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Turning the wheel on active transportation: Shifts in policymaking and planning for cycling and pedestrian infrastructure during the COVID-19 pandemic in large urban areas

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Abstract

The COVID-19 pandemic presented an opportunity to re-think how urban transportation policy and planning can address public needs through street reallocations for active transportation. Borrowing from Critical Junctures and Punctuated Equilibrium Theory, we propose a framework for understanding abrupt changes in transportation policy and to explain what may have triggered and shaped the actions related to pandemic-related street reallocations favouring active transportation. We interviewed 22 municipal employees in Canada's three largest urban regions: the Greater Toronto and Hamilton Area, the Metro Montréal region and the Metro Vancouver area. Regarding the pandemic as a crisis, participants highlighted its power to disrupt the status quo and accelerate the rollout of active transportation infrastructure. With this window of opportunity opened, we identified several important factors that may have shaped the responses taken, including a supportive political climate, a politically charged need to compete with other regions and/or a delegation of authority to transportation professionals to approve new infrastructure. We also found the use of temporary materials and pre-existing transportation plans as key to a municipality's ability to respond rapidly. These findings offer novel contributions to our understanding of how in the face of a crisis, major shifts in active transportation policymaking processes were achieved and how they may be sustained in the longer term.

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Keywords
active transportation, COVID-19 pandemic, critical junctures, political opportunities, street reallocations, transportation planning

摘要
城市交通政策和规划可以通过街道重新分配实现主动交通，从而满足公众需求。新冠疫情为重新思考其实施方式提供了机会。借鉴关键节点和间断平衡理论，我们提出了理解交通政策突然变化的框架，并解释可能引发和影响与疫情相关的有利于主动交通的街道重新分配相关行动的原因。我们采访了加拿大三大城市地区（大多伦多和汉密尔顿地区、蒙特利尔大都会地区和温哥华都会区）的 22 名市政雇员。被采访人员将此次疫情视为危机，强调其具有打破现状、加速主动交通基础设施建设的力量。随着这一机遇窗口的开启，我们发现了可能影响应对措施制定的几个重要因素，包括支持性的政治氛围、与其他地区竞争的政治需要，以及将新基础设施项目的审批权赋予交通专业人士。我们还发现，采用临时材料并预先制定交通计划是提升市政当局快速响应能力的关键。这些发现为我们理解在危机面前如何实现主动交通政策制定过程的重大转变以及如何长期维持这些转变提供了新的贡献。

关键词
主动交通、新冠疫情、关键节点、政治机遇、街道重新分配、交通规划

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Introduction

When COVID-19 was declared a global pandemic in March 2020 (World Health Organization, 2020), it resulted in extreme public health measures that imposed significant restrictions on individuals' daily lives. The pandemic forced many policy issues onto the table and provided the opportunity to re-frame them. For example, limited transportation and recreation options due to fears of virus transmission and related health consequences forced the transportation sector to re-evaluate its objectives (Combs and Pardo, 2021; Dunning and Nurse, 2020). Specifically, public transit ridership and other ridesharing options were discouraged given challenges in maintaining physical distancing (Freeman, 2021; Marti and Espindola, 2020). At the same time, indoor recreation facilities were closed for extended periods of time to limit virus transmission. As a result, safe outdoor spaces were needed for individuals to reach their neighbourhood destinations on foot or by bicycle, as well as for recreation and exercise. To this end, the pandemic led policymakers to re-allocate road space for active transportation (such as walking and cycling), without facing strong political opposition that used to be a common experience pre-pandemic (Wilson and Mitra, 2020).

The socio-political hegemony that promotes automobiles, a phenomenon that is recognised as 'automobility', has long dominated much of transportation policymaking in western societies and particularly in North America (Walks, 2014, 2015; Wilson and Mitra, 2020; Zipper, 2020). Yet during the COVID-19 pandemic, many municipalities saw a rapid reallocation of road space, which introduced on-street cycling infrastructure (such as bicycle lanes and cycle tracks) that provided better connections to the existing cycling networks. Some of this new cycling infrastructure was 'temporary',

where curb lanes were reallocated into space for cycling, marked with materials such as construction barrels, bollards and concrete curbs. In some cities, traffic lanes on major roads were closed to motor vehicle traffic on all or select days or weekends, allowing for more room for cyclists, pedestrians, rollerbladers and people who use wheelchairs. Similarly, to provide more space for a diverse range of road users, slow streets discouraged through-traffic of motor vehicles on select residential streets with the use of traffic-calming measures.

These initiatives may have led to more cycling, at least in the first year of the pandemic. Kraus and Koch (2020) found that each kilometre of new pop-up bicycle infrastructure in European cities was associated with a 0.6% increase in cycling. Buehler and Pucher (2021) found that cycling rates were higher in 2020 (the first year of the pandemic) than in 2019 (pre-pandemic) across many European, North American and Australian cities. Similarly, Nikitas et al. (2021) reported increases in cycling during the pandemic in cities across Asia, Africa, Oceania, Europe, North America and South America.

In the Canadian context, some researchers have examined where street reallocations emerged and the potential equity implications. Fischer and Winters (2021) found that street reallocations in Victoria, British Columbia and Halifax, Nova Scotia were more common near downtown areas, which were also lower-income, less racialised and more populous areas with greater rates of active transportation and closer proximity to essential services. In Vancouver, British Columbia, Firth et al. (2021) found that street reallocation initiatives were more likely to be in areas with greater proportions of visible minorities, newcomers and lower socioeconomic status households. Meanwhile in Toronto, Ontario, Lin et al. (2021) observed active transportation infrastructure to be more concentrated in the city's central core and where infrastructure already existed. Latanville et al. (2023), in their study conducted in Toronto, Montréal and Vancouver, Canada, found that 5% of infrequent cyclists pre-pandemic, defined as those cycling less than weekly, became frequent cyclists during the pandemic.

While the current literature has focused on *what* and *where* pandemic-time street reallocations happened, as well as their potential influence on rates of active transportation, a critical gap exists in our knowledge related to the planning and political processes behind the COVID-19 street reallocations; that is, *how* they emerged in the context of the prevailing transportation policymaking frameworks. The COVID-19 pandemic enabled a transformative shift in the use of road space. Such a sudden and substantial shift may have disrupted the entrenched institutions and actors supporting the culture of automobility, at least in the short term. A systematic exploration of how street reallocations were implemented in response to the COVID-19 pandemic offers a critical opportunity to improve our understanding of factors that potentially disrupt institutional stability and may lead to significant changes in transportation policymaking discourse.

