others. To see a map on green alleys in Montréal: https://cutt.ly/UmW93r0

would be better fit for a recreational use as part of the city's first comprehensive plan (Stanger-Ross, 2008). Ironically, the city deemed the space as too wild and wanted to repurpose it for its own benefit. As such, the desired destruction of the "wild" nature – or the untouched reserves – was justified by the conservation of the "civilized" nature of Stanley Park – the first and largest natural urban park in Vancouver.

Since the "wild" natural spaces were reserved for the well-off, the late 19th and early 20th century saw the rise of urban parks designed for the working class in Canada, as in other industrializing contexts, and these were viewed as tools for improving public health and democratization of access to nature (Dagenais, 2006). However, these supposedly inclusive spaces are also rooted in exclusionary practices. From the start, the creation of urban parks has contributed to the displacement of vulnerable populations. Moreover, the construction of parks on the fringe of cities often made them difficult to access from the working-class residential areas. New York's Central Park is a famous example of this process, where the former Seneca Village was razed, and its Black and Irish residents were evicted to give way for the urban park. Furthermore, at that time, Central Park was inaccessible by public transport or by foot from the city's residential areas (Byrne & Wolch, 2009).

Today, attitudes toward nature and wilderness ideals can either resonate with or differ from the sublime view of nature as described by Cronon. To illustrate differences in contemporary attitudes toward nature of (sub)urban dwellers, two empirical studies are telling – one focusing on a periurban setting in Québec, and one based in an urban setting in Denmark. The first study by Fortin & Deprés (2011) showed that people's attitudes towards nature might affect their residential choices as well as their lifestyles. To understand what people seek when moving closer to nature, the authors analyzed the experiences of 132 periurban residents in Québec through in-depth interviews. The results highlighted various expressions of relations to nature and showed a certain persistence of the wilderness ideal. Proximity to nature was clearly the leading reason for living outside the urban fringe, as 80% of participants reported moving there to get closer to nature. Some of them sought this proximity due to their active lifestyle, while other maintained a contemplative relationship with nature, as they preferred observing the landscape and wildlife. The paradox of seeking closeness to nature manifests itself in the concern they expressed about newcomers and new development, their desires to conserve

nature and the environment more generally, while paradoxically recognizing the negative impacts of their lifestyles on the environment (notably due to their excessive car use).

On the other hand, Petersen (2013) conducted interviews with 50 people from four different districts in Copenhagen to explore how urban greenspace becomes part of their lives. The urban setting of this study is obviously much different from the context of periurban Quebec. Even in comparison to Quebec urban centres, Copenhagen differs, as 90% of its dwellings consist of apartment buildings and only 8.6% are homes with private gardens (Petersen, 2013). In contrast, in Montréal – the largest urban centre in Québec – 7.3% of dwellings are single family detached homes, 3.3% are semi-detached homes and 13.6% are duplexes. Those types of dwellings all tend to have access to private exterior space, and together represent 24.2% of all dwelling types. Still, most dwellings, are unit in up to 4-story appartement buildings and constitute 57.9% of all dwellings (Paquin, 2018). That being said, Petersen showed how attitudes toward nature in an urban context differ, since city greenspace is not expected to be "wild", even though sometime its design attempts to resemble wilderness. Whether it is used regularly or occasionally, greenspace in cities is part of its residents' day to day life. It provides urban citizens with ecological and social benefits and supports various activities. Similarly to "wild" nature, urban green areas can serve for exercise and leisure activities, as well as for calm and contemplative activities. Parks and other green spaces are valued routes in daily commutes which allow residents to avoid the noise and the chaos of the city. As intended, Petersen (2013) reported that urban green space offers opportunities for momentarily escaping or "taking a break" from busy urban routines. The sites mentioned by respondents also seem to provide the flexibility and opportunities to do activities otherwise impossible in private space, sometimes serving as an extension of private domestic space for activities such as exercise or throwing large parties. Petersen's study furthermore showed that the participants forged a personal connection with trees and birds in the greenspaces they regularly visited. Finally, his study also showed the social aspect of urban greenspaces in Copenhagen which contrasts with the North-American concept of wilderness. Urban greenspace can facilitate social activity while also providing intimate space for being mutually alone thus diverging from the wilderness ideal, where expressions of society are often seen as undesirable.

Environmental Justice

Equity and access to urban greenspace is part of the larger issue of environmental justice where the "environment" relates both to the global environment and to the immediate environment where people live. When evaluating the benefits of parks for the general public, it is important to acknowledge the historic injustices embedded in parks provision and their current impacts on the urban space and on the population. Assessing environmental justice and urban green equity is complex, considering that many factors interact and have an impact on people's lives. One simple and widely-used approach is to assess spatial accessibility to greenspace or other amenities. In his literature review regarding park accessibility, Rigolon (2016) highlights the patterns of geographical inequalities impacting ethnic minority groups based on the factors of *proximity* (referring to an acceptable measure of distance between an urban park and a residence), *acreage* (referring to the amount park area available per resident) and *quality* (referring to available facilities, general maintenance and safety in the park). In his research, Rigolon (2016) found that although people of colour – mainly Latinos and African Americans in his approach – live close to parks in American cities, those green spaces tend to be deficient in size and quality compared to parks located in white neighbourhoods. Moreover, the spatial distribution of parks in many American urban centres is such that smaller neighbourhood parks are concentrated in the inner city, where greater ethnocultural diversity is observed, and the large natural parks are concentrated in suburban areas, which the population (mostly white) is expected to reach by car. This may explain the apparent proximity advantage for people of colour. Furthermore, the study found disparities in access to quality urban parks for people of colour as they are exposed to more physical hazards, crime issues, fewer recreational facilities, and lower maintenance levels in parks.

In addition to equal spatial distribution of green spaces, equity also refers to agency and recognition in decision-making. Therefore, these two dimensions are crucial for understanding and evaluating equity in green urban space. Described below are five sub-dimensions Nesbitt *et al.* (2018) propose as a framework for analyzing urban green equity.

- ***Condition and preference***. A sub-dimension of spatial distribution, "condition" refers to the quality of available space as perceived by the residents which, as was mentioned above, can be related to the preference for green space characteristics. This can be a preference for a certain sport facility or space for certain leisure

activities. All else being equal, when residents lack a certain commodity, they will tend to valorize and prioritize it more. When the opportunity presents to provide the residents with what they were missing, deciding to withhold what they need can only exacerbate the injustice.

- ***Ownership***. Ownership of private green space influences one's relationship with public green space. Households with a private backyard may not see the need for more public green space in their neighbourhood, since they already have easy access with no competition from others. Moreover, private green spaces, despite perhaps providing positive externalities to the general public, only provide direct benefits to those who have access to them. This extends beyond domestic space to spaces administered through a "club" mechanism, such as user-pay sport facilities, which will by definition exclude some from accessing their services.
- ***Temporality.*** Temporality relates to the availability of space and leisure opportunities through time. This dimension of equity may therefore be influenced by the seasons or by the daily schedules of individuals; often those with longer working hours, even if they live closer to urban parks, spend less time in greenspace.
- ***Representation***. Representation in the decision-making process is part of "recognition", an essential dimension of green equity. Decision-making with regard to the residents' living space should consider and respect their voices and needs in order to be equitable which is particularly challenging in a highly diverse environment. Such forms of representation can contribute to a better distribution and quality of green space according to resident preferences and needs.
- ***Desire and ability to participate.*** Opening the door to participatory processes of urban governance is not enough to truly include and represent the variety of individuals, especially those most disadvantaged. Many factors may impede the desire and ability of citizens to participate in governing activity, such as unconventional or long working hours, a sense of insecurity related to one's identity, a lack of transport options, family responsibilities, etc. The absence of resident voices in decision-making may only exacerbate their disadvantage, with the result contradicting the original goal of fair access to green urban spaces. Furthermore, this factor can also be interpreted as the desire and ability to use the space that is available (or less so) to residents.

To complete the various dimensions of urban green equity presented by Nesbitt *et al.* (2018), Anguelovski (2013) offers a complementary outlook to urban environmental justice where a more holistic approach addresses the physical and mental dimensions of environmental health. By analyzing three case studies of equitable community environmental revitalization, she puts forward various common themes that are closely linked to urban green equity consideration and thus should not be tackled independently. For instance, affordable and adequate housing was a common concern for environmental activists who realized that, without addressing housing affordability and economic security issues, their efforts to improve environmental quality in disadvantaged neighbourhoods can result in the displacement of the marginalized community. This issue is also raised by Wolch *et al*. (2014) who conclude that greening strategies need to be "just green enough" to improve the quality of life of current residents without encouraging green gentrification and thus the displacement of the local population.

Moreover, opportunities for physical activity, recreation or free play were also highlighted as a key concern by Anguelovski's research. Environmental activists advocated for more community centres and sports facilities to encourage physical health among residents, specifically youth. Sports, recreational activities, parks, and other public leisure amenities can contribute to the wellbeing of residents as well as enhancing social cohesion (Frisby, 2013; Henry, 1993; Petersen, 2016). For instance, participating in volunteering or decision-making activities associated with sports and recreation allows new Canadians to integrate to their new community (Frisby,2013). Furthermore, inclusive sports and recreational activities, especially those activities planned jointly with the community, had been proven to positively contribute to physical and mental health (Frisby,2013).

Finally, environmental justice is clearly a multidimensional concept that dependent on various factors as is portrayed by various scholars. Accordingly, environmental justice should be broadly understood to include not only physical but also psychological considerations, so that overall community economic, social and physical wellbeing are taken into account. Inspired by the broader sense of sustainability, Agyeman (2013) describes what he calls "just sustainability" around three key themes, food, space and culture. In that sense, advocating for a greener future should not only be for the sake of greening in terms of biomass and biodiversity, but as part of a holistic approach to community building that advocates for green justice, and social justice jointly, in all of their aspects.

Spatial Exclusion

Understanding patterns of spatial exclusion and their causes is another way to address social inequalities imbedded to the creation and distribution of urban greenspace. We should ask:

- Who is directly and indirectly excluded from greenspace?
- What are the barriers excluded populations face to enjoying greenspace?
- What can be done to overcome the existing barriers?

To address the first question, an English study (Boyd *et al*., 2018) presented a statistical analysis (n = 63 890) to find which groups of adults do not visit natural environments for recreations. Their results showed that frequent park visitors were more likely to be British, not full-time workers, people with children, or dog owners. On the other hand, infrequent visitors were more likely to be women, older people, people with a lower socio-economic status, people with a disability or a long-term illness, and car owners. While the most common reason for not visiting parks was being "too busy at work" (20%, n = 16 812) another fifth of the respondent indicated not visiting parks because they are not interested or for no particular reason (Boyd *et al*., 2018). On this point, scholars have identified various factors influencing people's desire (or lack thereof) to visit a greenspace (Byrne, 2012):

- personal/internal barriers (e.g. fear of crime, disability, motivation, interest, depression);
- social barriers (e.g. lack of companions, family responsibilities);
- structural barriers (e.g. lack of time and/or money, poor transportation)
- institutional barriers (e.g. user fees, park programming)

The most common reasons for park non-use, in recreation literature, are old age, low-income, social isolation, discrimination in terms of race, ethnicity or gender, lack of knowledge of park facilities, danger perception and lack of access to nature while growing up (Byrne, 2012).

Reasons for not visiting parks can also depend on cultural and/or individual habits and customs as different groups of people use parks differently according to their preferences. Some studies have found differences in park use depending on race and ethnicity (Byrne, Wolch, 2009). However, they highlight the importance of not falling into stereotypical conclusions about ethno-racial different uses in parks, since use patterns can be affected by the established exclusionary biases, which then leads to the spatialization of disparities resulting in segregated or inaccessible spaces (Byrne & Wolch, 2009). This can also apply to other groups. For instance,

the underrepresentation of women in parks might not be a result of women's different desires, but might be affected by their historical exclusion from leisure and sports activities especially in groups sport such as soccer, baseball, and so on (Gibson *et al.*, 2019). A lack of time due to expected care work, as well, can contribute to this disparity.

The Effects of the COVID Pandemic

With the surge of the COVID pandemic, the importance of parks became obvious, and the existing inequalities of park and greenspace access were exacerbated. Due to health restrictions and lockdowns, greenspace such as large natural parks and small neighbourhood open spaces in cities around the world gained in popularity (Geng, 2021). For instance, in Montréal, visits to natural parks rose by 64% in comparison to 2019 (Goudreault, 2021). Local neighbourhood parks also gained new attention and importance (Honey-Rosés *et al.*, 2020). In fact, in response to a Park People (2020) survey in Canadian cities, the majority of respondents (66%, n = 1 600) indicated they are more likely to visit a local park in their neighbourhood than before the pandemic. Yet, around a third (39%) indicated that they sought out new parks in their neighbourhood and another third (33%) reported visiting green spaces that aren't formal city parks (e.g. schoolyards, hydro corridors, etc.).

During the year following the onset of the pandemic, behaviours, attitudes toward public space and greenspace, and use patterns have all changed in various ways. On one hand, residents and municipalities rediscovered the inherent value of greenspace. On the other hand, the crisis and government responses both exacerbated inequalities and issues of accessibility. Because of COVID, residents and municipalities seem to recognize the value and importance of local public space more than before. For instance, Park People (2020) reported that 64% of respondents (n=1 600) value parks more for they foster a sense of connection to nature; as a result, half of the respondents gained interest in visiting more natural spaces in post-COVID times. Additionally, countless cities across the globe temporarily repurposed their public space for pedestrian or recreational use so that social distancing can be better respected. However, it is hard to predict how cities will address green and public space as the crisis of the pandemic evolves and when the need for access to quality greenspace might become more or less significant.

Nevertheless, parks quickly became congested when they turned out to be the only accessible option for large numbers of people to socialize while respecting physical distancing. In addition, parks located in disadvantaged areas, often in low-income and diverse neighbourhoods, were already suffering from congestion issues pre-COVID and thus could not offer an ideal environment for respecting social-distancing (Honey-Rosés *et al*., 2020; Hoover & Lim, 2021). Moreover, due to the implementation of new public health rules, the surveillance of public spaces increased, leading to an overrepresentation of racialized and poor populations in distancing offences (Hoover & Lim, 2021). As such, existing social injustices worsened and became more visible. Thus, although greenspace might see a shift in management or planning approaches in a post-COVID era, it cannot achieve environmental justice unless it is treated through the lens of social justice by creating inclusive and accessible space for all.

Local Research

Various local studies conducted in Montréal (at both the municipal and the metropolitan levels) show variations in the acknowledged lack of greenspace or access to it. Since greenspace does not have a clear definition, each study concentrates on specific spaces such as playgrounds for children, street vegetation, parks, “calm places”, etc. Various studies have found links between low-income populations and negative urban environmental factors such as high noise levels and the lack of playgrounds, nearby calm areas, or vegetation (Apparicio *et al*., 2012; Carrier *et al*., 2016; De Alvarenga *et al*., 2018; Delaunay *et al*., 2019). For instance, Delaunay *et al.* (2019) analysed the accessibility of “calm areas” – defined as open unbuilt spaces at a minimum distance of 300 m from sources of noise (highway, railroad, industries, airport, etc.). Since calm areas tend to be situated within urban greenspace, and since people tend to seek quiet time in greenspace, the accessibility of calm areas can reflect the reality of greenspace accessibility. Although the study did not show a clear association between the lack of access to calm areas and low-income, visible minority, or age factors, some discrepancies in the access to calm areas were found among neighbourhoods. For instance, almost no calm area can be found within five minutes of walking in Hochelaga-Maisonneuve while NDG has no such “deserts”.

