

# **Mindful Streets:**

**Examining the politics and practices of everyday mobility negotiated by those  
who are neurodivergent and the potential for more inclusive (and just) street  
design for 'all'**

by

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## EXAMINING COMMITTEE MEMBERSHIP

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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.

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## STATEMENT OF CONTRIBUTIONS

Samantha Leger was the sole author for Chapters 1, 2, 3, and 7 which were not written for publication under the supervision of Dr. Jennifer Dean.

This thesis consists in part, three manuscripts written for publication, which are exceptions to sole authorship and are listed below:

- Chapter 4: Automobility, velomobility, and complete streets? Discursively analyzing the politics of complete street design guidelines in Ontario, Canada
- Chapter 5: “I miss the bus, or I take the wrong bus, so many times”: Understanding the micro-politics of everyday neurodivergent mobility practices for inclusive transportation planning
- Chapter 6: “How should we know when to cross”: utilizing go-along interviews and participatory mapping to explore how ways-of-knowing construct experiences of everyday travel for people who are neurodivergent

I hereby declare that I, Samantha Leger was the lead author on Chapters 4, 5, and 6. I was responsible for the research conceptualization and design, methodology, data collection, analysis, and drafting/editing of manuscripts. Dr. Jennifer Dean as primary supervisor and co-author, provided supervisory support in terms of data collection, feedback on manuscripts, and editorial assistance.

All graphics included in this thesis were solely conceptualized and developed by Samantha Leger.

## ABSTRACT

Accommodating ‘all abilities’ in the planning and design of streets and transport-spaces has been a longstanding, yet unmet, objective in transportation planning. Although the discipline has been striving to become more inclusive with efforts to plan for ‘complete streets’ that accommodate diverse mode-users of ‘all ages & abilities’, the ways in which different abilities are planned for often remain limited. This is evidenced in cursory and unnuanced considerations that do not engage with the relational lived experiences of getting around whilst dis/abled or differently abled (Stafford et al., 2022). As such, despite objectives to accommodate ‘all’ abilities in complete streets planning paradigms, differential mobilities produced by being differently abled can remain under-considered. This is especially true for people who experience cognitive difference or who are neurodivergent, whose mobility needs are too often not well-articulated and are entirely or nearly absent from inclusivity considerations.

The misalignment between the promises and outcomes of planning for complete streets inclusivity promises are representative of a broader tension in the planning and design of transportation, wherein inclusive-transportation paradigms are constrained within wider politics of automobility and rationalist legacies within the transportation planning discipline. In this, for what (and whom) the street functions is contested within an inertia of autocentric values, ideologies, and ways-of-planning that have proven difficult to unsettle.

However, the resultant status-quo of flattened and ‘one-size-fits-all’ approaches to accommodating differential abilities, cannot be upheld. As of 2022, 8 million people across Canada live with some form of dis/ability. Particularly, many of those people fall within the umbrella of being ‘neurodivergent’, including in developmental, learning, and mental-health dis/abilities. Notably, those with development dis/abilities (including Autism Spectrum Condition) were the most likely to report unmet accommodations needs (70%). Moreover, learning dis/abilities, such as Attention Deficit and Hyperactivity Disorder (ADHD), were the second-most emergent form of dis/ability for youth (after only mental-health dis/abilities) (Statistics Canada, 2024a). In this, there is an evident need for transportation planning to challenge the current ways in which neurodivergence is included within the efforts to plan for ‘all’ abilities; but the question then becomes, how?

Utilizing a framework informed by both the neurodiversity paradigm, that reframes neurodivergence not as a deficit but rather part of the full-spectrum of cognitive ability and Mimi Sheller's *Mobility Justice*, that situates transportation planning within the politics and production of mobilities across the macro, mesa, and micro-political, the enclosed thesis responds to this gap in a three-fold approach which 1) explores how politics of automobility continue to shape emergent transportation-planning paradigms, 2) engages with the lived-experiences of getting around in everyday travel for people who are neurodivergent (those who identify as either Autistic or with ADHD) and 3) interrogates how such experiences can inform more-inclusive efforts to plan for 'all abilities' in transportation. To respond to the objectives, a qualitative research approach was designed based in both critical analysis of complete street planning documents (n=5) and sit-down (n=30) and go-along (n=14) interviews with people who are neurodivergent on their experiences of being-in-travel and navigating everyday-travel spaces. The findings were discussed in three manuscripts enclosed within this thesis.

Particularly, the first objective is addressed in manuscript #1, which examines the current politics of complete streets through a critical discourse analysis of current complete street design guidelines sourced from across Ontario. This review allowed for better understanding of how complete street planning paradigms remain embedded within politics of automobility, and the resistant potential of complete streets to emulate vélomobility. This thus provided insight into how transportation planning both influences and is influenced from the macro-political (or from "above"). Of note, the first manuscript provides the basis in which the second and third manuscript were informed, noting that complete street planning paradigms are not untethered from broader societal power-structures which can then construct (or constrain) inclusivity-potential.

In the second manuscript, the focus shifted to then unpacking how mobility was then produced in micro-political mobility practices (or from "below"), tracing the differential mobilities produced by people who are neurodivergent. Particularly, this manuscript interrogated the lack of research that engages with dis/abled mobilities, and the relational and lived experiences of navigating and negotiating everyday travel. Based on 30 sit-down interviews with people who identify as Autistic or with ADHD, this analysis traced the emotional influences of mobility and how focus, habit, navigation, and sensory sensitivities constructed everyday mobility practices. Further, the

mobile geographies of neurodiversity were then scaffolded; examining the adaptive tactics (relating to negotiating predictability and agency/interest) that emerged and could then subvert expectations for how mobility practice ‘ought’ to function.

Finally, the third manuscript examined the experiences of people who are neurodivergent in journeying everyday-transport spaces, and the ways in which differential ways-of-knowing can construct capabilities on the street. Guided by go-along interviews conducted in Waterloo, ON, this manuscript identifies specific transport-spaces that can be overwhelming or disorienting for people who are neurodivergent (including transit stations/stops, shared-spaces, and intersections). From this, recommendations were made for rescoping efforts to plan for ‘all abilities’ which consider neurodivergence and can have the potential to more-inclusively engage with the many ways in which ability is relationally and pluralistically constructed.

Overall, this thesis provides transportation planning scholars and practitioners with an alternative framework for confronting the complex politics that then construct for whom streets and everyday-transport spaces function; interrogating how to more meaningfully– and mindfully– plan for ‘all abilities’ on the street and in transport spaces. Aptly, throughout this research, transportation planning, particularly complete street planning paradigms, are (re)situated within the production of mobilities as a means to close-the-gap between current complete street initiatives, and their mobility-justice potential (Sheller, 2018).

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---

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## DEDICATION

Dedicated to my Grampy, Paul A. Leger, a lifelong learner and an honorary urban planner.

Further dedicated to all the participants who agreed to share parts of themselves on the enclosed pages. Being neurodivergent, you may always feel a little different, a little out of place. This thesis is for anyone who ever had to second-guess themselves or grew up feeling everyone else was given a rulebook they missed out on. I hope you see yourself in these pages and know you are not alone.

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## RESEARCHER POSITIONALITY

I check the time on my phone. “*Oh no,*” I think to myself, “*I need to leave right now if I am going to make it on time*”. As I try to think through my options to get downtown– I need to be there in 40 minutes– I can feel my body mindlessly going through the motions of getting me out the door. I think I grab my wallet, my keys, my glasses, but I don’t really remember doing so. My eyes are glued to my phone in my hand, checking the transit times. “*I really don’t want to have to uber again*” I think. After all, I’m trying to save money as a grad-student. I decide I can take the streetcar. I’ve done that before with my partner. Sure, this time I’m doing it alone, but I feel confident I can remember how he got me there last time. I’m out the door. Fast walking to the station, my mind is running even faster. Wait do I have my keys? My wallet? My glasses? I don’t remember, no time to check.

I arrive at the station in a flurry. My google maps is still open and I try to decipher which way the blue dot is telling me to face. Looks like the stop is at the street? Or no– I have to go in the station? I can feel the panic and shame rising in my body, my mind already turning on itself: “*why can’t I just figure this out? Why can’t I give myself enough time?*”. The streetcar should be here in one minute. I’m essentially running around the same 20 metres surrounding the station. “*Okay I think it’s here, no. I think it’s here, maybe. No.*” I can see the streetcar now pull out of the station and curve onto the street and I feel a moment of relief. “*I got this*”, I think. I wait at the street where the little blue dot tells me. The streetcar goes past me and does not stop– “*what?*”.

I can feel tears welling up now. I know I’m going to be so late. I see a post with a sign closer to where the streetcar pulled out. I decide that that must be where it stops. Another streetcar approaches and I stand as close to the pole as possible, just to be sure the driver will see me. They drive past me without stopping. I hear myself let one sob escape. “*Why does this have to be so hard?*”. I watch another three streetcars pass me as I run around the station trying to figure out where everyone is getting on. I can see people on the trains and have never felt so *different*. I just don’t understand how they can so simply know what to do. My google maps is functionally useless, it is still telling me to board on the street. Finally, I get on a streetcar that is waiting in queue behind the station, away from the street. It doesn’t say when its leaving but at this point,

I'll take anything. The operator gets on, looks at me, and informs me that "*the streetcar just ahead of us is leaving next, I won't be going for 20 minutes. You should go there*".

The information hits me hard. I'm both relieved to finally know what to do, but I'm also so angry and ashamed, because "*How. Does. Anyone. Just. Know. This.*". I jump onto the streetcar ahead and wait. We pull out 5 minutes later and we're on the way. I'm still sniffing back tears and I can feel tension in my whole body. I text my friends to tell them I'm going to be quite late, as always.



The above short story is just one of many I could share about my experiences in navigating everyday travel as someone who identifies as neurodivergent. Growing up, these experiences often brought deep shame and embarrassment as I didn't know why I felt so different. Like many women, I did not receive any formal diagnosis until adulthood. After receiving my diagnosis, I started to realize just how much it impacted by day-to-day life, and particularly my experiences getting around daily. For the first time I wondered: maybe it is not just me, maybe other people feel this way too.

As I studied urban planning in university, and had worked as a practicing transportation planner, I knew that, if this is the case, something *could be* done, and that currently it just wasn't. I became fascinated with understanding how street-design had evolved over time, and the embedded assumptions and politics that informed and constructed the realities of everyday travel. I drew both from my knowledge as an academic, as well as a practitioner, wherein I had spent much of my early career developing active transportation master plans and complete street guidance. These experiences lead to the development of this thesis, and my interest in uncovering how to design for *mindful streets*.