Our study is guided by the following research questions: (1) what were the key conditions that opened a window of opportunity for changes to planning and policy related to the reallocation of road space in the summer of 2020; and (2) what factors shaped the planning initiatives related to the reallocation of road space in favour of active transportation? We addressed these questions by interviewing 22 municipal transportation employees from 16 municipalities in the three largest urban regions in Canada, namely the Greater Toronto and Hamilton Area and surrounding region (Ontario), the Metro Vancouver area (British Columbia)

and the Metro Montréal area (Québec). The results offer insights into the motivations and decision-making processes related to the pandemic-time street reallocation initiatives.

Conceptual framework

Several theoretical approaches have been used in the past to explore how key events and their consequences affect institutions, politics and policy. The most relevant to our study are Punctuated Equilibrium Theory and Critical Junctures framework.

Punctuated Equilibrium Theory, adapted from a theory on biological evolution and now commonly applied to budgetary and fiscal policy, aims to explain both stability and change in public policy, purporting that there are generally long periods of policy continuity with only incremental changes, known as periods of equilibrium, which are sometimes disrupted by punctuations of change (True et al., 2007). Stability is maintained by the reinforcing interactions between bounded rationality, policy monopolies and positive policy images (Givel, 2010). To elaborate, bounded rationality is the notion that policymakers cannot consider all policy problems and solutions all the time or at the same time (Cairney, 2013). As such, policy subsystems are often monopolised by a single interest group, or insulated by strong connections with other salient groups, which impedes any pressure for change against the status quo (Baumgartner et al., 2009; Givel, 2010). Policy monopolies protect and reinforce the ways in which policies are 'understood and discussed' (Baumgartner et al., 2009: 33) and aim to portray a favourable image of the policy. When a policy is monopolised by a particular subgroup and the image of that policy is positive, equilibrium is maintained. While in equilibrium, the policy does not attract much, if any, political or public attention (Jolicoeur, 2018).

If stability is maintained when one group dominates or dictates how a policy problem is understood and viewed by the public, then it can be interrupted when this prevailing understanding is questioned by others. This questioning may come from 'venue shopping', meaning to socialise the problem and find an alternative decision-making venue that is more sympathetic to alternative understandings. As well, crises or other triggering events can have the effect of focusing attention on a policy issue and challenging its current solution and image (Cairney, 2019).

In contrast, the concept of Critical Junctures is rooted in the social ontology of historical institutionalism, which is a perspective that highlights the importance of history, timing and contingency during periods of significant changes to planning systems and institutions (Sorensen, 2022). Critical Junctures has been applied to a wide range of policy topics, including economic crises, homelessness and addiction, austerity agendas and political dictatorships, just to name a few. It assumes that historical institutional legacies, arrangements and incremental developments are pre-determinants of policy outcomes, that various actors can influence such outcomes and that decisions are both contingent and contested (David, 1985; Fioretos, 2011; Pierson, 2004). Further, it purports that some changes to planning systems and institutions are incremental while others are abrupt and transformative, where the latter is referred to as 'critical junctures'.

Whereas incremental policymaking maintains continuity with only minor adaptations, critical junctures can be considered potential turning points. Critical junctures are characteristically infrequent events in which change is less bounded than it was in the incremental, path-dependent period that preceded it (Sorensen, 2022). Specifically, a critical juncture can be understood as a context when a choice is made between two or

more distinct and plausible policy options, and once the choice is made, it becomes increasingly difficult to return to the options previously available (Capoccia and Kelemen, 2007; Mahoney, 2001). These choices are made during a time of greater contingency, including a crisis or disruption, where the structural constraints are relaxed and the possibility for change is enhanced (Capoccia and Kelemen, 2007; Mahoney, 2001). Moreover, crises, such as a pandemic or natural disaster, are frequently viewed as the trigger for critical junctures to occur (Berins Collier and Collier, 1991; Capoccia and Kelemen, 2007). This is because crises commonly have the power to apply pressure on and delegitimise existing institutions, and to create opportunities for policy change (Mahoney, 2001).

Sorensen (2022) suggests a sequenced approach to study critical junctures, which uncovers the various conditions necessary to build a critical juncture. His suggested model is an adaptation of Mahoney's (2000) sequence and outlines a framework to explore the antecedent and permissive conditions leading up to the critical juncture (which contains the productive conditions), followed by the reactive sequence and outcome. Within this framework, the antecedent conditions refer to the historical context, permissive conditions refer to the conditions that open a window of opportunity for policy change, productive conditions refer to the factors that shape the decisions made during a critical juncture, the reactive sequence refers to the reactions to the policy change over time and all of these steps lead to the ultimate outcome of the policy change potentially having a lasting impact. Each of these constructs are described in greater detail in reference to our proposed framework later in this article.

The two theories are different in some fundamental ways. One key point of divergence is that Punctuated Equilibrium Theory emphasises bounded rationality (Heikkila and Cairney, 2018), while the Critical Junctures framework focuses instead on historical context and causality (Capoccia and Kelemen, 2007). As well, unlike Punctuated Equilibrium Theory which defines a punctuation as a transformative change (Baumgartner and Jones, 1993), a critical juncture can be present in the absence of change, so long as alternatives recommending change were seriously considered (Capoccia and Kelemen, 2007; Mahoney, 2001).

Yet, these models of policy change are not mutually exclusive or incompatible. There are many common themes across them, and their unique contributions can complement each other. In this way, we can build a more comprehensive model to understand and identify non-incremental change in the field of transportation policy, which we have coined as the Framework for understanding Abrupt Change in Transportation policy, abbreviated as 'FACT' (Figure 1). For example, the Critical Junctures framework uniquely offers a sequenced, systematic approach to studying the development of policy change, as well as the proceeding period. This presents a compelling way to study not only how policy change may occur but also how it may become institutionalised through path dependency. Taking this approach, we can build a model of historical context (antecedent conditions), new opportunities led by a disruption (permissive conditions) and policymaking during such disruption (productive conditions), followed by the potential institutionalisation of policy changes made during the time of disruption over the longer term (reactive sequence). Within each of these steps, we can use key elements from Punctuated Equilibrium Theory to further inform the transformations. The FACT model is potentially generalisable to a wide range of local and regional transportation policy changes, but in the context of this study, we focus on examples relevant to active transportation.

