Are We on the Same Track? Using Lived Experiences to Understand the Complex Impacts of New Transportation Investment

by

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Author's Declaration

This thesis consists of material all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Statement of Contributions

I, Emma McDougall, was the sole author of Chapters 1 (with the exception of section 1.2.5), 4, and 5, and the lead author of Chapters 2 and 3.

Chapter 1, section 1.2.5 *from transportation to gentrification,* is adapted from a published article of which I was the lead author. I was responsible for the transit-induced gentrification research and was the author of the first draft of the transit-induced gentrification sections, which were later updated based on feedback from my colleagues Dr. Sam Petrie, who was responsible for the systems thinking aspect of the published article, and Kaitlin Webber, who contributed to the transportation-related research and supported the preparation of the final draft. I researched and wrote the section that was adapted.

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Chapter 2 has been submitted for publication to the *Journal of Transport Geography.*

Chapter 2 was co-authored with Dr. Brian Doucet. I conducted and managed the deeply marginalized participant interviews. I thematically analyzed both data sets, providing the framing for all data. I wrote the initial and final manuscript. Dr. Brian Doucet conducted the stakeholder interviews and contributed to the framing of the article.

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Chapter 3 was co-authored with Dr. Brian Doucet. I conducted all interviews, transcribed, interpreted, and thematically coded the data. I wrote the first draft of the manuscript. Dr. Brian Doucet was the principal investigator for this research, funded in part by the cities of Kitchener, Waterloo, and Cambridge and the Region of Waterloo. He commenced the study and was closely involved in design and analysis. He further contributed to the refinement of the article structure.

Abstract

North American planning is now emphasizing more integrated approaches that centre new transportation infrastructure in larger urban redevelopment approaches, such as transit-oriented development. Research demonstrates numerous measurable land-use and economic benefits associated with planning that prioritizes density, vibrancy, and accessibility through public transit and active transit infrastructure. But planners and policymakers lack insight into the mobility benefits and potential consequences for the original community and particularly, deeply marginalized residents. Importantly, these planning approaches are using transportation infrastructure as much more than a tool for improved transportation, and thus the implications also extend beyond travel.

As a response, this dissertation challenges the inherent benefit of large-scale transportation investment by providing a series of counternarratives to current understanding of the impact of new transportation on a community and its residents. This is done through lived experience data, which this dissertation argues is necessary for acquiring a comprehensive understanding of how these planning projects bring about change. Currently, implications of new transportation on individual mobility and on community transformation are underexplored. Using a mobility justice lens, this research interrogates unique dimensions of the impact and divide for residents and stakeholders navigating new active transportation, such as bike lanes, and new transit, such as light rail.

Using the Region of Waterloo as a study area, this dissertation provides three unique case studies that centre lived experiences and perspectives from different stakeholders, with a particular emphasis on deeply marginalized residents. Three sets of semi-structured interviews were conducted: the first with 22 key stakeholders (planners, politicians, etc.) who were involved in the development of the region's ION light rail transit (LRT) project and have in-depth knowledge about its planning and political economy. Second, 22 realtors and developers working in the region were interviewed, as they have a strong sense of the regional market and associated trends. Finally, 20 deeply marginalized Region of Waterloo residents were interviewed, as they have experienced this change firsthand and are the most impacted by it. Waterloo Region presents as a particularly salient case study, as it is the smallest North American region to operate an LRT. Further, the arrival of the LRT came with a fundamental reorganization of the previously strong bus transit network. This means all regional ridership has been impacted by the LRT, whether residents use the LRT or not.

Findings are presented through three empirical manuscripts. The first manuscript demonstrates the divide between perceived project goals and ridership experience from community members who are navigating the integration of a new transit system. These findings highlight conflict between expert opinions and community needs, arguing that while appearances have improved, the ridership experience has actually declined for some. The second manuscript finds that opinions of transportation can be influenced by positionality, both physically and professionally, as suburban residents and realtors struggle to see themselves, or their needs, in new active and public transit. The final manuscript provides a holistic vantage of the interconnectedness of transportation and other social, political, and economic constraints. Through interviews with deeply marginalized residents, this manuscript finds that transportation investment has cascading impacts that disproportionately affect equity-deserving groups in visible and invisible ways.

Collectively, these findings demonstrate the inherent bias that individuals and groups bring to conversations of transportation. Residents, stakeholders, and experts bring their own lived experiences that can prevent them from fully acknowledging or understanding oppositional opinions from individuals with vastly different experiences than their own. Essentially, this work stresses the importance of acknowledging, incorporating, and collecting diverse experiences and perspectives from as many groups as possible in the planning of new transportation. These perspectives can then be used to inform transportation systems that are beneficial for residents and the community at large. This research is valuable for theory as it contributes to the further theorization of mobility justice in planning research while addressing a growing gap in the way planners consider transportation's complex impacts. It further provides numerous recommendations for planning practice, including integrating more diverse perspectives into all stages of the planning process, partnering with community organizations to ensure equity-deserving groups have access to the planning process, and reflecting on the role that transportation is meant to play within a community.

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Chapter 1:
Introduction

Planning has progressively adopted more integrative approaches to city building, with policymakers seeking multimodal transportation projects that are about more than moving people. Transit-oriented development (TOD) is an example of such an approach (Kamruzzaman et al., 2016), offering transportation as the foundation for vibrant city planning, which features public and active transit, while creating walkable, accessible, and desirable communities. Integrating both higher-order transit to support density (Cervero & Murakami, 2009; Hensher, 2007) and active infrastructure to further sustainability (Barbour & Mannering, 2023; Bopp et al., 2011; Sardianou & Nioza, 2015) allows for policy and infrastructure investment that is more inclusive of travel outside of private vehicles (Bagloee et al., 2016; Hardinghaus et al., 2021). Within planning research, the economic benefits of TOD for cities are well documented (Cervero & Sullivan, 2011; Dittmar & Poticha, 2004; Nelson et al., 2015).

Integrative planning approaches that centre transportation investment can radically reshape the economic landscapes of the communities it runs through; research shows this. However, the lived experience of residents navigating this radical change has been underexplored. While this type of smart growth approach offers cities clear advantages, planners have a macro-level understanding of the specific impacts on residents' mobility and how change can resonate across a community. North American planning research and practice tends to uplift value-added benefits of transit, focusing less on the complex social and political dimensions of mobility (Adey, 2006; Sheller & Urry, 2006), leaving a gap in understanding of on-the-ground experiences of change that extend beyond land-use implications (Schuch & Mushipe, 2024). Community change brought on by new transportation investment is thus the central focus of this dissertation, specifically the underexplored community impacts that manifest in complex social, political, and economic ways for individuals and neighbourhoods. This dissertation further emphasizes the dichotomy between expectations and experience, which stems from planning without considering the diversity of public needs and interests. Without comprehensive strategies to assess on-the-ground conditions, planners have an incomplete understanding of how communities are experiencing this change, missing important and impactful outcomes.

This is not to say that planning researchers are not critical of TOD policies or large-scale transportation projects. Research to date has concerned who is likely to benefit from new

infrastructure (Tolfo & Doucet, 2022), be it public or active, what associated changes mean for residents of different equity-deserving groups (Pathak et al., 2017), and the overall extent to which transit can induce neighbourhood change (Doucet, 2021; Mayers et al., 2024). However, gaps in research surround the consequences of this change for residents and the perceptions of new infrastructure's impact on the community itself. Effectively, this dissertation highlights the lived experience dimension of holistic transportation planning approaches to better understand how new transportation projects can have impactful consequences on communities and residents. These consequences are present in the ridership experience, as new transportation infrastructure does not equate to better or more inclusive service. As a result, perceptions of new infrastructure can vary dramatically by neighbourhood, as concentrated infrastructure in certain neighbourhoods can further a city's urban/suburban divide, giving rise to counter experiences like that of bikelash. Negative repercussions also disproportionally affect certain individuals, driving transit-induced gentrification, which has detrimental impacts for equity-deserving groups.

North America's transportation history plays an important role in the way travel is planned and consumed, and can help explain why a shift towards integrative systems has allowed for these community impacts to go unseen. For decades, automobility has dictated transportation planning, influencing public perceptions of what it means to be mobile (Adey, 2006, 2009; Urry, 2012). Car ownership was likened to freedom and flexibility, whereas alternative forms of travel, like public and active transit, faced stigmatization and disinvestment, especially in cities and regions outside of major metropolitan areas (Ashmore et al., 2019; Daley & Rissel, 2011; Gardner, 1998; Koglin, 2015). Decades of car-centric planning further saw the dispersion of residential and commercial spaces, sitting in opposition to planning for public and active transit, which prioritizes vertical growth and density (Urry, 2004; Welch & Mishra, 2013). In response to the challenges of urban sprawl, North American cities are now re-evaluating their transportation planning strategies with planners and policy makers exploring opportunities to revive public and active transit (Giuliano, 2005; Knowles & Ferbrache, 2016; Merriman, 2009). However, with many cities still catering to car-centric infrastructure, it is no surprise that the integration of TOD policies can and do lead to processes like transit-induced gentrification, which sees transit as the catalyst for neighbourhood change (Bardaka et al., 2018; Cervero, 2006; Dong, 2017; Immergluck & Balan, 2018; Kahn, 2007; Nilsson & Delmelle, 2018), as demand is high and accessible neighbourhoods are limited.

While transit-induced gentrification and other forms of neighbourhood change brought on by new transit have measurable impacts, research argues that some aspects of this phenomenon cannot be measured (Baker & Lee, 2019; Deka, 2017) and thus are missing in conversations of transit-related change. With this in mind, this research proposes the new mobilities paradigm as a framework to better understand how transit is woven throughout a person's life and further, how devastating a change in transit can be, affecting more than just transit access in ways that are difficult to measure. This has effectively made movement a form of social capital (Cresswell, 2010), giving rise to the new mobilities paradigm and compelling a shift in the way transportation is considered in discussions of more complex social processes of exclusion (Hannam et al., 2006). This paradigm argues that being mobile is so much more than simply time lost to travel (Sheller & Urry, 2006, 2016), with research using a systemic approach that moves away from stagnant attempts to capture acts of movement (Adey, 2006; Cresswell, 2010). Specifically, this dissertation seeks to operationalize mobility justice (Sheller, 2018a, 2018b) to investigate how transportation injustice stems from, and relates to, larger social, political, and economic systems of inequity.

The research that drives this dissertation relies on and amplifies the value of lived experiences gained from rich interviews with different stakeholder groups who offer unique perspectives on how transportation drives change. This includes realtors and developers, for their understanding of the market, key stakeholders who were involved in the creation of such a transportation redevelopment project, for their insight into project goals, and deeply marginalized individuals who, as this dissertation argues, are often amongst those who face the most complex impacts of new transit (Delmelle & Nilsson, 2020) while simultaneously being the most likely to benefit from increased transportation access (Barri et al., 2021). Centring deeply marginalized experiences from extremely low-income residents, this research provides a novel contribution to conversations of new transit infrastructure through rich lived experience data to highlight the importance of transportation access, the impact that new transit can have on public perceptions of transit infrastructure, and the complexities that come with larger transportation planning projects that *should* meet the needs of all residents.

Thus, this dissertation puts forth two connected arguments. Transit investment has complex impacts on a community, and without an in-depth exploration of those impacts, however obscure, the approach to transportation planning is not comprehensive. To understand these impacts, planning needs to engage diverse lived experiences in the context of new transit infrastructure, including those

from equity-deserving groups that are difficult to engage through traditional planning channels. To interrogate these arguments, this research draws on several case studies in the Region of Waterloo, a mid-sized region in southern Ontario that has spent the last few decades rebranding and rebuilding its transportation systems, physically and otherwise. In 2019, the region opened its ION light rail transit (LRT) line, transforming its regional transit from a spoke-and-hub model to a grid system. The region functions as a strong case study for several reasons. First, Waterloo is one of the smallest North American regions to operate a light rail line, integrating LRT infrastructure into the already strong local bus network. Second, the arrival of the LRT led to a fundamental reorientation and reorganization of the entire transit system in the region, meaning that even residents who are not able to use the 19 km LRT line still experienced direct impacts on their daily transit routes.

This dissertation takes a manuscript approach and is organized as follows. Chapter 2 "Middle-Class Ambitions, and Deeply Marginalized Experiences: Comparing the Goals of Waterloo's Light Rail Project with How it Is Experienced by 'Captive' Riders" compares the planning goals of the LRT, through interviews with key stakeholders involved in the LRT's creation, with the lived experiences of extremely low-income residents. Using a mobility justice lens, this article functions to critically examine the motives that drove the ION project and the role that the LRT was expected to play within the region. This examination is followed by an exploration of on-the-ground conditions through discussions with extremely low-income residents. While the stakeholder interviews occurred before the LRT was operationalized, discussions with extremely low-income individuals took place 3 years after service commenced, providing valuable insight into how these goals have manifested and what they mean for mobility and beyond. The third chapter and second manuscript, "Polarized Paths: 'Selling' Cycling in City and Suburb," focuses on the expansion of active transportation infrastructure alongside the ION project, exploring how transportation's role in the real estate market is dictated by public reaction to new infrastructure. In the case of the region, bikelash became a concern as residents in more suburban communities expressed fear that cycling lanes could bring about negative change. Through interviews with realtors and developers, this article explores how perceptions of cycling are shaped by the built form and enforced through marketing approaches. It further considers how lived experience is interwoven into perspectives on transportation, for residents and for industry professionals.

The fourth chapter and final manuscript entitled "Bearing the Brunt of Change: Centring Deeply Marginalized Experiences of Transit-Induced Gentrification" operationalizes 20 interviews with

deeply marginalized residents in the Region of Waterloo to understand the complex and often covert ways that TOD has impacted residents and their communities. This manuscript centres equity in transportation through the lens of an equity-deserving group. Examining the transit-induced gentrification that has happened in the region, this chapter explores the different ways that this group has been affected by scale transit investment, in visible and invisible ways. This manuscript functions to reinforce the message that transit investment can have cascading effects for residents and their communities. Chapter 5 concludes this dissertation with an overview of key contributions, limitations and future directions for research, and implications for planning practice.

The remainder of this introduction provides context through relevant literature, guiding theory, the case study area, and the unique methodological contribution. This begins by outlining the scope and aim of this dissertation research, a review of relevant literature, and a rationale for using mobility justice as the guiding theoretical lens. This is followed by an introduction to the case study area, the Region of Waterloo, and a detailed rationale for why it is a strong case study that is representative of current shifts in North American planning approaches. This introduction concludes with an overview of methods.

1.1 Scope and Aim

This dissertation centres on the need to explore how popular transportation planning approaches can create intended and unintended consequences for different segments of the community that can have lasting, complex, and sometimes even negative impacts. Often, these challenges disproportionately affect vulnerable communities and marginalized groups and manifest in a much more complicated system of exclusion whose impacts are not fully understood. Because of this, this research is reliant on and uplifts lived experiences to gain a more encompassing vantage of the complex responses and relationships that residents of a series of community groups have with new and changing transit systems. This work functions to better understand how mobility manifests in planning approaches, specifically through unforeseen and unintended impacts of new transit infrastructure.

The unevenness of mobility (Sheller, 2018b) necessitates lived experience research to contextualize the unseen impacts of transit on a community, how extremely low-income individuals and others are impacted by the integration of new transit infrastructure, and how subsequent consequences, like transit-induced gentrification (Dong, 2017; Doucet, 2021; C. E. Jones & Ley, 2016), happen. This dissertation argues that the impact of new transportation projects on communities and individuals is

not fully understood and thus seeks to provide three unique experiences of change occurring in the same community. It focuses on deeply marginalized perspectives, as these individuals face complex impacts from neighbourhood change but lack avenues to effectively participate in the planning process. It further integrates a mobility justice lens to unpack the complexity of mobility in the scope of new transit.

As the body of this dissertation consists of 3 manuscripts, it offers three connected yet independent research questions.

1. To what extent do the goals of a new transportation project sit in conflict with the experiences of transit users?
2. How are perceptions of new cycling infrastructure shaped by lived experiences of built form? What role can experts play in validating and shaping these lived experiences?
3. To what extent does neighbourhood change brought on by new transit investment affect equity-deserving groups in seen and unseen ways?

These questions come together to critically examine the ramifications of new transit investment, from the perspectives of those who have experienced or been impacted by related change.

1.2 Literature Review

From North America's auto-centric history to current experiences of transit-induced gentrification, this review of literature examines the transportation climate to understand the drastic shift from car-centric planning to expanding instances of transit-induced gentrification, which sees competition for core urban areas with accessible public and active transportation infrastructure (Dawkins & Moeckel, 2016). This begins with a review of North America's transit evolution, to position the historical divide between riders and drivers physically and socially. This review is necessary for thinking about North America's transportation evolution from auto-centric to its current shift towards TOD, while acknowledging the surrounding limitations associated with land use, public perceptions, and current planning approaches. This is followed by an exploration of TOD policies' rise to popularity, their integration in planning, and recent research that has been critical of TOD's universal benefits, particularly for equity-deserving groups. This exploration is important in the context of research that links TOD to neighbourhood change processes like transit-induced gentrification. To conclude, this review defines transit-induced gentrification, explores the current state of transit-induced

gentrification research, and lays the groundwork to introduce mobility justice as a valuable theoretical lens to guide this dissertation.

1.2.1 Contextualizing North America's Transit Evolution

North America saw mass motorization as early as the 1930s, shifting land-use planning approaches to effectively prioritize the car by the end of the 1950s (D. W. Jones, 2010). In Canada, the first freeway was constructed in 1952, and the United States, in 1940. Freeways revolutionized commuting, entrenching personal automobility in the North American landscape (Miller, 2020; Urry, 2004) in economic, physical, and cultural ways (Joo, 2007). The automobile industry thus became an economic cornerstone, with manufacturing plants scattered across Canada and the United States. Cities formed around industry, encouraging outmigration from major metropolitan areas to the post-World War II communities that made up much of the North American suburban landscape (Torrie & Layzell, 2024).

These cities were relatively small or mid-sized, with low density as zoning for separation saw enforced boundaries between residential, industrial, and commercial areas. These cities supported car-centric infrastructure, saw a focus on strip malls and box stores and the prioritization of parking and wide multi-lane roads (Duany et al., 2000). During initial construction, public transit was often limited or concentrated to core areas, and walkability and bikability were poor due to a lack of safe infrastructure and the distance between residential and commercial spaces (Roberts, 2020). Further, these neighbourhoods lack mixed-use development and, as is the nature of urban sprawl (Bueno-Suárez & Coq-Huelva, 2020), saw horizontal expansion rather than vertical. For residents, owning a car was, and in many of these communities remains, essential (Crane, 1996). This lifestyle is in contrast with urban core communities, where public and active transit are more prevalent, illustrating a divide between urban and suburban neighbourhoods (Sander, 2002). Alongside this physical manifestation of automobility, culturally, the car became ingrained into the North American suburban identity, with pop culture representation promoting car ownership as the ultimate source of autonomy[1] (Anable, 2005; Heining, 1998; Thoms & Holden, 2016).

[1] Cultural manifestations of automobility were more prevalent in the United States than Canada, with car ownership linked to the America dream. Similarly, the polarity of car versus alternative modes of travel was more aggressive. However, Canada still experienced a shift towards automobility, particularly in small and mid-sized cities built after WWII that resulted in negative perceptions of alternative modes of travel for residents.

Ultimately, the car has played a fundamental role in shaping North American perceptions and experiences of travel (Sheller & Urry, 2000). However, as Jacobs (1961/1992) famously argued, North America created a self-perpetuating cycle of automobility, with infrastructure continuously expanding to meet the needs of a perceived increase in cars on the road, and as a result, more cars populated the streets, drawing into question which came first. Motives aside, the number of cars continued to grow, as did the systems surrounding them. As a result, urban flight drove middle-income groups out of the inner city (Grubb, 1982), and public opinion of public transit fell (Ward & Paulhus, 1976). Seemingly, for North Americans who ascribed to car culture, public transit, and even active forms of transit like cycling, appeared as the antithesis to the car (Henderson, 2016).

While historic automobility has shaped urban sprawl in many post-World War II suburbs, it is important to add nuance to this discussion. Public and active transit have never been viewed as a last resort form of travel in major North American metropolitan areas like Toronto, Montreal, or New York (Ward & Paulhus, 1976). While there are noticeable differences between larger cities and the mid-sized form, residents unable to access a private vehicle have relied on alternative forms of travel to get around, even in areas with poor infrastructure (Glaeser et al., 2008; Ureta, 2008). Public transit provides access to employment (Li & Wyczalkowski, 2023; Pasha et al., 2020), education and even the ability to participate in social spaces within and outside of an individual's community (Adli & Chowdhury, 2021; Liu & Kwan, 2020). Decreased mobility costs employment opportunities, limiting access to education and social engagements and overall has a profound effect on one's life. Thus, public transit has also always been viewed by some as an extension of the public, as shared commuting space (Xue et al., 2012) and in and of itself, a social service (Garrett & Taylor, 1999), providing individuals of all income groups mobility.

In essence, while public and active transit continues to serve North Americans, especially in large metropolitan areas, decades of planning for the car have built a mobility hierarchy for drivers, who view automobility as preferable to alternative modes of travel (Sheller & Urry, 2006; Urry, 2004). This pattern is prominent in many mid-sized cities that formed around automobility or whose transportation infrastructure is limited to urban centres. On a cultural level, conceptualizing public infrastructure as a social service builds a correlation between alternative travel and poverty (Ashmore et. al., 2019). On a practical level, limited public transit infrastructure in the cities discussed above, decades of land-use development around the car, and a lack of investment in public transit service have not positioned public transit as a viable alternative for car-reliant residents. Its fixed schedule

does not emanate flexibility or freedom, and in non-urban centres, public transit is scattered and headway can be sparse (Scherer, 2010). Cycling faces similar limitations, with a lack of safe and connected infrastructure cited as a primary barrier preventing non-riders from adopting cycling (Buehler & Pucher, 2012; Handy et al., 2014; Pucher & Buehler, 2010).[2] This chapter of North America's planning history physically entrenches the car in the North American suburban culture, making the idea of moving beyond the car difficult.

1.2.2 North America's Transit Evolution: Shifting Planning Efforts

Despite past automobility, North American planning efforts have had to reconsider the role that transportation plays within their communities (Brown et al., 2009). This shift towards holistic transportation is not just about improving cities, but also a response to rapid growth creating continued urban sprawl, despite an increasing desire for urban living (Schuch & Mushipe, 2024). As such, planners and policymakers are tasked with mitigating the infrastructure issues shaped by decades of oppositional transportation planning. Without accessible, connected infrastructure and reliable service, the case for travel alternatives is difficult and has been met with hostility from drivers who feel that cars should continue to be prioritized on the road and in transportation planning efforts (Kafura, 2021; van de Walle, 2002). Discussion of cycling infrastructure has become a particularly heated debate (Mayers & Glover, 2020; Wild et al., 2018; Wilson & Mitra, 2020), which has risen alongside public transit as a healthy and sustainable way to get around (Silva et al., 2023). As a result, North American cities are seeing the increased integration of permanent on-road cycling lanes (Pucher et al., 2011). However, residents have begun to push back, arguing that on-road cycling infrastructure is a threat to congestion and road efficiency and is not aligned with the lifestyle of many commuters (Verlinghieri et al., 2024). This bikelash – a term used to refer to the adverse reactions to new cycling infrastructure – is fuelled by decades of auto-centric planning and ideology but illustrates a growing divide between suburban and urban lifestyles (Field et al., 2018; Wild et al., 2018). As a result, navigating community perceptions of travel is equally challenging (Purifoye, 2020).

[2] While cycling infrastructure is limited, especially in car-oriented cities, it is important to acknowledge that there are a number of complexities that further deter residents from using cycling as a primary or secondary mode of travel, which is discussed in more detail in Chapter 3.

1.2.3 Bikelash: Integrating Cycling Infrastructure

North America has a long-standing history of opposition to new transit projects as residents raise concerns about the impact that these projects could bring (Barajas & Braun, 2021; Collins & Doroteo, 2024; Lewis, 2015; Loong et al., 2017; Weitz, 2008). Bikelash represents a particularly topical resistance to new infrastructure, as cycling lanes face scrutiny for their potential to negatively impact communities. Bikelash is fueled by negative public perceptions of cycling and can be best understood on a spectrum (Wild et al., 2018). On one hand, bikelash comes from middle-income homeowners who fear that cycling infrastructure will negatively impact their community through decreased property values and increased traffic. In the Region of Waterloo, new cycling infrastructure has repeatedly been met with bikelash from suburban residents who argue that the integration of permanent cycling infrastructure will have detrimental effects on drivers' ability to navigate the city (Wilson & Mitra, 2020).[3] On the other hand, bikelash forms as a response to neighbourhood change processes like gentrification or displacement from residents who fear that increased cycling infrastructure is a catalyst (Stehlin, 2019, 2015). Evidence from Washington DC (Malmo-Laycock, 2017), Portland, OR (Flanagan et al., 2016; Lubitow et al., 2019), and Montreal, QC (Kiani et al., 2024) argues that new cycling infrastructure, which is often included in the TOD bundle of goods (Higgins & Kanaroglou, 2016), is viewed by residents as a sign that gentrification is starting in their communities (Lubitow, 2017; Stein, 2011).

In both cases of bikelash, the mobility that cycling infrastructure supports is inherently a form of social capital, meaning the perceived impacts change based on who is talking. This dissertation uses bikelash to illustrate how perceptions and experiences of change can fundamentally alter the way in which community members view potential outcomes. Two groups have managed to come to the same conclusion, but their lived experience and rationales could not be more different.

1.2.4 The Rise of Transit-Oriented Development

While the rationale for a fundamental shift in transportation approaches is clear, after decades of stigma, attracting people back to transit, especially those who have other options, is complicated for the reasons addressed above. The intertwining of these recapturing strategies, who they are directed at, and how the community at large is impacted, are central to this research. Transit has become much

[3] The complexity bikelash and Waterloo's bikelash are explored in more detail in Chapter 3.

more than a mode of travel, and the role that it can play in shaping communities feeds into larger social and political systems.

Conversely, not all transit is viewed as equal. Rapid transit has historically been preferred to bus travel (despite its hefty price tag), offering new and innovative, albeit usually less beneficial, infrastructure (Garrett & Taylor, 1999; Olesen, 2020). As Mock and Thill (2015) argue, "Choice riders prefer rapid transit over local bus or express bus service, because rapid transit is better adapted to traffic-free operations, such as bridging over congested intersections, and offers a higher service quality with a better image" (p. 110). More controversially, Higashide (2019) argues that the classification of choice riders is a means to push more expensive modalities that offer poorer service, often concentrated in core areas (Chatman, 2013; Duncan, 2019). These preferences are explored in more detail in Chapter 2.

With an understanding of modality preferences and biases, cities across North America are uplifting rapid transit as efficient and desirable, centring it in their TOD efforts (Renne & Appleyard, 2019). These projects effectively reshape communities along the line and optimize transit (Boschken, 2003; Higgins & Kanaroglou, 2016). From a public participation perspective, narratives around the act of taking public transit have changed (Mahmoudi et al., 2020). On the one hand, rather than giving up the privacy that automobility offers, individuals are embracing the luxury of rapid transit, which removes the complications of traffic and the responsibility of the driver's seat (Scherer, 2010; Scherer & Zurich, 2012). On the other hand, engaging in public and active transit is more sustainable, as opting to participate in a ride-sharing mode is one way to live a healthy lifestyle (Agyeman, 2008; Anantharaman, 2022; Pearsall, 2018).

From an infrastructure perspective, communities are beginning to feel the limitations of past auto-centric approaches, reaching somewhat of a full circle moment in transit history. Planners are now renegotiating the role that transportation plays in North American cities, which has been complicated by half a century of planning and policymaking that favours the car, returning to alternative modalities (Hrelja & Rye, 2023). Transportation plans now feature a shift away from auto-centric infrastructure to account for transportation needs, to accommodate growth, encourage density of core urban areas and conceptualize a new multimodal system that reduces car usage (Nash & Whitelegg, 2016; van Wee & Handy, 2016). As such, TOD communities are presented as a solution to several planning issues, but they rarely centre equity-deserving perspectives. If planners, as argued through

this dissertation, believe that priority for new transit infrastructure should be increasing accessibility, then we need to critically reflect on the way we currently integrate transportation into cities, and for whom.

The shift towards smart growth within North American planning efforts and the necessity of recapturing choice ridership have produced a suite of planning tools used to optimize public and active transit in urban centres (Culver, 2017; McLellan & Collins, 2014; Siemiatycki, 2005). TOD policies have played an integral role in shaping urban redevelopment. Gaining traction in the early 1990s, TOD approaches were implemented to address growing land-use concerns for cities and municipalities facing urban sprawl. The uptick of TOD approaches in city planning was unsurprising given the perceived positive outcomes for both transit and city planning. TOD advocates uplifted TOD as having the ability to promote accessible mixed-use communities that could effectively reinvigorate transit by centring multiple modes of movement (public transit, walkability, cycling, etc.) in the development of city streets.

As Calthorpe (2011) argues:

> Transit-Oriented Development is regional planning, city revitalization, suburban renewal, and walkable neighborhoods rolled into one. It is a cross-cutting approach to development that can do more than help diversify our transportation system; it also offers a new range of development patterns for households, businesses, towns, and cities. TODs are never stand-alone. They must be conceived in the context of, at the very least, a corridor and a metropolitan region. They are an alternative that provides choice not only in transportation mode but, more fundamentally, in lifestyle. (p. 86)

In the context of North America's planning history, a shift towards TOD made a lot of sense. On paper, TOD policies make a strong case for progressive mobility-focused communities that can provide more equitable access to multiple modes of transportation to support a shift away from automobility (Boarnet, 2011; Garde et al., 2024). While TOD centres transit, it also claims to provide more mixed-use urban density, which effectively supports other core city planning goals like sustainability, equity, and healthy lifestyles (Appleyard et al., 2019; Cervero & Sullivan, 2011).

Despite the "transit" in TOD, North America's car culture means that many incoming residents are also attracted to these communities for reasons outside of transit and ultimately might not be so easily swayed from automobility (Chava et al., 2018; Danyluk & Ley, 2007). Chatman (2013), for example,

finds that automobile reliance is still high in TOD neighbourhoods, and draws into question the real purpose of transit within the scope of TOD. Researchers further argue that while TOD approaches have the potential to integrate equitable and integrative approaches to community planning, in practice, this has not been a priority (Lutz et al., 2024). As has been an ongoing criticism of mixed-use communities, the build it and they will cohabitate equitably mentality is rarely realized, as unaffordability quickly becomes prevalent (August, 2008; Moos et al., 2018). This development is a concern when reflecting on the integration of recapturing efforts into the policy goals of planning approaches like TOD. Despite TOD's central transit focus, research shows that transportation itself is not the primary determinant for new residents, who are instead attracted to TOD neighbourhoods because of their housing and neighbourhood quality (Lund, 2006). This pattern has helped realize the link between TOD neighbourhoods and processes of gentrification and displacement (Baker & Lee, 2019; Deka, 2017; C. E. Jones & Ley, 2016) and property value increases (Bardaka et al., 2018; Cervero, 2006; Dong, 2017; Immergluck & Balan, 2018; Kahn, 2007; Nilsson & Delmelle, 2018). As the density of urban centres has increased, there has been a rapid expansion of higher-order transit (i.e., rapid transit) investment in metropolitan areas, and increasingly, mid-sized cities (Topalovic et al., 2012).

This expansion has advanced the exploration of equity as a by-product of public transportation, with researchers exploring new transit infrastructure's impact on property values (Mathur & Ferrell, 2013; Seo et al., 2014) and its potential to induce gentrification (Dawkins & Moeckel, 2016). One of the reasons an understanding of the shortcomings of TOD projects is lacking is that important perspectives are missed in their planning and development, drawing attention to a research gap this dissertation seeks to fill. To understand limitations, researchers need to hear experiences from all potential users and community members, including hard-to-reach populations, whose needs may differ greatly from middle-income homeowners.

1.2.5 From Transportation to Gentrification

Transportation, both public and active, has been critically examined for its potential to contribute to or drive gentrification, leading to the development of the term "transit-induced gentrification." Critics of TOD policies have argued that they can contribute to unaffordability, driving neighbourhood change processes and motivating research that suggests TOD policies themselves are also drivers of transit-induced gentrification. Where gentrification can be understood as the interconnected process

of four key events: “(1) the reinvestment of capital; (2) the social upgrading of locale by incoming high-income groups; (3) landscape change; and (4) the direct or indirect displacement of low-income groups” (Davidson & Lees, 2005, p. 1170), transit-induced gentrification occurs when the catalyst for these events is transit investment (see also Dawkins & Moeckel, 2016). Contributions to this research have come from transportation scholarship and gentrification and neighbourhood change researchers who have attempted to find a causal relationship between new and shifting transportation infrastructure and gentrification.

From gentrification, scholarship argues that TOD strategies position new infrastructure as a successful urban densification tactic, placing more value on its attractiveness than its functionality (Culver, 2017; C. E. Jones & Ley, 2016) by using TOD policies formed from public-private partnerships (Siemiatycki, 2005, 2011) that prioritize economic gain (Grodach et al., 2014; Farmer, 2011). As a result, research suggests that transportation planning agendas are now polarising neighbourhoods (C. E. Jones & Ley, 2016; Schuch & Mushipe, 2024) and using new transit infrastructure as a development tool, with consequences for inequality (Allen & Farber, 2019; Danyluk & Ley, 2007). C. E. Jones and Ley's (2016) case study of two Vancouver neighbourhoods notes that the absence of protective housing policy has allowed rapid investment in transit station neighbourhoods, resulting in precarious living conditions for lower-income residents.

Transportation scholars have taken apolitical and deterministic approaches to exploring transit's impact on land value in relation to fixed land-use factors. Approaches range from the exploration of transit's impacts in relation to zoning (Duncan, 2011) to the built form (Kahn, 2007; Nilsson & Delmelle, 2018) and property value impacts (Cervero, 2006; Cervero & Duncan, 2002; Deka, 2017; Kramer, 2018). Some research has found that the presence of a higher-order transit system can increase land value in station areas and attract new development (e.g., Bardaka et al., 2018; Cervero, 2006; Immergluck & Balan, 2018; Nilsson & Delmelle, 2018). More subtly, studies have found that neighbourhoods with new transit infrastructure are experiencing inflated property values and/or are showing signs of gentrification (Dong, 2017; Kahn, 2007; Nilsson & Delmelle, 2018; Zuk et al., 2018); however, other studies have not found signs of gentrification (Baker & Lee, 2019; Deka, 2017; Dong, 2017). This scholarship has also looked to socioeconomic indicators to illustrate gentrification in station neighbourhoods. This work often draws on definitions of gentrification that position education, race, and private vehicle ownership as key determinants. Again, some studies find

evidence of gentrification (Bardaka et al., 2018; Grube-Cavers & Patterson, 2015), while others do not (Deka, 2017; Dong, 2017).

While transit's shifting role in property value increases speaks to the importance of understanding local context, as is central to this dissertation, it also highlights the different ways that transportation modality and its integration into a city can influence reception. For example, scholars have found that disparities exist between new and old transit infrastructure. Dong (2017) finds that established lines are valued more than new infrastructure, whereas Knaap et al. (2001) reports that the introduction of a light rail transit station was associated with property value increases. Similarly, Kahn (2007) notes that walk-and-ride station areas are more impactful for property value increases than park-and-ride stations, but importantly, walk-and-ride stations are disproportionately placed in higher-income neighbourhoods. These approaches have also identified gaps surrounding lived experience (Baker & Lee, 2019; Deka, 2017; Doucet, 2021; Revington, 2015). Ultimately, this body of literature is working towards more flexibility to account for the interdisciplinary nature of transit-related change, with an identified need to conceptualize the way planners are centring voice and experience to understand associated neighbourhood change.

Both approaches have and continue to be fundamental to their respective fields, but bringing together transportation and gentrification research presents challenges that, as highlighted above, suggest a need for a more nuanced lens (Currans et al., 2019; Finio, 2022). This is representative of a common call across this field: the need for approaches that can capture the complexity of lived experience (Baker & Lee, 2019; Bardaka et al., 2018; Dawkins & Moeckel, 2016; Deka, 2017).

Research demonstrates the land-use and development impacts of transit and TOD policies. What is lacking is insight into what this means for marginalized communities. This is because much of the above-mentioned research does not meaningfully engage with deeply marginalized residents whose neighbourhoods and daily lives are in flux because of new transit investment and the associated gentrification pressures (Baker & Lee, 2019; Bardaka et al., 2018; Dawkins & Moeckel, 2016; Deka, 2017) in a way that does not trivialize lived experiences of displacement, or prioritize spatial experiences at the cost of non-spatial impacts (Hackworth, 2021; Thurber et al., 2021). The addition of transportation into the discussion of gentrification and urban inequality brings with it an entirely new group of stakeholders, processes, and opportunities for intervention that need to be equally

considered. As a response, this dissertation sheds light on marginalized perspectives, amongst others, of the effects of new transit infrastructure.

1.2.6 Transportation Equity: Planning for Change

While transit-induced gentrification is a relatively new concept, the idea of just and equitable transportation is not. A large body of work within planning and geography scholarship has investigated how to make transportation systems and the transportation planning process more equitable (Bullard, 2003; Masser et al., 1993; van Wee & Mouter, 2021; Vigar, 2002). This scholarship argues that transportation systems should meet the needs of all community members, positioning the equitable distribution of resources and accessibility as an important concern for transportation planners. However, this work also finds that current transportation systems fail to do so (Bullard, 2005; Ramjerdi, 2006; Verlinghieri & Schwanen, 2020). As such, central to this work is the question of transportation for whom? This question has led to important debate surrounding equity parameters, as scholars and practitioners alike attempt to qualify and quantify an equity measure to better define what equitable transportation should look like in a community (Pereira et al., 2017).

Within transportation equity research, subfields have emerged. Researchers have explored concerns of transportation-related social exclusion and transport poverty (Allen & Farber, 2019, 2020; Karner et al., 2023; Lucas, 2012; Preston & Rajé, 2007), which sees inaccessible public transit as limiting a person's ability to participate in society. Scholarship has debated whether equity should be planned horizontally or vertically (Guo et al., 2020; Litman, 2022). Horizontal equity sees the equal distribution of transportation benefits, whereas vertical equity sees the prioritization of identified groups[4] in the distribution of transportation benefits (Karam & Ryerson, 2023). Further still, research has discussed best practice for integrating equity measures into the transportation planning process (Cantilina et al., 2021; Delbosc & Currie, 2011; Inwood et al., 2015; Litman, 2022; Ramjerdi, 2006).

More recently, researchers have considered the need to move beyond equity to explore justice within transportation (Beiler & Mohammed, 2016; Hananel & Berechman, 2016; Martens, 2016), arguing that equitable planning has become convoluted and at times performative (Gössling, 2016; Karner et al., 2020, 2023). Karner et al. (2020) assert "transportation justice describes a normative condition in which no person or group is disadvantaged by a lack of access to the opportunities they

[4]Often disadvantaged or marginalized groups

need to lead a meaningful and dignified life" (p. 440). This body of work seeks more fundamental change, arguing that reliable and accessible transportation is essential for all residents.

With this body of literature in mind, this dissertation argues that planners need to ensure their theoretical toolkit is well-equipped to handle the complex and interdisciplinary nature of large-scale transportation projects and discussions of just transportation (Loukaitou-Sideris, 2019). To do this, this dissertation harnesses mobility justice as a strong theoretical tool to consider the role that transportation plays in larger systems of injustices. Born out of the new mobilities paradigm, mobility justice presents a means to better investigate, define and address transportation in the context of larger social justice issues. As Sheller (2018a) argues, "existing concepts of transport justice and spatial justice are simply not capacious enough to address the triple helix of mobility crises that we face. That is where the new mobilities paradigm has an important role to play" (p. 9). More and more scholarship argues for the value of using a mobility justice lens to engage more critical with the transportation planning process (Cook & Butz, 2018; Enright, 2019; Verlinghieri & Schwanen, 2020).

1.3 Theoretical Approach

The purpose and scope of this research were inspired by the need to reconceptualize approaches to transportation research within the context of urban change. As addressed in the review of literature, the difficulty of integrating transportation into discussions of social-political change processes has created a gap in understanding of new infrastructure's direct and cascading impacts on a community. However, as planning efforts continue to push forward with TOD policy integration, understanding these impacts has become even more important. In response, this research offers the new mobilities paradigm (Sheller & Urry, 2006) as a strong theoretical lens for its ability to reshape how to consider the impacts that, in this case, transportation projects can have on an individual or group in larger social, political, and economic ways. Specifically, this dissertation attempts to contribute to the theorization of mobility justice (Sheller, 2018ba), to guide how to centre mobility in the way planners approach community impact as a result of large- and small-scale transit investment.

1.3.1 The New Mobilities Paradigm as a Theoretical Solution

This dissertation holds true that transportation plays a fundamental role in the way people negotiate space, and also in the social, political, and economic structures that shape society. This idea is not novel and has slowly made its way into sociology over the last few decades. Yet, this perceived truth

contrasts with much of the theoretical and methodological approaches used within the social sciences that capture space as a stagnant entity or a snapshot in time (Cresswell, 2006; Sheller & Urry, 2006). As more critical social theory evolved, researchers questioned the ways of knowing used to explore movement's role within the social. As a response, Sheller and Urry (2006) framed the growing cross-disciplinary shift in the way movement is incorporated into the social world as the *new mobilities paradigm* (herein referred to as mobilities). Mobilities theory delineates what it means to be mobile in the scope of how the social world functions (Sheller & Urry, 2006), injecting nomadic considerations into previously static world views (Cresswell, 2010). Mobilities further rejects traditional social theories' framing of social processes through a stagnant lens, arguing that it sits in opposition to how movement should be studied (Cresswell, 2006; Sheller & Urry, 2006). This stagnant lens made integrating movement into social processes difficult, if not impossible and instead reduced the social to a fixed physical location governed by stagnant boundaries. However, the movement of people, places, and things is entrenched in the complex social and cultural interactions that shape communities (Everuss, 2020), and these experiences need to be explored similarly. Defining the social as an immobile object effectively limits our ability as researchers to integrate movement's role in shaping social interactions into discussions of urban change.

As such, mobilities:

> enables the "social world" to be theorized as a wide array of economic, social and political practices, infrastructures and ideologies that all involve, entail or curtail various kinds of movement of people, or ideas, or information or objects. (Büscher & Urry, 2009, p. 100)

Mobilities further challenges transportation scholarship by repositioning movement as more than simply time lost to travel, arguing that the movement of people, ideas and things is inherently political (Cresswell, 2010). Mobilities further concerns the dominance of quantitative methodologies in researching transit impacts (Hannam et al., 2006; Sheller & Urry, 2006). Transport geography, for example, historically approached research on transportation's impact from a positivist informed quantitative methodological toolkit to attempt to provide truths about what transportation means (Goetz et al., 2009).[5] However, around the new mobilities turn, critical transport geographers argued

[5] This is not to say that transport geography has not since branched off (including the integration of social justice, culture analysis, feminist perspectives, and more).

for the value that mobilities offered their discipline, for both its potential to bridge the quantitative-qualitative gap growing in transport geography, but also as a viable interdisciplinary approach to incorporating and transcending disciplinary boundaries (Goetz et al., 2009; Sheller, 2014). Unlike past approaches to transportation studies, mobility is inherently interdisciplinary, exploring the complex overlap of different forms of movement that transcend the sedentary approaches rooted in much of social science (Sheller, 2017).

1.3.2 Mobilities as a Qualitative Shift in Transportation Research

Historically, much of transportation research has relied on quantitative approaches, partially borne out of the positivist movement that shaped sociology's quest for social engineering (Goetz et al., 2009; Manderscheid, 2016). Together with other critical research paradigms, mobilities rejects ways of knowing that claim objectivity. The idea that what is observable is akin to what is correct is in opposition to mobilities' theoretical underpinning (Sheller & Urry, 2006, 2016; Jensen, 2011; Merriman, 2023). This matters in the context of mobilities because it seeks to bridge the gap between transportation and social research. Bridging this gap is of value for this dissertation, as attempts to measure transit-induced change to empirically prove that change is or is not happening have been met with criticism that they are ultimately ignoring a dimension of lived experience that is difficult, if not impossible, to measure (Baker & Lee, 2019; Deka, 2017; Slater, 2009). When these efforts fail to include lived experience, their findings are incomplete. This research thus leverages mobilities' extensive use of more nuanced approaches to argue for the necessity of lived experience data within the formal transportation planning process.

Of course, this is not to devalue quantitative approaches or to suggest that they have not served a role in sociology's post-positivist shift, but it is to uplift the value of qualitative research in the larger methodological toolkit (McGuinness et al., 2010). As Manderscheid (2016) states, mobilities can be "analysed through qualitative research methods, which capture on a micro-sociological level the subjective sense, experienced constraints and freedoms and incorporated legitimisation which shape practices and patterns of mobilities and immobilities" (p. 45).

However, as Büscher and Urry (2009) argue, mobilities' methodological shift is about balance, to "refuse the simplistic opposition simple/complex in their empirical approach" (p. 109) and thus a need to consider a more integrated approach that seeks balance between oversimplifying or over complicating (Büscher et al., 2011). Simply put, mobilities strives to avoid oversimplification to fit

dominant ideology while at the same time ensuring that complication does not come at the cost of comprehension. Qualitative methods thrive under a mobilities lens and can be paired with quantitative approaches in the quest for clarity and actionability (Manderscheid, 2016). Having touched on some of the fundamental truths and guiding principles of mobilities theory, it is helpful to briefly explore mobilities' historical evolution as it relates to planning practice to narrow down mobility justice as the guiding framework for this dissertation.

1.3.3 Mobilities to Mobility Justice

The evolution of mobilities theory closely aligns with the growth of transportation in North America, beginning with a focus on automobility and exploring North America's fascination with the car (Featherstone et al., 2005; Urry, 2004), mobilities has become a holistic framework to research the complex ways modes of movement (be it physical, virtual, or imaginative), drive (im)mobility (Adey, 2006; Cresswell, 2008; 2010; Kaufmann et al., 2004; Kesselring, 2015; Sheller & Urry, 2006, 2016) and enable or impede social processes. Mobility is thus constrained by and contributes to the same social, political, and economic power dynamics as sedentary spaces, which motivated the conceptualization of mobility as a form of social capital (Cresswell, 2008; 2010; Kaufmann et al., 2004), supporting or impeding access to and participation in fundamental social and political processes (Adey, 2006). Mobility scholarship has also been influenced by complex systems theory, which argues for the need to look at the dynamic interplay between processes, stakeholders and ideas that contribute to transportation (Macmillen, 2013). Because of this, mobilities presents a framework to analyze social processes tied to transit in ways that transportation studies and social justice work cannot (Cook & Butz, 2018; Sheller, 2018a).

Given this conceptualization, it is unsurprising that mobilities research has been motivated by theories of justice. Cresswell (2010) presents the politics of mobility, which frames systems of movement and associated meanings as sources of privilege or disadvantage. Kaufmann et al. (2004) offer the term "motility" as the personal capital from (im)mobilities. Pierce and Lawhon (2018) coined the right to move as a mobility spin on the right to dwell ideology, to address how different groups navigate moving through the city. Others expose the innate injustices of transportation plans, as those most likely to benefit from increased access to modes of movement (marginalized groups who have limited transportation options) are not prioritized in the planning process (Ohnmacht et al., 2016).