In terms of playground accessibility for families with children, De Alvarenga *et al*. (2018) analyzed the metropolitan area of Montréal, considering two factors in their analysis – proximity

to the closest playground and the potential availability (measured according to the number of children living within one kilometre from a playground). The researchers found that potentially saturated parks were more likely to appear in neighbourhoods inhabited by low-income populations and visible minorities. Accordingly, the NDG area selected for this study known as a family-friendly sector shows a medium to high level of proximity to playgrounds while experiencing a low to medium "potential availability" rating.

Outside of parks and dedicated spaces, urban nature can also be found woven into the urban fabric as part of the private and public tree cover or other forms of street vegetation. One study assessing the distribution of urban vegetation (private and public) in Montréal found out that vegetation cover was poorer in areas with a high percentage of low-income population, especially regarding vegetation on public land (Apparicio *et al.,* 2012). Another study of the tree canopy in Montréal showed that the presence of street trees was more strongly associated with urban design characteristics than socio-economic measures (Apparicio *et al.,* 2017). Hence, the distribution of urban nature elements may depend on various factors.

Finally, to achieve a holistic look on urban green justice, one that also includes social justice, various physical and non-physical factors and barriers must be considered. Depending on the context of a studied area, certain factors may be more suitable for assessing the setting in order to reveal and identify meaningful gaps and injustices. Thus, based on the literary review, preliminary understanding of the NDG district and the methods used, I will mostly be considering Rigolon's physical aspects describing inequalities (*proximity*, *acreage*, and *quality*) and Nesbitt's *et al.* dimension of urban green equity regarding "recognition" (representation and desire and ability to participate) to identify possible social or physical barriers to local greenspace. Since NDG has a variety of green spaces in terms of size and quality as well as the fact that many visible minorities live in the district, Rigolon's factors of inequalities shown to impact ethnic minorities in the US context, might shed light on potential gaps within the NDG context. Furthermore, the factors are suitable for an observational analysis solely relying on in-situ observations of greenspace. Factors such as *representation*, *ability to participate* and *desire to participate* will allow to gather more significant information from the survey and interview responses to get a more holistic yet preliminary depiction of the attitudes toward (urban) nature of residents .

Chapter 2 – Direct Observations

NDG Context

At its origins, NDG was the Notre-Dame-de-Grace parish that stretched out across today's NDG and part of Westmount and Cote-Saint-Luc districts (both of which are now independent municipalities). During the 19th century, the land was mainly dedicated to farming. After its amalgamation with the City of Montréal in 1910, NDG evolved into a suburban residential sector that attracted many anglophone merchants and residents, and by 1930 all of its farmland had disappeared. The district grew significantly between the world wars to become one of the most populous in the city (Benoît & Gratton, 1991).

NDG's social context and the growth that occurred between the two world wars shaped the existing urban form of its neighbourhoods. The district is characterized by its mostly residential architecture and by an ample green landscape. A variety of single-family houses were built there for the well-off anglophone population. As NDG gained popularity, due to its proximity to the city centre, semi-detached typologies proliferated as well. Moreover, the density of the neighbourhood grew with the construction of many prestigious rental apartment houses along principal streets. Due to its abundant private green spaces and its urban form consisting of many street trees planted alongside roads, NDG has considerable urban green qualities. However, in terms of public parcs, the borough has the second least amount of parkland per person, after Montréal-Nord (see figure 1; Ville de Montréal, 2018)

Even today, NDG is a fairly anglophone area that is often perceived as a prosperous one. And yet, the district is full of contrasts and contains various socially and financially disadvantaged pockets throughout the area.

NDG is part of the Côte-des-Neiges-Notre-Dame-de-Grâce (CDN-NDG) borough which is one of the most populous boroughs of Montréal. However, it has registered one of the smallest growths in the city between the 2006 and 2011 censuses (Paquin, 2018). While Montréal registered a 3.3% population growth, NDG gained 1.5% of population which is higher than its borough's average of 0.9%. The average household size in the borough is of 2,2 people where 39,9% of households are composed of only one person (40,8% for Montréal). In total, 39 415

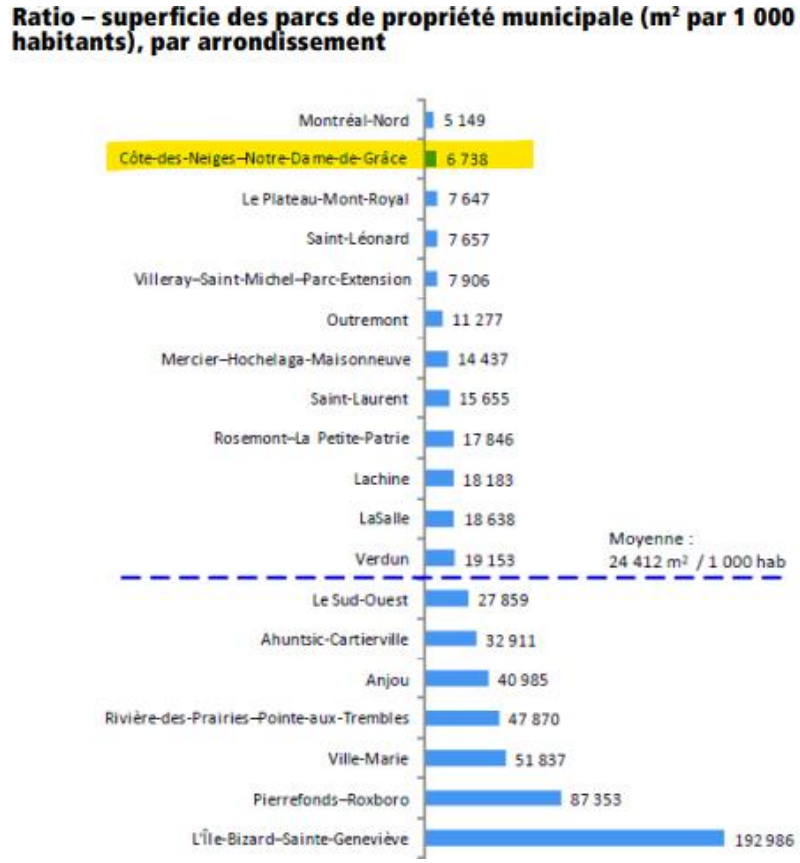


Figure 1 - Park area (m2 per 1 000 residents) by borough. Source: Montréal, 2018.

families[2] out of 75 005 households live in the borough. Most families (49.1%) have only one child while families in Montréal show the same trend (50%). Big families, *i.e.,* those composed of three children or more, represent 15,5% of all families in the CDN-NDG borough and in the city of Montréal.

Today, the anglophone population (people whose mother tongue is English) represents 36.3% of the population of NDG which is greater than the borough's (CDN-NDG) average (25.8%) and even more so than the city's average (12.4%). NDG's linguistic diversity is comparable to the trends observed in Montréal, with 33% of the population of NDG and of Montréal speaking a foreign language as their mother tongue. Furthermore, many recent and established immigrants find homes in NDG representing 39,1% of NDG's population as compared to 34,3% in Montréal

[2] In the census, a family is defined as any group of people who are blood-related, married or in a civil-union and live in the same dwelling regardless of age and gender. For instance, a same-sex couple, a person living with their grand-child or a parent living with their 30-year-old son would be considered families.

(Paquin,2018). Immigrants in NDG are particularly concentrated in multifamily residential areas which usually tend to offer renting housing units (see figure 2).

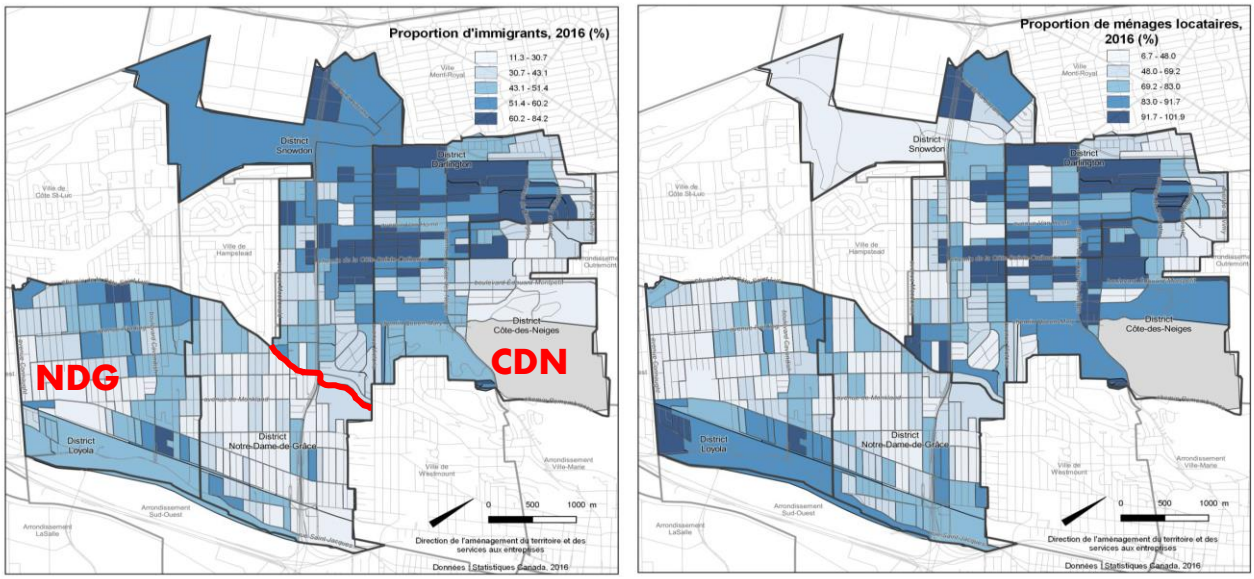
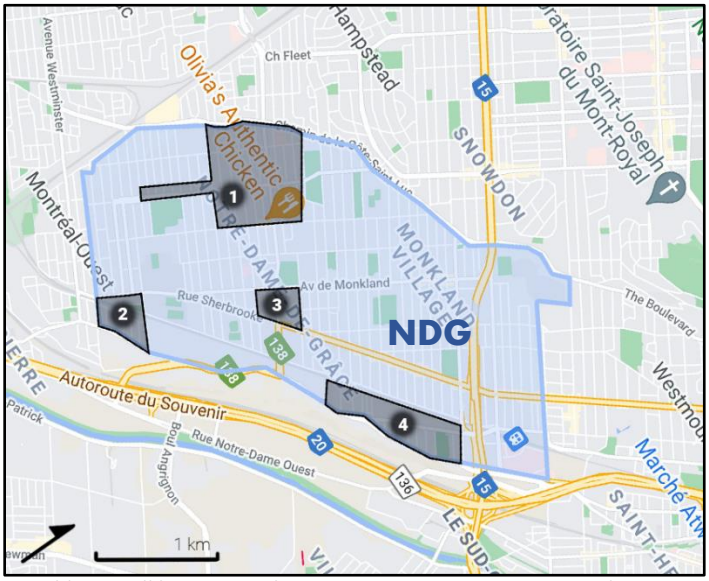


Figure 2- Left: proportion of immigrants, 2016. Right: proportion of renting dwellings, 2016. source: Paquin, 2018

That being said, renters are an important part of NDG's population (64,6%) which is less than the borough's average (73,3%) yet consistent with the city of Montréal average (63,3%) (Paquin, 2018). However, NDG differs from the rest of Montréal in the price of renting and quality of dwellings; 40,4% of renting households in NDG require more than 30% of the total revenue to pay for housing (36.5% in Montréal) while 10,7% of housing units require major renovations (compared to only 8% in the city). Moreover, the areas with high proportion of rented dwellings also intersect with all four priority sectors identified by the NDG Community Council, a local community organisation. In fact, the four sectors – Benny Farm, Westhaven, Fielding-Walkley and Saint-Raymond – face many common social issues such as food insecurity, poor housing, social isolation, etc. which require continuous attention on the part of community workers (see figure 3).



1: Fielding-Walkley, **2:** Westhaven, **3:** Benny, **4:** Saint-Raymond

Figure 3- Priority sectors in the NDG district. base map: Google Maps

In terms of income, the total annual median income of residents aged 15 and more in the borough was $24 715 in 2015 which represents a 12.7% lower income in comparison with the Montréal trends ($28 321 median income) (Paquin, 2018). However, median income in NDG (27 640$) is significantly higher than the borough's average. As figure 4 shows, there is a clear difference in income between the two parts of the borough, yet it also shows that various zones within NDG diverge from the district's norms.

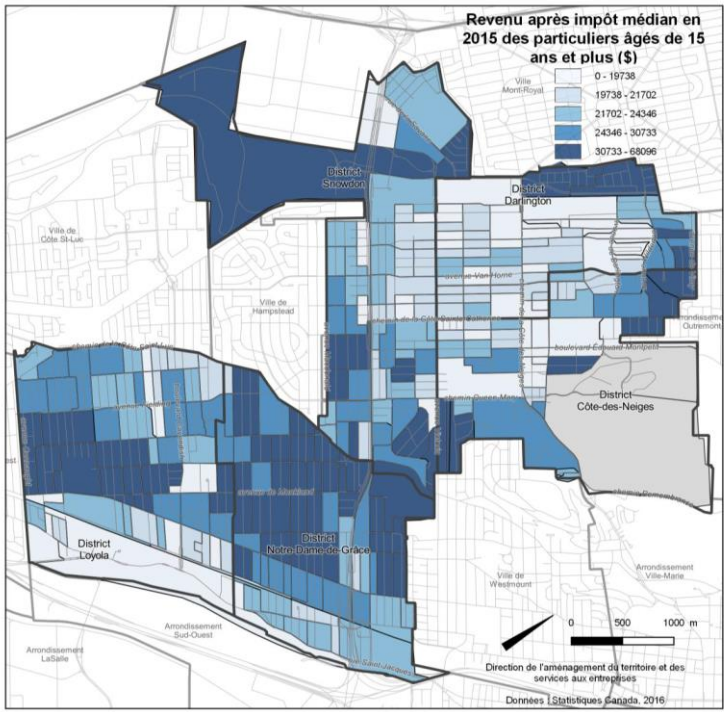


Figure 4 - Income after taxes in 2015 of residents aged 15 and more. source: Paquin, 2018

Lastly, the population of NDG has a greater postsecondary attainment rate than the rest of Montréal as 10.9% and 17.8% of the residents aged 15 years and more in NDG and in Montréal, respectively, do not have any type of postsecondary certificate. However, 29.1% of the population with a postsecondary education in NDG possess a foreign diploma (compared to 23.2% in Montréal) which might constitute a barrier to enter the job market. However, the employment rates in NDG and Montréal are quite similar with 58.9% of residents aged 15 and more in NDG being employed, in comparison to 58.3% in Montréal. Transit to work relies mostly on public transportation in NDG (42.9%) and is closely followed by personal car driving (41.3%). Compared to the city of Montréal, where 47.2% drive to work and 36.5% take public transit, NDG is less car dependent. Overall, in Montréal (including NDG) women are more likely to commute by public transport and men are more likely to drive to work.