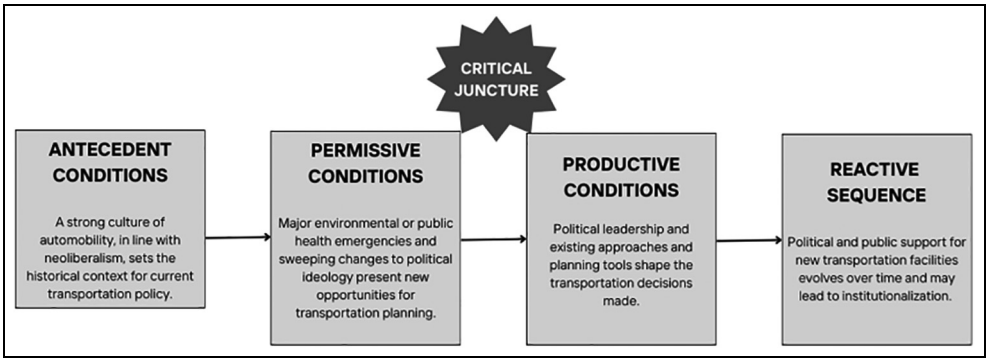

Figure 1. Framework for understanding abrupt change in transportation policy (FACT).

Within the context of our proposed framework, the hegemony of automobility sets the historical backdrop or antecedent conditions for transportation planning and policymaking in the North American context (Figure 1). Automobility may be described as the subjugation of non-driver interests as a result of motor vehicles being the dominant mode choice, which is consistent with the overarching neoliberal ideologies that promote personal liberties, individual freedom, privatisation and individualism through the acquisition of the automobile (Walks, 2014, 2015; Wilson and Mitra, 2020). Although cycling was regarded as a modern transportation option in the late 19th century, its symbolism has evolved into a political weapon for proponents of automobility (Mitra and Hess, 2021). As Norton (2008) describes, modern roads of the 20th century engineered children and pedestrians out of streets. This evolution is reflective of the change in values, one that the automotive industry pushed for, citing freedom by means of the automobile (Norton, 2008). Now, motorists occupy the majority of road space, isolating non-motorists to the edges of the road (Sheller and Urry, 2000).

In Canada, for example, it is the status quo for advancements to active transportation to take a subordinate role to protecting space for motor vehicles. Combative political will and sometimes public opposition are strong barriers to the implementation of pedestrian and bicycle infrastructure (Wilson and Mitra, 2020). In an automobile-centric society, local politicians are less enthusiastic about supporting initiatives that would take road space away from cars and often weaponise bicycles and pedestrians when placed in competition with the car (Wilson and Mitra, 2020). With regard to antecedent conditions, Montréal and Vancouver are the country's top cycling cities (Wilson, 2022), with commitments to expanding high-quality cycling networks. For example, Vancouver has made significant improvements to its cycling network over at least the past two decades, focusing on making facilities fit for all ages and abilities. Moreover, Montréal is renowned for being the first city in North America to introduce a large-scale connected network of physically separated on-street cycling lanes (Pucher and Buehler, 2008) and an ambitious bicycle-sharing strategy (Wilson, 2022). Montréal's continuous improvements in the area of active transportation are owed in part to the city's supportive political leadership, spearheaded by Mayor Valerie Plante.

On the other hand, while Toronto's cycling network has improved over the years

and is well-positioned politically at the municipal level with pro-cycling mayor Olivia Chow, the city faces mounting obstacles to maintaining its existing infrastructure and implementing new cycling infrastructure due to the provincial government. Specifically, Ontario Premier Ford recently introduced Bill 212; new legislation to disallow the installation of new cycling lanes in cases where motor vehicle lanes would be reduced (Government of Ontario, 2024). Bill 212 also requires cities to provide supporting data for existing bicycle lanes, upon request from the provincial government (Government of Ontario, 2024). These historical contexts set the backdrop for our study.

Next, we conceptualise that major disruptions may lead to new opportunities for transportation planning and policymaking and can be referred to as the permissive conditions (Figure 1). Natural disasters such as earthquakes, hurricanes, floods and wildfires, among others, may drastically change the transportation needs of residents. Public health emergencies such as epidemics or pandemics may also demand urgent changes to transportation systems. For example, the recent COVID-19 pandemic exposed the need to re-think existing transportation systems to facilitate physical distancing and active living. Specifically, Canadians were discouraged from riding public transit or taking shared carpooling services in order to reduce the risk of virus transmission. Therefore, a need to expand transportation options for those without access to a private motor vehicle created opportunities for new policy initiatives that were disruptive to the previously institutionalised approach. This recent example is reflective of a crisis' ability to draw attention to a policy problem, particularly one which would not ordinarily receive such attention. Outside of health and environmental crises, major shifts in political ideology may also open the door for sudden changes to transportation planning.

Once an opportunity for changes to transportation policy and planning presents itself, we hypothesise that the policy/planning response may be influenced by many factors or productive conditions (Figure 1). For example, political leadership may strongly influence the transportation actions taken in response to the disruption. In contrast to the prevailing policy monopoly which reinforces automobility, we would expect that during a time of disruption/crisis, political leadership would shift in favour of new policy solutions that break from the status quo (such as active transportation infrastructure to address the need for physical activity and transportation at a neighbourhood level during the COVID-19 pandemic). This is because, in light of the demands of a crisis/disruption, we would expect that the dominant political understanding of active transportation may shift from being a barrier to motor vehicle travel to being an important outlet for physical and mental health. This hypothesis is reflective of the literature suggesting a potential change in the beliefs and viewpoints of key actors during a critical juncture (Kopec, 2023; Mahoney, 2000).

Relatedly, most Canadian municipalities prepare transportation master plans (or sometimes Active Transportation Plans or Cycling Master Plans) that guide the transportation planning direction of their cities. For example, Toronto has a Cycling Network Plan and Vancouver has an Active Mobility Plan. During periods of equilibrium, there is often a disconnect between these plans and political will, which makes implementation challenging. During the punctuation period, we would expect there to be stronger political backing for municipal transportation departments to quickly turn to existing transportation plans to make decisions and quickly implement new infrastructure.

Finally, re-inventing the policymaking approach during a disruption with

compressed timelines is unlikely to be a viable approach. Previous research has also reported increased competitive pressures during times of disruption (Kopec, 2023; Mahoney, 2000). As such, we hypothesise that cities would look to each other for models of how to proceed in times of heightened uncertainty. Transportation planning decisions may be informed by the actions of alike cities, such as their successful pilot projects either during the time of disruption or prior.

