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Deconstructing business sentiment towards pedestrianization:

Case study of Sainte-Catherine Street West's temporary pedestrianization project

Image 1 – Summer 2020 temporary pedestrianization on Sainte-Catherine Street West, Ville de Montréal, source: https://montreal.ca/articles/pietonnisations-dans-ville-marie-5189

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Abstract

North American cities have seen their public space increasingly dominated by cars since the 20th century. Pedestrianization schemes, especially on commercial streets, have often been met with contention, especially by local business owners. Seen by many as a zero-sum game, pedestrians, car users, and local businesses fight to protect their interests in the public realm. While it is true that pedestrianization schemes are not appropriate for all types of commercial streets and must be adapted to the local context, numerous academic studies have showcased that commercial pedestrianization may involve a positive-sum game, where all stakeholders, including local businesses, end up benefiting.

The question which arises is how can cities, many of which are adopting sustainable agendas, increase the buy-in of local business stakeholders towards appropriate pedestrianization schemes to foster more successful pedestrianization projects? Many pedestrianization projects that have potential to foster widespread benefits simply never see the day of light due to initial business resistance in the early planning stages. Academic studies that tout the widespread benefits of pedestrianization on commercial streets tend to compare commercial vitality levels between pre-pedestrianization and post-pedestrianization schemes once they have reached a mature state. However, they do not explore early-stage planning and implementation processes of pedestrian-friendly street transformations to better understand the nuances and intricacies of how business sentiment evolves in the initial period of change.

This study aims to develop a deeper understanding of how business sentiment towards proposed pedestrianization schemes may be influenced by design and process-related elements in the early stages of planning and implementation of such interventions. The analysis of the temporary summer 2020 pedestrianization of Sainte-Catherine Street West, Montreal's main commercial arterial, is very context specific, both in terms of the street's commercial composition, surroundings, and the covid-19 context. While I encourage that similar studies be conducted in other contexts, the research brings to light that the majority of businesses had an initial neutral stance towards the proposed pedestrianization project as it was announced during the month of May. These neutral sentiments were quickly converted

to positive or negative feelings as the project evolved. This suggests that initial business sentiment towards pedestrianization is not systematically set in stone, nor is it always influenced by pre-conceived biases around pedestrianization and its impact on commercial vitality. That initial business sentiment towards pedestrianization may be shaped by the business community's lived experience in the early stages of planning and implementing a project hints that it may be possible to generate greater initial buy in from businesses through improvements in process or design-related elements.

The study showed that local businesses on Sainte-Catherine Street West placed significant importance on improvements in consultation and communication processes as a means towards increasing their likelihood of buying in to such schemes. This was especially true for businesses with an initial neutral stance towards the project. Businesses with an initial negative sentiment towards the project were more likely to choose a design-related element as their preferred choice towards increasing their buy in for future pedestrianization, with a strong interest in preserving at least one lane for vehicular circulation on a 24/7 basis. These respondents also tended to condone music and lights as positive design elements over street furniture.

This research suggests that in addition to demographic factors, multi-modal connectivity factors, commercial street composition, and well-thought-out design and animations, successful commercial pedestrianization schemes require robust engagement and communication strategies. While this might seem like common sense, the study hints that engagement and communication strategies are in fact crucial towards appeasing some of the fears that certain business stakeholders might hold towards pedestrianization schemes, and may at the very least permit partial iterations of pedestrianization to move forward that find common ground between the needs of pedestrians, car users, and local businesses. While pedestrianization enthusiasts will likely perceive partial pedestrianization schemes as lacking in ambition, being overly ambitious may in fact stop pedestrianization projects from becoming reality if they are far from being socially acceptable to a major stakeholder. In such situations, partial pedestrianization may provide a starting point towards a more equitable distribution of public space on commercial streets, giving the opportunity for bolder pedestrian-friendly street transformation to take form over time.

Acknowledgements

I would like to thank my Supervisor, Professor David Wachsmuth, for his support throughout the research process. His critical feedback and guidance helped me to dig deeper into the complex nuances that characterize urban life. Professor Wachsmuth also helped me navigate the sometimes-frustrating world of *R*, the programmatic language that I predominantly use for geospatial and statistical analyses as well as data visualization. The research was also fueled by the wealth of knowledge that was imparted on me over the past two years, both by professors at McGill University's School of Urban Planning and my lovely cohort whom I am proud to graduate with. The diverse perspectives and eclectic knowledge brought forth by my classmates and professors significantly enriched my academic experience and gave me a more rounded and comprehensive understanding of cities, their challenges, and their opportunities.

A big thank you is in order to my wonderful partner, parents, family, and friends for all of their love and support over the past two years. Embarking on a journey of change (professionally, mentally, spiritually) is never easy, but it is definitely worth it once all is said and done.

Finally, this research would not have been possible without the openness and collaborative spirit of employees from the City of Montreal, the various commercial development corporations of Montreal (especially Montréal Centre-Ville), and the businesses on Sainte-Catherine West Street that took the time to speak with me during a difficult period. This openness and collaborative spirit are generally representative of Montreal's ethos, and part of why I fell in love with this city. While conflicts of interest will always exist in cities, I do believe that communicative rationality allows us to better understand our diverse needs and viewpoints, and unearth opportunities for coexistence in shared space. These conversations allowed me to discover nuances and details that were not visible in the geospatial datasets that I had at my disposal, and when combined, offered a more comprehensive and holistic picture of the intricate dynamics surrounding commercial pedestrianization.

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I. Introduction

On May 15th 2020, the City of Montreal announced its plan to roll out a network of 327 km of new active transportation infrastructure (ATI) to mitigate covid-19's pernicious effects on public safety and health. Specifically, the plan's goal was to allow pedestrians and cyclists in predominantly dense neighbourhoods to have better access to green space, commercial amenities, while promoting physical distancing during travel.

The transformative plan experienced some backlash from some local merchants. Businesses in Little Italy expressed their opposition as early as May to a proposed pedestrian project on Saint-Laurent Boulevard. A July 31st report by Le Devoir showcased how several businesses on Notre-Dame Street in the Sud-Ouest Borough took to social media to criticize a proposal to temporarily remove all on-street parking and one of two lanes for vehicular circulation to make more space for pedestrians and outdoor terraces (Lepage 2020). In both the Saint-Laurent Boulevard and Notre-Dame Street cases, negative business sentiment halted the proposed pedestrianization projects in their tracks. The buy-in of local business stakeholders is a critical component to the success of pedestrianization schemes, yet the notion that they are beneficiaries of such interventions is not universally accepted knowledge. Academic studies and media sources often portray business owners as resistant to the pedestrianization of commercial streets. While it is true that pedestrianization schemes are not appropriate for all types of commercial streets and must be adapted to the local context, this general perception stands in stark contrast to the various academic studies that have shown that pedestrianization has commonly had a positive impact on businesses located in the area of implementation.

The problem is that, despite substantial documentation showcasing that well-designed street pedestrianization tends to benefit both pedestrian and commercial stakeholders, many such projects simply fail to materialize in the face of negative business sentiment and resistance towards these projects in their initial stages. Hass-klau noted that this behavior might be inevitable, as resistance of local businesses could be considered as a "law of nature" (Hass-klau, 1993). However, not enough studies

have focused on the early stages of planning and implementation of a street pedestrianization project in order to truly grasp whether improvements in governance, communication, and design strategies might appease initial business resistance.

Sainte-Catherine Street, Montreal's main commercial arterial, did move forward with several temporary pedestrianization projects over the course of summer 2020. The one on Sainte-Catherine Street West between Atwater Avenue and Metcalfe Street, spanning June 19th to September 7th, exhibited nuances in design elements on a block-by-block basis and maintained limited vehicular circulation from Monday to Thursday. This temporary pedestrianization presents itself as an excellent case study to pursue the research's primary objectives: 1) better understanding how initial business sentiment towards commercial street pedestrianization might be shaped by design, governance and communication strategies in the early stages of planning and implementing such an intervention, 2) the degree to which improvements in these strategies can increase the initial buy-in of local businesses, and 3) identifying local business pain points that policy makers and public officials may be able to address to generate more widespread commercial support for pedestrian projects on commercial streets. I hope that such insight will allow more context-appropriate commercial street pedestrianization projects to come to fruition in the future and provide substantial benefits to local business and pedestrians alike.

The research will first offer a comprehensive literature review of pedestrianization schemes, with a focus on benefits and threats to stakeholders (pedestrians, car users, and local businesses). I will give particular attention to the perceived sources of negative business sentiment toward commercial street pedestrianization, the temporal evolution of such sentiment, and the apparent gaps in the literature in understanding business resistance to pedestrianization. After describing the research methodology, I will provide background information about the context in Montreal which led to the City's ambitious plan to invest in new active transportation infrastructure. This section will also describe the plan's governance mechanisms, planning process, and general public reaction.

The research will then dive into the specific context of the case study by providing some background information about Sainte-Catherine Street West's built environment, mobility infrastructure, and

demographics from surrounding neighbourhoods. Information will be provided about the strategies adopted to implement, govern, communicate, and design the temporary transformation of the commercial street, as well as details of the public's response to the plan (street users as well as local businesses) based on surveys conducted by Montréal Centre-Ville, the downtown commercial development corporation which represents the interests of the business community in Montreal's downtown core. I will then present the results of my own structured questionnaire which surveyed storefront businesses located on Sainte-Catherine Street West. The survey investigated the businesses' feelings towards the street's pedestrian-friendly makeover in the early stages of planning and implementation, the relationships between business sentiment and the design and process-oriented strategies used to implement the plan, and whether improvements in these strategies may increase the initial buy-in of local business towards future pedestrianization projects. I conclude by offering some policy and governance recommendations that aim to appease early business resistance to pedestrianization, and reflects on appropriate strategies to rethink our streets and build back better in a time of crisis.

II. Literature Review

The following literature review will begin with a brief historical perspective of pedestrianization, and a comprehensive review of the impact of pedestrianization schemes on various stakeholders with a focus on local businesses. It will then focus on the main sources of business resistance to pedestrianization identified in the literature, how business sentiment towards pedestrianization evolves over time, and the perceived gaps in the literature's understanding of business sentiment towards pedestrianization, namely the lack of studies focusing on the early stages of planning and implementation of pedestrianization schemes to grasp the degree to which improvements in governance, communication, and design strategies might appease instances of initial business resistance.

Pedestrianization: historical perspective and stakeholders

Gehl and Gemzoe (2000) provide an analysis of the relation between pedestrians and traffic from a historical perspective. It starts with the traditional or pre-industrial city, where the substantial cost of traveling long distance led to cities whose spatial configurations were compact in order to provide walkable access to amenities (Gehl and Gemzoe 2000). The traditional city allowed meeting places, market places, and traffic to co-exist in balance for the most part. Then followed the "invaded city", when car traffic took control of the city center and transformed public space into areas that are less walkable due to noise, air pollution, and safety concerns. Rapid suburbanization gave way to the "abandoned city", characterized by a period of decline of central business districts while regional shopping centers and malls rose as powerful rivals to historic commercial zones in downtown cores. Finally, the "re-conquered city" represents an effort currently underway to re-conquer inner cities and downtown cores through a balance between market place, traffic space, and pedestrians.

The story of street pedestrianization is one that has been characterized by power struggles between pedestrian, car user, and commercial stakeholders. Long considered highly controversial interventions in the urban public realm by certain stakeholders, pedestrianization is sometimes viewed as a zero-sum

game, with winners on one side, and losers on the other. On the other hand, Soni and Soni's (2016) account of pedestrianization projects posits that their benefits may be widespread and distributed across stakeholders, as depicted in table 1.

Transportation benefits	Social benefits	Environmental benefits	Economic benefits	Health benefits
Mobility & accessibility improvement	Social interaction & relations	Air pollution reduction	Increase in footfall, sales & rent	Unpolluted air intake in respiration
Reduction in car use, congestion & parking need	Sense of belonging, responsibility, & pride	Fuel & land saving	Saving on fuel, land & road infrastructure	Exercise, fat/calories loss & fitness
Increase in public transit and non-motor. Transport use	Increase in security/safety	Noise reduction	Saving on reduced negative externalities	Improvement in metabolism & digestion
Road crashes & injury reduction	Heritage preservation & urban renewal	Micro-climate improvement	Increased improvement	Improve. in nervous & psychological health
Improvement in level of services, speed & trip time	Liveability improvement	Greenery & plantation	Income from public transport users	Cardiovascular & pulmonary fitness

Table 1 – The benefits of pedestrianization (Source: Soni and Soni, 2016)

Of the major stakeholders affected by such projects, pedestrians are the evident beneficiary. These benefits include safer and more comfortable mobility, a decrease in atmospheric and noise pollution, an increase in available green and social space as well as more space for children to engage in active play (Soni and Soni 2016). Increasing pedestrian-friendly public space allows residents to rediscover the human scale of urban life, move around in a way that stimulates their senses, and engage in a plethora of activities and social interactions through the activation of the public sphere (Gehl 2010). A case study in Kalamaria, Greece, evaluated residents' perception of recently introduced pedestrianization projects. It showed that residents particularly valued the improved safety, convenience, urban landscape aesthetic, and health and well-being of their newfound mobility experience (Panagopoulos et al. 2018).

In contrast, avid car users tend to perceive pedestrianization as unwanted incursions that lead to additional road traffic congestion and difficulty in finding parking spaces (Panagopoulos et al. 2018; Parajuli and Pojani 2017). However, other studies have found that pedestrianization may lead to less congestion on roads and creates less competition for parking as more people decide to travel by foot for certain trips as a result of improvements in pedestrian comfort, safety and experience (Melia and Shergold 2016; Soni and Soni 2016).

Local businesses are not systematically opposed to pedestrianization, yet it is commonplace to find business owners who perceive pedestrian-friendly street designs as detrimental to their operations. In contrast, many academic studies have highlighted the positive impact that pedestrianization schemes have had on local businesses located in the area of implementation (Hass-Klau 1993; Kumar and Ross 2006; Wooller, Badland, and Schofield 2012; Rotondo 2016). These studies use 1) turnover, 2) rental value, 3) footfall, and 4) commercial or retail vacancy growth rates as measures of impact, and observe how these metrics compare before the pedestrianization measures were put in place and after the intervention has reached maturity.

Although there are some variations across case studies, the results show conclusively that the impact of pedestrianization is overwhelmingly positive. A survey by the OECD in 1978 of 100 global pedestrianized cities showed that 49% of pedestrianized city centers experienced an increase in turnover, 25% experiencing no major change, and only 18% showing a decline (Kumar and Ross 2006). Hass-Klau (1993), who studied pedestrianization practices in Germany and the UK in 1993 observed an increase in turnover of 83% of local businesses within pedestrian areas, compared to only 20% for local businesses outside of pedestrian areas. One study conducted in the UK calculated that pedestrianization resulted in retail footfall increases of 32.3% and retail turnovers of 17% while rent increased by a range of 10-30% (Whitehead, Simmonds, and Preston 2006). Other studies have shown that the removal of passing traffic does not have a negative impact on business vitality (Brambilla and Longo 1977; Hall and Hass-Klau 1985; Kumar and Ross 2006), and that pedestrian friendly streets incite pedestrians to stay longer once they are there, which has been shown to be correlated with higher consumption rates (Robertson 1994). Pedestrians and cyclists were also found to give considerable contribution to business revenues. For example, a case study conducted in 2008 on Bloor street in Toronto concluded that patrons using active forms of transportation spent the most money and had the highest visiting frequency per month (Sztabinski 2009). The majority of business owners interviewed in this case study wanted to see even more possibilities for cyclists and pedestrians, as is often the case once a

pedestrianization project matures and reveals tangible economic benefits. Success and positive experiences breed broad public support (Parajuli and Pojani 2017).

Despite this evidence of the positive economic outcomes of pedestrianization, the literature also notes that positive commercial outcomes are not guaranteed. Successful pedestrianization schemes often lead to rent increases which may lead to the displacement of small business owners who rent their space and are vulnerable to spikes in rent unless appropriate rent-control policies are adopted (Özdemir and Selçuk 2017). The commercial benefits of a street pedestrianization project will typically have a different impact across industries as well. Businesses in the leisure and hospitality industries (cafés and restaurants) will usually outcompete more traditional retailers (Moosajee 2009) while businesses selling heavy materials or goods are more likely to suffer (Ibraeva 2014). Street pedestrianization interventions need to be well-thought out, evolve incrementally, and take into consideration the local context of the street. Commercial success of pedestrianization schemes is often contingent on various factors such as sufficient population density within walking distance of the site, accessibility by different means of transportation (Kumar and Ross 2006), appropriate mix of land use throughout the site (Moosajee 2009), and well-designed streetscape improvements (Litman 2004).

Commercial resistance towards pedestrianization

The most common cited reason explaining business resistance to pedestrianization schemes are the perception that motorized mobility is crucial for business economic sustainability, and that any obstacle to free-flowing automobile circulation and parking access will jeopardize the economic vitality of a given commercial street (Kumar and Ross 2006; Wooller, Badland, and Schofield 2012). Planners must recognize that in certain circumstances, these fears might be well founded. Unlike the hospitality sector, utilitarian stores and service centers tend to cater to a consumer base that is primarily concerned with efficient access to these services. Businesses selling big-ticket items and heavy materials or goods also rely on motorized access in order to deliver items or allow customers to pick up their purchases by car

(Ibraeva 2014). Further, if a commercial zone depends heavily on a non-local clientele, parking becomes a major concern, especially if the area is poorly served by public transit options (Parajuli and Pojani 2017).

However, business owners sometimes overestimate the proportion of their customers that accesses their stores by car, and in turn underestimate the spending amount and frequency of visits of customers travelling to their stores by public or active modes of transportation. For example, a study conducted by Technological University Dublin found that traders on Dublin's two main commercial streets considerably over-estimated the number of customers that accessed their stores by car (traders on Henry Street believed that 19% of shoppers arrived by car when in fact the figure was 9%). They also significantly underestimated how many clients accessed their stores on foot as well as their spending levels. Most notably, traders on Grafton Street and Henry Street believed that pedestrians represented 11% and 6% of their customer base respectively, where in fact the figures were 20% and 19% (O'Connor et al. 2011).

Another common cause of commercial resistance to pedestrianization schemes is the concern that the capacity to deliver supplies to the store or goods to the customer may become compromised. However, it has been found that it is relatively easy to appease such concerns through practical arrangements such as modifying the timing of closures or providing additional loading bays (Melia and Shergold 2016). Alternatively, Moosajee suggests that the most successful pedestrianization schemes will allow some level of vehicular traffic to pass through (Moosajee 2009).

Studies have also demonstrated that business sentiment to pedestrian schemes is not static. Instead, it evolves temporally. It is common place for business owners to become strong proponents of pedestrianization should they experience a taste of the economic benefits that may arise from it. This has been observed in numerous cases such as Times Square in New York City, the Village in Montreal, and the Mission District of San Francisco. A case study examining the perceived impact of pedestrianization on local businesses in Al-Muizz, a prominent commercial street in Cairo, found that prior to the proposed pedestrianization scheme, the majority of local business owners who participated

in a survey believed that the intervention would not improve their commercial well-being (ElFouly and Ghaly 2017). 30% of respondents were opposed to the project and convinced that it would affect them negatively, while a meager 10% were optimistic that they would benefit. In contrast, after the project reached maturation, 85% of respondents were satisfied with how the project impacted their business. Another study which tracked discourse on social media to better understand the evolution of public sentiment towards the installation of new protected bike lanes in the Canadian cities of Edmonton and Victoria found that attitudes associated with changes in bike infrastructure may have a cycle, with initial negative responses to change, followed by an uptick in positive attitudes (Ferster et al. 2020).

An initial negative response to change in response to investments in active transportation infrastructure is often understood as a natural reaction to interventions that disrupt the status quo coupled with commercial stakeholders who are simply unaware of the potential economic benefits that may arise from these new investments. Merchants might be more receptive to change in a crisis situation where the status quo is in fact threatening the solvency of local businesses. This was the case in Brisbane, where the retail industry was in a period of intense decline, and therefore pedestrianization schemes were seen as a possible tool for urban retail revitalization (Parajuli and Pojani 2017). This relationship between economic crisis and receptiveness to change is not systematic however. Covid-19 might be a case where widespread and abrupt economic uncertainty coupled with declining public transit ridership might lead business owners to resist sweeping changes to their commercial landscape in a time of doubt.

In reference to pedestrianization projects, the non-profit organization Embarq Turkiye astutely noted that "views, suggestions and concerns of local businesses have been perceived as a valuable feedback for authorities to improve current conditions and to get support for future ones" (Embarq Turkiye 2013). However, most studies of pedestrianization schemes share little more than before and after changes in revenues, customer base, property/rental values, and general satisfaction of local businesses. There is an opportunity to further explore the underlying sources of initial business resistance to pedestrianization beyond the conventional views that it is either a natural reaction to the disruption of the status quo, or in response to the belief that the automobile is the supreme mode of transport for

commercial access. While scholars have indicated the importance of extensive consultation, communication, awareness-raising, and well-thought out pilot projects in order to garner public support from the business community for newly proposed pedestrianization, there have been no comprehensive studies that focus on the early stages of planning and implementation of such projects to truly grasp the degree to which improvements in governance, communication, and design strategies might appease initial business resistance.

III. Methodology

The research uses a mixed-methods approach, combining quantitative and spatial analyses using open data sources, as well as thick descriptive data obtained from secondary sources of information (press releases, news articles, City plans and policies) and primary sources (interviews and surveys).

A spatial analysis using open data sources (Statistics Canada, OpenStreetMap, and the Montreal Open Data Portal) was undertaken to offer insight into which Montreal neighbourhoods are most at risk of pedestrian overcrowding, presenting potential public safety concerns within the context of the covid-19 pandemic. The analysis combines metrics such as residential density, walkable surface area, and pedestrian trip flows. Data from the 2016 Canadian census was used to analyze the demographic profiles of these "at-risk" neighbourhoods. The analysis is described in more detail on page 26 and 27 of this report.

Close to 30 Montreal-based news articles written between March 2020 and March 2021, as well as official City documents, plans, and policies, were analyzed to grasp the scope and scale of Montreal's summer 2020 plan to invest in temporary ATI (active transportation infrastructure). The media sources were also used to analyze the general public discourse and sentiment tied to this plan. Two semi-structured interviews, each lasting about one hour in length (one with a consultant working for Montreal's planning and mobility services and the other with an employee working at the downtown commercial development corporation known as Montreal Centre-Ville), provided insight into the governance, communication, and design strategies adopted by the governing bodies that planned and rolled out the temporary ATI. Direct email communication with all of Montreal's 26 commercial development corporations was instrumental in gathering details on the commercial impact of the plan, specifically the number of commercial streets that had been fully or partially pedestrianized, and how many storefront businesses were within the pedestrian zones.

The Montreal Centre-Ville employee offered insight into the specific governance and implementation strategy as well as the design and animation components that made up the Sainte-Catherine Street West intervention. I conducted site visits over the 2020 summer as well to observe and document what nuances in design and animations were incorporated on a block-to-block basis. Montreal Centre-Ville was kind enough to share the surveys that it conducted between August 26 and September 4th 2020 which gave some insight into the street visitors' (n = 503) and local storefront businesses' (n = 101) satisfaction level with the intervention.

Between February and March 2021, I developed a structured questionnaire and surveyed a total of 30 storefront businesses (n = 30) located on Sainte-Catherine Street West. The sample size represents 15% of total storefront businesses in the study site. The questionnaire was composed of a total of 21 questions, ranging from multiple choice selections, open-ended short answers, Likert scales, and choice ranking. In addition to getting some background information about the businesses such as their industry sector, size, and headquarter location, the questions most notably touched upon the respondents' sentiments towards the planning, implementation, and design of the intervention, how their sentiment evolved over time, which design elements contributed most positively and negatively to their operations, what specific design or process elements are most likely to increase their buy-in of future pedestrian-friendly street-design transformations, and their suggestions to improve the project should it be proposed again in the future.