As this thesis is embedded within a constructivist epistemology (more on this in **Section 2.1**), I was also cognizant that I as a researcher I am not an 'objective entity', my own positionality informs the research conducted and must be continually reflected upon. In conducting work with people who are neurodivergent, being a neurodivergent researcher is a benefit (Kaplan-Kahn &

Caplan, 2023). Indeed, my positionality was critical in garnering trust with my participant-base. As an ‘inside population’, I self-disclosed my diagnosis to the participants at the beginning of the interviews to establish a ‘safe space’ to tell their stories, wherein they would not be othered. I discuss this in more detail in **Section 2.2.3**.

Particularly, in sharing experiences of being-neurodivergent with participants, I attempted to construct a reciprocal relationship wherein it was not assumed I knew “more” or “better” than the participants. Indeed, in asking interview questions that were about their own lived experiences it was, per England (1994), unequivocally assumed that “the knowledge of the person being researched (at least regarding the particular questions being asked) is greater than that of the researcher” (p. 82). However, I found self-disclosing to be helpful in ensuring participants felt that same way. As will be noted in the results, and as hinted in my own short story, there is a sense of shame associated with the challenges faced in getting around whilst neurodivergent. Some participants were cautious to share vulnerably about these feelings. In response, I at times shared my experiences during the interview to further construct a safe space wherein their ways-of-knowing would not be judged or assumed as ‘less than’. Anecdotally, this was well-received, and participants would at times share their appreciation at the end of the interview.

However, as someone who wanted to understand what it means to plan for ‘all abilities’, I knew that dis/ability and neurodivergence does not exist in a silo. As such, it is also critical to note my positionality in privilege. As a white, cis-woman I exist within and benefit from spheres of heteronormative and racial privilege. Spheres that allow for easier access to diagnosis, and for my neurodivergence to not be as targeted as others. Both Olund (2024) and Giwa Onaiwu (2020) comment on the ‘whiteness’ of neurodiversity, in that many people who are racialized are denied the access to identify (formally) as neurodivergent, and even when they are afforded legitimacy through diagnosis, their experiences are radically different. In this, I am equally mindful to how my positions of privilege have shaped my transportation experiences and wanted to ensure I remained reflective on my intersectional positionality whilst conducting this work (England, 1994). Particularly, I work with the concept of ‘complex personhood’ introduced by MacPherson (2011) to ensure that the experiences of getting around day-to-day as someone who is neurodivergent that were shared by the participants are not abstracted from the many other ways

of being that can construct the relationship to everyday-travel (I discuss this in more detail in **Section 2.2.2.**)

**“But I just feel like—and this just goes for everything— that nothing is made for neurodivergent people, and everything is just made... I mean, not even for neurotypical people because think, they don't think about it, but a lot of things that neurodivergent people ask for or need would actually really just benefit everyone. But again, because they're not bothered by it, they don't really see how that could bother them.”** – Taylor (from a go-along interview)

**“That's honestly one of the biggest things that actually made me respond to (the study) was, someone's actually thinking about this. I never felt like someone was actually thinking about it. I felt like they were thinking about the most basic non-disabled people, the most basic kinds of visual disabilities, and then hardly anything else.”** – Jamie (from a go-along interview)

# 1 INTRODUCTION

Transportation planning is in a moment of reckoning. The longstanding traditions of the field that have guided the past hundred years of street layout and function are under question as the multi-scalar societal implications of aut centrality continue to cause irreparable harm to the environment, public health, and safety (Miner et al., 2024; Marshall, 2024). Particularly, this questioning confronts the ongoing-legacies of social-injustice in aut centric transportation systems in which the public health and safety harms are unequally distributed across society (Miner et al., 2024). This has resulted in mobility-marginalization both in ‘prevailing conditions’ (Ralph, 2025), such as for those who live in areas where transportation infrastructure has been systematically defunded (often reflecting both race and class lines), and in unequal accommodations for diverse needs, such as considerations of the gendered differences in travel and getting around when dis/abled (Sheller, 2018; Miner et al., 2024). For example, aut centric infrastructure (such as sidewalks cluttered with parking meters, wide crossings, and too frequent driveway entrances) can create inaccessible environments for people with various dis/abilities, perpetuating exclusion-by-design (Miner et al., 2024).

However, despite these societal fallouts of aut centrality being well-known, there remains an inertia to aut centric transport planning and design, fuelled by substantial support for “status-quo” ways of transportation both from decision-makers and the general public across North America (Jones & McCreary, 2022). Even amidst efforts to design for more inclusive transportation systems that support multi-modal options, the mode-split in Ontario, Canada has remained unchanged in almost 20-years. In 2006, 79% of daily commutes occurred by car<sup>2</sup>, a statistic that has persisted even in 2024, wherein 81.5% of commuters drive to get to work (Statistics Canada 2006; 2024b). This inertia perpetuates political pressures to plan in ways that continue to uphold inaccessible infrastructure or only meet minimum standards which can fall-short of meaningfully accommodating different ages and abilities in the planning and design of streetscapes and transport systems.

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<sup>2</sup> Including truck or van

These competing values and objectives situate transportation planning within a throttlehold. On the one side, there is a need for transport planning to disconnect itself from the status-quo to plan for more inclusive transportation systems that meaningfully accommodate all ages and abilities—both for the sake of the environment and equitable public health and safety. However, the inertia of autocentricity often subverts these efforts, privileging instead an established way-of-moving that excludes and marginalizes certain populations’ mobility-potentials, including people with dis/abilities.

In this, efforts to ideologically-shift transportation planning objectives and accommodate for diverse modes and users on the street (often called efforts to plan for **complete streets** since the mid-2000s) are met with significant dispute (Gregg & Hess, 2019; Sadik-Khan & Solomonow, 2017). These political tensions inhibit promises of more inclusive transportation futures, as a discipline in identity-crisis attempts to reconcile conflicting interests and ideologies as to what and for whom the street and everyday transport spaces are for. Simply to say, transportation planners are tasked with keeping people and things moving, yet it is becoming increasingly clear that what it means to do so cannot be universally defined.

These competing pressures are particularly evidenced in Ontario’s current transportation landscape. In 2021, the Canadian government launched the first-ever National Active Transportation Strategy (NATS) with the vision to get “*Canadians of all ages, ethnicities, abilities, genders, and backgrounds to be able to safely and conveniently access active transportation in their communities, and to significantly increase the ‘modal share’ of active transportation...*” (Infrastructure Canada, 2021 p. 5). Just over three years later, the Ontarian government enacted the *Reducing Gridlock, Saving You Time Act*, which proposed the development of a new highway and the removal of existing bike lanes on three major streets in Toronto to “*restore them to a motor vehicle traffic lane*” (Government of Ontario, 2024), and per Premier Doug Ford, “*get people moving again*”<sup>3</sup>.

The above is just one example of an all-too-common polarization of transportation-spaces and for whom they ‘should’ function. As noted in the Canadian NATS, there are often ambitious aspirations to accommodate ‘*all abilities*’ in progressive transportation planning strategies. Yet,

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<sup>3</sup> From here: <https://x.com/fordnation/status/1852080076415734089>

these aspirations do not exist in isolation of the exclusionary politics constructed from autocratic ideologies which as evidenced in the current Ontario context, continue to inform transportation planning efforts. In this, questions are raised as to how the embedded histories, politics, and ideologies of transportation planning then impact the inclusivity promises of planning for ‘all’. Specifically, Stafford et al. (2022) comment on this, stating that even in efforts to make more inclusive built-environments transportation planning can “unwittingly preserve ableism through narrow views of disability and “one-size-fits-all” approaches to mobility.” (p. 107)

Indeed, accommodating people with disabilities has been a long unmet objective of transportation planning— which continues to persist today, even in efforts to plan for ‘all abilities’ (Stafford & Baldwin, 2017; Stafford et al., 2022). Notably, Levine & Karner (2023) identify that this is due to in part 1) an overreliance on compliance-based agendas that do not meaningfully engage with the nuanced experiences of navigating place whilst dis/abled and 2) an over-representation of mobility-related disability accommodations<sup>4</sup>, and less consideration to other ways of being differently abled. Similarly, Terashima & Clark (2021) note that “*Little is yet known about differential needs by persons with a wider range of disabilities... Existing policies and regulatory tools are often inadequate for many people with disability whose challenges are other than mobility disabilities, as their specific needs are often not well-articulated*” (p. 127).

This was most recently evidenced in the unmet goals of the 2005 Accessibility for Ontarians with Disabilities Act (AODA), which was meant to foster a fully accessible Ontario by January 1, 2025, including in transportation services and the built environment (Biglieri et al., 2025). This demonstrates the ways in which urban planning efforts remain untethered from accessibility planning, and the need for more nuanced and comprehensive approaches to accommodating dis/ability, especially within transportation planning (Levine & Karner, 2023; Terashima & Clark, 2021).

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<sup>4</sup> To note, mobility-related dis/abilities typically refer to wheelchair-users or anyone who experiences a physical or bodily constraint which inhibits their ability to be mobile

Indeed, this absence of meaningful dis/ability accommodations is becoming unignorable. As of 2022, 8 million people across Canada live with some form of dis/ability, up 5% from 2017 (Statistics Canada, 2024a). Moreover, as of 2019, Canada adopted the Accessible Canada Act, the first federal accessibility act which redefined “disability” to explicitly include “any impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment – or a functional limitation – whether permanent, temporary, or episodic in nature, or evident or not, that in interaction with a barrier, hinders a person’s full and equal participation in society” (Accessible Canada Act, 2019, c. 10)<sup>5</sup>.

Notably, other ways of experiencing dis/ablement (beyond physical or mobility related dis/abilities) are equally centered in this definition. This update reflects emerging shifts in knowledge regarding dis/ability identities, wherein the 2024 Canadian census identified that those with development dis/abilities (including Autism Spectrum Condition) were the most likely to report unmet needs (70%) in accommodating their dis/ability. Moreover, learning dis/abilities, such as ADHD, were the second-most emergent form of dis/ability for youth (after mental-health dis/abilities) (Statistics Canada, 2024a). It is evident that cognitive difference and neurodivergence is emerging as more common, and yet, remains under considered in accommodation considerations.