Methodology

Site Selection

NDG's diversity of urban forms, the abundance of greenspace and the diversity of its residents make it an interesting setting for a case study regarding the residents' attitudes towards greenspace. Therefore, in order to better understand how certain parks are currently used in the neighbourhoods of NDG and how their use compares across different locations, I conducted an in-situ observation in three different parks. Two sets of observations were completed for each park – once during a regular weekday (Monday through Friday) and once on a weekend day in order to capture differences in activity levels.

The three parks were chosen for the observations based on their urban and social settings, their size, and their amenities. Inspired by Rigolon's (2016) framework for assessing parks' accessibility, *proximity*, *acreage* and *quality* considerations were taken into account to select the parks for the observations. As such, I considered **proximity** as the amount of people living in proximity to the park which depends on the residential density around the park (low, medium, high density). **Acreage** refers to the size of the park and how much greenspace per person is available. Finally, for **quality**, the type and quantity of amenities was considered.

The parks selected are all neighbourhood parks, meaning that they are broadly intended for the local population. It can be expected that their users live at a walking distance from them and that visitors from distant areas are rare. With account of these considerations, Coffee Park, Somerled Park, and Georges-Saint-Pierre Park were chosen for the analysis (see table 1).

Park	Proximity	Acreage	Quality
Coffee	High-density neighbourhood, wide mix of dwelling types (residential priority sector, as defined by the local community organisers/NDGCC, see figure 3)	Small neighbourhood park	Amenities: Children's playground Shaded sitting spaces Small green field Missing: Closed chalet
Somerled	Low density neighbourhood, mainly detached single-family dwellings	Medium-sized park	Amenities: Children's playground Tennis courts Green field Missing: Closed chalet
Georges-Saint-Pierre	Medium-density neighbourhood, mainly multiplexes	Large park	Amenities: Soccer field 1.5 basketball courts Children's playground Water fountains Shaded sitting areas Green field Open and clean washroom in the chalet

Table 1- Park selection based on identified accessibility factors

Data Collection

The methodology for documenting the observations is inspired by Vancouver's approach to dressing its "profile of park users" (Fox *et al*., 2017) using the SOPARC tool (System for Observing Play and Recreation in Communities). Vancouver has systematically collected data about physical activity levels, gender, age, and ethnicity groupings in key parks/recreational areas and used it to analyze equity and accessibility in their parks and in their facilities. Similarly, in addition to noting physical observations about the space, I recorded observations regarding activity types, gender, age and ethnicity of the users. However, my analysis is much more exploratory in its approach and is more focused on catching patterns or differences in park usage depending on the physical or social context. Thus, information about *who, what,* and *where* is considered and analyzed to understand the "interactions between life and form" (Gehl & Svarre, 2013).

In total, I completed six hours of observations, where I noted the activities of 400 people. In order to better understand the nature of activities occurring in different spaces, I categorized the observed activities into various groups according to their apparent similarities and the number of times they were encountered. The "**Active"** group includes various dynamic activities such as playing sports, exercising, running etc. The "**Playground**" group refers to children playing

specifically in the space designated as playground. It was singled out as a separate category to distinguish between the dynamic activities performed in the playground and elsewhere in the park. The "**Bringing children to the playground**" group is also singled out as a separate category to set the parents apart from the children in the analysis. Sedentary activities were divided into two categories where **"Passive activities"** include sitting in silence, reading, relaxing, standing, watching and "**Socializing"** includes talking to someone as a main activity, picnicking, eating with someone, etc. The last two categories, which are self-explanatory are, "**Dog walking"** and "**Passing through"**.

Coffee Park Observation

Context

Coffee Park is the smallest one of the three. It is situated at the corner of Coffee and West Broadway and is adjacent to a suburban train station and railway. Other important transport infrastructure located close by is the Maisonneuve protected bike path that starts at the eastern end of the park. This greenspace is located within a rather dense residential neighbourhood. Moreover, at the opposite side of the railway is found Westhaven, a mid-density sector identified as a priority sector by the local community organizations. Similar to many big or small NDG parks, this park contains a playground for children. It has a park chalet which looks like it has been closed for some time, so, it does not provide access to public washroom facilities. Other spaces of the park include a picnic area and a sitting area with benches, both well covered by the tree canopy, and a small open green field. However, the field is being transformed as construction was underway during the park visits. Although the park is quite small for the expected number of visitors, large open spaces are available to residents on the Loyola campus a few blocks away. In fact, after my weekend visit to Coffee Park, I observed many people walking through, playing or having a picnic in the greenspace on the Loyola Campus.

The observations made during the two visits were significantly different. The first visit to the park was on **Friday,** 6 November 2020, from 1:20 PM to 2:00 PM. It was a chilly overcast day (17^{o}C) and it was very windy. While in the park, one could hear music and conversation of the construction workers working on the building facing the park. The activity in the space was rather clam and few people passed through. The second visit was on **Sunday**, 8 November 2020

from 2:00 PM- 3:00 PM. It was a particularly warm and sunny day for this time of year (19°C). However, cold wind was again blowing through the park. In total, I made 90 observations during the two visits which are summarized and grouped by type of activity in figure 5.

Observations

The most common activity observed in the park, both on a weekday and on the weekend, was people simply passing through on foot or on bike. Although the bike path surrounds the park on the outside, several people chose to pass through the park to get from one point to another, even when the park seemed a little crowded. During both visits, people passing through represented around a third of the observed activities. The rest of the observed activities were significantly different between the two visits. While exercising was the least popular activity in the space during both visits, the playground and picnic areas were both quite utilized. On the first visit, on a Friday afternoon, no children were playing in the playground which might be due to bad weather or the timing, as the visit was during regular school hours. However, several groups (seniors and teenagers) gathered around the picnic tables or on the benches underneath the canopy to socialize. On the next visit, on a Sunday afternoon, the main activity in the park

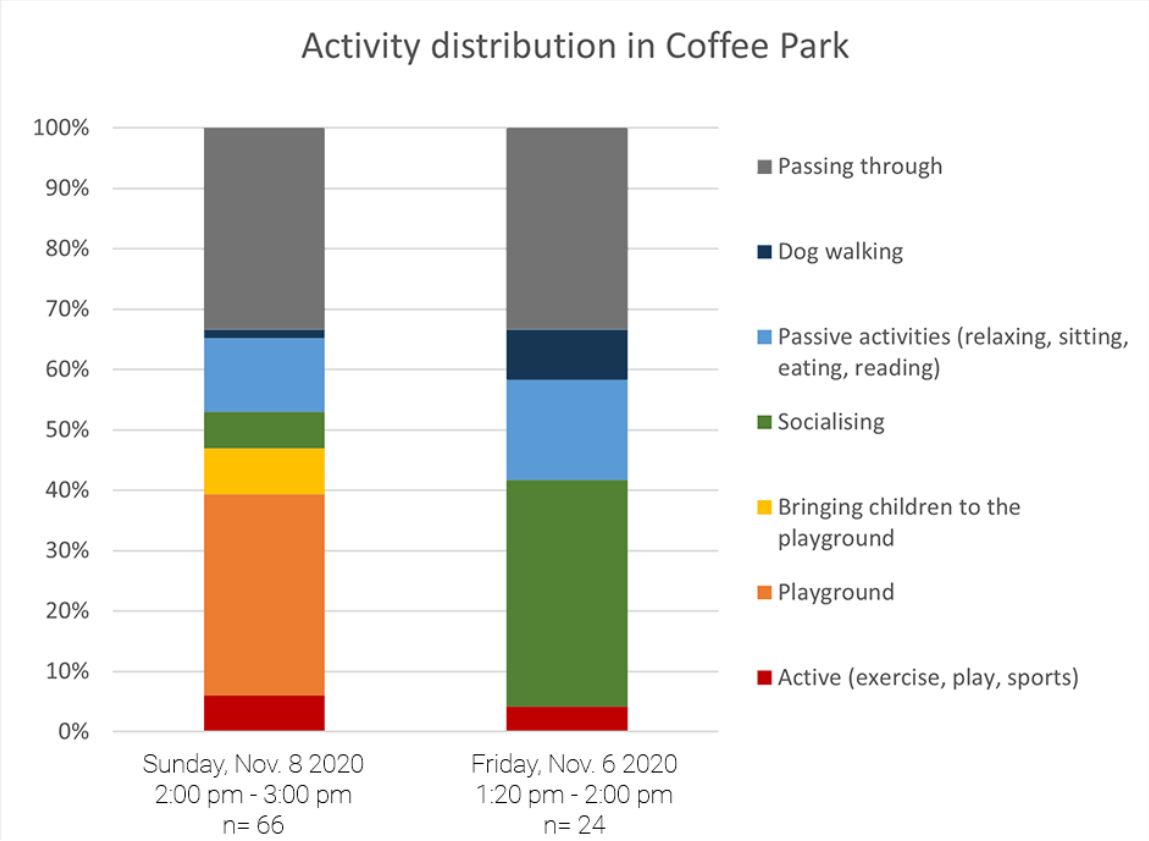


Figure 5 - Activity distribution in Coffee Park

consisted of children making good use of the playground. Both sides of the playground (one playground is for toddlers and the other for older children) were busy, and parents were sitting or standing nearby to watch. Some of the parents would also chat and use that time as a socializing opportunity. Those who came specifically to socialize with others in the park gathered in the picnic table area at a distance from the playground. Some other people were sitting in the same area enjoying a calm activity themselves.

Somerled Park Observations

Context

Next in size is Somerled Park which is situated in a lower-density residential sector of NDG. It is surrounded by single family detached houses but is not far from more dense residential sectors such as the Grand Boulevard and Somerled, both situated west of the park. The park contains a playground area, payable tennis facilities[3] and a flexible open space that faces Somerled. A chalet stands in the middle of the park separating the playground area from the open field. Similarly to Coffee Park, the chalet seems to have been closed for a long time and does not offer access to public washrooms or other amenities. Some trees have been planted across the green space but not enough to create an important canopy over the park area.

Again, the observations done during the two visits were very different in terms of the number of recorded activities and activity types. My first visit to the park was on **Friday**, November 6, 2020, from 11 AM to 12:30 PM. It was a rather warm and sunny day with 15°C temperature. The park was very calm with a few children using the playground. The playground was rather quiet, so much so that the tennis ball sounds from the adjacent court were clearly perceptible. Some people were passing through the park, but movement was rather limited inside the park. The second visit was on **Sunday**, November 8 2020, from 3:40 PM to 4:30 PM. It was an unusually sunny and warm day for November, 18°C. I visited in a late afternoon when the sun was already setting, yet the park was very busy. Many children were playing in the playground, but also in the trees and other spaces around it; families and groups of friends were picnicking in the open area probably for the last time that year.

[3] The facilities are sometimes free, depending on the schedule

Observations

As mentioned above, the park contains several amenities to offer to its visitors which were all well used during both visits. Moreover, the space in the park was also used for a variety of activities that are not formally integrated into the park's design. Although there are no formal free fitness facilities, such as an exterior gym or running tracks, people came specifically to exercise or play ball games in the park. The free space beside the playground was predominantly used for that purpose, whereas the open space facing Somerled was rather used for relaxed activities. This may be a result of the open space being separated from the busy playground and the presence of greenery.

Generally, the park seemed to be a thriving space that offers residents the space they need for daily recreational purposes (see figure 6 for a description of types of activities in the park). Moreover, other greenspaces in the area do not compete with Somerled Park. In fact, only a block away from the park, there is quite a large accessible open space which is part of a private

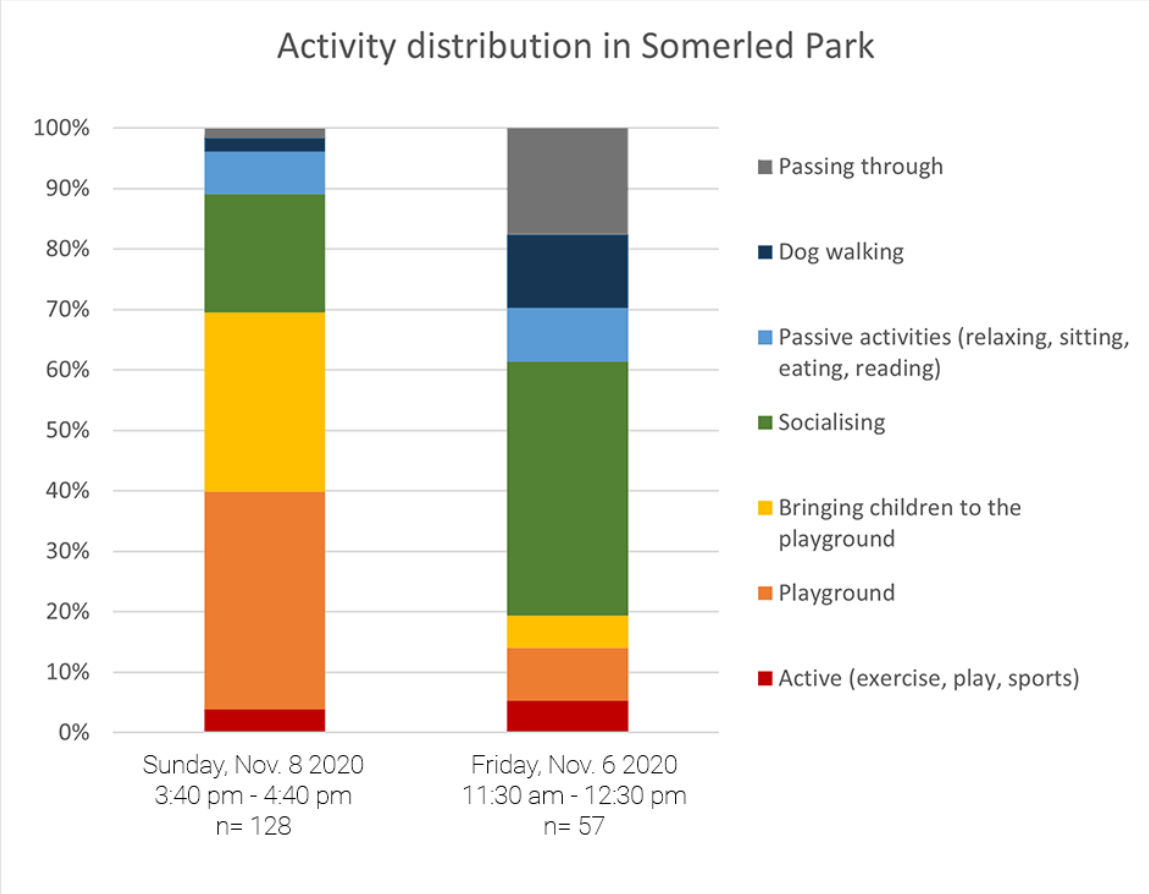


Figure 6 - Activity distribution in Somerled Park

institution. Contrary to my expectations, this space was completely empty before and after both of my visits to Somerled park. This suggests that Somerled park, as a formal public green space, is deemed ample enough for user's desired activities, even when it may feel crowded.