1.3.4 Theorizing Mobility Justice

Mobility justice builds on and is inclusive of the large body of mobilities work that has conceptualized the complexity of justice theory within mobilities (Sheller, 2018a). Mobility justice frames ongoing concerns of power and justice in movement within larger conversations of governance and global processes (Cook & Butz, 2018). It further offers a lens for transit equity to be theorized in a much more universal way (Haxhija et al., 2024) and challenges justice scholars' static approach, capable of exploring mobility regimes from micro-level to macro-level (Sheller, 2018a). Mobility justice is thus quite simple in definition as a guiding theory, positioned as a means to examine the complexities of mobility and inherent injustices on different scales to effectively "transition toward more just mobilities" (Sheller, 2018b, p. 17). However, the systems that contribute to these injustices and uneven mobilities are complex and intertwined. In the context of this dissertation, mobility justice is used to explore city-level concerns of justice (micro), through daily commutes, infrastructure changes, and experiences navigating the city while also exploring how the larger discourse around the rebranding of transit and resultant hierarchies enforce much larger systems of social and political injustice (macro). This is central to discussions in Chapter 2.

Mobility justice further centres the unevenness of movement and experience (Sheller, 2018b), which is central to this dissertation's focus on lived experience. It can help explain why expectation and experience vary so drastically when comparing stakeholder perspectives to deeply marginalized ridership. It can support an understanding of how community responses to change, like bikelash, can come from such drastically different perspectives. For the stakeholders included in this research, we can conceptualize how their perceptions and experiences of travel range so drastically based on mobility factors and larger social and political processes. Further, we can consider how their lived experience is integrated into their understanding of transit projects and outcomes. As experts, they hold an important position in informing and shaping transit, yet they still bring lived experience that will impact their perspectives. For marginalized residents, we can use mobility justice to map new transit to larger experiences of injustice that shape their lives in a city facing gentrification, making possible an important discussion of how certain lived experience is prioritized.

A mobility justice approach is therefore helpful in addressing planning's contribution to injustice (Wellman, 2019), whether that be proactively or retroactively. While the case of the Region of Waterloo and similar North American cities integrating new transit infrastructure presents a need for retroactive intervention to mitigate impact, using the Region of Waterloo as a case study, this

dissertation ultimately presents the means to consider how to dismantle implicit biases towards transportation planning rooted in our own experiences and perceptions. We can then consider how we can approach transportation planning in a just way. Using mobility justice, we can target justice throughout the planning process to ensure that we are capturing its ever-changing complexity and monitoring for future intervention.

In the context of city-level transportation planning, we lack a comprehensive understanding of the uneven mobilities (Sheller, 2018b) that shape transit access or a lack thereof, and how uneven mobilities are both products and producers of existing social and political hierarchies. Mobility justice then lays the groundwork to emphasize not just the importance of lived experience as valuable empirical data, but the necessity of it for informing actionable change.

1.3.4.1 Unifying Theories of Justice Under Mobility Justice

Sheller (2018a) approaches the theorization of mobility justice by exploring the contributions of five justice typologies (see Table 1), arguing that mobility justice seeks to incorporate all five, while also "treating justice as an unstable configuration" (p. 21). What this means is that through a mobilities lens, justice needs to be explored in motion. As is the foundation of the new mobilities paradigm, past social science approaches that are static, seeking to pause and capture experiences, do not provide a comprehensive picture. Mobility justice thus seeks to research inclusively of proactive and reactive justice as a response to conflicts in movement.

Distributive justice	Planning for equitable distribution of infrastructure and resources, and ensuring that accessibility is not decreased
Deliberative justice	Prioritizing diversity of perspective within the planning process
Procedural justice	Ensuring that individuals have access to supports and can productively contribute to planning discourse Ensuring that changes to transportation systems are communicated and accessibility limitations are addressed
Restorative justice	Acknowledging the power structures (class divides, income, ability, etc.) that have contributed to unequal access
Epistemic justice	Preparing to adapt as needed as new challenges arise

Table 1: Sheller's (2018a) Nested Approach to Justice in the Context of Urban Change Research

Applying mobility justice to the case of the Region of Waterloo, particularly in Manuscript 1, this dissertation will contribute to the theorization of mobility justice in the context of TOD policies and large-scale transit investment. This functions not only to further define a mobility justice framework, but also to better understand how city-level change feeds into much larger systems of inequality.

1.4 Situating the Case Study Area: The Region of Waterloo

The Region of Waterloo is located approximately 100km west of Toronto and is home to over 576,000 residents across three cities: Kitchener (256,000), Waterloo (121,000), and Cambridge (138,000) and four townships: North Dumfries, Wellesley, Wilmot, and Woolwich (see Figure 1.1), as per the 2021 census (Statistics Canada, 2022a). Previously operating as several smaller municipalities and townships, the Region of Waterloo was incorporated in the early 1970s, marking a shift towards the now competitive mid-size region. This incorporation was a strategic response to population growth at the time, to improve the coordination of services (including transportation and associated land-use planning) (English, 2011). This shift was also indicative of larger political restructuring efforts happening across Ontario, with arguments that a two-tiered governance model would ensure greater efficiency. While local municipalities (the cities and townships) would maintain control over local concerns like zoning bylaws and local services, regional government would take over larger social service systems like transportation, public health, and vital infrastructure. For this dissertation, one of the most significant benefits of this shift in governance was the ability to conceptualize a more integrated transit system that would be able to service transportation needs and encourage density within the cities. This density would function to both manage growth happening across the region and protect the rural townships by discouraging urban sprawl.

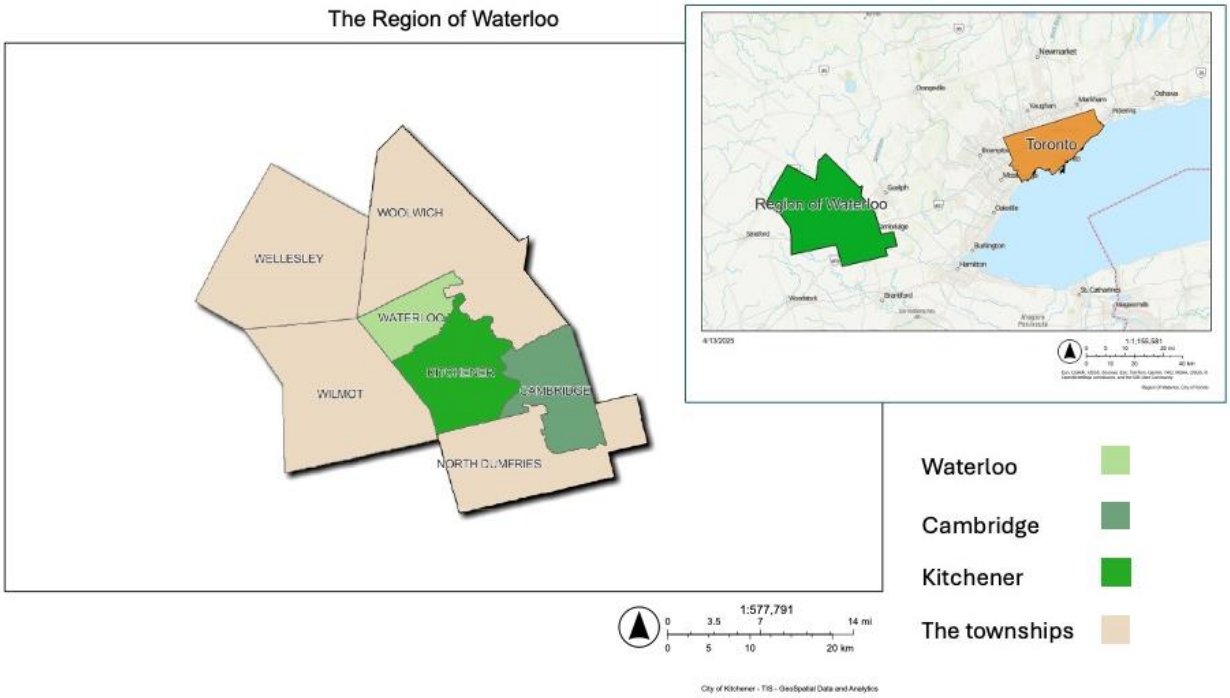

Figure 1.1: Map of the Region of Waterloo in Reference to Toronto

The regional and municipal governments spent the last few decades shaping their planning efforts around growth management to encourage density in their city centres and prevent further horizontal development. Transportation and the potential construction of a higher-order transit system were discussed heavily in the early 2000s with feasibility studies exploring the potential of said system as a comprehensive and integrated transit solution. In 2011, the ION LRT project was approved for a 2-stage implementation. The first stage, which was operationalized in 2019, consists of 19 km that stretch from Waterloo to Kitchener, incorporating both cities' urban cores, to peripherally located suburban malls on either end (Banger, 2019). The second stage would see the LRT expand an additional 17 km into Cambridge to connect what is often referred to as the tri-cities.[6] However, proposed costs have increased exponentially since the first stage of the LRT, driving concern from residents and the government. As such, a business case is currently being prepared with expected completion in 2025 (Thompson, 2024).

[6] Kitchener, Cambridge, and Waterloo

1.4.1 On Transportation

The integration of the ION also brought about fundamental changes to the region's existing transportation system. Grand River Transit (GRT), the regional bus system, was included in the ION project to ensure an integrated system that optimized the LRT line. To do this, the region transformed the previous spoke and hub model, which suited Kitchener and Waterloo's complicated road system and central bus depot (which has since been closed), to a more grid-like network structured around the LRT. Similarly, the GRT's express bus fleet was rebranded as part of the ION system, stretching the ION's reach an additional 17 km, with improved ridership experience and express service. Ultimately, the ION's introduction brought about a large-scale restructuring of transit across the region (see figures 1.2 and 1.3), including the introduction, removal, and rerouting of bus service, as well as the reorganization of bus stops (Sharkey, 2019). Significant for discussion in Chapter 3, bus service is still periodically changing, with routes and stops deemed underutilized being removed, driving tension amongst riders (see figure 1.4).

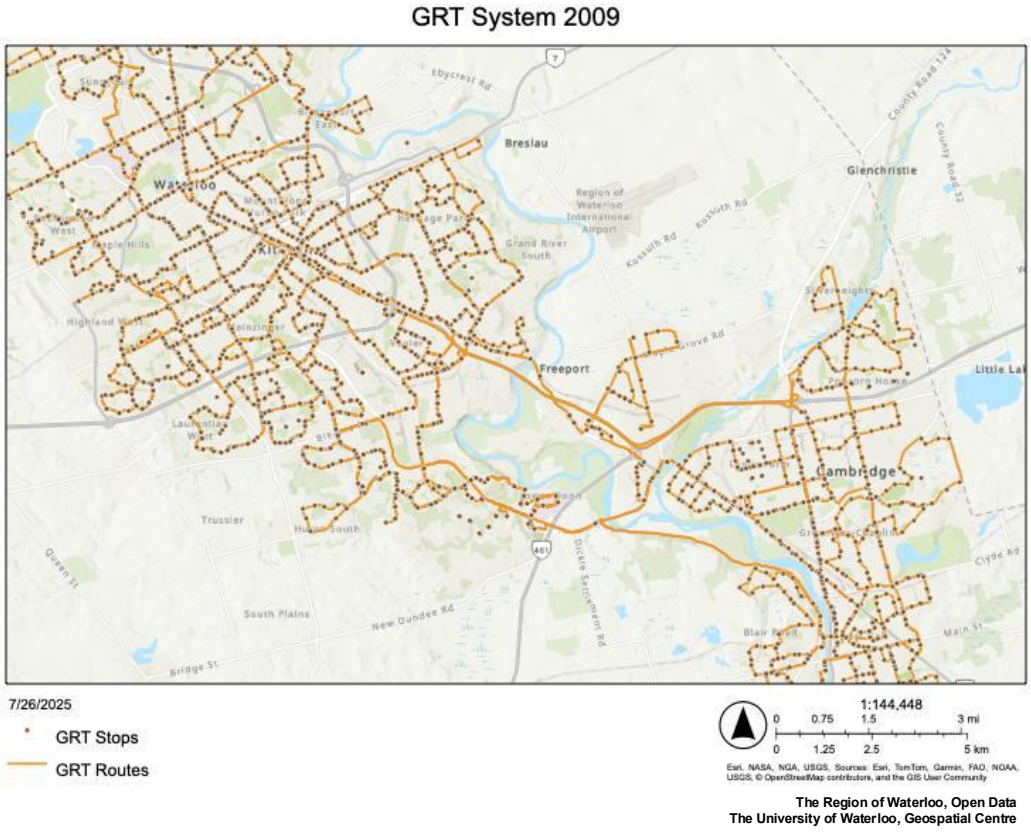

Figure 1.2: Map of the GRT System in 2009

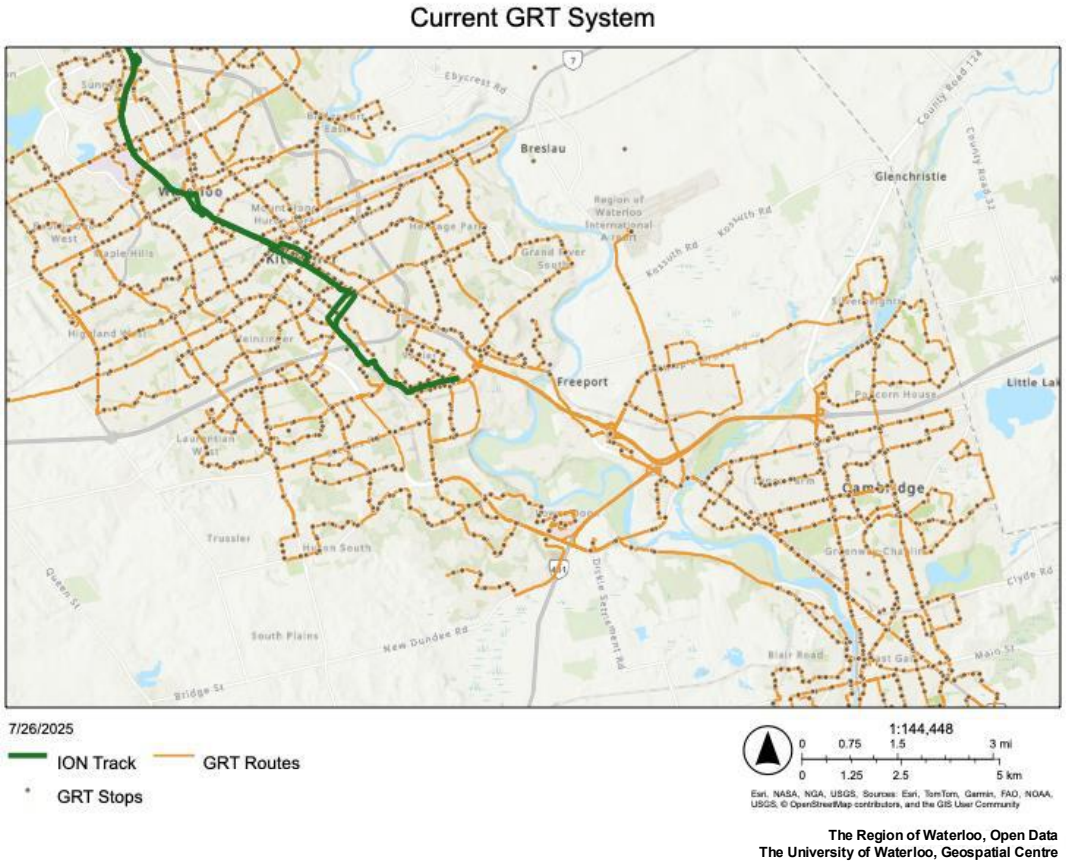

Figure 1.3: Map of the Current GRT System

For a mid-sized region, Waterloo's journey to work data records noteworthy participation in alternative modes of travel (Statistics Canada, 2023). In 2021, 4.1% of residents reported taking the bus, 0.4% the LRT, 3.7% walked, and 0.7% cycled (Statistics Canada, 2022b). Compared to a major metropolitan area, Toronto report 26.2% of the popular using public transit while 9.6% engage in active transportation through walking or cycling (Statistics Canada, 2022c). While the region's reliance on automobility is clear, a modest but meaningful portion of the population is engaging in public and active forms of commuting.

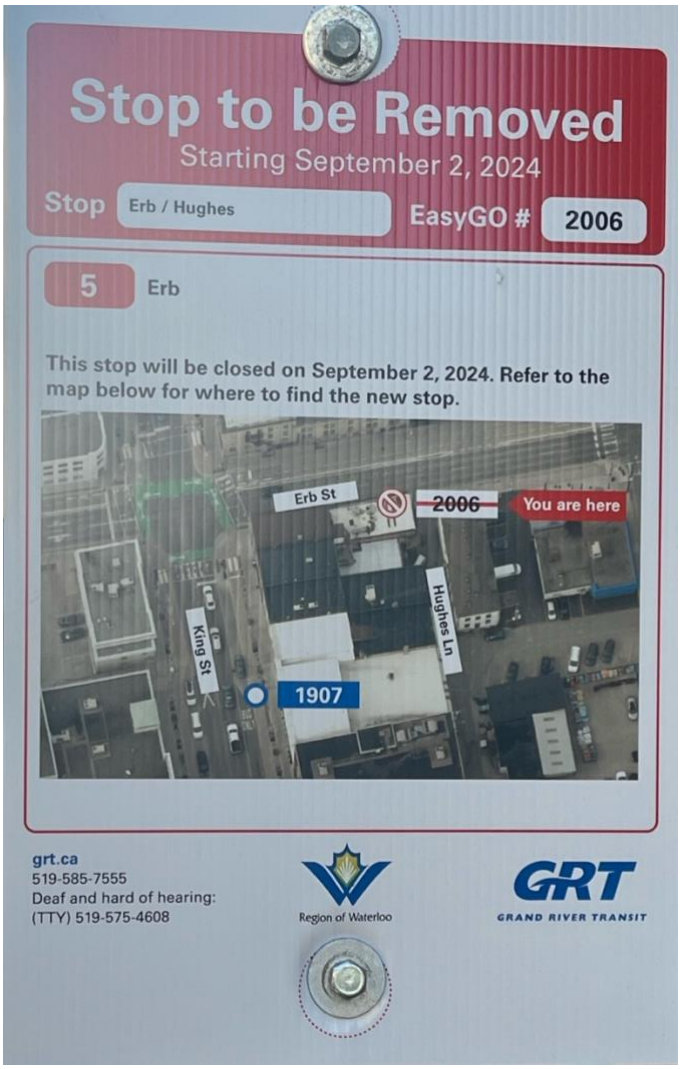

Figure 1.4: Sign Posted in 2024, Documenting Stop Relocation

Alongside the ION's development, all three cities have explored opportunities to expand their cycling infrastructure. While efforts have concentrated in core urban areas (Figure 1.5), they have made several innovative moves, like removing lanes of traffic in favour of permanent separated cycling infrastructure (Figure 1.6). In 2020, the cities of Waterloo and Kitchener ran an 18-month pilot project of protected bike lanes on major streets which connected to the LRT. This pilot marked a shift towards safer cycling infrastructure along arterial roads, as several permanent protected cycling lanes have been integrated on busy streets in core areas and new subdivisions. Kitchener, Cambridge,

and Waterloo have all updated their cycling and trails master plans, integrating several on-road protected cycling lanes in core areas and expanding multi-use trails. While the regional government has approved additional protected cycling infrastructure, the provincial Bill 212, which places approval of new on-road cycling lanes in the hands of the Ontario government, has created a roadblock (Bueckert, 2024). Still, the region's commitment to cycling expansion in core areas is clear.

Despite research that finds safe and integrated cycling infrastructure can have positive impacts within a community (Parker et al., 2020) and growing regional support of cycling, Waterloo is still experiencing bikelash from residents who do not see cycling investment as valuable. This observation offers an important frame of reference for considering how innovative planning can elicit a range of responses, as the provincial government, municipal government, and residents all bring different perspectives into discussions of new cycling investment.

Figure 1.5: Bike Lanes in Waterloo's Urban Core

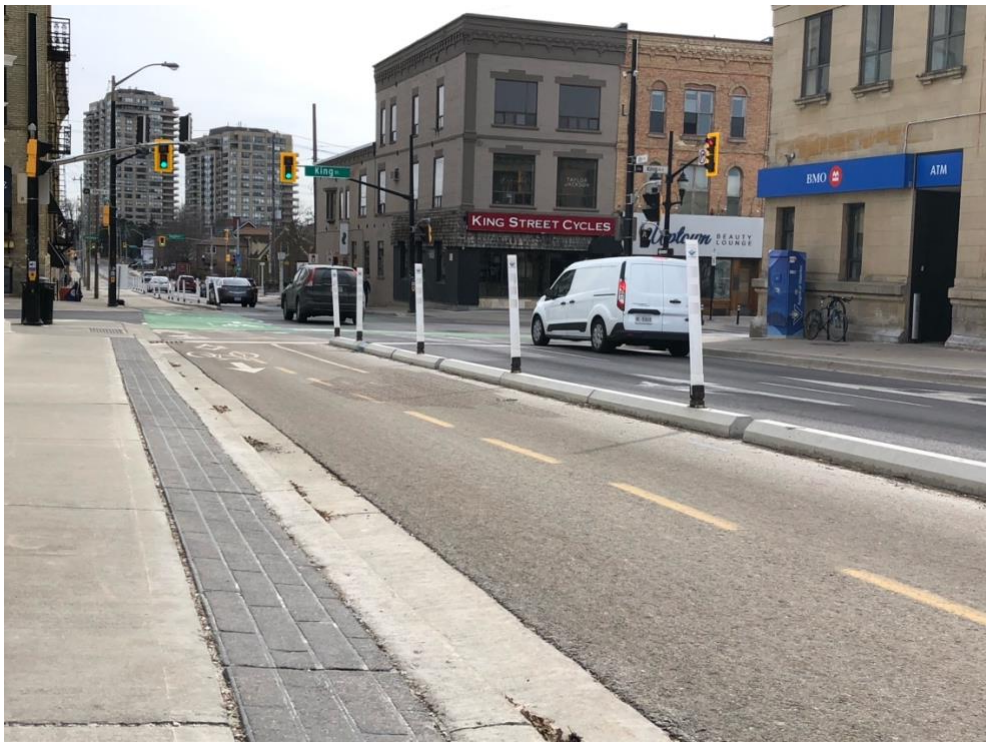

Figure 1.6: A Stretch of New Cycling Lanes that Were Implemented by Removing a Lane of Traffic

Similarly, again with concentration in core urban areas, the cities have made important attempts to connect new cycling infrastructure (see Figure 1.7) to the region's expansive trails and multi-use pathways (see Figure 1.8).

Figure 1.7: A Sign Explaining Cycling Expectations and Instructions to Connect to Adjacent Trails

Figure 1.8: A Shared Pathway Connecting a Local Park to the City's Urban Core

While this research does include perspectives on change happening in Cambridge, particularly in Chapter 3 through discussions of bikelash and perceptions community impact of new cycling infrastructure, much of this dissertation centres the central transit corridor (CTC), which encloses the 19 kms of ION LRT that run through Kitchener and Waterloo's (also referred to as KW's) urban cores.

1.4.2 On History

To better understand the ION project, its intended purpose, and the value of the Region of Waterloo as a compelling case study for other cities, it is helpful to reflect on the cities' development over the past few decades. Kitchener and Waterloo were both impacted by deindustrialization, which saw a restructuring of industry across the region. As a manufacturing economy, this shift had a significant impact on the region's trajectory, with once bustling manufacturing centres declining (Filion & Bunting, 1993). While manufacturing was not lost in the traditional sense, it was slowly pushed to suburban neighbourhoods, and nearly all the older industrial factories that populated the city centres closed (Barich, 2021). These closures caused a relatively rapid urban decay of core areas, which sat in contrast to the growing post-war suburbanization happening in surrounding neighbourhoods, putting pressure on the cities to make important decisions on the trajectory of their urban centres (English, 2011).

Waterloo was the first to suburbanize, which was made easier for several reasons. Home to two universities and one college, Waterloo had a steady supply of students looking for housing and contributing economically. Politically, the city of Waterloo was also more inclined than the rest of the region to let go of its urban heritage to embrace suburbanization. English (2011) argues that at peak suburbanization, Waterloo had essentially transformed its uptown, now part of the CTC, into one large parking lot.

In comparison, Kitchener struggled to adapt to suburbanization. After ongoing province-wide pressure to suburbanize, resulting in mid-sized cities across Ontario prioritizing a drivable city centre (Bunting et al., 2007; Filion & Bunting, 1993; Filion & Hammond, 2008; Filion et al., 2004), Kitchener made changes. The late 1960s early 1970s were a particularly interesting time in Kitchener's history, and ironic given the current transportation discussion. In response to the decline happening in Kitchener's urban core, a strong local coalition formed to attempt to revive what was referred to as the central business district (Filion & Bunting, 1993). They promoted a pedestrian-

friendly streetscape (a very innovative approach at the time) to attempt to breathe life back into the area. They were met with concerns that this would harm drivability and attract "long-haired youth" to loiter (Filion & Bunting, 1993). Filion and Bunting cite several reasons why this coalition was ultimately unsuccessful, but acknowledge the role that growing suburbanization pressures played in shifting public wants away from a centralized urban core. Eventually, the decision to suburbanize the core was made, resulting in the construction of a downtown mall and the destruction of Kitchener's historic city hall and the original Kitchener market (Filion & Bunting, 1993; English, 2011). Despite this, Kitchener's image continued to deteriorate.

In the 1990's Bunting and Filion (1999) revisited Kitchener's urban core to understand if there was a potentially untapped residential housing market there. Through interviews with regional residents, they found some were interested in core housing, noting an attraction to the city's heritage buildings, but were hesitant because of the area's declining reputation and increased crime. After decades of negative public opinion, Kitchener made moves to invigorate its urban core, exploring opportunities to attract investment through the revitalization of former manufacturing buildings, the rebranding of the city's cultural history and the integration of a technology hub (Barich, 2021).

In the mid-2000s, rapid transit became a priority for the region and the cities, which effectively argued that rapid transit was a vital investment to further compete on a global scale. During this time, the cities even discussed a potential merger to further their global image (English, 2011). While the merger was vetoed, both cities have taken full advantage of TOD's growth potential, offering developer incentives, centralizing public and active transit in both their core areas, and using this new investment and growth to demonstrate that they offer city centres that are accessible, bike friendly, and able to compete against a downtown core in a major metropolitan city. Before the LRT was even operationalized, the CTC attracted over $3 billion in new residential investment (Region of Waterloo, 2020).

1.4.3 On Social Geography

It is also helpful to reflect on the social geography of the region and the differences between cities. Waterloo region is seeing an increasing young workforce, younger than the Ontario average and comparable mid-sized cities, as young families and young professionals are seeking to maintain permanent residency in the region (Region of Waterloo, 2021). While this can in part be attributed to the universities and college, there are several additional factors, including the tech and start-up hubs

in Waterloo and Kitchener and overall affordability in comparison to Toronto, the closest major metropolitan area. Similarly, the regional community is relatively diverse, with foreign-born residents making up 25.8% of the total population, with a concentration in the three cities. India, the United Kingdom, and China are the top three birthplaces of immigrants; however, since 2016, India, Syria and Eritrea represent the top three birthplaces of newcomers (Statistics Canada, 2022a). In terms of city distribution, 36% of the racialized population lived in Waterloo, 24% in Kitchener and 26% in Cambridge. Across the region, Indigenous people made up 1.7% of the population (Statistics Canada, 2023).

The competitiveness of the city means that current growth is projected to be exponential, unsurprising given its consistent ranking among Ontario's fastest-growing regions. However, as the region has stark fault lines between urban, suburban, and rural areas, much of this growth has been concentrated in the urban communities – as has always been a goal of the region. This divide also translates to industry. In its cities, the region has been able to maintain a strong manufacturing workforce, the 4th largest in Canada, supports a tech and start-up hub, and despite a drop in employment, continues to hover just below the provincial average (Region of Waterloo, 2021). In the rural townships, agriculture remains a prominent industry, with slower farm loss than the provincial and federal rates (Region of Waterloo, n.d.).

It is also important to acknowledge the differences between the cities themselves. Waterloo is notoriously the most expensive, with average housing costs exceeding those in Kitchener and Cambridge. As mentioned, both universities are in Waterloo, and it had successfully suburbanized much of its communities, which means that its urban areas did not face aggressive decline. Kitchener falls second in terms of average housing costs. The LRT has brought massive development to the core areas, and many previously undesirable neighbourhoods are transforming. As discussed throughout this dissertation, Kitchener remains a social hub for many of the deeply marginalized individuals who participated in this study, reflecting the ongoing conflict between growth and development and original residents. While it ranks second in unaffordability of the three cities, it is third in median income (Statistics Canada, 2023).

Cambridge, which has yet to be included along the LRT line, remains the most affordable city but has also seen significant transformation in its core urban areas as the city is becoming increasingly attractive to regional residents priced out of Kitchener and Waterloo, as well as those looking for a

more affordable community that is within commuting distance of Toronto. Cambridge continues to support an older housing stock and more single-family homes, again likely because they have not seen the same urban density spurred by large-scale redevelopment (Statistics Canada, 2022a). Each township supports an independent identity, with some experiencing more suburbanization than others, but collectively reflecting a different lifestyle and demographic than the cities, with a smaller population of immigrants, less development,[7] and a car-centred approach to transportation.

While the 2021 census shows a drop in low-income residents in the region – 9.3% (Statistics Canada, 2021) – the simultaneous drop in employment rates suggests that COVID-19 relief, barriers to participation, and other factors could account for why these statistics are in opposition to what is being reported on the ground. Transportation and gentrification scholars have used KW as a case study to highlight the adverse effects unrestrained development can have (Huang et al., 2024), finding signs of displacement and gentrification in the CTC (Doucet, 2021; Webber, 2022) and arguing that KW has grown so unaffordable that it has a missing middle problem (Huang et al., 2021; Parker, et al., 2023; Turcotte, 2021). The desirability of the CTC has also had an impact on KW's commercial market. Through interviews with business owners and a data analysis of an employment survey, Webber (2022) argues that commercial gentrification has pushed many original shops and services out. Local news agencies have also covered this change, sharing story after story of how the transformation of the residential housing market has pushed both low- and middle-income groups out (Outhit, 2024; Pender, 2025) and has impacted the cost of housing in adjacent areas (Outhit, 2023). This shift has been facilitated through covert and high-profile changes, as renovations, demolitions, and targeted evictions have all facilitated the displacement of residents living along the line (Doucet et al., 2022).

Ultimately, the region presents a strong case study to explore how good planning efforts can have large consequences.

1.5 Overview of Methods

This research is guided by a series of semi-structured interviews. Three qualitative data sets were conducted with selected stakeholder groups to gain diverse perspectives of how new transit is integrated across the region and how said transit impacts the community and community perceptions

[7] Development is happening in some townships, made up of mostly suburban subdivisions

of change. While this work does not provide a complete account of experiences for all regional stakeholders and residents, it provides insights from experts, who can speak to larger trends, and perspectives from deeply marginalized residents, who are often underrepresented in the planning process. This work functions to highlight extremes while also seeking to understand overarching trends. This work does not provide a complete overview of change in the Region of Waterloo, but rather a series of perspectives that speak to groups with significantly different lived experiences of new transportation to fill important gaps in understanding. Taking a qualitative approach for this research facilitates a more nuanced examination of lived experience to better understand unseen or immeasurable impacts and to contribute to the growing body of research that argues for the inclusion of more lived experience data in the transportation planning and policy making process (Doucet, 2021; C. E. Jones, 2023; Schuch & Mushipe, 2024). This approach contributes to the validation of rich qualitative exploration as significant empirical data (Sheydayi & Dadashpoor, 2023). In addition, transportation and TOD research to date has been dominated by quantitative methodology, contributing to this gap in understanding and evaluation of transportation impact. Finally, through the final interview set, which occurred with deeply marginalized residents of the Region of Waterloo, this research harnesses a community partnership approach, highlighting the necessity of tailoring research methods (Carnaby, 1997), through recruitment, trust building, and ethical interviewing to suit the needs of equity-deserving groups who would otherwise be unlikely to participate in traditional public engagement avenues (Ravensbergen & VanderPlaat, 2010).

Informally, this research leverages document analysis, inclusive of the large body of local reporting from *CBC Kitchener* and the *Waterloo Region Record* on the ION LRT, neighbourhood change, and new transit infrastructure. This contributes to a comprehensive understanding of the historical evolution of the region, its transportation planning history, and its current equity concerns. In addition to the three formal interview sets, ongoing informal conversations and relationship-building with community partners provided a deeper understanding of the region's urban culture, its residents, and avenues of concern.

1.5.1 Interview Data Set One

The first interview set was conducted before the LRT was in operation,[8] from December 2018 to May 2019, with 22 key stakeholders involved or impacted by the ION project. This included city and regional councillors, developers, planners, and representatives from local social service organizations, among others. These interviews occurred in person in the Region of Waterloo or by telephone. Questions were designed to examine perspectives on the ION LRT's pending launch, the impact on surrounding neighbourhoods to date,[9] and perceptions on the direction of change for communities, residents, and the overall transit climate of the region. These interviews further sought to understand the ION's project goals, the planning process that led to the LRT, and overall, how stakeholders felt the integration of the LRT into regional planning efforts would transform transportation and more. These interviews are integrated into Chapter 2 and provide an important comparison between the ION's intended outcomes and actual performance from the perspective of equity-deserving residents.

These interviews were recorded and professionally transcribed. Using a deductive thematic approach and informed by literature exploring TOD's policy effects, a qualitative coding tree was created. Interviews were coded using the qualitative coding software NVivo. During this process, a natural inductive approach emerged, and additional codes were created based on unforeseen themes that arose from participants. The qualitative coding tree can be found in Appendix A.

1.5.2 Interview Set Two

The second set of interviews occurred with 22 realtors and developers working in at least one of the Region of Waterloo's cities, Cambridge, Kitchener, or Waterloo. These interviews occurred in person or over the phone, between September 2019 and March 2020. Approximately half the participants were recruited via the KW Realtors Association. Members received an invitation to participate and the information letter via the association's distribution list server. The other half of the participants (including developers) were identified and contacted via their public pages and through snowballing techniques. These interviews explored how new and expanding cycling infrastructure and the associated bikelash from residents were unfolding in the residential real estate market. Questions further interrogated the role that the larger ION project played in the residential market, to

[8] The LRT was officially operationalized in June of 2019.
[9] As mentioned, $3 billion in resident investment had occurred along the LRT line before it was in service, driving noticeable growth and change in surrounding communities.

contextualize how regional shifts in transportation factor in home buying and homebuilding processes and how residents' perceptions were influencing their real estate decisions. Realtors and developers were identified as strong groups to engage because they hold a multi-faceted micro and macro understanding of their buyers' perspectives on transit, and on larger desirability trends. These interviews are explored in Chapter 3 and are used to paint a holistic picture of the impact that new cycling infrastructure has had on the market to gain insight into how public perceptions of new transportation are impacting affected neighbourhoods. Interviews were also recorded and subsequently transcribed. Following a similar deductive-led approach as the first interview set, interviews were codified via a qualitative coding tree representative of bikelash and residential real estate impact research. However, the coding tree grew as more themes, such as realtor and developer agency and lived experience, organically presented themselves. The qualitative coding tree can be found in Appendix B.

1.5.3 Interview Set Three

The final interview set included 20 deeply marginalized residents living in the region of Waterloo and took place between December 2022 and April 2023. Initially, this research set out to interview low-income residents, and as such, participants needed to identify as low-income. However, after completing the interviews, it became evident that this group of participants all shared a deeply marginalized lived experience and were extremely low-income. Before the interviews, important research went into quantifying a working definition of "low-income." The foundation of this definition is Statistics Canada's low-income cut-offs for 2022 (Statistics Canada, 2024; see Table 2). These measures are relative to the rate of inflation and adjusted to population size. These markers appeared relatively low, motivating further exploration of low-income definitions used in equity research, particularly those that position low-income as relative (Hirsch et al., 2020). Given the post-COVID climate, the cost of living has been severely impacted in several ways. Rental costs in the region of Waterloo alone have gone up almost 7.5% in 2023,[10] vacancy rates are at record lows (Canada Mortgage and Housing Corporation, 2024), and subsidized housing waitlists are years long. These factors influenced a flexible definition of low-income, using Statistics Canada's low-income cut-offs for 2022 but including a clause for participants who believed that they should be identified as

[10] For a two-bedroom apartment.

low-income despite not meeting the cut-offs could still participate.[11] Despite this expanded definition, all participants did qualify under the low-income cut-offs or were significantly under them, apart from one. However, he had been let go from his employment and at the time of the interview had experienced a few months of unemployment.

Single-person household income	< $29, 380
Two-person household income	< $36, 576
Four-person household income	< $54, 594
Seven or more persons household income	< $77, 751

Table 2: Statistics Canada's 2022 Low-Income Cut-Offs Before Tax

Unlike the first and second interview sets, which relied on traditional recruitment tactics, the third interview set leveraged a community partnership approach to connect with residents through local social service organizations. To initiate this research, the researcher connected with contacts at three local social service organizations. The first, the Social Development Centre, explained that they were working over capacity but were able to share the call for participants on their events board. The second, House of Friendship, which was operating over capacity and understaffed, did not have the resources to support this research. Also facing capacity issues, the Working Centre was able to provide advertising and interviewing space within their public working resource space. The call for participation was taped to the front desk and further explained by Working Centre staff to individuals who expressed interest. The staff facilitated introductions and ultimately played a pivotal role in building trust for participants. The researcher attended the working centre 2-4 times a week from December 2022 to April 2023, alternating mornings and afternoons and days of the week. By March 2023, interviews had slowed substantially. In April, after 3 weeks without an interview, this set came to a natural close. While this set is relatively small, it is representative of a hard-to-reach population in a mid-sized city. As the social service organizations mentioned above explained through informal

[11] Participants who did not meet the low-income cut-offs but self-identified as low-income were encouraged to have a discussion with the researcher about qualifying to participate.

discussion, there is a level of distrust amongst these individuals who ultimately feel that their voices and experiences are not a priority. This is one of many factors that have left equity-deserving groups underrepresented in the planning process. Without the Working Centre's support, this research would not have been possible.

Participants ranged in age, ethnicity, and gender. All participants had extremely low or no income, and everyone who participated shared that they were seeking social supports through the local working resource centre. Many participants were facing unemployment and homelessness; some were job seekers, and others held part-time positions. All participants expressed ongoing precarity and, as such, represented a deeply marginalized group of residents. A participant table with more details can be found in Appendix C.

Similarly, interviews were also recorded and subsequently transcribed. As these interviews took place in a busy and loud working resource centre, detailed notes were used to fill in gaps in the audio. Following a similar deductive-led approach, interviews were codified via a qualitative coding tree representative of change in the region in three key areas: transportation, housing, and neighbourhood. Several sub-themes organically arose. The qualitative coding tree can be found in Appendix D.

1.5.4 Limitations of Sampling Techniques

While this research offers a novel and important contribution to discussions of transit-related change from the perspective of three key stakeholder groups, it is important to acknowledge the limitations of non-representative sampling. In some cases, it can be difficult to produce generalized takeaways or determine if the participant pool is representative (Statistics Canada, 2021). While this can be an important consideration for research on urban change, in the context of this dissertation non-randomized sampling approach was necessary for parsing out three key groups that could provide unique and diverse impacts. Equity-deserving groups are difficult to engage with (Quick & Bryson, 2016), and a randomized sampling approach, as is argued later in this dissertation, would be unlikely to yield enough participation (Bonevski et al., 2014). Further, as this research centres lived experience, large-scale generalizability is not a priority because it argues for the importance of context-specific participation.

Chapter 2: Middle-Class Ambitions, and Extremely Low-Income Experiences: Comparing the Goals of Waterloo's Light Rail Project With How it Is Experienced by Captive Riders

2.1 2.1 Introduction

Despite North America's historic stigmatization of public transit as a last resort form of travel for captive riders (Iacobucci, 2016), ongoing urbanization has necessitated the *recapturing* of middle-income groups as transit users (Giuliano, 2005; Knowles & Ferbrache, 2016). As a result, rapid transit has seen a revival (Higgins & Kanaroglou, 2016), marketed as an innovative and exciting form of public transit for *choice riders*. Choice riders are defined by their unrestricted travel; often private vehicle owners, they engage with public transit as they wish (Garrett & Taylor, 1999; Linovski et al., 2018). In contrast, *captive riders* are public transit reliant, holding the majority ridership for underfunded and undesirable transport modes (Giuliano, 2005; Zhao et al., 2014). In turn, rapid transit's desirability drives investment and density in urban areas, evident through increased property values in station-adjacent neighbourhoods (Cervero & Duncan, 2006; Culver, 2017; Deka, 2017; Kramer, 2018) and subsequent gentrification and displacement (Baker & Lee, 2019; Dawkins & Moeckel, 2016). Research acknowledges the political and economic impacts of new transit infrastructure as well as the connection between transportation broadly and larger social processes. However, few studies examine the impact on ridership experience, to understand how the introduction of new transit can bring fundamental change to individual mobility patterns that vary significantly between socio-economic groups.

This study investigates how new rapid transit, which is increasingly designed to attract choice riders as part of larger transportation strategies focused on growth and development, can have unintended consequences for captive riders. This article sheds light on missing perspectives to explore how captive ridership is affected by transit strategies that they are often excluded from. To engage transit justice, we harness a mobility justice lens (Sheller, 2018b). Mobility justice centres movement and its inherent power regimes to move beyond justice as fairness. It argues research should take a systems approach to consider who is making decisions, how their knowledge shapes processes, and whose voice is excluded (Petzer et al., 2020). This provides a lens to explore the

complex social, political, and economic milieu that shapes transit planning to understand the different ways social hierarchies are enforced through transit (Lowe et al., 2023).

We do this in the Region of Waterloo, a mid-sized region approximately 100km west of Toronto, using qualitative interviews with (22) key stakeholders and (20) deeply marginalized residents who were extremely low-income. In 2019, the region opened the ION light rail transit (LRT), transforming the existing Grand River Transit (GRT) bus system that serviced the region. Once a space of urban sprawl (Bunting et al., 2000), now one of Canada's fastest growing urban areas, we use the Region of Waterloo to explore how mobility injustices can be rooted in new rapid transit projects not only through larger processes of change, but also through day-to-day travel experiences.

Our work seeks to answer the following questions:

1. How has the strategic prioritization of choice ridership in transportation projects impacted captive riders' mobility?
2. What are the major differences in ridership experience between the bus and the LRT for low-income, captive riders?
3. How can we use mobility justice principles to guide more just planning at various stages of the planning process?

Through our analysis, we consider the spatial-temporal integration of the LRT through its physical infrastructure and social impact. We start by investigating stakeholder perspectives of the LRT prior to its operationalization. We then compare perceived benefits of the LRT to the lived experience of the deeply marginalized captive riders we spoke with, focusing on three key areas of change: physical updates to the transportation network, navigating new routes, and the overall ridership experience. This approach functions to piece together how the introduction and prioritization of a rapid transit system can contribute to mobility injustice, to inform recommendations for change.

2.1.1 The New Mobilities Paradigm: Mobility Justice as an Equitable Planning Tool

The new mobilities paradigm marked a fundamental shift in the way we research transportation (Adey, 2009; Cresswell, 2008; 2010; Kaufmann et al., 2004; Sheller & Urry, 2006), recognizing that mobility spaces are constrained by the same social, political, and economic power dynamics and inequities as traditionally sedentary spaces. (Im)mobility can amplify existing inequities and produce

its own. As a result, mobility is understood as a form of capital (Kaufmann et al., 2004) supporting or impeding access to social and political spaces (Adey, 2006; Sheller & Urry, 2006).

Within urban spaces, mobilities researchers argue that those most likely to benefit from increased transit infrastructure (marginalized groups who have limited transportation options) are notoriously under-prioritized in the planning process (Larsen & Urry, 2016; Ohnmacht et al., 2016; Sanchez, 1999). Wellman (2019) argues, "transportation policy has historically felt like a tool of societal conquest than a planned progression of utopia" (p. 70). To theorize transport justice, Sheller (2018a) proposes mobility justice, a theoretical framework we argue can help consider how new transit investment contributes to existing class structures. Mobility justice can help frame city-level transit injustice within larger conversations of movement, governance, and lived experiences of uneven mobilities (Cook & Butz, 2018).

Sheller (2018a) proposes a nested approach to mobility justice consisting of five justice typologies: *distributive, deliberative, procedural, restorative*, and *epistemic*, to address transit equity's limitations. Sheller explains that while each form of justice targets a different element of justice, they function more as an interplay than a hierarchy "in which there are interactions between narrower and wider apertures, as the focus shifts to different elements of justice within a mobile ontology" (Sheller, 2018a, p. 35). As such, it's helpful to briefly contextualize each justice typology's reach relative to this research.

Distributive justice can capture the accessibility and equity of a physical system. *Deliberative* justice can underscore the need for deliberate action and participation, while acknowledging the value of said participation. *Procedural* justice functions to ensure access and information sharing for all stakeholders involved. While the first three speak to process and function, the final two centre a need to reframe and reconceptualize processes and plans within larger social frameworks. Thus, *restorative* justice speaks to acknowledging systemic barriers and seeking opportunities to address these barriers in planning processes and hierarchies. Finally, *epistemic* justice, perhaps the most fundamental to this research, functions to consider how to prioritize marginalized voices to reevaluate, monitor, and adapt systems in more just ways (Sheller, 2018a). As we move forward with our analysis, we use this nested approach, exploring each justice's features and their interplay to better understand the social-temporal impact the LRT's development has had, and the conflicting perspectives that shape its identity.

Significant to this research, mobility justice can explore larger political and global power structures in the research of city-level processes (Sheller, 2018a). Congestion, urbanization, and climate change, alongside concerns about urban sprawl and density-focused planning, all contribute to the rapid transit renaissance we are experiencing. To recapture the middle class, policy presents transportation infrastructure as a multifaceted solution. On a smaller scale, individual experiences of (im)mobility, like a change in transit route or an accessibility barrier, can be understood as a mobility injustice that can be connected to larger social processes. A mobility justice approach is therefore helpful in dissecting planning's contribution to injustice (Wellman, 2019), while uplifting lived experience (Sheller, 2018b).

Planning researchers have begun to argue for mobility justice's value (Smeds et al., 2020) because it transcends current approaches that hyper-focus on issues of policy and infrastructure (Bierbaum et al., 2021), providing avenues to consider how planning can be *depoliticized* (Mahmoudi et al., 2020, p. 805). In Detroit, Lenhoff et al. (2022) use mobility justice to delineate equity in student bus access, outlining how a nested approach to justice can explain uneven infrastructure and inform equity-focused policy (Bierbaum et al., 2021; Lenhoff et al., 2022). In discussions of *just sustainability*, Mahmoudi et al. (2020) use mobility justice to centre the voices of community cycling activists and acknowledge historical cycling injustice in Portland (p. 805). In Amsterdam, Petzer et al. (2020) use mobility justice to understand if and how dockless bikes can be implemented in the city in a just way despite tension between old and new systems. Our work contributes to this conversation by shedding important light on the inequities inherent in the development of new higher-order transit and identifying ways in which justice and equity can be centred in the planning process for new light rail lines.