IV. The road towards Montreal's ambitious summer 2020 active transportation plan

In order to understand the context which led to the City of Montreal's ambitious plan to invest in temporary ATI (active transportation infrastructure) as part of its summer 2020 covid-19 response measures, this section will begin by describing Montreal's pre-covid pedestrianization efforts, the impact of covid-19 on the city's mobility patterns, and the capacity of Montreal neighbourhoods to allow its residents to respect 2-metre physical distancing regulations in public space. The section will then delve into the procedural and substantive components of the plan, its scope and impact on commercial streets and local businesses, and the public's reaction to it. We find that despite an uptick in pedestrian activity for local trips and a clear need for certain neighbourhoods to increase their capacity to allow for pedestrian physical distancing (predominantly in downtown dense neighbourhoods where residents are less likely to commute by car and where pedestrian trip flows are typically higher), the plan received significant resistance by business owners and to a lesser extent residents. As a result of this resistance, numerous interventions were rescinded and the scale of the original plan drastically reduced as the summer progressed. The perceived lack of clarity surrounding the plan and the absence of citizen consultation were some of the key factors which led the city's Ombudsman office to receive over 300 complaints.

Pre-Covid-19 pedestrianization trend

At the turn of the 21st century, Montreal had invested very little in street pedestrianization. For a North American city considered to have a considerable European feel, Montreal had been quite timid when it comes to pedestrianization. In 2006, Montreal adopted the Charter of pedestrians, an ancillary policy document to Montreal's transportation plan whose main orientations are to promote walkable trips and offer a safe and friendly experience to pedestrians (Ville de Montréal 2006). The adoption of the charter in 2006 coincided with the first temporary commercial street pedestrianization project in Montreal on

Sainte-Catherine Street East in the neighbourhood called the Village. The street's 10-day pedestrian-friendly makeover was designed for an event called the 'Gay games'. As the event gradually became a staple of the neighbourhood and turned the street into a destination, the pedestrianization project gained steam. By 2016 the street was fully closed to cars during the summer for a 5-month period (Ferraris 2016). In a 2016 interview with the newspaper Le Devoir, Denis Brossard, the director at the time of the Village Commercial Development Corporation, shared that local businesses instigated the project to prepare for the special event and that it subsequently created new streams of traffic, allowed people to stay longer, and led to higher levels of overall consumption (Ferraris 2016). It is important to note that the street hosts a high proportion of restaurant and bar establishments, is centrally located, well serviced by the public transit system, and is adjacent to dense residential and mixed-use neighbourhoods, all factors that might predict successful pedestrianization.

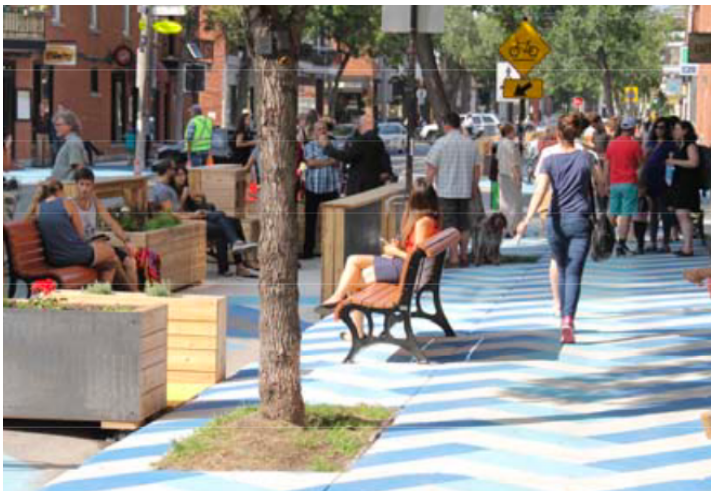
In 2015, under the mayorship of Denis Coderre, the City developed the Pedestrian and Shared Street Implementation Program governed by Montreal's Planning and Mobility Services. Its mission was to progressively increase the amount of pedestrian space in the city by demonstrating the potential of pedestrian-friendly street designs in creating more stimulating, friendly and safe environments (Ville de Montréal 2016). The program endorsed community participation and an inclusionary governance strategy as a means towards improving projects and generating the buy in of local stakeholders. By 2016, there were about 40 pedestrian projects (temporary, seasonal or permanent) in Montreal for a total of 7 km (Ville de Montréal 2016), growing at an average rate of 5 new projects per year. A few of these projects are depicted in Image 2. Montreal's planning and mobility services had also budgeted an additional $22 million for investments in pedestrian and shared streets up until 2025. Despite this observed trend of increased pedestrianization in Montreal, fears of congestion, constant detours and lack of parking still lingered for certain stakeholders, namely business owners and car-dependent residents. Marie Helene-Armand, an urban planner in charge of the Pedestrian and Shared Street Implementation Program, indicated that most support for pedestrian-friendly streets came from residents that wanted more vibrant public spaces near their homes. Full street closures on commercial streets were still perceived as a politically contentious move by many business owners (Ferraris 2016), and therefore the program was examining in more depth the potential for shared commercial streets or

expanded sidewalks where pedestrians and cars may coexist in a more equitable manner. In 2017, Mayor Valérie Plante from the Projet Montréal party was elected on a platform that advocated for the reduction of car traffic while giving more room to pedestrians and cyclists. Prior to the covid-19 pandemic, Montreal seemed to be warming up to the concept of pedestrianizing streets. Yet concerns still loomed large, particularly when it came to pedestrian-friendly designs on commercial streets where support could be characterized as tepid at best.

a) Sainte-Catherine East in the Village

b) Ontario Street

c) De la Gauchetière in China Town



d) Place De Castelnau in Villeray

Image 2 - – Pre-covid pedestrianization projects in Montreal, source:
http://ville.montreal.qc.ca/pls/portal/docs/PAGE/TRANSPORTS_FR/MEDIA/DOCUMENTS/PROGRAMME_RUES_PIETONNES_2016.PDF

Montreal Agglomeration: Administrative Boundaries

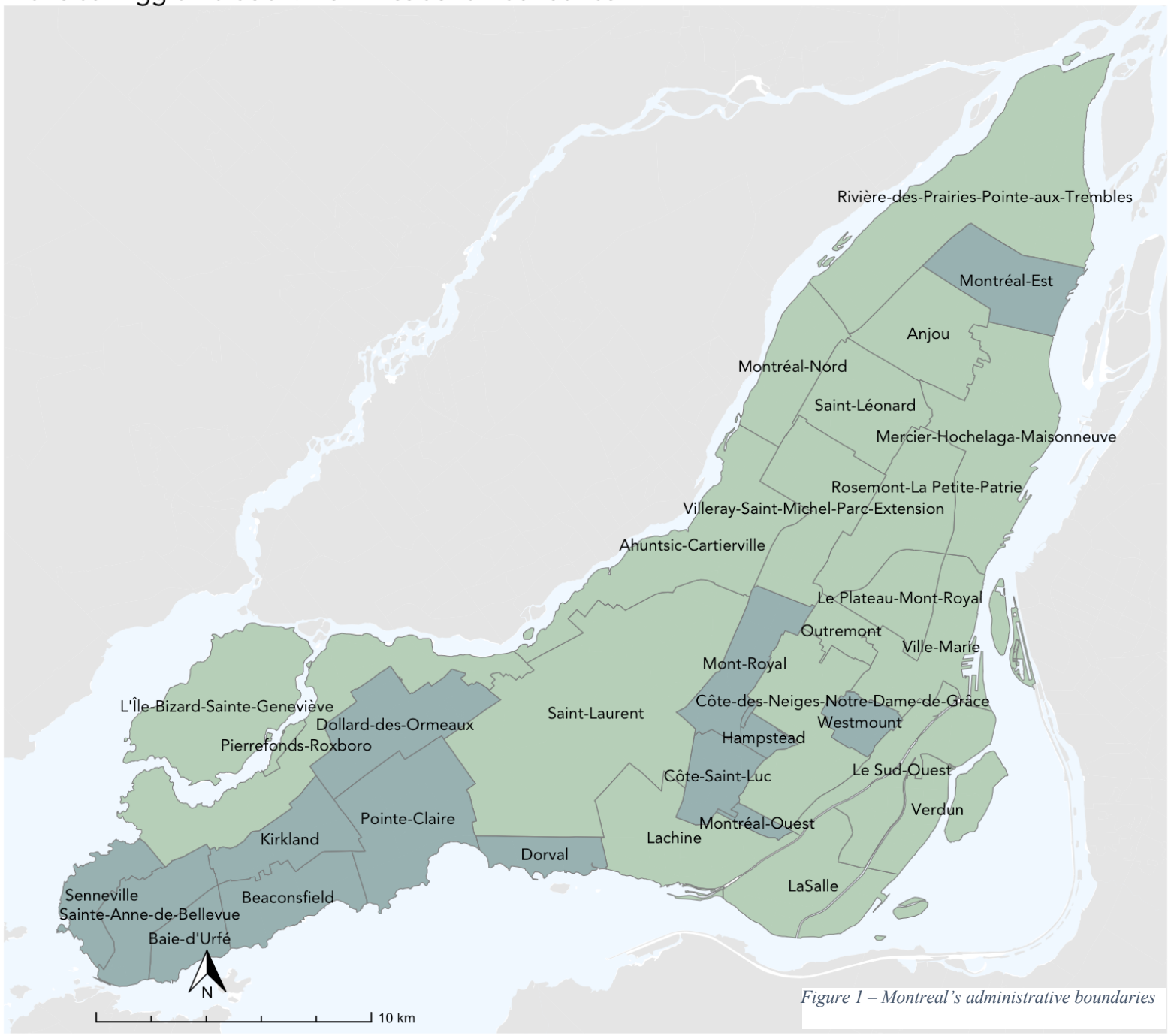


Figure 1 – Montreal's administrative boundaries

Covid-19 pandemic: changes in mobility and use of public space

Changes in mobility

The spread of the covid-19 virus has generally transformed how we work, live, use public space, and move around in our cities. Shelter in place ordinances and the normalization of remote work for non-essential workers have led to spikes in local neighbourhood trips while downtown commercial cores experienced sharp declines in activity. A decline in public transit and car ridership was observed in many cities while the number of active transportation users were on the rise. According to data presented at a press conference in Montreal in July 2020, public transit and car ridership were down by 70-90% and 20% respectively (Lévesque 2020). In contrast, preliminary data from counting firm Eco-Compteur showed increases in biking and pedestrian trips in Montreal along certain strategic paths (Rheault 2020). Despite nuances in observed traffic counts, the average ridership of the three busiest cycling lanes (which were widened during summer 2020) was up by 36% compared to 2019.

Public space and public health

A global survey by the urban design firm Gehl studied the varied role that public space plays during the covid-19 pandemic, with over 2,000 participants hailing from 40 US States and 68 countries worldwide. As seen in Figure 2, 35% of respondents indicated that they were not using public spaces due to strict government orders, caring for an elderly relative, and fear of entering constrained public spaces. One respondent cited, "we've had to stay indoors 100 percent of the time because our sidewalks are too tight for social distancing." (O'Connor 2020). The two thirds of respondents that were using public spaces, often on a daily basis, were overwhelmingly flocking to nearby locations. 91% of respondents

globally reported experiencing crowding in public spaces. This was most true when running essential errands such as groceries, where 59% of respondents experienced crowding.

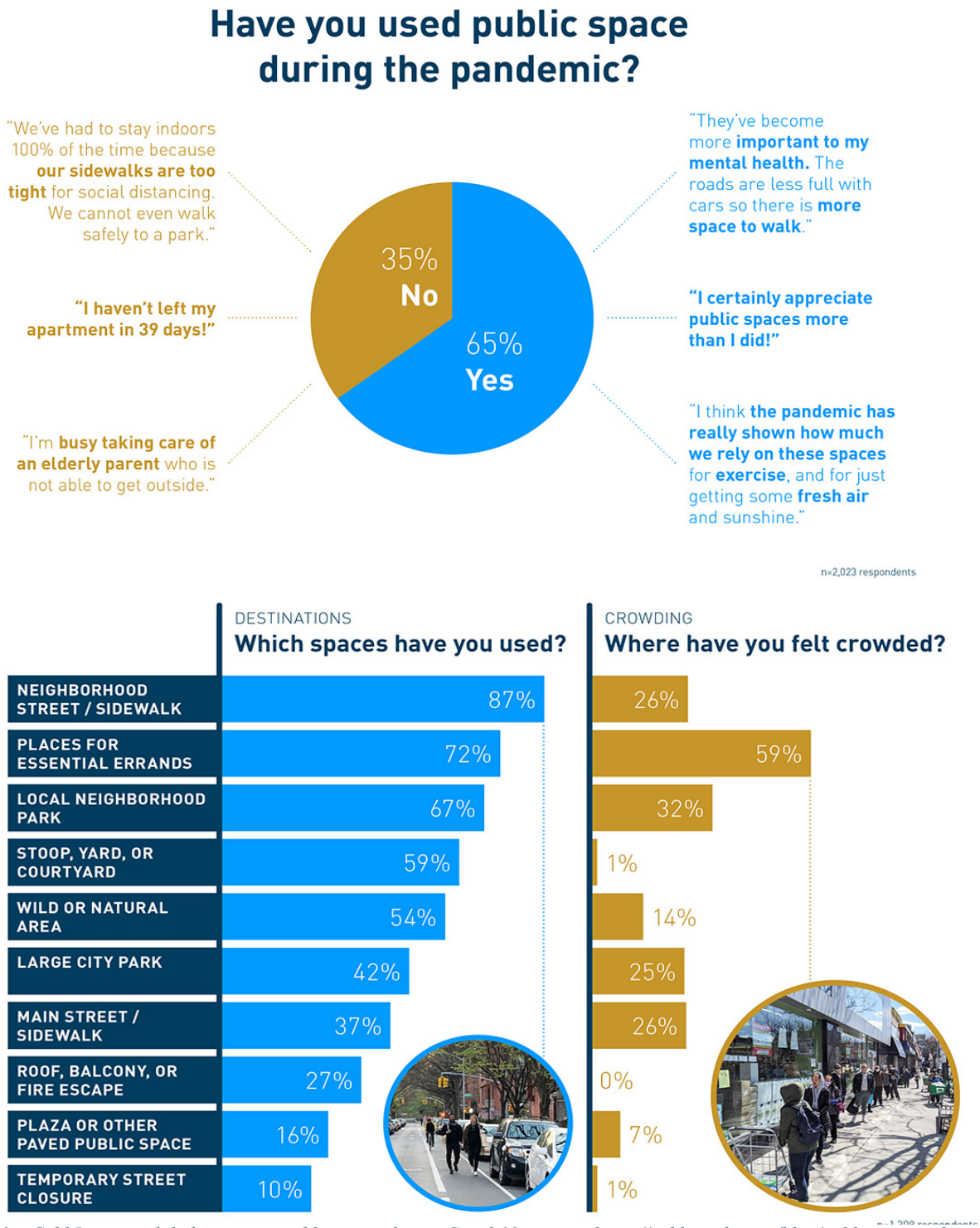


Figure 2 – Gehl Institute global survey on public space during Covid-19, source: https://gehlpeople.com/blog/public-space-plays-vital-role-in-pandemic/

The sentiment of pedestrian overcrowding and unsafe sidewalks in the context of the pandemic was echoed in cities across the globe, including in more car-dependent North American cities. Jennifer Toole, an urban planner in the State of Maryland, points out that "we have communities that don't have any sidewalks and don't have outdoor public spaces, either […] Even before Covid-19, we knew our transportation system had given precious little space to people walking and biking and using wheelchairs" (Crawford 2020). In New York City, Elizabeth Goldstein, President of the Municipal Arts Society, responded to a project which mapped NYC's sidewalk widths by saying "this pandemic has made it clear that sidewalks are absolutely vital infrastructure in New York […] I think we've discovered that our sidewalk infrastructure is not adequate" (Spivack 2020). In Toronto, the urban geographer Daniel Rotsztain who walked around the city with a 2-metre radius hula hoop-type contraption to show how difficult it was to respect physical distancing regulations was quoted as saying: "once quarantine kind of hit and we are all in this new paradigm… now it is really obvious how little space pedestrians have. It is almost impossible to safely navigate the city" (Wilson 2020).

To get a better sense of the supply and demand for walkable space in Montreal and which areas might be at risk of pedestrian overcrowding, I performed an analysis of Montreal's pedestrian infrastructure and the capacity of neighbourhoods to allow for pedestrian physical distancing. The geographic unit chosen to conduct this analysis is the census tract (CT), a geographic territory representing a neighbourhood ranging between 2,500 to 8,000 residents. The average surface area of a Montreal CT is generally well representative of an appropriate walking shed for residents to make local trips on foot and access basic amenities. By first calculating sidewalk widths throughout the island of Montreal using spatial data provided by the Montreal open data portal, the study uncovered that the average sidewalk width is 1.77 metres and the median sidewalk width is 1.64 metres. As illustrated in Figure 3 below, two thirds of Montreal CTs have average sidewalk widths between 1.67 and 2.48 metres.

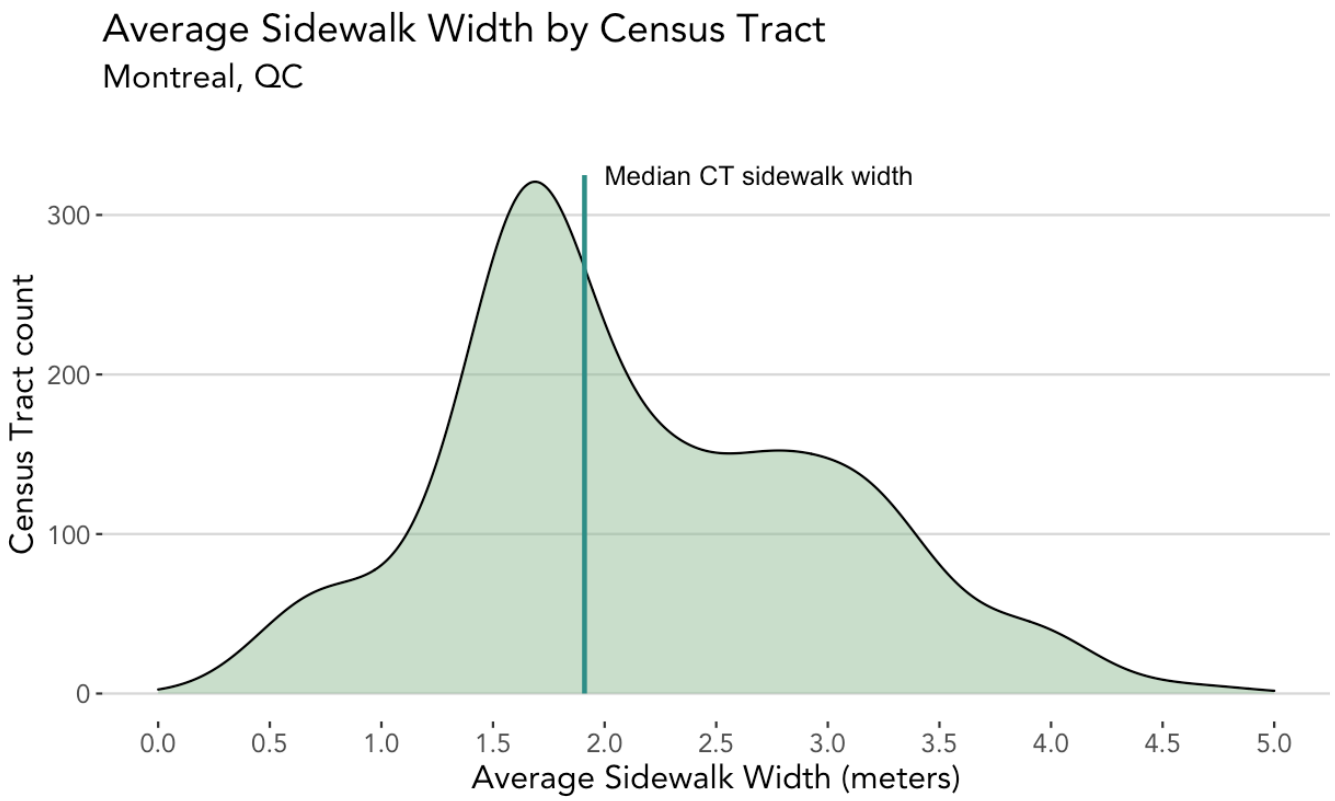


Figure 3 – Montreal Census Tract, average sidewalk width

Combining this sidewalk data with open-source data obtained from OpenStreetMap and the Montreal open data portal, it was possible to calculate the total surface area of sidewalks, neighbourhood parks, and pre-covid pedestrian streets. Summing these surface areas gets us a neighbourhood's total walkable surface area in square metres. Theoretically speaking, respecting physical distancing regulations of 2 metres implies that each pedestrian requires at least 12.54 square metres of walkable space in the pedestrian realm, which is the surface area of a circle with a 2-metre radius. 43.2% of CTs on the island of Montreal fall below the threshold of providing 12.54 square metres of walkable space per local resident. This represents 41.6% of the agglomeration's population according to the 2016 Canadian census data, or 808,316 people in absolute terms. In relative terms, the Borough of Villeray-Saint-Michel-Parc-Extension has the highest percentage (76%) of CTs in its territory with less than 12.54 square metres of walkable space per local resident while Le Plateau-Mont-Royal has the highest percentage of its population (80%) living in CTs below that threshold.

Without taking into account external pedestrian flows originating from other neighbourhoods, a CT that offers fewer than 12.54 square metres of walkable space per resident does not systematically mean that its residents will experience overcrowding when making trips on foot if we make the logical assumption that not all residents will be making trips on foot at the same time, nor will pedestrian trips be evenly distributed across space. As such, the chosen threshold of 12.54 square metres is not as important as the overall distribution of the "walkable space per person" variable, and the relationship of this variable with other metrics such as density or commute mode. The basic hypothesis is that the lower the amount of walkable space per person in a given CT, the higher there is a chance of overcrowding in public space. Based on 2016 census data, this is especially true for neighbourhoods with higher population densities and a larger proportion of residents who do not commute to work by car (Figure 4).

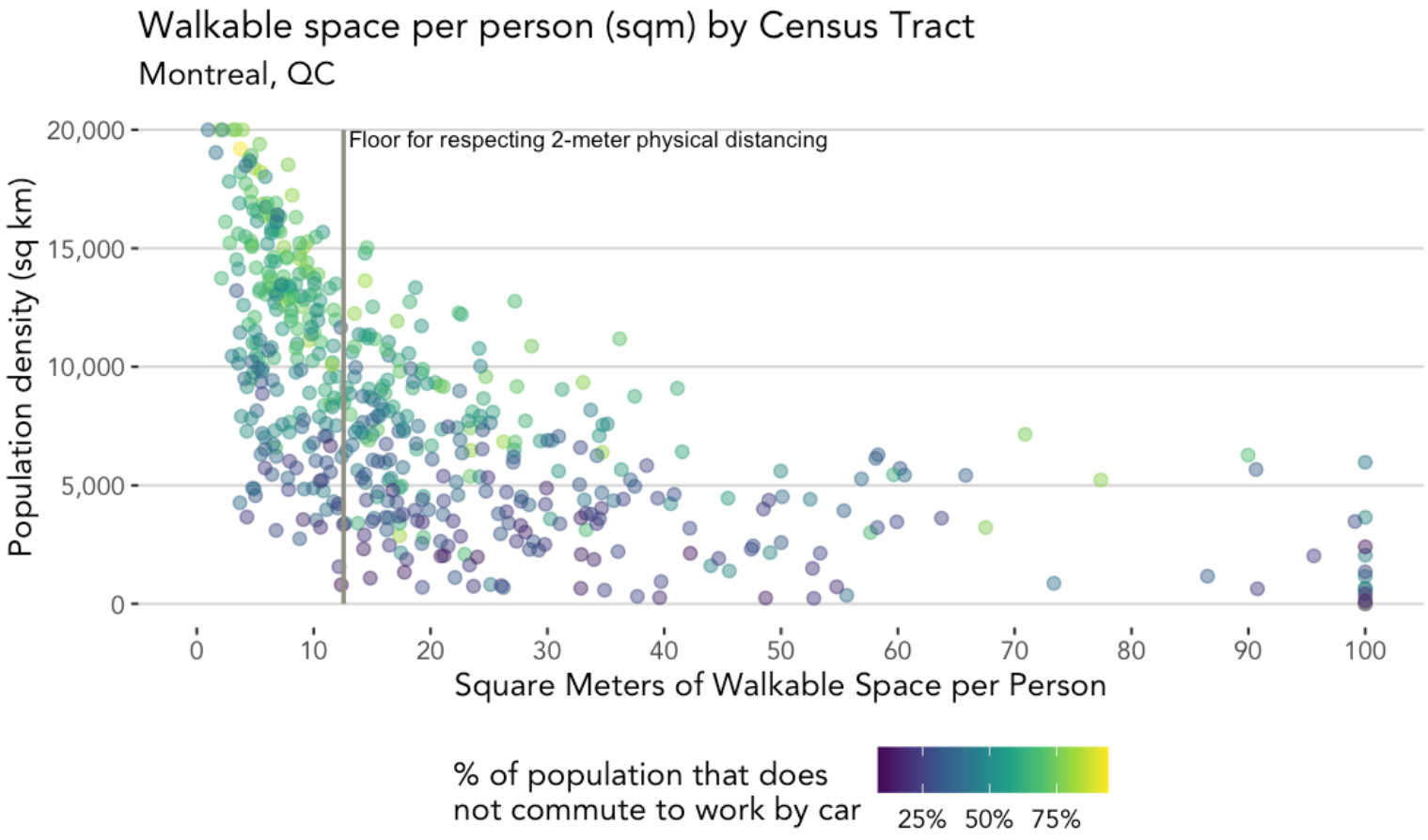


Figure 4 – Walkable space per person by census tract

Statistical correlation tests revealed that there is a strong negative relationship between the amount of walkable space per person (log scale) and a CT's population density ($r = -0.641$; $p < .001$) as well as a moderate negative relationship between walkable space per person (log scale) and the proportion of a CT's population that does not commute to work by car ($r = -0.368$; $p < .001$). In essence, neighbourhoods where pedestrians are more at risk of overcrowding often have higher population densities and tend to have a lower proportion of drivers. The supply in the amount of walkable space is not adjusted to demand based on density and commute mode. It is also important to note that the amount of walkable space per person varies significantly across administrative boundaries, with boroughs closer to the downtown core (such as Côte-des-Neiges-Notre-Dame-de-Grâce, le Plateau-Mont-Royal, Rosemont-La-Petite-Patrie, and Villeray-Saint-Michel-Parc-Extension) at a higher risk of pedestrian overcrowding in public space.