The park proved to be flexible enough to support different activities and atmospheres according to demand. Most common activities in the park varied between the two visits. During the first visit, during a school day lunch-hour, the most common activity in the park were socializing (42%) and passing through (18%). An important part of socializing was mostly due to a group of teenager students from a nearby school who came to eat in the park. Only three parents were with their children at the playground during this hour. However, bringing children to the playground was one of the most common activities during the second visit, on a weekend evening. Active children in the playground, together with other active visitors, accounted for 40% of activities during the second visit. This park is clearly family-friendly, yet it also provides space for other types of activities, such as relaxation and sports.

Georges-Saint-Pierre Park Observations

Context

The third examined site is situated in the Saint-Raymond sector which is separated from the rest of NDG by a railway running just south of de Maisonneuve. The Georges-Saint-Pierre Park is adjacent to a public primary school, a low-income senior housing copmlex, a community centre, and a multiplex residential sector. The park is physically delimited by trees along Upper-Lachine, Oxford and Saint-Jacques and by the community centre building on the east. The park is also located close to Belvédère Terry-Fox Park which a greenspace, situated at the edge of the Falaise Saint-Jacques, offering some seating in a formally-groomed garden settings. In addition to the activities offered in the community centre, Georges-Saint-Pierre Park offers space for various recreational activities. Formal amenities that are found in the park consist of playground areas both for toddlers and older children, a synthetic soccer field, one full basketball court and a half court, access to public washrooms in a chalet, picnic areas, water fountains, and an open field. The different spaces are sometimes separated from the street and/or from one another by fences.

The first visit to the park was on **Sunday**, November 8 2020 from 12:20 PM to 1:20 PM. It was an unusually warm (18°C) and sunny day with a light cool wind. The atmosphere in the park was rather dynamic as many small groups of people were playing or exercising in different parts of the park. The second visit was during **Friday**, November 20, 2020 which was again a warm day for the time of year (12°C). However, it was an overcast day with a light rain which may have discouraged some from going outside. On that day, I passed through the park at 10:30 AM when only a kindergarten group was present in the playground area. Thus, I left and returned later to observe the activity in the park, from 12:20 PM to 1:20 PM. The park was still rather tranquil when I came back in the afternoon. Some people were lunching in the covered area facing Upper-Lachine, a few people were exercising in the soccer field and a few parents with children were in the playground. The space became suddenly and very quickly more populated as I left around 1:30 PM.

Observations

First, as this park offers various activity-specific amenities, I observed a variety of activities, especially in the soccer field (see description of types of activity per day in figure 7). In fact, the field offered a flexible space for many sports, some of which were not soccer related. During both my visits, I was able to observe people having classes with a professional trainer, running, stretching, and of course, playing soccer. On the other hand, the basketball fields were almost at all times busy with teens, adults, and families playing exclusively basketball. Another popular space in the park was the playground for toddlers, especially during the weekend. On the Sunday afternoon, there were more adults in the playground area than there were children. Thus, this space was not only for children playing, but also for parents to socialize. Moreover, social activities were in general more frequent in the park during my second visit on the weekend than during the Friday afternoon visit.

Apart from exercising, the main activities observed during the Sunday visit were socializing and playing, whereas the main activities during the Friday visit were lunching, relaxing or being alone in the park. The most popular space for the latter was the covered area facing Upper-Lachine, whereas the picnic area facing Oxford was not used during my visits. The greater presence of other people on Upper-Lachine street compared to Oxford might explain why some people may prefer to sit on that side. However, the lack of direct access to the Oxford picnic area might also discourage others from using it. For example, during the lunch hour, two construction workers

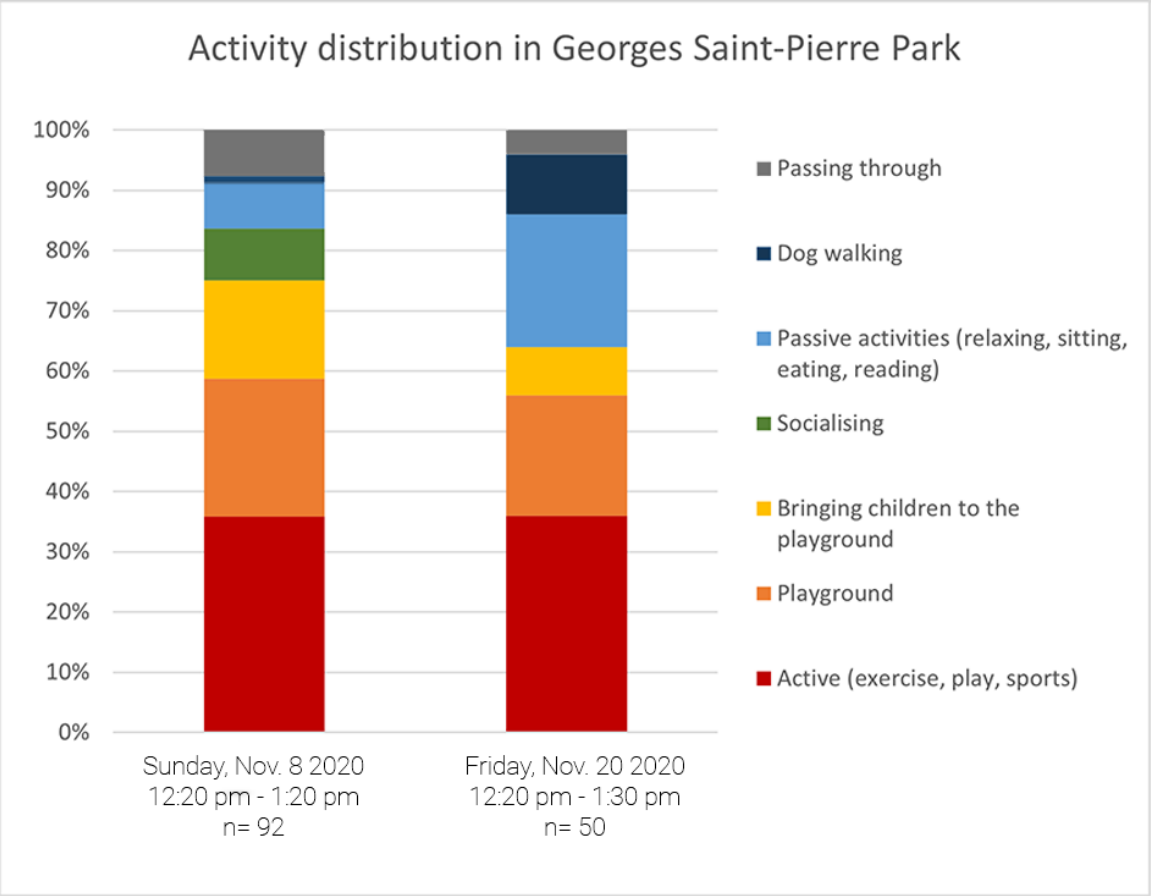


Figure 7 - Activity distribution in Georges-Saint-Pierre Park

working on a dwelling on Oxford decided to take their break in the empty playground. They might have chosen this spot for proximity reasons, as the empty picnic area was not directly accessible from the street due to the fence and represented a larger detour to access the picnic area from the street.

A similar accessibility issue exists for the picnic area facing Upper-Lachine where the barrier is not a fence but the street itself. There is a complex of seniors' social housing (HLM or Habitation à loyer modique) facing the park, and since a number of people living there have reduced mobility, they would benefit from direct access to the park and the community centre situated at the other side of the street. As of now, the residents must travel up to the Upper-Lachine/Oxford intersection, cross it and return back on the same street to access the picnic area and the community centre.

Comparison

Every visited park demonstrated its own identity: Coffee appeared as a rather "passing through space" while it also hosted more calm activities. Somerled appeared as a very family friendly park where the major observed activity was playing (and socializing) in the playground followed by sports activities, especially tennis. Finally, Georges-Saint-Pierre was mainly a space for various physical activities concentrated around its sports facilities. As such, the parks' locations and facilities seem to have influenced park visitors and their behaviour.

A plurality of needs and uses was observed in the three parks which translated into different types of activities performed by different age groups. When comparing the three parks, Coffee Park seems to serve an older population (see figure 8), which uses the spaces for socializing or other calm activities. On the other hand, Georges-Saint-Pierre Park was very popular for its sports facilities. In fact, an overwhelming majority of teens and young adults who visited the space, did so to use the soccer and basketball courts. The adults in the park use the space for a variety of activity types such as bringing their children to the park, socializing, relaxing, dog walking or more (see figure 9).

Georges-Saint-Pierre is also different from the other parks by apparently attracting male users. In fact, 74% of people observed in Georges-Saint-Pierre were men in comparison with 47% both in Somerled and Coffee parks. This discrepancy might be a result of the athletic nature of the park. As mentioned before, historically, girls and women were excluded from sports activities

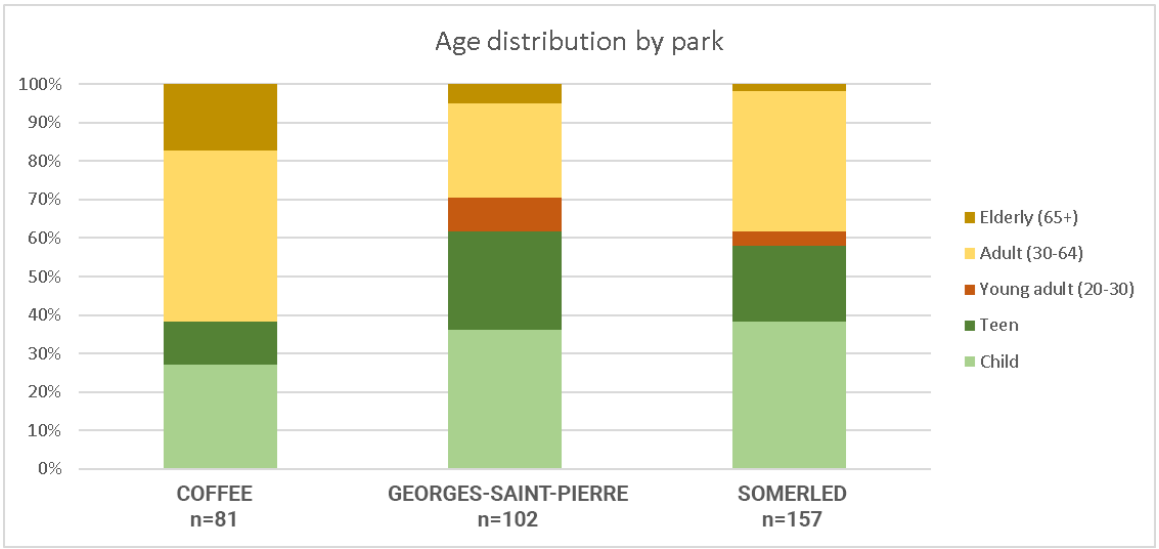


Figure 8 - Age distribution - park comparison

especially from sports teams, like soccer and basketball. Even today, girls can be underrepresented in parks and sports facilities (Gibson *et al.*, 2019). However, the greater number of men was not only observed in the sports fields. In Georges-Saint-Pierre Park, fathers were more commonly observed accompanying their children to the playground too, whereas children in Somerled and Coffee Parks were mostly accompanied by their mothers. Thus, Georges-Saint-Pierre Park displayed common gender discrepancies regarding sports play, but less expected vis-à-vis childcare.

In all the parks, the majority of users (excluding the people passing through) were children playing in the playgrounds, most often accompanied by their parents. On the crowded day in Somerled, children were also present throughout the park – climbing the trees, playing tag in the open field, or simply sitting and chatting on the grass.

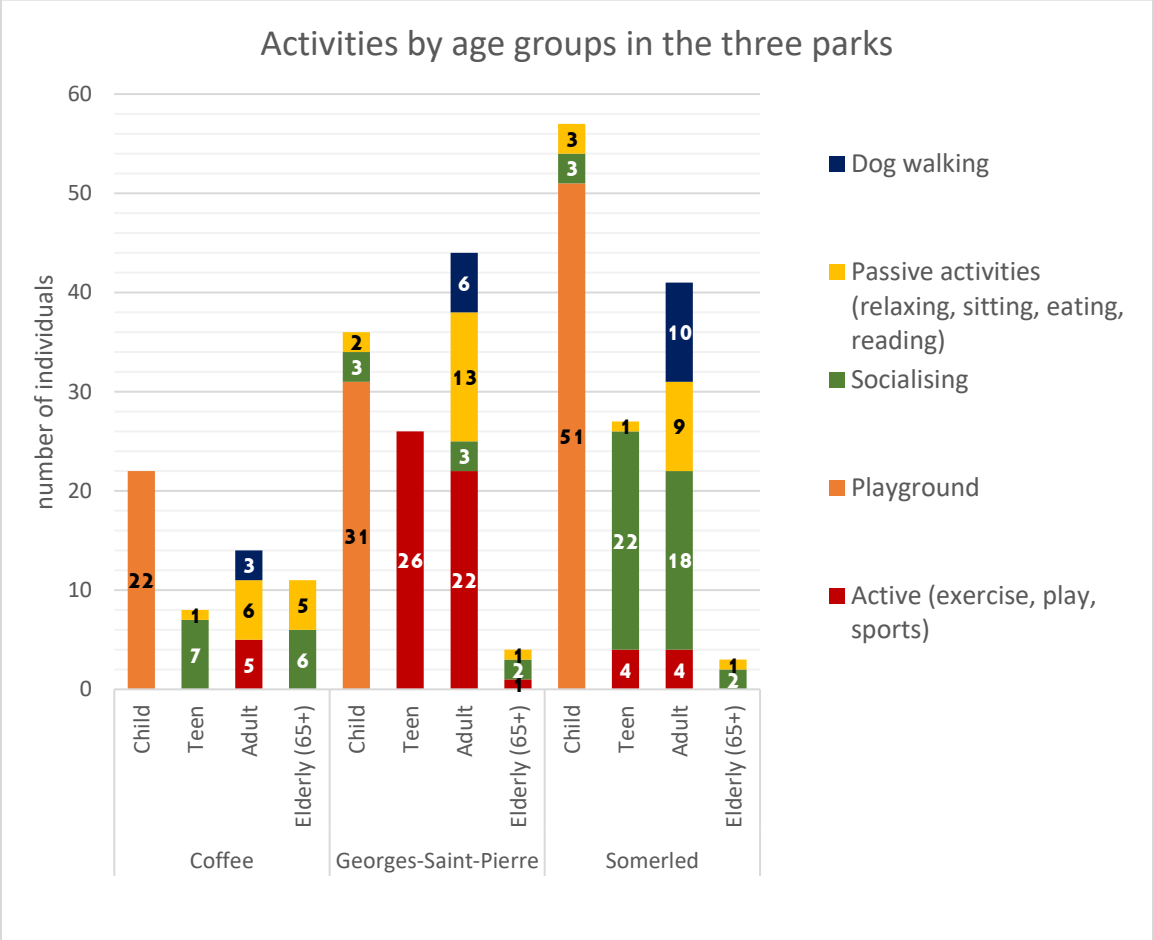


Figure 9 - Activities performed by different age groups - park comparison

Conclusion

In conclusion, each park seems to respond to different needs and, as such, accommodates different activities and behaviours. It is impossible to evaluate people's satisfaction with the spaces only by observing them in said space, but their simple presence there might be an indicator. In fact, other greenspaces are located in proximity to Georges-Saint-Pierre Park and Somerled Park, a lushly-vegetated yet formal neighbourhood park with benches and trees and an open field fronting an anglophone middle school, respectively, but those were deserted during both the visits to each site. This might indicate that the observed users favoured the spaces in the parks or the facilities available there. Thus, the variety of facilities and spaces contributed, as expected, to the variety of potential activities in parks.