2.1.2 Designing Cities to Recapture Transit Users: Rapid Transit as a Growth Management Tool

The resurgence of rapid transit, like LRT and streetcar (Culver, 2017), has been a direct attempt to destigmatize public transit (Purifoye, 2020), uplifting rapid transit as a desirable, efficient, and higher-class mode of travel, while also distinguishing it from bus transit. Traditional city buses are rarely new and are forced to adhere to the rules of the road without the freedom of personal automobility, as Ashmore et al. (2019) argue, "bus-based transit is still often seen as a 'poor cousin'" (p. 26). This perception comes decades after initial and ongoing criticism that transportation plans

have prioritized the wants of higher income choice riders who have historically preferred rail over the bus (Pisarski, 1996; Pucher, 1982; Pucher & Renne, 2003; Taylor & Morris, 2015), over the needs of captive riders (Bullard, 2005; Prayitno & Moos, 2022; Welch & Mishra, 2013). This raises equity concerns, as Garrett and Taylor (1999) argue, in prioritizing choice ridership, public transit is no longer a social service.

In addition to rapid transit's value for choice riders, it is praised for its growth and investment potential (Boschken, 2003; Higgins & Kanaroglou, 2016). Because of this, rapid transit is included in a larger suite of planning policies. As with many attempts to reconstitute urban spaces, new rapid transit projects can drive property values (Bardaka et al., 2018; Cervero, 2006; Dong, 2017; Immergluck & Balan, 2018; Kahn, 2007; Nilsson & Delmelle, 2018) leading to transit-induced gentrification and displacement in adjacent neighbourhoods (Baker & Lee, 2019; Deka, 2017; C. E. Jones & Ley, 2016).

Thus, rapid transit has become a luxury of choice. Choice riders can maintain private vehicle ownership, but logistically, an urban lifestyle means that taking rapid transit is also a viable option (Guerra, 2022; Scherer, 2010; Scherer & Zurich, 2012). These riders become what van Lierop and El-Geneidy (2016) call captive-by-choice riders. Here, participating in rapid transit and reducing one's automobility does not mean a shift from the car entirely (Chatman, 2013; Duncan, 2019). Captive riders do not have the same experience.

Captive riders rely on the bus (Ureta, 2008), which is rarely packaged into this bundle of goods associated with the promotion of urban life (Higgins & Kanaroglou, 2016). Despite this, researchers argue for the bus's benefits, linking the bus to an increase in employment (Li & Wyczalkowski, 2023; Pasha et al., 2020) and access to amenities, schools, and social spaces (Adli & Chowdhury, 2021; Liu & Kwan, 2020; Welch, 2013). New research even argues that the integration or expansion of local bus routes offers a means to increase access without inducing gentrification-related displacement (Pasha et al., 2020).

Despite the bus's accessibility benefits, rapid transit continues to prevail in urban planning projects for the reasons addressed above, as research demonstrates the impact that rapid transit can have on communities. Our work fills a gap by exploring how transportation projects aimed at reimagining public transit for middle- and high-income choice users affect deeply marginalized captive users in the same system. Change can come formally through route changes or fare increases, but can also be

informal, shifting the social dimension of travel. Through a mobility justice lens, we reconsider the way we think about city-level mobility on different scales.

2.2 Research Area

The Region of Waterloo is a mid-sized municipality in southern Ontario, Canada, encompassing three cities, Cambridge, Kitchener, and Waterloo, and four townships. The region is home to two universities and one college (attracting around 80,000 students), which has encouraged a growing tech hub in the region's urban cores. To accommodate growth, the regional and municipal governments supported a rapid transit project to encourage densification in urban centres. In 2019, the region operationalized the ION LRT. Stage one stretches 19 km with 19 station stops and runs from Kitchener to Waterloo's suburban malls, with stops concentrated in and connecting both cities' downtown cores. This area is now referred to as the central transit corridor (CTC). To further transit accessibility, the region's previous express bus system, IXpress, was rebranded as an ION BRT covering an additional 17 km. The ION attracted $3 billion in residential investment before its first train even left the station (Region of Waterloo, n.d.), driving gentrification in urban neighbourhoods near stops (Ellis-Young & Doucet, 2021). The region is currently seeking funding for stage two, which would extend the LRT by 18 km into Cambridge, despite concerns over the hefty price tag of 4.5 billion dollars [12](Coxson, 2023).

Prior to the LRT's inception, the regional bus system provided strong headway in Kitchener and Waterloo's urban cores, areas now serviced by the LRT, which raised concerns from some residents about the LRT's value and its contribution to expanding service (Desmond, 2016). Currently, there are about 50 GRT routes in operation. In September 2023, the GRT reached a new ridership record, with 40,000 more riders boarding in one day than ever previously recorded. Unsurprising given the different service coverage, of the 150,000 trips, 130,000 were on the bus and 20,000 on the LRT (Region of Waterloo, n.d.). These numbers are impressive for a mid-size region such as Waterloo.

2.3 Data and Methods

Our work is guided by qualitative interviews with two stakeholder groups at different periods of the LRT's evolution. The first semi-structured interviews were conducted just before the LRT was

[12] This has increased by almost $3 billion dollars since 2019's estimate. It is also just over $3.5 billion more than stage 1 of the ION project, which cost just short of 1 billion.

operationalized in 2019 with 22 key stakeholders in the region, including councillors, planning professionals, developers, and social service workers, among others involved in the ION's development. Questions concerned the perceived impact of the LRT, the rationale for the LRT, and its potential to create lasting neighbourhood change. These interviews provide context for the LRT's development process and purpose.

As Sheller (2020) states, addressing power dynamics in public transportation infrastructure through a mobility justice lens "call[s] for historical archival research, interviews with decision makers… to better understand how decisions have been made that shape uneven spaces and differential mobilities" (p. 15).

Interviews took place in person or over the phone, ranging from 40–120 minutes. Each interview was recorded and professionally transcribed. The transcriptions were uploaded to NVivo, where they were preliminarily coded by transit modality, stakeholder position, goals of the LRT, and overall opinions of the LRT. Interviews were further coded by common themes such as equity, neighbourhood change, and perceived impact of new transit infrastructure, among others.

The second interviews occurred between December 2022 and April 2023, 3 years after the LRT's operationalization, with deeply marginalized captive riders living in the region of Waterloo. Questions focused on individual travel patterns, the changes the LRT has brought, and what being mobile means for these residents. These interviews took place in downtown Kitchener at the Working Centre, a working resource service that offers vital social service supports and a social hub.

Demographically, interviewees ranged in age (26–65+), with 12 men and 8 women. Over half of the participants have lived in the region since childhood. Eligible participants were accessing social assistance, many had or were experiencing homelessness, and all expressed some level of housing precarity. Six participants were homeless at the time of the interview, living in shelters, motels, or couch surfing. An additional individual was being evicted when we spoke. While individuals could self-identify as low-income,[13] only one reported an average income higher than Statistics Canada's 2022 low-income cut-off but noted a recent layoff. Interviews ranged from 20-120 minutes, were

[13] Our information letter outlined Statistics Canada's low-income cut offs for 2022 but noted that individuals who believed they were low-income despite making more could still participate.

recorded, and transcribed.[14] Transcriptions were codified using a qualitative coding tree with mobility justice and Sheller's (2018a) nested approach to justice as a guide. After a comprehensive review of existing mobility justice research, themes of the introduction of the LRT, changing mobility patterns, and the mobility experience were used to organize our findings. Following this, we performed a holistic review of interview data. We uncovered additional themes identified by participants that were not initially considered. For participation, marginalized interviewees received remuneration via a gift card to Dollarama or Tim Hortons valued at $40.

For both interview sets, all identifying information has been removed and pseudonyms have been assigned.

2.4 The Political Economy of the LRT

Through interviews with stakeholders prior to the LRT's operationalization, we gained a holistic understanding of the ION's planning process, its core goals, and the perceived impact that the project would have on choice ridership.

Before committing to light rail, the ION project team visited other North American cities with successful rapid transit infrastructure. Exploring cities with existing LRT, bus rapid transit (BRT) systems, and integrative systems, LRT was ultimately chosen because it aligned with the region's multifaceted goals. Beyond expanding transportation, the region was interested in a sustainable transit system that could further densification in the cities' urban cores, attract development and cater to the growing population (Green Municipal Fund, n.d.). After decades of downtown decline, urban sprawl, and poor public perception of core urban areas (Bunting & Filion, 1999; Curtis, 1996), this transportation project was made possible by larger revitalization efforts happening in urban areas (Bunting et al., 2000). In 2004, Kitchener introduced a $110-million economic development investment fund (EDIF), which successfully drove investment in the city's downtown through satellite campuses and a growing technology hub (Edge et al., 2020). Many previous manufacturing buildings were also revitalized as Kitchener sought to rebrand its cultural history (Barich, 2020). In 2009, the region introduced the countryside line, a unique planning tool to protect agricultural spaces from ongoing urban sprawl and encourage urban densification. The combination of these factors puts

[14] As interviews occurred in a busy public space, at times audio quality was poor resulting in portions that could not be fully transcribed. As such, detailed notes were taken to ensure accuracy.

pressure on the need for intensification in core urban areas, positioning a rapid transit system as an important next step in managing growth.

Stakeholder participants shared that the region drew inspiration from Portland, Oregon's MAX LRT system, which was the most comprehensive transportation package of the cities they visited, for transportation needs and development goals (Dill, 2006). We spoke with a regional councillor who was in office at this time.

> We went out to Portland, and we went out to Calgary. Calgary's system – it's a transportation system; they didn't do a lot of TOD [transit-oriented development] out in Calgary. But in Portland, that's the one that we modelled ourselves after, so with all the TOD along the line…. So, we've modelled our – not necessarily the system itself, but the function of the LRT. Portland is the reason why we picked LRT over bus for … I mean, in my mind, because of all the extra and the greater amount of investment you get with the rail versus bus.

For Waterloo, MAX demonstrated that LRT could simultaneously repackage the public transit experience, attract development along the line, and act as a growth management tool. MAX and its subsequent extensions have been used to shape steady growth projected in Portland (TriMet, 2016). This example was fundamental in the decision to move forward with an LRT and the conceptualization of the ION as more than a transit solution.

We spoke with a development advisor for the Region of Waterloo, who shared that in 2019, the LRT was succeeding in shaping continued growth:

> I think the LRT has been a major catalyst for the continued investment in the Uptown, it's having all sorts of positive impacts in terms of facilitating new housing projects, but also new office projects. We have a very low office and employment rate in Uptown, which is 23% of our office market within our Uptown. So, what I think is, in moving forward, is as more jobs are attracted to the core, partly because of the millennial demographic, partly because of cost of living, you can live and work on the same route.

The LRT is that critical infrastructure that confirms to companies that they can attract young talent who might be moving from the core areas to this transit station area, or people who want to drive there.

While MAX is a strong example of the strategic deployment of transportation, Portland receives ongoing criticism that MAX contributes to gentrification and mobility injustice in the city. Neighbourhoods along the line have seen property value increases, and residents report a growing divide between social groups (Mahmoudi et al., 2020; Pierce & Lawhon, 2018). Portland's focus on transformation for choice riders has had and continues to have implications for captive ridership.

To accommodate growth, stakeholder participants acknowledged that the LRT was driving interest for choice riders. A regional councillor shared how the LRT buzz gained attention from residents in a luxury condo building along the proposed CTC.

> It was the largest crowd they'd had for their monthly tenant meeting in years, and it was almost 100% supportive [of the LRT]. So, you know, that's a group of people that have chosen to live in a more urban setting. They all have cars, I can't imagine there's anyone in that building that doesn't have a car unless it's by choice, and that could well be, but not because they couldn't afford it. If they can afford to be in that building, they can afford a car, but they were really looking forward to it. So, it's at both ends of the spectrum, it's about making some choices, that it's all a part of the bigger sustainability ethic that I think is getting instilled in people.

From a mobility justice lens, we can begin to analyze how transportation plans account for ridership. For choice riders, like those mentioned above, public transit is not a requisite. Some need to be sold the LRT through perceived personal benefit, like added convenience and accessibility, or moral benefit such as contributing to sustainability (Crane & Scweitzer, 2003). This is not the case for captive groups; their ridership is often assumed (Zhao et al., 2014). This difference drives a divide between choice and captive riders, which can create inequity (Garrett & Taylor, 1999).

We see this divide when we compare the region's public perception of the LRT and the bus. As the same regional councillor explained:

> From an economic point of view, an economic development point of view, it's a much more attractive transit system [LRT]. Unfortunately, the bus has a stereotype that rail doesn't have.
>
> I had a lady tell me during an election … So we fought four elections on this, and she, it was typical of a lot of thinking, "Only poor people take the bus", and I tried to tell her,
>
> "No, there's a lot of people nowadays that by choice don't have cars or they by choice only have one car when they might otherwise have two, and they're using transit as their regular means of transportation," well, she wasn't buying it.
>
> "It's for poor people".
>
> That's the bus stereotype for certain, and the LRT has a different stereotype; it's cool, it attracts more riders.

Stakeholders acknowledged that there is a divide between the LRT and the bus and thus a divide between its potential ridership, which is in line with research that finds choice riders are more likely to use rail (Garrett & Taylor, 1999; Pucher & Renne, 2003) and that rail can be used to spur growth (Bardaka et al., 2018; Cervero, 2006; Nilsson & Delmelle, 2018). This research ultimately played an influential role in the decision to build and market an LRT system in the Region of Waterloo.

2.5 Captive Ridership: Lived Experience of Mobility Change

When we interviewed stakeholders, the LRT had attracted widespread investment, which contributed to concentrated growth in core areas (De Angelis, 2019). Residential and commercial spaces were transforming, with a surplus of high-rise condo buildings to accommodate density. As hoped, the integration of the ION into the region's downtowns was smooth, but unsurprising given its multifaceted purpose identified in the above section. In the sections that follow, we jump ahead more than 3 years to talk to deeply marginalized residents about their lived experience since the ION's arrival. As captive riders, they are navigating change, which they identify as complex, impacting their mobility in ways we had not considered. We organize this section around three pressure points: the LRT's initial integration, navigating a changing system, and the rider experience.

2.5.1 The LRT's Arrival

The LRT's arrival brought fundamental change to the region's transportation network, centring the LRT, shifting regional transit away from a hub and spoke model towards a grid system, and retiring the previous transit terminal (Kraemer, 2023; Sharkey, 2019). Around 800 stops were replaced, moved or removed, or rerouted as routes were altered across the region (Sharkey, 2019), despite the LRT's concentration in the CTC. For interviewees, the LRT's limited reach was noticeable, summarized by Kyle, a 26-year-old Kitchener resident who was homeless at the time of the interview, as he shared, "it seems like everywhere I am, trains are not." As addressed above, the LRT has created affordability issues (Doucet, 2021; Ellis-Young & Doucet, 2021; Webber, 2023) and the centralization of the LRT means some lower-income residents are pushed to less transit-accessible neighbourhoods. However, for marginalized captive riders, accessible transit is fundamental to daily life:

> I just need some organization. I need a place to live is what I need. That's what I need, right? And without transportation, you can't get a place to live. And there are organizations who that are willing to provide help, but it is what it is…. One person can't change anything.

Downtown Kitchener used to have among the cheapest rents in the region, but new development and gentrification have resulted in the loss of many low-rent apartments and rooming houses, pushing many lower income residents further away (Doucet et al., 2022). Whether or not our interviewees resided downtown or not, they all accessed social services there. Living in the core or not, interviewees were accessing social services there. Joe, retired, living in subsidized housing in Cambridge, explained that he takes three buses (totalling approximately 90 minutes) into Kitchener to visit family or the Working Centre, a trip he makes a few times a week. This trip involves travelling in opposite directions and, despite the Working Centre's location on the LRT line, does not include rail. Comparatively, the trip is about 30 minutes by car. Joe usually receives a subsidized transit pass, but at the time of the interview he did not, meaning if he faces a delay, he must buy a secondary ticket to get to his destination.[15] While greater processes of neighbourhood change are outside the scope of this article, they contribute to the power regimes that drive mobility injustice and effectively lower individual mobility. They also inform our nested approach to justice. From both a distributive and

[15] A ticket is active for 90 minutes.

deliberative justice perspective, planning efforts fell short in implementing safeguards at the individual level and city to protect against transit-induced gentrification's effects (Doucet et al., 2022; Ellis-Young & Doucet, 2021; Webber, 2023).

2.5.2 Navigating New Routes

Interviewees shared that the original bus system's reliability shaped their confidence travelling within and between the cities. Since the introduction of the LRT, that confidence has changed. We heard consensus that transit is complicated, and interviewees are uncomfortable navigating new routes. Participants shared that this was made worse by poor communication of change and the rate of ongoing change. For example, not all bus stops display routes, and those we spoke with argue that efforts to inform low-income or homeless people of changes are ineffective.[16] Despite the mayor of Waterloo at the time stating, "It's so frequent, you really don't need the trip planner" (Jaworsky, as cited in Weidner, 2019), participants explain that confusion remains.

Mark, in his 50s, has lived in the region and has relied on public transit since childhood and explained that he never saw a need for a driver's license as he was comfortable navigating the system. However, the new system has been a big adjustment for him:

> Well before, I used to know where every bus went, and I basically knew when the buses came. Anywhere in the city pretty much. Now I don't even know where the buses go. I don't even know what buses are out there…. I'm still trying to adjust to what it is now. Like I said, I grew up, almost 30 years, having it one way, to what it is now, and the change is mind-boggling. You know? Knowing how to get around the city, and you're still learning at that point, to what it is now, where you must relearn the system all over again, it's not an easy thing to do.

Mark shared that because of the new system, he would rather use his bike, relying on public transit only when necessary. It is worth stressing that these interviews occurred over 3 years after the LRT was operationalized, meaning this confusion has spanned 3 years, and as a result, the transit system has become less accessible, even if it provides more extensive service (in some areas). This points to a much more complicated challenge that infrastructure alone cannot address. Sharing Mark's

[16] In 2019 the region did launch an online tool to support residents as they navigate their new routes, but many individuals lack consistent access to the internet. No interviewees mention this support.

experiences, other participants, who were physically able, explained they cycle to avoid the transit system when possible. Marshall, a 25-year Kitchener resident in his early 60s, explained:

> The bus, I don't know, I just don't have the patience for it. I can get there before [via bike], and the bus routes have changed, so like I don't know where they are half the time. The 3 has kinda changed its route, because that's the one to go to disability a lot, you take the three, so I am on that quite a bit.

Because of a recent injury, Marshall rides the bus more but only takes a new route when necessary. Of the participants who engaged in cycling regularly, all had experienced one or more accidents with minor to severe injury. This is an important example of uneven mobilities rooted in this system (Sheller, 2018a). To avoid confusion or delay, residents *choose* reliability despite added risk.

Similarly, Dave, in his 40s, who immigrated to Waterloo over a decade ago, explained his use of Uber:

> I would take an Uber in the morning. The bus didn't run at the time I need because I gotta be there at like 5, but the bus comes at 5:30, by the time I get here, 6. When I was doing mixing in Cambridge. So I take an Uber every day, 20 dollars to go, and when I'm coming back, I use the bus.
>
> **Interviewer**: And what is the time difference?
>
> Uber-was quicker way quicker, like ten minutes? Bus, you have to wait, wait for one hour, sometimes 40 minutes! The bus doesn't come quick.

This model was not sustainable; Dave lost his job after a few months, followed by his housing. When we spoke, he was looking for work but was not hopeful as he faced similar accessibility issues.

Roger, in his early 40s, moved to the Region within the last decade from the East Coast and shared a different experience of this change and his approach to overcoming it:

> What I didn't like at first was when the bus terminal shut down. Because it was so easy to understand, and everyone was like, "what are we going to do?" No one knew where everything is, right? But after a few weeks or months, it wasn't that hard to figure out.

Roger's solution was the crowdsourcing application *Transit*, which shares real-time updates on delays and alternative routes to navigate confusion. This app is a great option for some, but requires a Smartphone, a data plan, and technological literacy. For the marginalized individuals we spoke with, having all three was not common. This example is a failure of procedural justice. Residents are excluded from accessing information and, as a by-product, are not fully able to participate in the transportation system (Rose, 2016; Sheller, 2018b). Overall, many participants shared that the integration of a new system and its associated barriers has reduced their mobility. This confusion, three years after the LRT's operationalization, sits in stark contrast to an interview with the Region of Waterloo's director of transit services from 2019, days before the LRT line was grand opening, who stated that the GRT had done everything they could possibly have done to get people ready for the changes that were coming.

> Some people will do a great job of searching out the information. Others may be last-minute. Others may not do it at all. My recommendation is that people try to access the information that we have online.

2.5.3 Experiencing the Ride

Beyond route concerns, interviewees explained that the experience of riding the LRT is different than the bus. Physically, there was consensus that the LRT was more enjoyable because of its speed and comfort. This preference was surprising, since much of our conversations centred on how the LRT was a poor use of resources. As Roger shared, "The LRT is better overall for sure. I got to give it that right? I didn't think it was going to be as good as it was, but yeah."

The social experience was more complicated. The first source of concern was the LRT's honour fare system. Riders can use a transit pass or purchase a smart card or a single ride at station stops. Enforcement officers conduct regular, randomized fare inspections. This system is meant to streamline travel, diverging from the bus's fare system, which requires riders to pay on entry.[17] While this may seem like a small change, for the captive riders we spoke with, who have experienced the latter for decades, this practice is challenging. For participants, the new system had a twofold effect.

First, they explained that there is more leeway on the bus for riders who cannot afford the fare. Riders build relationships with drivers who can overlook short fare. Since the LRT's system removes

[17] Smart card system is available for bus travel as well, but riders tap on upon entry.

driver-to-rider interaction, this informal system is not possible. This effect is true for the payment process and ridership experience, as participants expressed hostility on the LRT. Dave summarized the difference:

> I don't like the train because of the security. They give people a hard time. On the train. But the train drivers they are good people, no problem, but only the security on the train I don't like. Better to take a bus, because bus drivers sometimes, they understand people's problems. When you have money or you are short, they talk to you 'what are your situation?' He can help you. But those security…. No. No.

Dave clarified that while not all bus drivers will accept short fare, he feels that transit enforcement is hostile and unsympathetic.

The second effect of this new system was confusion. Familiar with the bus system, the initial experience of navigating the pre-payment system was difficult. As discussed, many participants lack access to technology or have a use divide. Additionally, when the LRT was operationalized, it offered free service for the first month. Once that month ended, participants expressed uncertainty about how to pay or if payment was even enforced. Jake, born and raised in Kitchener and currently in his 40s, was recently forced to sell his car and become a transit rider again. He shared his first impressions of the LRT and his uncertainty around fare. He spent a few weeks riding without paying because he did not understand how and was unable to find anyone to help him.

> I didn't even know how to pay, and I'm not a computer guy, so I went up to the transit guy, or the light rail guy, and I said, "well how do you pay?" And they kinda looked at me…. and so, I was like "well, I guess I don't pay then"…. and like I didn't pay for three months.
>
> So, the security guard rolls up, "do you have your pass?"
>
> And I said no, 'cause you guys are rude. "The driver was rude, so I couldn't pay. So, I guess I get free transit until someone shows me how to pay!" I said, "do you want to show me how to pay, or do I get free transit?"
>
> "Well, we will show you."

While Jake continued to travel until someone showed him how to pay, others have not felt as confident, sharing the experience of being an LRT rider is stressful and unaccommodating. This

presents a complex concern about the digital age, innovation, and equity divides, but it is important in the context of assumed knowledge and skill in mobile spaces. Not all changes in a transportation system are physical, and not all barriers are visible.

2.6 Conclusion and Recommendations

For decades, researchers have argued that rapid transit can be used to attract growth and choice ridership (Ashmore et al., 2019; Culver, 2017; Garrett & Taylor, 1999; Hensher & Mulley, 2015; Higgins & Kanaroglou, 2016). Through our case study of the Region of Waterloo, we heard a similar sentiment from stakeholders involved in the ION's development. They explained that growth management was a primary goal of the ION to combat urban sprawl, encourage densification, and attract incoming choice riders to public transit. This decision was informed by lessons learned from other cities at the time, some of which, like Portland, are now facing their own mobility justice concerns (Mahmoudi et al., 2020; Pierce & Lawhon, 2018). Stakeholders believed that the ION would be positive for the region and its cities. Through discussions with marginalized captive riders 3 years later, we captured a different perspective. The new system created challenges for participants in three respects: 1) Due to neighbourhood change along the ION line and its limited reach, the ION does not get them where they need to go. 2) Network changes have caused confusion as routes have become more complex, creating an access divide. 3) Participants perceive a social divide between the LRT and the bus ridership experience. These concerns effectively reduced participants' overall mobility.

Research demonstrates that captive riders are the most reliant on transit, yet the least likely to be prioritized in the system (Larsen & Urry, 2016; Welch & Mishra, 2013). Our research builds on this, arguing that in cases of the ION LRT, the introduction of a new system has and continues to have negative impacts on certain groups. Using Sheller's (2018a) nested approach to justice, we propose targeted recommendations to consider, adapt to, and adapt for justice in rapid transit projects.

Beginning with *distributive justice*, our findings suggest a need to plan for the equitable distribution of infrastructure and resources, wherein the outcome should be increased accessibility for all ridership (Taylor & Morris, 2015). We argue that the captive ridership experience should be central to the planning process, to help inform meaningful changes to the transit system. This can be done by first engaging advocacy and community groups to understand transportation needs, as understanding who is going where, and why, can help shape just route planning. For example, as we

heard from captive riders, centrally located social services need to be accessible, yet network changes brought about by the introduction of the LRT system have made getting there harder, particularly from peripheral locations where many low-income residents increasingly reside (McDougall et al., 2022). Second, lessons learned from other cities, including the Region of Waterloo, have shown that transit can bring about change. As such, planning for distributive justice in transportation should also come in the form of mitigation. This mitigation could look like implementing land-use planning that preserves affordable housing near stations to ensure that those most likely to benefit from new infrastructure are actually able to access it (Doucet, 2021). As we heard from residents, the further they are pushed away from core areas, the more difficult their commuting experience becomes. New projects may not be able to provide city-wide improvements,[18] but they can ensure that those who need access to reliable transit infrastructure can afford to live in neighbourhoods that guarantee them that access.

Turning to *deliberative justice*, cities should prioritize the voice of captive ridership to ensure their needs are considered throughout the planning process. This extends beyond the public consultation stages and needs to be central to all aspects of the planning and policy process (J. Davis et al., 2021). While this can include engaging with community advocacy groups, it should also include performing research that explores alternative approaches that prioritize justice. To ensure a comprehensive understanding of these needs (Rose, 2016), municipal governments should define what a just transportation system means in their local contexts.

To ensure *procedural justice* is addressed, cities should ensure that community members, including both captive and choice ridership alike, have access to supports that allow them to productively engage with new transportation infrastructure (McCullough & van Stokkum, 2021). This support could look like the integration of systems that support individuals with accessibility issues, whether they be financial, technical or otherwise. As identified by participants, traditional means of communicating changes to the transportation system are not always accessible to low-income and captive riders. As such, knowledge mobilization needs to be tailored to individual groups to ensure captive riders' accessibility. An app or website may work well for the vast majority of riders, but they were inaccessible to many of the people we spoke with, particularly those who do not have internet

[18] It is necessary to acknowledge that while an expansive system that provides urban and suburban communities new and better transportation infrastructure is ideal, it is not always a realistic financial or political goal. As such, cities will likely continue to prioritize transit in urban areas that are more likely to be public transit reliant.

literacy or access to a smartphone. As discussed, many captive riders are avoiding transit because they are not able to engage the new system productively.

To begin to consider *restorative justice,* we need to acknowledge the power structures (class divides, income, ability, etc.) that have contributed to unequal access in all aspects of the planning process (Sandercock, 1998) and understand the complexities rooted in our own perspectives and values (Sheller, 2018a). This process is neither quick nor easy, but it can be ignited by actively seeking opportunities to prioritize the voices, perspectives, and needs of those most marginalized by these systems and using this knowledge to implement informed change. This justice typology requires intrinsic reflection to consider how perspectives that are considered counternarratives to planning best practice are also seen as valid and important in moving towards more just approaches to transportation.

Finally, and in connection with restorative justice, to address *epistemic justice,* planners need to prepare to monitor for change in new and old systems to constantly be adapting and redefining goals. Planning for epistemic justice requires the centring of marginalized voices in the planning process to begin to tackle the systemic and deeply rooted ways in which transportation planning has largely excluded marginalized voices and equity deserving groups (Sheller, 2018a). To do this, marginalized voices need to be represented in decision-making roles, guiding the planning and development of these systems. As such, integrating epistemic justice means acknowledging that achieving justice in transportation is an ongoing and iterative process.

Uneven mobilities have historically shaped the divide between captive and choice riders, as researchers have illustrated that this hierarchical system is not new (Cervero, 1990; Pisarski, 1996; Pucher, 1982; Pucher & Renne, 2003). Through a mobility justice approach, we can begin to unpack these systems. To do this, we need to centre those most impacted. Their experiences are invaluable in considering how to approach transportation investment and infrastructure in a just way. This analysis requires more than research and public consultation; it necessitates a shift in our planning approach to work with marginalized groups, uplift their voices, and prioritize their needs. This approach means creating seats at the table and including these voices in all aspects of the planning, implementation, and monitoring processes. It also means opening discussion to more radical and community-centred approaches to transportation planning that ask us to fundamentally reconsider our current process and the way we have normalized the use of transportation infrastructure to be more than a transit solution.

This study is not without limitations. Because it engages a hard-to-reach population, the sample is relatively small. As such, our work does not capture the experience of all captive ridership in the region of Waterloo but rather paints a holistic picture of the experiences of a small group of deeply marginalized captive riders. Because of this limitation, more research is needed to understand the complexity of captive ridership needs in the Region of Waterloo and other cities considering new and changing transit infrastructure to ensure that their needs are identified and incorporated in transportation planning, implementing, and monitoring.

2.7 References

Adey, P. (2006). If mobility is everything then it is nothing: Towards a relational politics of (im)mobilities. *Mobilities*, *1*(1), 75–94. https://doi.org/10.1080/17450100500489080

Adey, A. (2009). *Mobility*. Routledge.

Adli, S. N., & Chowdhury, S. (2021). A critical review of social justice theories in public transit planning. *Sustainability*, *13*(8), Article 4289. https://doi.org/10.3390/su13084289

Ashmore, D. P., Pojani, D., Thoreau, R., Christie, N., & Tyler, N. A. (2019). Gauging differences in public transport symbolism across national cultures: Implications for policy development and transfer. *Journal of Transport Geography*, *77*, 26–38. https://doi.org/10.1016/j.jtrangeo.2019.04.008

Baker, D. M., & Lee, B. (2019). How does light rail transit (LRT) impact gentrification? Evidence from fourteen US urbanized areas. *Journal of Planning Education and Research*, *39*(1), 35–49. https://doi.org/10.1177/0739456X17713619

Bardaka, E., Delgado, M. S., & Florax, R. J. (2018). Causal identification of transit-induced gentrification and spatial spillover effects: The case of the Denver light rail. *Journal of Transport Geography*, *71*, 15–31. https://doi.org/10.1016/j.jtrangeo.2018.06.025

Barich, L. (2021). *Old bones: A recent history of urban placemaking in Kitchener, Ontario through media analysis* [Master's thesis, University of Waterloo]. UWSpace. https://dspacemainprd01.lib.uwaterloo.ca/server/api/core/bitstreams/1f440a62-6235-495a-9dc6-6f26deac2ac8/content

Bierbaum, A. H., Karner, A., & Barajas, J. M. (2021). Toward mobility justice: Linking transportation and education equity in the context of school choice. *Journal of the American Planning Association, 87*(2), 197–210. https://doi.org/10.1080/01944363.2020.1803104

Boschken, H. L. (2003). Global cities, systemic power, and upper-middle-class influence. *Urban Affairs Review, 38*(6), 808–830. https://doi.org/10.1177/1078087403038006003

Bullard, R. D. (2005). All transit is not created equal. *Race, Poverty & the Environment*, *12*(1), 9–12. https://www.jstor.org/stable/41555221

Bunting, T. E., & Filion, P. (1999). Dispersed city form in Canada: A Kitchener CMA case example. *Canadian Geographer*, *43*(3), 268–287. https://doi.org/10.1111/j.1541-0064.1999.tb01385.x

Bunting, T., Filion, P., Frenette, S., Curry, D., & Mattice, R. (2000). Housing strategies for downtown revitalization in mid-size cities: A city of Kitchener feasibility study. *Canadian Journal of Urban Research*, *9*(2),145–175. https://www.jstor.org/stable/44320990

Cervero, R. (1990). Transit pricing research: A review and synthesis. *Transportation*, *17*, 117–139. https://doi.org/10.1007/BF02125332

Cervero, R. (2006). Effects of light and commuter rail transit on land prices: Experiences in San Diego County. *Journal of the Transportation Research Forum*, *43*(117765), 121–138. https://escholarship.org/uc/item/75n1b5xc

Cervero, R., & Duncan, M. (2006). Which reduces vehicle travel more: Jobs-housing balance or retail-housing mixing? *Journal of the American Planning Association*, *72*(4), 475–490. https://doi.org/10.1080/01944360608976767

Chatman, D. G. (2013). Does TOD need the T? On the importance of factors other than rail access. *Journal of the American Planning Association*, *79*(1), 17–31. https://doi.org/10.1080/01944363.2013.791008

Cook, N., & Butz, D. (Eds.). (2018). *Mobilities, mobility justice and social justice.* Routledge.

Coxson, D. (2023, April 5). Price tag for bringing ION to downtown Cabridge set at $4.5 billion. *Cambridge Today.* https://www.cambridgetoday.ca/local-news/price-tag-for-bringing-ion-to-cambridge-set-at-45-billion-6814115

Crane, R., & Scweitzer, L. A. (2003). Transport and sustainability: The role of the built environment. *Built Environment*, *29*(3), 238–252. https://www.jstor.org/stable/23287652

Cresswell, T. (2008). The production of mobilities. In T. Oakes & P. L. Price (Eds.), *The cultural geography reader* (pp. 337–345). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203931950-55/production-mobilities-tim-cresswell

Cresswell, T. (2010). Towards a politics of mobility. *Environment and Planning D: Society and Space*, *28*(1), 17–31. https://doi.org/10.1068/d11407

Culver, G. (2017). Mobility and the making of the neoliberal “creative city”: The streetcar as a creative city project? *Journal of Transport Geography*, *58*, 22–30. https://doi.org/10.1016/j.jtrangeo.2016.11.005

Curtis, K. (1996). *Revitalizing Kitchener's CBD: Public planning initiatives and effects*. In P. Filion, T. Bunting, & K. Curtis (Eds.), *The dynamics of the dispersed city: Geographic and planning perspectives on Waterloo Region* (pp. 137-166). University of Waterloo, Department of Geography, Publication Series No. 47.

Davis, J., Pijawka, K. D., Wentz, E., Hale, M., & King, D. A. (2021). Evaluating geodesign for community-based tribal planning: The role of planners in marginalized communities. *Journal of the American Planning Association*, *87*(4), 527–541. https://doi.org/10.1080/01944363.2021.1873168

Dawkins, C., & Moeckel, R. (2016). Transit-induced gentrification: Who will stay, and who will go? *Housing Policy Debate*, *26*(4-5), 801–818. https://doi.org/10.1080/10511482.2016.1138986

De Angelis, R. (2019, April 01). Transit, tech sector, education key to Waterloo region growth, mayors say. *CBC News.* https://www.cbc.ca/news/canada/kitchener-waterloo/waterloo-region-second-fastest-growing-urban-area-1.5079064

Deka, D. (2017). Benchmarking gentrification near commuter rail stations in New Jersey. *Urban Studies*, *54*(13), 2955–2972. https://doi.org/10.1177/0042098016664830

Desmond, P. (2016, November 22). Townships won’t have to pay extra LRT charge until 2019. *The Record.* https://www.therecord.com/news/waterloo-region/townships-wont-have-to-pay-extra-lrt-charges-until-2019/article_1e046c97-2dde-5630-bc04-0bba5d4a6783.html

Dill, J. (2006). *Final technical report: Travel and transit use at Portland area transit-oriented developments (TODs)*. TransNow, University of Washington. https://web.pdx.edu/~jdill/Files/Dill_Final_Report_TODs_May_2006.pdf

Dong, H. (2017). Rail-transit-induced gentrification and the affordability paradox of TOD. *Journal of Transport Geography*, 63, 1–10. https://doi.org/10.1016/j.jtrangeo.2017.07.001

Doucet, B. (2021). The ‘hidden’ sides of transit-induced gentrification and displacement along Waterloo Region’s LRT corridor. *Geoforum*, *125*, 37–46. https://doi.org/10.1016/j.geoforum.2021.06.013

Doucet, B., Diwan, F., Turman, W., Mehta, N., & Petrovic, A. (2022). Mapping displacement through lived experiences: Countermapping transit-induced gentrification in Kitchener- Waterloo, ON. *Radical Housing Journal. 4*(2), 67–87. https://doi.org/10.54825/JXKI5234

Duncan, M. (2019). Would the replacement of park-and-ride facilities with transit-oriented development reduce vehicle kilometers traveled in an auto-oriented US region? *Transport Policy*, *81*, 293–301. https://doi.org/10.1016/j.tranpol.2017.12.005

Edge, S., Boluk, K., Groulx, M., & Quick, M. (2020). Exploring diverse lived experiences in the Smart City through creative analytic practice. *Cities*, *96*, Article 102478. https://doi.org/10.1016/j.cities.2019.102478

Ellis-Young, M., & Doucet, B. (2021). From "big small town" to "small big city": Resident experiences of gentrification along Waterloo region's LRT corridor. *Journal of Planning Education and Research*, *44*(1), 416-430. https://doi.org/10.1177/0739456X21993914

Garrett, M., & Taylor, B. (1999). Reconsidering social equity in public transit. *Berkeley Planning Journal*, *13*(1), 6–27. https://doi.org/10.5070/BP313113028

Giuliano, G. (2005). Low-income, public transit, and mobility. *Transportation Research Record*, *1927*(1), 63–70. https://doi.org/10.1177/0361198105192700108

Green Municipal Fund. (n.d.). *Case study: Region of Waterloo, ON, develops LRT to connect its urban centres*. Green Municipal Fund. https://greenmunicipalfund.ca/case-studies/case-study-region-waterloo-develops-lrt-connect-its-urban-centres

Guerra, E. (2022). What the heck is a choice rider? A theoretical framework and empirical model. *Journal of Transport and Land Use*, *15*(1), 165–182. https://doi.org/10.5198/jtlu.2022.2096

Hensher, D. A., & Mulley, C. (2015). Modal image: Candidate drivers of preference differences for BRT and LRT. *Transportation*, *42,* 7–23. https://doi.org/10.1007/s11116-014-9516-7

Higgins, C. D., & Kanaroglou, P. S. (2016). Infrastructure or attraction? Image-led planning and the intangible objectives of rapid transit projects. *Journal of Planning Literature, 31*(4), 452–462. https://doi.org/10.1177/0885412216667899

Iacobucci, E. (2016). *Understanding attitudes and perceptions of public transport: Investigation through social media and conceptual analysis* [Doctoral dissertation, State University of New

York at Buffalo]. ProQuest. https://www.proquest.com/openview/6b53c09f61077be51101674b2ae00c19

Immergluck, D., & Balan, T. (2018). Sustainable for whom? Green urban development, environmental gentrification, and the Atlanta Beltline. *Urban Geography*, *39*(4), 546–562. https://doi.org/10.1080/02723638.2017.1360041

Jones, C. E., & Ley, D. (2016). Transit-oriented development and gentrification along Metro Vancouver's low-income SkyTrain corridor. *The Canadian Geographer*, *60*(1), 9–22. https://doi.org/10.1111/cag.12256

Kahn, M. E. (2007). Gentrification trends in new transit-oriented communities: Evidence from 14 cities that expanded and built rail transit systems. *Real Estate Economics*, *35*(2), 155–182. https://doi.org/10.1111/j.1540-6229.2007.00186.x

Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: Mobility as capital. *International Journal of Urban and Regional Research*, *28*(4), 745–756. https://doi.org/10.1111/j.0309-1317.2004.00549.x

Knowles, R. D., & Ferbrache, F. (2016). Evaluation of wider economic impacts of light rail investment on cities. *Journal of Transport Geography*, *54*, 430–439. https://doi.org/10.1016/j.jtrangeo.2015.09.002

Kraemer, B. (2023, June 07). Two GRT bus routes cancelled without public consultation, Waterloo Mayor suggests change to process. *CityNews.* https://kitchener.citynews.ca/2023/06/07/two-grt-bus-routes-cancelled-without-public-consultation-waterloo-mayor-suggests-change-to-process/

Kramer, A. (2018). The unaffordable city: Housing and transit in North American cities. *Cities*, *83*, 1–10. https://doi.org/10.1016/j.cities.2018.05.013

Larsen, J., & Urry, J. (2016). *Mobilities, networks, geographies*. Routledge.

Lenhoff, S. W., Singer, J., Stokes, K., Mahowald, J. B., & Khawaja, S. (2022). Beyond the bus: Reconceptualizing school transportation for mobility justice. *Harvard Educational Review*, *92*(3), 336–360. https://doi.org/10.17763/1943-5045-92.3.336

Li, & Wyczalkowski, C. K. (2023). How buses alleviate unemployment and poverty: Lessons from a natural experiment in Clayton County, GA. *Urban Studies*, *60*(13), 2632–2650. https://doi.org/10.1177/00420980231159569

Linovski, O., Baker, D. M., & Manaugh, K. (2018). Equity in practice? Evaluations of equity in planning for bus rapid transit. *Transportation Research Part A: Policy and Practice*, *113,* 75–87. https://doi.org/10.1016/j.tra.2018.03.030

Liu, D., & Kwan, M.-P. (2020). Measuring spatial mismatch and job access inequity based on transit based job accessibility for poor job seekers. *Travel Behaviour and Society*, *19,* 184–193. https://doi.org/10.1016/j.tbs.2020.01.005

Lowe, K., Barajas, J., & Coren, C. (2023). "It's annoying, confusing, and it's irritating": Lived expertise for epistemic justice and understanding inequitable accessibility. *Journal of Transport Geography*, *106*, Article 103504. https://doi.org/10.1016/j.jtrangeo.2022.103504

Mahmoudi, D., Lubitow, A., & Christensen, M. A. (2020). Reproducing spatial inequality? The sustainability fix and barriers to urban mobility in Portland, Oregon. *Urban Geography*, *41*(6), 801–822. https://doi.org/10.1080/02723638.2019.1698865

McCullough, S. R., & van Stokkum, R. (2021). *Answers from the margins: Participatory planning with disadvantaged communities* [Report No.: UC-ITS-2019-06]. UC Davis Institute of Transportation Studies. https://doi.org/10.7922/G2RX99DZ

McDougall, E., Diwan, F., Petrovic, A., Doucet, B., & August, M. (2022). *Displacement in Kitchener's inner suburbs: Experiences and perspectives from low-income tenants* [Report]. University of Waterloo, Faculty of Environment. https://www.waterlooregion.org/sites/default/files/2022McDougallet%20alDisplacementinKitchenersInner%20SuburbsUWSDC.pdf

Nilsson, I., & Delmelle, E. (2018). Transit investments and neighborhood change: On the likelihood of change. *Journal of Transport Geography*, *66*, 167–179. https://doi.org/10.1016/j.jtrangeo.2017.12.001

Ohnmacht, T., Maksim, H., & Bergman, M. M. (2016). Mobilities and inequality – Making connections. In T. Ohnmacht, H. Maksim, & M. M. Bergman (Eds.), *Mobilities and inequality* (pp. 7–26). Routledge.

Pasha, O., Wyczalkowski, C., Sohrabian, D., & Lendel, I. (2020). Transit effects on poverty, employment, and rent in Cuyahoga County, Ohio. *Transport Policy*, *88*, 33–41. https://doi.org/10.1016/j.tranpol.2020.01.013

Petzer, B. J. M., Wieczorek, A. J., & Verbong, G. P. (2020). Dockless bikeshare in Amsterdam: A mobility justice perspective on niche framing struggles. *Applied Mobilities*, *5*(3), 232–250. https://doi.org/10.1080/23800127.2020.1794305

Pierce, J., & Lawhon, M. (2018). The right to move: Informal use rights and urban practices of mobility. *Urban Geography*, *39*(5), 667–686. https://doi.org/10.1080/02723638.2017.1382050

Pisarski, A. E. (1996). *Commuting in America II: The second national report on commuting patterns and trends*. Eno Transportation Foundation. https://trid.trb.org/View/461400

Prayitno, K., & Moos, M. (2022). Freeing the "captive rider": Young adults' public transit experiences in Toronto high-rise suburbs. *Canadian Planning and Policy*, *2022*, 20–48. https://doi.org/10.24908/cppapc.v2022i1.15316

Pucher, J. (1982). Discrimination in mass transit. *Journal of the American Planning Association*, *48*(3), 315–326. https://doi.org/10.1080/01944368208976181

Pucher, J., & Renne, J. L. (2003). Socioeconomics of urban travel: Evidence from the 2001 NHTS. *Transportation Quarterly*, *57*(3), 49–77. https://www.scopus.com/pages/publications/0042822158

Purifoye, G. Y. (2020). Transit boundaries: Race and the paradox of immobility within mobile systems. *Mobilities*, *15*(4), 480–499. https://doi.org/10.1080/17450101.2020.1738684

Region of Waterloo. (n.d.). Stage 2 ION. *Region of Waterloo*. https://www.regionofwaterloo.ca/en/exploring-the-region/stage2ion.aspx

Rose, E. J. (2016). Design as advocacy: Using a human-centered approach to investigate the needs of vulnerable populations. *Journal of Technical Writing and Communication*, *46*(4), 427–445. https://doi.org/10.1177/0047281616653494

Sanchez, W. T. (1999) The connection between public transit and employment. *Journal of the American Planning Association*, *65*(3), 284–296. https://doi.org/10.1080/01944369908976058

Sandercock, L. (Ed.). (1998). *Making the invisible visible: A multicultural planning history* (Vol. 2). University of California Press.

Scherer, M. (2010). Is light rail more attractive to users than bus transit? Arguments based on cognition and rational choice. *Transportation Research Record*, *2144*(1), 11–19. https://doi.org/10.3141/2144-02

Scherer, M., & Zurich, E. T. H. (2012). Bus or rail: An approach to explain the psychological rail factor. *Journal of Public Transportation*, *15*(1), 75–93. https://doi.org/10.5038/2375-0901.15.1.5

Sharkey, J. (2019, June 12). *Charles Street terminal closing, 800 bus stops to change June 24*. CBC News. https://www.cbc.ca/news/canada/kitchener-waterloo/ion-waterloo-kitchener-bus-grand-river-transit-1.5170491

Sheller, M. (2016). Sustainable mobility and mobility justice: Towards a twin transition. In J. Urry & M. Grieco (Eds.), *Mobilities: New perspectives on transport and society* (pp. 289–304). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315595733-15/sustainable-mobility-mobility-justice-towards-twin-transition-mimi-sheller

Sheller, M. (2018a). *Mobility justice: the politics of movement in an age of extremes*. Verso.