In order to gauge the neighbourhood capacity for 2-metre physical distancing, I also developed a capacity metric called the neighbourhood capacity for pedestrian physical distancing. It calculates how many residents can 'fit' into the pedestrian realm while respecting physical distancing regulations of 2 metres. The number is then represented as a percentage of the residential population. Neighbourhoods where less than 100% of the local population can make trips on foot at the same time have a lower capacity for pedestrian physical distancing and are more at risk of overcrowding from local pedestrian trips (Figure 5 and Figure 6). Based on 2016 Canadian census data, there are 50,542 people (2.6% of the agglomeration's total population) living in CTs with a capacity score for physical distancing of 25% or less (45% of which live in the Côte-des-Neiges-Notre-Dame-de-Grâce Borough), indicating a very high risk of pedestrian overcrowding in public space. The population number rises to 319,116 (16.4% of the agglomeration's total population) at a capacity score of 50% or less, which still poses a significant risk of overcrowding. A closer look reveals that the CTs with the lowest capacity for physical distancing tend to have on average lower net income levels, a higher proportion of visible minorities and immigrants, and a lower proportion of white residents (see Table 2).

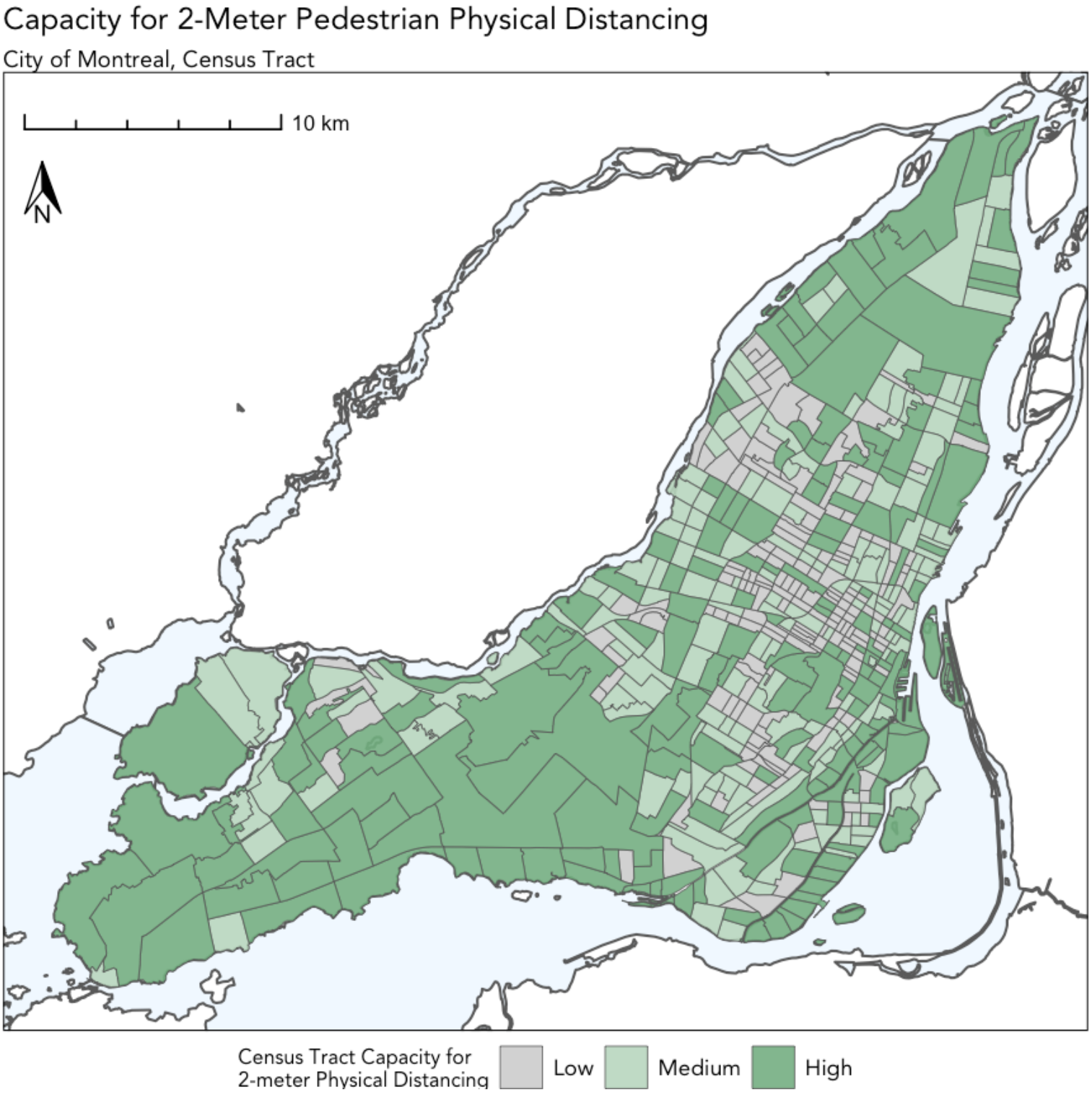


Figure 5 – Neighbourhood capacity for 2-metre pedestrian physical distancing

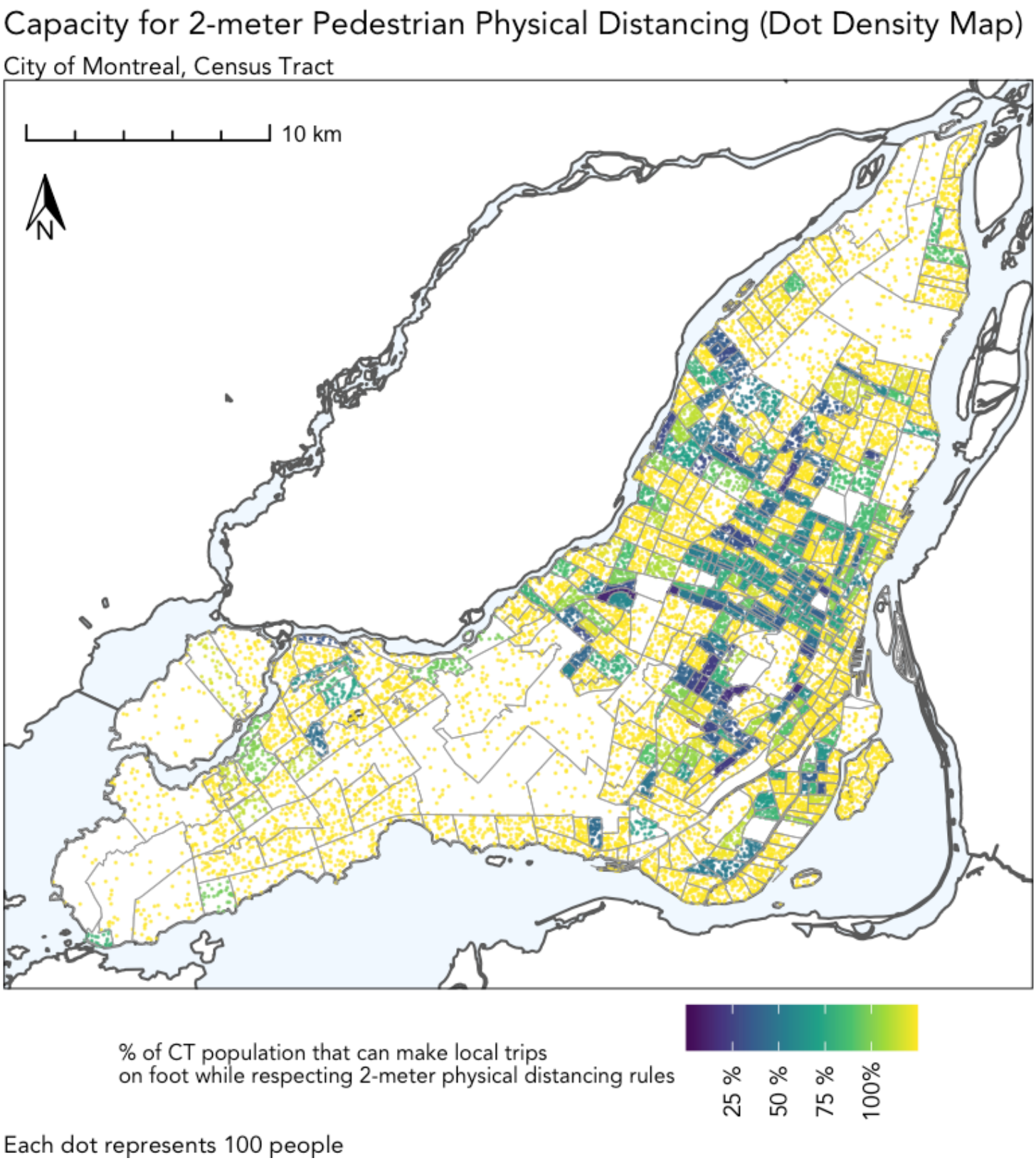


Figure 6 – Dot density map, neighbourhood capacity for 2-metre pedestrian physical distancing

Table 2 – Equity and neighbourhood physical distancing capacity (based on the 2016 Canadian census)

Physical Distancing Capacity (CT scale)	Average Net Median Income [1]	Average % of visible minorities [2]	Average % of immigrants [3]	Average % of white residents [4]
Less than 25%	$ 21,203	54 %	49.7 %	44.2 %
Between 25-50%	$ 25,216	34.5 %	35 %	63.2 %
Between 50-75%	$ 27,458	26.6 %	29.4 %	72.4 %
Between 75-100%	$ 27,883	26.6 %	28.6 %	70.7 %
Above 100%	$ 29,174	29.1 %	30.5 %	68.3 %
Total	$ 28,007	29.7 %	31.1 %	68 %

[1] ANOVA ($F = 10.44$, $p < 0.001$)

[2] ANOVA ($F = 8.527$, $p < 0.001$)

[3] ANOVA ($F = 8.023$, $p < 0.001$)

[4] ANOVA ($F = 8.881$, $p < 0.001$)

Based on the 2016 Canadian census, the average net median income of residents living in CTs with a pedestrian physical distancing capacity score of 25% or less is $6,804 lower than the total average for the Montreal agglomeration. Further, the average demographic composition of CTs with a capacity score of 25% or less is comprised of 24.3% more visible minorities, 18.6% more immigrants, and 23.8% less white residents compared to the total averages for the Montreal agglomeration. Generally speaking, we notice a pairwise relationship: as the capacity score increases, so do average incomes and the percentage of white residents, whereas the percentage of visible minorities and immigrants decreases substantially.

While it is still important to take into account pedestrian flows coming from external neighbourhoods, the measurement's focus on local pedestrian capacity is especially relevant during a pandemic situation where shelter in place and travel restrictions have generally led to a rise in local trips and a decline in trips from other neighbourhoods. That said, I did obtain some data collected on 2017 pedestrian trips in Montreal by the MTL Trajet mobile application (the application, which tracks the movement of its users as a means to guide transportation policies and plans, was developed by Concordia University and launched by the City of Montreal as part

of its smart city action plan). I used this data to calculate the total number of pedestrian trips crossing each CT, divided that number by the neighbourhood walkable surface area, and created a pedestrian traffic flow score where the mean is represented by a zero. A score below zero indicates below average pedestrian flows, and a score above zero represents above average pedestrian flows. Of note is that 45% of CTs with a capacity score below 100% had above average pedestrian traffic flows. In contrast, only 11.6% of CTs with a pedestrian physical distancing capacity above 100% had above average pedestrian traffic flows. This suggests that neighbourhoods with a higher risk of pedestrian overcrowding are also more prone to higher pedestrian trip flows, exacerbating the risk of overcrowding in public space.

As a response to these changes in mobility and the perceived risk of pedestrians and cyclists not being able to safely navigate the streets while maintaining 2-metre physical distancing ordinances, Montreal joined the efforts of many cities the world over in experimenting and re-thinking what the streets and mobility experience can look like. Interventions often involved tactical forms of urbanism (low-cost, temporary changes to the built environment which may be improved over time through feedback mechanisms) which closed certain streets to traffic, reclaimed parking lots and vacant lots for active transportation use, and invested in new bike lanes and temporary pedestrianization of streets (AFP - RELAXNEWS 2020; Crawford 2020). Although not all municipalities bought in to the 'slow street' movement, preferring to maintain a sense of normalcy amidst an uncertain climate, urban investments in ATI were growing at an unprecedented global scale (Crawford 2020).

Covid-19 mobility response: Montreal's investments in temporary active transportation infrastructure

Declaration of State of Emergency

By virtue of the Civil Protection Plan for the Urban Agglomeration of Montreal (CPPUA), the Montreal agglomeration declared a state of emergency on the 27th of March, 2020, at the request of provincial public health officials. It unlocks special emergency powers that are granted by the Quebec Civil Protection Act, a provincial law which sets the regulatory framework for Quebec municipalities to implement disaster risk management strategies as well as response and recovery operations (Province of Quebec 2001). On March 27th, the powers conferred to the City of Montreal included "control access to or enforce special rules on or within the roads or the territory concerned". This allows the City to redesign streets without formal procedures of public consultation. Mayor Plante indicated at the time that the City would leverage its emergency powers to unlock emergency funds, enforce public health directives, and open outdoor day centres and shelters for the homeless (CTV News 2020). There was no official mention yet of investments in temporary ATI. It would not be long however before the City of Montreal announced its ambitious plan to add 200 kms of new temporary bike and pedestrian lanes throughout its territory for citizens to enjoy public space and access amenities while respecting 2-metre physical distancing ordinances.

Announcements and plans

As the snow began to melt in late spring, Montreal was gradually exiting its first wave of confinement. The City subsequently observed an uptick in local trips on foot or by bike. In response, Montreal planned to temporarily expand its active transportation network to allow active transportation users to get fresh air, exercise, and access local essential amenities while respecting physical distancing rules. Such interventions have sometimes been referred to as slow

streets in North America, but will be referenced to as temporary ATI throughout this report. The various typologies of interventions that exist under this umbrella term are listed in Figure 7.

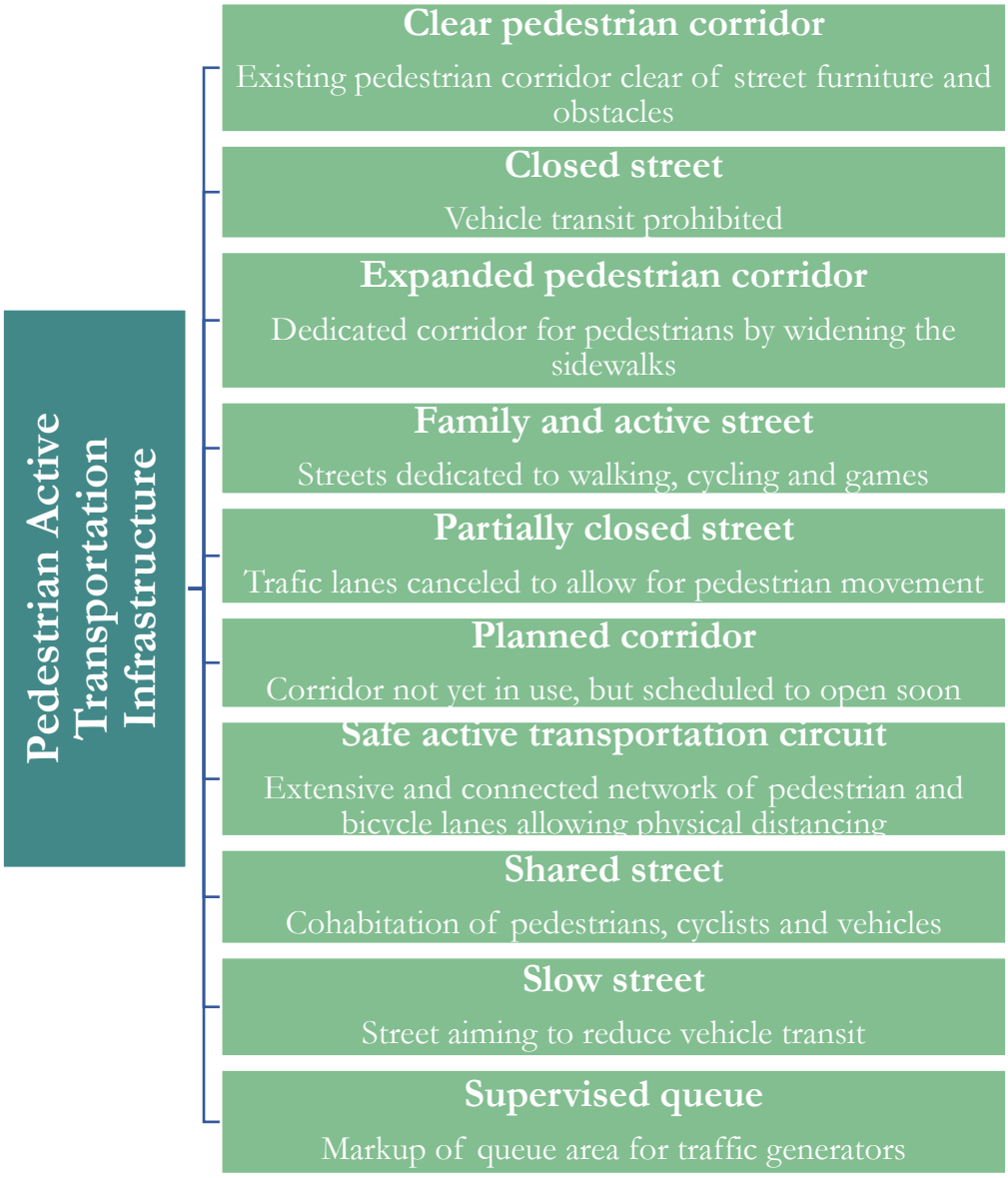


Figure 7 – Pedestrian Active transportation Infrastructure typologies as described by the City of Montreal

During Easter weekend (April 11th), the City put in place a pilot project in the Plateau-Mont-Royal Borough involving a 4.5 metre expanded pedestrian way installed on its main thoroughfare, Mont-Royal avenue, for a total stretch of 2.7 kilometres (Tomesco 2020). Considered a success

by the City and the Borough, the pilot project prompted the Plante administration to announce on April 17th the roll out of similar interventions in 8 additional boroughs to permit distancing for pedestrians waiting in line in front of busy shops (Ville de Montréal 2020a).

Image 3 – A man runs on the protected part of Mount-Royal Ave. in Montreal Monday April 13, 2020. Photo by John Mahoney / Montreal Gazette; taken from https://montrealgazette.com/business/local-business/montreal-to-decide-on-new-health-corridors-by-weeks-end-plateau-mayor

Mayor Plante announced that these expanded pedestrian corridors also presented an opportunity to support local businesses. The Borough of Ville-Marie which constitutes Montreal's downtown core announced eight such projects, including three on Sainte-Catherine Street East and one on Sainte-Catherine Street West. The business owners in the Village, who had benefited from summer street pedestrianization for more than a decade already, expressed their concerns that the announced interventions did not go far enough (Agence QMI 2020). Bars and restaurants relied heavily on the street closure to install their summer terraces. The Ville-Marie Borough appeased those fears on May 11th as it announced that the street would be fully pedestrianized for a 14th consecutive year. The announcement also included the implementation of 13

residential family streets, the full pedestrianization of Sainte-Catherine Street West in the Quartier des Spectacles (not to be confused with the site of the case study, which is also located on Sainte-Catherine Street West, but between Atwater Avenue and Metcalfe Street), and a hint that the City would soon unveil a large-scale interconnected network of pedestrian and cyclist infrastructure as part of its summer mobility plan.

On May 15th, the City announced the roll out of this ambitious plan known as the Active and Safe Transportation Circuit (Ville de Montréal 2020b). The circuit targeted dense neighbourhoods with the goal of connecting them to major parks and important commercial streets while complementing Montreal's official bike network (known as the Réseau Express Vélo or REV) and other already existing ATI. The plan was to be rolled out in two phases, the first totalling 61 kilometres on a north-south axis, and the second totalling 51 kilometres on an east-west axis. The latter phase included the pedestrian-friendly street redesign of Sainte-Catherine Street West between Atwater Avenue and Metcalfe Street.

Figure 8 shows the total amount of existing and planned ATI in kilometres throughout the City of Montreal as part of its original plan for the 2020 summer period, comprising 873 kilometres of pre-existing pedestrian and bike lanes, 127 kilometres of new permanent bike lanes, and 200 kilometres of temporary ATI as a response strategy to covid-19 (Ville de Montréal 2020b). However, the original plan was drastically reduced as the summer progressed. According to an article by La Presse, the revised plan removed 20 kilometres of temporary ATI, and other planned interventions did not move forward. By the end of July, temporary ATI covered a total of 89.6 kilometres, with 51.2 kilometres planned by the boroughs and only 38.4 kilometres for the Active and Safe Transportation circuit (Lévesque 2020). While the City was adapting to evolving circumstances, the removal of planned temporary ATI was often in response to both commercial and residential complaints, and a rising controversy surrounding the lack of public consultation prior to the roll out of these interventions which led to an investigation by the city's Ombudsman office. Figure 9 illustrates the changes between the original and revised plan of temporary ATI investments (taken from Manaugh et al. 2020).