At this point, a critical juncture has occurred, setting the possibility for path trajectory and dependence in the reactive sequence (Figure 1). In the context of transportation planning, we hypothesise that the political and public reactions to the new transportation infrastructure built during the time of disruption will play an integral role in determining the outcome of said infrastructure. Wherein political and public resistance have historically been key barriers to the development of active transportation infrastructure, we would expect the opposite to enable such infrastructure, representing a disruption to the equilibrium. By being able to experience interim and newer transportation solutions during times of disruption, communities may develop more informed opinions about alternative policy solutions. We conceptualise that where communities are supportive of the active transportation infrastructure, as observed through public consultation processes during and post disruption, this support would translate into heightened political willingness to support such changes. As such, the interim infrastructure would likely be made permanent and a general culture for active transportation may begin to evolve.

In our study, we use this FACT framework to explore the implementation of and processes behind pandemic-time active transportation infrastructure in Canada's three largest metropolitan areas. Specifically, within the scope of this article, we explore the stages of permissive and productive conditions that potentially led to a critical juncture. An exploration of the reactive sequence and ultimate/long-term outcome of these pandemic-time street reallocations is beyond the scope of this article but will be explored in our upcoming work.

Methods

Study area

The study area includes the three most populous metropolitan areas in Canada, namely the Greater Toronto and Hamilton Area (GTHA, Ontario), the Metro Vancouver area (British Columbia) and the Metro Montréal area (Québec). In Canada, federal and provincial governments are responsible for long-distance, interprovincial and international transportation, while municipalities are responsible for building and maintaining local roads and public transportation networks (Association of Ontario Municipalities, 2024; Eidelman et al., 2023). As a result, the ownership, planning, development and maintenance of active transportation networks typically rest solely with municipal governments (City of Toronto, 2024; Eidelman et al., 2023). To advance active transportation as a transportation priority, many municipalities have developed active transportation master plans with the help of provincial frameworks (Eidelman et al., 2023). Other municipalities, such as Toronto and Vancouver, have their own active transportation programmes without much integration of other levels of government (Eidelman et al., 2023).

Within our study regions, we included municipalities that took decisive action with respect to reallocating road space. Specifically, we focused on three types of street reallocations: (1) the implementation of cycling infrastructure; (2) the closure of major roads, either fully or partly, preventing motor vehicle traffic to allow space for

active transportation; and (3) the establishment of 'slow streets' on local roads, discouraging through traffic. In this study, the Region of Waterloo was also included (despite its location outside of the official GTHA boundary) due to its close proximity to the GTHA, similar political and planning environment and substantial roll-out of street reallocations at the onset of the pandemic. Together, these three metropolitan regions are home to over one-third of the Canadian population (Statistics Canada, 2023). Of the three regions, the Metro Montréal area has the most established cycling network, followed by the Metro Vancouver area, and then the GTHA. In 2016, 2.0%, 2.2% and 1.4% of people in these regions respectively used bicycles as their primary mode of commuting (Verlinden et al., 2019), and arguably a much higher proportion of people in these regions cycle occasionally for commute and other trip purposes.

In Ontario and British Columbia, each municipality has their own transportation plans, and local politicians (i.e. ward councillors) from across the municipality vote on decisions related to their local roads. Decisions regarding active transportation projects are typically made by a majority vote at city councils, comprised of local ward/borough councillors. The approval process for active transportation is different in the Metro Montréal area (which is within the province of Québec). Instead of local politicians from throughout the municipality voting on active transportation decisions, only those representing the relevant borough vote.

All three regions (the GTHA, the Metro Vancouver area and the Metro Montréal area), responded to the COVID-19 pandemic with substantial street reallocation initiatives. In the City of Toronto, for example, the ActiveTO programme was launched whereby 24 km of new buffered bicycle lanes and cycle tracks were added (City of Toronto, 2023a), five selected major roads were closed entirely to motor vehicle traffic on summer weekends (City of Toronto, 2023b) and 65 km of slow streets were installed on 31 residential streets in 2020 (City of Toronto, 2023c). In the Vancouver metropolitan area, most of the street reallocations were designed to provide better access to local greenspace, and predominantly included slow streets (e.g. 40 km in the City of Vancouver) and other recreational street reallocations (City of Vancouver, 2020a, 2020b). In Montréal, 112 km of temporary pedestrian and cycling corridors and 88 km of redeveloped streets, including slow streets, were added to the existing network in 2020 (Ville de, 2020). Some other surrounding municipalities in the GTHA, Metro Vancouver region and Metro Montréal region also had street reallocations, but they were less extensive compared to the cities of Toronto, Vancouver and Montréal.

Data collection

We explored our research questions using a qualitative approach. Semi-structured interviews were conducted with municipal staff (key informants) who were directly involved with the decision making, planning and/or implementation of street reallocation initiatives at the onset of the pandemic, including but not limited to project managers, managers and directors of transportation planning, transportation engineering, active transportation and capital projects. Our research team and community partners (the Centre for Active Transportation – Toronto, Vivre en Ville – Montréal and HUB Cycling – Vancouver) identified key municipal staff within our study area, who, based on our local knowledge, were directly involved with leadership roles in street reallocation projects. We contacted these key informants via email. Thereafter, recruitment continued using a snowball sampling technique where each participant was asked to identify

potential future participants. In total, 73 individuals were contacted and 22 participated. Interviews were conducted between May and October 2022.

Our participants included municipal staff across the GTHA and the Region of Waterloo (10 interviews from Toronto, Markham, Mississauga, Brampton, Hamilton and Waterloo – city and region), the Metro Vancouver region (five interviews from Vancouver, New Westminster, City of North Vancouver and District of North Vancouver) and the Metro Montréal region (five interviews from Ville de Montréal, Côte-des-Neiges – Notre-Dame-de-Grâce (NDG), Plateau-Mont-Royal, Ville Marie and Hochelaga-Maisonneuve). Multiple interviews were conducted in larger metropolitan cities that offered more extensive reallocations. An exemption to research ethics review was granted by Toronto Metropolitan University and Simon Fraser University given that the interview questions did not inquire about personal opinion or experience but instead asked participants to recall the processes and policies as observed in their professional capacity as municipal staff.