From the observations alone, it is also impossible to tell who is potentially excluded from the parks and for what reasons. However, some gaps between the expected and the observed results can inform of potential disparities. For instance, the parks were chosen for their various locations, urban form and population count. A bigger park situated in a multiplex sector, like Georges-Saint-Pierre, can be expected to attract more users than a smaller park, such as Somerled, situated in a single-family residential sector. However, the results show the opposite: Somerled Park was more popular. Differences in park crowding can stem from the observation methodology, since the observations were done at different moments which could have favoured one space more than the other. A comparison between the parks in the same point of time might reveal more accurate relationships. Still, Georges-Saint-Pierre is located in an enclave of sorts, separated from the rest of NDG by a railroad which can contribute to difficult access.

Finally, one of the observed gaps in accessibility to the parks in NDG relates to the presence of visible minorities in greenspaces. The three parks are situated in very different socioeconomic settings. Thus, according to 2016 Canadian census data, more than half of the population in the Coffee Park sector are visible minorities, more than a third of residents in Georges-Saint-Pierre Park are visible minorities and less than a quarter are visible minorities in the Somerled Park area (see figure 10). Nevertheless, visible minority people were rarely observed in Coffee Park where they were most expected. What greenspace do visible minorities of the neighbourhood visit (if any)? Does Coffee Park respond to their needs? And if not, why? Such questions need to be further researched to evaluate urban green equity in the sector.

Figure 10 - Proportion of visible minorities residing near the observed parks. Data: Statistics Canada, 2016 Census

Chapter 3 - Survey and Interview Results

In this section I will discuss the results of the survey conducted among residents and a small number of semi-structured interviews that were completed. Personal preferences, attitudes towards natural and urban spaces, lifestyle habits, personal limitations, etc. are subjective factors affecting the desire and need to enjoy greenspace in the urban environment or outside of it. Direct observations of space are not enough to understand people's attitude to the space and to see the various barriers that may impede them to enjoy greenspace, and so, asking park users directly is one way to get a better understanding. This analysis will not be representative of NDG population but will rather be used as an exploration of considerations and concepts relating to leisure activities in urban greenspaces.

Survey and Interview Methodology

The subject of the survey consisted in exploring the day-to-day interactions with urban nature within the neighbourhood. The survey was divided into four sections that categorized the questions by distinct subjects. Questions in the first section named "Activities in Green Urban Spaces (Sports/Leisure/Cultural)" were intended to better understand the respondents' motives and the types of activities they enjoy in urban greenspaces. The second section, "Distance, Accessibility, and Route to Urban Greenspaces" was designed to evoke reflections about the respondents' experiences when travelling towards urban greenspaces or other destinations within the neighbourhood. The third section, "Physical Features", refers to the facilities available in greenspaces and the appreciation for greenery. The last section asks about levels of satisfaction and comfort in greenspaces.

The survey was published in the weekly newsletter of a local community organization, the NDG Community Council (NDGCC), as well as on social media (Facebook). It was active on-line during two weeks and accumulated 21 complete responses from residents. The respondents were predominantly women (81%), older people (55 years and older, 67%) and high-income people ($80 000 +/household-year, 56%). All questions and results are presented in the annex.

As for the interviews, all interviewees have previously completed the survey since they were recruited through the survey itself. In total, 7 survey respondents accepted to follow-up with an interview. The interviews were semi-structured but followed three main themes: the living situation of the respondent, their outdoor leisure activities and the experience of place living in

NDG. All respondents but two were living in NDG at the time of the interview. One of the interviewees was a Westmount resident and another was a long-time former NDG resident that moved to the suburbs.

Themes

Several clear themes emerged from my conversations with the interviewees. Recurrent themes, both in the survey and in the interviews, were pertaining to the presence of trees and facilities, the activity of walking, and the wish for more "natural" spaces.

Trees

Trees are an essential part of urban nature which can be found in parks, natural areas, other green spaces and on streets. Survey and interviews respondents expressed certain attachment to trees in the neighbourhood by communicating their appreciation of trees, their hope to plant more trees or their wish to protect existing trees. Trees are known to provide many benefits to city dwellers such as shade, reduced heat island, reduced noise, and contribution to the spatial organization and design. Among the survey responses and interviewees, many mentioned that trees provide shade and comfort in greenspaces, offer habitat for wildlife, and provide a more "natural" environment to the space. Moreover, since trees can be planted directly on the streets, residents can take advantage from the benefits of urban nature simply by walking along the street without even going to a formal greenspace. Thus, street trees are of great importance since they not only favourable for mental and physical health, but also enhance street walkability and livability (Apparicio *et al.*, 2017).

Appreciation of Trees

The survey and interview responses showed a deep appreciation of trees in parks and on streets on the part of the residents. For example, most of survey respondents indicated that the presence of trees was the main reason for walking on specific streets. In fact, in the questionnaire, three questions asked the respondents to compare three pairs of pictures showing typical NDG streets and choose the one they would prefer for walking. The first question showed a mid-density residential street without many street trees but adjacent to a park (Grand-Boulevard) compared to a low-density wide street with street trees and houses at

each side of the road (Cavendish). The second set of pictures showed a mixed-use principal road with trees on each side (Sherbrooke) compared to the first picture of the preceding set showing Grand-Boulevard. Finally, the third set showed the previous Sherbrooke image compared to a fully tree-covered typical residential street (see image 11). When asked about the reasons for preferring one street to the other, most respondents answered that there are more trees. Other enumerated reasons for choosing the most popular environment for walking were that it is a greener or calmer space, and that there is less traffic.

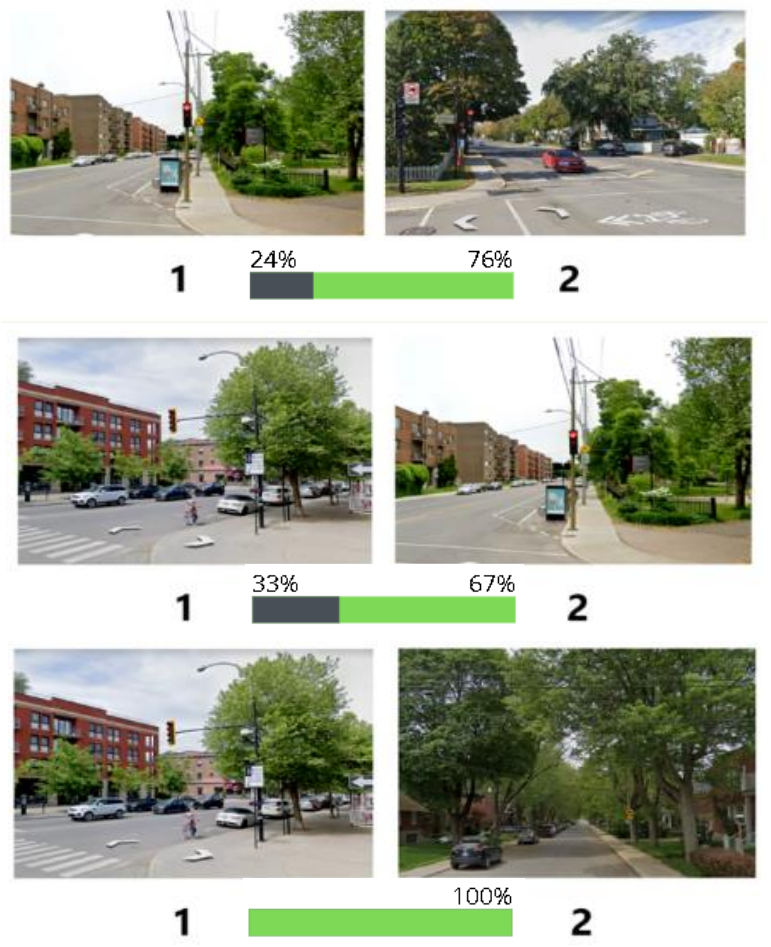


Figure 11 - Survey results for street comparisons

The images described as greener and containing more trees were unsurprisingly the most popular across the three combinations. In the last combination, the residential street was even voted unanimously as the preferred one.

In contrast, the reasons for choosing the least popular street are also noteworthy. For instance, those who chose the least favourite image in the first combination, were mostly attracted by the presence of a park. Hence, the benefits of the park seemed to compensate for the lack of a street canopy. One respondent further details why a park is a better option for walking: "*I prefer to walk through a park, with lots of greenery: grass, flowers, […], trees. Also, I dislike cars […]*". Even though trees are not specifically mentioned, yet again, greenery is cited as the desired quality for walking. But then, also, the absence of cars is necessary to this responded to regard a place as walkable. Actually, car traffic is a known disincentive for walking (Jacobsen *et al*., 2009). Another identified reason for choosing the least popular option was the attractiveness of the street. In the second combination, many of the respondents who selected the less popular option, Sherbrooke, seemed to do so for its active and attractive aspect. Interestingly enough, all of the respondents who chose the Sherbrooke (1) option in the second combination for its attractiveness preferred the Cavendish (2) option for its trees in the first combination. In other words, even if in the second combination, for the majority, Grand Boulevard seemed to boast more trees, it might not appeal to everyone's aesthetic preferences. This shows that although trees were clearly a significant factor in terms of respondent satisfaction with walking, those preferences are also linked to other considerations such as physical features associated with urban design.

The association between walkability and aesthetics will be discussed further but, but it is important to note here that the appreciation for trees does not only relate to ecological factors, but also to urban design considerations. In particular, trees contribute to establishing spatial boundaries, define human-scale spaces and as such enhance the experience of moving through space (Arnold, 1993). Together with the built environment, street trees contribute to the complexity of the urban form that results in desirable spaces for walking and passing through. That being said, it is impossible to identify a single reason why people like the presence of urban trees since the trees offer multiple benefits, be it ecological, spatial, aesthetical, public health-related, and so on. Most people indicated that they preferred a space due to the presence of "more trees" without leaving any indications regarding to why this is a desirable characteristic. Yet, a few indicated nature-related reasons for more trees, which include a more "natural" environment and to improve biodiversity.

As for trees located in parks, several interviewees assessed parks by the presence of trees in them. For instance, Sylvie[4] mentions that a greater quantity of trees in a park contributes to the park's quality, provides shaded areas, reduces heat and adds to the park's natural aspect. She then illustrates this idea by evoking Benny Park, a neighbourhood park close to her residence, which she believes to be greatly lacking trees and natural features. She explains she would never choose this park as a destination of her strolls around the neighbourhood. Similarly, Margaret also mentioned Benny Park for its lack of trees by comparing it to itself twenty years ago. As a long-time resident, she witnessed the park change throughout the years and noted the natural aspect of the former park she had enjoyed. For Dominique, a young new resident of NDG, trees are also an essential part of a formal greenspace. By expressing their appreciation for trees in greenspaces, the three women also have expressed their wish for planting more trees in such spaces, and specifically in parks.

Wish for More Trees

Although the interviewed residents were aware of their advantageous location (as residents of a relatively green neighbourhood in Montréal), planting more trees in parks and on streets would be desirable for many. For some, the need for more trees can stem from the perception that there are not enough trees even when they are numerous. For Margaret, a woman with a respiratory condition, trees are essential for improving air quality. She explains that street trees are extremely helpful to mitigate the emissions from cars and are crucial to her living environment. As for trees in parks, she says:

> *"When I found they [the municipality] planted trees, I was really happy, but then you could plant more trees and they don't have the budget. So that's missing, and that's missing in [parks]. I think that a little more money should be put into the maintenance of parks, it's our only greenspace. But I mean, as far as quality of life in the neighbourhood, I can't be complaining when you go to the east end of Montréal and you see people living with no trees around."*

On the other hand, some compared NDG to greener spaces such as Westmount and used it as an illustration of what is possible. As such, Walter explains his wishes for better parks as follows:

[4] Every participant is referred to here using a pseudonym to protect their confidentiality

"Parks could be upgraded to be more user friendly, but also more beautiful. I think we could take some reference from Westmount's parks. […] We could get rid of concrete paths in the parks, it makes them more natural, we could have fountains, some public art. I'd just like to see more trees, [and] I am seeing more trees, which is great."

In other words, the demand for more trees can reflect specific needs such as the need for cleaner air or more beautiful spaces. Whether respondents compared NDG to more advantaged or disadvantaged neighbourhoods of Montréal, their conclusion stayed the same: more trees are desirable. Survey results also show that the wish for more trees expresses a hope for biodiverse spaces for wildlife and/or comfortable and shaded spaces for human use.

Protection of Trees

There are several ways in which people connect to existing trees and express a desire to protect them. For instance, three of the interviewees enjoy birdwatching in the area and in adjacent parts of Montréal, in places such as the Falaise Saint-Jacques or Summit Park in Westmount. And so, their relationship with trees, constituting birds' habitat, is influenced by their interest for birdwatching and ecology. For one of them, the protection of trees is a cause close to her heart. Patricia is preoccupied with the number of trees the *Grands-Parcs* are cutting in their network of natural parks on the island of Montréal. In fact, many trees were cut in Montréal due to the infestation of emerald ash borers; where, only in 2019, the city cut 18 000 ash trees of which 77% were in natural areas (Léveillé, 2020). Patricia further explains: "Some of them are ash but [some] were something they considered dangerous trees, which is basically trees that were near the path; it's ridiculous". In this example, trees are considered as an element of ecological value, more than as a park element, one that is managed by and for human use. This tension surrounding the various qualities of parks was frequently highlighted and will be further discussed below.

Walking

Walking, Comfort, and Accessibility

Walking is first and foremost the act of moving from one place to another which is usually performed with a destination in mind. This kind of walking is described as purposive walking (Wunderlich, 2008) which is performed for a specific task or out of necessity. When speaking about the quality of their living space, interviewees have highlighted the importance walkable spaces for their day-to-day life. For instance, Sylvie is very happy to live in a walking distance to all her essential amenities such as the pharmacy, the supermarket, the library, and the tennis court.