Sheller, M. (2018b). Theorising mobility justice. *Tempo Social*, *30*(2), 17–34. https://doi.org/10.11606/0103-2070.TS.2018.142763

Sheller, M. (2020). Mobility justice. In M. Büscher, Freudendal-Pedersen, S. Kesselring & N. G. Kristensen (Eds.) , *Handbook of research methods and applications for mobilities* (pp. 11–20). Edward Elgar.

Sheller, M., & Urry, J. (2006). The new mobilities paradigm. *Environment and Planning A: Economy and Space*, *38*(2), 207–226. https://doi.org/10.1068/a37268

Smeds, E., Robin, E., & McArthur, J. (2020). Night-time mobilities and (in)justice in London: Constructing mobile subjects and the politics of difference in policy-making. *Journal of Transport Geography*, *82*, Article 102569. https://doi.org/10.1016/j.jtrangeo.2019.102569

Taylor, B. D., & Morris, E. A. (2015). Public transportation objectives and rider demographics: Are transit's priorities poor public policy? *Transportation*, *42*, 347–367. https://doi.org/10.1007/s11116-014-9547-0

TriMet. (2016, July). *Westside max blue line extension.* https://trimet.org/history/pdf/max-blueline-westside.pdf

Ureta, S. (2008). To move or not to move? Social exclusion, accessibility and daily mobility among the low-income population in Santiago, Chile. *Mobilities*, *3*(2), 269–289. https://doi.org/10.1080/17450100802095338

van Lierop, D., & El-Geneidy, A. (2016). Enjoying loyalty: The relationship between service quality, customer satisfaction, and behavioral intentions in public transit. *Research in Transportation Economics*, *59*, 50–59. https://doi.org/10.1016/j.retrec.2016.04.001

Webber, K. (2022). *Exploring the relationship between transit-induced intensification and retail gentrification in a mid-sized Canadian city* [Master's thesis, University of Waterloo]. UWSpace. http://hdl.handle.net/10012/18760

Weidner, J. (2019, January 29). Bus routes to be reorganized for LRT. *The Record.* https://www.therecord.com/news/waterloo-region/bus-routes-to-be-reorganized-for-lrt/article_23472977-ff22-5ffb-b241-7543581bef2e.html

Welch, T. F. (2013). Equity in transport: The distribution of transit access and connectivity among affordable housing units. *Transport Policy*, *30*, 283–293. https://doi.org/10.1016/j.tranpol.2013.09.020

Welch, T. F., & Mishra, S. (2013). A measure of equity for public transit connectivity. *Journal of Transport Geography*, *33*, 29–41. https://doi.org/10.1016/j.jtrangeo.2013.09.007

Wellman, G. C. (2019). Transportation exploitation, mobility and social justice. In N. Cook & D. Butz (Eds.) *Mobilities, mobility justice and social justice* (pp. 67–80). Routledge.

Zhao, J., Webb, V., & Shah, P. (2014). Customer loyalty differences between captive and choice transit riders. *Transportation Research Record*, *2415*(1), 80–88. https://doi.org/10.3141/2415-09

Zuk, M., Bierbaum, A. H., Chapple, K., Gorska, K., & Loukaitou-Sideris, A. (2018). Gentrification, displacement, and the role of public investment. *Journal of Planning Literature*, *33*(1), 31–44. https://doi.org/10.1177/0885412217716439

Chapter 3: Polarized Paths: 'Selling' Cycling in City and Suburb

3.1 Introduction

Over the past decade, North American cities have seen a rapid increase in the promotion and development of cycling. While there is growing support for new bike lanes, significant resistance remains among some residents and business owners. Despite evidence to suggest that bike lanes increase property values, much of this 'bikelash' revolves around their perceived negative impact on residential property values (Wild et al. 2018). To date, however, much of the literature on the relationship between cycling infrastructure and property values, and gentrification and neighbourhood change, relies heavily on quantitative analysis that misses important meanings, perceptions, and experiences of place. While this body of literature finds little evidence to suggest that bike lanes decrease property values, these models lack the tools to address why certain groups object to cycling infrastructure, how bike lanes factor into home buying and home building, and how attitudes towards cycling are influenced by neighbourhood attributes, cultural norms, and the built environment. Our article brings much-needed qualitative analysis into conversations about the role cycling infrastructure plays in residential property values, and, by extension, broader processes of neighbourhood change.

A second contribution of this article is in its emphasis on mid-size cities, which in North America are generally considered to be between 50,000 and 500,000 inhabitants. Mid-sized cities have traditionally been under-researched, but many have been experiencing a planning shift towards smart growth initiatives to promote intensification and density in core areas. Transportation has become a further tool to achieve these goals, attracting investment and promoting less auto-oriented lifestyles in core areas (Filion et al. 2010; Doucet 2021). While mid-sized cities are smaller geographically, and therefore theoretically more conducive to cycling, their dispersion, weak cores, and car-oriented lifestyles make sustainable cycling challenging. These factors make it difficult to apply findings (or recommendations) from large metropolitan cities to mid-sized communities (Bunting et al. 2000).

There is a need to understand both the relationship between cycling and residential real estate, and how this relationship manifests itself within mid-sized communities. Therefore, the aim of our article is to understand the role of cycling infrastructure in the development and consumption of real estate, specifically in midsized cities.

Two questions guide this research:

1. To what extent does cycling infrastructure play a role in the buying, selling, and developing of residential real estate?
2. How does this vary between core urban areas and automobile-oriented suburban ones?

To answer these questions, we focus on the perceptions, meanings, and marketing of cycling in the home-buying and home-building processes. We pay specific attention to the spatial differences in how cycling is perceived and promoted in core urban areas, whose built form and land-use patterns are more amenable to cycling, and suburban neighbourhoods constructed post-World War II with the automobile as the dominant transportation technology (see Filion 2018; Doucet & Doucet 2022).

By analysing the knowledge, perceptions, and experiences of real estate agents (hereafter 'realtors') and developers, we gain insights into trends in the housing market that are beyond the knowledge of individual homebuyers. Realtors engage with a wide variety of households and are therefore well positioned to provide valuable perspectives regarding transportation preferences and how they differ between people and neighbourhoods (see also McCormack et al. 2020). Developers offer insights into the ways in which different transportation modes are part of building and 'selling' new communities, whether they be in the city or the suburbs.

We conducted this research in three adjacent mid-size cities – Cambridge, Kitchener, and Waterloo, or the 'Tri-Cities' – which are located in the Region of Waterloo, in Southern Ontario. Situated 100 km west of Toronto, the Region of Waterloo regularly ranks as Canada's fastest growing urban area. The Cities of Kitchener (2020) and Cambridge (2020) have recently developed cycling master plans, and the City of Waterloo (2020) and Region of Waterloo (2018) have important cycling elements within their wider transportation master plans. As new infrastructure is constructed, it is being met with apprehension by a small yet vocal minority of residents who have voiced concern about traffic and the potential changes it will bring to their communities (CBC Kitchener-Waterloo 2020).

3.2 The Role of Cycling Infrastructure in Changing Property Values: The Urban Suburban

Unlike most European cities, the development of North American cities after World War II was based around the automobile to such a great extent that other modes of transport (walking, cycling, public transport) became difficult, if not impossible. Land use, density, and urban morphology all changed significantly as the automobile replaced the streetcar as the dominant transport technology shaping cities (Sewell 1993). The pre-war city is characterized by short blocks, narrow streets, and grid patterns, with mixed use and higher densities. Parking has been retroactively installed, and commercial streets, which form the heart of neighbourhoods, are characterized by storefronts opening to wide sidewalks, not parking lots. In contrast, areas built after 1945 feature wide arterial roads that delineate neighbourhoods. Commercial spaces are dominated by parking, functions are strictly separated, distances are far greater, and neighbourhood road networks feature convoluted loop and lollipop patterns. On many streets, sidewalks are absent. These land use, density, and morphology patterns were all dictated by the automobile and continue, in their general form, to this day.

This fault line between pre-war and postwar areas is at the heart of the urban-suburban divide within North American cities (Doucet & Doucet 2022). Studies have found that automobile-oriented suburbs are more politically conservative (Walks 2015), have more employment in manufacturing, fewer command and control functions within the global economy (Walks 2006), are increasingly home to growing concentrations of poverty (Grant et al. 2020), have very low modal shares of transit, walking, and cycling (Wheeler 2003; Doucet & Doucet 2022), and are culturally more oriented towards the automobile (Filion 2018). While many of these differences exist within European cities, the vast extremes in the built environment and orientation towards the automobile that can be found within North American cities are largely absent.

When discussing the meanings and experiences of cycling within a North American context, we must therefore pay particular attention to this important fault line between the parts of the city constructed before 1945 and those built afterwards. Paradoxically, however, some of the greatest bike lane coverage can be found in suburban areas that are primarily oriented towards the automobile (Doucet et al. 2020). Despite this, the highest percentage of people who cycle to work (the only significant variable to measure cycling use) is found within older, core urban neighbourhoods rather than in the suburbs. Part of this is likely due to the high prevalence of low-stress routes within the

urban core, and their comparative absence within automobile-oriented suburbs. A recent Toronto study found that the majority of Furth et al.'s (2016) Level of Traffic Stress 1 category (the lowest level of stress) can be found within the urban core. Even suburban residential streets were generally given higher categories (indicating higher levels of stress), and suburban arterials were considered to be the most stressful (Lin et al. 2021).

Again, when reflecting on other parts of the world, such extreme variations in cycling use and cycling infrastructure are not found in European countries with higher levels of cycling uptake, such as the Netherlands or Denmark, where suburban infrastructure, built forms, and distances are more conducive to modes of transport beyond the automobile. In Amsterdam, cycling use is higher in central districts (62% of all journeys); however, it is also between 32 per cent and 38 per cent within post-war districts in the west, southeast, and north (Municipality of Amsterdam 2018). In contrast, many suburban census tracts in Canada record no people who report cycling to work as their dominant mode of transport, while in some core urban areas, it can be over 15 per cent (tcat 2019). In Toronto, journey to work by bicycle within the city's pre-war neighbourhoods was 6 per cent in the 2016 census; in the rest of the region, it was 0.6 per cent (Doucet & Doucet 2022). These rates are generally lower in smaller and mid-sized communities, even within their older neighbourhoods.

North American cities, however, are increasing investment in cycling facilities. In the United States alone, there has been a more than 300 per cent increase in new protected bike lanes since 2010 (Calbike 2014), motivating a growing body of research that seeks to understand their impact. One major strand of this literature focuses on the potential economic impacts of cycling infrastructure on property values. This research is almost exclusively quantitative, largely dominated by hedonic price modelling. On the whole, cycling infrastructure generally has positive implications for residential property values. This includes open spaces – broadly referring to an area that could house cycling infrastructure but also has other purposes (Krizek 2006; Panduro & Veie 2013), multipurpose trails (Mogush et al. 2005; Sander & Haight 2012; Ohler & Blanco 2017), and paths that connect to open spaces.

Mogush et al. (2005) specifically examined bike lanes and found that urban areas experienced a positive correlation between cycling specific lanes and property values, whereas suburban neighbourhoods saw no impact – with the exception of on-road cycling lanes that saw a small negative association. The authors conclude that this disparity was likely due to different perceptions

towards cycling from the distinctive populations within each area. While cycling is viewed as an asset in urban neighbourhoods, it does not hold the same value in the suburbs (see also Krizek 2006). Sander and Haight (2012) explore this idea further, noting that while urban factors such as condo or apartment living may be more conducive to cycling travel, Bike Score ratings are also much higher in urban areas than their suburban counterparts. In urban areas, studies attribute greater value to cycling infrastructure when it connects residential properties to public transit (Sander & Haight 2012; Levine et al. 2018). In general, cycling infrastructure is far less functional for daily mobility in suburban areas (Buck & Buehler 2012), with a greater emphasis on recreation rather than on transportation.

Our ability to understand the complexities of these disparities is limited by the dominant quantitative methodological approaches that overlook the social and cultural dimensions of this relationship, and how the built environment shapes perceptions and experiences of cycling. For example, hedonic models cannot explain why there are differences in the relationship between bicycle infrastructure and property values between core urban areas and suburban ones, or the role that lifestyle, identity, experience, or political economy plays in shaping these differences (see Padeiro et al. 2019). Crane et al. (2016) emphasize the usefulness of mixed-method approaches through their study of the perceptions of new cycling infrastructure in Sydney, Australia. Mayers and Glover (2020) interviewed cyclists in the City of Waterloo and found that a lack of safe cycling infrastructure deterred growth in bike usage.

In addition, qualitative research has begun to examine the home-buying process through the lens of realtors and developers, including their agency as stakeholders in the market (Carnoske et al. 2010; Kern 2016; McCormack et al. 2020). McCormack et al. (2020) found that cycling can be a controversial topic, and that issues surrounding built form, healthy lifestyle, and education can attract or deter interest in cycling. While a focus on measuring property value impact is significant, it ultimately ignores external factors that could influence public perceptions, creating a gap in our understanding of why public resistance towards cycling infrastructure exists when property values are positively impacted.

3.1.1 Bikelash: Who Objects and Why?

While many individuals and organizations advocate for cycling (Furness 2006; Stehlin 2015), other have vocalized their resistance, often referred to as ‘bikelash’ (Duarte et al. 2014; Wild et al. 2018). Key motivations include perceived declines in property values, the loss of parking and space, longer

journey times for drivers, and even the perception that cycling can further social inequity (Wild et al. 2018). The latter, in particular, draws attention to another body of literature, which positions cycling infrastructure as a neoliberal planning tool that can contribute to gentrification (Flanagan et al. 2016; Smiley et al. 2016). As Culver (2017) and Smiley et al. (2016) both note, neoliberal planning positions cycling, much like modern streetcars or light rail, as a policy tool that enhances quality of life, provides mobility choices, attracts investment, and makes an area appealing to high-income residents, particularly those in the much-prized creative class (Martin-Brelot et al. 2010). The result is that, as with high-order transit, high-quality bike lanes are unevenly distributed throughout the city and tend to be found in affluent or gentrifying neighbourhoods within the urban core, rather than in declining, automobile-oriented suburbs (Winters et al. 2016; Fuller & Winters 2017; Doucet & Mazumder 2020). In 2020, Toronto city council approved the construction of 40 km of new bike lanes, the largest one-year increase in the city's history. The majority of these lanes, however, were in the gentrified urban core (with a significant percentage directly above a subway line), and none were built in the poorest postwar suburbs. This uneven geography both reinforces and actively produces spatial disparities in amenities that make areas attractive (or unattractive) for capital investment and middle-class residents. Because of this, decisions of where to place bike lanes influence spatial patterns of gentrification, investment, and disinvestment.

In North American cities in particular, high-quality bike lanes tend to cluster in gentrified or gentrifying urban neighbourhoods, and to a lesser extent in new suburban areas on the urban fringe. Declining post-war suburbs tend to see the fewest investments in high-quality cycling infrastructure. These spatial patterns mean that those who are most likely to benefit from cycling infrastructure (i.e., low-income neighbourhoods with limited transportation options) are much less likely to see bike lanes in their communities (Flanagan et al. 2016).

Portland, Oregon, is a compelling example of the relationship between bike lanes and gentrification. The city was originally praised for its comprehensive cycling network, one of the most extensive in North America (Pucher et al. 2011). However, much of this network can be found in gentrifying neighbourhoods already served by the city's light rail and streetcar networks. This has prompted bikelash both from residents fearing further gentrification of their neighbourhoods and from others residing in the social and spatial peripheries who feel excluded from this infrastructure (Lubitow & Miller 2013; Lubitow et al. 2016; Pierce & Lawhon 2018). This is why Doucet and Mazumder (2020) and others have argued that a key component of making cycling equitable and

accessible is the development of a spatially even network. In Waterloo Region, however, we are seeing the rapid implementation of downtown grids of protected bike lanes (where gentrification is displacing low-income communities) (Doucet 2021), as well as multi-use trails built as part of new suburban developments that contain no affordable housing.

While cycling was once viewed as a 'last resort form of travel' (Smart 2010; Lubitow et al. 2016), it has recently undergone a rebranding which, while attractive to some, can have detrimental costs for others (Smiley et al. 2016). These disparities can be both social and spatial. But while there is considerable research into modelling the impact of bike lanes on property values, there has been very little research that examines to what extent cycling becomes part of the 'selling' of houses, real estate, and new residential developments, and how this differs within a mid-sized urban region.

3.2 Population Growth, Transportation, and Economic Development in Waterloo Region

The Tri-Cities of Kitchener, Waterloo, and Cambridge are situated in the Region of Waterloo, an upper-tier municipality 100 km west of Toronto. It is one of Canada's fastest growing urban areas, a technology hub, and home to two universities. It is also increasingly home to commuters who have been priced out of the Greater Toronto Area.

Over the past decade, Waterloo Region has been very proactive in using transportation policy to shape regional growth and development patterns in a more compact and sustainable way. The biggest component of this is the 19- km ION light rail line, which opened in 2019. The ION works in tandem with the Countryside Line, a growth boundary enacted in 2009, to restrict new developments from taking place on farmland and other rural areas surrounding the Tri-Cities, and encourage it to take place within the existing urban footprint. Combined, these two policies have successfully encouraged densification. As of 2019, the year the ION commenced operations, Waterloo Region had seen more than $3 billion in investment along the LRT corridor (Region of Waterloo 2020). However, with this intensification, there are growing concerns about displacement, affordability, and gentrification (Diwan 2021; Doucet 2021; Ellis-Young & Doucet 2021).

The Tri-Cities and the regional government have also been developing and implementing new cycling infrastructure. While we were conducting this research, the Cities of Waterloo and Kitchener were running an 18-month pilot project of protected bike lanes on major streets which also connects

to the LRT system, further enhancing accessibility for potential LRT riders. The Region of Waterloo also implemented temporary bike lanes on major streets during the summer of 2020 as a way to encourage more people to cycle during the pandemic. Kitchener's cycling plan is particularly ambitious. In late 2020, the city council approved a downtown grid of protected bike lanes, and the first segments were opened in the fall of 2021. In addition to this, all cities have been building new multi-use trails along major roads in more suburban communities (Figure 3.1).

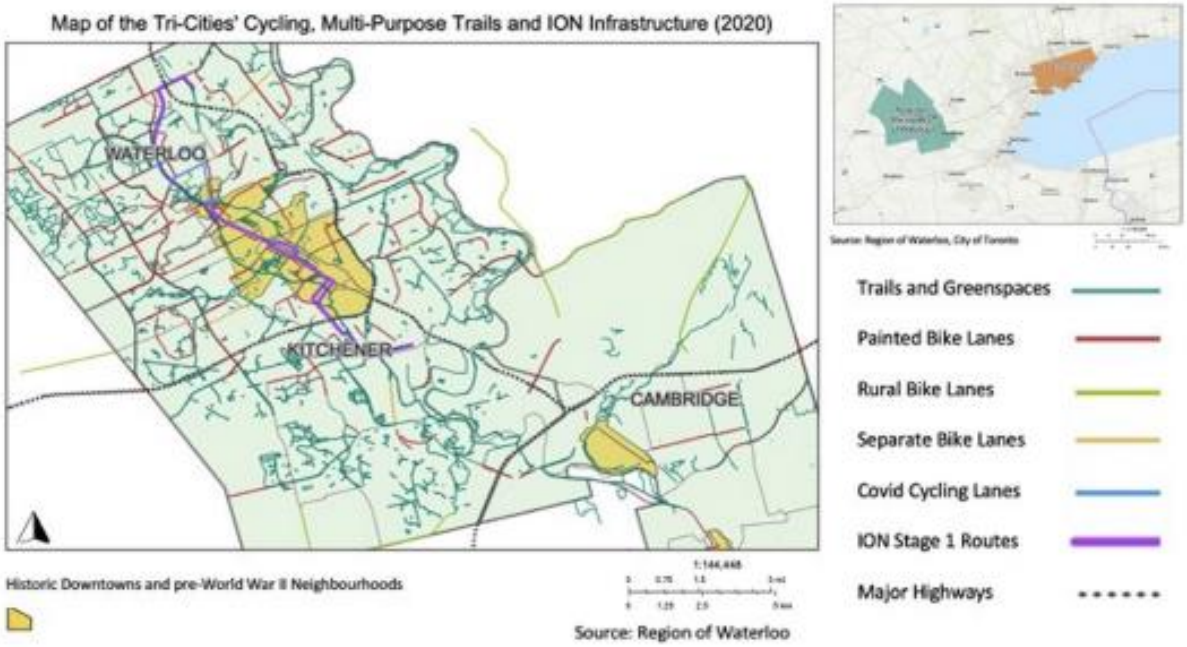

Figure 3.1: Map of the Tri-Cities Cycling, Multi-Purpose Trails and ION Infrastructure (2020)

3.3 Methodology

To understand how realtors and developers perceive cycling's impact on residential property values, we conducted twenty-two semi-structured interviews, seventeen with realtors and five with developers, between November 2019 and January 2020. Realtors have a clear sense of the pulse of the market; they are constantly interacting with, and catering to, buyers in different neighbourhoods and demographic groups. In a context such as Canada, where there are few planning regulations on the size and price of new residential developments, developers build what they know will sell. Because of the different perspectives and knowledge bases between realtors and developers, we created two separate question sets to guide the semi-structured interview process.

For realtors, interview questions focused on transportation preferences, habits, and demands of homebuyers, the role that transportation in general and cycling specifically plays in homebuyers' decision-making within different parts of the region, as well as their own perceptions of cycling's impact on the residential property market. We also focused on the extent to which cycling is 'sold' to potential clients. For developers, questions focused on the role that cycling infrastructure plays in site evaluation, in the building, construction, and marketing process, and to what extent these vary throughout the region. Participants were recruited via their professional profiles, through contacts provided by city representatives, or in response to a call for participants issued by the Kitchener-Waterloo Realtors' Association. Of the five developers we spoke with, only one worked primarily with single-family suburban homes, again highlighting the transition towards urban intensification we noted earlier. The interviews took place either in person or by phone, and each interview lasted between thirty and sixty minutes. With the exception of one participant who declined, interviews were recorded and subsequently transcribed for clarity and to assist with the analysis of trends and themes. Once transcribed, a qualitative coding system was applied to assist with the analysis. A first round of coding focused on some of the major themes identified within the literature (the urban-suburban divide, demographic trends, the role of cycling in home-building and home-buying, etc.). A second round of coding refined these, in addition to incorporating new themes which emerged during the first round. Ultimately, our coding framework started small, covering larger themes and key concepts, and was then 'constructed' further through the analysis process to best represent the data collected and the voices of the participants.

3.4 Results

It was clear throughout the interviews that while bikelash continues in the Tri-Cities, interviewees did not believe that cycling infrastructure is currently having a negative impact on residential property values. Importantly, however, perspectives of the role of cycling infrastructure and its potential impact on property values varied dramatically. While some participants viewed cycling as having a positive impact on residential properties, they were hesitant to suggest that cycling alone was responsible for property price increases, instead suggesting that it played into what Higgins and Kanaroglou (2018) refer to as 'a bundle of goods.' This positions the value of transportation as being integrated with surrounding amenities, which, as we noted earlier, vary greatly between different parts of the city. While some participants expressed concern around the potential impact on

congestion, wasted infrastructure, and parking loss, many shared that these were concerns they had noticed through their own experiences, rather than from conversations with clients. This acts as an important reminding that realtors and developers are also residents of the Tri-Cities and their lived experience can motivate them to participate in cycling advocacy or bikelash efforts.

In the remainder of this section, we analyze the interviews based on three themes: differences in the relationship between cycling and housing in urban and suburban areas, demographic trends associated with these divisions, and the role that realtors and developers play in the marketing of cycling in different parts of the city.

3.4.1 The Urban-Suburban Divide

In the Tri-Cities, core neighbourhoods (areas constructed before World War II) have seen population growth, increased density, and rising average incomes. Downtown Kitchener and Uptown Waterloo, both of which are on the LRT line, have seen significant gentrification and displacement (Region of Waterloo 2018; Doucet 2021). The built form of the urban core, combined with recent investments in transit infrastructure and bike lanes, means they also provide far more mobility choices than most suburban neighbourhoods, whereas driving is the default option in many communities. Participants confirmed this, pointing to the growing dichotomy of two vastly different cultures, requiring realtors and developers to cater to two different clienteles: one that wants to have more mobility choices, and another that prioritizes travel time by car and proximity to major roads and highways.

For realtors, this divide presents itself in the way each agent defines their clientele and preferred market. For agents who worked in both core and suburban neighbourhoods, the difference in demographics and needs was noticeable, as one agent stated:

> They just tend to have different needs … You know what I mean? What I've found is suburban people are much more specific in terms of what they want and what they need, where I find the core people are a little more open to old homes because there are mostly older homes in the core … They look at it from [the perspective that] they want to be in the downtown core, whereas the suburban people are more, a little more caught up in the 'new.'

As the quotation above highlights, the real estate process is about tailoring marketing approaches to potential clients. This means that in conversations with clients looking to live in core urban areas, amenities such as restaurants, cafés, shops, large parks, and bike lanes were highlighted and prioritized. In suburban neighbourhoods, realtors tended to focus on in-house amenities, such as backyards, swimming pools, parking, and so on. For suburban homebuyers, ample parking space was a priority, with agents noting that no garage space was often a deal breaker for potential buyers.

While it was generally accepted that cycling was a viable means of transport in core urban areas, even realtors who personally expressed a desire to see more active transportation in the region raised concerns about the practicalities of cycling as a mode of commuting for their suburban clients. This was exemplified by one realtor who shared with us a conversation about cycling with a client:

> … bike routes are an inconvenience for him; the pillars (lane dividers separating bike lanes from on-road traffic) slow him down. But he's never going to hop on a bicycle because it doesn't get him from where he lives to where he needs to go … So really my hope would be that active transportation gets out that far, and it has to. We can't just keep making the urban cores this wonderful active transportation place; it has to connect to all these people in suburbs.

In the same breath, however, the realtor also identified a potential issue:

> If you think about running around, running errands, even if the grocery store is a ten minute bike ride away, you then have to go to the hardware store and pick your kids up from dance and now you're on a two-hour cycle loop which isn't going to happen. So is he going to bike to the grocery store? Yeah, maybe once in the summer, when he is feeling extra ambitious.

Stories and perceptions such as this came up regularly in interviews. Realtors agreed that suburban commuters are primarily drivers, and the urban cores see people more willing to shift to alternative modes of travel. This also draws attention to the dispersion patterns of mid-sized cities, presenting a further consideration for transportation plans aimed at producing a more connected city.

Interviews with developers showed a similar dichotomy. From the perspective of suburban developers, in-house amenities such as large garages and new fixtures were prioritized. For urban development projects, the focus is on shared condo amenities and proximity to amenities within the

wider community. With land values rising in the Tri-Cities, developers are actively reducing the size of new urban residential units to maintain some level of affordability. Further solidifying the 'urban lifestyle,' this puts greater emphasis on amenities and facilities in the surrounding neighbourhood such as grocery stores, transportation (including bike lanes), entertainment, bars, restaurants, cafés, and shops. This lifestyle becomes the selling point for the area, rather than the unique features of the condo building itself. It is clear from these interviews that the comparative ease and accessibility of cycling is part of what makes core urban areas appealing to many homebuyers, as well as developers.

3.4.2 Demographic Differences: Who Lives Where and Why?

The differences in land use, morphology, and density that shape different relationships between cycling and housing in core versus suburban neighbourhoods also reflect demographic trends and differences. Suburban areas offer single-family homes with larger lots, lower densities, and more private indoor and outdoor space, whereas most new developments in urban cores are predominantly found in multi-family dwellings such as condominiums and, to a lesser extent, rental apartments. Adjacent to many new developments are neighbourhoods of older, detached houses, which are also increasingly becoming luxury products beyond the reach of most households (Doucet 2021). Realtors and developers both noted that these factors have made downtown areas more attractive for investors, young professionals, and downsizers, while at the same time potentially deterring families who prioritize more space. As one realtor explained:

> I would say there's both; there's the young professionals, like pre-kids, are the condo dwellers, and then retired folks looking to go back to the condo so then they don't have to maintain the yards and there are less stairs. People with kids can't really figure out how condo lifestyle is going to work.

New condominium and apartment developments in the urban core are primarily studio or one-bedroom units; there are very few two-bedroom units and almost none with three or more. This shift away from large units is a trend noticed across Canadian cities, with affordability (for both buyers and developers) and demand, cited as primary drivers (Hunt, 2018). To date, there are virtually no new affordable housing units constructed along the LRT corridor (Doucet 2021). With less and less space available to larger families, barriers to urban living include the increasing cost of living, and growth of smaller developments aimed at singles and childless couples. In terms of transportation, an individual parking spot in a condominium complex in a core area costs upwards of $40,000, which

can be a deterrent for those already struggling to afford the area. Strong active and public transportation options mean households can save money by reducing driving or giving up their second car.

Parking is not only expensive for condo owners, but it is also expensive to build. Several developers noted how cycling facilities such as bike parking and storage are used to reduce the number of parking spaces required. This helps to reduce their costs. In 2020, the City of Kitchener even approved a new mixed-use development downtown without any automobile parking, with the idea that residents can walk, cycle, use transit, or carshare. Again, we see differences between places and people; some prospective condo buyers are attracted to this environment and the ability to move around easily on foot, by bike, or on the LRT. However, the combination of small units and dwindling parking spots deters other buyers from purchasing in the urban core, and they search for housing in the suburbs, where even new condominium projects have ample parking, although they are not accessible by bike the way their urban counterparts are. While Canadian suburbs are becoming increasingly diverse in terms of class, economics, and ethnicity, as Filion (2018) discusses, they retain shared mobility patterns and a culture that centres on driving and travelling by car that transcends these differences. Increasingly, these suburban households include those who would prefer to live in the core (where mobility options are more plentiful) but have been priced out (Pi 2017).

3.4.3 Realtors and Developers: Stakeholder Agency and Marketing

Beyond having a privileged insight into the home-buying process, realtors and developers play an active role in the marketing of amenities such as cycling or transportation infrastructure to their clients. While participants noted that most buyers are not currently prioritizing cycling as a primary mode of travel, both conversations and possibilities around cycling will grow as local municipalities continue to develop new cycling infrastructure. Interviews revealed that opinions and ideas held by realtors and developers contribute to how properties are marketed, and that these opinions can influence positive and negative perspectives of cycling, particularly for potential homebuyers.

Not surprisingly, there are significant differences in the ways in which cycling is marketed between core urban neighbourhoods and suburban ones. In downtowns, cycling, walking, and the LRT are part of the basket of amenities that are increasingly part of the lifestyle we mentioned previously, as well as the hip urban lifestyle associated with gentrification, functioning as key selling points within these communities. An example of this is the Spur Line Common development, situated between the

downtowns of Kitchener and Waterloo. The Waterloo Spur is a lightly used railway line that has a bicycle and walking path beside it called the Spur line Trail. Not only does this development have the name of a popular cycling trail in its title, but its logo also contains a bicycle wheel and many of its marketing imagery features bicycles. It markets a decidedly urban lifestyle of cycling, corner parks, and hanging out with friends at cafés[19] . The language it uses appeals to this subset of the population, a 'likeminded crowd': 'Your people are already here enjoying life.' In another recently proposed development in central Waterloo, connectivity by bicycle was a central part of the development application, which noted that the proposed site was directly connected to an LRT stop via a multi-use trail.

In suburban areas, even if new developments are denser than typical single-family houses (such as townhomes or mid-rise), these mobility choices do not feature in their marketing. Proximity to trails is important and will sometimes feature in the marketing text that realtors publish about property listings. However, this is more for recreation than for commuting and clearly indicating proximity to specific highways is central to the ways in which mobility plays into their marketing and selling. The same developer behind Spur Line Common is also involved in a suburban mid-rise project that discusses proximity and mobility through driving. It states: 'Stay in touch with Kitchener-Waterloo through conveniently located city traffic arteries – shopping at Fairview Mall, swimming at the local pool or jump onto the 401 for an eagerly anticipated day trip in or outside the region[20].

While images of cycling rarely feature in the marketing of suburban developments (and those that do portray recreational rather than commuter cycling), developers perceive cycling as inherently positive, particularly in urban cores. In addition to this, urban developments have started to include cycling facilities as part of their packages of amenities within new projects. This includes the construction of bike storage, workshop areas, and parking options. As one developer explains:

> Again it's [cycling as] another marketing tool, something we can offer for buyers or residents. And we certainly have bike parking on site. Bike storage inside the building and outside.

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[19] Reid's Heritage Homes, 'Spur Line Common,' https://www.reidsheritagehomes.com/site/ spur-line-common-waterloo (accessed on 15 June 2021).
[20] Reid's Heritage Homes, 'Welcome to The Ridge' (Lackner Ridge web page), https://www.reidsherit agehomes.com/site/lacknerridge-condos-kitchener.

By providing parking options and bike storage outside of units, potential buyers can justify cycling as a viable transportation option without the need to take up space inside their units (which, as we noted, tend to be very small). This could be attractive to both cyclists, who feel that their needs are being met, and non-cyclists, who could be motivated to engage in cycling if the facilities are available and it is perceived as a safe, accessible, and convenient form of travel in their community, which is what the new bike lanes are designed to do. It also means that the urban lifestyles associated with cycling are part of the fabric of a new development, something that can also be highlighted by realtors who also sell this lifestyle to urban buyers. As we previously mentioned, however, there are also financial motivations for developers to include cycling facilities within their projects, which enable them to reduce parking ratios and save costs associated with parking construction.

For realtors, the degree to which they marketed cycling to their clients reflected their personal attitudes towards cycling, which, as in many regions, is a highly contentious and polarizing issue in Waterloo. Realtors we spoke with who were personally against new bike lanes were less likely to discuss them as a selling point with clients. The same was evident for those operating in suburban, automobile-oriented areas working with demographic groups identified as less likely to cycle (i.e., elderly individuals). That said, most realtors indicated that they would highlight the cyclability of a property to increase its marketability. Importantly, there is also a high degree of self-selection when it comes to working with clients; realtors who were cyclists themselves were actively promoting cycling in the region to their clients. As with many other aspects of our analysis, the core versus suburban divide is one that influenced the ways in which realtors' own perceptions of cycling differed.

3.5 Conclusions

Like much of the existing quantitative literature, interviews with both realtors and developers did not find any evidence that bicycle infrastructure significantly detracted from the appeal or value of residential properties. Thinking beyond the price, however, this research rendered visible the degree to which they factor into the home-buying and home-building processes, and how this varies depending on whether properties are situated in core urban areas, which enjoy a growing range of mobility options, or more suburban neighbourhoods, which are predominantly automobile-oriented.

In core urban areas, cycling is marketed both for its transportation accessibility and also for its hip urban characteristics, featuring prominently in urban lifestyles associated with gentrification. This was evident in the ways in which developers marketed cycling facilities as part of a suite of urban

amenities that existed outside an individual dwelling. The (gentrifying) neighbourhood, and its range of amenities, are central to the lifestyles sold in the urban core. This includes cafés and restaurants, but also a lifestyle, culture, and mobility connected to the bicycle. In suburban areas, cycling is not part of the marketing and selling of houses, which tends to focus on features internal to a dwelling, as well as proximity by car. Here, realtors and developers stressed the recreational and health benefits of cycling rather than its role in everyday commuting. Suburban communities remain predominantly automobile-oriented, and prioritizing spaces for cars and easy access to highways remain favoured among suburban homebuyers. Planners and policymakers need to pay attention not only to differences in cycling statistics between core urban areas and automobile-oriented suburban ones, but also in these vastly different attitudes towards mobility and cycling. While there is huge potential and latent demand for cycling across a wide range of areas, these differences are important to acknowledge and understand if municipal goals of increased cycling usage are to be realized. Our analysis of the different ways in which cycling is sold and marketed in different parts of the city can help interpret the complex and, in some cases, contradictory ways in which cycling is part of neighbourhood identity, and the varying amenities offered by different parts of the city.

Rather than focusing on how bike lanes reduce property values, a growing body of literature suggests that cycling infrastructure is becoming part of the gentrification process. Recent research from Portland reminds us that cycling infrastructure is not passive, and can both reinforce and produce social and spatial fault lines. When combined with other mobility enhancements, such as light rail, this can further the appeal of – and therefore the premium paid for – parts of the city that enjoy a range of transportation options, thereby contributing to their gentrification (Lubitow & Miller 2013; Lubitow et al. 2016; Pierce & Lawhon 2018). This creates a new urgency to prioritize social and spatial equity as a pivotal part of the planning for any new transportation infrastructure, including bike lanes. Planners need to consider not only where to put bike lanes, but what impact these spatially uneven networks have on housing, gentrification, and neighbourhood change.

In Waterloo Region, transportation infrastructure is playing a major role in shaping patterns of gentrification, particularly in the urban cores of Kitchener and Waterloo (Doucet 2021). Cycling infrastructure is less developed than the region's new LRT, but as interviews reveal, bike lanes and cycling culture are part of the 'selling' of an urban lifestyle. The 'urban' neighbourhood is a positional good (Walks 2006) that is part of a middle-class identity, framed in contrast to the suburbs. Cycling as mobility, lifestyle, and culture plays a role in this. Planning and policy therefore need to

consider both the cultural and lifestyle differences between core and suburban areas, and how they relate to the growing mobility choices found in many gentrifying neighbourhoods. In North America, good transit, walkability, and safe and convenient cycling are not evenly distributed throughout the city; increasingly these mobility options are concentrated in gentrified urban cores.

Within these urban cores, bike lanes are part of a range of amenities that make them appealing, as was highlighted by both realtors and developers. The same cannot be said about automobile-oriented suburban areas. Even when bike lanes are present, their use is low, and most residents see driving as the default option. When bike lanes are not present, suburban roads are characterized by their high-stress experiences for cyclists, particularly along arterials (Lin et al. 2021). However, as core areas gentrify, and poverty is pushed into these suburban areas, there is a growing need for planners and policymakers to create safe, seamless, and connected cycling infrastructure to break automobile dependency and provide genuine mobility alternatives. The ageing apartments that line wide arterial roads in areas constructed between 1945 and 1980 are increasingly home to low-income residents (Grant et al. 2020). Neither automobile-oriented solutions, nor downtown protected bike lanes, adequately address the mobility needs of these communities. In the summer of 2020, the Region of Waterloo implemented temporary bike lanes as a response to the pandemic that included several such arterials. However, they were not made permanent, and new cycling infrastructure is largely concentrated within the increasingly gentrified urban cores, or at the outer fringes of the Tri-Cities, where new, predominantly single-family housing is being built for middle and upper-middle-income households. The biggest challenge is not how to increase cycling use in the urban core, but rather how to enhance cycling opportunities within suburban neighbourhoods that currently lack safe and convenient mobility choices to both increase access to a range of mobility choices and decentralize them from gentrified core urban areas.

In this article, we have aimed to enhance our understanding of the relationship between cycling infrastructure and housing by directly engaging with stakeholders involved in residential real estate in order to provide a more rich, nuanced, and detailed account of how cycling features in the development and selling of housing. We also need to acknowledge that perspectives of realtors and developers are only one piece of these complex landscapes, especially when it comes to mobility challenges and experiences of gentrification. More research is needed, in particular on how low-income groups, or those who have been displaced from the urban core, experience cycling and mobility. We are also keen to stress that a one-size-fits-all approach to enhancing cycling

infrastructure and the promotion of cycling in different parts of the city is unlikely to be successful due to the economic, social, and spatial disparities between core and suburban areas – although safe, seamless, and connected infrastructure suitable for all ages and abilities should be a central pillar of any transportation policy. Planners and policymakers, particularly in the North American context, need to pay attention to the fault lines between core and suburban parts of the city when planning new cycling infrastructure and promoting cycling for both recreation and transport. As we have demonstrated, this fault line constitutes not only spatial and mobility differences, but marks a divide between very different experiences, meanings, and perceptions of cycling specifically, and mobility more broadly.

3.6 References

Buck, D. & R. Buehler (2012), *Bike Lanes and other Determinants of Capital Bikeshare Trips.* Presented at the 91st Annual Meeting of the Transportation Research Board (TRB). January. Online. Available at: <https://nacto.org/wp-content/uploads/2012/02/Bike-Lanes-and-Other-Determinants-of-Capital-Bikeshare-Trips-Buck-et-al-12-3539.pdf>

Bunting, T., P. Filion, S. Frenette, D. Curry & R. Mattice (2000), Housing Strategies for Downtown Revitalization in Mid-Size Cities: A City of Kitchener Feasibility Study. *Canadian Journal of Urban Research 9,* 145–175. https://www.jstor.org/stable/44320990

Calbike (2014), Governor Signs Protected Bikeways Act. *Calbike: California Bicycle Coalition.* Available at: https://www.calbike.org/historyarchive/governor_signs_protected_bikeways_act/

Carnoske, C., C. Hoehner, N. Ruthmann, L. Frank, S. Handy, J. Hill, S. Ryan, J. Sallis, K. Glanz & R. Brownson (2010), Developer and Realtor Perspectives on Factors that Influence Development, Sale, and Perceived Demand for Activity-Friendly Communities. *Journal of Physical Activity and Health 7(s*1), S48–S59. https://doi.org/10.1123/jpah.7.s1.s48

CBC Kitchener-Waterloo (October 07, 2020), Westmount Road Bike Lanes will be First To Go as Pilot Project Ends. *CBC.* Available at: < https://www.cbc.ca/news/canada/kitchener-waterloo/covid-bike-lanes-region-waterloo-pilot-temporary-1.5752819> Accessed on 28 July 2021.

City of Cambridge (2020), *Bike Your City: Cycling Master Plan*. Online. Available at: <https://www.cambridge.ca/en/learn-about/cycling-master-plan.aspx> Accessed on 30 July 2021.

City of Kitchener (2020), *Cycling and Trails Master Plan.* Online. Available at: <https://www.kitchener.ca/en/strategic-plans-and-projects/cycling-and-trails-master-plan.aspx> Accessed on 20 July 2021.

City of Waterloo (2020), City of Waterloo Official Plan: Transportation. Online. Available at: <https://www.waterloo.ca/en/government/resources/Documents/Cityadministration/Official-plan/2020/City-of-Waterloo-Official-Plan-Transportation.pdf>

Crane, M., C. Rissel, S. Greaves, C. Standen & L. Ming Wen (2016), Neighbourhood Expectations and Engagement with New Cycling Infrastructure in Sydney, Australia: Findings from a Mixed Method Before-and-After Study. *Journal of Transport & Health* 3, pp. 48–60. https://doi.org/10.1016/j.jth.2015.10.003

Culver, G. (2017), Mobility and the Making of the Neoliberal 'Creative City': The Streetcar as a Creative City Project? *Journal of Transport Geography* 58, pp. 22–30. https://doi.org/10.1016/j.jtrangeo.2016.11.005

Diwan, F., W. Turman, D. Baird, N. Mehta, A. Petrovic & B. Doucet (2021), *Mapping Displacement in Kitchener-Waterloo.* Social Development Centre Waterloo Region.

Doucet, B. (2021), The 'Hidden' Sides of Transit Induced Gentrification and Displacement Along Waterloo Region's LRT Corridor. *Geoforum* 125, pp. 37–46. https://doi.org/10.1016/j.geoforum.2021.06.013

Doucet, B. & M. Doucet (2022), Streetcars and the Shifting Geographies of Toronto: A Visual Analysis of Change. Toronto: University of Toronto Press.

Doucet, B. & R. Mazumder (2020, November 22) COVID-19 Cyclists: Expanding Bike Lane Network Can Lead to More Inclusive Cities. The Conversation.

Doucet, B., D. Parker, E. McDougall, Y. Huang & D. Feng (2020), Cycling Infrastructure and its Relationship to Residential Property Prices. Report Commissioned by the City of Kitchener, City of Waterloo, City of Cambridge and Region of Waterloo.

Duarte, F., M. Procopiuck & K. Fujioka (2014), 'No Bicycle Lanes!' Shouted the Cyclists. A Controversial Bicycle Project in Curitiba, Brazil. *Transport Policy* 32, pp. 180–185. https://doi.org/10.1016/j.tranpol.2014.01.010

Ellis-Young, M. & B. Doucet (2021), From 'Big Small Town' to 'Small Big City': Resident Experiences of Gentrification Along Waterloo Region's LRT Corridor. *Journal of Planning Education and Research.* 44(1), pp. 416–430. https://doi.org/10.1177/0739456X21993914

Filion, P. (2018), Enduring Features of the North American Suburb: Built Form, Automobile Orientation, Suburban Culture and Political Mobilization. *Urban Planning* 3(4), pp. 4–14. https://doi.org/10.17645/up.v3i4.1684

Filion, P., T. Bunting, D. Pavlic & P. Langlois (2010), Intensification and Sprawl: Residential Density Trajectories in Canada's Largest Metropolitan Regions. *Urban Geography* 31, pp. 541–569. https://doi.org/10.2747/0272-3638.31.4.541

Flanagan, E., U. Lachapelle & A. El-Geneidy (2016). Riding Tandem: Does Cycling Infrastructure Investment Mirror Gentrification and Privilege in Portland, OR and Chicago, IL? Research in Transportation Economics 60, pp. 14–24. https://doi.org/10.1016/j.retrec.2016.07.027

Fuller, D. & M. Winters (2017), Income Inequalities in Bike Score and Bicycling to Work in Canada. *Journal of Transport & Health* 7 (Part B), pp. 264–268. https://doi.org/10.1016/j.jth.2017.09.005

Furness, Z.M. (2006), *'Put the Fun Between Your Legs!': The Politics and Counterculture of the Bicycle.* Doctoral dissertation. University of Pittsburgh.

Furth, P.G., M.C. Mekuria & H. Nixon (2016), Network Connectivity for Low-Stress Bicycling. *Transportation Research Record* 2587(1), 41–49. https://doi.org/10.3141/2587-06

Grant, J., A. Walks & H. Ramos (2020), *Changing Neighbourhoods: Social and Spatial Polarization in Canadian Cities.* Vancouver: UBC Press.

Higgins, C. & P. Kanaroglou (2018), Rapid Transit, Transit-Oriented Development, and the Contextual Sensitivity of Land Value Uplift in Toronto. U*rban Studies* 55, 2197–2225. https://doi.org/10.1177/0042098017712680

Hunt, S. (2018, January 18). Not enough demand to justify building more 3 bedroom condos, says developer. *CBC.* Available at: <https://www.cbc.ca/news/canada/calgary/three-bedroom-condo-debate-developers-side-1.4493312#:~:text=Calgary%C2%B7Q&A-,Not%20enough%20demand%20to%20justify%20building%20more%203%2Dbedroom%20condos,Quantum%20Place>

Kern, L. (2016), Rhythms of Gentrification: Eventfulness and Slow Violence in a Happening Neighbourhood. *Cultural Geographies* 23, pp. 441–457. https://doi.org/10.1177/1474474015591489

Krizek, K.J. (2006), Two Approaches to Valuing Some of Bicycle Facilities' Presumed Benefits: Propose a Session for the 2007 National Planning Conference in the City of Brotherly Love.