Our interview guide included 11 questions centred on the motivations, decision-making processes and evaluation of COVID-19 street reallocation initiatives. During the interviews, the key respondents were asked to think back to the first year of the pandemic and to respond to our questions based on their professional experience during that time. Prior to conducting interviews with the key informants, we hosted a pilot interview with a municipal transportation practitioner who was previously involved in active transportation planning and implementation in a large city to assess the relevance and clarity of questions. We used video conferencing to conduct the interviews, where audio transcription and recording were enabled with the participants' permission. The interviews were conducted by two PhD students, based in Toronto and Vancouver. For interviews in the Metro Montréal area, a local interviewer also joined the two students, who later translated the transcripts from French to English. We advised participants that they would remain anonymous and would only be referred to as a representative from their respective city, without mention of their specific job title or role. For the purpose of reporting results, the date of interview (mmdd) and city were used to reference the key informants. Each interview lasted between 45 minutes and one hour.

Data analysis

We developed the FACT framework as the conceptual model to explore the enabling conditions of street reallocations and the factors that shaped the specific responses of each region (Figure 1). Using this conceptual framework as a guide, we adopted a thematic analysis approach to analyse the interview data. This approach was used for its usefulness in identifying patterns across datasets (Braun and Clarke, 2012). Thematic analysis follows a six-step process to derive meaning from the data. First, we became familiar with the data by reviewing the interviews multiple times and editing the transcripts (step 1). We developed a descriptive codebook, taking a blended approach of deductive and inductive codes. Deductive codes were predominantly used based on expectations from a review of the literature and were derived before reviewing the transcripts. We then coded segments of the transcripts using NVivo software (step 2).

To improve the reliability of the coding scheme, two coders (PhD students at Toronto Metropolitan University and Simon Fraser University) independently reviewed the transcripts and coding, then discussed any areas of disagreement to ensure alignment in the coding decisions. Thereafter, the analysis was pursued

independently by the two PhD students, each having a different topic of focus. For this study, we organised codes by manually snipping and arranging them into themes, searching for enabling and shaping factors of the street reallocations (step 3). Following this step, we reviewed the themes to see the full picture and ensure sufficient data was present to support each permissive and productive condition theme (step 4). Each theme (total four themes) and sub-theme (total five subthemes) was titled to reflect its essence (step 5). Finally, we reported the results to highlight the novel insights that emerged from our data (step 6).

Results

Our analysis focused on exploring the development and processes behind pandemic-time active transportation infrastructure implemented in Canada's three largest metropolitan areas, which may have led to a critical juncture in Canadian transportation planning and policy. We break down the findings into two sections: (1) the permissive conditions related to the COVID-19 pandemic as a crisis that allowed a shift in policy, enabling installations of street reallocation measures; and (2) the productive conditions, such as the actors involved and the socio-political contexts, that shaped the immediate pandemic-time active transportation-related responses.

Permissive conditions (impact of a crisis)

The COVID-19 pandemic (the 'crisis') may have led to a shifted focus on public health and an urgent need to respond with safe public spaces for transportation and recreation. The COVID-19 pandemic exposed problems with the current approaches of road space planning and design, and necessitated emergency responses in major Canadian municipalities.

Major concerns around public health. Given the high transmissibility of the COVID-19 virus, especially before the introduction of vaccinations in December 2020, public health was a major policy concern for municipal governments, which is probably the most significant permissive condition that triggered an active transportation response. Physical distancing was mandated, and all three regions included in our study experienced varying degrees of 'lockdowns'. As such, municipal staff across the study areas described the immediate need to create safe outdoor spaces for community members.

In particular, creating space for safe and physically distanced participation in active transportation and outdoor recreation was frequently mentioned as an important health priority, especially in the context where many municipalities have limited or 'constrained' (0825 New West) sidewalks, cycling infrastructure and urban public spaces. A participant from the Montréal region explained how public health measures facilitated active transportation developments:

> This project just wouldn't have happened without the pandemic … [It happened] because of the need for people to be able to move around freely with lots of space … with enough space to meet the clearances or the distancing standards set by the government. (0919 Hochelaga-Maisonneuve)

Some GTHA participants mentioned the need to provide active transportation options as an alternative to public transit, given public concerns of virus transmission in a crowded bus, streetcar or subway car.

Participants also expressed that cities were concerned about the physical and mental health of their residents, given the new public health restrictions:

> Health became a greater priority than ever before. Like, health was always in planning, and on everyone's radar, but I think both

> physical and mental health became even greater priorities during the pandemic, and people saw the connections to active transportation for that. (0622 Toronto)

Prioritisation of active transportation. Given new priorities centred on public health, transportation priorities were quickly flipped on their head, indicating another key trigger that enabled change:

> The order of priorities, it changed from, you know, auto-centric to pedestrians or cyclists second, then transit, and then whatever, and then ending at sort of, you know, personal automobile. (0706 Brampton)

Several participants reported being given approval by their city council to proceed with cycling infrastructure, major road closures and/or slow streets – initiatives that would have previously endured lengthy public and political consultation processes and approvals.

Across all regions studied, many key informants pointed to the 'power of COVID-19', as a crisis, to disrupt the status quo and quickly transform roads and streets. Several participants specifically noted a lower volume of motor vehicle traffic (as a result of lockdowns and working-from-home arrangements) as a potentially enabling factor that created opportunities for the reallocation of road space for active transportation. For example:

> I think in the beginning of the pandemic we were like, yeah, rise to the challenge. Reallocate space away from motor vehicles because … [there] has been a significant drop in motor vehicle travel. (0530 Toronto)

Many participants explained the pandemic as being an opportunity to advance the broader active transportation planning agenda, given the exceptional circumstances:

> There's an acceleration because of the pandemic, because of the emergency measures during the pandemic. (1007 Ville de Montréal)

A participant from the Town of Markham also described this as:

> Never waste a good crisis … You gotta take action and use that opportunity to further your goals … It's about taking advantage, leveraging what is before you and furthering your goals as fine, as quickly as you can. (0621 Markham)

Others recounted the early days of the pandemic as being 'a climate of almost like military emergency state' (0705 Toronto) and 'in an emergency operations mode' (0802 Hamilton), which allowed significant changes very quickly.

In summary, COVID-19 significantly disrupted the status quo of transportation planning in these regions, forcing public health priorities to the top of the agenda and necessitating urgent responses to address them. These permissive conditions presented a window of opportunity for active transportation solutions to take precedence.