Indeed, considerations for people who are neurodivergent are almost entirely absent from planning design guidance for ‘all abilities’, reflecting the limits of ‘existing policies and regulatory tools’ noted by Terashima & Clark (2021) in accommodating people whose disabilities are not mobility related. Neurodivergence is an umbrella term for people whose brains either develop or work differently for a variety of reasons. Neurodivergence is not one diagnosis or condition and can be used to refer to someone who identifies with Autism Spectrum Condition (ASC), Attention Deficit and Hyperactivity Disorder (ADHD), Obsessive Compulsive Disorder (OCD), Dyslexia, an intellectual disability, sensory processing disorders, and more<sup>6</sup>. Again, to the point of Terashima & Clark (2021), not much is currently known about the

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<sup>5</sup> <https://laws-lois.justice.gc.ca/eng/acts/a-0.6/page-1.html>

<sup>6</sup> See: <https://my.clevelandclinic.org/health/symptoms/23154-neurodivergent>

experiences of people who are neurodivergent in everyday travel, meaning there is equally little known about potential accommodations and *'needs are not well articulated'*.

Despite very little current research exploring how being neurodivergent can impact the experiences of everyday travel (Feldman et al., 2020 & Kenna, 2022, 2023), the existing research on experiences of neurodivergence in the built-environment suggests that everyday travel through transport-spaces can be perceived as *'complex'* (per Kenna, 2023). Indeed, across the (emerging) literature, there seems to be an indication that getting around day-to-day can be challenging (or, experienced differently) for people who are neurodivergent (Cecchini, et al., 2018; Davidson & Henderson, 2010; 2016; Kenna, 2023; Kersten et al., 2020; McAllister et al., 2022; Tola et al., 2020; Toronyi, 2021; Vanolo, 2023), including by impacting the perceived-accessibility of travel-modes (Deka et al., 2016; Feeley, et al., 2015; Haas et al., 2020; Lindsay, 2017; Lubin & Feely, 2016). Some studies particularly highlight that the planning and design of transportation spaces are built by and for *'neurotypical'* people rather than for people who are neurodivergent, and in this, can construct spaces of difference (Kersten et al., 2020; McAllister et al., 2022).

Therefore, this thesis examines the experiences of people who are neurodivergent in everyday travel as a means to unpack the broader shortcomings of current efforts to accommodate *'all abilities'* in inclusive transportation planning efforts. Particularly, this thesis positions this lack of critical engagement in accommodating pluralistic dis/abilities in transportation planning as an interrelated issue constructed by the engrained politics of automobility, the impact of said politics on an emerging paradigm-shift in transportation planning, and current limited knowledge on the affectual experiences of everyday-travel for people who are differently abled.

To respond to this issue, this thesis deploys a framework informed by Mimi Sheller's *Mobility Justice* (2018), to analyze how mobilities are produced by transportation planning and identify:

- 1) The politics of complete street planning ideologies and how such politics influence efforts to plan for *'all abilities'*;
- 2) The experiences of navigating and negotiating everyday travel for people who are neurodivergent, and;

- 3) The ways that current efforts to plan for ‘all abilities’ can be reckoned with by being informed from experiences of being-in-travel lived by people who are neurodivergent.

The aim of the enclosed thesis is to meaningfully explore the lived experiences of getting around with a non-mobility related dis/ability<sup>7</sup> and interrogate how current transportation planning paradigms can be unsettled from unjust predecessors to be part of our collective path towards just mobilities futures. Particularly, I aim to contribute to discourses on inclusivity in transportation planning and conceptualize a future of streets that are not only complete, but that are *mindful*.

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<sup>7</sup> The use of this term is to replace other ways of referring to cognitive dis/abilities of differences, such as ‘invisible’ disabilities or ‘non-physical’ disabilities. However, it is important to note that in referring to ‘non-mobility’ related dis/abilities, this is only in reference to the absence of physical-mobility limitations tied to bodily ability and the relationality to existing transportation planning policies, which typically only plan for these forms of difference in ability. As will be explored throughout this thesis, societal-mobility marginalization is experienced across many populations and identities, beyond physical mobility capacities and limitations. In this, we also question and confront the interdisciplinary tension within the term ‘mobility’, engaging with both critical conceptions of the term such as what is scoped within the politics of mobility and mobility justice, as well as normative conceptions of the term often present in urban and transportation planning literature and practice.

## 1.1 DEFINING NEURODIVERSITY, NEURODIVERGENCE, AND THE NEURODIVERSITY PARADIGM

Before diving into the contents of this thesis, some core terminologies of this thesis, being neurodiversity, neurodivergence, and neurodiversity paradigm first need to be defined. The term ‘neurodiversity’ refers to the spectrum of human cognitive ability or function. In this, when saying ‘neurodiverse’, we refer to the infinite ways we all think, understand, and process information differently. As such, despite common misuses of the term ‘neurodiversity’, it does not solely refer to individuals who experience cognitive difference or disability, but rather encapsulates the entire human population, and the endless ways in which we all process and understand information (Walker, 2021).

However, although we all think, understand, and choose, in various ways there has been an assumed ‘right’ way of decision-making; a ‘neurotypical’ expectation which has thus othered certain ways of being or understanding (Judge, 2018). In this, people who are neurodivergent, think, understand, and process information in a way that is ‘othered’ by this neurotypical expectation. This is to say, we all are *neurodiverse* but only some of us are *neurodivergent*. As mentioned in the introduction, neurodivergence is an umbrella term which includes people who are Autistic, have ADHD or other learning and developmental dis/abilities or differences. As an umbrella term, there is no one-set of symptoms for “being neurodivergent”, however, some neurodivergent-conditions share experiences of sensory-sensitives, or challenges with executive function, which can affect working memory, habit-forming, and emotional regulation<sup>6</sup>.

The neurodiversity paradigm emerged in the 1990s, following years of emergent discussion on cognitive difference. Indeed, ‘neurodiversity’ became the popularized and well-known version of previous-terms such as neurological-plurality (Botha et al., 2024). As such, although Judy Singer is commonly credited for ‘coining’ neurodiversity (Singer, 1999), the paradigm was co-constructed by many scholars and advocates (Botha et al., 2024). The neurodiversity paradigm allowed for a new framing of cognitive dis/abilities<sup>8</sup> and differences. As it is well-known, there

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<sup>8</sup> Throughout this thesis, there will be times in which I utilize the “/” within the writing of dis/ability. This is to demonstrate the relationality between ability and disability and the ways in which abilities are (re)formed by the surrounding environment. The writing of dis/ability is meant to visualize the dynamicity of the concept and reject an understanding of disability as fixed or stagnant. Such thinking aligns with the neurodiversity paradigm and critical dis/ability theories (Delvin & Pothier, 2012; Hall, 2019; Hall & Wilton, 2017).

are two predominant schools of thought in theorizing dis/ability: the medical model and the social model. In the medical model of disability, it is theorized that disability is an ‘individual pathology’, and the social and political responsibility is limited to finding a ‘cure’. For people living with disability, there are limited social interventions. Often, in neoliberal society, the medical model is prominent as it does not require social supports or programming and rather posits that disability is an individual issue to be ‘solved’ (Delvin & Pothier, 2012). In contrast, the social model of disability frames ability as a result of social structure, so those who are dis/abled are not disabled due to their bodies but rather are not supported by or within social structures like education, employment, and the built environment (Delvin & Pothier, 2012).

Up until the mid-1990s cognitive or intellectual disabilities were framed as ‘curable’ disorders with very few social-supports across education, employment or the built-environment (a.k.a., the medical-perspective). In this, the responsibility to manage cognitive differences fell to the individual. The neurodiversity paradigm redefined cognitive dis/ability not as a deficit that was to be ‘cured’ but rather a part of the spectrum of ‘normal’ human cognitive function. Balmer and Freuh (2021) define it as “the idea that people experience and interact with the world around them in many different ways; there is no one “right” way of thinking, learning, and behaving, and differences are not viewed as deficits”.

Importantly, the neurodiversity paradigm allows for neurodivergence to be understood similarly to other socially constructed concepts like race and gender wherein certain groups have been marginalized due to unequal power dynamics (i.e. white supremacy, patriarchy) and there is a potential for radical change and inclusion in confronting these societally constructed ‘fictions’ (Walker, 2021). In the neurodiversity paradigm, this refers to unsettling the belief system that there is ‘one’ right way of thinking, feeling, or choosing that then informs how social structures function. However, the neurodiversity paradigm remains cautiously separate from the social model of disability (similar to critical dis/ability studies), recognizing that neurodivergent conditions are experienced in the body as well as constructed socially (Botha & Gillespie-Lynch, 2022; Walker, 2021). Aptly, the neurodiversity paradigm, positions dis/ability as a constantly evolving bodily phenomenon that is perpetuated and reformed by the environment it occurs within.

In this, the neurodiversity paradigm, most closely aligns with critical perspectives on dis/ability. Critical dis/ability studies unpack the socio-political productions of disability, and the ways in which power and powerlessness construct ‘ability’. Importantly, critical dis/ability studies acknowledge the relationality and complexity of dis/ability. Dis/ability, as an identity, is in constant (re)construction and flux (Hall, 2019). One’s abilities can be (re)formed over time and, at any time, one can become dis/abled. This is true too within the neurodiversity paradigm, which posits the ways in which cognitive functions can be changed by age or injury, acknowledging that cognitive ability is never fixed over one’s lifetime. Per Garland-Thompson (2002) “Disability is an identity category anyone can enter at any time, and we will all join it if we live long-enough” (p. 20).

Moreover, a critical dis/abilities perspective acknowledges the innate value of different-abilities, rather than positioning dis/ability as always meant to be minimized or lessened to ‘fit’ into existing productive societal standards (Devlin & Pothier, 2012). The neurodiversity paradigm equally values this, with Botha & Gillepsie-Lynch (2023) noting that “the neurodiversity movement frames neurological-diversity as invaluable for societal progress and yet inherently challenging at times, meaning autism (and other neurodivergent conditions) can both be an identity, and an embodied disability, with aspects of impairment” (p. 94). To this end, although neurodivergence is often included in critical discourses of dis/ability (Devlin & Pothier, 2012), the association between neurodivergence and dis/ability is personal. Some folks who identify or have been diagnosed with a neurodivergent condition do not identify as being disabled, and some do.

This is especially relevant in positioning this thesis within the neurodiversity paradigm, which aims to critically question deficit-based language for neurodivergence and cognitive difference. Currently, ADHD is commonly referred to as a learning dis/ability and Autism Spectrum Condition as a development dis/ability, including in earlier statistics shared within this thesis (Statistics Canada, 2024a). Despite this association, the neurodiversity paradigm (along with critical dis/ability studies) reframes differential abilities not as deficits, but rather differences worthy of respect and consideration within society. This mirrors recent efforts within Autism studies to move away from associating Autistic traits as ‘less-than’ (Rosqvist, et al., 2020). Similarly, there has been recent discourse to resituate ADHD within the neurodiversity paradigm

and separate from antiquated deficit-based language and terms (Bertilsdotter Rosqvist et al., 2023). These efforts allow for neurodivergence to be respected as-of-right rather than favouring a ‘specific neurotype’ which then excludes other ways of knowing and being.