Journal of the American Planning Association 72(3), pp. 309–320. https://doi.org/10.1080/01944360608976753

Levine, J., M. Zellner, M. Arquero de Alarcón, Y. Shiftan & D. Massey (2018), The Impact of Automated Transit, Pedestrian, and Bicycling Facilities on Urban Travel Patterns. *Transportation Planning and Technology* 41, pp. 463–480. https://doi.org/10.1080/03081060.2018.1468968

Lin, B., T.C.Y. Chan & S. Saxe (2021), The Impact of COVID-19 Cycling Infrastructure on Low-Stress Cycling Accessibility: A Case Study in the City of Toronto. *Transport Findings.* https://doi.org/10.32866/001c.19069

Lubitow, A. & T.R. Miller (2013), Contesting Sustainability: Bikes, Race, and Politics in Portlandia. *Environmental Justice* 6, pp. 121–126. https://doi.org/10.1089/env.2013.0018

Lubitow, A., B. Zinschlag & N. Rochester (2016), Plans for Pavement or for People? The Politics of Bike Lanes on the 'Paseo Boricua' in Chicago, Illinois. *Urban Studies* 53, pp. 2637–2653. https://doi.org/10.1177/0042098015592823

Martin-Brelot, H., M. Grossetti, D. Eckert, O. Gritsai & Z. Kovács (2010), The Spatial Mobility of the 'Creative Class': A European Perspective. *International Journal of Urban and Regional Research* 34, pp. 854–870. https://doi.org/10.1111/j.1468-2427.2010.00960.x

Mayers, R.F. & T.D. Glover (2020), Whose Lane is it Anyway? The Experience of Cycling in a MidSized City. *Leisure Sciences* 42, pp. 515–532. https://doi.org/10.1080/01490 400.2018.1518174

McCormack, G.R., A. Nesdoly, D. Ghoneim & T.L. McHugh (2020), Realtors' Perceptions of Social and Physical Neighborhood Characteristics Associated with Active Living: A Canadian Perspective. *International Journal of Environmental Research and Public Health* 17, pp. 9150. https://doi.org/10.3390/ijerph17239150

Mogush, P., K. Krizek & D.M. Levinson (2005), *The Value of Trail Access on Home Purchases*. Presented at the 84th Annual Meeting of the Transportation Research Board (TRB). Online. Available at: < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1748563>

Municipality of Amsterdam (2018), *Nota Parkeernormen Fiets en Scooter, Gemeente Amsterdam*. 28 August. Available at: < https://zoek.officielebekendmakingen.nl/GMB-2018-183048.HTML> Accessed on 30 July 2021.

Ohler, A. & G. Blanco (2017), Valuing Public Goods, the Time to Capitalization, and Network Externalities: A Spatial Hedonic Regression Analysis. *Land Economics* 93, pp. 127–144. https://doi.org/10.3368/le.93.1.127

Padeiro, M., A. Louro & N. Marques da Costa (2019), Transit-Oriented Development and Gentrification: A Systematic Review. *Transport Reviews* 39, pp. 733–754. https://doi.org/10.1080/01441647.2019.1649316

Panduro, T.E. & K.L. Veie (2013), Classification and Valuation of Urban Green Spaces—A Hedonic House Price Valuation. *Landscape and Urban Planning* 120, pp. 119–128. https://doi.org/10.1016/j.landurbplan.2013.08.009

Pi, X. (2017), *Exploring Rental Housing Market in Kitchener-Waterloo, Ontario*. UWSpace. Available at: < https://uwspace.uwaterloo.ca/items/63858970-a162-4e0c-9bee-2eadecf595d3>

Pierce, J. & M. Lawhon (2018), The Right to Move: Informal Use Rights and Urban Practices of Mobility. *Urban Geography* 39, pp. 667–686. https://doi.org/10.1080/02723638.2017.1382050

Pucher, J., R. Buehler & M. Seinen (2011), Bicycling Renaissance in North America? An Update and Re-appraisal of Cycling Trends and Policies. *Transportation Research Part A: Policy and Practice* 45(6), pp. 451–475. https://doi.org/10.1016/j.tra.2011.03.001

Region of Waterloo (2018), *Moving Forward: 2018 Transportation Master Plan.* Online. Available at: < https://www.regionofwaterloo.ca/en/exploring-the-region/transportation-master-plan.aspx> Accessed on 30 July 2021.

Region of Waterloo (2020), *Monitoring Change in the CTC: 2019 Report*. Online. Available at: < https://www.regionofwaterloo.ca/en/shared-content/resources/PDL-CPL-20-31__Monitoring_Change_in_the_CTC_2019_Report.pdf> Accessed on 30 July 2021.

Sander, H.A. & R.G. Haight (2012), Estimating the Economic Value of Cultural Ecosystem Services in an Urbanizing Area Using Hedonic Pricing. *Journal of Environmental Management* 113, pp. 194–205. https://doi.org/10.1016/j.jenvman.2012.08.031

Sewell, J. (1993), *The Shape of the City: Toronto Struggles with Modern Planning*. Toronto: University of Toronto Press.

Smart, M.J. (2010), US Immigrants and Bicycling: Two- Wheeled in Autopia. *Transport Policy* 17, pp. 153–159. https://doi.org/10.1016/j.tranpol.2010.01.002

Smiley, K.T., W. Rushing & M. Scott (2016), Behind a Bicycling Boom: Governance, Cultural Change and Place Character in Memphis, Tennessee. *Urban Studies* 53, pp. 193–209. https://doi.org/10.1177/0042098014556590

Stehlin, J. (2015), Cycles of Investment: Bicycle Infrastructure, Gentrification, and the Restructuring of the San Francisco Bay Area. *Environment and Planning A: Economy and Space* 47(1), pp. 121–137. https://doi.org/10.1068/a130098p

TCAT [The Centre for Active Transportation] (2019). Where is Cycling Increasing? Available at: < https://tcat.ca/project/increasing-cycling-in-canada/where-is-cycling-increasing/> Accessed on 30 July 2021.

Walks, A. (2015), Stopping the 'War on the Car': Neoliberalism, Fordism, and the Politics of Automobility in Toronto. *Mobilities* 10(3), pp. 402–422. https://doi.org/10.1080/17450101.2014.880563

Walks, R.A. (2006), The Causes of City-Suburban Political Polarization? A Canadian Case Study. *Annals of the Association of American Geographers* 96(2), pp. 390–414. https://doi.org/10.1111/j.1467-8306.2006.00483.x

Wheeler, M.S. (2003), The Evolution of Urban Form in Portland and Toronto: Implications for Sustainability Planning. *Local Environment* 8(3), pp.317–– 336. https://doi.org/10.1080/13549 83030 6656

Wild, K., A. Woodward, A. Field & A. Macmillan (2018), Beyond 'Bikelash': Engaging with Community Opposition to Cycle Lanes. *Mobilities* 13, pp. 505–519. https://doi.org/10.1080/17450101.2017.1408950

Winters, M., K. Teschke, M. Brauer & D. Fuller (2016), Bike Score®: Associations Between Urban Bikeability and Cycling Behavior in 24 Cities. *International Journal of Behavioral Nutrition and Physical Activity* 13, article 18. https://doi.org/10.1186/s12966-016-0339-0

Chapter 4: Bearing the Brunt of Change: Centring Marginalized Experiences of Transit-Induced Gentrification

4.1 Introduction

Once presented as a tool to encourage equitable community building (Calthorpe, 1993), researchers argue that modern transit-oriented development (TOD) rarely prioritizes inclusive policy or a commitment to equity (Boarnet, 2011; Garde et al., 2024), creating concerns of potential impact on equity-deserving communities and deeply marginalized residents (Makarewicz et al., 2020; Peng & Knaap, 2023; Smart & Klein, 2018). Contemporary TOD implementation sees the integration of a package of planning policies that support the development of high-density and accessible mixed-use communities through higher-order transit, often to manage growth and combat urban sprawl. The success of this approach has attracted attention from many North American cities that are seeking to use transportation to bring about wider neighbourhood change. As a result, transit-induced gentrification has followed TOD as an unintended outcome (Chatman et al., 2019; Jones & Ley, 2016; Rayle, 2015). While research has identified the connection between gentrification and higher-order transit broadly, we lack an understanding of the complex lived experiences of equity-deserving groups living in neighbourhoods targeted for TOD, and how the integration of transportation into the gentrification experience adds a dimension of complex change.

This article contributes to the growing body of work that argues for the need to seek out diverse perspectives of change to understand how transit investment affects communities (Doucet, 2021; Jones, 2023; Gaber, 2020; Schuch & Mushipe, 2024). Rather than seeking to prove that transit-induced gentrification is happening, this research presents the perspectives of residents who have lived through this transformation to help understand how the impacts of transit-induced gentrification are felt and experienced. This is done through interviews with deeply marginalized residents who have experienced TOD transformation firsthand. As an additional contribution, this research shows how these perspectives can reshape the way we think about equity in the transportation planning process.

This research takes place in the Region of Waterloo, a mid-sized region approximately 100 km west of Toronto, Ontario, 3 years after its ION light rail transit (LRT) system was opened. The region offers a strong case study that can provide important lessons, relevant for similar mid-sized

municipalities seeking to use transit investment to encourage growth and define their urban core areas. Perhaps the most compelling argument for the region's applicability to other cities is its rapid economic growth. Some of the communities that have been affected by TOD in the region were once areas of poverty and disinvestment, which is in part a rationale for why growth was prioritized, taking a build it and they will come mindset (Cheng, 2006). However, because of this approach to urban densification, researchers have argued that transit-induced gentrification has happened along the LRT line (Doucet, 2021). Thus, the region acts as a cautionary tale for unmanaged growth, even in cities that are not showing signs of gentrification.

This work is guided by the following research questions:

1. How do deeply marginalized residents perceive their position in new TOD communities?
2. How has the integration of new transportation infrastructure transformed impacted communities in visible and invisible ways?
3. To what extent do marginalized residents feel that transportation projects are created with their needs in mind?

This article is organized as follows. It begins with a review of literature that explores why modern TOD policies and projects are driving equity concerns, demonstrating the connection between new transit infrastructure and gentrification. This is followed by an examination of current perspectives on the value of empirical lived experience data, in the context of equitable planning. After reviewing methods, context on the case study area, the Region of Waterloo, is provided, highlighting the region’s use of TOD, its transit history, and its growing equity concerns. This article then presents the empirical findings from 20 interviews with deeply marginalized residents in the region about perceived changes, organized into three themes: loss of community, feelings of exclusion, and reflections on new transportation infrastructure. To conclude, this article considers how lessons learned from the Region of Waterloo can guide other cities seeking to integrate new transit infrastructure through an equity-informed lens.

4.2 Transit-Oriented Development: Why Transit Investment Is a Concern for Equity

TOD projects have gained popularity in North American cities, strategically implemented to address a multifaceted suite of city planning issues. Beyond increasing transit accessibility, TOD policies are

praised for transforming streets (through reduced congestion and increased active transportation), enhancing sustainable travel (through proposed increases in public and active transit ridership), and their ability to rejuvenate urban core neighbourhoods through densification and development (Calthorpe, 2011; Culver, 2017; Deboosere et al., 2018; Jacobson & Forsyth, 2008; Jones & Ley, 2016; Lubitow et al., 2016). While early iterations of TOD made a strong case for their potential to provide a more equitable approach to transportation planning, the prioritization of growth and development has meant that equity is viewed as more of a potential by-product of TOD neighbourhoods, rather than a guiding principle for policymaking (Boarnet, 2011; Chapple & Loukaitou-Sideris, 2019; Garde et al., 2024; Ibrahim et al., 2022; Yip et al., 2024).

Transportation equity scholarship has argued for the need to position equity as a driving force in the transportation planning process (Litman, 2022; Martens, 2012; Pereira et al., 2017). This becomes difficult when we attempt to provide a concrete definition of equity under the guise of transportation. To date, there has yet to be an agreed-upon comprehensive definition of what equitable transportation is. However, there is relative agreement that equity functions as "the fair distribution of costs and benefits across society" (Cantilina et al., 2021, p. 973). When we start to consider how we measure equity and who we are measuring it for, the conceptualization of what equitable transportation is becomes that much more obscure (van Wee & Mouter, 2021). In the case of new transit projects and the continued integration of TOD, this obscurity has allowed policy to drive further and further away from equity as a concrete policy, instead positioning equity as a construct (Brown, 2022). However, without defined processes and outcomes surrounding what equitable transportation looks like in a new transportation project, the likelihood of equity being prioritized is low (Martens et al., 2019; Litman, 2017). But, as Brown (2022) argues, the lack of clear parameters for equitable transportation can be beneficial for cities that can build equitable policy with local context in mind. However, this requires an inherent prioritization of equity in both planning and policy. This could mean including affordable housing policy that maintains and expands upon existing housing stock, or ensuring that marginalized communities are included in the planning process (Lung-Amam et al., 2019). Through the results section of this article, participants' stories help guide the construction of parameters for equity.

4.2.1 Transit-Induced Gentrification

TOD policies are instituted as an inherently transformative planning approach, which has unsurprisingly raised concerns about who is likely to benefit from this transformation. In response, research argues this form of transit investment could create transit-induced gentrification (Dong, 2017), which sees transit as the catalyst for the reprioritization of space to suit the needs of higher-income residents (Dawkins & Moeckel, 2016). This work has found that TOD projects are associated with an increase in housing costs in adjacent neighbourhoods (Cervero & Duncan, 2002; Deka, 2017; Kramer, 2018; Mathur & Ferrel, 2013; Zuk et al., 2018), and both rapid transit (Bardaka et al., 2018; Doucet, 2021; Ellis-Young & Doucet, 2021; Grube-Cavers & Patterson, 2015; Webber, 2022) and concentrated protected cycling lanes have been linked to gentrification (Barajas & Braun, 2021; Flanagan et al., 2016; Gibson, 2015; Stehlin, 2015).

Understanding the connection between gentrification and transportation is complicated, however, bringing together two seemingly oppositional schools of thought (McDougall et al., 2023). As a result, researchers have sought different measures to prove or disprove transit-induced gentrification. Dominant in this literature are property value trends (Cervero & Duncan, 2002; Cao & Schoner, 2014; Deka, 2017; Kramer, 2018; Mathur & Ferrel, 2013; Zuk et al., 2018) and socioeconomic indicators (Bardaka et al., 2018; Baker & Lee, 2019; Chava & Renne, 2022; Deka, 2017; Dong, 2017) to understand how station-adjacent neighbourhoods are changing. However, these studies have been divided.

Some studies find evidence of gentrification (Cervero, 2006; Garcia-López & Gómez-Hernández, 2024; Immergluck & Balan, 2018; Kahn, 2007). Apell (2014) explores rental costs in transit neighbourhoods, finding that rents are unaffordable in TOD communities. Chava and Renne (2022) find gentrification markers increase after a new LRT line opened, and these markers are prevalent in neighbourhoods characterized as TOD. Dong (2017) finds that established transit systems see more signs of gentrification than newer systems. Other studies do not find evidence. Deka's (2017) research does not reveal significant evidence of gentrification in TOD communities in New Jersey. Similarly, Baker and Lee (2019) do not find significant evidence; however, they argue that different planning approaches can fundamentally influence change in station neighbourhoods. We are also seeing the emergence of qualitative studies that provide insight into the lived experience of transit-induced gentrification, which can be beneficial for thinking about equity in a more holistic and context-specific way (Doucet, 2021; Jones, 2023; Jones & Ley, 2016).

Hypotheses for the disparity in findings include location, age of infrastructure, and methodological inconsistencies (Baker & Lee, 2019; Bardaka et al., 2018; McDougall et al., 2023). Building on this body of work that illustrates the potential for transit-induced gentrification and the nuances around where and why it is happening, this research contributes personal narratives from equity-deserving groups on how complex change occurs pre- and post-TOD project integration. As planning research shows, an important step toward a commitment to equity would be to include equity-deserving groups in the planning process (Gaber, 2020; Doucet et al., 2022; Jones, 2023) to identify and decipher equity concerns.

4.3 Marginalized Voices in Planning Practice

Low-income and marginalized individuals have long faced exclusion from the planning process (Walsh et al., 2020) due to systemic barriers that impede equity-deserving groups from contributing effectively. In response to these barriers, we see community-based planning approaches as grassroots groups or advisory councils (Walker & East, 2014) that form to voice community needs to planning professionals (Nasca et al., 2019). Overall, community-based planning efforts have been effective in producing change (Stoecker, 2012; Whitney & Ledsham, 2024). However, participation is a burden of responsibility, and this expectation to organize, share deeply personal experiences, and find the right channels to share this message is unrealistic for most (Boisjoly & Yengoh, 2017). This has led to important work on the inaccessibility of the public planning process and on how to cater to hard-to-reach populations, understood as groups that are difficult to include in traditional research/programming (Quick & Bryson, 2016).

Prioritizing equity-deserving groups is significant in the transportation planning process as marginalized residents are more likely to rely on public transit as a primary mode of transportation, and thus, have a more comprehensive understanding of what equity should look like (Allen et al., 2022; Zhao & Li, 2016). Further, their reliance on transportation makes them more susceptible to negative impacts, which can be extensive. Without accessible and reliable transportation, research has found a decline in a number of quality of life indicators, including job security, access to education and social spaces, and more (Barreira et al., 2021; Graham et al., 2014). Appleyard et al. (2019) find that TOD neighbourhoods are associated with important quality of life markers, but they lack economic inclusivity. Lung-Amam et al. (2019) argue that to consider equity in TOD, planners need to look for opportunities to better connect with equity-deserving groups through partnerships with

community organizations and social services. With the growing acknowledgement of the value of being more inclusive of equity-deserving voices in the planning process, there is a need to ensure that these individuals have access to forms of public participation that suit their needs.

To identify and address needs, researchers are beginning to use lived experience data to better understand the complexities of urban change for residents (Gaber, 2020; Jones, 2023; Schuch & Mushipe, 2024; Walsh et al., 2020). In the TOD context, engaging marginalized residents, who have witnessed processes of change and were likely the first to be impacted, can help explain how investment in infrastructure transforms a city in multifaceted ways (Stacy et al., 2020), providing valuable empirical data that can inform the planning process (Silverman et al., 2019). As such, this research engages lived experience data to gain a comprehensive understanding of on-the-ground conditions from the perspective of equity-deserving groups whose experiences differ from traditional middle-income homeowners. Contributing to the growing body of work using qualitative methods to assess transit's impacts (Baker & Lee, 2019; Bardaka et al., 2018), this research addresses a gap by focusing on the experience of TOD integration and what it means for deeply marginalized individuals who have lived in these communities as this change has happened.

4.4 Research Design and Methodology

The opportunity to conduct this research was made possible through ongoing community-based participatory research, through a partnership between the university and social service organizations across the region. The Social Development Centre Waterloo Region (SDCWR), one such organization, has been at the forefront of this larger research partnership, contributing to all aspects of the research design, implementation, and dissemination of several research projects. While the SDCWR was not directly involved in the research design process for this article, lessons learned from the larger partnerships and collaboration with social service organizations throughout the research process have allowed for this project to also take a community-based approach. The SDCWR's support has been invaluable in building trust and relationships with organizations and residents in the region, effectively supporting the formation of lasting relationships and facilitating introductions with hard-to-reach community members who would be unlikely to answer traditional recruitment calls. This connection led to the Working Centre, a working resource centre that provided recruitment and interview spaces for this research. This location gave participants a familiar environment to engage with the project and provide informed consent. With the Working Centre's endorsement, participants

also had more trust in the researcher and the value of the research itself. This level of trust cannot be simulated, meaning that without the Working Centre's support, this research would not have been possible. Social services across the region have spent decades fostering trust and community in their cities and have a comprehensive understanding of the barriers marginalized community members face.

Twenty in-depth semi-structured interviews with deeply marginalized Waterloo Region residents were conducted on the transformation of Waterloo's and Kitchener's urban cores since the introduction of the LRT. While this sample size is relatively small, it represents an organic process, as the researcher visited the Working Centre multiple times a week for periods of 3-6 hours (alternating morning and afternoon and randomizing days of the week) from December 2022 to April 2023, offering any individual who visited and identified as low-income the opportunity to participate in an interview. As the organizations coordinated with, and the participants themselves explained, marginalized individuals in the region are navigating their own emotional, physical, and psychological stresses and thus have limited capacity for public participation, research or otherwise (Summers, 2020). After a prolonged period without an interview and clear shared experiences between participants, these interviews came to a natural conclusion.

Interview questions centred on Waterloo's new rapid and active transit infrastructure, how TOD ideals are shaping the CTC, and the impact this has had on residents to explore how investment in transportation affects (1) neighbourhoods and community change, (2) experiences of housing, and (3) travel, through accessibility concerns and commuting patterns.

Interviews occurred with 12 men and 8 women across ages 26–65+. Two of the participants were new Canadians, three participants had immigrated over a decade ago, and 14 participants have lived in the region for 10+ years. Most participants were receiving or applying for social assistance, and everyone expressed housing insecurity, including previous evictions and homelessness. Six participants were actively homeless at the time of the interview, living in shelters, motels, or staying with friends. One individual was in the process of being evicted. None of the participants owned or had access to a private vehicle at the time of the interviews, placing them in the minority for the region. Per the 2021 Statistics Canada Census, 89% of the population reported driving as their main mode of commuting. Conversely, 4.5% reported public transit and 4.4% reported active transportation.

Interviews lasted 20–120 minutes, were recorded, and subsequently transcribed.[21] Transcriptions were codified using a qualitative coding tree, which positioned TOD policies as the overarching theme. After a comprehensive review of existing transit-induced gentrification literature, themes of a loss of community, exclusion, and the ION projects' perceived benefits for deeply marginalized residents were identified. This was followed by a holistic review of interview data to ensure that marginalized voices and their experiences were central to the construction of this research. This ultimately uncovered further themes as identified by participants that were not originally considered. For their participation, residents were given the option of a gift card to Dollarama or Tim Hortons valued at $40.

4.5 Case Study: The Region of Waterloo

This research uses the Region of Waterloo,[22] a mid-sized Ontario municipality, as a case study, focusing on the Central Transit Corridor (CTC) that has formed in two of its cities' urban cores, Kitchener and Waterloo (also referred to as KW). The CTC developed around the ION, which spans just 19 km. The ION's implementation was supported by a suite of planning policies used to densify the CTC, but also plays into a wider regional strategy aimed at curbing urban sprawl through intensification.

Both Kitchener and Waterloo have experienced several life cycles, thriving as manufacturing hubs, facing decay in the wake of deindustrialization, and now harnessing growth tactics to invigorate their downtown cores. During deindustrialization, many North American manufacturing cities experienced rapid decline as factories that had previously supplied thousands of jobs closed or greatly reduced production (Bourne & Simmons, 2003). As a result, Kitchener and Waterloo were forced to reconsider their city images as their urban cores declined, sitting in relative opposition to the surrounding post-war suburbs that had sprung up (Bunting et al., 2007; Filion & Bunting, 1993; Filion et al., 2004). Home to two universities and one college, Waterloo had a steady supply of investment and was relatively successful in adapting to desirability at the time by effectively turning

[21] As interviews occurred in a busy public space, at times audio quality was poor, resulting in portions that could not be fully transcribed. As such detailed notes were taken to ensure accuracy.
[22] Previously the County of Waterloo, which encompasses three major cities (Cambridge, Kitchener, and Waterloo), which house 90% of the region's population (Statistics Canada, 2017), and four townships.

its core into one large parking lot (English, 2011). Despite Kitchener's efforts to suburbanize, public perception of the city's downtown core continued to deteriorate over the next few decades.

In 2004, Kitchener implemented its Economic Development Investment Fund to support the growth of an education and knowledge cluster, which would ultimately act as a tipping point for the city (Pan, 2018). With a growing technology hub, rapid transit became a priority for the region and the cities, which effectively argued that this investment was vital to compete on a global scale. Because of this, Kitchener and Waterloo integrated TOD policies into their transit planning approach, offering a plethora of development incentives for residential and commercial builds, centralizing public and active transit in both their core areas, and using this new investment and growth to model successful TOD communities (Pan, 2018).

The last few decades have been undoubtedly transformative for KW. From the announcement of the LRT until its operationalization in 2019, nearly $3 billion were invested in new residential real estate in the CTC. Between developer incentives, densification, and the concentration of amenities, the ION has succeeded as a growth management tool, positioning Waterloo as one of Canada's fastest-growing regions. In 2022, the region issued nearly $2 billion in new building permits, over 30% more than the region's 10-year average (CambridgeToday Staff, 2023). In many ways, this is positioned as a success for the cities, as unprecedented growth is paired with increased competition to live in the CTC, a successful transit system of 150,000 boardings a day, and ongoing residential and commercial development (Region of Waterloo, n.d.).

This economic success has had concerning impacts. Gentrification and displacement are occurring in the CTC (Doucet, 2021; Ellis-Young & Doucet, 2021; Huang et al., 2024; van der Merwe, 2021), as KW's unaffordability has driven a missing middle (Huang et al., 2021; Parker et al., 2023) and housing options for low- and moderate-income individuals are dwindling (Parker et al., 2023). The Region of Waterloo continues to contend with major metropolitan areas for low rental vacancy, dropping to 1.2% in 2022, the lowest in 20 years (Sharpe, 2023). Rental costs are also increasing at a faster rate than in Toronto and exponentially faster than in more comparable mid-sized cities like Guelph and London, with the Canada Mortgage and Housing Corporation citing high-tech sector growth as contributing to increased population (Duhatschek, 2023). The desirability of the CTC has also had an impact on KW's commercial market. Through interviews with business owners and a data

analysis of an employment survey, Webber (2022) argues that commercial gentrification has forced original shops and services to close.

The introduction of the ION LRT also drove land-use change in the CTC and induced widespread transformation of the regional transportation system. In preparation for the ION's operationalization in 2019, a series of strategic changes were made. First, the original bus terminal that acted as the central transit hub was closed, and the LRT was centralized where possible. Second, to support this change, the region's rapid bus system was expanded and rebranded as an extension of the ION project, adding 17 km of rapid transit to connect to high-traffic areas. Third, the system was simplified to encourage a more grid-like structure.[23] While this restructuring offered a more efficient system and a wider service area, it also resulted in the relocation or removal of bus stops, particularly in suburban neighbourhoods. Stops that were relocated saw anywhere from a 500 to 750 m shift, and some suburban routes saw service reduction or an increase in commuting time due to rerouting (Sharkey, 2019).

Significant to this research, the Region of Waterloo undertook extensive public consultation during the ION's development. Consultation efforts began in the scoping stages of the project, used to ensure the LRT was the right fit, to name the ION, and to share the different routing options for ION LRT and BRT, engaging hundreds of residents by the LRT's opening. However, during this period, and within consultation documents (see Region of Waterloo, n.d.), there did not appear to be any dedicated outreach efforts to connect with low-income, homeless, or marginalized community groups. This means that these groups were expected to seek out opportunities to engage alongside the general public. As the findings from this research explain, these groups face additional barriers to public participation, which makes it unlikely that they were able to meaningfully engage through these channels.

Ultimately, the Region of Waterloo presents a strong case study for considering how equity in TOD planning remains a concern, as these approaches can bring about complex change to their cities, specifically for equity-deserving groups. In a city experiencing rapid economic growth as a direct by-product of TOD, there is a need to more critically examine the lived experience of residents who have

[23] The region of Waterloo's GRT bus system previously followed a hub and spoke model that aligned with the more suburban patterns that shaped the region. While hub and spoke models traditionally offer more flexibility, they also have large potential for inefficiencies and bottle necks then gridded structures.

not been able to benefit from these changes and overall what this means for discussions of equity in transportation plans.

4.6 Findings

Participants shared detailed accounts of their experiences navigating changes associated with the region's incorporation of TOD policies. Unlike the vision of innovation and accessibility that has been attached to the ION project to date, this group positions a counternarrative, experiencing the transformation of their community in ways that no longer reflect their needs. In the sections that follow, these experiences are organized by three key themes: loss of community, feelings of exclusion, and reflections on new transportation infrastructure. Collectively, these sections underscore what complex change means for a hard-to-reach population that is often left out of the planning process to understand how transit-induced gentrification can have cascading impacts. Building on the scholarly work that has connected transit investment to gentrification explored above, these lived experiences unpack transit-induced gentrification's impact, which can then be used to consider how transit plans can be integrated in a more equitable way.

4.6.1 Navigating Community Loss

> Along with improving access to existing places, the Corridor will become the focus for new medium and high density residential, retail and commercial development. To help the Region optimize available urban land, a key focus for new growth will be along the CTC. Through integration of land use and transportation planning, areas along the Corridor will be distinguished by having a greater mix of housing, jobs, retail, and leisure choices all within close proximity to enhanced transit. (The Region of Waterloo, 2013, p. 4)

The ION project brought about significant and rapid change to the region's urban cores. Physically, new transit infrastructure created increased density within the CTC and helped reinvigorate both Kitchener and Waterloo's urban centres through an associated influx of residential and commercial development. This investment encouraged growth, attracting new residents to these spaces and expanding neighbourhoods deemed desirable; all outcomes associated with the successful integration of TOD (Cervero & Sullivan, 2011; Nelson et al., 2015). While the physical changes to the CTC have been impactful for all residents, the deeply marginalized residents who participated in this research

shared a different perspective of how these changes have affected their neighbourhoods in less visible ways. Beyond physical infrastructure, participants explained that the pulse of station-adjacent neighbourhoods has shifted to account for incoming residents. As such, longstanding businesses have had to adapt to meet the needs of new clientele or face the possibility of being replaced (Webber, 2022). This commercial shift and the overall influx of new residents have left original residents feeling a sense of loss, as the community that they participated in for decades is slowly being dismantled and replaced. This has created a stark contrast between the new image of the CTC, which sees a vibrant TOD community, and original residents who are struggling to navigate a community that no longer caters to their needs.

In terms of commercial change, participants explained that new retail stores are aimed at a higher-income lifestyle and are slowly pushing affordable stores out of the CTC. This has meant that accessible retail is often more expensive. While this is an established trend in neighbourhoods experiencing gentrification (Glaeser et al., 2023; Hubbard, 2017), the fact that this is occurring along new transit infrastructure in neighbourhoods deemed highly accessible adds a further complication for marginalized residents living in these neighbourhoods. Without a private vehicle, residents are navigating longer commutes to access more affordable stores or paying more to shop accessibly.

Claire, in her 40s and living in a motel with her three children, explains:

> More expensive grocery stores have come into play. Yeah, like for instance Zehrs is so expensive compared to like Food Basics where you can get the same thing, like a pound of hamburger is like four or five dollars different price, like it's just absolutely insane.

For Claire, the overall shift in her community can be felt in both residential and commercial spaces. As she adds, “They aren’t making affordable housing anymore, it's multimillion-dollar homes, subdivisions, just no normal day-to-day things you need, it's getting more difficult.”

Alice, in her 50s, moved to the region over 20 years ago. She is currently working part-time and receiving disability support. Alice also observed that more expensive stores have clustered in Kitchener’s and Waterloo’s urban cores, and some affordable stores have been pushed out. Adding to Claire’s concern about the direction of affordability, Alice feels these changes are dismantling the original community she has been a part of for the last two decades. She explained:

> The stores that they are putting in are becoming more expensive… so the stores that they do put in like Trends for Men [a store in Kitchener off the CTC], you go there, there's a 40 dollar pair of shoes, and then you go up a little more towards Waterloo and then there's a pair of shoes that are like $600. Which people in Kitchener cannot afford to buy, like me. So, I sort of find that Kitchener people are being forced out because they are low-income… People that have lived here all their lives are taking out sort of, some part of their roots.

For Alice, this direction of change in the CTC does not align with the sense of community that previously existed, and is effectively pushing residents and retailers who cannot afford to keep up out.

Participants agreed that the social community that they continue to engage with plays an important role in shaping how they navigate living in an increasingly unaffordable city. Participants shared that social services in the region are often central to their sense of community. As discussed, the region has a strong network of social service and charity organizations that support low-income and equity-deserving groups. However, many of these are located downtown, having purchased commercial property in previously undesirable neighbourhoods. While the city has prioritized transformation and revitalization, more and more people have found living within their means difficult or impossible in these neighbourhoods. Through interviews, individuals explained that they are "choosing" to live outside of their means or making sacrifices to stay in place as long as possible. This has few measurable impacts, as residents are not physically out-migrating or facing eviction (yet), but is important in the context of sustainability, as this lifestyle cannot be upkept indefinitely.

Morris, in his 50s, moved from Toronto to the region 25 years ago to help his brother's business. Morris shared his perspective on change in the region, stating, "I had the attitude, you know, as long as I had a roof over my head, I didn't care that I was broke." This, unfortunately, changed when he faced an unexpected eviction, which pushed him out of his neighbourhood to access alternative housing in his price range. Morris explained how valuable his current social network is, and how it has factored into his decision to move into his current housing.

> Yeah, because I go to Ray of Hope [local social service organization] and the food programing and then I eat there, and it's kinda close, yeah, it [transportation] did play a factor, I didn't want to move out of reach of all the supports, you know?

Interviewees shared important perspectives on how this shift has affected original populations. Despite the positive city image forecasted in the region's strategy, marginalized individuals are struggling.

Tim, in his 60s and facing eviction at the time of the interview, explained that since the ION, there have been obvious efforts to "clean up" Kitchener, but residents forced into homelessness are still trying to maintain space in the core. In Tim's downtown Kitchener neighbourhoods, as redevelopment has put pressure on original residents, he has seen a significant increase in homelessness and drug use. As he was once again on the cusp of homelessness, Tim shared his resentment with the changes and the prioritization of the city's image over residents' needs.

> Do you know what they clean up for? The rich! Build all those condos, build everything… They [the city] lie to you too, "we're going to help you," what have they helped? "Oh, we're going to build 100 units, that's enough." All these cutbacks, they don't help me!

Kyle, who is in his late 20s and was homeless at the time of his interview, shared similar concerns about how perceptions are shaping public opinions of change. As he explained, "I feel like that's… I mean, you can be homeless and have a job. It's [rent] not accessible. It's just crazy right now." Kyle makes an important point about the visibility of change and our understanding of what it means to be homeless. He went on to explain that he is not perceived as homeless, stating, "I talk well enough too that it makes it sound like 'I'm great, I'm awesome!' [pointing to his attire] I'm wearing two coats! I'm not great…" This is significant to our discussion of invisible forms of neighbourhood change. Homelessness is increasing in different ways, but individuals who are invisibly homeless are not often accounted for when we consider the impact of change.

4.6.2 Community Exclusion and Housing Insecurity

Beyond the physical infrastructure itself, participants were concerned with associated unaffordability, as they argued that accessing affordable housing in CTC neighbourhoods was a challenge.

Sandra, in her 50s, was recently forced to move, as a physical altercation with her landlord left her feeling unsafe in her apartment. As a result, she lost her job, her vehicle, and has been staying with a friend as she gets back on her feet. For her, the changing housing climate, which she believes was

ignited by the LRT, is a clear indicator that the LRT did not consider extremely low-income community members.

> I don't think they [the region and cities] did have poor people in mind because look at the rent being raised? Like, it's [rent] tripled, it's ridiculous! They couldn't have possibly had poor people in mind.

In response to questions surrounding the effects that the ION has had on the community, Theresa, who has lived in Kitchener her whole life, shared that since the introduction of the ION and the associated neighbourhood change, she has seen more community members losing housing and being unable to find new accommodations.

> There are more homeless people in this city than there ever has been in my whole life! And we can't even accommodate our own people…Everything is closing down for these high rises, meanwhile, they are still empty. They want $2000 for one bedroom… It's like a loft, it's nothing!

Theresa explained her frustration as she is currently in a cycle of homelessness, beginning around the time of the LRT's operationalization. Having lived in a motel for the past 5 months, 4 months in tent city, and 4 years of on-and-off homelessness before that, she shared that she feels completely pushed out and excluded from the community.

Other participants shared this frustration and desperation, as there are no viable options for extremely low-income individuals who are being priced out. The Region of Waterloo states that the wait for subsidized housing averages 3–5 years; however, with more than 6,000 households currently registered, wait times are only increasing. In 2020, Ontario also updated its housing offer policy. In the past, applicants received multiple offers, choosing the unit that fit their needs,[24] but now the top of the list is paired with the first unit that becomes available. This creates several issues for individuals with large families or accessibility needs, like access to transit, and as participants explained, puts little pressure on the need to address necessary repairs. This policy change is presented as an attempt to further streamline the subsidized housing process, but it also strips residents of choice, as those who refuse the first unit presented to them are removed from the list. Of course, this policy change is

[24] This includes transportation needs, meaning individuals could be given subsidized housing in an inaccessible area.

not a direct by-product of the LRT, but it does speak to how excluded residents are feeling. Regardless, while a few of the individuals we spoke with were on the region's waitlist at the time of the interview, their perception of subsidized housing was akin to winning the lottery and not a realistic path to affordable housing.

Jordan, in his early 40s and currently living in a shared space in the downtown core, explained his perspective on subsidized housing.

> It's a long process, and there are waitlists that are so long, you know, you might not get in for 10 years. I've heard of people who, in 7 or 8 years, they will get a call from housing saying, "hey your name just came up on the list. Do you want a home?" And it's like, well, I don't really need it now that was ten years ago… you know everything has changed since then, I've got a 6-year-old kid now, you know?

What resounded from participants is that deeply low-income residents feel that housing is a losing battle. Investment has transformed the market, and residents have no idea what their futures hold.

It is important to acknowledge that the Ontario housing market has dramatically inflated over the last few years. However, participants noted that they believe the LRT's introduction and the associated urban development, which peaked in 2019, marked a noticeable shift in core urban areas that previously housed a larger number of extremely low-income individuals. The LRT and associated TOD policies have transformed the CTC and exponentially increased its desirability. As a result, extremely low-income individuals are slowly being pushed out.

James, who has lived in the region for around 40 years, shared that people in similar situations are now starting to consider a move, as he explains, "And the other thing that I've heard from other people, is that if rents do not go down, in the next I guess, roughly 3 to 4 years a lot of people might just decide well, 'I'll go to a different city.'"

4.6.3 Community Reflections on New Transportation Infrastructure

> Today, patterns of mobility are related to proximity within the CTC. Generally, there are higher levels of walking, cycling and transit use close to the universities and in higher density neighbourhoods along the Corridor. (Region of Waterloo, 2013, p. 10)

During the interviews, residents were asked if they felt the LRT was created with extremely low-income individuals in mind. The consensus was it was not. This is unsurprising, given that small-

scale rapid transit projects like the ION have limited physical infrastructure, and research shows that this tends to privilege certain neighbourhoods and socio-economic groups (Appleyard et al., 2019). At the time of the interviews, none of the participants had access to a private vehicle, and many had never acquired a driver's license. Therefore, the region's transportation system had been central to these individuals' ability to access amenities, social services, work, and third spaces. This has positioned them as most likely to be impacted by change. As participants shared, the integration of the ION into the existing transit system brought about significant changes, some of which they were not happy about. While the LRT has streamlined commuting in the CTC, participants were not satisfied with the changes to the regional bus system. The changes have led to confusion about bus lines, fear about stepping outside of known routes, and, for some, the belief that their commute is now longer than it was before. Residents further argued that the ION was a misuse of public funds that could have been better allocated to needed transportation improvements.

Tess, in her 50s, recently left a relationship and is currently navigating work and a return to school, and shared her anxiety around the current bus system and route planning.

> we need to make transportation better. And then their schedule, making it on time and helping the students and the workers. I'm now planning to go to Conestoga College, and I don't know how I can get there. I'm worried a lot about getting there, I cannot afford a car, I don't know. So, I don't know how I can do that. If we are making a plan to talk to them [planners & politicians], or doing something or write something down, maybe we can be making it better.

With her school located outside of the CTC, Tess thinks that she will have to take multiple buses to get to where she needs to go. Her experience to date, however, with delayed buses and confusion around the new bus system has made this process much more stressful. Because of the new system, routes have changed, with transportation across the region now feeding into the CTC. This system has left participants unsure about the purpose of the LRT as they continue to navigate longer and more confusing commutes, becoming more aware of other aspects of their transit networks that could be more deserving of investment.

Tim, currently living in downtown Kitchener, shared that despite being in a TOD neighbourhood, he does not use the LRT, and neither do his friends, leading him to argue that funds invested in this project would have been better used improving existing transportation. As he shares:

> The train was spending money for nothing! Because if they can improve more buses, they don't need to spend 800 million for the train. Like I said, not many people use the train, and the train is not going to the point that people like it…. For myself, it was spending money for nothing. You know, I am not in city hall, I am not in government, but maybe I should be!

Tim harbours resentment for this project, and as a regular public transit user, he is left confused about who the LRT is supposed to serve if not regular public transit riders like himself and his friends.

Kyle agreed, explaining several different public transit investment opportunities. At the forefront were bus shelters, or a lack thereof. As he explained:

> One of my concerns would be the bus shelters. Why is there, you have a shelter across the street but not where you are? Like you will look across the street and there is nowhere to sit there, but then where you are, you can sit. Like literally right across the street, one shelter will have a wall over it so that it's kinda protective of wind, and then the other one won't. I just, I don't think that there is enough consistency and equality in regards to shelters.

There is inconsistent bus shelter placement across the region, with many stops lacking shelters entirely. Yet, every LRT stop has seats and a protective shield. This was a concern many participants expressed, explaining how miserable it can be to wait for a bus in the pouring rain or freezing cold without any protection. Depending on the route, some buses only come once an hour, in comparison to the 10-minute wait for the LRT. As participants explained, if you miss your bus, you will have to wait or walk. Shorter headway is associated with suburban routes, which also means that walking can be quite a distance.

Participants were also deeply concerned about the associated fare increases that are being used to subsidize the LRT, with incremental increases beginning shortly after the LRT was operationalized. As Theresa explained:

> **Interviewee:** The fares are going up ridiculously!
>
> **Interviewer:** Would you say they are unaffordable?
>
> **Interviewee:** Almost, yep! Bus passes now are almost 100 dollars for a single person a month. And $3.50 [cost per ride] I think is a little absurd, and they want to bring it

> up to almost 4 dollars now. And we only get 90 minutes! Or at least, if you are going to do that, why don't you give us 2 hours then? Because of the way the buses don't migrate together, the train doesn't, you will have the time to do what you want to do and catch your bus on the way home. But it's all a money grabber.

Without integrating the LRT into daily mobility patterns, participants who were already unhappy with the current service conditions did not believe that they should be required to pay more for a transit pass to subsidize new operational costs.

For those who can, cycling has become a viable alternative to public transit. However, it comes with risks. Of the avid cyclists, all of them had had one or more bike accidents, a few resulting in serious injuries that limited their ability to continue to cycle.

Mark, currently living in downtown Kitchener in a one-bedroom apartment, shared that he had had at least 10 accidents in his lifetime as a cyclist in the region, his most recent being the day before the interview, resulting in minor injuries. Mark likes the freedom that cycling offers, but is reliant on public transit during the winter or when he is in recovery from cycling-related injuries. While others shared that they would like to bike because it is more affordable and can even be faster than public transit, having to ride on the road is a safety concern.

As Claire explained:

> Like the route I take, that I took when I was walking to and from work, there is a spot on university [city street in Waterloo] where they had a wide sidewalk where one side was a bike lane and one side was a walk lane. That works perfect! Let's just do that. I found that way more convenient than having to bike on the road.

Waterloo region has shown commitment to active transportation as part of their package of TOD policies and supports a strong network of trails and paths. However, protected routes remain concentrated in core areas along the CTC. Those that stretch to suburban neighbourhoods are relatively disjointed and disconnected. This limits less experienced cyclists from using cycling as a primary mode of travel outside of the core.

Being able to get around the city was vital to participants, but the introduction of new transit, rapid and active, has not streamlined their travel experience. Participants argued that trains do not take them where they need to go. For residents living outside of the core, their commute in from the suburbs to

access the services concentrated in the core is long. For residents living in the core, getting to school or accessing employment outside can be difficult. While some participants expressed that they would rather cycle than use public transit, the lack of safe, connected infrastructure is limiting. Ultimately, their experiences have left them feeling that the funds invested in this project could have been better used to improve transit in different ways.

4.7 Discussion: Overview of Findings

Conversations with deeply marginalized individuals living through transit-induced gentrification produced a counternarrative to the successful TOD communities that surround new transit infrastructure. In the region, despite the $4 million in investment or the vibrancy in core urban areas, participants mourned the loss of their communities. They now face new barriers that affect the way they experience their neighbourhoods, and unaffordability and feelings of exclusion are putting pressure on their ability to maintain their place in these neighbourhoods. Despite the integration of new transit systems, participants shared unexpected constraints on their ability to get around, driving feelings of resentment towards the cities and the region for integrating a system that, to them, felt unnecessary. As a result, the consensus from participants was that the ION project and the surrounding TOD policy that shape the project's integration into the region were not created with deeply marginalized community members' needs in mind. These experiences showcase several avenues and areas of intervention that should have been explored to better integrate a consideration of equity into the transportation planning process that appears to have been overlooked.

In terms of neighbourhood change, participants shared that in addition to the physical transformation of their neighbourhoods, the influx of new residents has put pressure on their social community. The gentrification of the core areas along the line has seen a transformation of retail, a rapid influx of new residents, and a steady decline in the sense of community that participants previously enjoyed. Those who have been able to stay in the core are mourning a loss of the neighbourhoods they once knew. Participants argued that the new image that has been built is outshining a growing crisis for original residents, who are now facing homelessness despite working or receiving social support. The centring of the ION in the region's large transit systems brings further complexity to the discussion of neighbourhood change. As the residents who participated were public transit reliant, and these businesses are taking over CTC neighbourhoods, accessing affordable retail means a further and less direct commute. Similarly, as affordability continues to rise in the core,

residents are concerned about their ability to access concentrated social services that are foundational to the sense of community they are still reliant on. With the ION LRT line acting as a catalyst for much of this neighbourhood change, this also means that the most accessible parts of the city are becoming the least affordable.

In terms of feelings of exclusion, residents are facing pressure in their attempts to maintain space, as they struggle to navigate growing unaffordability in the CTC. While unaffordability and housing precarity have become commonplace for many North American cities, and have undoubtedly affected the region (Hill et al., 2021), we have also seen that the ION is a contributing factor (Ellis-Young & Doucet, 2021; Dong, 2017; Doucet, 2021). Neighbourhoods along the line are being sold at a premium, and the influx of residential development alone demonstrates difficulty keeping up with demand. Through interviews, this was supported by participants who shared that the LRT marked a downward trend for the negative experiences that they had shared. Resentment from residents has shaped negative perspectives of the public participation process, as residents feel neglected in plans and policy. Yet, as residents continue to do whatever it takes to maintain their place, the impact of transit-induced gentrification and potential displacement is not fully understood. This highlights the value of lived experience data, especially when it comes to identifying priority concerns for equity-deserving groups (Schuch & Mushipe, 2024).

This led to concerns around transportation itself, arguably one of the most crucial issues for residents, as accessible and reliable transportation dictates how many residents get around. Ultimately, residents were not satisfied with the transportation outcomes from the project. The region's investment in the LRT has had little positive impact on transit users' ability to get around because many are not using it. It simply does not get them where they need to go (D'Amato, 2018). Between expanding bus routes, improving bus infrastructure, and committing to safer and connected cycling infrastructure, participants could not comprehend why so much money was invested in the LRT. This investment drove feelings of resentment for participants, who felt voiceless while navigating significant changes that directly impacted them.