Productive conditions

Using our FACT model, we sought to explore the key mechanisms for municipal decisions to reallocate road space for active transportation. In support of our initial hypothesis, we found that political leadership was an important facilitator of street reallocations. This leadership sometimes also included a delegation of authority to municipal transportation professionals. We also found that cities looked to each other to learn how best to meet the new transportation and health needs of their residents. In order to accelerate the implementation of new active transportation infrastructure, we found that many cities turned to their pre-

existing transportation plans, while all cities used temporary materials to build interim solutions. These findings reflect our framework's suggestions of productive conditions related to transportation planning during times of crisis.

Political leadership and role models (promoting a new policy solution)

Exemplary political leadership. Irrespective of their geographic and political differences, participants from all three regions highlighted the important role of their city councils as key actors in shaping transportation decision–making at the start of the pandemic. Local politicians played a key part in the implementation of street reallocation initiatives, specifically by providing political support, direction and/or a delegation of authority.

Predominantly in the GTHA, our key informants underlined a significant change in political discourse at the onset of the pandemic – one which allowed active transportation planning to flourish. A City of Toronto participant situated the pandemic response within the city's political contention in the following way:

> I think what's most important is that the politicians are less so involved during the pandemic … I think it's easy from the outside to look at a city, and assume that if they knew better, they would do better … But I think the reality is that making the decision to stray from the status quo is politically difficult … Things have changed in terms of the politics of active transportation planning during COVID-19. (0705 Toronto)

Participants also described that given the permitting factors of less vehicular traffic and strict public health guidelines, a new consensus was (at least temporarily) achieved with 'unprecedented support' (0705 Toronto) for active transportation in the City of Toronto.

This resonated with other respondents in our study. For example, a participant from the City of New Westminster (Metro Vancouver region) described how the strong support of their local elected officials allowed for an 'aggressive and bold' active transportation response (0825 New West). Similarly, a representative of the borough of Hochelaga-Maisonneuve (Metro Montréal region) expressed that having a 'progressive administration' in the central city was key to their successful implementation of street reallocation initiatives during the pandemic (0919 Hochelaga-Maisonneuve).

The City of Brampton was another notable example of a GTHA city that garnered strong political support for active transportation at the beginning of the pandemic. They described having 'council champions' that paved the way for being 'first out of the gate [in the GHTA]' (0706 Brampton) with respect to announcing and rolling out active transportation infrastructure. It was the strong political advocacy and championship for active transportation in Brampton that really pushed their aggressive response of street reallocations forward. Other medium-sized cities in the GTHA specifically pointed to Brampton's actions as contributing to their own city's response supporting active transportation.

Coupled with unprecedented political support and championship for active transportation, many participants, predominantly in the GTHA and Metro Montréal area, also recognised the importance of being directed by city council to focus on street reallocation initiatives. As one participant suggested:

> When [city] council gets interested in something, it becomes a priority, plain and simple. (0804 Region of Waterloo)

Several participants, mostly in the GTHA and Metro Montréal regions, expressed that given the interest in providing an active transportation response, city councils

directed staff to propose and develop solutions. For example, a Metro Montréal region participant explained the authority of council to dictate the work of staff:

> Our projects and our mandates come from the politicians. (0919 Hochelaga-Maisonneuve).

With reference to the pandemic-time active transportation response specifically, a City of Montréal participant mentioned receiving 'a mandate from elected officials to create what was called active and safe lanes' (1007 Ville de Montréal). In the GTHA, participants explained that their city council initiated the request for a transportation response. For example, one participant recalled:

> We got a request from council to put together a proposal to look at what we could do in terms of reallocating some [road] space. (0804 Region of Waterloo)

Another participant explained that the 'ask' was very general, with many decisions on the specifics still to be made: 'Council just gives the direction, but with very little detail' (0621 Markham). Following with this theme, a participant in North Vancouver (Metro Vancouver Region) explained that they were requested by council to come up with a range of recommendations to respond to the transportation challenges resulting from the pandemic.

Follow examples from other cities. Overall, many GTHA participants highlighted their felt need to provide the same level of active transportation responses to match initiatives from other cities. Politically, there was a growing awareness of what other cities were doing, both locally and globally, and a perceived need to take similar actions. Several participants from the GTHA, as well as from the Metro Vancouver region, also recognised their cities' observations of and communication with other cities as a learning tool to develop their own responses and policies. For example, for one participant from the City of New Westminster (Metro Vancouver), looking to other cities was helpful in determining the logistics of the reallocations:

> Being a small city, we don't have a lot of materials on hand to use for quick interventions, so our staff was researching what other cities were using, what materials were available, how much they cost, how quickly they could be delivered, things like that. (0825 New Westminster)

A City of Waterloo participant described using their connections to identify what was happening elsewhere to inform their own plans:

> We've got a really good relationship with a lot of other municipalities, so there was a lot of emails flying around saying, 'What are you guys doing?', 'What are you guys doing?'. (0823 Waterloo)

Temporary new authority. Several participants, most notably in the Toronto and Vancouver regions, explained that their city council had directed staff to develop an active transportation-related response and granted new powers to municipal transportation departments to decide exactly what to do. This was a break in the status quo of the prevalent municipal planning and policy-making processes in Canadian municipalities, where city councils (i.e. political representatives) debate and approve (based on majority vote) transportation planning proposals prepared by municipal staff. In Vancouver, immediately prior to the pandemic, a delegation of authority to transportation planning/engineering staff was granted, giving them the powers to decide which street reallocations items should go to council for decision-making and which ones may not. Similarly in Toronto, after the city council approved a high-level proposal for

street reallocations in the early months of the pandemic, the city's transportation staff were delegated the independent authority to submit the necessary bylaw changes and adaptations to reallocate road space. In the Metro Montréal region, during the pandemic, local boroughs were granted the authority to install street reallocations on their own accord by going through the Emergency Measures Coordination Centre (CCMU – le Centre de coordination des mesures d'urgence).

One participant recalled receiving 'carte blanche' (0823 Waterloo) from council to decide what actions to take to meet the active transportation objectives. Another participant explained the need for such powers:

> If we have to bring every single thing to council, it'll take forever. So, we got this delegated authority … [from council] to reallocate road space to the city engineer. (0829 Vancouver)

This new authority was necessary in order to respond quickly and to overcome the delays typical to active transportation infrastructure implementations, including lengthy consultations and council involvement. As one participant explained, it also: 'enabled us to be more nimble and swift, and evolve, by having that authority to make change' (0530 Toronto).