Walkable and accessible neighbourhood allows citizens to access local greenspaces more easily. In particular, street accessibility is of great importance to those with reduced mobility. For instance, Rose tries to enjoy the outdoors as much as she can and likes picnicking and other activities in the park. As a user of a motorized scooter, however, she can only enjoy greenspace if the route to her destination is accessible:

> *"[A green space], I think it's a place where I can go and unwind and enjoy the trees and the nature even just see people. in a green space you can spread out I don't have to worry that much for the 2m distancing, I don't have to worry about access as long as I can get on the sidewalk I can access the park, that's a huge thing. In Montréal universal accessibility does not exist."*

Thus, it is important to consider greenspaces, not as unique entities, but as element which are part of an urban network.

Another aspect of walkability is sharing the road with other users. The response to the COVID pandemic highlighted the importance of space allocation for pedestrians but also enhanced some conflicts between different road users both in green spaces and on streets. As a cyclist, Anne raises an issue of sharing space between pedestrians and cyclists in parks. For instance, since the bike paths in the Canal Lachine Park became multiuse, she complains that pedestrians do not know how to share it since they do not try to be seen or allow cyclists to pass. This conflict raises the issue of who "owns" the path/street which is a common conflict in environment justice.

Walking in Greenspace as a Leisure Activity

Most interviewees were frequent walkers and would intentionally walk in their neighbourhood for recreational purposes. For some, their walking activities were affected, for better or worse, by the COVID-19 situation while others continued their practices as usual. For instance, Dominique used to only walk as part of her commute before the pandemic unfolded. Now, her walks shifted for recreational use to stimulate physical activity and socialisation. Patricia was already a fan of walking before the pandemic, but she observed that "more people are doing now what [she] used to do". Thus, she changed her usual walking setting to avoid the crowds.

Several interviewees tended to walk predominantly for recreational reasons, to enjoy this activity along the streets of their neighbourhood, where they like to be surrounded by mature trees. They might not have a particular destination in mind (except where walking is part of another activity); they tend to walk near their residences and on a regular basis. Common streets named for walking include Fielding, and de Terrebonne or the Loyola sector, whereas de Maisonneuve was commonly identified as problematic for walking (see figure 12).

Figure 12 - Streetscape: Fielding Street, de Terrebonne Street, and de Maisonneuve Street images: Google map

Anne, 69-year-old woman living in Westmount, talks about walking both as a leisure activity for socializing and for spending time in nature. She describes her walks to Summit Park, a forested urban park located in Westmount, as an escape from city noise and heat, where one can spend time and be comfortable. But walking is also an important social activity for Anne: she often undertakes walks to visit friends living in NDG and takes advantage of NDG neighbourhood greenspaces such as Girouard or Benny Parks for meeting and strolling.

Survey responses also showed patterns of regularly getting outside for recreational more than functional reasons during the first year of the COVID pandemic. Half of the respondents indicated to go out every day for pleasure (see figure 13). Other still common daily activities include visiting a greenspace or a friend and functional activities (shopping, school, work, etc.). Moreover, for some survey respondents walking became an alternate activity, whereby activities such as swimming and skiing (although were somewhat possible during the winter under certain circumstances) were replaced by walking in the neighbourhood alone or accompanied.

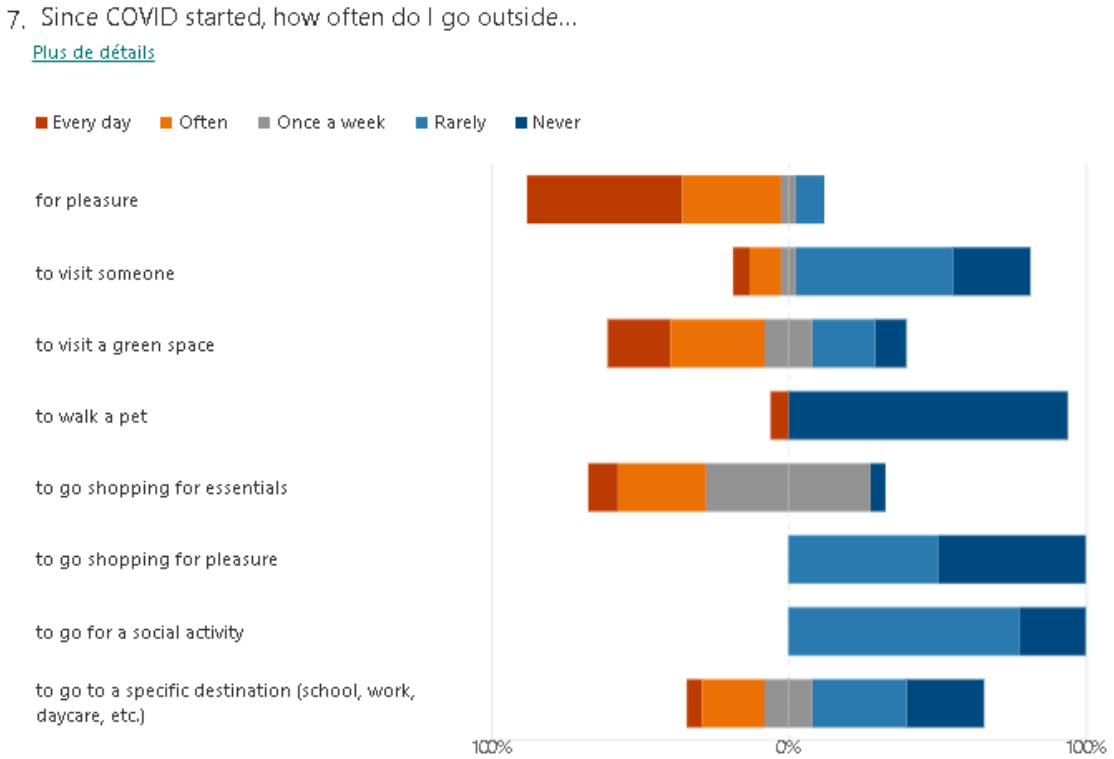


Figure 13 - Trip frequency and trip types during COVID - Survey results

Walking as an Esthetic Practice

Particular attention was given to the street's appeal when deciding where to walk. Interviewees not only reported avoiding certain streets for traffic or crowdedness reasons but also for aesthetic ones. As mentioned in the above section, trees are an important element in the streetscape and so interviewees said to prefer walking along streets containing many trees.

Trees are only one part of the street design. Other urban design elements were also noteworthy to respondents. As such, Margaret mentioned her interest towards interesting architecture she may encounter on her walks while leaving a critique regarding Montréal's approach to urban design, which is too eclectic in her opinion. She is however very pleased that construction such as the luxurious condos popping everywhere else in Montréal do not appear in her neighbourhood. Moreover, Sylvie gave particular attention to the street allure. She enjoys streets like de Terrebonne, characterized by their generous tree cover. However, Sylvie who loved de Terrebonne for walking was shocked by its transformation during summer 2020 when the car parking on both sides became bike paths and completely changed the familiar allure of the street. This transformation cased her to avoid the street at all costs.

"Nature"

Importance of Greenery

The need to find contact with nature was clearly expressed in the survey results and all interview testimonies. Although everyone approached the concept of nature and park with a different understanding, everyone acknowledged the importance of greenspace for themselves and the people around them (see figure 14). Nearly half of survey respondents indicated that "contact with nature" is their first reason for visiting greenspaces. Other important reasons constitute "relaxing" (first choice for 33,3% of respondents) and practicing a physical activity (first choice for 14.3% of respondents).

3. What activities do I enjoy most in green public spaces? (Rank those that apply by order of preference)

Plus de détails

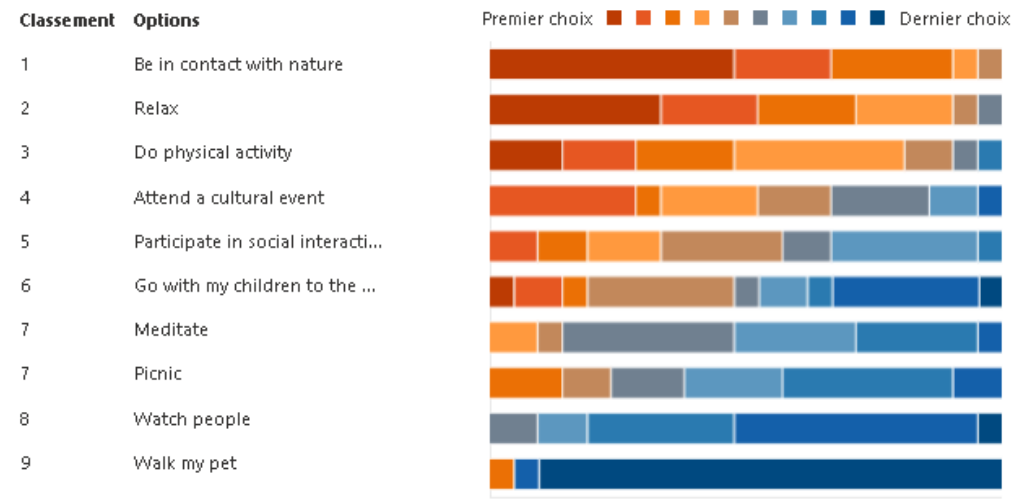


Figure 14 - Favourite activities in greenspace - Survey results

Various reasons were given for visiting greenspace but the importance of nature in greenspaces was expressed differently depending on the person. The importance of such spaces became more obvious for some as parks became the only leisure space during COVID restrictions. Anne tells how parks served as an extension of her deck during COVID, allowing her to replace her usual deck gatherings with friends to park gatherings.

> *"[Parks were] essential places for meeting up with people during the pandemic, and you know, we have really appreciated the fact we have these green spaces and I have met friends a lot in NDG because of those places where we could get together with all the restrictions. […] I have friends who live in apartments, they don't have access to greenspace on their property, the parks have been SO important to your mental health, and even if you're not meeting someone, just to have space for you to go walk around […]. "*

In other words, parks were no longer simply important; they became a *necessity.* The importance of parks was also considered for physical health. Margaret reveals the importance of greenspace for herself and others:

> *"[we need greenery] so that we can breathe better […]Everyone needs oxygen, that's what attracted me to the Falaise, so I can go in there and sit and read there and listen to the birds, and it just feels so… good because then breathing and great oxygen and feeling.. I feel very very good when I'm in the forest I don't feel very good when I'm walking on pavement in the heat."*

Attitude Towards Greenspace and Nature

Although parks allowed certain residents to find an appropriate space to connect with nature thanks to the presence of trees, other types of greenery, and peace of mind, for other participants parks were not a true representation of nature. For instance, for Sylvie, a park is not necessarily a natural space. For her, neighbourhood parks in NDG are not a destination, nor are they interesting spaces for her needs:

> *Un parc c'est de main d'homme ça là là, pis ya du gazon et il ya des terrains de jeux. […] Un parc c'est plus propre [que la nature], tout est bien rangé, tout est à sa place. Dans la nature, c'est pas comme ça, c'est un autre ordre qu'on connait peut être moins bien.*[5]

Similarly, Patricia, who previously lived in Toronto, was surprised by Montréal's definition of greenspace. She describes greenspace in Montréal as any "outdoor activity space" whereas greenspace for her should be more "natural" by definition. It should be more "left alone, continuous, and big"; and she mentions that there are not a lot of those in Montréal, or they are overused.

Since people tend to compare their current living space with other spaces they know, the environment where one grew up is one of many factors that can influence one's attitude towards nature (Fortin & Després, 2011). On one hand, in the previous example, Patricia compares greenspaces from one big city to another (where she expresses her preference to the park system of Toronto). On the other hand, based on her childhood environment, Rose expresses her satisfaction with the nature she finds in the urban environment of NDG while being close to all her needs and amenities:

> *"I grew up in the country […] I wouldn't want to go back but at the same time I do need those times where I am surrounded by trees, smell the trees, and you know see the birds the squirrels, I need to see nature and almost be part of it. [..] What I have here in NDG is good balance"*

[5] Translation by author: a park, it's human-made, there is grass and there are playgrounds […] A park is cleaner [than nature], everything is well organized, everything is in its place. In nature, it's not like that, there is another order, one that we may not know as much.

The different attitudes towards nature contribute to different conceptions of what a park or other type of greenspace should look like and what amenities it should contain. Thus, some conflicts between how much should a greenspace be manicured or left more “wild” or “natural” arise. For some this translate to a question of amenities and services that greenspace provides, for other it is a question of biodiversity.

The conflict around playgrounds and other facilities in urban parks can illustrate the first case regarding greenspace and what they should contain. Whether playgrounds belong in a park was somewhat a common theme during interviews, even though none of the respondent was a parent of young children. The presence of children in the park can promote a sense of security to the space which might contribute to its quality. Dominique, for instance, remarked that she likes knowing that kids have a safe and dedicated space for them to enjoy. Similarly, without being a dog owner, she loves the idea of dog parks so the dogs can freely play in a dedicated space. In contrast, other survey and interview respondents, even while recognizing the importance of playgrounds, think there might be too much of a focus on these facilities to the detriment of recreational facilities for adults and/or provision of more natural spaces. As such, one survey respondent suggested ping-pong tables or rock-climbing facilities in green spaces while others suggested more biodiverse settings suitable for insects and urban fauna. Additionally, although Sylvie understands the need for playgrounds in neighbourhood parks, she observes a tendency to add playgrounds even in natural parks such as Mont-Royal or the Îles de Boucherville which, in her opinion, prioritise leisure in over the conservation of nature and should be the other way around, in natural space at least.

Biodiversity was mentioned quite often in the survey as a potential improvement for NDG greenspaces. In the survey, the idea that parks should be more attractive to wildlife was clearly present. For example, some responses to the question “If you could, what would you change in NDG public spaces?” were:

- *Nothing much. I just would like access to the Falaise St Jacques, which is a big natural area*
- *Rezone St Jacques to residential and protect [the] green space of Falaise St Jacques*
- *Large, naturalized spaces*
- *More Nature*
- *Make them wilder*
- *Make them wildlife friendly, create butterfly and pollinator gardens*

One interviewee, Walter, also insists on making parks more user friendly and more biodiverse so that they become more attractive to wildlife. However, he also mentions NDG parks should be more like Westmount parks, where the space has more trees and flowers, because they are more beautiful, with fountains, but no concrete paths. That being said, ecological and aesthetic qualities are not always compatible, and many studies show that perceived or desired qualities of biodiversity and its benefits largely depend on cultural and geographical context and the ecological knowledge of the users of space (Ives & Kelly, 2015). Due to different aesthetic cultures, conflict may arise between amenity and biodiversity.

Discussion

In conclusion, all interviewees concur that NDG offers high environmental quality, although some suggest that it could be better. All but one were fond of their neighbourhood and said that they are more attached to the neighbourhood than to their specific dwelling. Generally, positive attitudes towards the neighbourhood were also expressed through the survey, as respondents characterized their routes more often as pleasant and nice than busy, noisy, etc.

Access to greenspace, or lack thereof, was not mentioned as an issue. In fact, half of the respondents say they live within a five-minute walk of the closest greenspace and another third lives between five and 10 minutes from the closest greenspace. Nevertheless, more than a half of the respondents live more than 15 minutes of walking from their favourite greenspace and only one in 10 respondents mentioned living near to the one they prefer (i.e., less than a five-minute walking). This expresses the varied needs and expectations people might have with regard to their neighbourhood greenspace.