To this end, it is important to note, in referring to people who experience dis/ability, person-first language is often the accepted standard (i.e. to say ‘persons with disabilities’). However, person-first language can be considered problematic, as it centers dis/ability as a limitation that some people have, which can in-turn ignore the social and political context of dis/ability, including the relationality between person and environment (Ross, 2013). When explicitly working with and discussing neurodivergent people, identify-first language has been commonly noted as a preference (i.e. to say Autistic person, rather than person with Autism) (Botha et al., 2023). This can also be applied in referring to ADHD, through the term ADHDers (Bertilsdotter Rosqvist et al., 2023). In this thesis, I take guidance from current-literature and feedback received during the interviews and utilize both identity-first and person-first language, with a preference for identity-first language.

## ***1.2 PLANNING FOR ALL ABILITIES: THE CANADIAN POLICY LANDSCAPE***

As mentioned in the introduction, transportation planning is confronting a difficult balance between the competing pressures of the status-quo of traditional transportation planning and inclusive transportation planning paradigms. In this, the promises of inclusive and accessible transportation planning to accommodate ‘all ages and abilities’ that is often written into planning documents– from the national to the local-municipal level– can be inadequate in actually accommodating diverse users (Prytherch, 2025).

In order to better understand this tension, the existing and emerging policy landscape of accessibility planning in Canada must first be reviewed. Efforts to accommodate people with dis/abilities first emerged in Canada and the U.S.A around the 1960s (Prytherch, 2025; Baker, 2005). In the U.S., this aligned with the broader civil-rights movement (Stafford & Baldwin, 2017; Prytherch, 2025), with some of the very-first accommodations being grassroots efforts that came from people who were dis/abled, such as DIYing curb-cuts (Prytherch, 2025).

Between the late 1970s and early 1990s, more formalized accommodations grew alongside the advocacy and Canada earned a reputation as a leader in accessible transportation planning (Baker, 2005). This was in-part due to a 1970s programming effort from Transport Canada to accommodate travelers with dis/abilities in transportation services under federal jurisdiction. This program was one of the first of its kind and set precedent for many subsequent accessibility planning initiatives at federal levels, including the 1983 Transport Canada policy on transportation of persons with dis/abilities (Suen & Geehan, 1993). By 1991, this policy was strengthened to claim that accessible transportation is not a privilege, but a right (Suen & Geehan, 1993). Such claims were building upon the 1982 enactment of the Charter of Rights and Freedoms. In the Charter, people with disabilities (both physical and mental) are protected from discrimination (Suen & Geehan, 1993).

Yet, the early advancements of accessible transportation planning in Canada slowed. By the mid-1990s, the shifting Canadian governments resulted in an adoption of a ‘voluntary opt-in’ model for dis/ability accommodations for federally managed transportation, as opposed to statutory standards or requirements. These shortcomings reflect the critical role of politics in shaping legislation. Importantly, the fading federal support for legislating accessibility requirements inversely mirrored the watershed enacting of the Accessibility for Americans with Disabilities Act (ADA) in the U.S.A, which came into force in 1990. This Act was a result of decades of advocacy from persons with dis/abilities and able-bodied allies.

In response to the momentum from the ADA, advocates in Ontario began to organize for an “Ontarians with Disabilities Act” (ODA) in the mid-1990s (AODA.ca Inc., 2011). By 2005, the “Accessibility for Ontarians with Disabilities Act” (AODA) was enacted, with a goal to make Ontario fully accessible by January 1, 2025 (Ross, 2013). This was the first provincial Accessibility Act in Canada, which was then followed by similar legislations in Manitoba (2013), Nova Scotia (2017), and most recently British Columbia (2021).

Despite the advancement of the AODA for its time, as of writing in October 2025, many of the goals for an accessible Ontario have gone unmet (Biglieri, et al., 2025). Particularly, the AODA has been further critiqued for perpetuating an ‘us’ vs ‘them’ binary related to who is helped by accessible design (Ross, 2013), and in lacking alignment with land-use policies, and urban

planning paradigms more broadly (Biglieri et al., 2025; Ross et al., 2024). This reflects the gap noted earlier, in which planning efforts do not meaningfully engage with accessibility planning (Terashima & Clark, 2021). This misalignment can then trickle down to regional and local municipalities, which per the AODA, are required to appoint an Accessibility Advisory Committee and complete an Accessibility Plan (Ross, 2013). Indeed, in planning practice disability and accommodation is rarely at the forefront of conversations, furthering conceptions of ‘accessible planning’ being only for the few, rather than universally beneficial.

Biglieri et al., (2025), concluded that many planners were unaware or misinformed regarding the planning legislation, regulation, and guidelines concerning accessibility and disability, with some assuming that requirements of the AODA was already integrated into municipal planning documents, including complete street design guides (p. 283). Moreover, other planners felt that AODA lacked enforcement mechanisms that ensured impact. The struggle for the AODA to meet its set objectives reflect the ongoing tension in accessibility planning, and the lack of integration, understanding, and continuity of accessibility planning objectives within the realities of transportation planning (Levine & Karner, 2023).

However, in the twenty-years since AODA was adopted, there have been advancements in advocacy for accessible transport environments. As of 2019, the federal government in Canada enacted the Accessible Canada Act. This act aims to have Canada be barrier-free by 2040, and principles that “accessibility standards and regulations must be made with the goal of achieving the highest level of accessibility” with sub-categories of both the built-environment and transportation (Accessible Canada Act, 2019 c.10). This act is the first Canadian comparable to the ADA in the U.S.A. To note, as the ACA is federal legislation, the principles and regulations of this act apply only to agencies and lands under federal jurisdiction. In this, the transportation and built-environment standards that are proposed alongside the Act refer to only spaces that are regulated federally, including paths to federal buildings, and the federally managed modes of transportation (like some rail and air travel).

The enacting of the ACA reflects a shift towards more inclusive transportation systems in Canada, and the aspiration for accessibility to be centered within planning initiatives. When higher-level policy is put in place, this can contribute to more momentum at local scales. For

example, in the context of the U.S., the enactment of the ADA in-part inspired the complete streets movement, particularly the efforts to ‘accommodate all ages and abilities’ (AAA) on the street (Prytherch, 2025). This demonstrates the critical role of legislation in not only regulating accessibility but contributing to ideological shifts in policy (Ingram et al., 2020; Nijman & Wei, 2020; Elliott et al, 2022; 2024) even for jurisdictions that are outside of the scope of the legislation. Now, across both Canada and the U.S., AAA is commonly referenced in transportation planning. However, as noted earlier, the scoping of AAA is often murky, especially with respect to whom ‘all abilities’ applies (Laberee et al., 2023). Importantly, the ACA has scoped a new definition of dis/ability which more clearly encompasses the plurality of dis/ability, including specific mention to mental, intellectual, cognitive, and learning dis/abilities, and frames dis/ability as being constructed in relation to barriers. This contrasts with the AODA definition which only vaguely considered other forms of dis/ability beyond mobility related disabilities and aligned more-so with the medical-perspective (Ross, 2013).

Despite more inclusive definitions as to what constitutes dis/ability, most to all of the accommodation measures included in the aforementioned legislation assist those with sensory dis/abilities (such as hearing or visual differences) or mobility dis/abilities (including minimum width or surface requirements, or signage/announcement requirements). In contrast, there are very little explicit accommodations for cognitive difference or neurodivergence. This speaks to the gaps identified by Terashima & Clark (2021) and Levine & Karner (2023) in that there is currently a lack of tools for accommodating the nuances within dis/ability more broadly, which reflects a growing concern given the increasing prevalence of neurodivergent conditions across Canada.

Aptly, there is a particular context of accessibility planning which informs this thesis. At the time of writing, Canada is both grappling with the unmet promises of its first provincial accessibility act, whilst ramping up its first federal accessibility act. As such, there is an opportunity to critically engage with the efficacy of accessibility efforts such as planning for AAA in the current Canadian transportation landscape (Laberee et al., 2023). Importantly, there is an evidenced need to engage more meaningfully with neurodivergence within accommodations for transportation and the built-environment, and indication that the current approaches to accommodation planning could be expanded upon to better scope tools to do so.

As noted in the earlier section, many cognitive dis/abilities or neurodivergent conditions, such as ASC and ADHD were siloed within the medical-model of disability and assumed as an individual-responsibility rather than conditions that could be addressed through eliminating societal-barriers. Now, in the context of the neurodiversity paradigm, there is greater support to engage critically with how ‘neurotypical’ expectations in the built-environment can (re)produce exclusion and inaccessibility, especially in transport related public-spaces such as transit stops, streets, and paths (Kenna, 2022; 2023; Sarraf, 2025; Vanolo, 2023). Layered with the context of the political tension in transportation planning more broadly, the current moment holds an opportunity to better understand the barriers to achieving meaningful accommodations for dis/abled people; including the ideological and political contexts that inform meanings of for whom mobility is for and how dis/ability is socially constructed.

To note, although this review scoped various jurisdictional levels of policy (including the influence and standards of policy at the federal and provincial levels), the remainder of this thesis focuses on interrogating accessibility of everyday-transport spaces (such as streets, transit stops/stations, and pathways) and as such, engages predominantly with local-level transportation planning policies, including complete street design guidelines and the operationalization of accommodation measures within.

### ***1.3 SITUATING WITHIN THE POLITICS OF MOBILITY AND DIS/ABILITY***

As demonstrated in the above section, the complexity and political nature of the current transportation and accessibility landscape is fundamental to unpacking the avenues toward more mobility just futures for people of ‘all abilities’. In the past, streets, transport spaces, and the act of ‘transportation planning’ itself were often framed as non-political, value-neutral spaces and practices. The layout and function of a street was conceptualized as purely engineering, and was not theorized as exemplifying ideologies, values, or norms of society (Prytherch, 2025). This distilling of transportation meant that for many years, mobility-practices were theorized as rational, abstracted practices that were siloed from discussions of sociology, geography, anthropology, and cultural-studies (Sheller & Urry, 2006).