4.8 Conclusion: The Path Forward

Through conversations with deeply marginalized individuals who have lived in a post-TOD neighbourhood for the last 5 years, we heard important perspectives on how transit has effectively reshaped communities and the experience of the city. After ongoing research that has attempted to

measure gentrification in station-adjacent areas (Cervero & Duncan, 2002; Deka, 2017; Kramer, 2018; Mathur & Ferrel, 2013; Zuk et al., 2018), this article joins the growing body of literature demonstrating the value of using lived experiences to better understand the complex challenges that transit-induced gentrification creates for deeply marginalized residents (Doucet, 2021; Jones, 2023; Schuch & Mushipe, 2024). For Waterloo Region, participants had several concerns about transit infrastructure itself and the effect that it has had on the neighbourhood. As a result, they felt resentment towards the project, struggling to understand how, and if, their needs were considered. This finding presents an important opportunity to consider how we are defining equity in local contexts. Using their testimonies, we can also begin to decipher what equitable transportation could look like and, importantly, how transit investment can drive inequity in unexpected ways. These lessons are helpful for other cities integrating TOD policies to consider both the visible effects of transit-induced gentrification, like new retail and increased rents, and the invisible, like loss of social communities. Building on Brown's (2022) discussion of the value of shaping equity around community needs, this research emphasizes the importance for planners and policymakers to intentionally define equity in the planning process that is informed through research, but constructed in the local context. In the case of the region of Waterloo, participants explained the different ways that inequity in transit has had multifaceted impacts. These factors, like community needs, individual mobility, and resultant unaffordability, should have been used to define equity as it relates to the ION project.

Through a detailed exploration of the ION LRT, the residents who participated in this study ultimately felt that it was not a good use of public funds. Instead, they identified areas where public and active transit could have been improved, and further, several areas where the ION has had a negative impact. Retroactively, this information should be used to improve the current transit system and inform necessary interventions to ensure marginalized individuals are able to stay in the city. For other cities looking to implement TOD policy that centres rapid transit, the Region of Waterloo can be seen as an important case study of the concerns of a one-size-fits-all approach to planning. Discussions with equity-deserving groups must occur throughout the planning process to ensure that their needs are considered. For some cities, this could mean that rapid transit is not the best fit for their communities, and funds should be directed to transportation improvements in other ways.

4.9 References

Allen, J., Palm, M., Tiznado-Aitken, I., & Farber, S. (2022). Inequalities of extreme commuting across Canada. *Travel Behaviour and Society*, *29*, 42–52. https://doi.org/10.1016/j.tbs.2022.05.005

Apell, S. (2015). *Evaluating the unintended impacts of socio-economic and demographic shifts in transit served neighborhoods on mode choice and equity* [Doctoral dissertation, University of Texas at Arlington]. MavMatrix. https://mavmatrix.uta.edu/publicaffairs_dissertations/102/

Appleyard, B. S., Frost, A. R., & Allen, C. (2019). Are all transit stations equal and equitable? Calculating sustainability, livability, health, & equity performance of smart growth & transit-oriented-development (TOD). *Journal of Transport & Health*, *14*, Article 100584. https://doi.org/10.1016/j.jth.2019.100584

Baker, D. M., & Lee, B. (2019). How does light rail transit (LRT) impact gentrification? Evidence from fourteen US urbanized areas. *Journal of Planning Education and Research*, *39*(1), 35–49. https://doi.org/10.1177/0739456X17713619

Barajas, J. M., & Braun, L. M. (2021). Are cycling and walking good for all? Tracking differences in associations among active travel, socioeconomics, gentrification, and self-reported health. *Journal of Transport & Health*, *23*, Article 101246. https://doi.org/10.1016/j.jth.2021.101246

Bardaka, E., Delgado, M. S., & Florax, R. J. (2018). Causal identification of transit-induced gentrification and spatial spillover effects: The case of the Denver light rail. *Journal of Transport Geography*, *71*, 15–31. https://doi.org/10.1016/j.jtrangeo.2018.06.025

Barreira, A. P., Amado, C., Santos, S., Andraz, J., & Guimaraes, M. H. (2021). Assessment and determinants of the quality of life in Portuguese cities. *International Regional Science Review*, *44*(6), 647–683. https://doi.org/10.1177/0160017620979611

Boarnet, M. G. (2011). A broader context for land use and travel behavior, and a research agenda. *Journal of the American Planning Association*, *77*(3), 197–213. https://doi.org/10.1080/01944363.2011.593483

Boisjoly, G., & Yengoh, G. T. (2017). Opening the door to social equity: Local and participatory approaches to transportation planning in Montreal. *European Transport Research Review*, *9*, Article 43. https://doi.org/10.1007/s12544-017-0258-4

Bourne, L. S., & Simmons, J. (2003). New fault lines? Recent trends in the Canadian urban system and their implications for planning and public policy. *Canadian Journal of Urban Research*, *12*(1), S22–S47. https://link.gale.com/apps/doc/A109504794/AONE

Brown, A. (2022). From aspiration to operation: Ensuring equity in transportation. *Transport Reviews*, *42*(4), 409–414. https://doi.org/10.1080/01441647.2022.2064527

Bunting, T., Filion, P., Hoernig, H., Seasons, M., & Lederer, J. (2007). Density, size, dispersion: Towards understanding the structural dynamics of mid-size cities. *Canadian Journal of Urban Research*, *16*(2), 27–52. https://www.jstor.org/stable/26189240

Calthorpe, P. (1993). *The next American metropolis: Ecology, community, and the American dream.* Princeton Architectural Press.

Calthorpe, P. (2011). *Urbanism in the age of climate change.* Island Press. https://link.springer.com/book/10.5822/978-1-61091-005-7

CambridgeToday Staff. (2023, May 10). Building permits issued across region reached near record in 2022. *Cambridge Today.* https://www.cambridgetoday.ca/local-news/building-permits-issued-across-region-reached-near-record-in-2022-6979039

Cantilina, K., Daly, S. R., Reed, M. P., & Hampshire, R. C. (2021). Approaches and barriers to addressing equity in transportation: Experiences of transportation practitioners. *Transportation Research Record*, *2675*(10), 972–985. https://doi.org/10.1177/03611981211014533

Cao, X. J., & Schoner, J. (2014). The influence of light rail transit on transit use: An exploration of station area residents along the Hiawatha line in Minneapolis. *Transportation Research Part A: Policy and Practice*, *59*, 134–143. https://doi.org/10.1016/j.tra.2013.11.001

Cervero, R. (2006). Effects of light and commuter rail transit on land prices: Experiences in San Diego County. *Journal of the Transportation Research Forum, 43*(117765), 121–138. https://escholarship.org/uc/item/75n1b5xc

Cervero, R., & Duncan, M. (2002). Transit's value-added effects: Light and commuter rail services and commercial land values. *Transportation Research Record*, *1805*(1), 8–15. https://doi.org/10.3141/1805-02

Cervero, R., & Sullivan, C. (2011). Green TODs: Marrying transit-oriented development and green urbanism. *International Journal of Sustainable Development & World Ecology*, *18*(3), 210–218. https://doi.org/10.1080/13504509.2011.570801

Chapple, K., & Loukaitou-Sideris, A. (2019). *Transit-oriented displacement or community dividends? Understanding the effects of smarter growth on communities*. MIT Press.

Chatman, D. G., Xu, R., Park, J., & Spevack, A. (2019). Does transit-oriented gentrification increase driving? *Journal of Planning Education and Research*, *39*(4), 482–495. https://doi.org/10.1177/0739456X19872255

Chava, J., & Renne, J. L. (2022). Transit-induced gentrification or vice versa? A study of neighborhoods around light rail stations from 1970–2010. *Journal of the American Planning Association*, *88*(1), 44–54. https://doi.org/10.1080/01944363.2021.1920453

Cheng, A. S. (2006). Build it and they will come? Mandating collaboration in public lands planning and management. *Natural Resources Journal*, *46*(4), 841–858.

Culver, G. (2017). Mobility and the making of the neoliberal "creative city": The streetcar as a creative city project? *Journal of Transport Geography*, *58*, 22–30. https://doi.org/10.1016/j.jtrangeo.2016.11.005

D'Amato, (2018, November 8). D'Amato: Transit riders are more concerned about today's bus service than the delayed light-rail launch [Opinion]. *The Record.* https://www.therecord.com/opinion/columnists/damato-transit-riders-are-more-concerned-about-todays-bus-service-than-the-delayed-light-rail/article_9347aa90-2434-5bb0-937d-2487efe20d83.htm l

Dawkins, C., & Moeckel, R. (2016). Transit-induced gentrification: Who will stay, and who will go? *Housing Policy Debate*, *26*(4-5), 801–818. https://doi.org/10.1080/10511482.2016.1138986

Deboosere, R., El-Geneidy, A. M., & Levinson, D. (2018). Accessibility-oriented development. *Journal of Transport Geography*, *70*, 11–20. https://doi.org/10.1016/j.jtrangeo.2018.05.015

Deka, D. (2017). Benchmarking gentrification near commuter rail stations in New Jersey. *Urban Studies*, *54*(13), 2955–2972. https://doi.org/10.1177/0042098016664830

Dong, H. (2017). Rail-transit-induced gentrification and the affordability paradox of TOD. *Journal of Transport Geography*, 63, 1–10. https://doi.org/10.1016/j.jtrangeo.2017.07.001

Doucet, B. (2021). The 'hidden' sides of transit-induced gentrification and displacement along Waterloo Region's LRT corridor. *Geoforum*, *125*, 37–46. https://doi.org/10.1016/j.geoforum.2021.06.013

Doucet, B., Diwan, F., Turman, W., Mehta, N. & Petrovic, A. (2022). Mapping displacement through lived experiences: Countermapping transit-induced gentrification in Kitchener- Waterloo, ON. *Radical Housing Journal. 4*(2), 67–87. https://doi.org/10.54825/JXKI5234

Duhatschek, P. (2023, February 8). *Why rent is so expensive in 3 Canadian cities (that aren't Toronto or Vancouver)*. CBC News. https://www.cbc.ca/news/business/high-rent-canada-cities-1.6738966

Ellis-Young, M., & Doucet, B. (2021). From "big small town" to "small big city": Resident experiences of gentrification along Waterloo region's LRT corridor. *Journal of Planning Education and Research*, *44*(1), 416-430. https://doi.org/10.1177/0739456X21993914

English, J. (2011, July 28). Kitchener meets its Waterloo. *Macleans*. https://macleans.ca/news/canada/kitchener-meets-its-waterloo/

Filion, P., & Bunting, T. E. (1993). Local power and its limits: Three decades of attempts to revitalize Kitchener's CBD. *Urban History Review*, *22*(1), 4–16. https://doi.org/10.7202/1016718ar

Filion, P., Hoernig, H., Bunting, T., & Sands, G. (2004). The successful few: Healthy downtowns of small metropolitan regions. *Journal of the American Planning Association*, *70*(3), 328–343. https://doi.org/10.1080/01944360408976382

Flanagan, E., Lachapelle, U., & El-Geneidy, A. (2016). Riding tandem: Does cycling infrastructure investment mirror gentrification and privilege in Portland, OR and Chicago, IL? *Research in Transportation Economics*, *60*, 14–24. https://doi.org/10.1016/j.retrec.2016.07.027

Gaber, J. (2020). *Qualitative analysis for planning & policy: Beyond the numbers*. Routledge.

Garcia-López, M.-À., & Gómez-Hernández, L. Y. (2024). Housing prices, buses and trams in Medellín (Colombia). *Research in Transportation Economics*, *106*, Article 101464. https://doi.org/10.1016/j.retrec.2024.101464

Garde, A., Jamme, H. T., Toney, B., Bahl, D., & Banerjee, T. (2024). Can TODS include affordable housing? The Southern California experience. *Journal of the American Planning Association*, *90*(2), 303–317. https://doi.org/10.1080/01944363.2023.2236586

Gibson, T. A. (2015). The rise and fall of Adrian Fenty, Mayor-Triathlete: Cycling, gentrification and class politics in Washington DC. *Leisure Studies*, *34*(2), 230–249. https://doi.org/10.1080/02614367.2013.855940

Glaeser, E. L., Luca, M., & Moszkowski, E. (2023). Gentrification and retail churn: Theory and evidence. *Regional Science and Urban Economics*, *100*, Article 103879. https://doi.org/10.1016/j.regsciurbeco.2023.103879

Graham, B. C., Keys, C. B., & McMahon, S. D. (2014). Transportation and socioemotional well-being of urban students with and without disabilities. *Journal of Prevention & Intervention in the Community*, *42*(1), 31–44. https://doi.org/10.1080/10852352.2014.855056

Grube-Cavers, A., & Patterson, Z. (2015). Urban rapid rail transit and gentrification in Canadian urban centres: A survival analysis approach. *Urban Studies*, *52*(1), 178–194. https://doi.org/10.1177/0042098014524287

Hill, K., Webber, R., & Hirsch, D. (2021). *Staying home and getting on: Tackling the challenges facing low to middle income families where young adults live with their parents*. Centre for Research in Social Policy, Loughborough University. https://www.financialfairness.org.uk/docs?documentId=GB-151221-162871-1

Huang, Y., Parker, D., & Minaker, L. (2021). Identifying latent demand for transit-oriented development neighbourhoods: Evidence from a mid-sized urban area in Canada. *Journal of Transport Geography*, *90*, Article 102940. https://doi.org/10.1016/j.jtrangeo.2020.102940

Hubbard, P. (2017). *The battle for the High Street: Retail gentrification, class and disgust*. Palgrave Macmillan.

Ibrahim, S. M., Ayad, H. M., & Saadallah, D. M. (2022). Planning transit-oriented development (TOD): A systematic literature review of measuring the transit-oriented development levels. *International Journal of Transport Development and Integration*, *6*(4), 378–398. https://doi.org/10.2495/TDI-V6-N4-378-398

Immergluck, D., & Balan, T. (2018). Sustainable for whom? Green urban development, environmental gentrification, and the Atlanta Beltline. *Urban Geography*, *39*(4), 546–562. https://doi.org/10.1080/02723638.2017.1360041

Jacobson, J., & Forsyth, A. (2008). Seven American TODs: Good practices for urban design in transit-oriented development projects. *Journal of Transport and Land Use*, *1*(2), 51–88. https://doi.org/10.5198/jtlu.v1i2.67

Jones, C. E. (2023). Transit-oriented development and suburban gentrification: A "natural reality" of refugee displacement in metro Vancouver. *Housing Policy Debate*, *33*(3), 533–552. https://doi.org/10.1080/10511482.2020.1839935

Jones, C. E., & Ley, D. (2016). Transit-oriented development and gentrification along Metro Vancouver's low-income SkyTrain corridor. *The Canadian Geographer*, *60*(1), 9–22. https://doi.org/10.1111/cag.12256

Kahn, M. E. (2007). Gentrification trends in new transit-oriented communities: Evidence from 14 cities that expanded and built rail transit systems. *Real Estate Economics*, *35*(2), 155–182. https://doi.org/10.1111/j.1540-6229.2007.00186.x

Kramer, A. (2018). The unaffordable city: Housing and transit in North American cities. *Cities*, *83*, 1–10. https://doi.org/10.1016/j.cities.2018.05.013

Litman, T. (2017). *Evaluating transportation equity*. Victoria Transport Policy Institute.

Litman, T. M. (2022). Evaluating transportation equity: Guidance for incorporating distributional impacts in transport planning. *Institute of Transportation Engineers. ITE Journal*, *92*(4), 43–49. https://vtpi.org/Litman_ITEJ_Equity_Apr2022.pdf

Lubitow, A., Zinschlag, B., & Rochester, N. (2016). Plans for pavement or for people? The politics of bike lanes on the 'Paseo Boricua' in Chicago, Illinois. *Urban Studies*, *53*(12), 2637–2653. https://doi.org/10.1177/0042098015592823

Lung-Amam, W., Pendall, R., & Knaap, E. (2019). Mi casa no es su casa: The fight for equitable transit-oriented development in an inner-ring suburb. *Journal of Planning Education and Research, 39*(4), 442–455. https://doi.org/10.1177/0739456X19878248

Makarewicz, C., Dantzler, P., & Adkins, A. (2020). Another look at location affordability: Understanding the detailed effects of income and urban form on housing and transportation expenditures. *Housing Policy Debate*, *30*(6), 1033–1055. https://doi.org/10.1080/10511482.2020.1792528

Martens, K. (2016). *Transport justice: Designing fair transportation systems*. Routledge.

Martens, K., Bastiaanssen, J., & Lucas, K. (2019). Measuring transport equity: Key components, framings and metrics. In K. Lucas, K. Martens, F. Di Ciommo, & A. Dupont-Kieffer (Eds.), *Measuring transport equity* (pp. 13–36). Elsevier. https://doi.org/10.1016/B978-0-12-814818-1.00002-0

Mathur, S., & Ferrell, C. (2013). Measuring the impact of sub-urban transit-oriented developments on single-family home values. *Transportation Research Part A: Policy and Practice*, *47*, 42–55. https://doi.org/10.1016/j.tra.2012.10.014

McDougall, E., Webber, K., & Petrie, S. (2023). Addressing the need for more nuanced approaches towards transit-induced gentrification: a case for a complex systems thinking framework. *Geography Compass*, *17*(3), Article e12681. https://doi.org/10.1111/gec3.12681

Nasca, T. F., Changfoot, N., & Hill, S. D. (2019). Participatory planning in a low-income neighbourhood in Ontario, Canada: Building capacity and collaborative interactions for influence. *Community Development Journal*, *54*(4), 622-642. https://doi.org/10.1093/cdj/bsy031

Nelson, A. C., Eskic, D., Hamidi, S., Petheram, S. J., Ewing, R., & Liu, J. H. (2015). Office rent premiums with respect to light rail transit stations: Case study of Dallas, Texas, with implications for planning of transit-oriented development. *Transportation Research Record*, *2500*(1), 110–115. https://doi.org/10.3141/2500-13

Pan, F. (2018, January 10). *Carl Zehr looks back on decades of dramatic change' in Kitchener*. CBC News. https://www.cbc.ca/news/canada/kitchener-waterloo/downtown-kitchener-10-years-of-change-carl-zehr-1.4480948

Parker, D. C., Valaei Sharif, S., & Webber, K. (2023). Why did the "missing middle" miss the train? An actors-in-systems exploration of barriers to intensified family housing in Waterloo region, Canada. *Land*, *12*(2), Article 434. https://doi.org/10.3390/land12020434

Peng, Q., & Knaap, G. (2024). When and where do home values increase in response to planned light rail construction? *Journal of Planning Education and Research*, *44*(4), 2086–2097. https://doi.org/10.1177/0739456X221133022

Pereira, R. H., Schwanen, T., & Banister, D. (2017). Distributive justice and equity in transportation. *Transport Reviews*, *37*(2), 170–191. https://doi.org/10.1080/01441647.2016.1257660

Quick, K. S., & Bryson, J. M. (2016). Public participation. In C. Ansell & J. Torfing (Eds.), *Handbook on theories of governance* (pp. 158–169). Edwar Elgar.

Rayle, L. (2015). Investigating the connection between transit-oriented development and displacement: Four hypotheses. *Housing Policy Debate*, *25*(3), 531–548. https://doi.org/10.1080/10511482.2014.951674

Region of Waterloo. (n.d.). Stage 2 ION. *Region of Waterloo*. https://www.regionofwaterloo.ca/en/exploring-the-region/stage2ion.aspx

Region of Waterloo. (2013, December). Community building strategy. *Region of Waterloo.* [Report]. https://www.regionofwaterloo.ca/en/doing-business/resources/Community-Building-Strategy/The-Corridor-Today-S1.pdf

Schuch, J. C., & Mushipe, T. (2024). Included or left behind? Residents' perceptions on public investments, city growth, and local decision-making. *Urban Geography*, *45*(8), 1309–1329. https://doi.org/10.1080/02723638.2023.2285117

Sharkey, J. (2019, June 12). *Charles Street terminal closing, 800 bus stops to change June 24*. CBC News. https://www.cbc.ca/news/canada/kitchener-waterloo/ion-waterloo-kitchener-bus-grand-river-transit-1.5170491

Sharpe, K. (2023, January, 27). *Rental vacancies in Waterloo region reach 20-year low: CMHC*. CTV News Kitchener. https://kitchener.ctvnews.ca/rental-vacancies-in-waterloo-region-reach-20-year-low-cmhc-1.6249641

Silverman, R. M., Taylor, H. L., Yin, L., Miller, C., & Buggs, P. (2019). There goes our family friendly neighborhood: Residents' perceptions of institutionally driven inner-city revitalization in Buffalo, NY. *Journal of Community Practice*, *27*(2), 168–187. https://doi.org/10.1080/10705422.2019.1616642

Smart, M. J., & Klein, N. J. (2018). Complicating the story of location affordability. *Housing Policy Debate*, *28*(3), 393–410. https://doi.org/10.1080/10511482.2017.1371784

Stacy, C., Su, Y., Noble, E., Stern, A., Blagg, K., Rainer, M., & Ezike, R. (2020). *How can cities create more equitable transportation systems*? Urban Institute. https://www.urban.org/sites/default/files/publication/102991/how-can-cities-create-more-equitable-transportation-systems.pdf

Stehlin, J. G. (2015). Cycles of investment: Bicycle infrastructure, gentrification, and the restructuring of the San Francisco Bay Area. *Environment and Planning. A*, *47*(1), 121–137. https://doi.org/10.1068/a130098p

Stoecker, R. (2012). Community-based research and the two forms of social change. *Journal of Rural Social Sciences*, *27*(2), 83–98. https://egrove.olemiss.edu/jrss/vol27/iss2/6?utm_source=egrove.olemiss.edu%2Fjrss%2Fvol27%2Fiss2%2F6&utm_medium=PDF&utm_campaign=PDFCoverPages

Summers, K. (2020). For the greater good? Ethical reflections on interviewing the 'rich' and 'poor' in qualitative research. *International Journal of Social Research Methodology*, *23*(5), 593–602. https://doi.org/10.1080/13645579.2020.1766772

van der Merwe, J. (2021). *Spillover gentrification? Mid-sized cities within commuter sheds of global cities* [Master's thesis, University of Waterloo]. UWSpace. http://hdl.handle.net/10012/17628

van Wee, B., & Mouter, N. (2021). Evaluating transport equity. In N. Mouter (Ed.), *Advances in transport policy and planning* (Vol. 7, pp. 103–126). https://doi.org/10.1016/bs.atpp.2020.08.002

Walker, L. A., & East, J. F. (2014). The benefits of including engaged residents and professionals in low-income neighborhood redevelopment planning processes. *Journal of Community Practice*, *22*(3), 342–364. https://doi.org/10.1080/10705422.2014.929063

Walsh, C. A., Gulbrandsen, C., Hewson, J., & Paul, K. (2020). "Fallen between the cracks": Exploring subsidized housing from the perspectives of low-income preseniors. *Journal of Aging and Environment*, *34*(1), 5–30. https://doi.org/10.1080/02763893.2019.1627264

Webber, K. (2022). *Exploring the relationship between transit-induced intensification and retail gentrification in a mid-sized Canadian city* [Master's thesis, University of Waterloo]. UWSpace. http://hdl.handle.net/10012/18760

Whitney, R. A., & Ledsham, T. (2024). Community animators and participatory planning. *Journal of the American Planning Association*, *90*(2), 336–348. https://doi.org/10.1080/01944363.2023.2240794

Yip, M. K. F., Ramezani, S., Meijering, L., Tillema, T., & Arts, J. (2024). Conceptualising justice in transit-oriented development (TOD): Towards an analytical framework. *Transport Reviews*, *44*(5), 944–971. https://doi.org/10.1080/01441647.2024.2346761

Zhao, P., & Li, S. (2016). Restraining transport inequality in growing cities: can spatial planning play a role? *International Journal of Sustainable Transportation*, *10*(10), 947–959. https://doi.org/10.1080/15568318.2016.1191693

Zuk, M., Bierbaum, A. H., Chapple, K., Gorska, K., & Loukaitou-Sideris, A. (2018). Gentrification, displacement, and the role of public investment. *Journal of Planning Literature*, *33*(1), 31–44. https://doi.org/10.1177/0885412217716439

Chapter 5: Conclusion

This dissertation set out to achieve two goals. The first was to explore the complex yet often unseen impacts of new transit infrastructure on different stakeholder groups and communities, and the second, to use lived experiences to illuminate our understanding of how different stakeholder groups integrate their positionality into their perspectives of transit. This dissertation accomplished these goals through three connected, yet independent, manuscripts that explored different dimensions of transit-related change and impact. This approach was best suited as it provided an avenue to compare and contrast the perspectives of different stakeholder groups and areas of effect, to produce a more complete understanding of change. Each manuscript interrogates a unique dimension of change and challenge at different stages of integrating new transportation infrastructure.

Manuscript 1 uses data set 1, key stakeholders and data set 3, deeply marginalized residents, to examine how lived experiences of travel align with perceived planning project goals. Comparing stakeholder perspectives of the ION project before the LRT opened to lived experiences for deeply marginalized residents more than 3 years after operationalizing, this manuscript provides an in-depth exploration of the commuter experience. It offers unique insight into what changes to a transportation system mean for extremely low-income captive riders, and unpacks the marketing of new transit infrastructure to choice ridership. This manuscript finds that project outcomes that were aimed at choice riders ultimately had negative outcomes for captive riders from equity-deserving groups. These residents shared that since the opening of the LRT, their commuter experiences have worsened, leaving them unable to see direct benefits to their own travel experiences. This manuscript leverages Sheller's (2018a) nested approach to justice through mobility justice to identify and provide recommendations for more justice interventions at critical stages of the transportation planning process, from initial conversations to post-implementation. It argues for the value of mobility justice in framing large-scale transportation projects in more just ways. As such, this manuscript contributes to the further theorization of mobility justice, the theoretical element of this dissertation, and provides novel empirical and planning practice contributions regarding the assumed benefits of new transit.

Having gained insight into the roles that new infrastructure can play for different groups from the first manuscript, **Manuscript 2** considers the implications of cycling and larger transportation projects on the housing market. Motivated by reported bikelash from middle-income homeowners in the region, this article provides insight into why these perceptions prevail despite research that

suggests positive outcomes for neighbourhoods with new infrastructure. Harnessing data set 2, realtors and developers, this work centres an expert lens to interrogate perceptions and positionality. As a result, this research provides several findings on why residents are resistant to or attracted to cycling infrastructure. Central is the divide between suburban communities and urban core areas, presenting differences in lifestyle, housing needs, and desirability of public and active transit access. This work contextualizes the region's bikelash, finding that land-use limitations have made a seamless integration of new infrastructure difficult. Through questions about participants' own transit needs, this article further finds that experts' lived experiences can influence their professional opinions. In the Region of Waterloo, we are seeing a dichotomy in how realtors and developers who personally cycle versus those who do not feature cycling infrastructure in client conversations. With research conducted in 2019–2020, just after the ION project's implementation, this manuscript concludes with cautionary examples from other cities that are beginning to report cycling as a potential driver for transit-induced gentrification, providing valuable empirical contributions for research and practice.

Having gained an understanding of how experience guides perspective, from stakeholders, experts and transit users, **Manuscript 3** returns to the deeply marginalized perspective to delve into the multifaceted impact of new transit infrastructure on equity-deserving groups. Building on the warning of transit-induced gentrification from Manuscript 2, this article identifies and explores the complexity of the impact on the daily lives and commuting patterns of deeply marginalized residents who still reside in the region. This manuscript demonstrates the value of lived experience data in uncovering invisible transit-related change, as well as the deeply personal impact that this change has in different aspects of participants' lives. This manuscript makes an empirical contribution to the transit-induced change research by offering a comprehensive exploration of the impact of new transit infrastructure on equity-deserving groups that is currently limited. It further contributes to the expansion of qualitative research on transit-induced gentrification, which is currently dominated by quantitative approaches.

From conception to implementation, these manuscripts paint an encompassing picture of how new transit projects weave into the fabric of a community in different ways. These changes are motivated by specific goals and outcomes, meant to produce transformative change for residents of surrounding neighbourhoods. However, transformation is not experienced equally, and some resident groups are left feeling more fractured from their community than before. Positive or negative, lived experiences

are an effective tool to understand complex impacts of urban and suburban change and help better equip our planning policy and practices with a more diverse understanding of public interest.

These case studies were conducted in the Region of Waterloo, which is a strong applied example for several reasons. First, the region incorporated TOD policy through the ION LRT project to effectively transform neighbourhoods along the line and further carve out core urban areas. The region and cities wanted to encourage and accommodate growth through an integrated transit system, and as such, the ION was uplifted as innovative transit, leveraged to attract investment from developers and investors capitalizing on a growing market. These features are central to many of the TOD projects across North America: the desire to create a defined transit corridor and manage or attract growth. The second reason the region is a topical example is that it was once an area of disinvestment, sharing a history with many manufacturing cities that saw decline and suburbanization post-industrialization. Poverty has also been a concern in the region, with several of the region's previous low-income neighbourhoods located within the CTC. This is relevant as transit projects are happening more and more in cities outside of major metropolitan areas that share these similarities. Disinvestment specifically can drive perceptions that growth is inherently good, or that large-scale neighbourhood change processes like transit-induced gentrification are not possible. As we learned from the case studies above, the community impact of transit-related growth can be much more complex. Even cities currently facing disinvestment need to consider how consequences can present in unforeseen ways. The best strategy is a proactive approach.

The remainder of this conclusion is divided into three sections. The first explores the theoretical and empirical contributions of this dissertation. The next section provides an overview of methodological and empirical limitations and how these limitations offer important avenues for future research. This chapter further provides implications for planning practice, necessary takeaways, and avenues for intervention at the political, social, and economic levels. It concludes by highlighting the pivotal role that community organizations can play in the formal planning process, providing avenues for future community-led partnerships.

5.1 Empirical and Theoretical Contributions

Through the three manuscripts, this dissertation makes novel contributions to three bodies of literature. Beginning with takeaways for captive vs choice ridership research, this work considers how transit ridership experiences change under TOD, as well as the role that marketing plays in attracting

choice ridership. This is followed by an exploration of how bikelash feeds into larger social processes and the role that lived experience can play in shaping residents' and experts' opinions. Finally, this research's contributions to validating lived experience data as a means to better understand the complexities of transit-induced gentrification for communities and individuals are explored. This section concludes by reviewing the contributions to the theorization of mobility justice.

5.1.1 The Role of Marketing in Enforcing Captive Versus Choice Ridership

There is a rich body of research on the divide between captive and choice ridership and their role in transportation systems (Garrett & Taylor, 1999; Taylor & Morris, 2015; Ureta, 2008; Zhao et al., 2014). This work has helped shape our understanding of ridership trends, their impact on planning, and whose perspectives are given precedence within large-scale transportation projects. Researchers have shown time and time again that attracting choice ridership is a priority (Bullard, 2005; Prayitno & Moos, 2022; Taylor & Morris, 2015; Welch & Mishra, 2013), so it is unsurprising that the experiences of captive riders have been overlooked (Schuch & Mushipe, 2024). Chapter 2 provides a unique contribution to this discussion by focusing on the lived experience of captive ridership and the way that they have been seemingly excluded from both marketing tactics and considerations of ridership experience. In terms of marketing, we heard key stakeholders share that the ION was about more than transit, offering an avenue for individuals who would be unlikely to move away from the car to engage in alternative travel modalities. These conversations centred on a transformation of neighbourhoods along the line and a means to attract new, choice ridership, to travel and live in station-adjacent neighbourhoods. Captive riders were mostly excluded from this discussion, assumed to already be participating in the regional transportation system.

Malicious or not, there appears to be an assumption that captive riders will always benefit from new transit infrastructure (Garrett & Taylor, 1999; Ureta, 2008) or at the very least endure change (Hanson, 2017), despite limited consideration for their transit needs. In the case of the Region of Waterloo, interviews with captive riders uncovered that this assumption is not correct. These individuals shared that they were actively avoiding public transit as much as possible because the changes brought on by the ION are negatively impacting their commuting experience. Shifts in the system, closure of the previous bus terminal, and a prioritization of the LRT line through the reorganization of the GRT network contributed to this perception. These findings draw attention to the harm assumptions can have within the planning process, particularly that transit improvements are

experienced equally. Assumptions of equity thus create a concerning causality, in that catering to choice riders can have negative impacts on their captive counterparts. Past research has framed captive versus choice ridership as a hierarchy (Fang et al., 2021; Zhao et al., 2014). Findings from this dissertation suggest that planning for choice ridership can undermine the needs of captive riders, contributing to a systemic neglect of transit-dependent groups.

Argued throughout this dissertation, those most likely to benefit from new transit infrastructure are also the most likely to be negatively impacted by neighbourhood change (Welch & Mishra, 2013; Larsen & Urry, 2016). As a result, this focus on attracting new residents and ridership is inherently problematic when we reduce transportation to its fundamental purpose, to move people (Kushner, 2002; Taylor & Morris, 2015). However, as argued in Chapter 2, transportation is increasingly prioritized as a growth management strategy first and a transportation tool second. As a result, transit modality, development goals, and accessible amenities are aimed at attracting captive riders (Higashide, 2019; Mock & Thill, 2015). This aim includes shifting away from poorly perceived modalities, like the bus, that can be more beneficial for captive riders, towards more innovative and attractive modalities like the train (Ashmore et. al., 2019; Scherer & Zurich, 2012).

Ultimately, this research contributes new considerations for the way planners view captive and choice riders in larger-scale transportation projects in both the marketing and implementation process, emphasizing that exclusion of a group's perspectives and experiences does not exclude them from adverse impacts.

5.1.2 Enforcing Bikelash Through Built Form

To date, bikelash research has addressed the duality that surrounds why people react so viscerally to new cycling infrastructure (Daley & Rissel, 2011; Wilson & Mitra, 2020). Residents either fear that new infrastructure will have a negative impact on their property values, or they worry that new infrastructure will drive gentrification concerns, ultimately pushing original residents out (Duarte et al., 2014; Wild et al., 2018; Wild & Woodward, 2019). In Chapter 3, this dissertation contributes new empirical findings to this discussion by exploring instances of bikelash through the lens of realtors and developers. This chapter finds that these experts understand market dynamics, providing insight into the role that transportation plays in the homebuying and homebuilding process (Carnoske et al., 2010; Kern, 2016; McCormack et al., 2020). This insight provides a new perspective on trends in the real estate market, to validate or contradict bikelash from residents.

In the case of the Region of Waterloo, bikelash came from vocal homeowners who expressed fears that new cycling infrastructure could negatively impact their property values and commuting practices (Parker et al., 2020). These residents were largely from outer suburban communities, where cycling as a primary form of travel is very unlikely. On the contrary, realtors and developers shared that urban dwellers were much more likely to be excited about cycling infrastructure, as the ION project[25] and associated neighbourhood change were a response to the urban/suburban divide (Keil & Addie, 2015) that has formed in the region's major cities. This work contributes to a land-use planning conceptualization of why cycling is better received in urban areas. Cycling infrastructure fits the urban scape and the lifestyle associated with the urban core (Pucher & Buehler, 2010). Realtors and developers shared that core buyers are more willing to move away from the car to gain accessible amenities and shorter commutes. While these experts confirmed that cycling infrastructure has not negatively impacted property values anywhere in the region, they did provide an explanation for why these groups do not feel cycling caters to their needs. This novel contribution to bikelash literature is the inherent role that built form and lifestyles play in shaping opinions and perspectives on cycling infrastructure. Rather than bridging the urban/suburban divide, concentrated infrastructure instead further reinforces these barriers.

A secondary contribution of this research is the role that realtors and developers can play in the marketing of cycling infrastructure. As interviewees shared, they are strategic in the way they advertise cycling infrastructure to potential buyers, based on demographics, location and their perspectives on cycling's value. Some self-proclaimed cycling enthusiasts would always highlight surrounding infrastructure, whereas others who did not engage in cycling shared that they do not highlight cycling in their listings. This creates an important connection between bikelash research and larger conversations of transportation resistance, in that perceived experts also bring their personal perspectives and biases into discussions. We cannot discount the role that these individuals can play in influencing client perceptions and opinions.

Given the direction of change in the Region of Waterloo, addressed in Chapters 2 and 4, one might deduce that the other side of bikelash, gentrification, is more concerning for the region. As we have seen in other cities integrating cycling infrastructure (Lubitow et al., 2016; Pierce & Lawhon, 2018),

[25] This research occurred in 2019 and 2020, just shortly after the LRT was operationalized. At this time, the ION was driving change, but realtor interviewees were still unsure how large of an impact the LRT had on the homebuying decision.

there is seemingly a far larger likelihood that cycling infrastructure would drive gentrification than property value decline. Despite the region's ongoing transit-induced gentrification (Doucet, 2021; Webber, 2022), bikelash perceptions are strong, illustrating the value in including diverse perspectives in the transportation planning process to ensure that we are building transportation that caters to community needs. In the case of the Region of Waterloo, while not an explicit takeaway, one could argue that the way cycling infrastructure was integrated into the larger transit system was not effectively serving the majority of the population, suburban middle-income homeowners and deeply marginalized residents.

5.1.3 Transit-Induced Gentrification: Perspectives and Experiences

In Chapter 4, this dissertation operationalized the growing call from transit-induced gentrification research to reconsider the empirical approaches we use when integrating transportation and movement into gentrification discussion (Baker & Lee, 2019; Bardaka et al., 2018; Dawkins & Moeckel, 2016; Deka, 2017). By using lived experience data, this manuscript investigates the consequences of transit-induced gentrification for deeply marginalized residents, contributing to the small but growing body of literature that engages equity-deserving perspectives to gain a rich understanding of how these changes directly impact an individual's life (Doucet, 2021; Doucet et al., 2022; C. E. Jones, 2023; C. E. Jones & Ley, 2016; Kushner, 2002; Schuch & Mushipe, 2024) and to highlight where intervention is needed. Where much of past research on transit-induced gentrification has focused on visible change, measurable impacts, and the physical displacement of residents, this work contributes to the study of less visible forms of change. Through individual stories and experiences, this research pieces together a complex system of impacts for residents that extends far beyond changes to physical infrastructure. These impacts affect their day-to-day interactions, through their ability to get around the city, and in their long-term planning goals, as neighbourhoods and even cities themselves are becoming inhospitable to extremely low-income residents.

While residents were able to maintain space physically, they shared that there is new pressure on them financially and socially, which is slowly pushing them out of the communities they call home. This work is important for planning research and practice because it stresses the necessity of including perspectives from groups that are traditionally excluded from the planning process. As it stands, without lived experience integration, we are not capturing the complex milieu that surrounds the integration of new transit infrastructure and the impact it has. Thus, the use of lived experience

data successfully addresses not only the political-economic impacts but also the more complex social implications.

Chapter 2 further contributes to our perceptions of transit-induced gentrification through the ridership experience. To date, little research has explored how deeply marginalized residents are impacted by the transit system itself. Not only are they facing the realities of gentrification, but also the transit infrastructure they are reliant on has actually worsened. As a result, this system is not getting them where they need to go and has been so deeply impacted by social change that residents do not feel welcome on the new infrastructure.

5.2 Theorizing Mobility Justice as a Tool for Transit-Related Neighbourhood Change

This dissertation contributes to the theorization of mobility justice Sheller (2018a) by applying it to the context of transit-related change in the Region of Waterloo. This work relies on and justifies the value of this theory, arguing that it is particularly helpful for interrogating our implicit biases as planners and researchers, created through experience and perceptions, while also weaving transportation into larger processes of social change. In looking at city-level change, mobility justice helps comprehend the different lived experiences and impacts. It also allows us to take a step back and consider how systems of inequity and disparity feed these impacts. As argued across all three manuscripts, the integration of transit infrastructure in a city does not happen in a stagnant vacuum, and the process through which we go about understanding the impact is not stagnant either. It is extremely messy and complex, with lived experience and positionality dictating how different community members can benefit from, or are negatively impacted by, change. It further helps us consider whose lived experiences are being prioritized, and how lived experiences can be positioned as truth by stakeholders and experts who hold a level of authority in conversations of transit.

In Chapter 2, residents shared that they are now actively avoiding public transit because of the changes to their commuting experience. That immobility and unevenness of experience is an important failure of justice in the planning process (Sheller, 2018a, 2018b). Mobility justice helped us realize that and pinpoint where in the process intervention is needed. As argued throughout this dissertation, mobilities offers a different way to consider how mobile spaces contribute to larger social, political, and economic inequities. Chapter 2 further operationalizes mobility justice's nested approach to justice (Sheller, 2018a) to propose actionable intervention throughout the planning

process. This work is guided by lived experience to consider how more diverse perspectives can better inform equitable planning practice.

Collectively, this dissertation demonstrates how planning researchers can consider lived experience and personal mobility to address issues of injustice rooted throughout the planning process. Using mobility justice, we can identify opportunities to integrate lived experience discussions in cities already experiencing the effects of transit-induced gentrification and suggest avenues for approaching transportation planning to reduce neighbourhood change effects. This has important implications for planning practice that will be further explored in the sections that follow. As such, this work joins the growing body of planning research that has integrated mobility justice to examine and propose solutions for complex planning problems (Bierbaum et al., 2021; Mahmoudi, 2020; Lenhoff et al., 2022; Petzer et al., 2020).

5.3 Limitations and Areas for Further Research

This research has made important theoretical, methods, and practical contributions that are helpful for adapting our approaches to transportation research. However, there are methodological and empirical limitations of this dissertation that present avenues for future research. The section that follows offers three limitations, justification and directions for future investigations.

5.3.1 Case Study

A concern that presented in various stages of this research was the potential limitations of using a relatively unknown mid-sized Canadian region as a case study to discuss a phenomenon more commonly associated with larger metropolitan areas. This is an important discussion in planning scholarship to ensure that the case study can be effectively leveraged to further planning research and practice. While discussions of the impact of public and active transportation have been centralized in major metropolitan areas, the shifting transportation planning climate has meant that more mid-sized cities are seeking TOD policies to transform their transit systems and undo some of the harmful urban sprawl that has historically shaped the suburban landscape.

As argued throughout this dissertation, the Region of Waterloo is a strong exemplar of the mid-sized perspective of new transit. To reiterate key features, the region has experienced significant development as a direct result of strategic transit investment to manage and attract growth. They did this by attracting and supporting a technological hub in Kitchener's urban core, the implementation of

a countryside line to separate urban and suburban from rural townships, and the focus of this dissertation, massive investment in transit infrastructure and surrounding urban redevelopment. The region's trajectory from degradation to gentrification is relatively mappable and representative of a potential trajectory for other North American cities looking to use transit as a growth tool.

Now more than ever, we are seeing cities large and small, turning to TOD and investing in public and active transit to support growth and city image building. Each city has a unique experience; however, the negative impacts that we are seeing in the research, which at the smaller scale are unused infrastructure (Chatman, 2013), to more extreme effects, such as transit-induced gentrification (Culver, 2017), are becoming trends. Waterloo Region thus presents a perfect storm example that should be reflected upon to help the region and similar cities that have progressed to this stage. It can also provide lessons in equitable transportation planning for cities and regions considering similar transportation planning approaches to transform core areas. While the case of Waterloo Region might not represent the same trajectories as other North American cities investing in transit infrastructure, it does offer lessons on the importance of considering the full diversity of public interests regarding transit.

Additional research is thus needed in other cities at various stages of TOD planning or transit-induced gentrification to understand how impacts differ, and to gain a more comprehensive understanding of the lived experiences of new transportation systems for all residents. While this dissertation may seem like a heavy criticism of TOD policies and new transit infrastructure, a healthy and accessible transit system is vital to managing population growth and supporting residents. As all three stakeholder groups shared, transportation, in all its forms, is fundamental to daily life. It would be valuable to engage this type of lived experience in a city currently redeveloping its transit systems to prioritize diverse interests throughout. For equity-deserving groups, traditional planning consultation methods are not effective, which means that we need more robust engagement systems to ensure that all groups are effectively able to participate (De Weger et al., 2022). As it stands, there is little research that has explored how systemic transformation to the consultation process affects transportation plans. For this research to be possible, it would require a collaborative approach from planners, researchers, and community groups to introduce, integrate and prioritize these voices and perspectives.

Similarly, additional research could explore attempts to mitigate the effects of transit-induced gentrification or other neighbourhood consequences in cities already impacted, to better understand how to renegotiate space to ensure that transit accessibility for all is a priority. While this research has proposed several avenues for intervention, it has not offered a planning-centred approach that considers how to reconfigure existing systems to extend accessibility without further inducing gentrification. Research like this would be especially topical in the Ontario context, in the face of Premier Doug Ford's Bill 212, which proposes widespread bike removal and a moratorium on new on-road bike lanes.

Finally, on the topic of methods, while this research offers a valuable contribution, there remains a need, identified in transportation and gentrification research, for more mixed methods approaches to integrate lived experience data with quantitative planning tools (Baker & Lee, 2019; Currans et al., 2019; Deka, 2017). The goal of this research was to capture a holistic perspective from a population in a city experiencing transportation investment to demonstrate the stark differences in experiences, the way different groups leverage their positionality, and the intensity of the load on deeply marginalized groups. This research, particularly the marginalized interview pool, is small and would have benefited from more widespread exploration and application.

5.3.2 Race, Neighbourhood Change, and New Transit investment

An important body of gentrification research explores the implications of race in neighbourhood change processes, with researchers arguing that racialized and ethnic communities have been disproportionately affected by processes like gentrification and displacement (Chronopoulos, 2020; Gibbons & Barton, 2016; Powell & Spencer, 2002). Similarly, research has explored the ways racialized communities have faced poorer public transit and active transit access and infrastructure (Archer, 2020; Carter, 2021; McFarlane, 2021; McKenzie, 2013), or worse ridership experiences (Lubitow, 2017; Lubitow et al., 2024) with cascading effects (Golub et al., 2013). Research has also found that race and ethnicity play into modal ridership, as bus users are disproportionately low-income and non-white. This contrasts with rail usage, which sees a higher proportion of white ridership (Taylor & Morris, 2015). However, in conversations of the impact of transit-induced gentrification and resultant shifts in daily mobility, racialized experiences are underexplored (Purifoye, 2020; Tehrani et al., 2019). As this dissertation argues, individual experiences and factors

shape perspectives of transit-induced gentrification, and thus the way race and ethnicity shape perceptions of this change is an important research avenue (Golub et al., 2013; Sandoval, 2021).

Further, as mobilities has argued, race and ethnicity also play a role in individual mobility, which is made more complicated by the possession of multiple identities (Munshi, 2015; Nicholson & Sheller, 2016) and needs to be explored in the context of transit-related change.

5.3.3 Social and Physical Displacement Within Transit-Induced Gentrification

Gentrification and displacement have been historically intertwined. Wherein gentrification can be understood as the process of neighbourhood change, displacement can be understood as the outmigration of residents (Slater, 2009). This can happen spatially, through a forced physical move (Marcuse, 1985), but can also present in non-spatial forms, wherein changes to neighbourhoods can put severe social pressures on residents (Kern, 2016; 2022; Elliott-Cooper et al., 2020). This can come in the form of community revitalization, leaving original residents feeling unwelcome, a loss of original culture, and pressures from landlords who attempt to convince or coerce residents into leaving (August & Walks, 2018; McDougall et al., 2023; Zigman & August, 2021). This has been followed by a fierce debate about a potential causal relationship between gentrification and displacement and the way that they have been approached by research (Shaw & Hagemans, 2015; Zuk et al., 2018). Some take issue with the presentation of displacement as an inherent by-product of gentrification, arguing that a causal relationship between gentrification and displacement is a misrepresentation (Freeman, 2005; Hamnett, 2003; Vigdor, 2002)[26].