Total kilometres of existing and planned ATI

Montreal's original plan, summer 2020

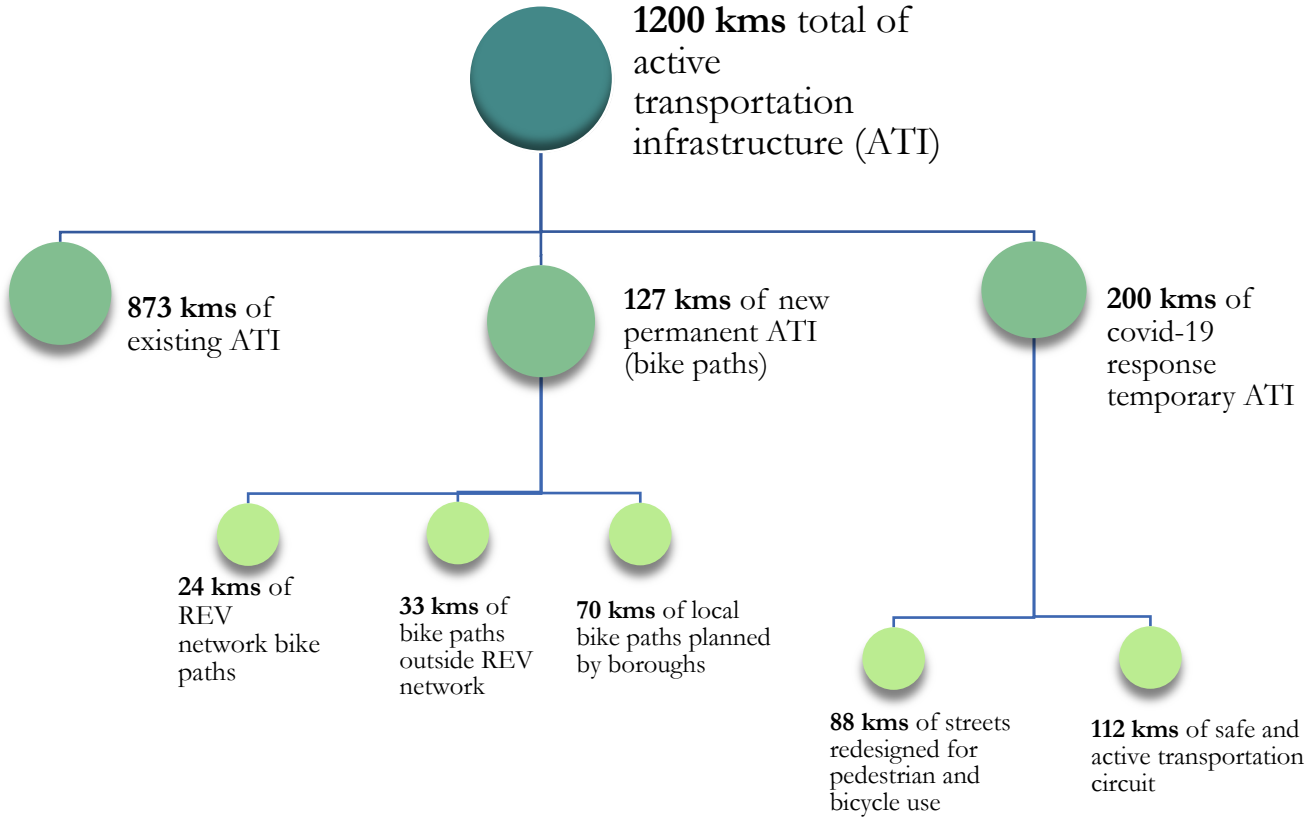


Figure 8 – Original summer 2020 plan: Montreal's existing and planned ATI in numbers

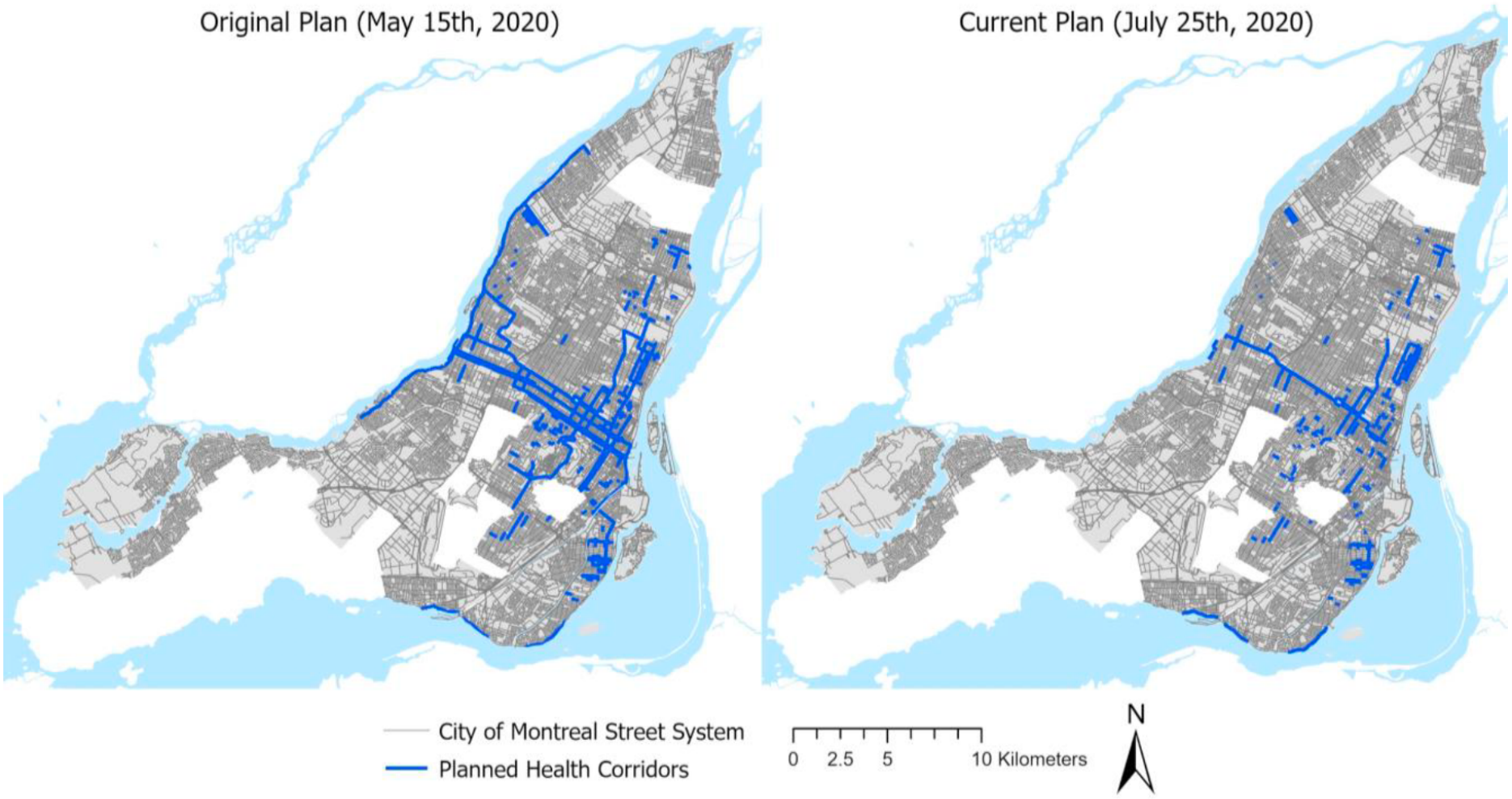


Figure 9 – Montreal's proposed Active and Safe Transportation Circuit, taken from Manaugh et al. (2020)

Governance strategy

Montreal's Planning and Mobility Services planned and implemented the Active and Safe Transportation circuit while the Boroughs were in charge of local interventions with the support of the City. When planned interventions were located on commercial streets, the local commercial development corporation became involved with varying degrees of responsibilities depending on the intervention type. In all cases, approval and financing for the projects was handled by the City's emergency operations centre.

Montreal planning and mobility services & Boroughs

An interviewed mobility consultant working for Montreal's Planning and Mobility Services explained that because of the observed changes in mobility, City Council mandated the department to develop the Safe and Active Transportation circuit. The general criteria for selecting appropriate circuit locations included population density, areas with expected high levels of active mode trips, and proximity to key amenities such as parks, grocery stores, health centers and day care centers. The department favored tactical forms of urbanism to quickly roll out interventions and improve them over time as they evolved. It also offered general guidelines and recommendations to support the Boroughs with their local interventions. Ultimately, the main governing body responsible for validating and financing projects proposed by the City and its Boroughs was the City's emergency operations center, activated through the Civil Protection Plan for the Urban Agglomeration of Montreal.

The interviewed mobility consultant clarified that normally, interventions of this scale would take months or even years to deploy, and emphasized that the speed at which the interventions were planned and rolled out was not ideal. However, the looming public health crisis prompted the City to streamline the process and sideline its standard processes of public consultation, as permitted by its emergency powers. Further, the interventions were temporary in nature, and

the department had already identified some strategic locations where bike and pedestrian infrastructure might be viable through its pre-pandemic research. The contact did acknowledge that the temporary interventions were set up hastily, but emphasized that the experience allowed the City to learn, validate or reject certain hypotheses surrounding its ATI strategies, and better plan for the future with this experience under its belt.

Commercial Development Corporations

I also interviewed an employee working for a Montreal-based Commercial Development Corporation (CDC) called Montréal Centre-Ville to learn more about their role in these interventions. CDCs are non-profit associations that represent the local commercial interests of a specific territory defined by Borough councils. There are currently 23 such associations in Montreal currently (Ville de Montréal 2020c), four of which are labelled as district CDCs because they cover large territories as opposed to a single commercial street. Montréal Centre-Ville is one of the four district CDCs, and the largest such association in Canada. It represents a diverse group of 4,700 businesses across a territory of approximately 3.5 square kilometres in Montreal's downtown core, and includes Sainte-Catherine Street West.

CDCs are governed by a board primarily composed of local merchants, but can also include public officials and citizen representatives. Their activities and responsibilities include representing its members, managing the safety and cleanliness of its commercial streets, and budget permitting, animating the street and providing entertainment to stimulate local economic vitality. The interviewee indicated that approximately 80% of CDC revenue streams stem from mandatory member contributions, and that while district CDCs have higher absolute budgets compared to smaller ones, they cover larger territories and often have greater relative costs due to higher traffic volumes. Because the budget is often proportional to the covered territory, differently-sized CDCs have a similar financial and operational capacity to support their members.

CDCs were involved in the governance of the investments in temporary ATI in one of two ways. The first can be labelled as proactive: board members gather to determine whether they want to pedestrianize a commercial arterial. If the decision is favorable, it works with the Borough Council to submit a project proposal to Montreal's emergency operations center. This was the case for example in the Ahuntsic-Cartierville Borough where the CDC Quartier Fleury Ouest opted to pedestrianize its commercial street despite resistance from a minority of its board members (Fournier 2020). The second type of involvement may be labelled as reactive: central municipal authorities mandate a CDC to implement an active transportation intervention, with the City's support, to carry out its Safe and Active Transportation circuit. This was the case for Montréal Centre-Ville and the pedestrianization of Sainte-Catherine Street West. In the reactive scenario, the CDC has less authority over the planning of the street redesign and acts more in the capacity of an advisor to the City's Planning and Mobility Services. It is however still responsible for the implementation of the intervention and any initiatives to animate the street.

Scope of impact on businesses

Table 3 gives an overview of the twelve summer 2020 pedestrianization projects on commercial streets that were implemented. Almost all of the projects exhibited complete street closures, with the exception of the intervention on De la Commune Street which was a partial pedestrianization, and the study site which adopted a hybrid model. After verifying with Montreal's various CDCs, it was confirmed that a total of approximately 1,518 storefront businesses were located within the pedestrian zones listed below, with an additional 600 businesses located in commercial centres on Sainte-Catherine Street. Other pedestrianization projects on commercial streets were planned as well, but did not move forward due to backlash from local businesses or the CDC members voting against a proposed pedestrianization scheme.

Table 3 – Commercial streets hosting pedestrianization projects during summer 2020

Borough	Street name	Intersections	Type of pedestrianization	Number of impacted businesses
Ville-Marie	Sainte-Catherine Street West	Atwater Avenue - Metcalfe Street (study site) & De Bleury Street - Saint-Laurent Boulevard (entertainment district)	Hybrid (full and partial) for the study site; full pedestrianization for the entertainment district	303 storefront business; 600 businesses in commercial centres
Ville-Marie	Crescent Street	De Maisonneuve Boulevard West - Sainte-Catherine Street West	Full pedestrianization	50
Ville-Marie	Sainte-Catherine Street East	Saint-Hubert Street - Papineau Avenue	Full pedestrianization	170
Ville-Marie	Saint-Denis Street	Sherbrooke Street East - Sainte-Catherine Street East	Full pedestrianization	60
Ville-Marie	Saint-Paul Street East	Marché Bonsecours Street - Saint-Laurent Boulevard	Full pedestrianization	46
Ville-Marie	Place Jacques-Cartier	Notre-Dame Street East - De la Commune Street	Full pedestrianization	18
Ville-Marie	De la Commune Street	Marché Bonsecours Street - Saint-Gabriel Street	Partial pedestrianization	15
Mercier-Hochelaga-Maisonneuve	Ontario Street East	Darling Street - Pie-IX Street	Full pedestrianization	179
Le Plateau Mont-Royal	Mont-Royal Avenue	Du Parc Avenue - Chapleau Street	Full pedestrianization	350
Verdun	Wellington Street	Desmarchais Avenue - Lasalle Boulevard	Full pedestrianization	247
Ahuntsic Cartierville	Fleury Street West	Meilleur Street - Saint-Laurent Boulevard	Full pedestrianization	80

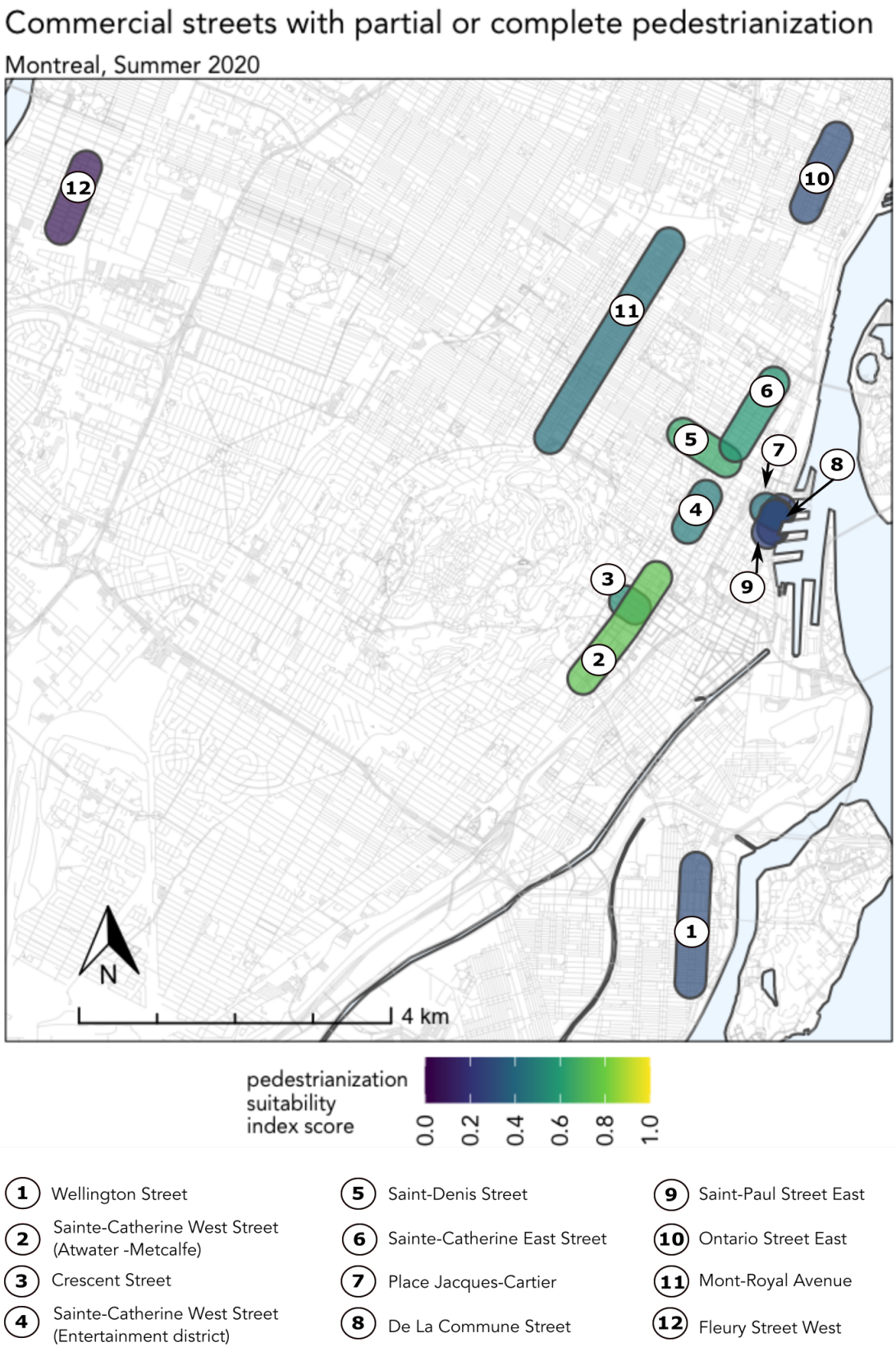


Figure 10 – Pedestrianized commercial streets and suitability index score

Figure 10 shows the location of the commercial streets listed in table 3 with a 200-metre buffer around them. By using open data from Open Street Map and the 2016 Canadian census data, the study created a commercial pedestrianization suitability index score based on what the literature posits in terms of successful commercial pedestrianization schemes. The index score uses five metrics: 1) population density in nearby neighbourhoods, 2) the number of metro stations per square kilometre within the 200-metre buffer zone, 3) the pedestrian trip flow index created by using MTL Trajet data, 4) density of local businesses, and 5) the proportion of local businesses that are restaurants and bars. Each metric was given a weight of 20%, and the final commercial pedestrianization suitability index is represented as a score that varies between 0 and 1. Fleury Street West received the lowest score. According to a source, the 2020 pedestrianization experience on that street was not very positive, and the local CDC confirmed that it will opt not to pedestrianize again in 2021. The study site, Sainte-Catherine Street West, received the highest score. However, it must be noted that Open Street Map data does not provide an exhaustive list of businesses present on Montreal's commercial streets. The incompleteness of the data undoubtedly distorts the suitability index score. The percentage of restaurants and bars (75%) calculated using Open Street Map data for the portion of Saint-Denis Street that was pedestrianized over the 2020 summer does match publicly available information about the street's commercial composition. However, the official registry of businesses located on the study site shows a percentage of restaurants and bars that is considerably lower than the result obtained using Open Street Map data. This suggests that the crowd-sourced data platform is underreporting other industry sectors present on the street. Further, Wellington Street and Mont-Royal Avenue are well-known for having a high proportion of restaurants and bars, yet this is not reflected in the Open Street Map data. While the index score would certainly benefit from more complete data and the incorporation of other forms of multi-modal access to the sites beyond simply metro stations, it nonetheless offers a framework for calculating a very high level commercial pedestrianization suitability score.

Public discourse and reaction

Positive reactions

The Plante administration largely perceived its investments in temporary ATI as a success (Lévesque 2020). Éric Alan Caldwell, in charge of mobility at the City's executive committee, said that preliminary data showed the popularity of these new corridors. The report released by counting firm Eco-Compteur highlighted that tens of thousands of locals were adopting these new expanded pedestrian corridors, and using them consistently over the course of the summer (Rheault 2020). In response to a rise in negative press coverage, mayor Plante said in an interview with the CBC that she sensed a gap between the negative media coverage and how people actually felt about the interventions (CBC News 2020a), specifying that her comments were based off of survey results and conversations with local residents.

Certain non-for-profit environmental organizations such as Montreal's Regional Council for the Environment (CRE) also expressed their satisfaction with the investments in temporary ATI. The organization in a press release applauded the efforts to redistribute public space more equitably across mode shares, and the contributions of commercial street pedestrianization towards stimulating economic activity while offering more welcoming and safe places for pedestrians (CRE 2020).

CDCs that hosted pedestrianization interventions were portrayed by the media as generally supportive of the initiatives. An article by the newspaper Le Devoir stated that Montréal Centre-Ville and CDC Quartier Latin positively viewed the announcements of pedestrianization projects in their respective territories (Corriveau 2020a). Emile Roux, the general director at the time of Montréal Centre-Ville, said that the proposed model for pedestrianizing Sainte-Catherine Street West, which preserved a lane for vehicular circulation four days out of the week, finds a suitable compromise between the need to respect physical distancing regulations and the capacity for

suppliers to deliver supplies to businesses during the week. Angélique Lecesve, the general director of the CDC Quartier Latin, mentioned that the association was happy with the project to pedestrianize Saint-Denis Street. She highlighted that the commercial arterial is a good candidate for such an intervention given that 64% of its businesses are bars and restaurants which could benefit from wider terraces. In a news article by Radio Canada, the Avenue Mont-Royal CDC and the Plateau Borough suggested that the Mont-Royal pedestrianization was considered a success for many local businesses. While waiting for more concrete numbers from a conducted survey, Claude Rainville, the executive director of the Avenue Mont-Royal CDC, said in an interview that the general sentiment was that local businesses were satisfied (Schué 2020).

Negative reactions

Press coverage around Montreal's investments in temporary ATI overwhelmingly highlighted negative criticisms raised primarily by business stakeholders, and to a lesser degree residents. Opinion pieces expressed that mayor Plante was investing in pedestrianization too rapidly despite public anger and discontent (Lauzon 2020), and that the mayor was completely out of touch with the reality faced by Montrealers who did not believe that it was the right time to experiment with new forms of sustainable mobility, preferring instead a sense of normalcy (Cardinal 2020). As indicated previously, mayor Plante pushed back by saying that the views getting the most attention are not necessarily the ones held by the majority (CBC News 2020a).

News coverage surrounding the discontent of residents included residents of a retirement home on Gouin Boulevard in the Montreal-Nord Borough protesting the implementation of new pedestrian and cyclist paths which impeded the mobility of the elderly by displacing their bus station (Cyr 2020). Another case on Terrebonne Street in the Notre-Dame-de-Grâce Borough involved parents who complained about the transformation of a residential parking lane into a bike lane because it impeded them from dropping their kids at nearby schools (Hanes 2020; CBC News 2020b). Both cases of resistance occurred in August 2020, led to the removal of the contested interventions, and decried the lack of public consultation. The Borough Mayor for

Montreal-Nord was quoted as saying that in the future, the Borough would ensure that more time is dedicated for consultation and planning to implement effective interventions that are adapted to the local context and that are socially acceptable to residents (Cyr 2020).

News coverage about commercial resistance to these interventions was commonplace. The study will describe the two cases that received the most attention. The Borough of Rosemont-la-Petite-Patrie's plan to implement a transit mall (pedestrianization with one lane preserved for buses and emergency vehicles) on Saint-Laurent Boulevard, a major commercial arterial in Little Italy, never moved forward as commercial resistance shut it down in its tracks (Corriveau 2020c). Two months later, the same reporter who covered the story of the initial resistance engaged with business owners to see if they regretted that decision, particularly with covid-19 still hampering business revenues (Corriveau 2020b). The response was mixed, indicating some division among local merchants. A few anecdotal examples include the owner of a shoe retail store who stood by the decision to stop pedestrianization efforts claiming that the area would have otherwise become deserted, the owner of a bistro who was open to trying it out despite the uncertainty around its impact, and a restaurant and bar owner who was certain that pedestrianization would have been preferable in his case. Once again, the theme of consultation came up when the owner of a uniform store expressed their anger at the process, claiming that there was no consultation by the City or the local CDC and that the project was poorly managed. That business owner suggested that other scenarios could have been proposed instead of a full pedestrianization, such as pedestrianizing the street during peak pedestrian hours in the evening and at night time (Corriveau 2020b).

On Notre Dame Street in the Sud-Ouest Borough, David McMillan, the owner of the acclaimed restaurant Joe Beef, took to Twitter in July to complain about a proposed plan to pedestrianize one of two traffic lanes as well as both parking spots on both sides of the street to make more room for pedestrians and terraces for cafés and restaurants (Lepage 2020). Mr. McMillan claimed that the local CDC did not effectively represent the interests of local businesses, and that street closures and reduced parking did not provide economic relief. In a change of tone from his series

of incendiary tweets, Mr. McMillan clarified that he is open to change, but that local government must discuss these changes with the community, and not impose it in 7 days, a sentiment shared by some of his neighbouring business owners. Partly due to the influence and vocal nature of McMillan's tweets, the plan was rescinded within 24 hours (Hanes 2020). In response, the Borough municipal councillor Craig Sauvé claimed that his office had worked closely with the local CDC for this project which was met with great enthusiasm, but conceded that there was still work to do in terms of better communication between the CDC and its members. Despite an attempt to incorporate local feedback and tweak the proposed intervention, the project never materialized (Lepage 2020).

Main complaints

One day after Mr. McMillan expressed his ire, the city's Ombudsman office published an update on its investigation into complaints about both permanent and temporary new cycling and pedestrian infrastructure implemented in Montreal over the summer (Hanes 2020). A report by the Montreal Gazette later divulged that the Ombudsman office saw more than 300 complaints leading to 240 investigations (Montreal Gazette 2020). The complaints questioned among other things the management of the projects and the political vision behind them according to the office. Between temporary projects in the emergency context of covid-19 and other projects that had been under consideration for a long time, the "amalgamation of work created a great deal of confusion among Montrealers" according to City Ombudsman Nadine Mailloux. The office published a report (Mailloux 2020) with 15 recommendations to the City concerning the planning, execution and supervision of such projects, including the need prior to executing these projects to properly inform local residents what the effects of that project will be.