However, all mobility is political, and contingent upon societal structures, ideologies, and practices (Sheller, 2018). Since the 2000s, the ‘new-mobilities-turn’, has been retheorizing

mobility for the complex relationship with social-structuring, power, and powerlessness (Sheller & Urry, 2006; Sheller, 2012; Sheller & Urry, 2016; Prytherch, 2025) In this, mobility-practices are enveloped within the complex societal-politics of where they occur and informed by the societal-positioning of the mobile-body of which they are performed in (Sheller, 2012; Sheller & Urry, 2006; Sheller & Urry, 2016). Indeed, it is from the ‘new-mobilities turn’ of which the more comprehensive objective of mobility-justice emerged (Sheller, 2018). Mobility justice moves beyond a spatial-distributive framework of transportation justice to engage with the social-productions of (im)mobilities within contexts of societal power-distributions, including the bodily-politics of mobility and the ‘gendering, racialization, and impairment of mobilities’ in western societies (Sheller, 2018 p. 57).

By examining the politics of mobility produced within complete street planning paradigms, more can be understood regarding the assumptions, values, and ideologies that inform the planning paradigm and the implication for the embedded inclusivity promises. It is of note, one of the founding principles of complete-streets was to unsettle the technocratic ‘value-neutrality’ of past-traditions in transportation planning and traffic engineering (Prytherch, 2025 p. 87). In this, complete streets are meant to be politically informed; however, the ongoing legacies of rational-transportation planning could be limiting the mobility-justice potential of such initiatives (more on this in chapter 3 and 4).

Particularly, as noted by Sheller (2018), the bodily politics of everyday mobility practices are socially produced. To this end, societal structures, ideologies, and norms similarly produce the mobilities of dis/abled people. In the current Canadian context, the ‘status-quo’ of accessibility planning often relies on the compliance-based agendas or ‘checkbox-approaches’ highlighted by Levine & Karner (2023), which can result in ‘flattened’ understandings of dis/ability (Stafford et al., 2022). Particularly, the current planning frameworks and processes are lacking engagement and consideration to dis/ability perspectives (Biglieri et al., 2025; Levine & Karner, 2023; Stafford & Baldwin, 2017; Stafford et al., 2022; Terashima & Clark, 2021).

Indeed, although both critical mobility studies and critical dis/ability studies are established areas of research, Matereke (2020), notes that mobility studies have yet to “return its gaze back to disability studies” (p. 91). Aptly – and in-alignment with the neurodiversity paradigm and

critical dis/ability studies— this thesis engages with the politics of how ability and dis/ability are constructed societally; specifically examining with the politics of ability and dis/ability in everyday mobility-practices. As part of this, this thesis centers the lived-experiences and accounts of people who are neurodivergent as the primary source of knowledge. This responds to both the calls of mobility justice and critical dis/ability studies for research on dis/abled mobilities to more meaningfully engage with the nuanced, pluralistic experiences of getting around whilst dis/abled (Parent, 2016; Goggin, 2016; Matereke, 2020; Saltes, 2018; Sheller, 2018)

This framing further builds upon the theoretical framework of Sarraf (2025), which acknowledged that the current neurodiversity paradigm does not currently engage meaningfully with spatial (in)justices, a framework I argue, can also be extended to considering mobility (in)justices. As will be further discussed within **Sections 5.3** and **6.2.2**, much of the existing research of Autism/neurodivergence is focused on closed, dedicated, spaces such as schools, daycares, and work-place environments (Cecchini et al., 2018). This reflects yet another gap in the current literature wherein, although other forms of dis/ability have been meaningfully positioned within mobile-spatial contexts, neurodivergence has not. In this, spatial injustices experienced in navigating everyday public spaces whilst neurodivergent have yet to be meaningfully unpacked. There is an opportunity for urban planning theory and practice to further the current understanding of the neurodiversity paradigm, especially as it relates to the relational formation of body and places through the practice of mobility (Kenna, 2022; MacPherson, 2011; Sarraf, 2025). **Figure 1** summarizes the research gaps which position this thesis.

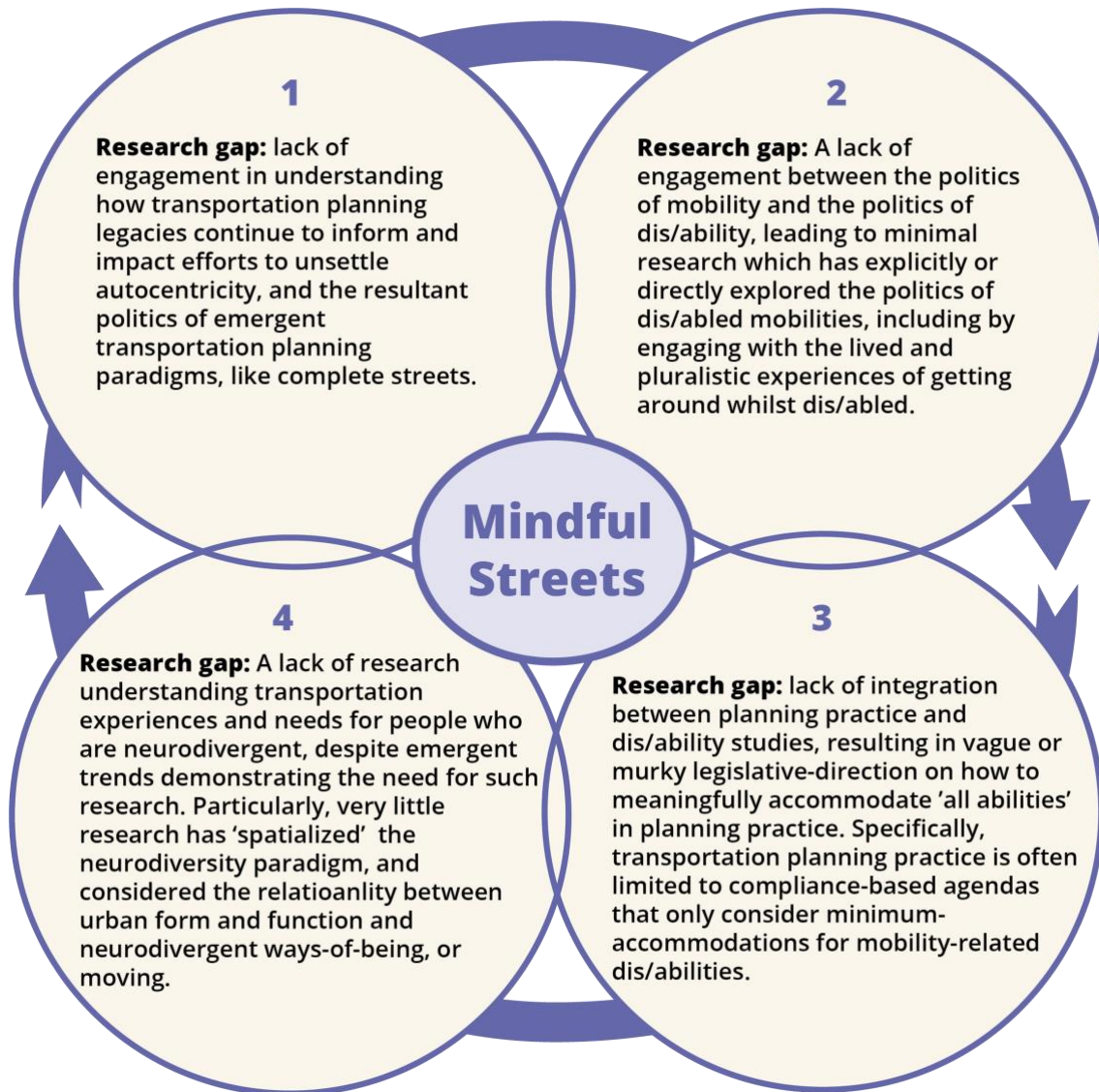


Figure 1: Research gaps

## **1.4 RESEARCH QUESTIONS AND OBJECTIVES**

As noted, this thesis thus aims to address the theoretical, substantive and practical gap of how the politics of current transportation paradigms (i.e. complete street planning) engage with planning for ‘all abilities’, and particularly the everyday mobility practices of those who are neurodivergent. From this interrogation, this thesis conceptualizes how efforts to plan ‘for all’ can be resituated and respond to pluralistic lived experiences of getting around with different ability. To do so, this work is guided by the following overarching research questions:

1. What are the politics of complete streets? How does this politics impact the operationalization of promises to plan for ‘all abilities’?
2. What are the politics of neurodivergent mobility? How do these impact everyday mobility practices?
3. What can complete streets planning, specifically planning for all abilities, learn from an examination of the politics of neurodivergent mobility?

Each of these research questions align with one of the substantive chapters, which feature specific research objectives. **Table 1** conceptually maps this relationship.

Table 1: Research question overview

| Thesis research question                                                                                                                                     | Chapter                                                                                                                                                                                                                 | Chapter specific research objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. What are the politics of complete streets? How does this politics impact the operationalization of promises to plan for ‘all abilities’?</b>           | <i>Chapter 4: Automobility, velomobility, and complete streets? Discursively analyzing the politics of complete street design guidelines in Ontario, Canada</i>                                                         | <ul style="list-style-type: none"> <li>A. Identify the types of bodies and identities that are considered and planned for in complete streets policies;</li> <li>B. Examine how complete streets policies relate to central ideological common senses of automobility: efficiency and economic productivity;</li> <li>C. Explore the relationship between complete streets policies and the publicness of place; and</li> <li>D. Illuminate spaces of resistance within current complete streets policies that could inform a just mobilities future.</li> </ul> |
| <b>2. What are the politics of neurodivergent mobility? How do these impact everyday mobility practices?</b>                                                 | <i>Chapter 5: “I miss the bus, or I take the wrong bus, so many times”: Understanding the micro-politics of everyday neurodivergent mobility practices for inclusive transportation planning</i>                        | <ul style="list-style-type: none"> <li>A. Explore how being neurodivergent affects the ways in which every day travel is navigated and negotiated</li> <li>B. Examine the ways that these micro-politics of everyday travel shape geographies of dis/ability; and</li> <li>C. Scope the potential learnings for just and inclusive transportation strategies</li> </ul>                                                                                                                                                                                          |
| <b>3. What can complete streets planning, specifically planning for all abilities, learn from an examination of the politics of neurodivergent mobility?</b> | <i>Chapter 6: “How should we know when to cross”: utilizing go-along interviews and participatory mapping to explore how ways-of-knowing construct experiences of everyday travel for people who are neurodivergent</i> | <ul style="list-style-type: none"> <li>A. Examine how neurodivergent ways-of-knowing construct experiences of everyday travel and transport spaces; and</li> <li>B. Scope what can be learnt from this in informing more-inclusive planning and design for ‘all abilities’</li> </ul>                                                                                                                                                                                                                                                                            |

## 1.5 THESIS STRUCTURE

This thesis is written as the ‘three-paper model’, with three substantive analytical chapters that act as stand-alone manuscripts and as chapters of the overall thesis. Each chapter builds upon the prior and are meant to narratively form a cohesive document that has theoretical (chapter 3, 5), substantive (chapter 4, 5, 6), methodological (chapter 4, 5, 6), and practical impact (chapter 4, 5, 6). See **concluding chapter 7** for a more fulsome discussion of the thesis contributions. As an overview, this thesis sets out the following objectives for contribution:

**Theoretical:** engage critically with theories guiding current transportation planning paradigms, and scope potential alternative theoretical frameworks that can address the limitations in meaningfully accommodating for pluralistic dis/ability in inclusive transportation planning efforts

**Substantive:** scope a ‘politics of complete streets’ which grapples with the impacts of automobility on the potential of such planning paradigms to reconstitute for whom the street functions. Contribute new knowledge on how everyday travel is experienced by people who are neurodivergent, including the potential differential mobilities produced.