The plurality of needs and attitudes towards greenspaces and the varied definition everyone give to them was apparent even in a very small sample of seven interviewees and 21 survey responses. For many, the use of greenspace was associated with their recreative or sport activities. For example, those who like skiing or hiking would need to visit natural parks (which can be within the city or outside), or if they are birdwatchers, they need places where birds often nest or alight while migrating. That being said, NDG has officially no large urban parks or

natural parks. The closest ones might be Summit woods, Angrignon Park or Mont-Royal. Thus, it can be expected that residents feel the need for large natural spaces.

Because of the lack of park diversity in NDG, most of parks in NDG have a programmatic focus on children's playgrounds and sports facilities. Together with the sense of safety, amenities for children contribute to the general notion that NDG is very family-friendly. Interestingly enough, as mentioned in the literature review, one study showed low to medium level of access to playgrounds in NDG due to the high number of children in the area and thus the potential of crowding (De Alvarenga *et al.,* 2018). Although according to some standardized indexes, there might not be enough parks in NDG, the general feeling from the interviews was that there were too many. Here, the expression of unmet needs in terms of park facilities might indicate the existence of barriers to recreational, open or green space for groups others than parents and young families. Since interest is an important aspect for frequent park visits (Boyd *et al*., 2018), the lack of variety in facilities might constitute a personal or even an institutional barrier to accessing parks. However, to further confirmer how different populations are affected by variable park programming more studies are needed

That being said, the complementarity of uses in the park network is important to respond to the various needs. It is also important that the different uses are well distributed and accessible on all levels (physically, psychologically, culturally accessible, etc.). There seems to be a need in NDG for a natural park, or a space that is ecologically significant. Some respondents, both in interviews and survey responses, have expressed their affection for the natural space of the Falaise Saint-Jacques which, for some, allowed to fill the need for natural space. Thus, the escarpment has the potential to provide needed space and is part of the plan of *Grand-Parcs* to become a natural park.

Conclusion

In conclusion, this study serves as an exploratory research regarding the patterns of greenspace use in an urban context and how they might express gaps in accessibility. The study was based on a review of literature pertinent to the issue of urban green justice and was conducted within the NDG neighbourhood, part of the Côte-des Neiges-Notre-Dame-des-Grâces borough (CDN-NDG). First, I reviewed the frameworks and discussions in academic literature regarding the themes of green space definition, attitudes towards nature in the past and the present, factors of (in)equality and accessibility to greenspaces for vulnerable population, potential effects of the COVID-pandemic, and relevant locally conducted studies. Next, to put the case study in context, the NDG district was briefly described in terms of history, geography, and demography. In an attempt to represent the variety of NDG park facilities, three parks that vary in size and design were chosen. Based on the literature, a framework including physical and non-physical parameters was chosen for the analysis. More specifically, based on proximity, acreage and quality parameters, a set of observations was conducted in the chosen neighbourhood parks. To get a sense of how residents use their greenspace, six sessions of direct observation, two in each space, were conducted to perceive who is visiting the space, and for what purpose. Generally, every park offered assorted amenities that, beyond the people bringing their children to the playground, attracted different types of people to each parc. Reinforcing the theoretical framework laid out in chapter 1, the observation showed some potential gaps in terms of accessibility to the parks for visible minorities, and girls and women. Moreover, the most popular park, out of the three, appeared to be Somerled Park, one that is situated in a low-density neighbourhood and that houses few visible minorities. However, the park offering most diverse and well-maintained facilities was Georges-Saint-Pierre which is located in one of the four priority sectors of the district. Thus, in contrast to theory, park quality can hardly be generalised by the socioeconomic status in this area and more in-depth studies are necessary to confirm the diverse needs and potential lack of greenspace provision to certain groups in the NDG context.

At last, finding out the personal viewpoint of some residents regarding greenspace in NDG was achieved through a survey and some interviews. Respondents have confirmed the importance of greenspace for their mental and physical health, and their leisure time. Yet, the lack of consensus from respondents about what is a greenspace or how nature is defined in the city (or

outside of it) echoes the academic debates on the matter. Generally, the respondents of the survey and interviews were quite satisfied with the green aspect of their neighbourhood and more broadly, the NDG district. Nevertheless, residents insisted on the importance of having and protecting trees in the parks and on the streets to promote a more healthy, green and beautiful environment.

Even though the park space of CDN-NDG per capita is one of the lowest in the city, its high street tree cover might compensate for this lack of other greenspaces. **Street tree cover** – as a part of urban nature that isn't a formal greenspace – offers many benefits. Street trees contribute to the street design and enhance the quality of the space and are also beneficial for physical and mental health. They can also contribute to mitigating inequalities in access to green space. In other words, those with limited access (spatially, culturally or otherwise) to green space can still enjoy benefits of greenery simply from transiting in the streets .

That being said, **walking** was as an activity shared by most survey and interview respondents: those who enjoyed nature outside the city and those who stayed in the neighbourhood for their leisure activities. Walking in NDG was a social activity for some, a physical activity for other, or an individual leisure activity for yet others. Many have agreed that the streets of NDG constitute an agreeable environment for walking, although some were critical in regard to the esthetical or environmental qualities of certain streets, especially in regard to the quantity of trees, presence of cars or universal accessibility. Thus, improving the design of streets in collaboration with the local residents, to make the public domain more accessible, attractive and green has the potential to encourage even more an activity that seems already well-liked. Encouraging walking can contribute to the city's goal of increasing the number of people that perform at least 30 minutes of physical activity in a day (Ville de Montréal, 2018). Moreover, considering the lack of space for sports and leisure in the borough (in relation to the city), taking advantage of the public space that is occupied by streets is an important asset.

Finally, the plurality of residents living in NDG would necessarily require a varied range of greenspaces and programs. Since greenspace doesn't imply the same definition for everyone, even within a small sample of seven interviewees, neighbourhood greenspaces should be diversified to respond to various demands.

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Annex 1 - Research Ethics Board Certificate

McGill

Research Ethics Board Office
James Administration Bldg.
845 Sherbrooke Street West. Rm 325
Montreal, QC H3A 0G4

Website: www.mcgill.ca/research/research/compliance/human/

Research Ethics Board 1
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 21-01-037

Project Title: Supervised Research Project in Urban Planning (2021 - URBP 630, 631 & 632)

Principal Investigator: Prof. Lisa Bornstein

Department: School of Urban Planning

Other Researchers: Madhav Badami, Ahmed El-Geneidy, Nik Luka, Anna Kramer, Richard Shearmur, David Wachsmuth–faculty at McGill's School of Urban Planning; Kevin Manaugh (adjunct faculty Urban Planning, FT faculty in McGill's Geography Dept.; Ray Tomalty—adjunct faculty, McGill's School of Urban Planning

Approval Period: **January 21, 2021 to January 20, 2022**

The REB-1 reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

Deanna Collin, Senior Ethics Review Administrator

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* Approval is granted only for the research and purposes described.
* Modifications to the approved research must be reviewed and approved by the REB before they can be implemented.
* A Request for Renewal form must be submitted before the above expiry date. Research cannot be conducted without a current ethics approval. Submit 2-3 weeks ahead of the expiry date.
* When a project has been completed or terminated, a Study Closure form must be submitted.
* Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
* The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
* The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this study.
* The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.

Annex 2- Survey questionnaire

1. **I am 18 years old or older.**
    a. **Yes**
    b. **No**
2. **I have read and understood the information about this survey and the broader research project. I consent to participation in the survey and use of my responses for this research project.**
    a. **Yes**
    b. **no**

1/5. Activities in Green urban spaces (sports/leisure/cultural)

3. What activities do I enjoy in public spaces? (rank those that apply by order of preference)

    Attend sports activities (as a spectator)
    Attending a cultural event
    Be in contact with nature
    Do physical activity
    Go with children to the playground
    Meditate
    Participate in social interactions
    Picnic
    Play pool and water games
    Practice an individual sport
    Practice team sports
    Read
    Relax
    Spending time outside
    Walk my pet
    Watch people
    Other (specify)

4. Why do I need to go out to green urban spaces? [choose all that apply]

    Get out of my four walls
    Flee the heat and cool down (during summer)
    Socialize
    Observe the urban life
    Walk a pet
    Physical activity
    Spend my energy

5. Did the confinement or the COVID-19 pandemic prevent me from my usual leisure or outdoors activities during summer? (team sports, camping, winter sports, etc.)
    a. Yes
    b. No

6. If yes, what were the activities I was unable to complete? what did I do instead? [open question]

7. How often do you walk for… [for each choose: Every day/Often/Once a week/Rarely/Never]

    for pleasure
    to visit someone
    to visit a green space
    to walk a pet
    to go shopping for essentials
    to go shopping for pleasure
    to go to bus/metro
    to go for a social activity
    to go to a specific destination (school, work, daycare, etc.)

8. I visit parks outside of ndg … times per month? How often do you visit parks or other green spaces **on the Island of Montreal** (outside of NDG)? [open question]

9. How often do you visit parks or other green spaces **outside the Island of Montreal**? [open question]

2/5. Distance, accessibility, and route to urban green spaces

10. How do I get to the park or green space?
    a. walking
    b. moving w/ mobility aid
    c. biking
    d. car
    e. bus
11. The quality of my route to the park (scale 1-5) [1 to 5 star. 1=unpleasant, 5= delightful]
12. My route to the parks is… (calm, noisy, green, safe, not safe, with too many obstacles, etc.) [open question]

13. Where would I prefer to walk?

1

2

   a. 1
   b. 2

14. Why? [open question]
15. Where would I prefer to walk?

1

2

   a. 1
   b. 2

16. Why? [open question]
17. Where would I prefer to wa

1

2

   a. 1
   b. 2

18. Why? [open question]

19. How far do I live from the closest green space?
    a. less than 5 min walking
    b. 5-10 min walking
    c. 10-15 min walking
    d. 15 minutes walking or more

20. How far do I live from my favourite green space?
    a. less than 5 min walking
    b. 5-10 min walking
    c. 10-15 min walking
    d. 15 minutes walking or more

21. Which green space I visit most (if you do not know its name indicate the closest intersection)? [open question]

22. How many times a week I visit a green space in NDG?
    a. Never
    b. Once a week
    c. Twice a week
    d. Every other day
    e. Every day

23. Is it more than before the COVID outbreak?
    a. Yes
    b. Maybe
    c. No
    d. I don't know

24. I would visit more often green spaces in NDG if… [open question]

3/5. Physical features

25. how much do you have each of these within a 5-min walk from your home? [for each choose: not at all, not enough, some, quite a bit, or very much]

    Large trees
    shrubs and bushes
    flower beds
    lawns
    sport fields
    children playground
    somewhere to sit
    outdoor gathering areas

26. Are the following elements a source of concern when you visit green open spaces in NDG? [for each choose: Yes, very much/Yes, somewhat/No/ I don't know]

    noise

traffic
major roads
long walking distance
safety concerns related to COVID
other safety concerns
dirty open spaces
lack of information about activities
other factors we didn't mention?

27. In NDG's public green spaces, do you find that there are enough of the following? [for each choose: not enough/ enough/ more than enough/ I don't know]
    - Benches
    - WC
    - Water fountains
    - Shaded spaces
    - Calm spaces
    - Playgrounds
    - Sports courts

28. What amenities are missing? [open question]

29. If you could, what would you change in NDG public spaces? [open question]

4/5. Level of satisfaction/comfort

30. Please indicate your agreement with the following statements. [for each choose: Agree/ Neutral/ Disagree/ I don't know or NA]
    - I find that there is enough public space in my neighbourhood for all its residents
    - Because of the pandemic, I'm reluctant to go outside when it's crowded
    - My private green space is enough for me
    - The public green space in my neighbourhood is enough for me
    - I feel like being in a natural environment makes me happier
    - I feel included/represented in the parks and activities offered in my neighbourhood
    - I know where I can give a suggestion or file a complaint regarding the maintenance or state of a park
    - I am aware when public consultations or public participation activities take place
    - I feel safe being in NDG spaces

31. What makes me feel safe in green open spaces? [open question]
32. What makes me feel unsafe in green open spaces? [open question]

5/5. Information about myself

33. postal Code [open question]

34. gender
    a. Woman
    b. Man
    c. non-binary
    d. prefer not to say

35. My ethnicity/cultural identity. [open question]

36. Household Income
    a. Less than $19 000
    b. $20 000 - $39 000
    c. $40 000 - $59 000
    d. $60 000 - $79 000
    e. $80 000 and more

37. my age
    a. 18-25
    b. 25-35
    c. 35-45
    d. 45-55
    e. 55-65
    f. 65

38. I live in a...
    a. House
    b. Duplex
    c. multiplex (max 16 apartments)
    d. apartment in a high-rise building)

39. Do you own or rent your place?
    a. Own
    b. Rent

40. How many people live in your household? [open question]
41. For how many years have you been living in NDG? [open question]

42. Before moving to where I currently reside, I lived in a...
    a. House
    b. Duplex
    c. multiplex (max 16 apartments)
    d. apartment in a high-rise building)

43. I would like to contribute more to the research and participate in an interview to further share my experience. YES / NO *(if yes, please provide contact info)*

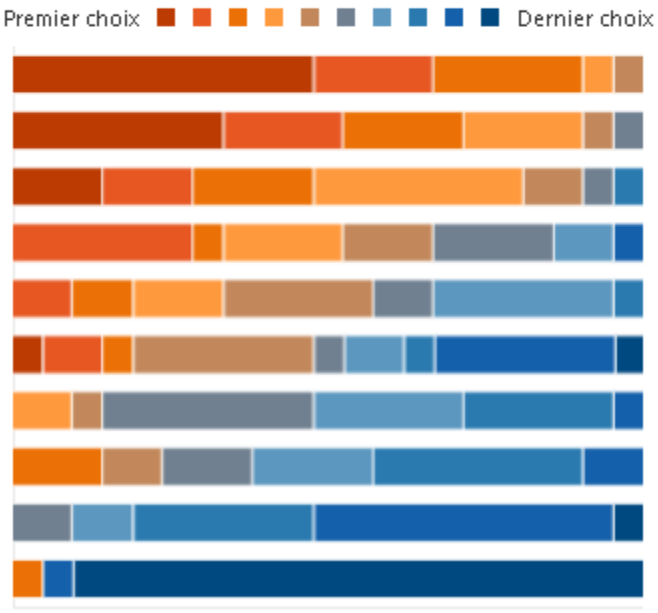
Annex 3- Survey results (closed questions)

3. What activities do I enjoy most in green public spaces?

(Rank those that apply by order of preference)

Plus de détails

Classement	Options
1	Be in contact with nature
2	Relax
3	Do physical activity
4	Attend a cultural event
5	Participate in social interacti...
6	Go with my children to the ...
7	Meditate
7	Picnic
8	Watch people
9	Walk my pet