Accelerated implementation of street reallocation initiatives (speed, timing and pace)

Expedite implementation process. Across all study regions, key informants highlighted the record time in which the pandemic-time infrastructure was implemented. The approval, design and implementation processes were all accelerated to allow the reallocations to be on the ground very quickly. A Montréal region participant explained that the fundamental change experienced during COVID-19 was 'the length of time we have to install something [street reallocations]' (0926 Plateau-Mont-Royal). The acceleration was made possible given the aforementioned strong political support and delegation of authority. Municipal staff were directed to focus their attention, time and resources on the street reallocation initiatives. One participant recalled: 'Put emergency of reallocation, you know, on steroids. Like, we just have to go really, really big and fast' (0829 Vancouver). However, this was described as being unsustainable in the longer term, especially as it related to putting other tasks and projects on hold to focus on the pandemic responses. Instead, the interview respondents highlighted the need for additional staff resources to achieve similar active transportation responses in the future, and to avoid burnout and other health and morale consequences.

Fast track existing plans. When asked about the use of pre-existing planning instruments to deliver a rapid pandemic response, participants' answers varied by region. We heard from many participants in the GTHA that they capitalised on pre-pandemic transportation master plans to quickly roll out their active transportation infrastructure at the start of the pandemic. We observed that existing transportation plans played an integral role in identifying the locations and considerations for pandemic-time street reallocations. In essence, the pre-pandemic plans were accelerated in response to the COVID-19 pandemic. Street reallocation initiatives that were planned for future years were installed in the immediate term.

Participants in the Metro Vancouver region also highlighted their use of pre-existing master plans, including Official Community Plans, council strategic plans and cycling and pedestrian master plans. In addition to these planning instruments, several Metro Vancouver region participants

noted their city's commitment to environmental goals. Active transportation responses to COVID-19 were described as consistent with their previously declared climate action objectives:

> So going pre-pandemic, actually, in the fall of 2019, our council had declared a climate emergency. One of the bold actions that they set out was to reallocate street space … 10% of our street space to active transportation … What started as a climate action measure also became a pandemic response mission. (0825 New Westminster)

In contrast, participants in the Montréal region did not identify using their city's planning instruments to develop an active transportation response to the pandemic. Instead, they relied on the expert, localised knowledge of municipal staff in their respective boroughs, who led the design and implementation of the responses most suitable for their area. These differences in implementation styles may have important implications related to equity.

Quick-build solutions. In addition to planning instruments, across all three study areas, participants also highlighted the use of temporary materials as being integral to the rapid installation of street reallocations. Frequently mentioned materials included construction barrels, bollards, paint and signage to mark or separate road space for active transportation. As one participant explained, the use of such bare bone materials was necessary because 'The idea was rapid response. Let's get something in – get it in fast, quick and easy and cheap' (0713 Mississauga). Many also expressed the need to use what they already had on hand given steep competition for limited resources between cities. A City of Toronto staff member explained:

> It's not like we went shopping for … what are the most appropriate materials? Which ones are safer or not? It was like, we want to, in a week from now, have some signs in the ground. What can hold them up [with]? These old barrels – great … What can we do with what we already have? (0705 Toronto)

However, the quick turnaround times enabled by temporary materials were sometimes met with community confusion. For example, several participants highlighted that residents assumed the construction barrels were indicative of construction zones rather than reallocated spaces for active transportation.

The use of temporary materials aligned with an emergent tolerance for experimentation in the early days of the pandemic, with many street reallocations being advertised as 'temporary'. Across all regions, participants pointed to the ability to 'test' or 'pilot' infrastructure without having to fully commit to them for the long term, instead taking a more flexible and responsive approach. Relatedly, predominantly in the Metro Vancouver area, many also highlighted their ability to allow communities to experience the new infrastructure first and then provide feedback: 'The temporary build – It works to the benefit of allowing people to feel, try and see how it might incorporate into their lives' (0829 Vancouver). Based on post-implementation feedback, cities could easily remove infrastructure that was not well received by communities. On the other hand, other infrastructure could be extended after communities were given the chance to use and enjoy it. Participants from the Metro Vancouver region, in particular, intensely described taking an install and adapt approach, stating that they were 'not asking permission' (0825 New Westminster) of communities to implement new infrastructure due to newly delegated authorities, but

made a 'commitment to ongoing adaptation' (0928 North Vancouver) to adjust installations on an as-needed basis.

In conclusion, it is apparent that political willpower, support and direction produced the street reallocation initiatives in the GTHA, Region of Waterloo, Metro Montréal and Metro Vancouver areas. Rapid implementations were facilitated by capitalising on pre-existing plans in the GTHA and Metro Vancouver area, but not in the Metro Montréal area. On-hand temporary materials were viewed as being vital to quickly reallocating road space for active transportation across the study areas.

Discussion and conclusions

Within the context of significant public and political contention around active transportation planning (Roberts, 2020; Walks, 2015; Wilson and Mitra, 2020), the advances made in response to the COVID-19 pandemic were arguably exceptional. In this study, we use our FACT model to understand institutional and socio-political factors underlying non-incremental change in transportation policy and planning discourse. As an example of the model's application, we sought to uncover what it was about the COVID-19 pandemic as a crisis that allowed for the implementation of street reallocations (permissive conditions) and what actions were taken relating to street reallocation policy and planning (productive conditions) that may have changed the policy image of active transportation and opened new venues for rapid improvements.

Much is to be learned from our findings on *permissive conditions*, even in the absence of another pandemic or otherwise disruptive event. For example, our findings underscore the *immediate* danger of COVID-19 virus transmission as contributing to a sense of urgency. While conceivably there are other public health matters related to active transportation infrastructure that *should* demand attention, such as climate change, traffic safety and physical inactivity, they are not perceived as imminent threats, which may explain why they often do not receive the same level of attention (Buehler and Pucher, 2022). This underscores the importance of framing policy issues in such a way that they demand urgent attention and expand the range of possible responses. As our findings suggest, crafting a sense of urgency can be key to putting transportation policy issues on the agenda.