The Ombudsman office stated that the City and Boroughs were receptive to feedback and acted proactively to rectify them. Mayor Plante expressed that the City could do more to improve communications with citizens despite the emergency situation, but that her administration had been proactive in correcting issues as they arose. Opposition leader Lionel Perez said that the

report highlighted the administration's lack of listening to pedestrians and businesses, and that it confirms that urgency does not excuse everything. "The ombudsman clearly states that [Covid-19] doesn't justify excluding the will of the people, consulting them properly, analyzing the impact on the population and on the quality of life and the neighbourhood" (Montreal Gazette 2020).

Summary

Covid-19 led to a rise in pedestrian activity for local trips in Montreal during its first wave of confinement. An analysis of the amount of walkable space per person at the CT scale demonstrates that certain neighbourhoods had a clear need to increase their capacity to allow for pedestrian physical distancing. This is especially true of dense neighbourhoods in the downtown core where residents are less likely to commute by car and where pedestrian trip flows are typically higher. This was the primary impetus towards the City's ambitious plan to increase the supply of active transportation infrastructure, including 200 kilometres of temporary bike lanes and pedestrian corridors, to allow active transportation users to move around during the summer and access key amenities while respecting physical distancing ordinances. That said, the plan received significant resistance by business owners and to a lesser extent residents. As a result of this resistance, numerous interventions were rescinded and the scale of the original plan drastically reduced as the summer progressed. The perceived lack of clarity surrounding the plan and the absence of citizen consultation were some of the key factors which led the city's Ombudsman office to receive over 300 complaints.

V. Case Study Background

The following section will first provide some background information about the study site located on Sainte-Catherine Street West between Atwater Avenue and Metcalfe Street, its surrounding neighbourhoods, and the local context during summer 2020. Attention will be given to the built environment, social demographics and density of surrounding neighbourhoods, the local mobility infrastructure, and the commercial composition of the street. This section will then give an overview of the planning and implementation strategy to temporarily redesign the street, the specific design and animation elements that constituted the intervention, and data collected on pedestrian traffic counts. Finally, a survey conducted by Montréal Centre-Ville will shed light on the reaction and general satisfaction rates of both visitors using the street and local businesses.

Sainte-Catherine Street West profile and context

Site location

Sainte-Catherine Street is considered to be Montreal's primary commercial arterial road, stretching a total of 11.2 kilometres. It crosses the central business district from west to east. A total of nine metro stations connect with Sainte-Catherine Street as it passes through residential neighbourhoods, the entertainment district (Quartier des Spectacles) and the downtown core. The 1.6 kilometre stretch of Sainte-Catherine Street West that is subject to investigation as part of this research lies between Atwater Avenue to the west and Metcalfe Street to the east. It is located on the western edge of the Ville-Marie Borough. To its north lies the iconic Mont-Royal mountain after which the city is named. To the west of Atwater Avenue is the wealthy independent municipality of Westmount which is part of the Montreal agglomeration. South of the site is the 720 Ville-Marie expressway which cuts through the south of Montreal's downtown core and disconnects the study site from its southern borough neighbour, Le Sud-Ouest. To the

east of the site is a continuation of Montreal's downtown core, including the entertainment district.

Land use & built environment

The site is designated as a mixed-use zone, with retail storefront businesses on the first floor, and higher floors occupied by commercial offices, additional retail shops, or residential units. Buildings on Sainte-Catherine Street West average three to five storeys, with a few exceptions of high-rise units haphazardly scattered along the street, such as the Alexis Nihon shopping center on Atwater Avenue and the Concordia University downtown campus on Guy Street comprising contemporary buildings with glass curtain walls.

Neighbourhoods & demographics

The site, visible in Figure 11, is split between two neighbourhoods: Shaughnessy Village (SV) to the west of Guy street and the Golden Square Mile (GSM) to the east of Guy street. Table 4 shows some differences in demographics between the two neighbourhoods according to the 2016 Canadian census. Some of the interesting insights that should be highlighted are that 1) SV's population density is 83.5% denser than GSM, 2) both have high proportions of people who do not commute to work by car, 3) both have similar proportions of immigrants but SV has 14.9% more visible minorities and 12.9% fewer whites than GSM, 4) SV has on average a net median income that is 37.8% lower than GSM. SV also has a slightly younger population, and is renowned for having a large student population due to its proximity to Concordia University.

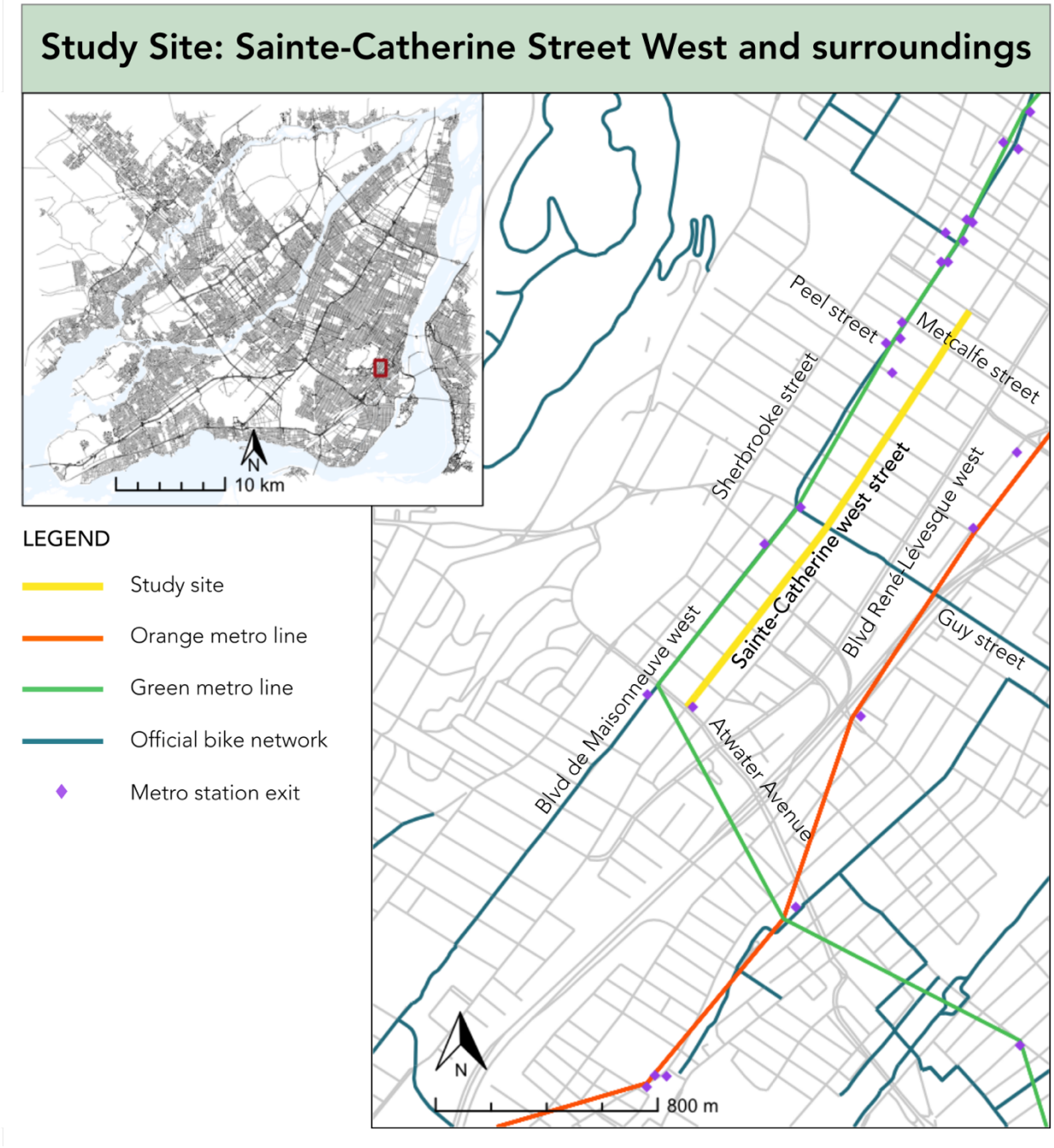


Figure 11 – Map of the study site

Table 4 – Shaughnessy Village and Golden Square Mile demographic cross-comparison

Variable (CT average)	Shaughnessy Village	Golden Square Mile	Montreal agglomeration
Total population	15,677	12,662	1,942,039
People per km2	25,108	7,307	8273
% of work commuters that do not drive	79.28 %	69.25 %	48.97 %
% of immigrants	38.4 %	39 %	31 %
% of visible minorities	59.7 %	44.8 %	29.5 %
% of whites	39.5 %	52.4 %	68 %
Net median income	$ 14,829.5	$ 21,746	$ 28,121
Unemployment rate	14.92 %	11.02 %	8.96 %
Average age	35.65	38.08	40.32

Local mobility infrastructure

The site's regular street layout is comprised of a four-lane one-way street (going towards the east), with the two middle lanes used for vehicular circulation while the outer lanes are reserved for on-street parking. The average sidewalk width across the site is 5.16 metres (significantly above the Montreal average of 1.77 metres), ranging from a minimum sidewalk width of 3.97 metres to a maximum of 7.14 metres. The commercial street is nearby two primary arterial roads (Sherbrooke Street about 300 metres north and René-Lévesque Boulevard about 270 metres south), both of which connect to highways and have four circulation lanes, two going in each direction A total of four metro stations (Atwater, Guy-Concordia, Peel and McGill), all on the green line, are located within a 200-metre catchment area from the site. There are bike lanes as part of Montreal's official bike network that run from east to west on De Maisonneuve Street one block north of Sainte-Catherine Street West, and north to south on Guy Street which marks the border between Shaughnessy Village and the Golden Square Mile.

Pedestrian space and flows

The pedestrian physical distancing capacity score for SV is relatively low, standing at 54 %. In contrast, the GSM has a high-capacity score at 222%. This is due to SV's higher population density with no adjustment in the amount of walkable space. Although SV is more at risk of overcrowding in the pedestrian realm due to a higher local demand to supply ratio for pedestrian space, both neighbourhoods exhibited in 2017 a significantly above average flow of pedestrian trips compared to other Montreal neighbourhoods according to MTL Trajet data. We can assume that a significant portion of these pedestrian trips were concentrated on Sainte-Catherine Street West because it is an area with a high density of points of interests and generally good connectivity with other modes of transport. The data from MTL Trajet suggests that the areas of SV and the GSM which experienced the highest levels of footfall were between Sainte-Catherine West and de Maisonneuve streets on a north-south axis, and between du Fort and Peel streets on a west-east axis. Montréal Centre-Ville surveyed visitors of the study site during the pandemic between August 26 and September 4th (n= 504) and reported that 24% of respondents resided within a 2-kilometre radius from the intersection of Sainte-Catherine and Peel streets. The other visitors were pretty evenly spatially distributed between neighbouring zones, more distant neighbourhoods, the western and eastern extremities of the island of Montreal, and those coming from outside of the island. Even during the pandemic, the study site attracted a variety of visitors from both near and far.

Commercial composition

According to a registry provided by Montréal Centre-Ville, there were 229 storefront businesses on the study site at the beginning of 2021. Some of these businesses were temporarily or permanently out of business, while a few others opened up shop after the expiry of the summer 2020 pedestrianization scheme. As seen in Figure 12, the majority of businesses are restaurants and bars with a heavy emphasis on restaurants (28%) and clothing and apparel retail stores (27%). The remainder of the local storefront businesses are quite diverse. Heavy retail stores,

representing 3% of the total businesses in the registry, include a furniture store, a car dealership, and consumer electronic stores. They are the most likely to be disrupted by a pedestrianization scheme according to the literature. SV also has a higher percentage of restaurants and bars, representing approximately 53% of businesses compared to only 4.8% in the GSM. Restaurants in SV tend to be local and smaller in size. The GSM has a much higher percentage of businesses in the clothing, apparel and accessories industry (62%), and is host to larger international chains. Unlike the Village or Mont-Royal Avenue where restaurants and bars dominate, the study site has a more diverse commercial profile with a higher proportion of retail businesses in the fashion and service industry.

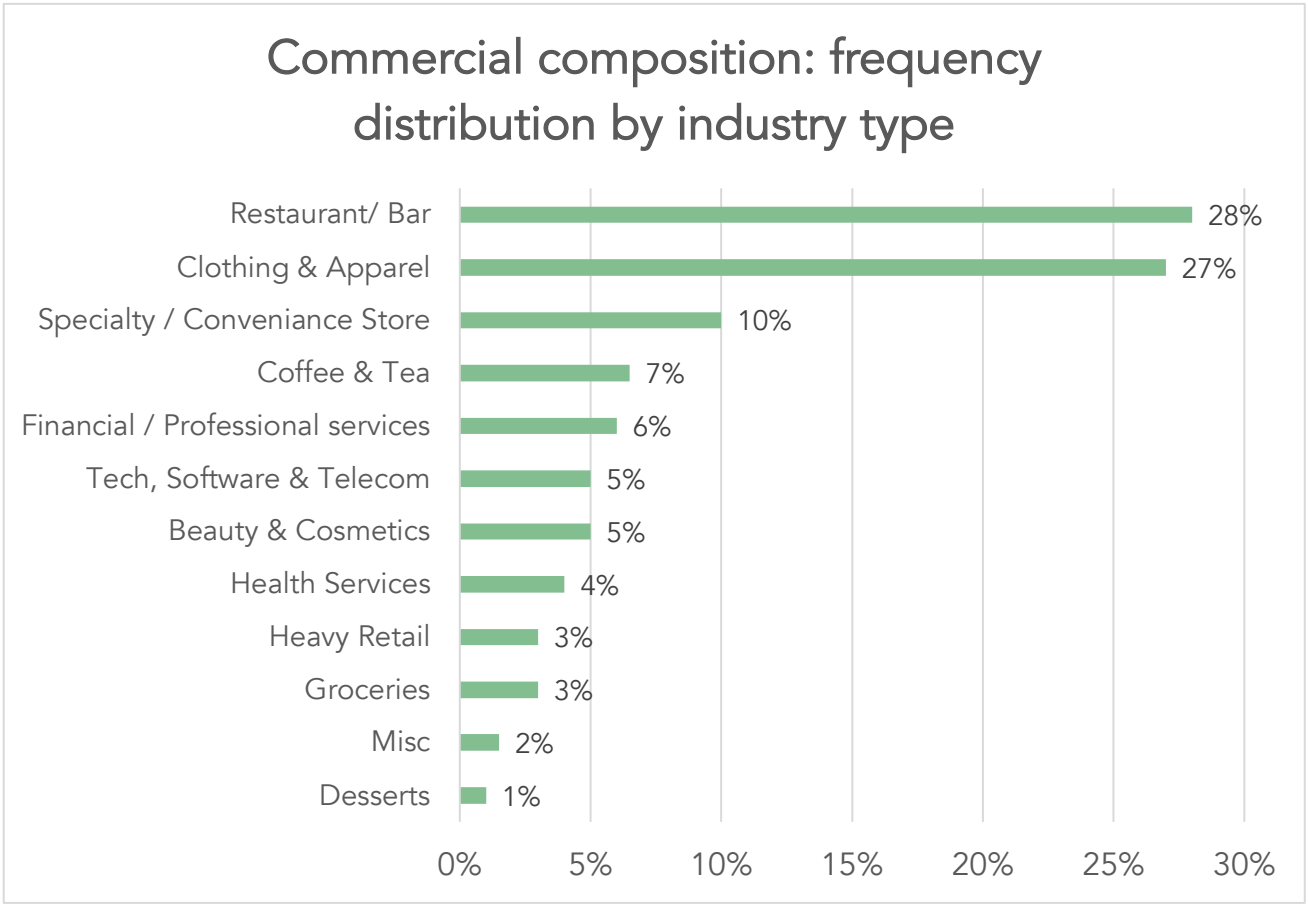


Figure 12 – Sainte-Catherine Street West (Atwater avenue and Metcalfe street) commercial composition

Covid-19 context

The pandemic emptied the downtown core of its 100,000 students, millions of tourists, and many of its 310,000 workers (Goudreault 2020; Archyde 2020). As a result, many retail shops saw their revenues drop significantly, and were in survival mode. In April and early May, Sainte-Catherine Street was by and large deserted with strict shelter in place ordinances and non-essential services closed. According to Montréal Centre-Ville's inventory, fewer than 100 businesses were open throughout its 3.5 square kilometre territory.

Summer 2020 pedestrian-friendly street redesign

Planning and Implementation

On May 20th, the City announced that Sainte-Catherine Street West's redesign would include a partial pedestrianization starting on May 25th, effectively transforming one parking lane and one traffic lane on the northern part of the street into space reserved for pedestrians. Starting on the 19th of June, the entire street was set to close down to vehicular traffic between Fridays and Sundays, lasting until the 16th of September (Ville de Montréal 2020d). Figure 13 shows the transformation of the street layout of Sainte-Catherine West, while Figure 14 displays the timeline of Montreal's investments in temporary ATI as a covid-19 response strategy, with a focus on the Sainte-Catherine West intervention.

The intervention was planned by Montreal's Planning and Mobility Services. Montréal Centre-Ville was not involved in the initial planning phase according to the contact working there, although it was consulted by the City. The CDC employee indicated that the initial plan was to fully pedestrianize the street on a 24/7 basis. While Montréal Centre-Ville was open to a pedestrian-friendly street design given the context, it believed that a 24/7 street closure would not be socially acceptable for the local business community, especially given the diverse

commercial profile of certain blocks. The CDC proposed a plan B: creating an expanded pedestrian corridor on the north side of the street since it typically experiences more traffic, and full street pedestrianization only on Fridays and the weekend when there are more visitors. This revised plan was accepted by the City. The CDC employee explained that its recommendations were based on its local knowledge of the commercial composition of the street and the makeup of typical patrons, as well as a few informal discussions with some of its members. With the City asking for a rapid 2-week turnaround for the CDC to implement the intervention, the CDC had no time to exhaustively consult its members as it would under normal circumstances.

The employee at Montréal Centre-Ville mentioned that, despite an inability to consult its members and the rapid implementation of the project, the association was able to make modifications to the intervention over time by incorporating some feedback from its members and by maintaining good communication and a collaborative spirit with the City's Department of Permits and Montreal's Planning and Mobility Services. An example of a design tweak was the implementation of short-term stop areas for cars at strategic intersections to promote access to heavy goods shops. According to Montréal Centre-Ville, this modification was well received by concerned businesses, and received support from the City as well. From a communications perspective, the employee stressed that it was very difficult to communicate a concrete vision of what to expect from the intervention because it was planned so rapidly. Its final design was very much up in the air in the initial stages of planning and the strategy was to improve it over time based on feedback and general developments. In addition, the CDC was often unclear about what it could communicate because of constantly fluctuating health regulations about physical distancing and group gatherings in public space.

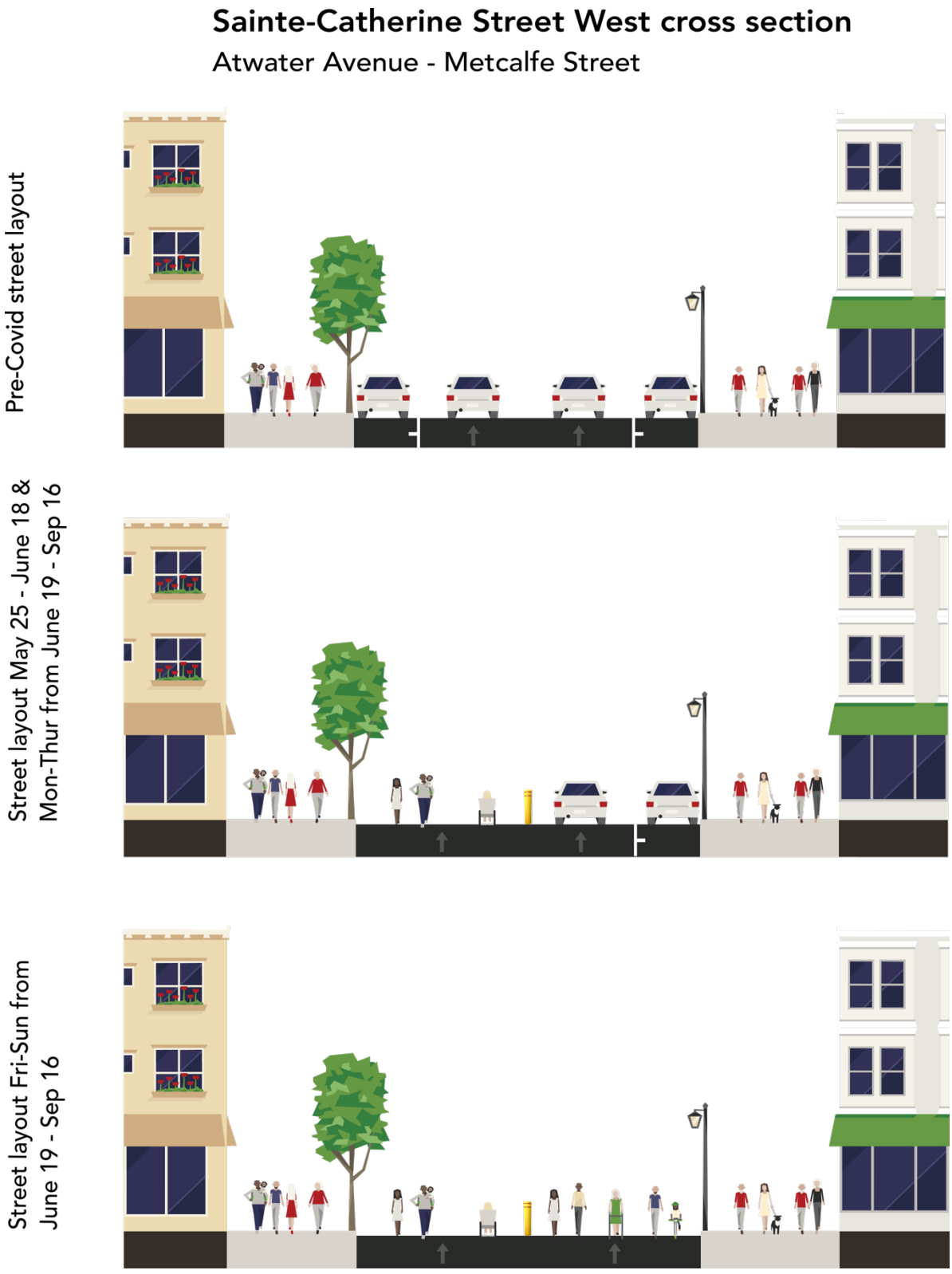


Figure 13 – Evolution of the study site's streetscape, made using Streetmix

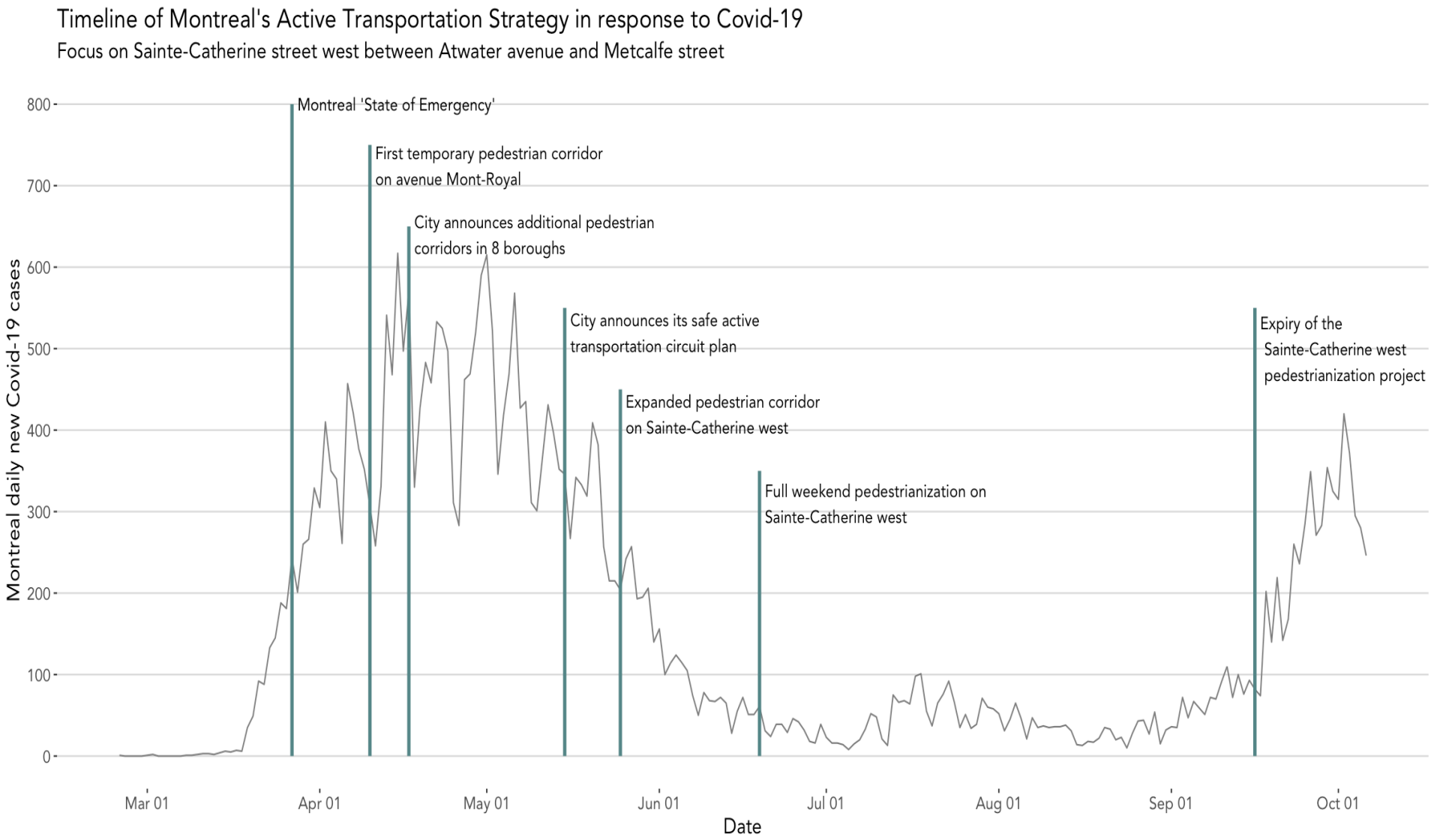


Figure 14 – Timeline of investments in temporary ATI, Montreal 2020

Design & Animation

The Montréal Centre-Ville contact stipulated that as a general rule, pedestrianization should involve 1) a plan to re-think and re-design the streetscape and 2) an affiliated program to animate the street and stimulate the senses of its visitors. Figure 15 shows the various design and animation elements that the intervention was composed of, identified through site visits during the summer.