As this research alludes to, transit-induced gentrification is undoubtedly a stressor for displacement (Lutz et al., 2024). While this research does not contribute to that larger theoretical discussion, it does begin to touch on several processes that are likely to induce physical displacement or contribute to feelings of non-spatial displacement. As discussed in Chapter 2 and Chapter 5, marginalized residents of the Region of Waterloo are feeling tension in their communities, exacerbated by the increased cost of living and desirability for core urban areas.

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[26] This argument has occurred within gentrification discussion, with some researchers looking to 'revitalization' as a better term to discuss the type of change that is happening. Under the revitalization argument, notable change is occurring to the communities effected, but minimal negative effects are experienced by original residents. While this argument is outside of the scope of this research, it is worth noting that revitalization arguments often leverage the lack of measurability associated with neighbourhood change processes like gentrification and displacement to argue that they are not happening.

As other transit-induced gentrification researchers have argued, including displacement in this current conversation is inherently difficult (Delmelle, 2021; Delmelle et al., 2021; Rayle, 2015; Zuk et al., 2018). We know that quantitative data is not effective enough to capture the complexities of displacement, as the way residents are displaced is not always measurable (Slater, 2009). Displacement can occur explicitly, as a forced physical move through a legal eviction, or it can happen more covertly, through social pressures or more covert eviction tactics (Atkinson, 2003; Shaw & Hagemans, 2015; McDougall et al., 2023). While the former is measurable and mappable (to an extent), the latter is not (Newman & Wyly, 2006). Despite the challenges, understanding the relationship between new transit infrastructure and displacement is significant in the discussion of equity and presents an important research frontier. This knowledge could play a significant role in better understanding how new transit infrastructure can effectively drive inaccessibility for equity-deserving groups that are pushed out of communities adjacent to new transit.

5.4 Implications for Planning Practice

As is the case for much of urban change research, contributions need to be considered in the scope of formal planning practice. Identifying the impact of new transit infrastructure on a community and the complex ways transit shifts community ethos is one step, but to effectively operationalize this work, it is necessary to consider how planning can begin to address these challenges. Drawing on critiques raised by Thurber et al. (2021) and Hackworth (2021), who argue that current solution spaces are too policy-focused, this dissertation contributes several solutions that capture the need for planning to explore implicit biases surrounding equity and a need to induce actionable change. As argued across the three manuscripts, two challenges face North American cities as they plan for and maintain new transportation. The first is mitigating or preventing the negative impacts of new transit infrastructure by adapting projects to ensure diverse perspectives influence the creation of policy and plans. The second is ensuring that monitoring systems are in place to adapt these structures to suit the needs of ridership and residents, but also to be constantly re-evaluating and recentring goals.

The section that follows explores implications for the formal planning process and the recommendations that have come from this research. This begins with an exploration of implications for planning and policymakers. It then explores the role that community-led partnerships can have in shaping the ability to approach transportation in a way that is more inclusive of community needs, especially for hard-to-reach groups that have been traditionally left out of the planning process.

5.4.1 Implications for the Formal Planning Process

It is tempting to lose hope that substantive change is possible, given the depth of the issues that we are seeing and the change that we are able to propose through research, which has the 'luxury' of overlooking the political and practical red tape that makes change in the planning process difficult. However, that bleak view of planning is no more helpful to change than is suggesting a fundamental shift in the way we conceptualize the role of planners and an overhaul of the formal planning process entirely (despite my desire to do so) (Huq, 2020). Instead, change is most impactful when it is process-oriented and incremental to challenge the system in the ways that it can, to encourage those in power to reflect on their own biases, and to start to bring about meaningful change. We cannot ignore the dominant ideologies that guide political processes, or the practical realities of neoliberal urbanism, which see the planning process as elicit in enforcing systems of inequity and injustice in transportation and beyond (Carr, 2012; Sandercock, 1998). Instead, we can target opportunities within the transportation planning process to bring about change.

The first point of intervention needs to happen at the beginning of a planning project, in the scoping stage. Through this dissertation, the argument that transit-induced gentrification cannot be accurately measured through quantitative approaches alone is pivotal in challenging the foundational approach to understanding community needs and impacts. Within planning practice, however, quantitative research methods have shaped data collection processes to measure perceived impact. Census data, inflation, business turnover rates, and population growth are all tools and measurement points that are used to consider change. This is paired with public forums for community members to share public opinions, barriers, and challenges. Yet, there is no formal system to *effectively* canvas communities that are not actively voicing their perspectives (J. Davis et al., 2021; Kempin Reuter, 2019; McCullough & van Stokkum, 2021).

Without a combination of research advancements and purposeful public participation opportunities for marginalized groups, these experiences will not be captured. Without evidence to suggest otherwise, the impact of new transit infrastructure will not be fully understood. This can be particularly harmful for cities currently in decline, which are using transit-oriented policies to revitalize their communities. This is also a concern for cities that lack strong transportation infrastructure, which may interpret any new system as a step in the right direction, even when not planned around community needs. It is necessary to shift approaches from listening to public opinion to critically analyzing what motivates these opinions.

The second point of change is offering more opportunities to include marginalized groups in the planning process (Doucet et al., 2022; Kushner, 2002; McDougall et al., 2022, 2023; Schuch & Mushipe, 2024). This can look like community partnerships, which will be explored in more detail below, but it can, and should, also come in the form of employing people from marginalized groups as experts to support the planning process more deeply from inception to operationalization. Giving a "seat at the table" to a representative of an equity-deserving group ensures a level of oversight and integration that pushes past traditional public participation models. This process has already started in our case study region. In the Region of Waterloo, we have seen several paid 'community connector' positions created, which seek individuals with lived experience in an equity-deserving group to support the planning process and voice concerns for underrepresented communities. In academia, a community connector is defined as a "member(s) of the community who enables the flow of information, resources and relationships across cultural, social and organisational boundaries" (Wallace et al., 2019, p. 367). As this dissertation contributes, even experts carry their own lived experiences, which can influence their ability to understand the ramifications of change. Fully integrating diverse perspectives provides a more robust understanding to challenge current practice and bring about necessary reform to planning strategies.

Perhaps an idealistic proposal, there is a need to shift prioritization around transit choice and transportation's role to conceptualize an accessible transit-first mindset, in cities integrating new infrastructure. This is in line with work conducted to date on transportation policy and outcomes. Taylor and Morris's (2015) research explores how equity and ridership needs are included in North American transportation plans, raising concerning results. Through a review of formal mission statements, they found an omission of directed language on the role that publicly owned transportation systems play in serving low-income groups or captive ridership.

> ….serving the needs of the poor and transit-dependent are not identified as a goal, even in the most general of terms, by the vast majority (86 %) of transit systems. Just four of the 50 agencies (8 %) explicitly identified this social service function, while just three others (6 %) vaguely alluded to it. Given the stark figures on transit riders'—particularly bus riders'—low-incomes, this omission is striking… While formal statements of mission, goals, and objectives are but one measure of a transit agency's intentions, transit agencies' actions—as reflected by their investment

> priorities—indicate that a relative neglect of poor riders is an omission in deed and not only in word. (p. 360)

Taylor and Morris go on to argue that while their work has found an inherent flaw in many North American publicly owned transit systems, the politicization of the planning process means that a focus on the needs of low-income or deeply marginalized communities could affect funding or further decline public opinion of transit. As such, we need to explore ways to ensure that transportation infrastructure, public and active, is uplifted and valued first for its ability to provide access, rather than for its potential to contribute to growth and development goals. That is not to say that transit cannot be integrated into larger redevelopment or smart growth projects, but it is to emphasize the need for inclusive community-centred work (Rose, 2016; Stacy et al., 2020), if equity is a goal. Despite how radical this goal may seem, we are seeing planning professionals acknowledging a need and calling for change. V. Davis (2023), Director of Transportation & Drainage Operations, Houston Public Works, for example, recently published her book *Inclusive Transportation: A manifesto for Repairing Divided Communities,* which calls for a paradigm shift in transportation planning that seeks to recentre equity-deserving groups by dismantling current systems that continue to produce inequity.

Looking to the case of Waterloo, which has experienced widespread change already, policy intervention is still an integral avenue to both mitigate effects and inform future policy. Recommendations from Chapter 2 are useful for cities that have already integrated new transportation and are seeing adverse community impacts. For these cities, policy intervention should focus on maintaining and increasing affordable housing stock in station-adjacent areas (Ellis-Young & Doucet, 2021) and integrating more comprehensive housing legislation that protects renters and disincentivizes landlords to push tenants out (McDougall et al., 2023). For cities currently planning new transit infrastructure, this can look like building up housing stock to be used for affordable housing in station neighbourhoods and revisiting housing policy to ensure original residents are protected as new transit infrastructure is integrated (Garde et al., 2024; Welch, 2013). As was the case in the Region of Waterloo, TOD projects are about much more than transportation, with impacts that extend far beyond travel.

5.4.2 Avenues for Community-Led Partnerships

This dissertation validates the necessity of partnership approaches with local community organizations to access difficult-to-reach populations. A community partnership approach was used in

this dissertation to engage with deeply marginalized Region of Waterloo residents in a way that best suited their needs. On a smaller scale, a partnership approach with the KW Realtors Association added validity to our call for realtor and developer participants.

Within planning practice, there is a need to integrate community-led partnerships into the consultation process to engage equity-deserving groups who face barriers to participation (Knight et al., 2023; Linovski & Baker, 2023; Martinez et al., 2024). As it stands, the communication, facilitation, and organization of formal planning participation have limited reach for equity-deserving groups. They are instead representative of a need to streamline the planning process, which currently prioritizes efficiency over "citizen empowerment" (De Weger et al., 2022, p. 685). For hard-to-reach populations, a system that prioritizes quantity over quality is inaccessible. As such, open invitations to attend public meetings or provide feedback on plans online are rarely seen or accepted by these groups.

In addition to structural barriers to participation, a further barrier comes from the distrust marginalized groups have towards decision makers (Laurian, 2009; Schul & Peri, 2015). As the informal conversations with social service workers have uncovered, this is at best the belief that marginalized citizens are excluded from the planning process, and at worst a genuine distrust stemming from concern that the government does not care about this group's needs. These perspectives were supported through conversations with marginalized individuals, who explained that they felt their voice did not matter, so they saw no value in participating. Additionally, many lack the capacity to pursue participation, unable to manage an additional task on top of their already difficult load. As a further observation, experiences and perceptions being shared were personal and brought to the surface intense emotions for participants (Shimmin et al., 2017). Many interviews were paused, questions were avoided, and tears were shed because for marginalized participants, questions related to transportation, housing and community impact connect to struggle and hardship. To add a more personal reason to avoid public participation, these experiences can be difficult to share.

This is all to say that community-led partnerships can help mitigate some of these concerns, offering residents a trusted avenue for participation if they choose. These partnerships can also alleviate the burden of individual participation (Ravensbergen & VanderPlaat, 2010), especially during initial change making as these groups can speak to fundamental intervention needed by the communities they work with and represent (Fung, 2015). While qualitative work and perspectives

from hard-to-reach groups are necessary for gaining a holistic understanding of experience and needed change (Gaber, 2020), interviews for the sake of interviews, without the support of community organizations, should be discouraged. In the Region of Waterloo, while the population of extremely low-income individuals continues to grow, per population, these numbers are still relatively small, and the number of people willing to engage in advocacy and research is even smaller. Over-sampling needs to be a concern.

Community partnerships are thus fundamental to begin to include hard-to-reach populations in the planning process and address several of the recommendations outlined in the formal planning section of this conclusion. Because of this, the way forward to including hard-to-reach groups in the planning process is through partnerships with trusted local community advocacy groups, organizations, and charities. It is necessary to emphasize, for the final time, that without the support and participation from these groups, this research would not have been possible. It is important to be reminded that we as researchers represent a system that has been historically exclusionary, and we have work to do to gain trust.

5.5 Conclusion

In conclusion, this work offers a number of important empirical, methodological, and theoretical contributions that should be used to inform planning practice. As we see a growing emphasis on the need to shift transportation planning away from automobility and towards more comprehensive travel, lived experience is a necessary tool to add to our planning toolkit (Gaber, 2020; Walker & East, 2014). Current attempts to integrate new infrastructure have induced unforeseen consequences. In the Waterloo Region case study, stakeholders involved in the ION project's perceptions of impact were much different from the lived experiences of deeply marginalized individuals. Similarly, homeowners and experts in real estate struggled to see the value of cycling infrastructure when most of it is concentrated in core areas. This was surprising for the region, which did not understand how transit infrastructure like cycling lanes can be polarizing. Perhaps the most harmful, conversations with deeply marginalized residents revealed that transit impacts affect them in visible and invisible ways – through their transit experiences and more complicated social and economic challenges. These impacts are a concern for any city looking to integrate new transit projects, but especially for those with visible signs of gentrification. Without an understanding of diverse perspectives, it is not possible to fully understand potential impacts and consequences. Further, to begin to think about

transit in a more just way, we need to take into account the way we prioritize (or avoid) these perspectives.

As it stands, in the case of Waterloo, and many cities across North America, current approaches often result in uneven mobilities (Sheller, 2018b), which effectively privilege the mobility of some and have the potential to drive immobility for others (Sheller & Urry, 2006). For lower-income and marginalized groups who are often the most likely to benefit from increased transit access but least likely to have access to it (Giuliano, 2005; Lubitow et al., 2017; Lucas, 2012; Moulding, 2005), the path forward remains unclear. This situation raises an important question of how cities should be approaching transportation projects in a way that is more inclusive of these findings. We, as planning researchers and practitioners, have made important strides in advancing public and active transit; steps are still needed to ensure equity is a priority feature of good transit.

References

Adey, P. (2006). If mobility is everything then it is nothing: Towards a relational politics of (im)mobilities. *Mobilities*, *1*(1), 75–94. https://doi.org/10.1080/17450100500489080

Adey, A. (2009). *Mobility*. Routledge.

Adli, S. N., & Chowdhury, S. (2021). A critical review of social justice theories in public transit planning. *Sustainability*, *13*(8), Article 4289. https://doi.org/10.3390/su13084289

Agyeman, J. (2008). Toward a 'just' sustainability? *Continuum*, *22*(6), 751–756. https://doi.org/10.1080/10304310802452487

Allen, J., & Farber, S. (2019). Sizing up transport poverty: a national scale accounting of low-income households suffering from inaccessibility in Canada, and what to do about it. *Transport Policy*, *7*4, 214–223. https://doi.org/10.1016/j.tranpol.2018.11.018

Allen, J., & Farber, S. (2020). Suburbanization of transport poverty. *Annals of the American Association of Geographers*, *111*(6), 1833–1850. https://doi.org/10.1080/24694452.2020.1859981

Anable, J. (2005). 'Complacent car addicts' or 'aspiring environmentalists'? Identifying travel behaviour segments using attitude theory. *Transport Policy*, *12*(1), 65–78. https://doi.org/10.1016/j.tranpol.2004.11.004

Anantharaman, M. (2022). Is it sustainable consumption or performative environmentalism? *Consumption and Society*, *1*(1), 120–143. https://doi.org/10.1332/LTTT8626

Appleyard, B. S., Frost, A. R., & Allen, C. (2019). Are all transit stations equal and equitable? Calculating sustainability, livability, health, & equity performance of smart growth & transit-oriented-development (TOD). *Journal of Transport & Health*, *14*, Article 100584. https://doi.org/10.1016/j.jth.2019.100584

Archer, D. N. (2020). "White men's roads through black men's homes": Advancing racial equity through highway reconstruction. *Vanderbilt Law Review*, *73*, Article 1259. https://scholarship.law.vanderbilt.edu/vlr/vol73/iss5/1

Ashmore, D. P., Pojani, D., Thoreau, R., Christie, N., & Tyler, N. A. (2019). Gauging differences in public transport symbolism across national cultures: Implications for policy development and

transfer. *Journal of Transport Geography*, *77*, 26–38. https://doi.org/10.1016/j.jtrangeo.2019.04.008

Atkinson, R. (2003). Introduction: Misunderstood saviour or vengeful wrecker? The many meanings and problems of gentrification. *Urban Studies*, *40*(12), 2343–2350. https://doi.org/10.1080/0042098032000136093

August, M. (2008). Social mix and Canadian public housing redevelopment: Experiences in Toronto. *Canadian Journal of Urban Research*, *17*(1), 82–100. https://www.jstor.org/stable/26193206

August, M., & Walks, A. (2018). Gentrification, suburban decline, and the financialization of multi-family rental housing: The case of Toronto. *Geoforum*, *89*, 124–136. https://doi.org/10.1016/j.geoforum.2017.04.011

Bagloee, S. A., Sarvi, M., & Wallace, M. (2016). Bicycle lane priority: Promoting bicycle as a green mode even in congested urban area. *Transportation Research Part A: Policy and Practice*, *87*, 102–121. https://doi.org/10.1016/j.tra.2016.03.004

Baker, D. M., & Lee, B. (2019). How does light rail transit (LRT) impact gentrification? Evidence from fourteen US urbanized areas. *Journal of Planning Education and Research*, *39*(1), 35–49. https://doi.org/10.1177/0739456X17713619

Banger, C. (2019, June 17). *Timeline: Looking back at a 17-year journey to ION*. CTV News. https://www.ctvnews.ca/kitchener/article/timeline-looking-back-at-a-17-year-journey-to-ion/

Barajas, J. M., & Braun, L. M. (2021). Are cycling and walking good for all? Tracking differences in associations among active travel, socioeconomics, gentrification, and self-reported health. *Journal of Transport & Health*, *23*, Article 101246. https://doi.org/10.1016/j.jth.2021.101246

Barbour, N., & Mannering, F. (2023). Intended cycling frequency and the role of happiness and environmental friendliness after COVID-19. *Scientific Reports*, *13*(1), Article 636. https://doi.org/10.1038/s41598-023-27681-6

Bardaka, E., Delgado, M. S., & Florax, R. J. (2018). Causal identification of transit-induced gentrification and spatial spillover effects: The case of the Denver light rail. *Journal of Transport Geography*, *71*, 15–31. https://doi.org/10.1016/j.jtrangeo.2018.06.025

Barich, L. (2021). *Old bones: A recent history of urban placemaking in Kitchener, Ontario through media analysis* [Master's thesis, University of Waterloo]. UWSpace. https://dspacemainprd01.lib.uwaterloo.ca/server/api/core/bitstreams/1f440a62-6235-495a-9dc6-6f26deac2ac8/content

Barri, E. Y., Farber, S., Kramer, A., Jahanshahi, H., Allen, J., & Beyazit, E. (2021). Can transit investments in low-income neighbourhoods increase transit use? Exploring the nexus of income, car-ownership, and transit accessibility in Toronto. *Transportation Research Part D: Transport and Environment*, *95*, Article 102849. https://doi.org/10.1016/j.trd.2021.102849

Beiler, M. O., & Mohammed, M. (2016). Exploring transportation equity: Development and application of a transportation justice framework. *Transportation Research part D: Transport and Environment*, *47*, 285–298. https://doi.org/10.1016/j.trd.2016.06.007

Bierbaum, A. H., Karner, A., & Barajas, J. M. (2021). Toward mobility justice: Linking transportation and education equity in the context of school choice. *Journal of the American Planning Association*, *87*(2), 197–210. https://doi.org/10.1080/01944363.2020.1803104

Boarnet, M. G. (2011). A broader context for land use and travel behavior, and a research agenda. *Journal of the American Planning Association*, *77*(3), 197–213. https://doi.org/10.1080/01944363.2011.593483

Bonevski, B., Randell, M., Paul, C., Chapman, K., Twyman, L., Bryant, J., Brozek, I., & Hughes, C. (2014). Reaching the hard-to-reach: A systematic review of strategies for improving health and medical research with socially disadvantaged groups. *BMC Medical Research Methodology*, *14*, Article 42. https://doi.org/10.1186/1471-2288-14-42

Bopp, M., Kaczynski, A. T., & Wittman, P. (2011). The relationship of eco-friendly attitudes with walking and biking to work. *Journal of Public Health Management and Practice*, *17*(5), 9–17. https://doi.org/10.1097/phh.0b013e31821138de

Boschken, H. L. (2003). Global cities, systemic power, and upper-middle-class influence. *Urban Affairs Review*, *38*(6), 808–830. https://doi.org/10.1177/1078087403038006003

Brown, J. R., Morris, E. A., & Taylor, B. D. (2009). Planning for cars in cities: Planners, engineers, and freeways in the 20th century. *Journal of the American Planning Association*, *75*(2), 161–177. https://doi.org/10.1080/01944360802640016

Bueckert, K. (2024, November 05). *New bike lane plan gets green light from regional councillors despite concerns over provincial approvals*. CBC News. https://www.cbc.ca/news/canada/kitchener-waterloo/region-waterloo-bike-lane-concept-plan-approved-at-committee-1.7374157

Buehler, R., & Pucher, J. (2012). Cycling to work in 90 large American cities: New evidence on the role of bike paths and lanes. *Transportation*, *39*, 409–432. https://doi.org/10.1007/s11116-011-9355-8

Bueno-Suárez, C., & Coq-Huelva, D. (2020). Sustaining what is unsustainable: A review of urban sprawl and urban socio-environmental policies in North America and Western Europe. *Sustainability*, *12*(11), Article 4445. https://doi.org/10.3390/su12114445

Bullard, R. D. (2003). Addressing urban transportation equity in the United States. *Fordham Urban Law Journal*, *31*, Article 1183. https://ir.lawnet.fordham.edu/ulj/vol31/iss5/2

Bullard, R. D. (2005). All transit is not created equal. *Race, Poverty & the Environment*, *12*(1), 9–12. https://www.jstor.org/stable/41555221

Bunting, T. E., & Filion, P. (1999). Dispersed city form in Canada: A Kitchener CMA case example. *Canadian Geographer*, *43*(3), 268–287. https://doi.org/10.1111/j.1541-0064.1999.tb01385.x

Bunting, T. E., Filion, P., Hoernig, H., Seasons, M., & Lederer, J. (2007). Density, size, dispersion: Towards understanding the structural dynamics of mid-size cities. *Canadian Journal of Urban Research*, *16*(2), 27–52. https://www.jstor.org/stable/26189240

Büscher, M., & Urry, J. (2009). Mobile methods and the empirical: What is the empirical? *European Journal of Social Theory*, *12*(1), 99–116. https://doi.org/10.1177/1368431008099642

Büscher, M., Urry, J., & Witchger, K. (Eds.). (2011). *Mobile methods*. Routledge.

Calthorpe, P. (2011). *Urbanism in the age of climate change.* Island Press. https://link.springer.com/book/10.5822/978-1-61091-005-7

Canada Mortgage and Housing Corporation. (2024). *Fall 2024 rental market report: Kitchener-Cambridge-Waterloo*. https://www.cmhc-schl.gc.ca/professionals/housing-markets-data-and-research/market-reports/rental-market-reports-major-centres?selected=kitchenerCambridgeWaterlooDiv

Cantilina, K., Daly, S. R., Reed, M. P., & Hampshire, R. C. (2021). Approaches and barriers to addressing equity in transportation: Experiences of transportation practitioners. *Transportation Research Record*, *2675*(10), 972–985. https://doi.org/10.1177/03611981211014533

Carnaby, S. (1997). 'What do you think?': A qualitative approach to evaluating individual planning services. *Journal of Intellectual Disability Research*, *41*(3), 225–231. https://doi.org/10.1111/j.1365-2788.1997.tb00701.x

Carnoske, C., C. Hoehner, N. Ruthmann, L. Frank, S. Handy, J. Hill, S. Ryan, J. Sallis, K. Glanz & R. Brownson. (2010). Developer and realtor perspectives on factors that influence development, sale, and perceived demand for activity-friendly communities. *Journal of Physical Activity and Health 7(*1), S48–S59. https://doi.org/10.1123/jpah.7.s1.s48

Carr, J. (2012). Public input/elite privilege: The use of participatory planning to reinforce urban geographies of power in Seattle. *Urban Geography*, *33*(3), 420–441. https://doi.org/10.2747/0272-3638.33.3.420

Carter, D. R., Jr. (2021). Our work is never done: Examining equity impacts in public transportation. *Transportation Research Record*, *2675*(1), 1–9. https://doi.org/10.1177/0361198120976329

Cervero, R. (2006). Effects of light and commuter rail transit on land prices: experiences in San Diego County. *Journal of the Transportation Research Forum*, *43*(117765), 121–138. https://escholarship.org/uc/item/75n1b5xc

Cervero, R., & Duncan, M. (2002). Transit's value-added effects: Light and commuter rail services and commercial land values. *Transportation Research Record*, *1805*(1), 8–15. https://doi.org/10.3141/1805-02

Cervero, R., & Murakami, J. (2009). Rail and property development in Hong Kong: Experiences and extensions. *Urban Studies*, 46, 2019–2043. https://doi.org/10.1177/0042098009339431

Cervero, R., & Sullivan, C. (2011). Green TODs: Marrying transit-oriented development and green urbanism. *International Journal of Sustainable Development & World Ecology*, *18*(3), 210–218. https://doi.org/10.1080/13504509.2011.570801

Chatman, D. G. (2013). Does TOD need the T? On the importance of factors other than rail access. *Journal of the American Planning Association*, *79*(1), 17–31. https://doi.org/10.1080/01944363.2013.791008

Chava, J., Newman, P., & Tiwari, R. (2018). Gentrification of station areas and its impact on transit ridership. *Case Studies on Transport Policy*, *6*(1), 1–10. https://doi.org/10.1016/j.cstp.2018.01.007

Chronopoulos, T. (2020). "What's happened to the people?" Gentrification and racial segregation in Brooklyn. *Journal of African American Studies*, *24*, 549–572. https://doi.org/10.1007/s12111-020-09499-y

Collins, B., & Doroteo, N. (2024). Skeptics, progressives, and adoptees: The constituencies of public transit and their perceptions of place along the Los Angeles Purple Line. *Journal of Urban Affairs*, 1–16. https://doi.org/10.1080/07352166.2024.2317230

Cook, N., & Butz, D. (Eds.). (2018). *Mobilities, mobility justice and social justice.* Routledge.

Crane, R. (1996). Cars and drivers in the new suburbs: Linking access to travel in neotraditional planning. *Journal of the American Planning Association*, *62*(1), 51–65. https://doi.org/10.1080/01944369608975670

Cresswell, T. (2006). *On the move: Mobility in the modern western world*. Taylor & Francis.

Cresswell, T. (2008). The production of mobilities. In T. Oakes & P. L. Price (Eds.), *The cultural geography reader* (pp. 337–345). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203931950-55/production-mobilities-tim-cresswell

Cresswell, T. (2010). Towards a politics of mobility. *Environment and Planning D: Society and Space*, *28*(1), 17–31. https://doi.org/10.1068/d11407

Culver, G. (2017). Mobility and the making of the neoliberal "creative city": The streetcar as a creative city project? *Journal of Transport Geography*, *58*, 22–30. https://doi.org/10.1016/j.jtrangeo.2016.11.005

Currans, K. M., Nelson, A. C., & Chambers, S. (2019). A framework to operationalize a deep and vast literature for practice: Translating land value uplift literature to estimate economic impacts of multimodal transportation system projects. *Transportation Research Record*, *2673*(8), 62–72. https://doi.org/10.1177/0361198119839979

Daley, M., & Rissel, C. (2011). Perspectives and images of cycling as a barrier or facilitator of cycling. *Transport Policy*, *18*(1), 211–216. https://doi.org/10.1016/j.tranpol.2010.08.004

Danyluk, M., & Ley, D. (2007). Modalities of the new middle class: Ideology and behaviour in the journey to work from gentrified neighbourhoods in Canada. *Urban Studies*, *44*(11), 2195–2210. https://doi.org/10.1080/00420980701520277

Davidson, M., & Lees, L. (2005). New-build 'gentrification' and London's riverside renaissance. *Environment and Planning A*, *37*(7), 1165–1190. https://doi.org/10.1068/a3739

Davis, J., Pijawka, K. D., Wentz, E., Hale, M., & King, D. A. (2021). Evaluating geodesign for community-based tribal planning: The role of planners in marginalized communities. *Journal of the American Planning Association*, *87*(4), 527–541. https://doi.org/10.1080/01944363.2021.1873168

Davis, V. (2023). *Inclusive transportation: A manifesto for repairing divided communities.* Island Press. https://islandpress.org/books/inclusive-transportation#desc

Dawkins, C., & Moeckel, R. (2016). Transit-induced gentrification: Who will stay, and who will go? *Housing Policy Debate*, *26*(4-5), 801–818. https://doi.org/10.1080/10511482.2016.1138986

De Weger, E., Baan, C., Bos, C., Luijkx, K., & Drewes, H. (2022). 'They need to ask me first'. Community engagement with low-income citizens. A realist qualitative case-study. *Health Expectations*, *25*(2), 684–696. https://doi.org/10.1111/hex.13415

Deka, D. (2017). Benchmarking gentrification near commuter rail stations in New Jersey. *Urban Studies*, *54*(13), 2955–2972. https://doi.org/10.1177/0042098016664830

Delbosc, A., & Currie, G. (2011). Using Lorenz curves to assess public transport equity. *Journal of Transport Geography*, *19*(6), 1252–1259. https://doi.org/10.1016/j.jtrangeo.2011.02.008

Delmelle, E. C. (2021). Transit-induced gentrification and displacement: The state of the debate. In R. H. M. Pereira & G. Boisjoly (Eds.), *Advances in transport policy and planning* (Vol. 8, pp. 173–190). Academic Press. https://doi.org/10.1016/bs.atpp.2021.06.005

Delmelle, E. C., Nilsson, I., & Bryant, A. (2021). Investigating transit-induced displacement using eviction data. *Housing Policy Debate*, *31*(2), 326–341. https://doi.org/10.1080/10511482.2020.1815071

Delmelle, E., & Nilsson, I. (2020). New rail transit stations and the out-migration of low-income residents. *Urban Studies*, *57*(1), 134–151. https://doi.org/10.1177/0042098019836631

Dittmar, H., & Poticha, S. (2004). Defining transit-oriented development: The new regional building block. In H. Dittmar & G. Ohland (Eds.), *The new transit town: Best practices in transit-oriented development* (pp. 20–55). Island Press.

Dong, H. (2017). Rail-transit-induced gentrification and the affordability paradox of TOD. *Journal of Transport Geography*, 63, 1–10. https://doi.org/10.1016/j.jtrangeo.2017.07.001

Doucet, B. (2021). The 'hidden' sides of transit-induced gentrification and displacement along Waterloo Region's LRT corridor. *Geoforum*, *125*, 37–46. https://doi.org/10.1016/j.geoforum.2021.06.013

Doucet, B., Diwan, F., Turman, W., Mehta, N., & Petrovic, A. (2022). Mapping displacement through lived experiences: Countermapping transit-induced gentrification in Kitchener-Waterloo, ON. *Radical Housing Journal. 4*(2), 67–87. https://doi.org/10.54825/JXKI5234

Duany, A., Plater-Zyberk, E., & Speck, J. (2000). *Suburban nation: The rise of sprawl and the decline of the American dream*. Macmillan.

Duarte, F., Procopiuck, M., & Fujioka, K. (2014). 'No bicycle lanes!' Shouted the cyclists. A controversial bicycle project in Curitiba, Brazil. *Transport Policy*, *32*, 180–185. https://doi.org/10.1016/j.tranpol.2014.01.010

Duncan, M. (2011). The synergistic influence of light rail stations and zoning on home prices. *Environment and Planning A*, *43*(9), 2125–2142. https://doi.org/10.1068/a43406

Duncan, M. (2019). Would the replacement of park-and-ride facilities with transit-oriented development reduce vehicle kilometers traveled in an auto-oriented US region? *Transport Policy*, *81*, 293–301. https://doi.org/10.1016/j.tranpol.2017.12.005

Elliott-Cooper, A., Hubbard, P., & Lees, L. (2020). Moving beyond Marcuse: Gentrification, displacement and the violence of un-homing. *Progress in Human Geography*, *44*(3), 492–509. https://doi.org/10.1177/0309132519830511

Ellis-Young, M., & Doucet, B. (2021). From "big small town" to "small big city": Resident experiences of gentrification along Waterloo region's LRT corridor. *Journal of Planning Education and Research*, *44*(1), 416–430. https://doi.org/10.1177/0739456X21993914

English, J. (2011, July 28). Kitchener meets its Waterloo. *Macleans*. https://macleans.ca/news/canada/kitchener-meets-its-waterloo/

Enright, T. (2019). Transit justice as spatial justice: Learning from activists. *Mobilities*, *14*(5), 665–680. https://doi.org/10.1080/17450101.2019.1607156

Everuss, L. (2020). The new mobilities paradigm and social theory. In A. Elliott (Ed.), *Routledge handbook of social and cultural theory* (2nd ed., pp. 287–305). Routledge.

Fang, D., Xue, Y., Cao, J., & Sun, S. (2021). Exploring satisfaction of choice and captive bus riders: an impact asymmetry analysis. *Transportation Research Part D: Transport and Environment*, *93*, Article 102798. https://doi.org/10.1016/j.trd.2021.102798

Farmer, S. (2011). Uneven public transportation development in neoliberalizing Chicago, USA. *Environment and Planning A*,*43*(5), 1154–1172. https://doi.org/10.1068/a43409

Featherstone, M., Urry, J., & Thrift, N. (2005). *Automobilities.* Sage.

Field, A., Wild, K., Woodward, A., Macmillan, A., & Mackie, H. (2018). Encountering bikelash: Experiences and lessons from New Zealand communities. *Journal of Transport & Health*, *11*, 130–140. https://doi.org/10.1016/j.jth.2018.10.003

Filion, P., & Bunting, T. E. (1993). Local power and its limits: Three decades of attempts to revitalize Kitchener's CBD. *Urban History Review*, *22*(1), 4–16. https://doi.org/10.7202/1016718ar

Filion, P., & Hammond, K. (2008). When planning fails: Downtown malls in mid-size cities. *Canadian Journal of Urban Research*, *17*(2), 1–27. https://www.jstor.org/stable/26193214

Filion, P., Hoernig, H., Bunting, T., & Sands, G. (2004). The successful few: Healthy downtowns of small metropolitan regions. *Journal of the American Planning Association*, *70*(3), 328–343. https://doi.org/10.1080/01944360408976382

Finio, N. (2022). Measurement and definition of gentrification in urban studies and planning. *Journal of Planning Literature*, *37(*2), 249–264. https://doi.org/10.1177/08854122211051603

Flanagan, E., Lachapelle, U., & El-Geneidy, A. (2016). Riding tandem: Does cycling infrastructure investment mirror gentrification and privilege in Portland, OR and Chicago, IL? *Research in Transportation Economics*, *60*, 14–24. https://doi.org/10.1016/j.retrec.2016.07.027

Freeman, L. (2005). Displacement or succession? Residential mobility in gentrifying neighborhoods. *Urban Affairs Review*, *40*(4), 463–491. https://doi.org/10.1177/1078087404273341

Fung, A. (2015). Putting the public back into governance: The challenges of citizen participation and its future. *Public administration review*, *75*(4), 513–522. https://doi.org/10.1111/puar.12361

Gaber, J. (2020). *Qualitative analysis for planning & policy: Beyond the numbers*. Routledge.

Garde, A., Jamme, H. T., Toney, B., Bahl, D., & Banerjee, T. (2024). Can TODS include affordable housing? The Southern California experience. *Journal of the American Planning Association*, *90*(2), 303–317. https://doi.org/10.1080/01944363.2023.2236586

Gardner, G. (1998). When cities take bicycles seriously. *World Watch*, *11*(5), 16–19.

Garrett, M., & Taylor, B. (1999). Reconsidering social equity in public transit. *Berkeley Planning Journal*, *13*(1), 6–27. https://doi.org/10.5070/BP313113028

Gibbons, J., & Barton, M. S. (2016). The association of minority self-rated health with black versus white gentrification. *Journal of Urban Health*, *93*, 909–922. https://doi.org/10.1007/s11524-016-0087-0

Giuliano, G. (2005). Low-income, public transit, and mobility. *Transportation Research Record*, *1927*(1), 63–70. https://doi.org/10.1177/0361198105192700108

Glaeser, E. L., Kahn, M. E., & Rappaport, J. (2008). Why do the poor live in cities? The role of public transportation. *Journal of Urban Economics*, *63*(1), 1–24. https://doi.org/10.1016/j.jue.2006.12.004

Goetz, A. R., Vowles, T. M., & Tierney, S. (2009). Bridging the qualitative-quantitative divide in transport geography. *The Professional Geographer*, *61*(3), 323–335. https://doi.org/10.1080/00330120902931960

Golub, A., Marcantonio, R. A., & Sanchez, T. W. (2013). Race, space, and struggles for mobility: Transportation impacts on African Americans in Oakland and the East Bay. *Urban Geography*, *34*(5), 699–728. https://doi.org/10.1080/02723638.2013.778598

Gössling, S. (2016). Urban transport justice. *Journal of Transport Geography*, *54*, 1–9. https://doi.org/10.1016/j.jtrangeo.2016.05.002

Grodach, C., Foster, N., & Murdoch, J. (2014). Gentrification and the artistic dividend: The role of the arts in neighborhood change. *Journal of the American Planning Association*, *80*(1), 21–35. https://doi.org/10.1080/01944363.2014.928584

Grubb, W. N. (1982). The flight to the suburbs of population and employment, 1960–1970. *Journal of Urban Economics*, *11*(3), 348–367. https://doi.org/10.1016/0094-1190(82)90080-8

Grube-Cavers, A., & Patterson, Z. (2015). Urban rapid rail transit and gentrification in Canadian urban centres: A survival analysis approach. *Urban Studies*, *52*(1), 178–194. https://doi.org/10.1177/0042098014524287

Guo, Y., Chen, Z., Stuart, A., Li, X., & Zhang, Y. (2020). A systematic overview of transportation equity in terms of accessibility, traffic emissions, and safety outcomes: From conventional to emerging technologies. *Transportation Research Interdisciplinary Perspectives*, *4*, Article 100091. https://doi.org/10.1016/j.trip.2020.100091

Hackworth, J. (2021). W. E. B. Du Bois and the urban political economy tradition in geography. *Progress in Human Geography*, *45*(5), 1022–1039. https://doi.org/10.1177/0309132520988358

Hamnett, C. (2003). Gentrification and the middle-class remaking of inner London, 1961-2001. *Urban Studies*, *40*(12), 2401–2426. https://doi.org/10.1080/0042098032000136138

Hananel, R., & Berechman, J. (2016). Justice and transportation decision-making: The capabilities approach. *Transport Policy*, *49*, 78–85. https://doi.org/10.1016/j.tranpol.2016.04.005

Handy, S., van Wee, B., & Kroesen, M. (2014). Promoting cycling for transport: Research needs and challenges. *Transport Reviews*, *34*(1), 4–24. https://doi.org/10.1080/01441647.2013.860204

Hannam, K., Sheller, M., & Urry, J. (2006). Mobilities, immobilities and moorings. *Mobilities*, *1*(1), 1–22. https://doi.org/10.1080/17450100500489189

Hanson, S. (2017). Introducing urban transportation. In G. Giuliano & S. Hanson (Eds.), *The geography of urban transportation* (pp. 3–33). Guilford Press.

Hardinghaus, M., Nieland, S., Lehne, M., & Weschke, J. (2021). More than bike lanes—a multifactorial index of urban bikeability. *Sustainability*, *13*(21), Article 11584. https://doi.org/10.3390/su132111584

Haxhija, S., Duran-Rodas, D., Larriva, M. T. B., & Wulfhorst, G. (2024). A mobility justice framework to prioritize areas for mobility interventions. *Research in Transportation Business & Management*, *56*, Article 101192. https://doi.org/10.1016/j.rtbm.2024.101192

Heining, D. (1998). Cars and girls: The car, masculinity and pop music. In D. Thoms & L. Holden (Eds.), *The motor car and popular culture in the 20th century* (pp. 96–117). Routledge.

Henderson, J. (2016). The politics of mobility: De-essentializing automobility and contesting urban space. In A. T. McLaren (Ed.), *Car troubles* (pp. 147–164). Routledge.

Hensher, D. A. (2007). Sustainable public transport systems: Moving towards a value for money and network-based approach and away from blind commitment. *Transport Policy*, *14*(1), 98–102. https://doi.org/10.1016/j.tranpol.2006.10.004

Hewitt, C. M., & Hewitt, W. E. (2012). The effect of proximity to urban rail on housing prices in Ottawa. *Journal of Public Transportation*, *15*(4), 43–65. https://doi.org/10.5038/2375-0901.15.4.3

Higashide, S, (2019). *Better buses*, *better cities*. Springer. https://link.springer.com/book/10.5822/978-1-64283-015-6

Higgins, C. D., & Kanaroglou, P. S. (2016). Infrastructure or attraction? Image-led planning and the intangible objectives of rapid transit projects. *Journal of Planning Literature*, *31*(4), 452–462. https://doi.org/10.1177/0885412216667899

Hirsch, D., Padley, M., Stone, J., & Valadez-Martinez, L. (2020). The low income gap: A new indicator based on a minimum income standard. *Social Indicators Research*, *149*(1), 67–85. https://doi.org/10.1007/s11205-019-02241-6

Hrelja, R., & Rye, T. (2023). Decreasing the share of travel by car. Strategies for implementing 'push' or 'pull' measures in a traditionally car-centric transport and land use planning. *International Journal of Sustainable Transportation*, *17*(5), 446–458. https://doi.org/10.1080/15568318.2022.2051098

Huang, Y., Parker, D. C., Babin, R., & Kong, F. (2024). Causal identification of transit-induced property value uplift in Canada's Waterloo Region: A spatio-temporal difference-in-differences method application. *Cities*, *145*, Article 104676. https://doi.org/10.1016/j.cities.2023.104676

Huang, Y., Parker, D., & Minaker, L. (2021). Identifying latent demand for transit-oriented development neighbourhoods: Evidence from a mid-sized urban area in Canada. *Journal of Transport Geography*, *90*, Article 102940. https://doi.org/10.1016/j.jtrangeo.2020.102940

Huq, E. (2020). Seeing the insurgent in transformative planning practices. *Planning Theory*, *19*(4), 371–391. https://doi.org/10.1177/1473095219901290

Iacobucci, E. (2016). *Understanding attitudes and perceptions of public transport: Investigation through social media and conceptual analysis* [Doctoral dissertation, State University of New York at Buffalo]. ProQuest. https://www.proquest.com/openview/6b53c09f61077be51101674b2ae00c19

Immergluck, D., & Balan, T. (2018). Sustainable for whom? Green urban development, environmental gentrification, and the Atlanta Beltline. *Urban Geography*, *39*(4), 546–562. https://doi.org/10.1080/02723638.2017.1360041

Inwood, J. F., Alderman, D., & Williams, J. (2015). "Where do we go from here?": Transportation justice and the struggle for equal access. *Southeastern Geographer*, *55*(4), 417–433. https://www.jstor.org/stable/26233754

Jacobs, J. (1992). *The death and life of great American cities*. Vintage Books. (Original work published 1961)

Jensen, A. (2011). Mobility, space and power: On the multiplicities of seeing mobility. *Mobilities*, *6*(2), 255–271. https://doi.org/10.1080/17450101.2011.552903

Jones, C. E. (2023). Transit-oriented development and suburban gentrification: A “natural reality” of refugee displacement in metro Vancouver. *Housing Policy Debate*, *33*(3), 533–552. https://doi.org/10.1080/10511482.2020.1839935

Jones, C. E., & Ley, D. (2016). Transit-oriented development and gentrification along Metro Vancouver's low-income SkyTrain corridor. *The Canadian Geographer*, *60*(1), 9–22. https://doi.org/10.1111/cag.12256

Jones, D. W. (2010). *Mass motorization and mass transit: An American history and policy analysis*. Indiana University Press. https://iupress.org/9780253221711/mass-motorization-and-mass-transit/

Joo, J. (2007). The impact of the automobile and its culture in the US. *International Area Review*, *10*(1), 39–54. https://doi.org/10.1177/223386590701000103

Kafura, C. (2021). *Are urbanites willing to ditch cars for more sustainable commutes?* Chicago Council on Global Affairs. https://coilink.org/20.500.12592/s5d0r5

Kahn, M. E. (2007). Gentrification trends in new transit-oriented communities: Evidence from 14 cities that expanded and built rail transit systems. *Real Estate Economics*, *35*(2), 155–182. https://doi.org/10.1111/j.1540-6229.2007.00186.x

Kamruzzaman, M., Baker, D., Washington, S., & Turrell, G. (2016). Determinants of residential dissonance: Implications for transit-oriented development in Brisbane. *International Journal of Sustainable Transportation*, *10*(10), 960–974. https://doi.org/10.1080/15568318.2016.1191094

Karam, S., & Ryerson, M. S. (2023). Operating at the individual level: A review of literature and a research agenda to support needs-forward models of transport resource allocation. *Transportation Research Interdisciplinary Perspectives*, *21*, Article 100887. https://doi.org/10.1016/j.trip.2023.100887

Karner, A., Bills, T., & Golub, A. (2023). Emerging perspectives on transportation justice. *Transportation Research part D: Transport and Environment*, *116*, Article 103618. https://doi.org/10.1016/j.trd.2023.103618

Karner, A., London, J., Rowangould, D., & Manaugh, K. (2020). From transportation equity to transportation justice: Within, through, and beyond the state. *Journal of Planning Literature*, *35*(4), 440–459. https://doi.org/10.1177/0885412220927691

Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: Mobility as capital. *International Journal of Urban and Regional Research*, *28*(4), 745–756. https://doi.org/10.1111/j.0309-1317.2004.00549.x

Keil, R., & Addie, J. P. D. (2015). 'It's not going to be suburban, it's going to be all urban': Assembling post-suburbia in the Toronto and Chicago Regions. *International Journal of Urban and Regional Research*, *39*(5), 892–911. https://doi.org/10.1111/1468-2427.12303

Kempin Reuter, T. (2019). Human rights and the city: Including marginalized communities in urban development and smart cities. *Journal of Human Rights*, *18*(4), 382–402. https://doi.org/10.1080/14754835.2019.1629887

Kern, L. (2016), Rhythms of gentrification: eventfulness and slow violence in a happening neighbourhood. *Cultural Geographies*, *23*(3), 441–457. https://doi.org/10.1177/1474474015591489

Kern, L. (2022). *Gentrification is inevitable and other lies*. Verso Books.