**Methodological:** introduce a framework for evaluating the politics of complete streets. Provide novel methodological learnings on how to conduct participatory research with people who are neurodivergent.

**Practical:** outline recommendations on how planners can be critical and reflective when writing complete street design guides. Provide new considerations for transportation planners when ‘planning for all abilities’.

Notably, although each substantive chapter explores a specific research question the intent is that they are read together to meet the above expected contributions. Certain chapters may be more conceptual and answer a theoretical argument, whereas others may act as practical contributions rooted in empirical argument. **Figure 2** maps the contributions of the different chapters, and how they flow together.

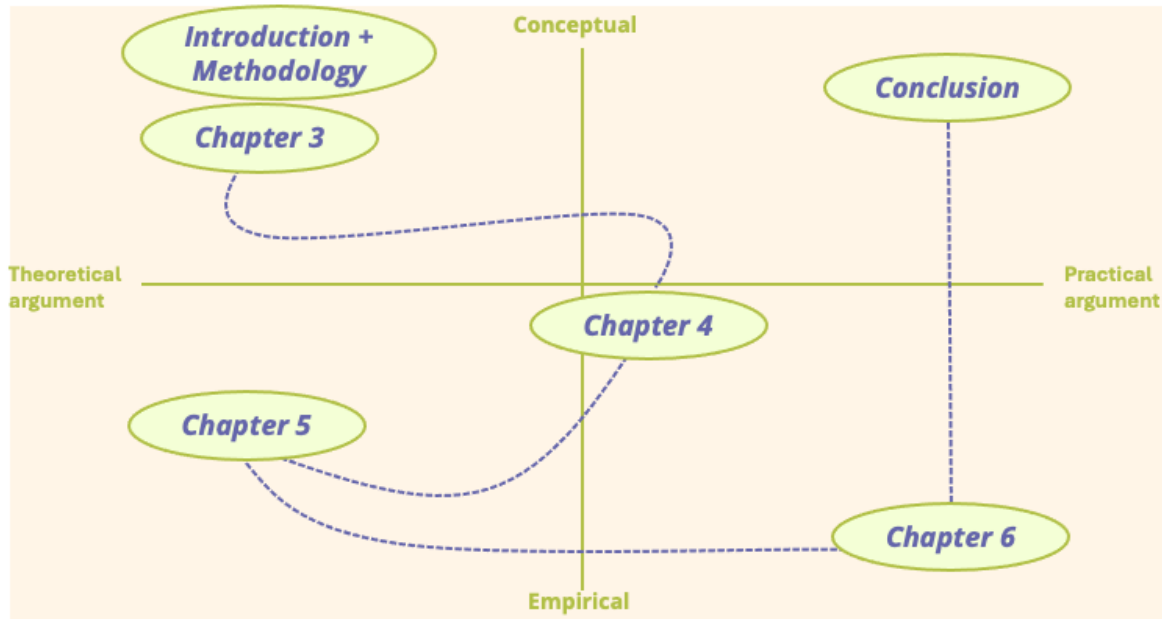


Figure 2: Thesis structure

To this end, the introduction has scoped the current context for this thesis and introduced overall objectives. The following methodology chapter provides an overview into the approach of investigating and answering the research questions. **Chapter 3** then provides a theoretical framework which guides the overall thesis and is applied in various ways throughout the three substantive chapters. **Chapter 4** is the first of such substantive chapters and explores how complete streets planning documents relate to ideologies of automobility and velomobility, and how such ideological positioning can scope the inclusivity potential of such planning documents, especially in context of the operationalization of ‘all ages and abilities’ planning promises. **Chapter 5** goes on to engage with the experiences of ‘being-in-travel’ for people who are neurodivergent, mapping the micro-politics of navigating and negotiating everyday travel, including how mobility is constructed by emotion and the adaptive-tactics that emerge from mobility practices produced from ‘below’. **Chapter 6** then applies these learnings to the knowledge construction of ‘how to’ navigate everyday transport spaces and proposes a framework of “ways-of-knowing” to reconceptualize planning for ‘all abilities’ as a process of knowledge-production. The conclusion (**Chapter 7**) provides a summary of how the research questions were addressed, expands upon the aforementioned contributions, and provides direction for future research and practice.

## 2 OVERALL METHODOLOGICAL APPROACH

### 2.1 ONTOLOGY, EPISTEMOLOGY, AND POSITIONALITY

#### 2.1.1 *Ontology & epistemology*

Ontology and epistemology are fundamental to the practice of research, setting up the assumptions by which we base our understanding of the world and reality. Ontology is, in short, the image of social reality; or to say, “*what is out there to know about*” and epistemology is the process of gathering knowledge and the parameters of what knowledge *can* be gathered (Grix, 2002 p.175). The ontology and epistemology inform how research design is then structured, framing how the world is understood and can be analyzed.

As a research-endeavour that is rooted within unpacking the politics of mobility embedded within complete-street planning paradigms and neurodivergent mobility practices, this thesis is situated within constructivist and transformative research paradigms (Mertens, 2019). Ontologically, this means that what is out there to know about is produced by social-actors, and as such is in constant reform (Grix, 2002). To this end, rather than assuming the concepts of mobility or dis/ability as independent, fixed, and constructed objectively, in constructivist paradigms both are understood as relational and socially constructed thereby in constant (re)formation from societal meanings assigned to them and the interactions between actors and places. Further, as this research examines the experiences of people who are neurodivergent in navigating potentially ‘neurotypical’ expectations in transport spaces, this research ontologically aligns with the transformative paradigm. In this, the ways in which power-structures and societal-positioning construct these various and ongoing ‘*realities*’ are acknowledged and the ‘*consequences of privileging (certain) versions of reality*’ are interrogated (Mertens, 2019 p. 11).

Finally, as this research explores the politics of everyday mobility practice, and the complexities of societal-functioning which can be understood through critically analyzing mobility-patterns, I follow suit to Sheller (2018) and position this research within a mobile-ontology in which “*movement is primary as a foundational condition of being, space, subjects, and power*” (p. 9).

Simply, the ontological framing of this research assumes multiple realities exist and are in constant (re)formation by the unequal relations of the mobilized social actors that produce them. In this, both mobilities and material transport spaces are produced relationally and interdependently by social actors. To this end, *‘what is out there to be known’* is fundamentally relational. In the context of this research, I thus assume that the production of place, mobility, and bodies are understood to occur in relation to one another and are in constant (re)forming, ever unfinished (Tornaghi, 2015). Per Sheller (2018 p. 10), a mobile ontology can further “*detect the relations, resonances, connections, continuities, and disruptions that organize the world*” understanding “*the constant state of revision*” in which social phenomena and categories occur within (Grix, 2002 p.175) is formed by “*ongoing yet temporary mobile formations*” (Sheller 2018. P. 10).

Epistemologically, this research thus understands that ‘how’ we can know about the world is also subjectively produced (Grix, 2002). Following with the constructivist paradigm, this thesis takes guidance from both phenomenology and hermeneutics in positioning that knowledge is understood as produced both through *representations* and *practices* in society, which are also in constant (re)form and evolvment (Mertens, 2019). In this, all ways-of-knowing are fundamentally interpreted by the social-actor, and never objective. In this thesis, constructions of meaning in mobility practices and material spaces were analyzed both discursively (through engaging with the politics of complete street paradigms) and by engaging with lived-experience (through gathering knowledge about everyday mobility practices of people who are neurodivergent). Importantly, in aligning with constructivist epistemologies, research is framed as “*a product of the values of researchers and cannot be independent of them*” (Mertens, 2019 p. 16). In this, context is paramount, including societal power-structures and the interaction of the researcher and participants to these structures. As noted in the researcher positionality statement, I am a neurodivergent researcher conducting this work, and in that, take an active and relational role within the research-design and practice. The relationship between researcher and participants is interactive– rather than objective– and knowledge is thus co-constructed.

To this end, as this research aligns with critical perspectives in dis/ability and mobility justice, the epistemology of this work is also transformative, understanding that knowledge is situated within (and irremovable from) historical and political contexts. Particularly, the ideologies,

values, and norms of society are viewed as irremovable from how knowledge is produced and are actively interrogated through the methodologies of this work. Particularly, this research is guided by the framework of “nothing about us, without us”; centering the voices of neurodivergent participants within data-collection as a response to decades of marginalization wherein research on neurodivergent participants favoured knowledge from carers or ‘experts’, rather than those who are neurodivergent (Kaplan-Kahn & Caplan, 2023; Szulc, 2022).

Importantly, this epistemology contests traditional epistemologies of transportation-research which closer align to rationalism and positivism, often assuming models of rational decision-making that are abstracted from the wider uneven politics of mobility rooted in dominant power-structures and ideologies, and the lived-experiences of being-in-travel (more on this in **Chapter 3**) (Schiefelbusch, 2010). Aptly, this epistemological framing informs the methodology and methods introduced in **Section 2.2**. Constructivist and transformative paradigms often use qualitative research methods that center an interactive relationship between the inquirer and the inquired-into (Mertens, 2019, p.16). Qualitative methodologies thus permit for understandings into socially constructed and relational productions of knowledge, rather than perpetuating rational or ‘value-neutral’ assumptions of past-transportation planning research paradigms.