The redesign of the street offered new uses and affordances through terraces, rest areas, and the installation of small plazas. More specifically, design elements predominantly included the installation of street furniture in the newly created plazas or on the expanded pedestrian corridor (chairs, tables, picnic tables, terraces, bike shelter racks, etc.). Orange cones and concrete blocks were used at first to demarcate the pedestrian zone on the northern side of the street from the zone reserved for vehicular circulation between Monday and Thursday. The Montréal Centre-Ville employee highlighted that the cones and concrete blocks sparked some negative reactions due to their unappealing and construction-like aesthetic, a by-product of the limited time to implement the intervention. The CDC addressed this criticism by using paint to add colour to the cement blocks, and replacing the cones with bollards and flower pots along the road. The CDC also adapted the design by using floor signage and placing street furniture at strategic locations to encourage physical distancing in front of certain shops exhibiting large queues. The design also involved the removal of one parking lane throughout the site on a 24/7 basis, and the removal of an additional parking lane between Fridays and Sundays. In an attempt to appease fears that the supply of parking would be insufficient around the site, Émile Roux, Director of Montréal Centre-Ville at the time, asserted late May in an interview that there was plenty of parking available with the large number of remote workers no longer commuting to the area on a daily basis (TVA Nouvelles 2020).

The local CDC employee believed that the inclusion of animations was instrumental in improving the lived experience of street users. If streets are closed to vehicular circulation without any

attractive animations that stimulate the local street life, it might exacerbate negative business sentiment towards these types of projects. Animations included music, lights, street art, entertainment and creative installations. Public health regulations placed significant restrictions on the types of animations that the CDC and its partners could implement. Special and cultural events that would draw a crowd by transforming the street into a true destination were forbidden. As such, the animations were primarily designed to stimulate the senses of street users as they passed through. Although different-sized CDCs have similar budgets relative to their territory, where some have a comparative advantage in their ability to support successful pedestrian-friendly street design programs is in their ability to seek and leverage partners that can help them animate the streets. Montréal Centre-Ville benefited from two partners that were able to invest funds and labor towards designing public squares and animating them with lights, music, and creative installations. The first was XP_MTL, a non-profit organization that has been mandated for the past two years to offer festive programming in the downtown core, particularly around Concordia University on Sainte-Catherine Street. The second was the Quartier des Spectacles, the organization responsible for managing Montreal's entertainment district just east of the study site. The Quartier des Spectacles, which leveraged the expertise of several design firms to understand how to design and animate public space in a way that attracts while encouraging physical distancing, exceptionally stepped outside of its territorial jurisdiction to support other downtown areas with animation initiatives.

Overall, the design and animation of Sainte-Catherine Street West was a good effort given the short amount of time to plan and implement the intervention, but it was still visibly an unfinished product. Figure 15 also shows that the spatial distribution of street furniture and animations were uneven across the study site. The eastern portion located in the Golden Square Mile neighbourhood exhibited a substantially higher number of design components and animation initiatives compared to the western portion of the site in Shaughnessy Village which seemed more neglected from a design and animation standpoint.

Figure 15 – Design and animation of Sainte-Catherine west street's pedestrianization

Traffic counts

One major uncertainty around the plan was the amount of pedestrian traffic that Sainte-Catherine Street West would attract (TVA Nouvelles 2020). Based on data collected by the counting firm Eco-Compteur that was published on Montreal's open data portal, the intersection between Sainte-Catherine West and Stanley streets exhibited an average traffic flow of 972 pedestrians per hour between July 31st and September 14. This was the highest average pedestrian flow rate among the strategic intersections where pedestrian counts were measured during the summer of 2020 (Figure 16).

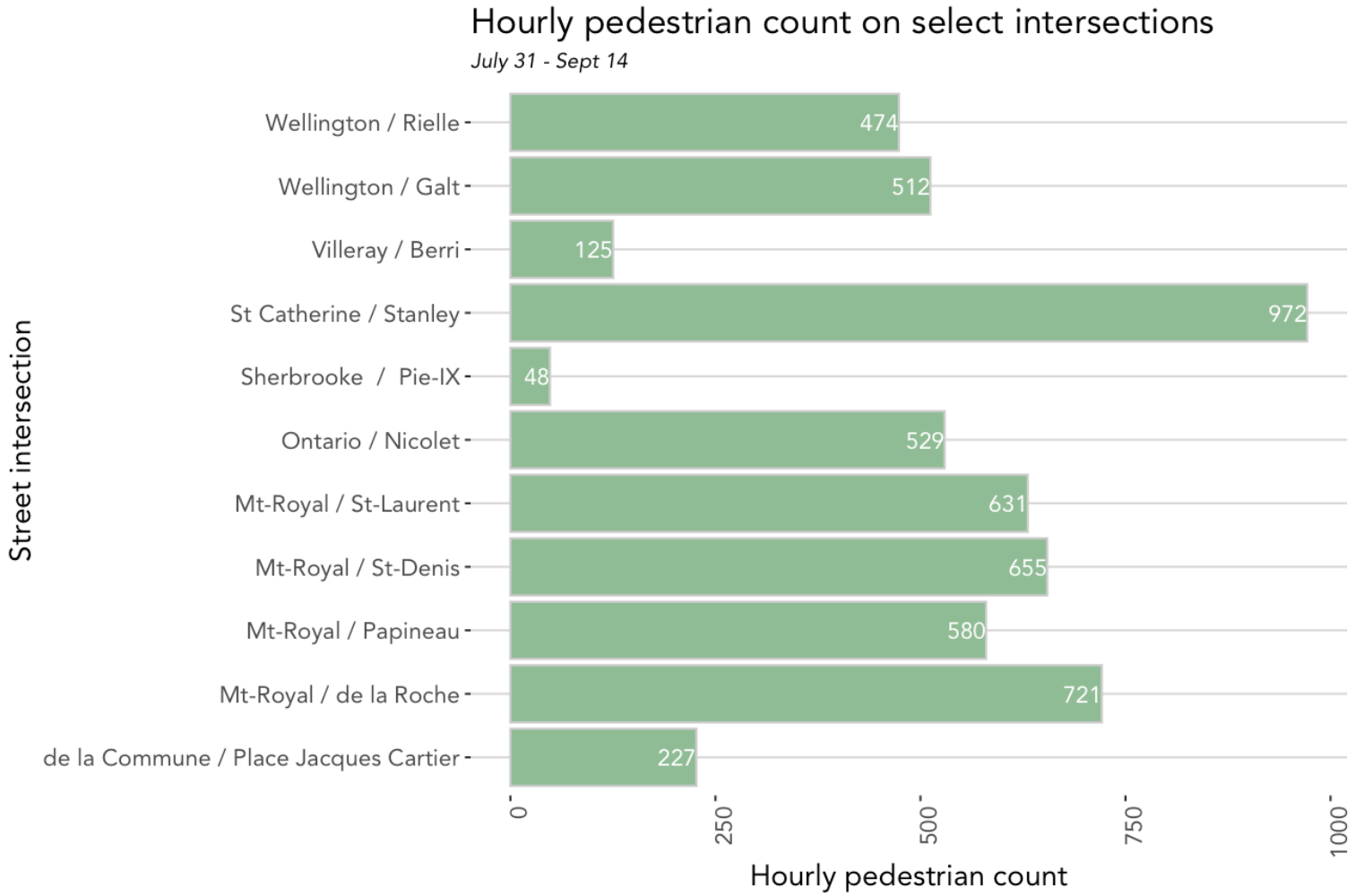


Figure 16 – Hourly pedestrian count on select intersections of pedestrianized commercial streets

Although this data illustrates that Sainte-Catherine Street West was still a popular destination during the pandemic, it is believed to be a significant decrease from pre-pandemic levels, which is to be expected. In 2014, CBRE estimated that around noon, about 3,000 pedestrians were walking each hour on Sainte-Catherine Street West between University and Bleury streets, just east of the study site (Shaffer 2017). With the city's population growth, one can expect that the hourly pedestrian flow rate kept rising until the pandemic hit. When looking at the average hourly pedestrian count by day of the week on the study site between July 31st and September 14th, we observe peak travel times during the evenings after 5 p.m. and during the end of the week between Fridays and Sundays. Mornings on the other hand exhibited very small pedestrian flows (Figure 17).

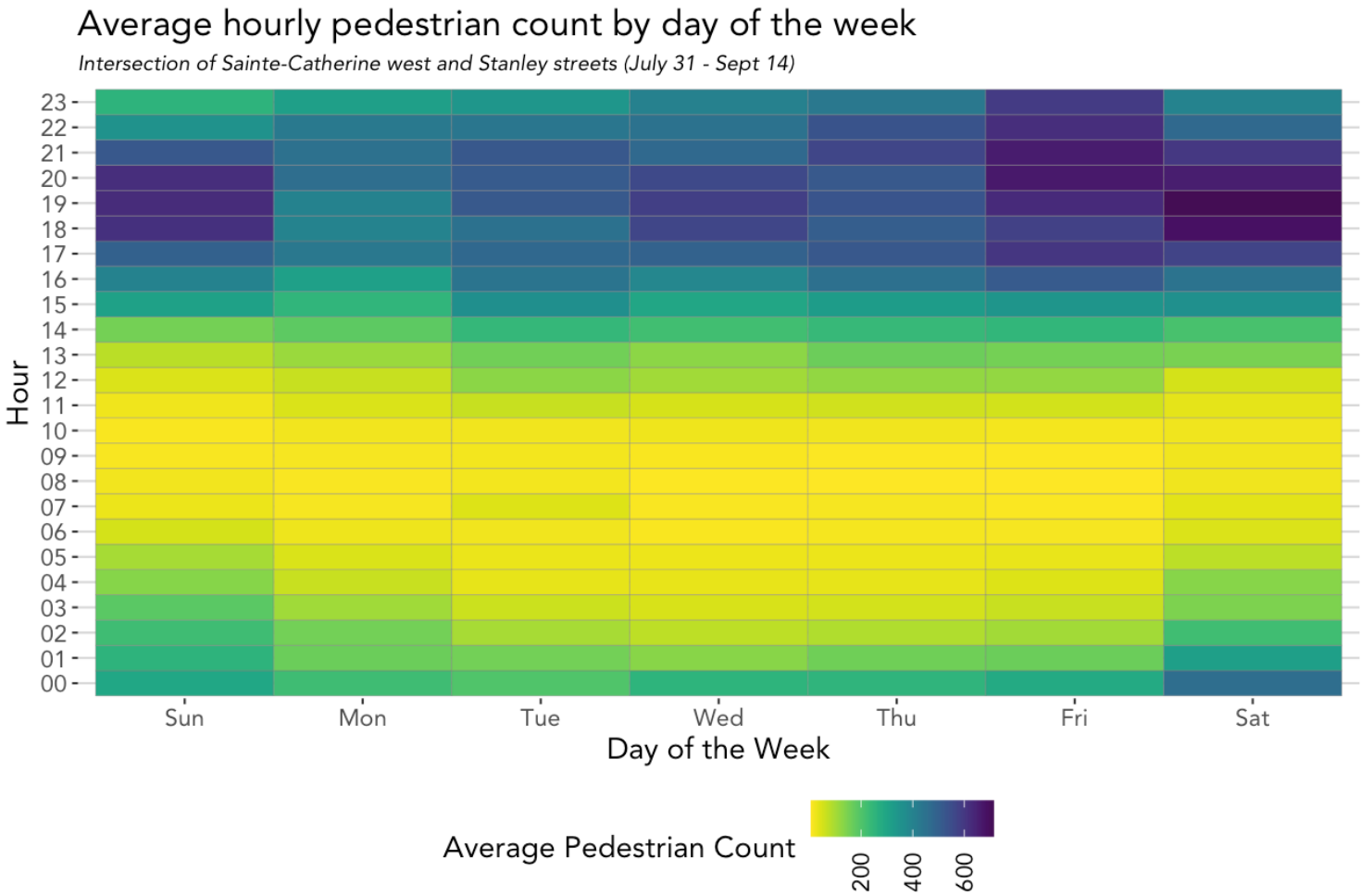


Figure 17 – Average hourly pedestrian count by day of the week on Sainte-Catherine West and Stanley streets

Public Reaction

People

Montréal Centre-Ville conducted a survey of 503 people walking along Sainte-Catherine Street West between August 26 and September 4th to better understand the social acceptability of the project and the profiles and behaviours of its users. 24% of them resided within a 2-kilometre radius of the intersection of Sainte-Catherine and Peel streets. On the other extreme, 16% came from the extremities of the island of Montreal and 12% from outside of the island. Among its findings was the fact that 78% of pedestrians walking on the street had a high appreciation of their visit. The appreciation rate was particularly high for users that arrived by foot or by public transit (84 and 83% respectively). The majority of users that arrived by car still expressed a strong appreciation rate of 68%. Those that appreciated their visit the most based on origin location and age were either residents that lived nearby the site or at the extremity of the island of Montreal (87% appreciation rate for both groups) and young passengers between 15-34 years old (85% appreciation rate). Those visiting from outside of the island and elderly users over the age of 55 had the lowest appreciation rate (61% and 63 % respectively). Overall, 81% of respondents expressed a high satisfaction with the new design of the street, and 80% showed a high appreciation for its animation initiatives.

When asked what visitors enjoyed the most, the two highest ranking answers included animation and ambiance (35% of respondents) and the fact that pedestrianization offered more space (33%). What they enjoyed the least was construction in surrounding areas (39% total, with those arriving by bike being particularly bothered) and the obstacles created for vehicular circulation and finding parking (21%). When asked what would bring them back to visit the street, the two top answers were shopping (34%) and the ambiance provided through animations (29%). It is also interesting to note that while those that arrived on Sainte-Catherine Street West by car spent about twice as much as users that arrived by active or public modes of transportation, the

frequency of trips to the site for active and public transport users was much higher. 56% of pedestrians said they visited the street every day compared to 22% for car users, and up to 29% of car users only visited once or twice a year.

Businesses

Montréal Centre-Ville also surveyed its members. The 101 respondents included retail stores (70%), restaurants (20%), and businesses specialized in professional services (10%). The response within the business community was more mixed and polarized compared to the previous survey. 55% of respondents were either relatively or very satisfied with the intervention (total satisfaction), 42% were relatively or very unsatisfied (total unsatisfaction), and 3% were undecided. We observe what one would expect to find based on the literature: retail shops are more likely to be generally unsatisfied with such interventions (45%) compared to restaurants and professional service companies (35% and 30% respectively). To dig a bit deeper, 55% of respondents were generally satisfied with the partial pedestrianization during the week, 54% with the complete closure of the street during the weekend, 64% with the street design and furniture implemented, and 62% with the animations provided. Once again, we observe that professional services have the most positive view of the elements enumerated above, followed by restaurants, and retail shops with the highest levels of unsatisfaction.

When asked to offer recommendations to improve the intervention, a high percentage of respondents wanted an increase in the number of available parking spots (23%) and vehicular access to the site (23%). Other respondents proposed compromises with a greater supply of free parking in the downtown area (4%), or maintaining the expanded pedestrian corridor while permanently preserving a lane for vehicular circulation and another for temporary parking (4%). 13% of respondents indicated that they would like more activities and animation, such as street sales and food trucks. Certain businesses to the west of the site, in Shaughnessy Village, asked for a more equitable distribution of animation and design elements across the site, feeling that the western portion of the site had been somewhat neglected. Finally, 7% of commercial

respondents wanted to improve the visitor experience by better managing waste, managing noise pollution (music was considered a bit loud by some, and nearby construction noise considered a nuisance), and cleaning the streets more regularly.

Summary

We have seen that the case study site has a diverse commercial composition, is generally well-serviced by multi-modal transportation infrastructure, and is split between two neighbourhoods (Shaughnessy Village to the west and the Golden Square Mile to the east), each with their unique socio-demographic profiles. The commercial vitality of Sainte-Catherine West Street was deeply impacted by covid-19 during Montreal's first wave of confinement, emptied for the most part of its tourists, students, and office staff that were working remotely. The City planned to fully pedestrianize the street during the 2020 summer as a means towards commercial revitalization while allowing for physical distancing of street users. The local CDC proposed an alternative plan that it thought would be more socially acceptable to the local business community, comprising partial pedestrianization between Mondays and Thursdays, and full street closure on Fridays and during the weekends. The street's redesign appropriated two of the street's four lanes to install street furniture, larger terraces, rest areas and small plazas. It also incorporated animations to attract visitors and create a more stimulating environment, comprising music, lights, street art, and creative installations. Despite the pandemic, the site was still a popular destination, attracting both local residents as well as visitors from the extremities of the island and beyond. Peak visiting hours were in the evenings and during the weekends. A survey conducted by Montréal Centre-Ville showed that visitors generally had high levels of appreciation towards the street's temporary redesign and its animation program. In contrast, the business community's opinion of the intervention was more divided. The survey also showed that retail shops had the highest levels of unsatisfaction towards the intervention among the business community, and that the supply of parking and vehicular access to the site were listed as primary concerns by local businesses.

VI. Survey Results and Analysis

I conducted my own survey of storefront businesses on Sainte-Catherine West Street, which most notably asked the respondents questions about the profile of the businesses they work for, their sentiment about the planning and implementation of the intervention, how their sentiment evolved over time, which design elements contributed most positively and negatively to their operations, what specific design or process elements are most likely to increase their buy-in of future pedestrian-friendly street-design transformations, and their suggestions to improve the project should it be proposed again in the future. Responses to questions ranged from multiple choice selections, open-ended short answers, Likert scales, and choice ranking. A total of 30 storefront business on the study site responded to the survey from February to March 2021, representing approximately 15% of total storefront businesses (n = 30).

The survey found that the majority of businesses were unsatisfied with the level of engagement and communication from the authorities in the early stages of planning this intervention. That said, the majority of businesses had an initial neutral stance towards the intervention. However, these neutral feelings were rapidly converted into either positive or negative sentiments, showcasing the polarizing effect that the street's redesign had on the business community. The results suggest that business opinion towards street pedestrianization is not systematically influenced by pre-conceived notions and biases, but in fact may be shaped by the lived experience in the early stages of an intervention's lifecycle. The majority of respondents indicated that on the whole, improvements in process-related elements such as better public consultation and communication strategies were more likely to generate their buy in for future pedestrianization projects compared to design-related improvements. This is especially true for the businesses that had an initial neutral stance towards the project. However, businesses with initial negative feelings towards the intervention said that a design-related improvement (namely preserving one lane for vehicular circulation on a 24/7 basis) would be their top choice towards generating future buy in for commercial street pedestrianization.

Profiles of respondents and businesses

The majority of respondents were business owners (53.3%). The rest were split between managers (33.3%), assistant managers (6.6%) and supervisors (6.6%). All of the respondents were working at their respective companies between May and September 2020 and experienced the pedestrian-friendly street redesign. The majority of businesses were described as being small in size by the respondents (56.6%), while 33% were characterized as medium-sized and 10% large. 76% of businesses were headquartered in Montreal, 3.33% were headquartered elsewhere in the province of Quebec, and 20% were headquartered outside of the province. Finally, the industry type frequency distribution was as follows: 60% in the hospitality industry (restaurant, cafés and bars), 30% in light retail (clothing, accessories, groceries, pharmacies), 6.6% were hair salons, and 3.3% offered professional services.

Survey data limits

Although the sample size of the survey is decent by all means, a larger sample size that is more representative of the commercial profile of the study site would have been preferable. Most notably, businesses in the hospitality industry, namely restaurants, are overrepresented by 32% in the survey results. It is also important to keep in mind that the results are very context-dependent, with covid-19 and the specific commercial profile of Sainte-Catherine Street West having a significant impact on the findings.

Business sentiment and evolution

A reoccurring theme brought up by stakeholders that opposed or complained about Montreal's investments in temporary ATI was the lack of consultation. The survey results show that 84% of respondents felt that the authorities either did not reach out to them at all (47%) or did not reach

out enough (37%). Although it was confirmed by the City and the local CDC that there were no initiatives to exhaustively consult the business community due to the City's perceived need to act rapidly to address public health imperatives in public space, 16% of respondents still felt that the authorities' consultation efforts were sufficient.

The lack of communication was also brought up as a major concern by stakeholders impacted by pedestrian-friendly interventions in Montreal. In relation to Sainte-Catherine Street West's temporary pedestrianization plan, the survey showed that business sentiment about communication efforts showed identical results to that of business sentiment about consultation. Out of the 16% of respondents that were satisfied with the level of consultation and communication, four of them initially had neutral attitudes and one initially had a negative attitude towards the plan as it was announced in late May. While standards and expectations around consultation and communication levels vary from business to business, a substantial majority of respondents were unsatisfied with the level of engagement and communication from the authorities in the early stages of planning this intervention.

A minority of businesses (37%) felt that the implementation of the project created disruptions to their business. 64% of these businesses were in fact restaurants. When asked to describe the specific disruptions that they faced, the main theme that came up was delivery issues, namely for restaurant pick up orders (45%). Other respondents brought up the lack of parking, a slowdown in traffic flow, and a distaste for the aesthetic of the intervention as the disruptions that they faced during the implementation phase.

Contrary to Montréal Centre-Ville's survey results, this survey found that restaurants exhibited more negative attitudes towards the intervention compared to businesses in light retail. 55% of restaurants surveyed had a negative perception of the project in the month of May, with that number rising to 67% at the end of the summer (compared to 11% rising to 33% for light retailers). The high level of negative sentiment stemming from restaurants seems to contravene

the literature on pedestrianization which often positions restaurants as a key sector benefitting from such projects.

Going back to food delivery disruptions, given that food delivery orders may come at any time of the day, practical arrangements typically used to appease concerns tied to the delivery of supplies such as modifying the timing of closure or providing additional loading bays are not a viable solution. It is interesting to think about how changes in our consumption patterns, namely the rise in the number of food deliveries, may negatively impact restaurants' sentiments towards pedestrianization. With many restaurants likely to maintain a hybrid model after the pandemic, with a mix of deliveries and sit-down customers, innovative solutions will need to be identified for pedestrianization and food deliveries to co-exist.

The study was not able to find any pre-existing research on this specific issue, and is an interesting topic to tackle from the perspective of public innovation agencies. Some municipalities are experimenting with sidewalk delivery robots, which could be a potential solution to deliver food to nearby couriers who could have temporary parking reserved at key intersections of a pedestrianized zone. Certainly, other solutions are bound to exist, and will require a certain level of public and political innovation to unearth.