Kesselring, S. (2015). Corporate mobilities regimes. Mobility, power and the socio-geographical structurations of mobile work. *Mobilities*, *10*(4), 571–591. https://doi.org/10.1080/17450101.2014.887249

Kiani, B., Thierry, B., Apparicio, P., Firth, C., Fuller, D., Winters, M., & Kestens, Y. (2024). Associations between gentrification, census tract-level socioeconomic status, and cycling infrastructure expansions in Montreal, Canada. *SSM-Population Health*, *25*, Article 101637. https://doi.org/10.1016/j.ssmph.2024.101637

Knaap, G. J., Ding, C., & Hopkins, L. D. (2001). Do plans matter? The effects of light rail plans on land values in station areas. *Journal of Planning Education and Research*, *21*(1), 32–39. https://doi.org/10.1177/0739456X0102100103

Knight, K., Love, M., Williams, J., & Vargas, M. (2023). Central coast regional equity initiative: Co-creating and actionizing a new community-led equity framework. *Social Sciences*, *12*(8), Article 441. https://doi.org/10.3390/socsci12080441

Knowles, R. D., & Ferbrache, F. (2016). Evaluation of wider economic impacts of light rail investment on cities. *Journal of Transport Geography*, *54*, 430–439. https://doi.org/10.1016/j.jtrangeo.2015.09.002

Koglin, T. (2015). Vélomobility and the politics of transport planning. *GeoJournal*, *80*(4), 569–586. https://doi.org/10.1007/s10708-014-9565-7

Kramer, A. (2018). The unaffordable city: Housing and transit in North American cities. *Cities*, *83*, 1–10. https://doi.org/10.1016/j.cities.2018.05.013

Kushner, J. A. (2002). Smart growth, new urbanism and diversity: Progressive planning movements in America and their impact on poor and minority ethnic populations. *UCLA Journal of Environmental Law and Policy*, *21*, 45–50. https://doi.org/10.5070/L5211019395

Larsen, J., & Urry, J. (2016). *Mobilities, networks, geographies*. Routledge.

Laurian, L. (2009). Trust in planning: Theoretical and practical considerations for participatory and deliberative planning. *Planning Theory & Practice*, *10*(3), 369–391. https://doi.org/10.1080/14649350903229810

Lenhoff, S. W., Singer, J., Stokes, K., Mahowald, J. B., & Khawaja, S. (2022). Beyond the bus: Reconceptualizing school transportation for mobility justice. *Harvard Educational Review*, *92*(3), 336–360. https://doi.org/10.17763/1943-5045-92.3.336

Lewis, P. G. (2015). Moral intuitions and smart growth: Why do liberals and conservatives view compact development so differently? *Journal of Urban Affairs*, *37*(2), 87–108. https://doi.org/10.1111/juaf.12172

Li, & Wyczalkowski, C. K. (2023). How buses alleviate unemployment and poverty: Lessons from a natural experiment in Clayton County, GA. *Urban Studies*, *60*(13), 2632–2650. https://doi.org/10.1177/00420980231159569

Linovski, O., & Baker, D. M. (2023). Community-designed participation: Lessons for equitable engagement in transportation planning. *Transportation Research Record*, *2677*(6), 172–181. https://doi.org/10.1177/03611981221145131

Litman, T. M. (2022). Evaluating transportation equity: Guidance for incorporating distributional impacts in transport planning. *Institute of Transportation Engineers. ITE Journal*, *92*(4), 43–49. https://vtpi.org/Litman_ITEJ_Equity_Apr2022.pdf

Liu, D., & Kwan, M.-P. (2020). Measuring spatial mismatch and job access inequity based on transit based job accessibility for poor job seekers. *Travel Behaviour and Society*, *19*, 184–193. https://doi.org/10.1016/j.tbs.2020.01.005

Loong, C., van Lierop, D., & El-Geneidy, A. (2017). The path of least resistance: Identifying supporters of public and active transportation projects. *Transportation Research Record*, *2666*(1), 94–102. https://doi.org/10.3141/2666-11

Loukaitou-Sideris, A., Gonzalez, S., & Ong, P. (2019). Triangulating neighborhood knowledge to understand neighborhood change: Methods to study gentrification. *Journal of Planning Education and Research*, *39*(2), 227–242. https://doi.org/10.1177/0739456X17730890

Lubitow, A. (2017). *Narratives of marginalized cyclists: Understanding obstacles to utilitarian cycling among women and minorities in Portland, OR* (No. NITC-SS-994). National Institute for Transportation and Communities. http://nitc.trec.pdx.edu/research/project/994

Lubitow, A., Johnson, E., & Pierce Jr, V. V. (2024). Unequal realities and racialized geographies: Men of color biking in Portland. *Journal of Race, Ethnicity and the City*, *5*(2), 191–206. https://doi.org/10.1080/26884674.2023.2279321

Lubitow, A., Rainer, J., & Bassett, S. (2017). Exclusion and vulnerability on public transit: Experiences of transit dependent riders in Portland, Oregon. *Mobilities*, *12*(6), 924–937. https://doi.org/10.1080/17450101.2016.1253816

Lubitow, A., Tompkins, K., & Feldman, M. (2019). Sustainable cycling for all? Race and gender–based bicycling inequalities in Portland, Oregon. *City & Community*, *18*(4), 1181–1202. https://doi.org/10.1111/cico.12470

Lubitow, A., Zinschlag, B., & Rochester, N. (2016). Plans for pavement or for people? The politics of bike lanes on the 'Paseo Boricua' in Chicago, Illinois. *Urban Studies*, *53*(12), 2637–2653. https://doi.org/10.1177/0042098015592823

Lucas, K. (2012). Transport and social exclusion: Where are we now? *Transport Policy*, *20*, 105–113. https://doi.org/10.1016/j.tranpol.2012.01.013

Lund, H. (2006). Reasons for living in a transit-oriented development, and associated transit use. *Journal of the American Planning Association*, *72*(3), 357–366. https://doi.org/10.1080/01944360608976757

Lutz, E., Wicki, M., & Kaufmann, D. (2024). Creating inequality in access to public transit? Densification, gentrification, and displacement. *Environment and Planning B: Urban Analytics and City Science*, *51*(9), 2196–2212. https://doi.org/10.1177/23998083241242883

Macmillen, J. (2013). Mobility as a complex system: Key elements and interactions. In M. Givoni, & D. Banister (Eds.), *Moving towards low carbon mobility* (pp. 190–206). Elgar Publishing Limited.

Mahmoudi, D. (2020). The sustainability fix and barriers to urban mobility in Portland, Oregon. *Urban Geography*, *41*(6), 801–822. https://doi.org/10.1080/02723638.2019.1698865

Mahmoudi, D., Lubitow, A., & Christensen, M. A. (2020). Reproducing spatial inequality? The sustainability fix and barriers to urban mobility in Portland, Oregon. *Urban Geography*, *41*(6), 801–822. https://doi.org/10.1080/02723638.2019.1698865

Malmo-Laycock, J. (2017). *Bypassing the bikelash: Strategies for addressing opposition to bicycle infrastructure projects in Washington, DC* [Master's thesis, McGill University]. eScholarship@McGill. https://escholarship.mcgill.ca/concern/papers/4t64gn387

Manderscheid, K. (2016). Quantifying mobilities? Reflections on a neglected method in mobilities research. *Applied Mobilities*, *1*(1), 43–55. https://doi.org/10.1080/23800127.2016.1147752

Marcuse, P. (1985). Gentrification, abandonment, and displacement: Connections, causes, and policy responses in New York City. *Washington University Journal of Urban and Contemporary Law*, *28*(1), 195–240. https://openscholarship.wustl.edu/law_urbanlaw/vol28/iss1/4

Martens, K. (2016). *Transport justice: Designing fair transportation systems*. Routledge.

Martinez, R. L., Frausto, D., Zavala-Sandoval, J., Serna, A., Corchado, C. G., Alvarado, A., Nkosi, J., & Yen, I. (2024). Community-led solutions: How local organizing committees drive change for housing and health equity in California's central valley. *Journal of Participatory Research Methods*, *5*(2). https://doi.org/10.35844/001c.120257

Masser, I., Svidén, O., & Wegener, M. (1993). Transport planning for equity and sustainability. *Transportation Planning and Technology*, *17*(4), 319–330. https://doi.org/10.1080/03081069308717523

Mathur, S., & Ferrell, C. (2013). Measuring the impact of sub-urban transit-oriented developments on single-family home values. *Transportation Research Part A: Policy and Practice*, *47*, 42–55. https://doi.org/10.1016/j.tra.2012.10.014

Mayers, R. F., & Glover, T. D. (2020). Whose lane is it anyway? The experience of cycling in a mid-sized city. *Leisure Sciences*, *42*(5-6), 515–532. https://doi.org/10.1080/01490400.2018.1518174

Mayers, R., Rallis, N., Doucet, B., & Babin, C. (2024). In light of transit: Documenting the scales of urban change along the LRT line in Hamilton, Ontario. *The Canadian Geographer*, *68*(4), 468–480. https://doi.org/10.1111/cag.12890

McCormack, G. R., Nesdoly, A., Ghoneim, D., & McHugh, T. L. (2020). Realtors' perceptions of social and physical neighborhood characteristics associated with active living: A Canadian perspective. *International Journal of Environmental Research and Public Health*, *17*(23), Article 9150. https://doi.org/10.3390/ijerph17239150

McCullough, S. R., & van Stokkum, R. (2021). *Answers from the margins: Participatory planning with disadvantaged communities* [Report No.: UC-ITS-2019-06]. UC Davis Institute of Transportation Studies. https://doi.org/10.7922/G2RX99DZ

McDougall, E., Diwan, F., Petrovic, A., Doucet, B., & August, M. (2022). *Displacement in Kitchener's inner suburbs: Experiences and perspectives from low-income tenants* [Report]. University of Waterloo, Faculty of Environment. https://www.waterlooregion.org/sites/default/files/2022McDougallet%20alDisplacementinKitchenersInner%20SuburbsUWSDC.pdf

McDougall, E., Vandermeer, R., Kelly, Y., Reid-Davies, D., Vandevyvere, K., Lafrance, A., & Doucet, B. (2023). *The many faces of urban and rural displacement* [Report]. The Social Planning Network of Ontario. https://homelesshub.ca/wp-content/uploads/2024/03/The-Many-Faces-of-Urban-and-Rural-Displacement-Final-Report.pdf

McFarlane, A. G. (2021). Black transit: When public transportation decision-making leads to negative economic development. *Iowa Law Review*, *106*(5), Article 2369. https://ilr.law.uiowa.edu/print/volume-106-issue-5/black-transit-when-public-transportation-decision-making-leads-to-negative-economic-development

McGuinness, M., Fincham, B., & Murray, L. (2010). Conclusions: Mobilising methodologies. In B. Finchman, L. Murray, & M. McGuinness (Eds.), *Mobile methodologies* (pp. 169–173). Palgrave Macmillan UK.

McKenzie, B. S. (2013). Neighborhood access to transit by race, ethnicity, and poverty in Portland, OR. *City & Community*, *12*(2), 134–155. https://doi.org/10.1111/cico.12022

McLellan, A., & Collins, D. (2014). "If you're just a bus community… you're second tier": Motivations for rapid mass transit (RMT) development in two mid-sized cities. *Urban Policy and Research*, *32*(2), 203–217. https://doi.org/10.1080/08111146.2014.882255

Merriman, P. (2009). Automobility and the geographies of the car. *Geography Compass*, *3*(2), 586–599. https://doi.org/10.1111/j.1749-8198.2009.00219.x

Merriman, P. (2023). Mobility/fixity: Rethinking binaries in mobility studies. *Mobility Humanities*, *2*(1), 6–21. https://doi.org/10.23090/MH.2023.01.2.1.006

Miller, D. (Ed.). (2020). *Car cultures*. Routledge. https://www.routledge.com/Car-Cultures/Miller/p/book/9781859734070

Mock, A., & Thill, J. C. (2015). Placement of rapid transit park-and-ride facilities. *Transportation Research Record*, *2534*(1), 109–115. https://doi.org/10.3141/2534-14

Moos, M., Vinodrai, T., Revington, N., & Seasons, M. (2018). Planning for mixed use: Affordable for whom? *Journal of the American Planning Association*, *84*(1), 7–20. https://doi.org/10.1080/01944363.2017.1406315

Moulding, P. (2005). Fare or unfair-the importance of mass transit for America's poor. *Georgetown Journal on Poverty Law and Policy*, *7*(1), 155.

Munshi, S. (2015). Race, geography, and mobility. *Georgetown Immigration Law Review*, *30*(245). https://ssrn.com/abstract=2908139

Nash, C., & Whitelegg, J. (2016). Key research themes on regulation, pricing, and sustainable urban mobility. *International Journal of Sustainable Transportation*, *10*(1), 33–39. https://doi.org/10.1080/15568318.2013.821006

Nelson, A. C., Eskic, D., Hamidi, S., Petheram, S. J., Ewing, R., & Liu, J. H. (2015). Office rent premiums with respect to light rail transit stations: Case study of Dallas, Texas, with implications for planning of transit-oriented development. *Transportation Research Record*, *2500*(1), 110–115. https://doi.org/10.3141/2500-13

Newman, K., & Wyly, E. K. (2006). *Gentrification and displacement revisited* [Research Bulletin No. 31]. Centre for Urban and Community Studies. http://neighbourhoodchange.ca/wp-content/uploads/2011/05/CUCSRB31-NewmanWyly.pdf

Nicholson, J. A., & Sheller, M. (2016). Race and the politics of mobility- Introduction. *Transfers*, *6*(1), 4–11. https://doi.org/10.3167/TRANS.2016.060102

Nilsson, I., & Delmelle, E. (2018). Transit investments and neighborhood change: On the likelihood of change. *Journal of Transport Geography*, *66*, 167–179. https://doi.org/10.1016/j.jtrangeo.2017.12.001

Ohnmacht, T., Maksim, H., & Bergman, M. M. (2016). Mobilities and inequality – Making connections. In T. Ohnmacht, H. Maksim, & M. M. Bergman (Eds.), *Mobilities and inequality* (pp. 7–26). Routledge.

Olesen, K. (2020). Infrastructure imaginaries: The politics of light rail projects in the age of neoliberalism. *Urban Studies*, *57*(9), 1811–1826. https://doi.org/10.1177/0042098019853502

Outhit, J. (2023, January 30). Residents are unhappy with Waterloo over unaffordable homes, survey shows. *Toronto Star.* https://www.thestar.com/news/waterloo-region/residents-are-unhappy-with-waterloo-over-unaffordable-homes-survey-shows/article_e0830db8-bf55-5245-87b5-b10c3f99d60d.html

Outhit, J. (2024, April 11). Affordability gap: Kitchener-Waterloo among the least affordable place to buy a home. *The Record.* https://www.therecord.com/news/waterloo-region/affordability-gap-kitchener-waterloo-among-the-least-affordable-places-to-buy-a-home/article_1576aa24-07e8-5d6e-92f3-fee95c48c4a4.html

Parker, D., Huang, Y., & Feng, D. (2020, November 5). The effect of bicycle infrastructure on residential property values in a mid-sized Canadian city [Paper presentation]. *Association of Collegiate Schools of Planning Annual Meeting*. https://cdn.ymaws.com/www.acsp.org/resource/collection/1E387680-3D4A-4EFC-830E-97842B4C4A36/ACSP2020_ConferenceProgram.pdf

Parker, D. C., Valaei Sharif, S., & Webber, K. (2023). Why did the "missing middle" miss the train? An actors-in-systems exploration of barriers to intensified family housing in Waterloo region, Canada. *Land*, *12*(2), Article 434. https://doi.org/10.3390/land12020434

Pasha, O., Wyczalkowski, C., Sohrabian, D., & Lendel, I. (2020). Transit effects on poverty, employment, and rent in Cuyahoga County, Ohio. *Transport Policy*, *88*, 33–41. https://doi.org/10.1016/j.tranpol.2020.01.013

Pathak, R., Wyczalkowski, C. K., & Huang, X. (2017). Public transit access and the changing spatial distribution of poverty. *Regional Science and Urban Economics*, *66*, 198–212. https://doi.org/10.1016/j.regsciurbeco.2017.07.002

Pearsall, H. (2018). New directions in urban environmental/green gentrification research. In L. Lees and M. Phillips (Eds.), *Handbook of gentrification studies* (pp. 329–345).

Pender, T. (2025, April 2). Housing affordability crisis is spreading, says new report. *The Record.* https://www.therecord.com/news/waterloo-region/housing-affordability-crisis-spreading-says-new-report/article_5937562b-92ae-580f-a825-3dbbe5ba4570.html

Pereira, R. H., Schwanen, T., & Banister, D. (2017). Distributive justice and equity in transportation. *Transport Reviews*, *37*(2), 170–191. https://doi.org/10.1080/01441647.2016.1257660

Petzer, B. J. M., Wieczorek, A. J., & Verbong, G. P. (2020). Dockless bikeshare in Amsterdam: A mobility justice perspective on niche framing struggles. *Applied Mobilities*, *5*(3), 232–250. https://doi.org/10.1080/23800127.2020.1794305

Pierce, J., & Lawhon, M. (2018). The right to move: Informal use rights and urban practices of mobility. *Urban Geography*, *39*(5), 667–686. https://doi.org/10.1080/02723638.2017.1382050

Powell, J. A., & Spencer, M. L. (2002). Giving them the old one-two: Gentrification and the KO of impoverished urban dwellers of color. *Howard Law Journal*, *46*, 433–490. https://lawcat.berkeley.edu/record/1118295?ln=en&v=pdf

Prayitno, K., & Moos, M. (2022). Freeing the "captive rider": Young adults' public transit experiences in Toronto high-rise suburbs. *Canadian Planning and Policy*, *2022*, 20–48. https://doi.org/10.24908/cppapc.v2022i1.15316

Preston, J., & Rajé, F. (2007). Accessibility, mobility and transport-related social exclusion. *Journal of Transport Geography*, *15*(3), 151–160. https://doi.org/10.1016/j.jtrangeo.2006.05.002

Pucher, J., & Buehler, R. (2010). Walking and cycling for healthy cities. *Built Environment*, *36*(4), 391–414. https://www.jstor.org/stable/23289966

Pucher, J., & Buehler, R. (Eds.). (2012). *City cycling*. MIT press. https://mitpress.mit.edu/9780262517812/city-cycling/

Pucher, J., Buehler, R., & Seinen, M. (2011). Bicycling renaissance in North America? An update and re-appraisal of cycling trends and policies. *Transportation Research Part A: Policy and Practice*, *45*(6), 451–475. https://doi.org/10.1016/j.tra.2011.03.001

Purifoye, G. Y. (2020). Transit boundaries: Race and the paradox of immobility within mobile systems. *Mobilities*, *15*(4), 480–499. https://doi.org/10.1080/17450101.2020.1738684

Quick, K. S., & Bryson, J. M. (2016). Public participation. In C. Ansell & J. Torfing (Eds.), *Handbook on theories of governance* (pp. 158–169). Edwar Elgar.

Ramjerdi, F. (2006). Equity measures and their performance in transportation. *Transportation Research Record*, *1983*(1), 67–74. https://doi.org/10.1177/0361198106198300110

Ravensbergen, F., & VanderPlaat, M. (2010). Barriers to citizen participation: The missing voices of people living with low income. *Community Development Journal*, *45*(4), 389–403. https://doi.org/10.1093/cdj/bsp014

Rayle, L. (2015). Investigating the connection between transit-oriented development and displacement: Four hypotheses. *Housing Policy Debate*, *25*(3), 531–548. https://doi.org/10.1080/10511482.2014.951674

Region of Waterloo. (n.d.). Stage 2 ION. *Region of Waterloo*. https://www.regionofwaterloo.ca/en/exploring-the-region/stage2ion.aspx

Region of Waterloo. (2020). *Monitoring change in the central transit corridor: 2019* [Report]. https://www.regionofwaterloo.ca/en/shared-content/resources/PDL-CPL-20-31__Monitoring_Change_in_the_Central_Transit_Corridor__2019_Report.pdf

Region of Waterloo. (2021, January 14). *2020 Labour force report and council bulletin* [Report]. . https://www.regionofwaterloo.ca/en/regional-government/resources/2020-Labour-Force-Report-and-Council-Bulletin.pdf

Region of Waterloo. (2023). *Census bulletin 2021: Agriculture*. https://www.regionofwaterloo.ca/en/regional-government/resources/Census/133459-Census-Bulletin-2021-Agriculture_access.pdf

Renne, J. L., & Appleyard, B. (2019). Twenty-five years in the making: TOD as a new name for an enduring concept. *Journal of Planning Education and Research*, *39*(4), 402–408. https://doi.org/10.1177/0739456X19885351

Revington, N. (2015). Gentrification, transit, and land use: Moving beyond neoclassical theory. *Geography Compass*, *9*(3), 152–163. https://doi.org/10.1111/gec3.12203

Roberts, C. (2020). Into a headwind: Canadian cycle commuting and the growth of sustainable practices in hostile political contexts. *Energy Research & Social Science*, *70*, Article 101679. https://doi.org/10.1016/j.erss.2020.101679

Rose, E. J. (2016). Design as advocacy: Using a human-centered approach to investigate the needs of vulnerable populations. *Journal of Technical Writing and Communication*, *46*(4), 427–445. https://doi.org/10.1177/0047281616653494

Sander, T. H. (2002). Social capital and new urbanism: Leading a civic horse to water? *National Civic Review*, *91*, 213–234. https://doi.org/10.1002/ncr.91302

Sandercock, L. (Ed.). (1998). *Making the invisible visible: A multicultural planning history* (Vol. 2). University of California Press.

Sandoval, G. F. (2021). Planning the barrio: Ethnic identity and struggles over transit-oriented, development-induced gentrification. *Journal of Planning Education and Research*, *41*(4), 410–424. https://doi.org/10.1177/0739456X18793714

Sardianou, E., & Nioza, E. (2015). Who are the eco-bicyclists? *Transportation Research Part D: Transport and Environment*, *34*, 161–167. https://doi.org/10.1016/j.trd.2014.11.003

Scherer, M. (2010). Is light rail more attractive to users than bus transit? Arguments based on cognition and rational choice. *Transportation Research Record*, *2144*(1), 11–19. https://doi.org/10.3141/2144-02

Scherer, M., & Zurich, E. T. H. (2012). Bus or rail: An approach to explain the psychological rail factor. *Journal of Public Transportation*, *15*(1), 75–93. https://doi.org/10.5038/2375-0901.15.1.5

Schuch, J. C., & Mushipe, T. (2024). Included or left behind? Residents' perceptions on public investments, city growth, and local decision-making. *Urban Geography*, *45*(8), 1309–1329. https://doi.org/10.1080/02723638.2023.2285117

Schul, Y., & Peri, N. (2015). Influences of distrust (and trust) on decision making. *Social Cognition*, *33*(5), 414–435. https://doi.org/10.1521/soco.2015.33.5.414

Seo, K., Golub, A., & Kuby, M. (2014). Combined impacts of highways and light rail transit on residential property values: A spatial hedonic price model for Phoenix, Arizona. *Journal of Transport Geography*, *41*, 53–62. https://doi.org/10.1016/j.jtrangeo.2014.08.003

Sharkey, J. (2019, June 12). *Charles Street terminal closing, 800 bus stops to change June 24*. CBC News. https://www.cbc.ca/news/canada/kitchener-waterloo/ion-waterloo-kitchener-bus-grand-river-transit-1.5170491

Shaw, K. S., & Hagemans, I. W. (2015). 'Gentrification without displacement' and the consequent loss of place: The effects of class transition on low-income residents of secure housing in gentrifying areas. *International Journal of Urban and Regional Research*, *39*(2), 323–341. https://doi.org/10.1111/1468-2427.12164

Sheller, M. (2014). The new mobilities paradigm for a live sociology. *Current Sociology*, *62*(6), 789–811. https://doi.org/10.1177/0011392114533211

Sheller, M. (2017). From spatial turn to mobilities turn. *Current Sociology*, *65*(4), 623–639. https://doi.org/10.1177/0011392117697463

Sheller, M. (2018a). *Mobility justice: the politics of movement in an age of extremes*. Verso.

Sheller, M. (2018b). Theorising mobility justice. *Tempo Social*, *30*(2), 17–34. https://doi.org/10.11606/0103-2070.TS.2018.142763

Sheller, M., & Urry, J. (2000). The city and the car. *International Journal of Urban and Regional Research*, *24*(4), 737–757. https://doi.org/10.1111/1468-2427.00276

Sheller, M., & Urry, J. (2006). The new mobilities paradigm. *Environment and Planning A: Economy and Space*, *38*(2), 207–226. https://doi.org/10.1068/a37268

Sheller, M., & Urry, J. (2016). Mobilizing the new mobilities paradigm. *Applied Mobilities*, *1*(1), 10–25. https://doi.org/10.1080/23800127.2016.1151216

Sheydayi, A., & Dadashpoor, H. (2023). Conducting qualitative content analysis in urban planning research and urban studies. *Habitat International*, *139*, Article 102878. https://doi.org/10.1016/j.habitatint.2023.102878

Shimmin, C., Wittmeier, K. D., Lavoie, J. G., Wicklund, E. D., & Sibley, K. M. (2017). Moving towards a more inclusive patient and public involvement in health research paradigm: The incorporation of a trauma-informed intersectional analysis. *BMC Health Services Research*, *17*, Article 539. https://doi.org/10.1186/s12913-017-2463-1

Siemiatycki, M. (2005). The making of a mega project in the neoliberal city: The case of mass rapid transit infrastructure investment in Vancouver, Canada. *City*, *9*(1), 67–83. https://doi.org/10.1080/13604810500050336

Siemiatycki, M. (2011). Urban transportation public–private partnerships: Drivers of uneven development. *Environment and Planning A*, *43*(7), 1707–1722. https://doi.org/10.1068/a43572

Silva, S. C. B., Tebar, W. R., Ferrari, G., Lemes, Í. R., Aguilar, B. A. S., Teixeira, M. S., Mota, J., Ritti-Dias, R. M., Beretta, V. S., & Christofaro, D. G. D. (2023). Sports practice, walking and biking are positively related to quality of life in adults: A cross-sectional study. *Journal of Transport & Health*, *33*, Article 101701. https://doi.org/10.1016/j.jth.2023.101701

Slater, T. (2009). Missing Marcuse: On gentrification and displacement. *City*, *13*(2–3), 292–311. https://doi.org/10.1080/13604810902982250

Stacy, C., Su, Y., Noble, E., Stern, A., Blagg, K., Rainer, M., & Ezike, R. (2020). *How can cities create more equitable transportation systems*? Urban Institute. https://www.urban.org/sites/default/files/publication/102991/how-can-cities-create-more-equitable-transportation-systems.pdf

Statistics Canada. (2021, September 2). *Non-probability sampling*. https://www150.statcan.gc.ca/n1/edu/power-pouvoir/ch13/nonprob/5214898-eng.htm

Statistics Canada. (2022a, November 30). *Focus on geography series, 2021 census*. *Kitchener-Cambridge-Waterloo, Census metropolitan area.* https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/Page.cfm?Lang=E&Dguid=2021S0503541&topic=1

Statistics Canada. (2022b, December 16). *Employed labour force by main mode of commuting and multiple modes of commuting, Waterloo (Regional municipality), 2021*. *Focus on geography series, 2021 census*. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/alternative.cfm?dguid=2021A00033530&lang=e&objectId=8&topic=13

Statistics Canada. (2022c, February 9). *Focus on geography series, 2021 census – Toronto (census subdivision)*. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?lang=E&topic=5&dguid=2021A00053520005

Statistics Canada. (2023). *Profile table:* C*ensus profile, 2021 census of population – Kitchener, City (Census subdivision), Ontario* [Data table]. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm

Statistics Canada. (2024, October 23). *Low income cut-offs before tax (2022).* https://www.canada.ca/en/employment-social-development/services/foreign-workers/caregiver/financial-ability.html

Stehlin, J. G. (2015). Cycles of investment: Bicycle infrastructure, gentrification, and the restructuring of the San Francisco Bay Area. *Environment and Planning. A*, *47*(1), 121–137. https://doi.org/10.1068/a130098p

Stehlin, J. G. (2019). *Cyclescapes of the unequal city: Bicycle infrastructure and uneven development*. University of Minnesota Press.

Stein, S. (2011). Bike lanes and gentrification. *Progressive Planning*, *188*, 34–37. https://www.plannersnetwork.org/wp-content/uploads/2011/07/PNmag_Summer_Stein.pdf

Taylor, B. D., & Morris, E. A. (2015). Public transportation objectives and rider demographics: Are transit's priorities poor public policy? *Transportation*, *42*, 347–367. https://doi.org/10.1007/s11116-014-9547-0

Tehrani, S. O., Wu, S. J., & Roberts, J. D. (2019). The color of health: Residential segregation, light rail transit developments, and gentrification in the United States. *International Journal of Environmental Research and Public Health*, *16*(19), Article 3683. https://doi.org/10.3390/ijerph16193683

Thompson, K. (2024, February 28). After long delay, region to make business case for LRT to Cambridge. *The Record.* https://www.therecord.com/news/waterloo-region/after-long-delay-region-to-make-business-case-for-lrt-to-cambridge/article_4c4fa12e-5f4e-5439-aefb-9197ac9d026f.html

Thoms, D., & Holden, L. (Eds.). (2016). *The motor car and popular culture in the twentieth century*. Routledge. https://doi.org/10.4324/9781315238241

Thurber, A., Krings, A., Martinez, L. S., & Ohmer, M. (2021). Resisting gentrification: the theoretical and practice contributions of social work. *Journal of Social Work*, *21*(1), 26–45. https://doi.org/10.1177/1468017319861500

Tolfo, G., & Doucet, B. (2022). Livability for whom? Planning for livability and the gentrification of memory in Vancouver. *Cities*, *123*, Article 103564. https://doi.org/10.1016/j.cities.2022.103564

Topalovic, P., Carter, J., Topalovic, M., & Krantzberg, G. (2012). Light rail transit in Hamilton: Health, environmental and economic impact analysis. *Social Indicators Research*, *108*(2), 329–350. https://doi.org/10.1007/s11205-012-0069-x

Torrie, R., & Layzell, D. (2024). *The automobile and the transformation of personal mobility in Canada* [Unpublished manuscript].

Turcotte, S. (2021, August 27). *'It is high': Kitchener rental prices outpacing average income, officials say*. CTV News Kitchener. https://www.ctvnews.ca/kitchener/article/it-is-high-kitchener-rental-prices-outpacing-average-income-officials-say/

Ureta, S. (2008). To move or not to move? Social exclusion, accessibility and daily mobility among the low-income population in Santiago, Chile. *Mobilities*, *3*(2), 269–289. https://doi.org/10.1080/17450100802095338

Urry, J. (2004). The 'system' of automobility. *Theory, Culture & Society*, *21*(4–5), 25–39. https://doi.org/10.1177/0263276404046059

Urry, J. (2012). Social networks, mobile lives and social inequalities. *Journal of Transport Geography*, *21*, 24–30. https://doi.org/10.1016/j.jtrangeo.2011.10.003

van de Walle, D. (2002). Choosing rural road investments to help reduce poverty. *World Development*, *30*(4), 575–589. https://doi.org/10.1016/S0305-750X(01)00127-9

van Wee, B., & Handy, S. (2016). Key research themes on urban space, scale, and sustainable urban mobility. *International Journal of Sustainable Transportation*, *10*(1), 18–24. https://doi.org/10.1080/15568318.2013.820998

van Wee, B., & Mouter, N. (2021). Evaluating transport equity. In N. Mouter (Ed.), *Advances in transport policy and planning* (Vol. 7, pp. 103–126). https://doi.org/10.1016/bs.atpp.2020.08.002

Verlinghieri, E., & Schwanen, T. (2020). Transport and mobility justice: Evolving discussions. *Journal of Transport Geography*, *87*, Article 102798. https://doi.org/10.1016/j.jtrangeo.2020.102798

Verlinghieri, E., Vitale Brovarone, E., & Staricco, L. (2024). The conflictual governance of street experiments, between austerity and post-politics. *Urban Studies*, *61*(5), 878–899. https://doi.org/10.1177/00420980231193860

Vigar, G. (2002). Transport for people: Accessibility, mobility and equity in transport planning. In C. Greed (Ed.), *Social town planning* (pp. 90–101). Routledge.

Vigdor, J. L. (2002). Does gentrification harm the poor? *Brookings-Wharton Papers on Urban Affairs*, 133–182. https://doi.org/10.1353/urb.2002.0009

Walker, L. A., & East, J. F. (2014). The benefits of including engaged residents and professionals in low-income neighborhood redevelopment planning processes. *Journal of Community Practice*, *22*(3), 342–364. https://doi.org/10.1080/10705422.2014.929063

Wallace, C., Farmer, J., & McCosker, A. (2019). Boundary spanning practices of community connectors for engaging 'hardly reached' people in health services. *Social Science & Medicine*, *232*, 366–373. https://doi.org/10.1016/j.socscimed.2019.05.034

Ward, J. D., & Paulhus, N. G. (1976). *Suburbanization and its implications for urban transportation systems*. Urban Transportation information Services.

Webber, K. (2022). *Exploring the relationship between transit-induced intensification and retail gentrification in a mid-sized Canadian city* [Master's thesis, University of Waterloo]. UWSpace. http://hdl.handle.net/10012/18760

Weitz, R. (2008). Who's afraid of the big bad bus? NIMBYism and popular images of public transit. *Journal of Urbanism*, *1*(2), 157–172. https://doi.org/10.1080/17549170802221500

Welch, T. F. (2013). Equity in transport: The distribution of transit access and connectivity among affordable housing units. *Transport Policy*, *30*, 283–293. https://doi.org/10.1016/j.tranpol.2013.09.020

Welch, T. F., & Mishra, S. (2013). A measure of equity for public transit connectivity. *Journal of Transport Geography*, *33*, 29–41. https://doi.org/10.1016/j.jtrangeo.2013.09.007

Wellman, G. C. (2019). Transportation exploitation, mobility and social justice. In N. Cook & D. Butz (Eds.), *Mobilities, mobility justice and social justice* (pp. 67–80). Routledge.

Wild, K., & Woodward, A. (2019). Why are cyclists the happiest commuters? Health, pleasure and the e-bike. *Journal of Transport & Health*, *14*, Article 100569. https://doi.org/10.1016/j.jth.2019.05.008

Wild, K., Woodward, A., Field, A., & Macmillan, A. (2018). Beyond 'bikelash': Engaging with community opposition to cycle lanes. *Mobilities*, *13*(4), 505–519. https://doi.org/10.1080/17450101.2017.1408950

Wilson, A., & Mitra, R. (2020). Implementing cycling infrastructure in a politicized space: Lessons from Toronto, Canada. *Journal of Transport Geography*, *86*, Article 102760. https://doi.org/10.1016/j.jtrangeo.2020.102760

Xue, C. Q., Ma, L., & Hui, K. C. (2012). Indoor 'public' space: A study of atria in mass transit railway (MTR) complexes of Hong Kong. *Urban Design International*, *17*, 87–105. https://doi.org/10.1057/udi.2012.6

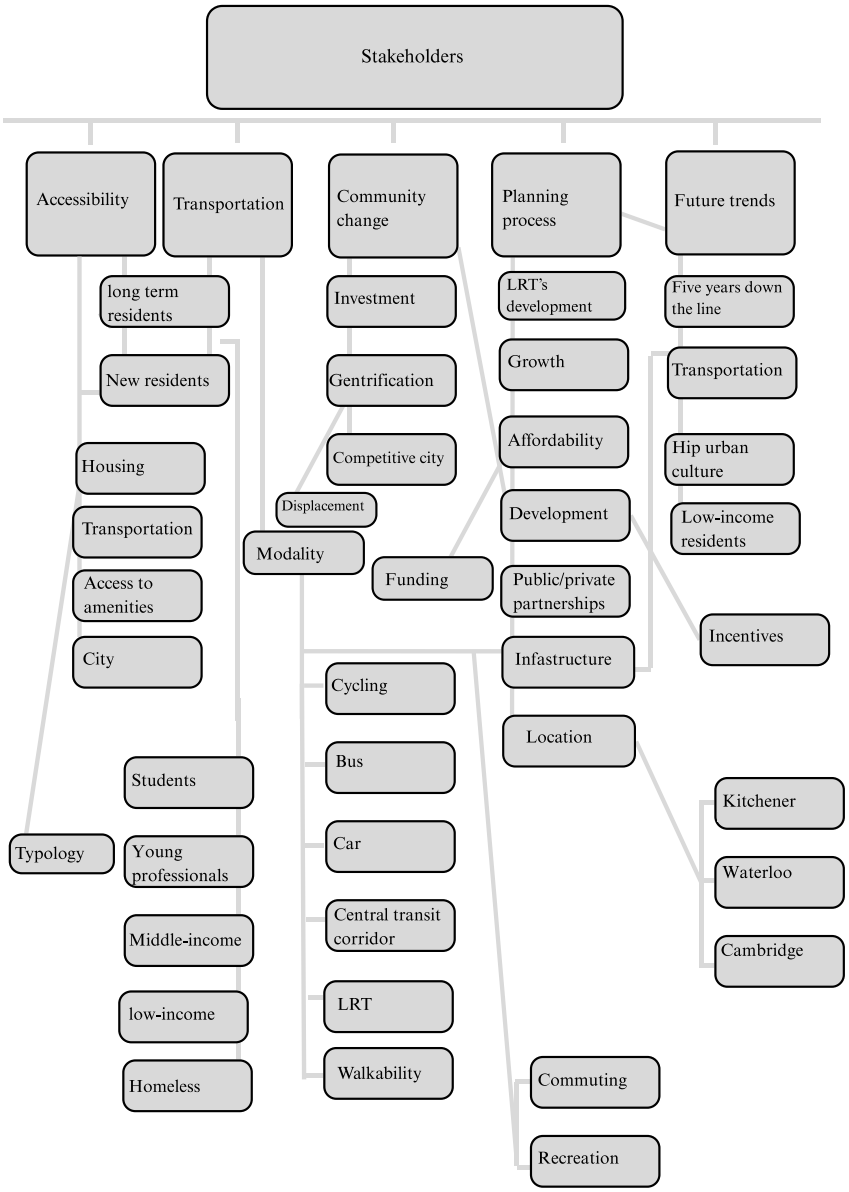
Zhao, J., Webb, V., & Shah, P. (2014). Customer loyalty differences between captive and choice transit riders. *Transportation Research Record*, *2415*(1), 80–88. https://doi.org/10.3141/2415-09

Zigman, P., & August, M. (2021). *Above guideline rent increases in the age of financialization* [Report]. RenovictionsTO. https://renovictionsto.com/RenovictionsTO-AGIReport-Final.pdf

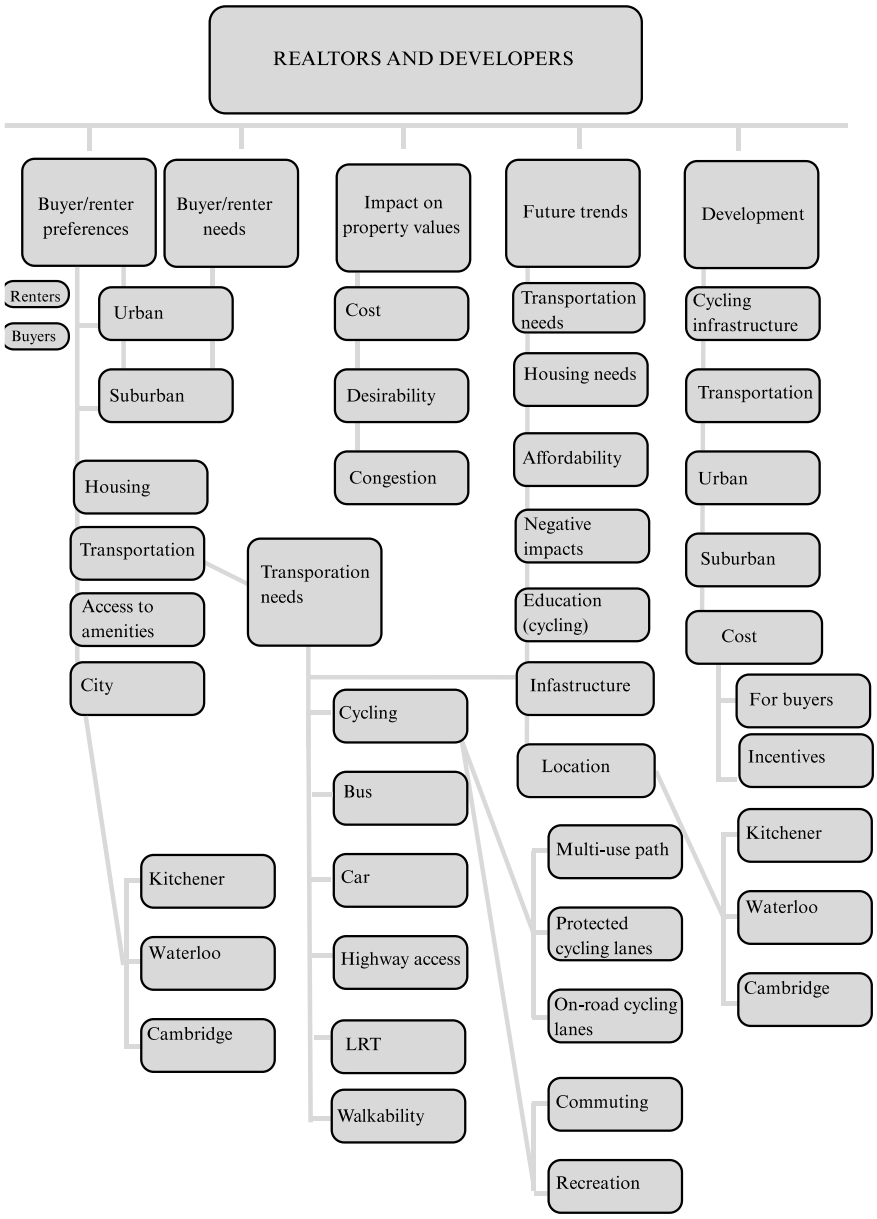
Zuk, M., Bierbaum, A. H., Chapple, K., Gorska, K., & Loukaitou-Sideris, A. (2018). Gentrification, displacement, and the role of public investment. *Journal of Planning Literature*, *33*(1), 31–44. https://doi.org/10.1177/0885412217716439

Appendices

Appendix A: Qualitative Coding Tree for Key Stakeholders



Appendix B: Qualitative Coding Tree for Realtors and Developers



Appendix C: Deeply Marginalized Participant Table

Pseudonym	**Age**	**Race/ethnicity**	**Occupation/Income**	**Housing status**	**Transportation**	**Time in the region**
Joe	65+	White	Retired, relying on Canadian Pension Plan (CPP) Income: <25k	Currently living in subsidized housing in Cambridge (waited for 7 years)	Had his license suspended now relies on public transit Commutes into Kitchener a few times a week Receives a subsidized bus pass The bus stop is half a block away from his apartment and is inaccessible for individuals with mobility limitations Does not cycle regularly	Born in the Region of Waterloo
Frank	65+	White, immigrated to KW from Eastern Europe 3 decades ago	Retired, relying on social supports Income: <25k	Currently living in supportive housing in suburban Kitchener	Never takes the LRT, only the bus Does not have any internet access at home, so needs transportation to go to the library	20+ years

					Travels strategically to make use of all 90 minutes Walking or cycling is more affordable License status unknown No private vehicle	
Tim	63	White	Currently receiving early CPP worked for 40 years faced an injury that left him unable to work (undisclosed) Income: <25k	Facing eviction at the time of our interview from his downtown Kitchener multi-tenant dwelling	Uses the bus when he must Prefers cycling or walking Does not have a license	Born in PEI, came to KW a few decades ago
Mark	50s	White	Unemployed Support status unknown	Currently living in a one-bedroom unit in the region	Relies on the Bus Avoids the LRT as he does not like the ride Cycles when he can	Born in the Region of Waterloo

			Currently unemployed, seeking work Income: <25k		Does not have a license because he has always been happy with the bus	
Roger	40s		Currently unemployed seeking work Income: <25k	Currently living multi-tenant dwelling in downtown Kitchener	Relies on the bus but takes the LRT when he can Cycles when he can Does not have a license	Moved to the region within the last 12 years from the East Coast
Carrie	40s	White	On Ontario Disability Support Program (ODSP) Income: <25k	Living in a women's shelter in the region	Relies on the bus to get around Cycles occasionally Does not have a license	N/A
Sandra	50s	White	Unemployed after a dangerous situation with her landlord,	Couch surfing	Previously a driver but was forced to sell her car Relearning how to use the bus but finding it difficult	Born in the Region of Waterloo, moved out of province briefly and

			also resulted in her losing her housing Income: <25k		Does not cycle	moved back 10+ years ago
Dave	40s	Black	Unemployed Currently looking for work Income: <25k	Living in subsidized housing in downtown Kitchener	Bus/LRT user Cycles when possible Does not have a license	Came to Canada over a decade ago as a refugee
Beth	30s	Black	Looking for work Explained that her education is not being recognized in the Canadian context Income: <25k	Living in an unaffordable unit in Cambridge	Relies on the bus but she and her husband cannot afford 2 monthly passes Does not have a license Does not cycle	Immigrated to Canada within the last 5 years

Marshall	Late 60s	White	On ODSP Income: <25k	Currently living in a multi-tenant dwelling in the region	Prefers to cycle, will take the bus if he must License status unknown No private vehicle access	25+ year resident
Claire	40s	White	Hospitality worker Income: <25k	Living in a subsidized motel with her kids after a divorce	Relies on the bus Likes to cycle but does not feel safe doing so without dedicated lanes License status unknown No private vehicle access	Born in the Region of Waterloo
Jake	40s	White	Previously making over 50k a year but has been unemployed for the past 6 months relying on employment	Living in a neighbourhood near downtown Kitchener	Had to sell his vehicle, now a public transit user/pedestrian Has a license	Born in the Region of Waterloo

			insurance benefits (EI)		No mention of cycling	
Sarah	30s	White	On ODSP Income: <25k	Living in supportive housing in suburban Kitchener	Uses the bus or walks Does not cycle Does not have a license	N/A
Ali	30s	Syrian refugee	Employment status unknown Income: <25k	Living in a rental in Kitchener	Uses the bus or walks Does not cycle Does not have a license	<3 years
Tess		White immigrated to Canada from Europe two decades ago.	Previously worked full-time in hospitality but has reduced to part-time as she is going back to school Income: <25k	Lives in a suburban neighbourhood near downtown Kitchener	Relies on the bus and train Does not have a license Does not cycle	Has lived in Kitchener for over 24 years

Kyle	26	Black	No income Seeking social supports to help him find housing and employment	Currently couch surfing	Pedestrian first Uses the bus when needed Rarely if ever uses the LRT or cycles Does not have a license	Born in Toronto, lived in Kitchener for most of his life
Alice	50s	White	Works part-time ODSP Income: <25k	Has a stable rental in Waterloo that she shares with her partner, but is facing a rent increased	Relies on the bus Rarely uses the LRT License status unknown No private vehicle access Does not cycle	Born in the Region of Waterloo
Theresa	40s	White	ODSP Unemployed Income: <25k	Homeless, staying with friends Previously lived in tent city	Relies on the bus and her bike to get around Does not take the LRT Does not have a license	Has lived in the region for over a decade

Morris	50s	White	On ODSP Unemployed Income: <25k	Recently had to move to a new multi-tenant unit after an eviction	Prefers to cycle but has had several serious accidents Will take the bus if needed Never takes the LRT License status unknown No private vehicle access	Born in Toronto, moved to the Region of Waterloo in 2005
Jordan	40s	White	Support status unknown Income: <25k	Lives in a multi-tenant dwelling in downtown Kitchener	Never wanted a license Was happy taking the bus (previous system) Now prefers to cycle Does not like taking the LRT	Born in the Region of Waterloo

Appendix D: Qualitative Coding Tree for Extremely Low-Income Individuals