### ***2.1.2 Temporal and geographic positionality***

Given the constructivist and transformative paradigms which situate this research, it is important to scope the geographic and temporal assumptions embedded within this thesis which can impact the assumptions (or to say, the expected meanings of hypothetical actors) of the society it occurs within. This body of writing is bounded within the relationship of transportation and mobility within 21<sup>st</sup> century capitalist and neo-liberal society (Walks, 2015). Although often abstracted, neoliberalism and capitalism cannot be assumed as placeless and instead reflect the values and beliefs of a certain and dominant society (Massey, 2004). Particularly, within this thesis, capitalism and neo-liberalism are bounded to the context of the Global-North, as despite the rapid globalization of these economic and governance structures, how they unfold in the Global-South cannot be assumed to be equal to the values of the Global-North (Roy, 2011). Therefore, this work will be particularly situated within the context of Global-North/Western specific capitalism and neoliberal governance. Although some conclusions of this thesis may be

extrapolated and applied to other geographic contexts, it is heavily recommended that the context of culture and dominant ideologies be considered prior.

Even more specifically, this thesis is based in Ontario, Canada. As such, it is situated within the societal and political contexts of Canada as a state. As a colonial state, Canada is representative of Western politics and entrenched within unjust systems of power (including white supremacist, patriarchal, ableist, and heteronormative belief systems) that pervade societal expectations and functioning. It is particularly critical to note, that as a settler-colonial state “Canada” is an active tool of the ongoing marginalization and oppression of indigenous populations. Since colonization, indigenous mobilities have been limited, policed, and forced across the nation—signifying the potential of mobility as both a form of power and oppression (Mitchell, 2003; Borrows, 2016), central to the understanding of one’s world (Sheller, 2018). Often in urban planning, indigenous perspectives are what Tedesco and Bagelman (2017) dub the ‘doubly missing’, as their experiences and stories are unheard and unmissed within existing power structures. This work does not aim to unpack the complex histories and injustices of indigenous (im)mobilities in a settler-colonial state, yet recognize this research is situated on indigenous lands. As such, although indigenous experiences are not scoped in this thesis, I recognize this perspective is missing, and that mobility justice cannot be truly achieved without acknowledging and addressing the mobility injustices faced by those who are indigenous to this land.

### ***2.1.3 Geographic context***

As mentioned, this research is particularly scoped in Ontario, Canada. Ontario is the most populous province in Canada. Most of the population lives in the Greater Golden Horseshoe (GGH), a region of just over 30,000 sq.km that is home to over ten million people (Government of Ontario, n.d.). As a region that has experienced intense growth over the past few decades, the GGH is a sprawled and largely autocentric region. As of 2024, 81.5% of commuters in Ontario still opt to travel to work in a car, truck or van (Statistics Canada, 2024b). Previous planning guidance for the GGH focused on intensification and development that supported growth in the established urban centres. In Ontario, there are over 40 complete street planning initiatives, representing a ‘shift’ in planning priorities on the street to challenge the largely autocentric legacies in the province.

However, urban planning is always subject to political will (Linovski, et al., 2025). At the time of writing this thesis, the landscape of planning policy was rapidly changing and conflicted. As noted in the introduction, there is both support and disdain for active and sustainable transportation initiatives. Such political pressures exemplify the complex politics of mobility and the struggle of unsettling former transportation planning ideologies to allow for more inclusive approaches. Moreover, as noted, Ontario was the first province to enact accessibility legislation, which was meant to have fostered a fully accessible province by the beginning of this year (2025). Basing this research in Ontario thus allows for engagement with the potential and limits of accessibility legislations especially as they relate to planning professions (Biglieri et al., 2025; Ross et al., 2023).

Particularly, this research design is scoped within Waterloo, ON (for Phase 3), a mid-sized city within the GGH. Although under-researched in comparison in large metropolitan areas, midsized cities are representative of an important and evolving city-structure in the North American context due to suburbanization and auto-oriented development that have evolved into emerging planning paradigms that reflect smart-growth initiatives (McDougall & Doucet, 2022; Filion, 2023). Waterloo, much like the rest of the province, has an automobile-dominant mode split yet has recently put in place many policies and planning initiatives to unsettle autocentricity (McDougall & Doucet, 2022; Doucet, 2021), including the Regional Light-Rail-Transit system (the ION) that opened in 2019 (Ellis-Young & Doucet, 2024). In this, Waterloo represents a common condition across many cities in Ontario. Incorporated as a City in 1948 (McLaughlin & Cornell, 2015), Waterloo was largely built-up during the peak era of autocentricity, sprawling outwards from the established uptown-core into the suburban periphery (Filion, 2023). As such, the tension between automobility and emerging transportation planning-paradigms that are striving to become more inclusive for mode-users of ‘all ages & abilities’ is pertinent in Waterloo (as noted in the current Transportation Master Plan<sup>9</sup>), wherein autocentric road networks and designs must now be ‘retrofitted’ towards more sustainable and inclusive transportation networks and infrastructure. As such, Waterloo presents a socio-spatial context

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<sup>9</sup> See page 163. City of Waterloo (2020). Transportation Master Plan Update. City of Waterloo. Retrieved from: <https://www.waterloo.ca/en/government/resources/Documents/Cityadministration/TransportationMasterPlan/Waterloo-TMP-Vol-3-Strategy.pdf>

that is broadly transferrable to many other Ontarian cities, especially in confronting the tension between transportation-planning paradigms.

### *2.1.3.1 Ontario's planning system*

As a thesis concerned with urban planning practices, it is important to scope the planning framework with Ontario (as of 2025, the time of writing). In Canada, urban planning is provincially mandated, and municipalities are creatures of the province (Per the Municipal Act<sup>10</sup>). Ontario's planning system is governed by the Planning Act, Provincial Planning Statement, municipal Official Plans and zoning by-laws. Long-term transportation planning objectives are typically written into a municipal Official Plan and then further expanded upon via the functional master planning of a transportation master plan. In the planning hierarchy, transportation master plans must show alignment to the objectives of the Official Plan. Therefore, transportation decision-making is deeply tied to both the municipal government (council) and provincial government (premier and ministers) that are elected at the time the decision-making occurs.

Regarding complete streets paradigms, such initiatives are deployed in many ways across Ontario's planning system. Complete street ideologies can be written into Official Plans, as policy objectives. At times, a consideration to complete streets in the Official Plan can result in a separate complete streets policy that is adopted by municipal council. However, complete street approaches can also be adopted in functional master plans, such as transportation master plans (TMP). In this context, a complete street approach may guide the roadway classifications. However, just with all planning in the Ontario context, these complete-street classifications would need to be adopted within the Official Plan to have regulatory 'teeth', this can include the Official Plan adopting the proposed road-classifications or supporting complete street networks by adopting a schedule (map). In addition to being implemented as an approach or chapter of a TMP, complete streets are also deployed as design guidance. This would typically include proposed roadway classifications and mode-specific design guidance. Typically, complete street design guidelines have most mentions to planning for 'all ages and abilities' (AAA), both in visioning and/or objective statements and in specific AAA design guidance. See **Figure 3** for a

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<sup>10</sup> <https://www.ontario.ca/laws/statute/01m25>

summary of where complete streets planning efforts ‘fit’ within Ontarian transportation planning framework

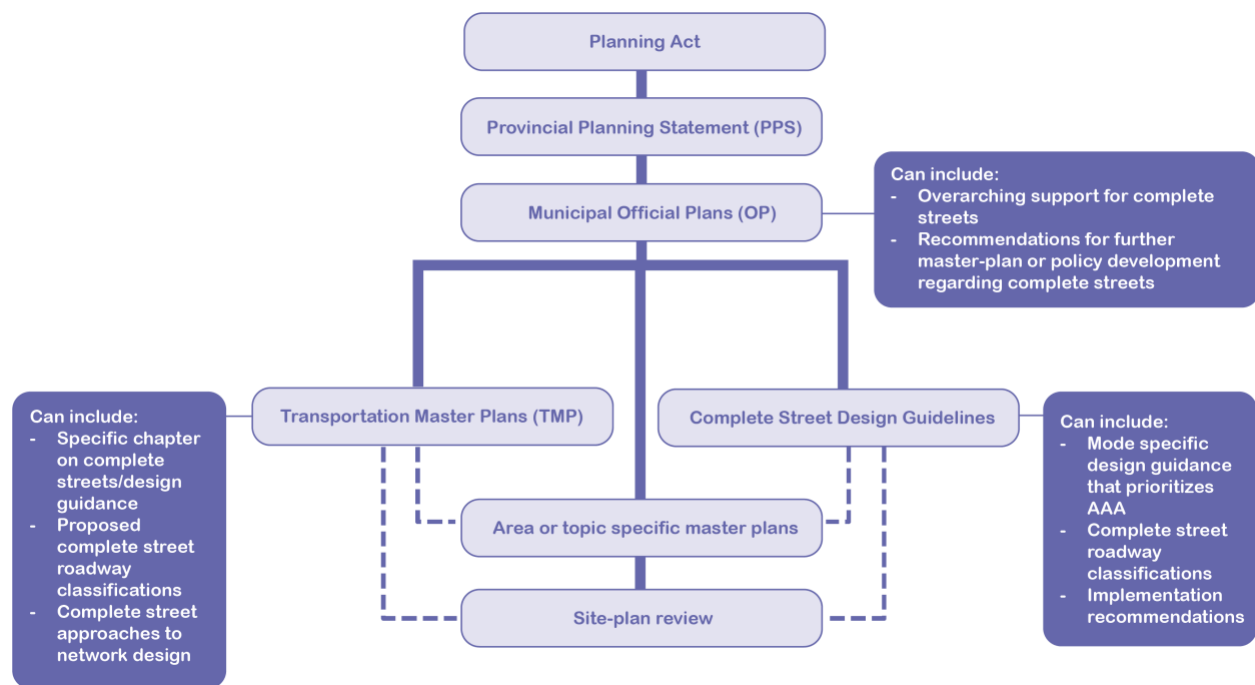


Figure 3: Complete street planning framework in Ontario

As mentioned in the introduction, accessibility planning is governed by the Accessibility for Ontarians with Disabilities Act (AODA), particularly the Integrated Accessibility Standards (O. Reg 191/11). This includes standards for transportation and public space, pertaining to recreational trails, transit vehicles, transit stops, intersections (tactile walking surface indicators) and sidewalks. Most recently, the Ontario government published the recommendations for improving the accessible built-environment standards (2023). In this review, recommendations were made regarding recreational trails and exterior paths of travel (such as sidewalks). The recommendations included providing rest areas every 30m along recreational trails and sidewalks, provide further clarification on ‘firm and stable’ surface for recreational trails, requiring passing areas on trails whenever minimum widths cannot be met, and increasing minimum sidewalk widths to 1.8m with a minimum 1.5m width for travel (Public Spaces Standards Development Committee, 2023). Moreover, in 2018 a review was completed for the transportation standards, and included recommendations for conventional transit, including

enhancing training programs to ensure people with dis/abilities could easily navigate transit systems (Transportation Standards Development Committee, 2018). Compliance with both reviews/updates is currently recommended but not required.