Our finding of the health risks and popular demands for disruptive transportation options (such as what was observed during the COVID-19 pandemic period) creating the conditions necessary for change is consistent with the non-incrementalist literature, including other studies that have used a critical junctures approach (Baumgartner and Jones, 1993; Kingdon, 1984; Sabatier and Weible, 2007). Other transportation scholars have also long pointed to the role of major events in carving out political opportunities. For example, Davis and Altshuler (2019) highlight the political strategy of recognising and taking advantage of the right timing to make policy changes. Similarly, drawing on the work of Kingdon (1984), Bratzel (1999) identified social crises and strong political mandates as 'macro-policy-windows' for urban transportation. More recently, several studies have argued that the COVID-19 pandemic presented a similar window of opportunity that enabled improvements of cycling infrastructure (Buehler and Pucher, 2022; Combs and Pardo, 2021; Thébert et al., 2024). Our study extends the current knowledge by capturing the policy-relevant nuances associated with disruptive events, and by exploring the nature of municipal responses in the face of an abrupt change in policy discourse, using a theoretically grounded

research approach and a framework that borrows influences from Critical Junctures and Punctuated Equilibrium Theory.

With respect to *productive conditions*, our findings highlight that in responding to the COVID-19 crisis as a disruptive event, the role of political leadership was paramount. Other researchers have also highlighted the importance of political support in advancing cycling infrastructure during the pandemic (Buehler and Pucher, 2022; Oluyede et al., 2024). However, our study draws attention to *how* political support was carried out and exemplified in practice. For example, we found that political support was manifested through clear messaging and direction from politicians supporting active transportation and the removal of red tape by delegations of authority and/or expedited approval processes.

Reflecting on the strong political opposition to reallocating road space for active transportation pre-pandemic (Walks, 2015; Wilson and Mitra, 2020), the newly found political support was an important turning point. Further, we heard that cities' political leaders sent loud and clear messages supporting reallocated road space for walking and cycling, in turn inspiring and/or pressuring other cities near and far to develop their own active transportation responses. Our findings underscore the need for and importance of establishing best practices, which can be used as case studies for other cities adapting to a post-pandemic new normal in active transportation planning and policymaking.

Our findings also indicate that city councils putting greater trust in their cities' planning and transportation departments allowed for more swift responses, in terms of both decision-making and implementation. Within supportive conditions, municipal responses were then shaped by political leadership and accelerated rollouts by way of pre-existing plans and temporary materials (*productive conditions*). Further, cities recognised that their pandemic-time active transportation planning reflected an 'emergency mode', and acknowledged the related turbulence in decision making during the pandemic. Across all three study areas, our key informants jumped on the opportunity to take advantage of the newly found popular and political support for non-automobiles on urban streets. However, we also heard that the pandemic-time model may not be operationally sustainable in the longer term. It remains to be seen how the new normal emerges when the economy and road traffic levels go back to pre-pandemic levels (or closer to those levels). Our upcoming work will focus on uncovering the evolution of the pandemic-derived street reallocation initiatives, and why some may have lasted while others did not, in the post-pandemic period. Addressing these questions will help to determine if the pandemic-time street reallocations indeed constitute a *critical juncture*, or not (Sorensen, 2022).

This pandemic-induced institutional arrangement may serve cities well in the future when targeted and expedited responses are needed. However, caution should be taken as the processes of implementation may be less democratic and could lead to further inequities with respect to the distribution of active transportation infrastructure. Previous studies have identified limited to non-existent public engagement relating to the pandemic-time infrastructure as a major area of concern (Combs and Pardo, 2021; Evenson et al., 2023; Firth et al., 2021; Thébert et al., 2024). The importance of community consultations, and more specifically, focused efforts to reach marginalised groups, including lower-income and racialised residents, should not be overlooked when implementing new active transportation infrastructure.

To this end, our work emphasises the intricacies of location- and context-specific

strategies. As Fischer and Winters (2021) also reported, having well-developed active transportation plans with safety and equity considerations, as well as insights from community consultations already built in, may help cities to accelerate the implementation of already-planned infrastructure when political opportunities present themselves. However, this strategy was not used equally by all regions that we studied. For example, the Metro Montréal area did not use their existing transportation plans, but chose to rely on local, borough-specific knowledge. This finding highlights how political structures may be organised and equipped differently across various contexts to take on unanticipated transportation challenges and opportunities.

Relatedly, our findings showcase the use of temporary materials to rapidly reallocate road space, as this successfully averted long waiting times for materials in high demand and short supply, enabling quick-build solutions. Other scholars have also highlighted this approach during COVID-19, with reference to 'tactical urbanism' (Cariello et al., 2021; Daly et al., 2020; Hassen, 2022; Rojas-Rueda and Morales-Zamora, 2021; Thébert et al., 2024). Outside of the pandemic, Davis and Altshuler (2019) also describe the utility of modular materials in cutting through the bureaucracy, based on their case study in New York City. Yet, it is important to recognise that the use of temporary materials may have inflicted accessibility and safety challenges for certain population groups, including persons with disabilities. However, taking an 'install and adapt' approach may be useful as a pilot to explore public support for active transportation post exposure, which was highlighted by several participants.

The implications of our study are bound by some limitations. For example, interviews were conducted in the summer and fall of 2022, over two years after COVID-19 was declared a pandemic. Asking participants to recall the series of events and decision-making processes from the beginning of the pandemic may have led to some recall bias. Nonetheless, the participants were directly involved at the time of the pandemic, and thus it is reasonable to assume that these municipal staff members remembered the pertinent details. As well, the goal of our recruitment approach was to establish a sufficient basis for understanding policy and practice in each of the study regions. To this end, there were instances where individuals who were directly involved in transportation planning at the time of the pandemic had since retired or changed employers or were otherwise not reachable by email.

In conclusion, findings from this study offer insights into opportunities to advance active transportation by altering the status quo in planning and policymaking processes. While this study focuses specifically on active transportation, our proposed framework for exploring transportation policy change (Figure 1) may be broadly be used as a model for understanding institutional changes in transportation policymaking. This study showcases how the model can be applied in the context of the COVID-19 pandemic to test the hypothesised relationships between factors and stages, and the potential for path dependency in abrupt transportation policymaking. Our results offer novel insights that will help us understand how important strides in active transportation planning and implementation were achieved in Canada and throughout the western world during the COVID-19 pandemic. We argue that it is important to learn from the productive conditions that shaped the transportation response in Canadian cities, but not merely to accept them as best practice solutions. Instead, we urge scholars and practitioners to examine pandemic-time street reallocations through critical lenses and uncover ways to build on

them to achieve a new normal in planning and policymaking that creates healthy, sustainable and equitable communities.

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