Figure 18 shows the change in business sentiment over time as the intervention was rolled out and matured over the course of the summer. Going back to the literature review section, several studies have indicated that attitudes towards investments in active transportation may have a cycle, with initial negative responses to change followed by an uptick in positive attitudes (Ferster et al. 2020; ElFouly and Ghaly 2017). We do observe some similarities in this case, with Figure 19 showing that positive business sentiment towards the project had the highest growth rate (20%) between May to July/August of any other sentiment.

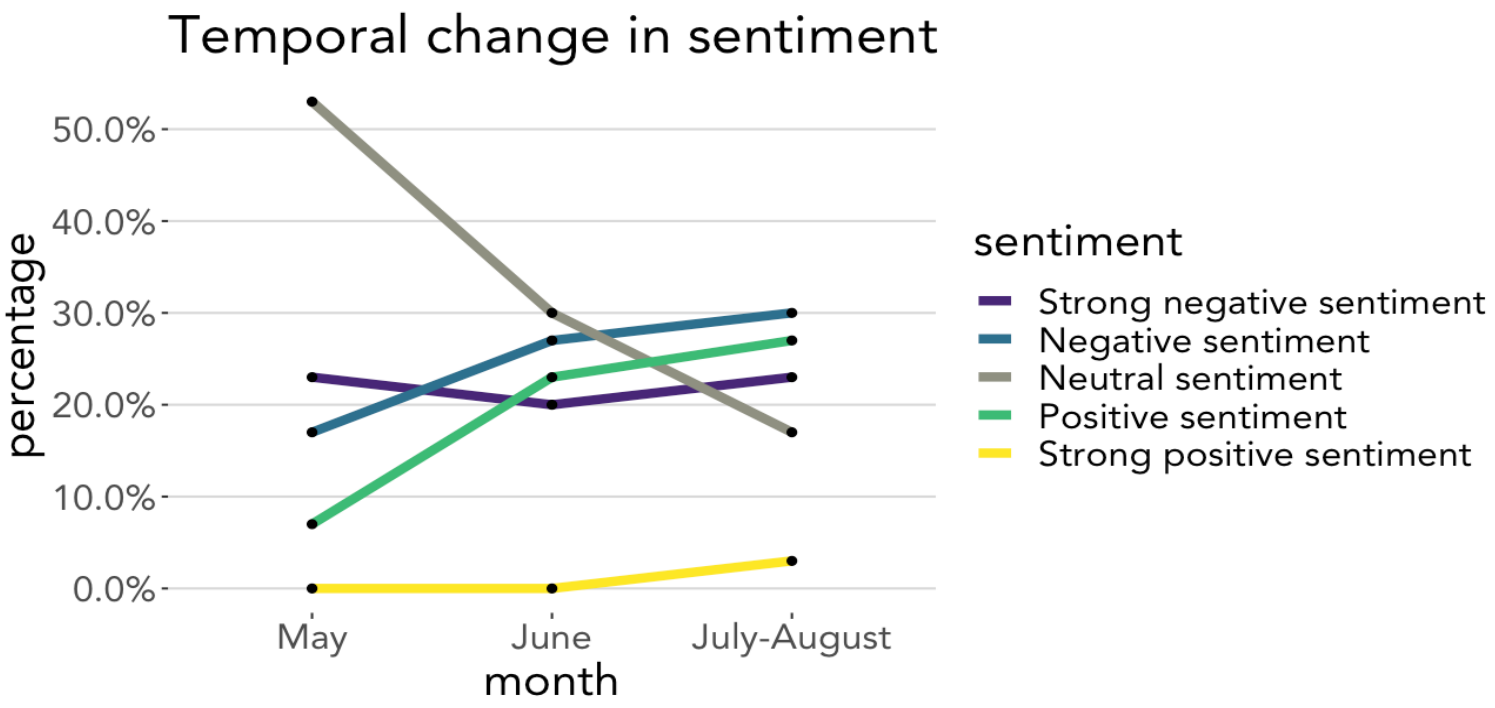


Figure 18 – Temporal change in business sentiment between May and July/August

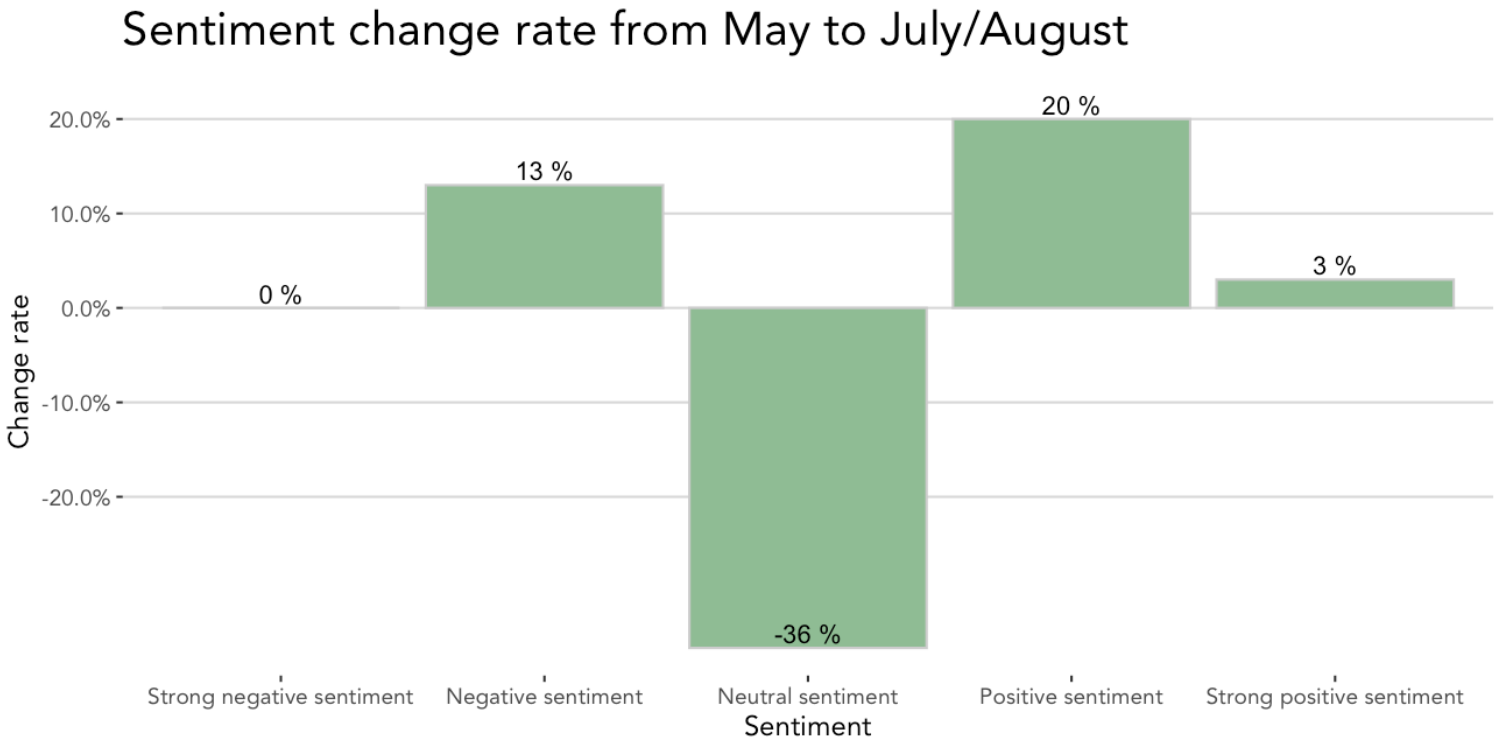


Figure 19 – Business sentiment change rate from May to July / August

It is interesting to note however that the majority (53%) of businesses had an initial neutral sentiment towards the project when it was first announced end of May, with the rest having a predominantly negative or strong negative initial attitude towards the project. The neutral attitudes waned over time (representing only 17% of respondents by the end of the intervention) as they were converted into either positive or negative sentiments, shining light on how the experience had a polarizing impact on the business community. The fact that so many businesses had a neutral sentiment towards the project at first hints at the idea that business sentiment may be more malleable than the literature leads on.

That these neutral attitudes were rapidly converted to either positive or negative sentiments also suggests that opinions may be highly influenced by the lived experience in the early stages of a project, including components related to an intervention's design or planning process. As such, there may be an opportunity to increase early buy-in through improvements in early-stage design or planning processes. The analysis of these results is highly context-dependent. Proposed pedestrianization schemes for commercial streets that are clearly not a good fit for such an intervention will likely exhibit much higher rates of initial negative sentiments. It is also hard to know whether these initial neutral attitudes towards pedestrianization might be tied to the uncertainty caused by covid-19, where a deserted downtown core might cause business owners to be more open-minded towards trying out new ideas. Many articles and opinion papers, perhaps erroneously, posited just the opposite however, claiming that a crisis compounded by uncertainty makes us yearn for a sense of normalcy, and therefore provokes negative reactions to change.

Respondents were also asked which design elements they felt had the most positive and negative impacts on their business operations. Figure 20 illustrates the responses through a word cloud. There was a lack of consensus regarding the impact of street furniture. A total of 8 respondents listed street furniture as a nuisance with an emphasis on tables. The major concern was that they create obstacles to circulation flows. However, a similar number of respondents listed larger terraces specifically and chairs as positive design elements. Other negative design

elements that were brought up were the cement blocks (in line with the CDC's comments and the importance of the design's aesthetic), general street closure, the lack of parking, and the absence of benches. Numerous respondents listed music and lights as a positive design element as they contributed towards a positive ambiance. Interestingly enough, some respondents also included the lack of light as a nuisance, while others indicated a significant distaste for all design elements except for music and lights. No respondent viewed lighting as a negative design element. However, a few did list music as a nuisance, in line with the CDC's survey where some businesses were concerned by the level of noise pollution. In essence, while there is disagreement on certain design elements, there seemed to be a widespread appreciation for lighting and music (with a few exceptions for the latter), showing a preference for the design elements that set an ambiance and do not create obstacles to movement. These design elements could be prioritized for zones where pedestrianization is feasible but local businesses remain skeptical about its benefits and concerned about movement flows (pedestrian, vehicular or otherwise).

Word Cloud
Perception of design elements

Negative perception

Positive perception

Figure 20 – Word cloud: sentiment towards specific design elements

Design, process, and buy-in

The central question of this study is whether improvements in certain design or process-related elements in the early stages of planning and implementing pedestrianization schemes might increase the likelihood of local businesses buying into such interventions, assuming the commercial profile of the street and surrounding factors make it a good candidate for pedestrianization in the first place. As we have already seen in sections above, complaints about the lack of consultation and communication stopped numerous interventions in their tracks and led to multiple investigations from the city's Ombudsman. The uniform store in Little Italy, angered at the process and lack of consultation, suggested alternative design scenarios to full-time pedestrianization such as closing the street to cars only during times of peak pedestrian traffic (Corriveau 2020b). The owner of Joe Beef on Notre Dame street tweeted that he is open to change, but only if the community is involved. The survey therefore asked the respondents to rank seven elements in order of (1) which one is most likely to increase their buy-in of pedestrian-friendly street-redesign transformation, to (7) which one is least likely to increase their buy-in.

Table 5 – Choice Ranking

THEME	ELEMENT	Choice 1	Choice 2	Choice 3	Choice 4	Choice 5	Choice 6	Choice 7
PROCESS	Better consultation	**40%**	16.6%	6.6%	**26.6%**	6.6%	3.3%	0%
	Better communication	0%	**43.3%**	**26.6%**	16.6%	3.3%	10%	0%
	Mechanisms to recommend changes as the project evolves	10%	6.6%	**26.6%**	16.6%	**26.6%**	6.6%	6.6%
DESIGN	Better animation	10%	10%	13.3%	**26.6%**	**20%**	3.3%	16.6%
	Maintain one lane for vehicular access at all times	**26.6%**	3.33%	10%	6.6%	**23.3%**	16.6%	13.3%
	Pedestrianize only on certain blocks	3.3%	10%	6.6%	0%	6.6%	**26.6%**	**46.6%**
	Pedestrianize only during peak hours (evenings)	10%	10%	10%	6.6%	13.3%	**33.3%**	16.6%

Table 6 – Average choice rank by element

THEME	ELEMENT	AVERAGE CHOICE RANK
PROCESS	Better consultation	2.53
	Better communication	3.1
	Mechanisms to recommend changes as the project evolves	3.9
DESIGN	Maintain one lane for vehicular access at all times	4
	Better animation	4.13
	Pedestrianize only during peak hours (evenings)	4.7
	Pedestrianize only on certain blocks	5.63

Anova test: $F = 9.516$; $p < .001$

As per the above tables, the elements to choose from included 1) better consultation, 2) better communication, 3) mechanisms to recommend changes as the project evolves, 4) maintaining one lane for vehicular access at all times, 5) better animation, 6) pedestrianizing only during peak hours, and 7) pedestrianizing only on certain blocks. The elements were categorized under two themes: the first three under the "process" theme, and the last four under the "design" theme. As seen in table 5 and 6, we observe that the choice rankings vary greatly across elements in a manner that is statistically significant (anova test: $F = 9.516$; $p < .001$). Specifically, process-related elements were much more likely to be chosen in the top choices over design-related elements. Process-related elements represent about 60% of choices 2 to 4 despite the fact that design-related elements have one additional element to choose from. Design-related elements were chosen in greater quantity in the three last choices. For the first choice, there is a 50/50 split between both themes, but improving consultation stands out as the top element that would likely increase the buy in of local businesses towards pedestrianization schemes with 40% of the votes.

When looking at the average choice rank by element, the process-related elements outperform all of the design-related elements, with better consultation taking top place with an average score rank of 2.53, followed by better communication with an average score rank of 3.1. The best performing design-related element was maintaining one lane for vehicular circulation at all times (average choice rank of 4) followed by better animations (average choice rank of 4.13). When aggregating the elements by theme, we observe that the average choice rank of the process theme as a whole significantly outperforms that of the design theme, as seen in Table 7 below.

Table 7 – Average choice rank by theme

THEME	PROCESS	DESIGN
AVERAGE CHOICE RANK	3,17	4.61

Anova test: $F = 30.19$; $p < .001$

At first glance, the data suggests that improvements in process elements, with an emphasis on early consultation and robust communication, are more likely to generate local-business buy-in of pedestrian-friendly street transformations compared to improvements in design elements. When only observing the first choice selected by respondents, we notice however that businesses with an initial negative sentiment towards the project were twice as likely to select a design-oriented element compared to a process-oriented one. The number is only slightly lower for businesses with a negative sentiment towards the project at the end of its lifecycle, as they are 1.6 times more likely to choose a design-oriented element as their first choice. This shows that design elements are a key concern for businesses with negative attitudes towards pedestrianization, and that modifications to the design with a heavy emphasis on maintaining one lane for vehicular circulation 24/7 might be the best way to appease them. These respondents often listed music and lights as a positive design element of the project, while the complete street closure and cement blocks were commonly perceived as negative features. In contrast, respondents who had an initially neutral stance in May were 1.6 times more likely to

choose a process-related element than a design-related one as a first choice. On the whole, improvements in process-related elements ranked much higher as a potential catalyst towards greater business buy in for pedestrianization schemes, but improvements in design-related elements were a more popular first choice for businesses with negative sentiments towards pedestrianization.

The survey also asked the respondents how likely they were to buy in to future pedestrian-friendly street transformations if their top choices were met. 46.6 % responded that they would likely 'buy in' to future pedestrianization, 36.6% said that they were undecided, and 16.6% said that it was unlikely that they would ever support such interventions. This suggests that businesses' attitudes towards pedestrianization are not necessarily set in stone, and may be influenced by changes in processes or design during the early stages of planning. In fact, 25% of businesses with a general negative attitude towards the project at the end of its lifecycle indicated that they would likely buy in to pedestrianization if their top choices were met, with another 43.75% remaining undecided. Naturally, one may question whether all respondents were entirely sincere in their response to this question, especially for those with negative attitudes towards the project. It is useful then to cross-compare the answer to their likelihood to buy into future pedestrianization if their top choices are met and the recommendations for improvement that they suggested if the project were proposed again in 2021.

Those that indicated a high unlikeliness of buying in to future pedestrianization if top choices were met focused predominantly on a better management of parking supply and maintaining at least one lane for vehicular circulation and another for parking at all times. While some of the respondents who listed that they were undecided about buying in to future pedestrianization in response to design or process improvements also brought up maintaining one lane for vehicular circulation, a greater diversity of suggestions emerged. These included decreasing the payment fee for terraces, more animation and weekly events to draw crowds, and more signage to control pedestrian flows. One respondent simply condoned out of the box and innovative solutions, keeping it rather vague but showing an openness to new ideas. Those that indicated that they

were likely to buy in to pedestrianization if their top choices were met had a variety of responses. A few did bring up that the parking problem needed to be solved, and that it may be better to maintain one lane for vehicular circulation, or at least to only pedestrianize blocks that are better suited for pedestrianization. A few respondents wanted more pedestrianization on a 24/7 basis. Other suggestions included more flexible store opening hours, allowing food trucks, more chairs and tables, and ensuring safety on the street. What really stood out is that better communication was brought up by several respondents in the "likely" category. One suggested that the authorities should communicate more with local businesses for them to better understand the purpose and potential impact of the intervention, whereas another one wanted clearer communication regarding downtown parking alternatives around the site. A robust and inclusive communication strategy should certainly be central to any proposed pedestrianization scheme. Maintaining one lane for vehicular circulation came up often as well on the whole. While some of the respondents bringing up this design option may have a preference for no pedestrianization at all, their comments suggest that such an arrangement is socially acceptable to them, and certainly finds some common ground between the needs of various stakeholders. As we have already seen in the literature review, Moosajee suggested that the most successful pedestrianization schemes will allow some level of vehicular traffic to pass through (Moosajee, 2009), at least at first.

Summary

To sum up, the survey results show that the majority of businesses on Sainte-Catherine West Street had an initial neutral stance towards the pedestrianization project as it was announced during the month of May. These neutral sentiments were quickly converted to positive or negative feelings as the project evolved. This suggests that initial business sentiment towards pedestrianization is not systematically set in stone, nor is it always influenced by pre-conceived biases about the commercial impact of pedestrianization. That initial business sentiment towards pedestrianization may be shaped by the business community's lived experience in the early

stages of planning and implementing a project hints that it may be possible to generate greater initial buy in from businesses through improvements in process or design-related elements.

The majority of respondents expressed that they were unsatisfied with the level of consultation and communication from the project's governing bodies. In the same vein, the majority of respondents indicated that on the whole, improvements in process-related elements such as better public consultation and communication strategies were more likely to generate their buy in for future pedestrianization projects compared to improvements in design-related elements. This is especially true for the businesses that had an initial neutral stance towards the project. Effective engagement and communication strategies seem to be crucial for appeasing some of the fears that certain business stakeholders might hold towards pedestrianization schemes, and may at the very least permit partial iterations of pedestrianization to move forward that find common ground between the needs of pedestrians, car users, and local businesses. The respondents with initial negative feelings towards the intervention were more likely to select a design-related improvement, with a preference for preserving one lane for vehicular circulation on a 24/7 basis, as their top choice towards generating future buy in of pedestrianization. Partial pedestrianization schemes which preserve one lane for vehicular circulation may not be perceived as ambitious enough for pedestrianization enthusiasts. However, the compromise creates an opportunity for a more equitable distribution of public space between pedestrians and automobiles that is more socially acceptable to the local businesses that are fearful of pedestrianization or unconvinced by its potential benefits. This type of progress has the potential to lead to bolder pedestrianization schemes over time. On the other hand, a complete lack of compromise might in certain cases completely shut down pedestrianization schemes on commercial streets, and maintain the status quo of automobiles dominating commercial public space.

VII. General Discussion

While keeping the particular context of the study site and covid-19 in mind, the survey data suggests that it is possible to appease initial business resistance or skepticism towards pedestrianization schemes by improving some process and design-related elements in the early stages of planning and implementation, namely better consultation and communication processes and prioritizing partial pedestrianization over complete street closures from a design standpoint. The following section will make parallels between these findings and larger planning questions, such as the role of drawing on collective knowledge to rethink our streets, whether better consultation necessarily leads to more equitable outcomes, and the debate around whether planners should consult first and act later, or act quickly and improve over time.

While some businesses may view consultation as a means towards obstructing pedestrianization schemes (and this without any consideration of the larger context and the variety of interests that exist in public space), covid-19's slow street movement showed us that a lack of consultation and effective communication may be even more likely to bring pedestrianization projects to a halt. I argue that communication has a key role in appeasing fears surrounding pedestrianization, while consultation should be viewed as an opportunity to improve projects by drawing on valuable stakeholder input (which requires giving a voice to a broad spectrum of viewpoints) while building trust. In no way is consultation synonymous with referendum however, and governing bodies acting in the name of the public interest should have the final say in the decision-making process while remaining accountable for their decisions. Further, I argue that while government must act swiftly in an emergency situation, it should not come at the expense of effective emergency response policies that are context-appropriate and generate trust and buy in from local communities. Depending on the crisis scenario, clear communication and engagement processes may have great value in improving the substance and effectiveness of response and recovery measures. I also claim that while tactical urbanism distinguishes itself from traditional planning by its iterative learning process that tests out small-scale and modifiable interventions

prior to scaling up, tactical interventions still need to adopt a reasoned and responsible approach, respond to reel needs identified by communities, and incorporate good design practices that generate just enough initial buy in from citizens for them to envision the potential of what is being proposed.

The role of consultation

Improving consultation received the top average score rank in the survey in terms of the element that is most likely to increase the buy in of local businesses towards future pedestrianization projects. Some might view this skeptically, as it may be an opportunity for NIMBYism to occur ("not in my back yard"), where businesses use consultation as a justification for pre-existing hostility to pedestrianization. While this fear is not entirely unfounded, the summer of 2020 showed Montreal and other cities that the absence of consultation is just as likely to stop projects from moving forward. Trust breaks down and feelings of resistance tend to grow when stakeholders are excluded from the planning process. Further, there are several examples taken from media sources presented in this research where businesses complaining about the lack of consultation expressed that other alternatives could have been proposed through a consultation process, such as partial pedestrianization or pedestrianizing only at certain hours or on certain blocks. The survey results also show that certain businesses who don't hold pedestrianization with high esteem seemed willing to accept partial pedestrianization as a suitable and socially acceptable compromise. While perhaps not ambitious enough for pedestrianization enthusiasts, a partial pedestrianization is certainly more preferable for active transport users compared to no pedestrianization at all, and may offer a pathway towards more ambitious projects in the future. Partial pedestrianization gets us closer to Gemzoe and Gehl's reference of the compact city where meeting places, places of business, and places for traffic coexist (Gehl and Gemzoe 2000).

It is also important to discuss how planners should view the role of a public consultation. A public consultation is not a referendum. Decisions made through aggregative democratic procedures do not systematically lead to fair outcomes, and as stewards of the public realm, cities must take into consideration both the commercial imperatives of commercial streets, but also the imperatives of other stakeholders such as pedestrians. The role of public consultation is to have an inclusionary process that builds trust, and that draws on collective knowledge to ensure that interventions are well designed and adapted to the local reality. By excluding local stakeholders from the planning process altogether, interventions often end up being sub-standard and fall short of meeting local needs due to a poor understanding of local factors. While some businesses will certainly bring a NIMBY mentality towards consultation, others have a lot of valuable input to provide, which speaks to the importance of finding ways to engage with as many stakeholders as possible to include a diversity of viewpoints instead of only amplifying the "loudest voices in the room". The trust that comes with inclusive planning is also a key factor towards consultation being a powerful tool towards appeasing initial business tension towards street transformations and redesign.

Although consultation is primarily the responsibility of the city, we must ask ourselves whether local businesses should be more proactive in facilitating communication channels for consultation with governing bodies if it matters to them so much, especially with the City and CDCs having limited resources and staff. In fact, the Montréal Centre-Ville employee explained that it was able to easily consult its members on Peel street for its 2020 temporary pedestrianization precisely because its members had previously formed their own organization and board to plan for the Formula 1 event which entails closing down the street to vehicular circulation for a weekend of festivities. One strategy for successful commercial street pedestrianization may be to start gradually by organizing small events, similar to the Gay games in the Village or Formula 1 on Peel Street, and to encourage local businesses to form their own associations which can streamline communication channels for consultation between local businesses and governing bodies.