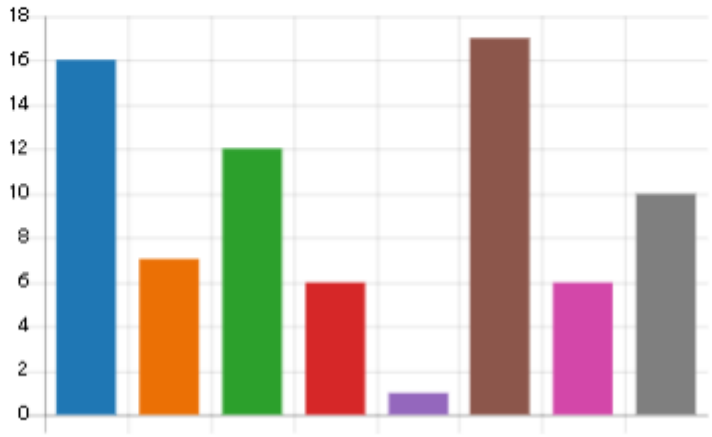


4. Why do I need to go out to green urban spaces?

(select all that apply)

Plus de détails

Get out of my four walls	16
Flee the heat and cool dow...	7
Socialize	12
Observe the urban life	6
Walk a pet	1
Physical activity	17
Spend my energy	6
Autre	10



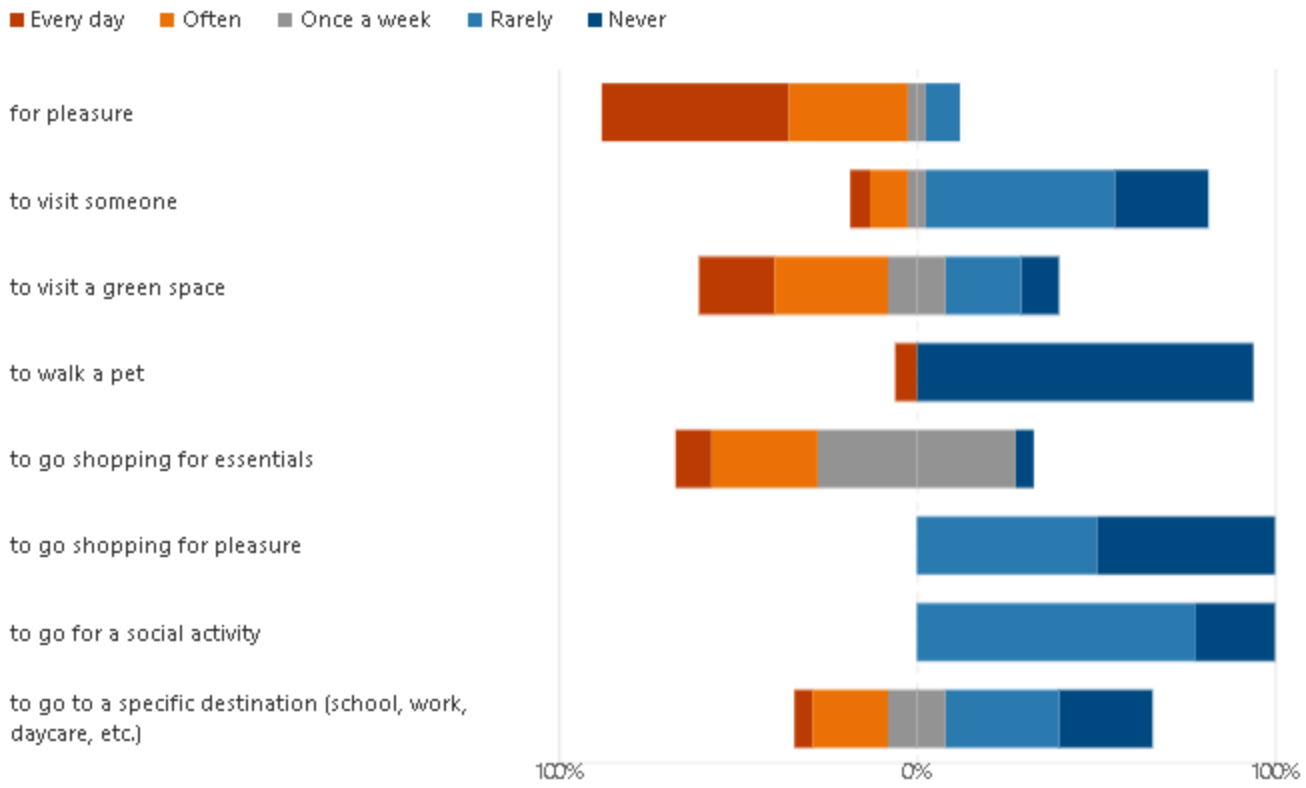
5. Did the confinement or the COVID-19 pandemic prevent me from taking part in my usual leisure or outdoor activities? (team sports, camping, winter sports, etc.)

Plus de détails

Yes	14
No	7

7. Since COVID started, how often do I go outside...

Plus de détails



10. How do I get to green spaces in NDG?

Plus de détails

walking	17
walking with mobility aid	1
biking	0
driving	3
by public transport	0

13. Where would I prefer to walk?

Plus de détails

Option 1	5
Option 2	16

15. Where would I prefer to walk?

Plus de détails

Option 1	7
Option 2	14

17. Where would I prefer to walk?

Plus de détails

Option 1	0
Option 2	21

19. How far do I live from the closest green space?

(If you are not an NDG resident, you can skip this question)

Plus de détails

less than 5 min walking	9
5-10 min walking	6
10-15 min walking	2
15 minutes walking or more	2

20. How far do I live from my favourite green space?

(If you are not an NDG resident, you can skip this question)

Plus de détails

less than 5 min walking	2
5-10 min walking	3
10-15 min walking	2
15 minutes of walking or m...	9

X

22. How many times a week do I visit a green space in NDG?

Plus de détails

Never	3
Once a week	6
Twice a week	4
Every other day	5
Every day	2

23. Is this more often than before the COVID outbreak?

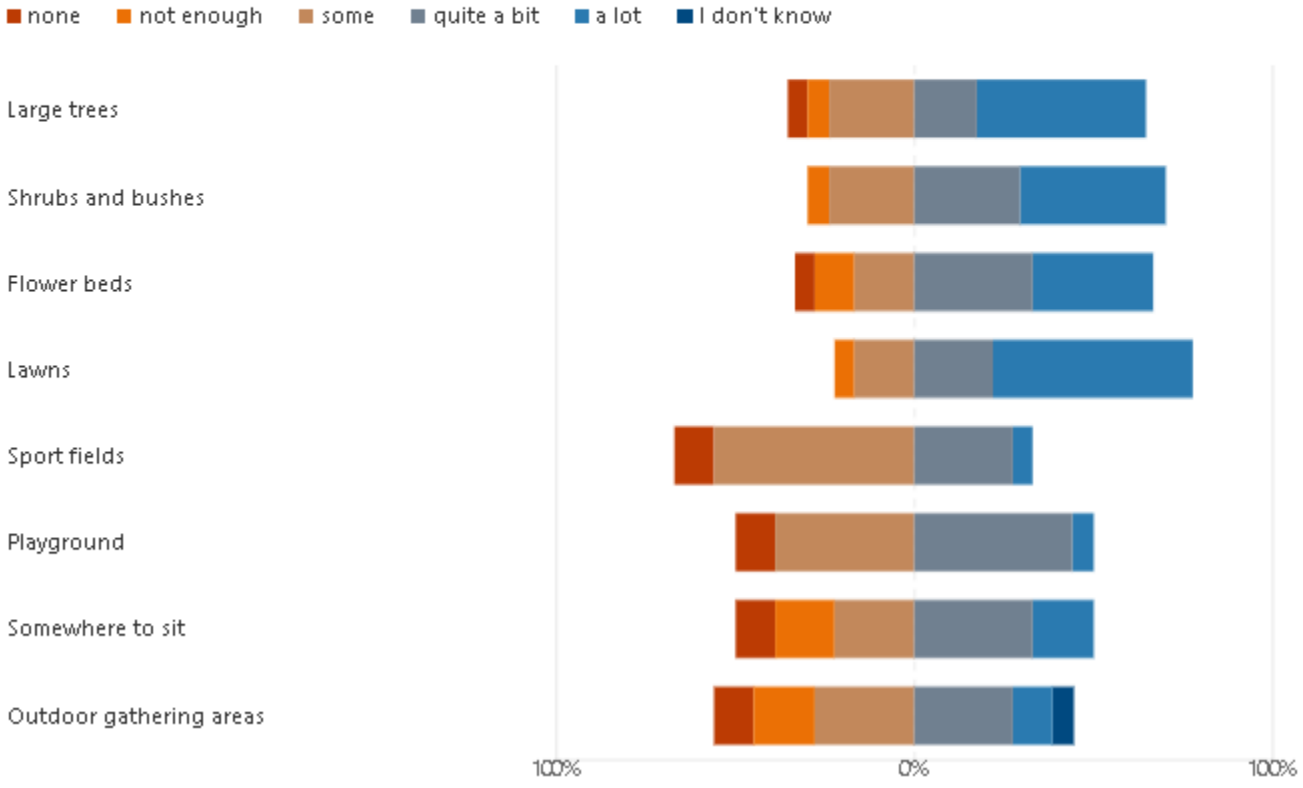
Plus de détails

Yes	8
Maybe	3
No	7
I don't know	2

25. How many of the following features do you encounter within a 10-min walk from your home?

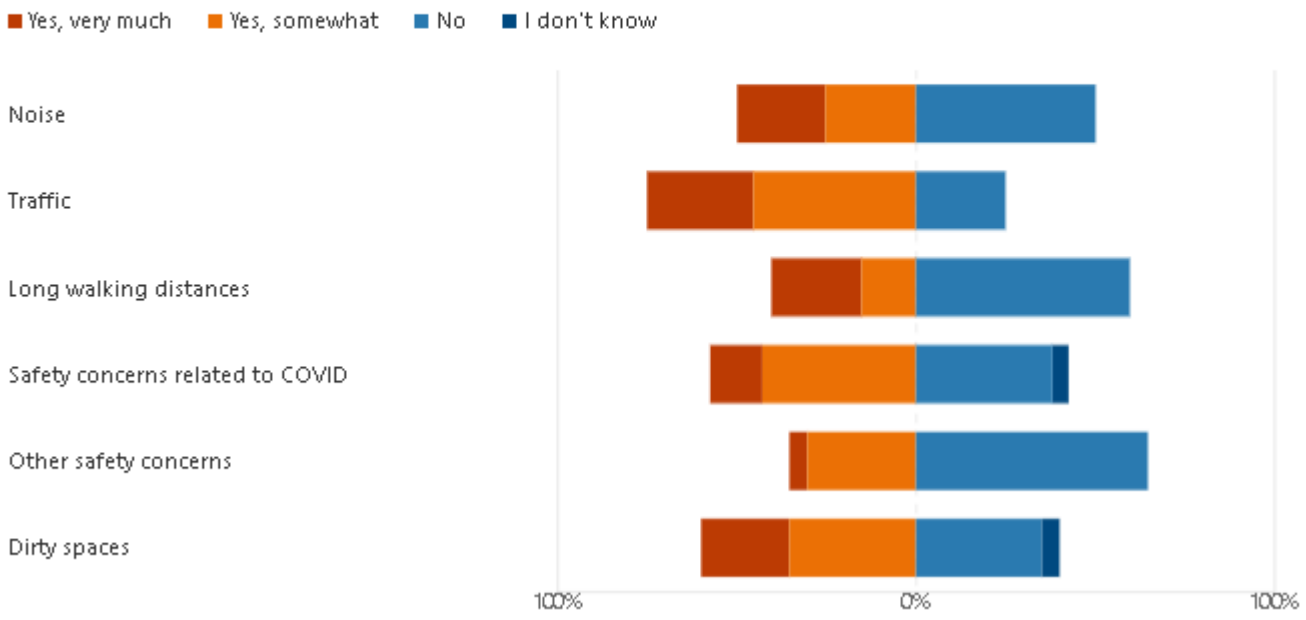
(If you are not an NDG resident, you can skip this question)

Plus de détails



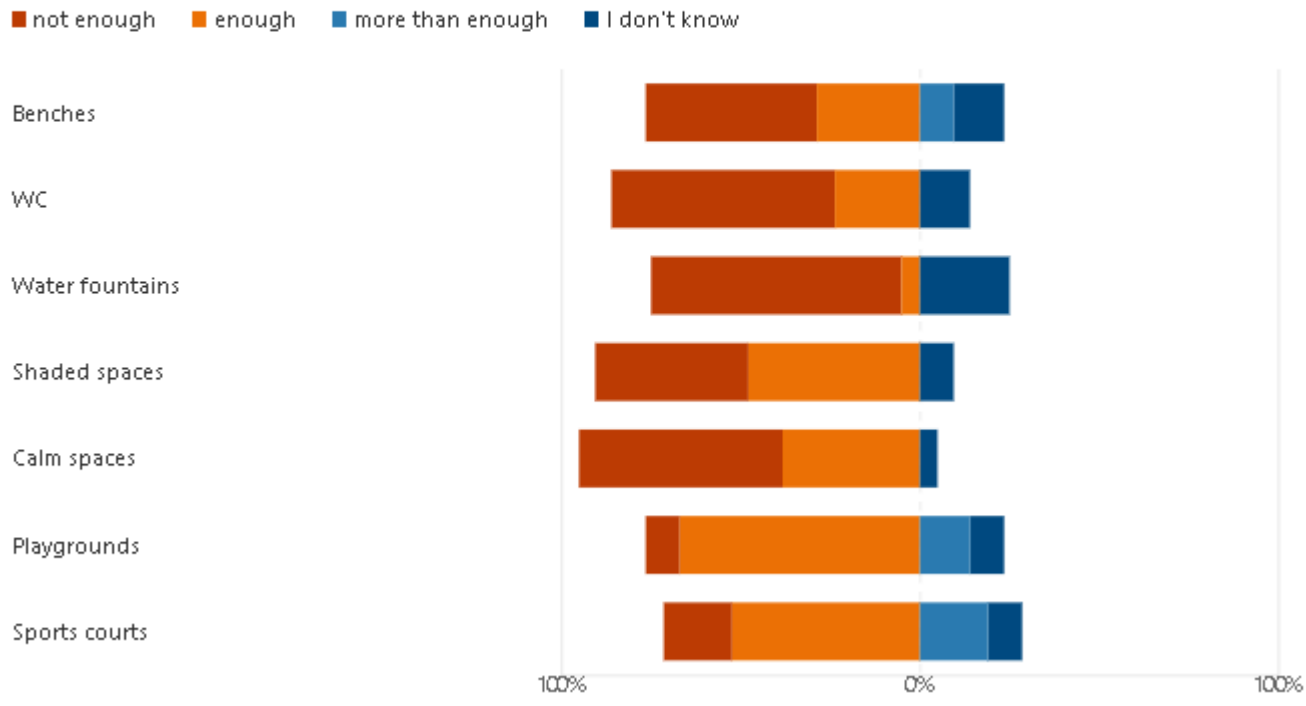
26. Are the following elements a source of concern when you visit green open spaces in NDG?

Plus de détails



27. In NDG's public green spaces, do you find that there are enough of the following?

Plus de détails



30. Please indicate your agreement with the following statements.

(If you are not an NDG resident, you can skip this question)

Plus de détails