Is it possible to consult during a crisis?

Although cities should find innovative ways to streamline consultation processes when appropriate, consultation nonetheless does takes time. This brings up the larger question as to whether there is a place for consultation during a crisis or emergency situation. Typically, the answer is no. While not everyone will systematically agree on the appropriate response measures when tangible disasters such as floods or earthquakes occur, there is generally a certain level of consensus that government must act swiftly to conduct search and rescue operations and provide shelter and resources to victims. Covid-19 however is a multi-dimensional crisis touching a variety of issues (physical health, mental health, job loss, policing, etc.) that disproportionately impact certain groups. There is no consensus on the best strategy for mitigating the virus while ensuring that people's different needs are met. In response to the implementation of slow streets in North America, a few news articles and opinion pieces pointed out that planners need to have more nuanced discussions as to who benefits and who is forgotten in these street redesign interventions (Bliss 2020; Walker 2020).

The Bliss article quotes Aidil Ortiz, a social worker in Durham, North Carolina, as saying: "I knew if slow streets were implemented without dialogue and consent and co-ownership, people would resent how it unfolded, and it'd become another example of how some people matter and others don't." In response to community resistance around pedestrianization schemes, Ortiz pressed the government to review their process, stressing that slow adoption could be a virtue, as rigorous community outreach is key towards ensuring that interventions are adapted to the local reality and gains social trust and acceptability. The city of Durham eventually found success by listening, partnering with community-based organizations, and responding. Taking the extra time, even during a global pandemic, allowed projects to better serve the needs of local communities. The City of Oakland, an early adopter of slow street programs, also changed its playbook as it faced community resistance. Instead of terminating the program, they revised it

by working with local community groups, and implemented a process through which slow streets would be selected by working with groups.

It seems that the 2020 "covid-19 slow street" initiatives, especially in North America, can teach us a lot in terms of appropriate planning processes in a pandemic situation and how it relates to re-thinking the streets and our relationship to them. The need for government to act swiftly in a crisis situation should not come at the expense of effective emergency response policies that are adapted to the local context and generate trust and buy in from local communities. Clear communication and engagement processes still have value in a global pandemic both from an ethical and substantive standpoint, and should not systematically be sidelined after declaring a state of emergency.

Consult first and act later, or act quickly and improve over time?

One major question coming out of the planning field is whether planners should take the time to consult and plan carefully prior to implementing an intervention, or alternatively act quickly, and improve over time through feedback mechanisms. The latter scenario has been more closely associated with tactical urbanism, defined by some as being all about action and 'Planning-by-Doing'. This is a rather narrow definition of tactical urbanism. While it does involve short-term, low-cost, and scalable interventions that aim to catalyze long-term change, community-advocacy and participatory-advocacy groups highlight that it should be a city and citizen-led initiative. Tactical urbanism should not be viewed as synonymous with lack of citizen engagement and well-designed plans. What distinguishes tactical urbanism from traditional planning is its iterative process, allowing planners or citizens to test, experiment and learn from the implementation of small-scale and reversible interventions that may be gradually improved prior to scaling up. That

said, successful tactical interventions still need to adopt a reasoned and responsible approach, respond to reel needs identified by communities, build trust, and incorporate good design practices that generate just enough initial buy in from citizens for them to envision the potential of what is being proposed. It is certainly possible to find a middle ground between a low-cost tactical plan that is not perfect from the get go but that is still well thought-out and takes the time to implement it appropriately.

According to the literature review, commercial success of pedestrianization is often contingent on various factors including well-designed streetscape improvements (Litman 2004). The study also found that numerous businesses on Sainte-Catherine Street West complained about the cement blocks and orange cones which initially gave the intervention an unfinished feel and the aesthetic of a construction site. In the survey results, local businesses ranked improvements in consultation and communication higher on average compared to having the ability to recommend changes to the project over time as a potential catalyst towards increasing their buy in of future pedestrianization projects. This suggests that local businesses are keen on a well-thought-out intervention from the get go. Businesses with an initial neutral attitude towards interventions may quickly make up their opinion based on their lived experience. As such, tactical forms of urbanism surrounding pedestrianization schemes should find a balance between low-cost experimentation, well thought-out design plans, and adherence to inclusionary community planning practices.

The role of communication

Inclusive community planning, building trust, appeasing fears surrounding pedestrianization, and planning for well-thought-out interventions adapted to the local context all rely on robust communication. This was one of the key takeaways from the ombudsman's report. The lack of a robust awareness and communication campaign created chaos and confusion. The interviewee at the City's Planning and Mobility Services did recognize that the communication strategy

should have done a better job of explaining the logic and reasoning behind the emergency measures being put in place, and believed that more clarity in this regard could have appeased the public. Although the communication strategy intentionally wanted to avoid being alarmist, it backfired in many ways because it diminished the perception of risk tied to covid-19. The interviewee also astutely pointed out that negative sentiment is exacerbated when there is an abrupt chock to the status quo without understanding the reasoning behind it. Further, the employee at Montreal Centre-Ville suggested that if there is a strategy that clearly explains the plan, what type of design elements will be incorporated, what type of animations will occur, and how they will plan to ensure multi-modal access, then sentiments of fear or panic may be quashed. Some of the respondents' suggestions for future improvements echoed just this, with several demands for more clarity and better communication surrounding the impact of the plan and alternatives for parking around the site. A few more weeks dedicated to developing a more robust design and communication strategy coupled with some community engagement might have gone a long way towards quashing local fears within the business community, and perhaps more commercial street interventions would have come to life in the city, even if they were just partial pedestrianization schemes.

VIII. Conclusion

This study aims to develop a deeper understanding of how business sentiment towards proposed pedestrianization schemes may be influenced by design and process-related elements in the early stages of planning and implementation of such interventions.

A growing number of urban residents are seeking commercial street experiences that are attractive, safe, comfortable and centered around people. Numerous studies exist highlighting the economic benefits of pedestrianization for local businesses. Commercial benefits are not guaranteed however, as not all commercial streets are well adapted to accommodate such projects. The literature posits that successful commercial street candidates will typically have a sufficient population density within walking distance of the site, accessibility by different means of transportation, an appropriate mix of land use throughout the site, well-designed streetscape improvements, and a commercial profile composed of a high proportion of bars and restaurants and a low proportion of heavy good stores. However, even with commercial streets that meet a good proportion of this criteria, local business owners may resist pedestrianization interventions for fear that their commercial imperatives will be at risk.

The analysis of the temporary summer 2020 pedestrianization of Sainte-Catherine Street West, Montreal's main commercial arterial, brings to light that these fears may not be set in stone as some of the literature suggests, and may be appeased through improvements in design and process-related elements in the early stages of planning. Specifically, local businesses placed significant importance on improvements in consultation and communication processes as a means towards increasing their likelihood of buying in to such schemes. The ability to recommend changes as the project evolves was a less popular choice, indicating that tactical forms of urbanism should still ensure that a well-designed plan is implemented from the get go, and that the plan's objectives and potential impact are clearly communicated.

Further, businesses with an initial negative sentiment towards the project were more likely to choose a design-related element as their preferred choice towards increasing their buy in for future pedestrianization, with a strong interest in preserving at least one lane for vehicular circulation on a 24/7 basis. These respondents also tended to condone music and lights as positive design elements over street furniture. Design elements and process elements go hand in hand of course. Pedestrianization comes in all sorts of different shapes and sizes, and consultation may be harnessed as a tool to understand what design configurations are socially acceptable. Lack of parking is often brought up as a source of business resistance to pedestrianization, and some businesses in the study suggested that better communication around parking availability around the site would be extremely beneficial. In Montréal Centre-Ville's most recent consultation of its members in order to prepare for 2021, several businesses suggested that free parking should be offered around the site during peak visit hours, that the City should boost awareness campaigns about its mobile app which gives information about available parking, and that the application's technical configuration should be modified to show available parking in real-time. The case study also brings to light that restaurants may face some challenges in the face of future pedestrianization as the number of food deliveries are expected to rise. Innovative ideas will be necessary to find a balance between pedestrianization schemes and the need for restaurants to deliver their food.

As Montreal prepares for another wave of pedestrianization during the summer of 2021 on several commercial streets, many of the CDCs, including Montréal Centre-Ville, have taken the time to consult their members and listen to their suggestions and needs. The study site is expected to be pedestrianized again according to the employee working at Montréal Centre-Ville, but with a more flexible approach and spatial nuances involving more intense pedestrianization in the Golden Square Mile, and partial pedestrianization in Shaughnessy Village with a lane for vehicular circulation at all times, including weekends.

This research suggests that in addition to demographic factors, multi-modal connectivity factors, commercial street composition, and well-thought-out design and animations, successful

commercial pedestrianization schemes require robust engagement and communication strategies. While this might seem like common sense, the study hints that engagement and communication strategies are in fact crucial towards appeasing some of the fears that certain business stakeholders might hold towards pedestrianization schemes, and may at the very least permit partial iterations of pedestrianization to move forward that find common ground between the needs of pedestrians, car users, and local businesses. The study's context is very specific, both in terms of Sainte-Catherine Street West's commercial composition and surroundings, and the covid-19 context. It is the hope that this study encourages academics to further explore this topic within different contexts. We must explore the nuances that exist surrounding commercial street pedestrianization, digging beyond the mainstream narrative that local businesses concerned by vehicular circulation and access to parking are rigidly opposed to all forms of pedestrianization, and taking a closer look at the early stages of planning and implementation as opposed to simply comparing an intervention in the before and after stages. This is a call to action to be creative, open-minded, and draw on collective knowledge to transform our streets in a more equitable manner, and explore compromises between the various imperatives that exist in public space.

IX. Bibliography

AFP - RELAXNEWS. 2020. "'Tactical Urbanism' Is the Term to Know When the Topics of Cycling Lanes and Parking Space Repurposing Come Up." *AFP - RELAXNEWS*, 2020. https://technology.inquirer.net/105046/tactical-urbanism-cycling-lanes-and-parking-space-repurposing.

Agence QMI. 2020. "La piétonnisation saisonnière de la rue Sainte-Catherine va de l'avant." 24 heures. May 11, 2020. https://www.24heures.ca/2020/05/11/la-pietonnisation-saisonniere-de-la-rue-sainte-catherine-va-de-lavant.

Archyde. 2020. "The Chamber of Commerce Recommends the Pedestrianization of Rue Sainte-Catherine." *Archyde*, June 4, 2020. https://www.archyde.com/the-chamber-of-commerce-recommends-the-pedestrianization-of-rue-sainte-catherine-coronavirus/.

Bliss, Laura. 2020. "The Swift, Disruptive Rise of 'Slow Streets.'" *Bloomberg CityLab*, 2020. https://www.bloomberg.com/news/articles/2021-01-06/the-swift-disruptive-rise-of-slow-streets.

Brambilla, Roberto, and Gianni Longo. 1977. *For Pedestrians Only: Planning, Design, and Management of Traffic-Free Zones*. Whitney Library of Design.

Cardinal, François. 2020. "La mairesse est dans sa bulle." *La Presse*, September 2, 2020, sec. Éditoriaux. https://www.lapresse.ca/debats/editoriaux/2020-09-02/la-mairesse-est-dans-sa-bulle.php.

CBC News. 2020a. "Valérie Plante Senses 'big Gap' between Media Coverage and How Residents Actually Feel about Bike Paths." *CBC*, September 4, 2020. https://www.cbc.ca/news/canada/montreal/montreal-valerie-plante-daybreak-bike-paths-1.5712254.

———. 2020b. "Borough Councillors Vote to Remove Terrebonne Bike Path in NDG | CBC News." *CBC News*, September 9, 2020. https://www.cbc.ca/news/canada/montreal/terrebonne-bike-path-1.5717086.

Corriveau, Jeanne. 2020a. "La rue Sainte-Catherine Ouest sera réservée aux piétons la fin de semaine cet été." *Le Devoir*, 2020. https://www.ledevoir.com/politique/montreal/579255/la-rue-sainte-catherine-ouest-sera-reservee-aux-pietons-la-fin-de-semaine-cet-ete.

———. 2020b. "L'abandon de la piétonnisation divise les commerçants dans la Petite-Italie." Le Devoir. 2020. https://www.ledevoir.com/societe/transports-urbanisme/583070/montreal-l-abandon-de-la-pietonnisation-divise-les-commercants-dans-la-petite-italie.

———. 2020c. "Rosemont-La Petite-Patrie ne piétonnisera pas ses artères commerciales." Le Devoir. 2020. https://www.ledevoir.com/politique/montreal/580432/rosemont-la-petite-patrie-ne-pietonnisera-pas-ses-arteres-commerciales.

Crawford, Amy. 2020. "The Coronavirus Shows It's Time to Make Cities Less Car-Centric." *Chicago Daily Herald*, 2020.

CRE. 2020. "Un premier bilan des Voies actives sécuritaires encourageant." 2020. https://cremtl.org/communiques/2020/un-premier-bilan-voies-actives-securitaires-encourageant.

CTV News. 2020. "Montreal Declares Local State of Emergency amid COVID-19 Pandemic." *CTV News*, March 27, 2020. https://montreal.ctvnews.ca/montreal-declares-local-state-of-emergency-amid-covid-19-pandemic-1.4871544.

Cyr, Guillaume. 2020. "Montréal-Nord : Des Citoyens Font Démanteler Une Piste Cyclable." *Le Journal de Montréal*, 2020. https://www.24heures.ca/2020/08/18/montreal-nord-demantelera-une-piste-pandemie.

ElFouly, Heba Assem, and Aly Abdel-Gawad Ghaly. 2017. "The Perceived Impact of Pedestrianization on Local Businesses in Al-Muizz Egypt: A Case Study." *International Journal of Development and Sustainability*.

Embarq Turkiye. 2013. "The Pedestrianization of Istanbul's Historic Peninsula: Perspectives from Local Businesses." Embarq Turkiye.

Ferraris, Florence Sara. 2016. "Une piétonnisation en marche." *Le Devoir*, 2016. https://www.ledevoir.com/societe/transports-urbanisme/474704/montreal-une-pietonnisation-en-marche.

Ferster, Colin, Karen Laberee, Trisalyn Nelson, Calvin Thigpen, Michael Simeone, and Meghan Winters. 2020. "From Advocacy to Acceptance: Social Media Discussions of Protected Bike Installations." *Urban Studies Journal Limited*.

Fournier, Éloi. 2020. "La rue Fleury Ouest sera piétonnière dès la fin juin ; La Promenade s'est prononcé contre." *Journaldesvoisins.com*, June 5, 2020. https://journaldesvoisins.com/la-rue-fleury-ouest-sera-pietonniere-des-la-fin-juin-la-promenade-sest-prononce-contre/.

Gehl, Jan. 2010. *Cities for People*. Island Press.

Gehl, Jan, and Lars Gemzoe. 2000. *New City Spaces*. The Danish Architectural Press.

Goudreault, Zacharie. 2020. "Sainte-Catherine piétonne entre Atwater et Papineau cet été?" *Journal Métro*, June 3, 2020. https://journalmetro.com/actualites/montreal/2457891/sainte-catherine-pietonne-entre-atwater-et-papineau-cet-ete/.

Hall, Peter, and Carmen Hass-Klau. 1985. *Can Rail Save the City?:The Impacts of Rail Rapid Transit and Pedestrianisation on British and German Cities*. Aldershot, Hants: Gower.

Hanes, Allison. 2020. "Rollout of Cycling Lanes Has Been Anything but Smooth." Montrealgazette. 2020. https://montrealgazette.com/opinion/columnists/allison-hanes-rollout-of-cycling-lanes-has-been-anything-but-smooth.

Hass-Klau, Carmen. 1993. "A Review of the Evidence from Germany and the UK." *Transport Policy*, (1): 21-31.

Ibraeva, Anna. 2014. "Pedestrian Priority Zones in the Context of Urban Mobility and Valorization of Public Space."

Kumar, Santosh, and William Ross. 2006. "Effects of Pedestrianization on the Commercial and Retail Areas: Study in Kha San Road, Bangkok,." *World Transport Policy & Practice*, Vol. 13: 38–50.

Lauzon, Véronique. 2020. "Valérie Plante investie «à 100 milles à l'heure» dans la piétonnisation." *La Presse*, June 22, 2020, sec. Grand Montréal. https://www.lapresse.ca/actualites/grand-montreal/2020-06-22/valerie-plante-investie-a-100-milles-a-l-heure-dans-la-pietonnisation.

Lepage, Guillaume. 2020. "Le réaménagement de la rue Notre-Dame Ouest suscite la grogne." *Le Devoir*, 2020. https://www.ledevoir.com/societe/transports-urbanisme/583398/coronavirus-le-reamenagementde-la-rue-notre-dame-ouest-suscite-la-grogne-de-commercants.

Lévesque, Kathleen. 2020. "Les voies actives sécuritaires sont un succès, selon l'administration Plante." *La Presse*, July 31, 2020, sec. Grand Montréal.

https://www.lapresse.ca/actualites/grand-montreal/2020-07-31/les-voies-actives-securitaires-sont-un-succes-selon-l-administration-plante.php.

Litman, Todd. 2004. "Economic Value of Walkability." , *Transportation Policy & Practice* Vol. 10 (1): 3–11.

Mailloux, Nadine. 2020. "RAPPORT CONCERNANT DES AMÉNAGEMENTSURBAINS RÉALISÉS À L'ÉTÉ 2020." Ombudsman de Montréal. https://ombudsmandemontreal.com/wp-content/uploads/2020/12/Rapport-de-lOdM-ame%cc%81nagements-urbains-2020.pdf.

Manaugh et al. 2020. "Montreal's Response to Covid-19: An Equity Analysis of New Active Transportation Infrastructure"

Melia, Steve, and Ian Shergold. 2016. "Pedestrianisation and Politics: Evidence Gaps and a Case Study of Brighton's Old Town." *UTSG*.

Montreal Gazette. 2020. "Ombudsman Saw More than 300 Complaints about Bike Paths, Pedestrian Streets." *Montreal Gazette*, 2020. https://montrealgazette.com/news/local-news/ombudsman-saw-more-than-300-complaints-about-bike-paths-pedestrian-streets.

Moosajee, Naadiya. 2009. "A Move Towards Pedestrian Friendly Spaces and Their Economic Effects in the City of Cape Town, Available At:" http://hdl.handle.net/20.500.11892/50430.

O'Connor, David, James Nix, Simon Bradshaw, and Enda Shield. 2011. "Shopping Travel Behaviour in Dublin City Centre." University College Cork.

O'Connor, Eamon. 2020. "Public Space Plays Vital Role in Pandemic." *Gehl* (blog). May 7, 2020. https://gehlpeople.com/blog/public-space-plays-vital-role-in-pandemic/.

Özdemir, Dilek, and Irem Selçuk. 2017. "From Pedestrianisation to Commercial Gentrification: The Case of Kadıköy in Istanbul."

Panagopoulos, Thomas, Stilianos Tampakis, Paraskevi Karanikola, Aikaterini Karipidou-Kanari, and Apostolos Kantartzis. 2018. "The Usage and Perception of Pedestrian and Cycling Streets on Residents' Well-Being in Kalamaria, Greece." MDPI.

Parajuli, Ayaush, and Dorina Pojani. 2017. "Barriers to the Pedestrianization of City Centers: Perspective from the Global North and Global South." *Journal of Urban Design*.

Province of Quebec. 2001. *CIVIL PROTECTION ACT*.

Rheault, Jean-François. 2020. "Comptages, Voies Actives et Sécuritaires." Montreal. https://res.cloudinary.com/villemontreal/image/upload/v1596115573/portail/caog8rihseba36wertxm.pdf.

Robertson, Kent. 1994. *Pedestrian Malls and Skywalks: Traffic Separation Strategies in American Downtowns*. Avebury.

Rotondo, Francesco. 2016. *Cultural Territorial Systems, Springer International Publishing*. Springer International Publishing.

Schué, Romain. 2020. "L'avenue du Mont-Royal rouvrira à la circulation fin septembre." *Radio Canada*, 2020. https://ici.radio-canada.ca/nouvelle/1731010/voiture-covid-mont-royal-velo-montreal-commerces.

Shaffer, Marie-Eve. 2017. "La Charte du piéton, 10 ans après son adoption." *Journal Métro*, July 26, 2017. https://journalmetro.com/actualites/montreal/1174444/la-charte-du-pieton-dix-ans-apres-son-adoption/.

Soni, Nikhil, and Neetishree Soni. 2016. "Benefits of Pedestrianization and Warrants to Pedestrianize an Area." *Land Use Policy* 57: 139–50.

Spivack, Caroline. 2020. "New York City Sidewalks Have Failed Us. Here's How We Can Fix Them." Curbed NY. April 23, 2020. https://ny.curbed.com/2020/4/23/21231798/coronavirus-nyc-sidewalk-widths-pedestrians-biking.

Sztabinski, Fred. 2009. "Bike Lanes, On-Street Parking and Business,A Study of Bloor Street in Toronto's Annex Neighbourhood." Clean Air Partnership: https://www.bikeleague.org/sites/default/files/bikeleague/bikeleague.org/programs/bicyclefriendlyamerica/bicyclefriendlybusiness/pdfs/toronto_study_bike_lanes_parking.pdf.

Tomesco, Frédéric. 2020. "Montreal to Decide on New 'health Corridors' by Week's End: Plateau Mayor." Montrealgazette. 2020. https://montrealgazette.com/business/local-business/montreal-to-decide-on-new-health-corridors-by-weeks-end-plateau-mayor.

TVA Nouvelles. 2020. "Corridors Piéton et Distanciation: La Nouvelle Rue Sainte-Catherine." *TVA Nouvelles*, 2020. https://www.tvanouvelles.ca/2020/05/24/corridors-pieton-et-distanciation-la-nouvelle-rue-sainte-catherine.

Ville de Montréal. 2006. "Charte Du Piéton." Ville de Montréal. https://ocpm.qc.ca/sites/ocpm.qc.ca/files/pdf/P107/4-7_charte_du_pieton_juin_2006_20060613.pdf.

———. 2016. "Programme d'Implantation de Rue Piétonnes Ou Partagées." Ville de Montréal. http://ville.montreal.qc.ca/pls/portal/docs/PAGE/TRANSPORTS_FR/MEDIA/DOCUMENTS/PROGRAMME_RUES_PIETONNES_2016.PDF.

———. 2020a. "COVID-19: La Ville de Montréal et ses arrondissements ajoutent plusieurs corridors sanitaires sur le territoire." Web page. Ville de Montréal. 2020. http://ville.montreal.qc.ca/portal/page?_pageid=5798,42657625&_dad=portal&_schema=PORTAL&id=32575.

———. 2020b. "COVID-19: La Ville de Montréal proposera cet été le circuit des Voies actives sécuritaires." Web page. Ville de Montréal. 2020. http://ville.montreal.qc.ca/portal/page?_pageid=5798,42657625&_dad=portal&_schema=PORTAL&id=32659&ret=http://ville.montreal.qc.ca/pls/portal/url/page/prt_vdm_fr/rep_annonces_ville/rep_communiques/communiques.

———. 2020c. "List of SDCs (By Borough)." http://ville.montreal.qc.ca/pls/portal/docs/PAGE/SERVICE_FIN_EN/MEDIA/DOCUMENTS/2020_COORDONNEES_%20SDC_ANG.PDF.

———. 2020d. "Piétonnisations dans Ville-Marie." 2020. https://montreal.ca/articles/pietonnisations-dans-ville-marie-5189.

Walker, Alissa. 2020. "Coronavirus Is Not Fuel for Your Urbanist Fantasies." Curbed. May 20, 2020. https://archive.curbed.com/2020/5/20/21263319/coronavirus-future-city-urban-covid-19.

Whitehead, Tim, David Simmonds, and John Preston. 2006. "TheEffect of Urban Quality Improvements on Economic Activity." *Journal of Environmental Management* 80 (1): 1–12.

Wilson, Codi. 2020. "Toronto Man Creates 'social Distancing Machine' to Highlight Pedestrian Woes." *CTV News*, April 13, 2020. https://toronto.ctvnews.ca/toronto-man-creates-social-distancing-machine-to-highlight-pedestrian-woes-1.4893751.

Wooller, Leslie, Hannah Badland, and Grant Schofield. 2012. "Pedestrianization: Are We Reading from the Same Page? Perspectives from Key Stakeholders in Takapuna, Auckland." *Graduate Journal of Sport, Exercise & Physical Education Research* 2012 (1): 16–30.