In the Ontarian context, AAA infrastructure typically refers to types of bicycle facilities and multi-use trails (Laberee et al., 2023). In this, any AAA infrastructure that also scoped within the AODA should comply with the applicable AODA standards, which are often also expanded upon the municipal accessibility plans (required by the AODA). For example, an AAA multi-use-trail would require it meet the minimum width requirements outlined in the AODA and have a firm, stable surface. It is of note that there has been a lack of clarity with the application of the AODA for transportation, and there are many inconsistencies in application and understanding of accessibility for urban planners (Biglieri et al., 2025; Ross, 2013).

However, as also noted in the introduction, the regulatory context of accessibility planning is shifting and becoming more progressive. More recently, the Accessible Canada Act was adopted in 2019 and developed based on the principles of ensuring dignity, choice, and the involvement of people with dis/abilities in the development of accommodating-built environments (physical spaces) (Accessible Canada Act, 2019). The full-extent of built-form standards for the ACA are still in development, yet some have been published in draft on the Government of Canada webpage at the time of writing, including the most recent update to the Accessible Design for the Built Environment Standards (CSA/ASC B651: 23). This standard does not require compliance, however, provides important context regarding the landscape of accessibility accommodations and can be recommended at the municipal level. It includes guidance on pedestrian paths, pedestrian crossings, crosswalks, intersections, mid-block crossings, and transit stops and shelters.

## 2.2 METHODOLOGY

To answer the research questions within the stated ontology and epistemology, this research design was structured as a qualitative inquiry that was meant to be reflective, iterative, and adaptive. Each substantive chapter of the thesis (being chapters 4, 5, and 6) includes methodology sub-sections. As such, this introductory section is meant to position the overarching methodological approach, tracing the connective-tissue between each of the methodologies deployed in the substantive chapters. For specific details on methodological frameworks, data collection, and analysis please see **Chapter 4 subsection 4.4, Chapter 5 sub-section 5.4, and Chapter 6 sub-section 6.3.**

Overall, the research design explored how meaning is constructed both in representations of mobility (macro-politics and ideological representations of mobility in complete street planning) and practices of mobility (micro-politics of moving through space whilst neurodivergent). To do so, this research design engaged with planning documents and first-hand accounts of getting around whilst neurodivergent. Particularly, the research design was scoped in three phases:

**Phase 1:** Critical discourse-analysis of complete street design guidelines, examining legacies of automobility and implications for all-ages-and-abilities planning promises (data collected between March 2023-May 2023; data analysis conducted between May 2023-September 2023)

**Phase 2:** Grounded theory analysis of sit-down interviews with people who are neurodivergent on everyday travel experiences and preferences (data collection conducted between November 2023- January 2024; data analysis conducted between March 2024-August 2024)

**Phase 3:** Thematic analysis of go-along interviews traversing everyday transport spaces in Waterloo, ON (data collection conducted between May 2024-July 2024; data analysis conducted between September 2024-January 2025)

Each of these phases built upon each other to respond to the research questions of this thesis (see **Table 2**, below). Although the phases were conducted subsequently (and generally align to one substantive chapter) the learnings from each phase of the research design informed the next and were iterative in development. For example, the data collection period of phase 3 overlapped with the data analysis period of phase 2. In this, the grounded-theory analysis was constructed

iteratively by both existing data and new data being collected, following-suit to best practice (Charmaz, 2014). Additionally, the interview question development of phase 3 was informed by emerging themes in the data analysis of phase 2. Moreover, when writing-up results of phase 3, the learnings of phase 1 were returned to, especially in the current landscape of all ages and abilities planning considerations. As such, the phases of the research design were developed and conducted in-tandem as opposed to in-silos.

Table 2: Overall methodological approach

| <b>Ontology:</b><br><i>Mobile (and transformative) constructivism</i>                                                                              |                                     |                                                  |                                               |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------|-----------------------------------------------|-------|
| <b>Epistemology:</b><br><i>Transformative constructivism</i>                                                                                       |                                     |                                                  |                                               |       |
| <b>Overarching theoretical framework</b><br><i>Production of mobilities in transport planning (see chapter 3)</i>                                  |                                     |                                                  |                                               |       |
| Research question                                                                                                                                  | Theoretical framework               | Analytical framework                             | Method                                        | Phase |
| What are the politics of complete streets? How does this politics impact the operationalization of promises to plan for ‘all abilities’?           | Politics of mobility                | Textual politics/<br>Critical discourse analysis | Policy review                                 | 1     |
| What are the politics of neurodivergent mobility? How do these impact everyday mobility practices?                                                 | Production and politics of mobility | Grounded theory                                  | Sit-down interviews                           | 2     |
| What can complete streets planning, specifically planning for all abilities, learn from an examination of the politics of neurodivergent mobility? | Mobility justice; ways-of-knowing   | Thematic analysis                                | Go-along interviews and participatory mapping | 3     |

The remainder of this section describes the details of participation and data sample, data collection/ recruitment, methods, and analytical frameworks that scopes the three phases of the research design.

### ***2.2.1 Participation and sample***

The first phase of the research design was a critical discourse analysis of planning policies, namely, complete street design guidance. Five complete street design guides were scoped from across the GGH, resulting in 701 pages of critical discourse analysis. Selection of the design guidelines were based on whether the guide specifically referred to complete streets and if the municipality had a range of street-typologies, including both urban, suburban, and rural contexts. This allowed for the analysis to engage specifically with municipalities in the Ontario context that are confronting the ideological-polarization of for what and for whom streets are for and examine how language in complete street design-guidelines can uphold or challenge autocratic ideologies.

In phases two and three of the research design, 44 interviews were conducted with people who identify as neurodivergent and live in Ontario. 30 of these interviews were sit-down conversations and 14 were go-along interviews (described further in **Section 2.2.4**). For the phase 2 sit-down interviews, participants were located from across Ontario, and interviews were conducted virtually (either by Zoom, teams, or phone call). This allowed for more spatial range in the participant pool. Notably, there were participants from across the GGH and wider, including Toronto, Hamilton, Ottawa, Windsor, and Barrie. For the phase 3 go-along interviews, the potential participant pool was scoped to students currently enrolled at the University of Waterloo. This allowed for consistent spatial context for the go-along routes.

For both phases 2 and 3, participants needed to either self-identify or be diagnosed with either Autism Spectrum Condition (ASC), or Attention Deficit and Hyperactivity Disorder (ADHD) and actively-travel around their communities in their day-to-day life. For this study, the participant pool was limited to these two diagnoses as:

1. The current landscape of research on neurodivergence is overrepresented in studies on the Autism spectrum, specifically children who are autistic and their experiences of closed

spaces, such as schools and daycares (Cecchini et al., 2018). There is a need to diversify the knowledge base on neurodivergence (Kenna, 2022; Kenna, 2023) and give voice to different neurodivergent diagnoses and how neurodivergence affects adults in the public realm (Kenna, 2023; Vanolo, 2023), and

2. Both ADHD and ASC share some commonalities in how they can present and affect everyday life, notably in challenges with executive function and sensory sensitivities. As such, in focusing on ADHD and ASC, this study was able to trace experiences of being neurodivergent— both in the plurality of the term and in mapping some shared experiences.

Particularly, this study also recruited participants that actively and ‘independently’ travelled around their communities day-to-day. This thus meant that the participant pool is not reflective of the entire neurodivergent population, that is heterogeneous and includes some people who are dependent on transportation-support. However, given that this thesis was interested in understanding how current transport-spaces were ‘lived’ by people who are neurodivergent, engaging with people who could navigate everyday-travel spaces independently allowed for engagement with the existing negotiations of everyday-space, and the experiences of being-in-travel for people who have a non-mobility related dis/ability.

It is critical to note; participants did not need formal diagnosis to participate in this study. This decision was made as a result of several factors. Firstly, access to ADHD and Autism diagnoses is not always equitable. Historically, the diagnostic criteria for both conditions have been based in the behaviours exhibited by white males, typically in children. In this, the ways in which ADHD or Autism can present in women and racialized populations is under-researched and can lead to diagnostic-biases (Aylward, 2021; Cook et al., 2024; Giwa Onaiwu, 2020). Moreover, accessing a diagnosis can also be rooted in cultural-norms and privileges, often reflecting race and class lines. In this, many people either are not recognized for the ways in which neurodivergent conditions impact them or are not able or supported in accessing formal diagnosis prescribed by a doctor (Giwa Onaiwu, 2020).

Secondly, as a study that was based in understanding the perceptions of people who are neurodivergent, and the potential implications for more-inclusive transportation planning, requiring formal medical diagnoses was unnecessary. At its core, this work is centrally concerned with pluralistic feelings of difference which emerge within everyday travel across neurodiverse populations. To this point, this thesis is framed through the neurodiversity paradigm which aims to destigmatize neurodivergent conditions, and which recognizes that ‘being neurodivergent’ is not a diagnosis, but rather a way of moving through the world (Botha & Gillespie-Lynch, 2023; Botha et al., 2024; Olund, 2024). As such, requiring medical diagnosis would contradict the framework of which this thesis is situated.

Thirdly, in the nature of this qualitative research, it would be functionally impossible to distill neurodivergence from the intersectional identities of each participant which could impact their experiences in-travel, formally diagnosed or not (Brekhus, 2008). As a researcher, I followed MacPherson (2011) in engaging with ‘complex personhood’ when scoping and analyzing findings. In this, I do not assume neurodivergence can be isolated from the various ways participants engaged with me in data collection (especially in the Phase 3 go-along interviews). However, I invite the complexity this brings to the conversation, and the potential of expanding beyond ‘checkbox’ identities in scoping how to plan for more-inclusive transport spaces.

To that end, for both phases 2 and 3, a demographic survey was distributed to participants as part of the interview. This survey asked questions on age, race, and gender, and allowed for a greater understanding into the diversity of the participant pool. As noted, this information was important to collect as neurodivergence does not exist in a silo, and the experiences of being neurodivergent are intertwined with how identity is configured and negotiated through race, gender, and age (Olund, 2024). By having this data to cross-compare we could better understand the sample and the relationality of the sample to other forms of mobility-marginalization. To this end, **Figure 4** summarizes the data sample for phases, 1, 2, and 3, including information on participant demographics and recruitment strategies.

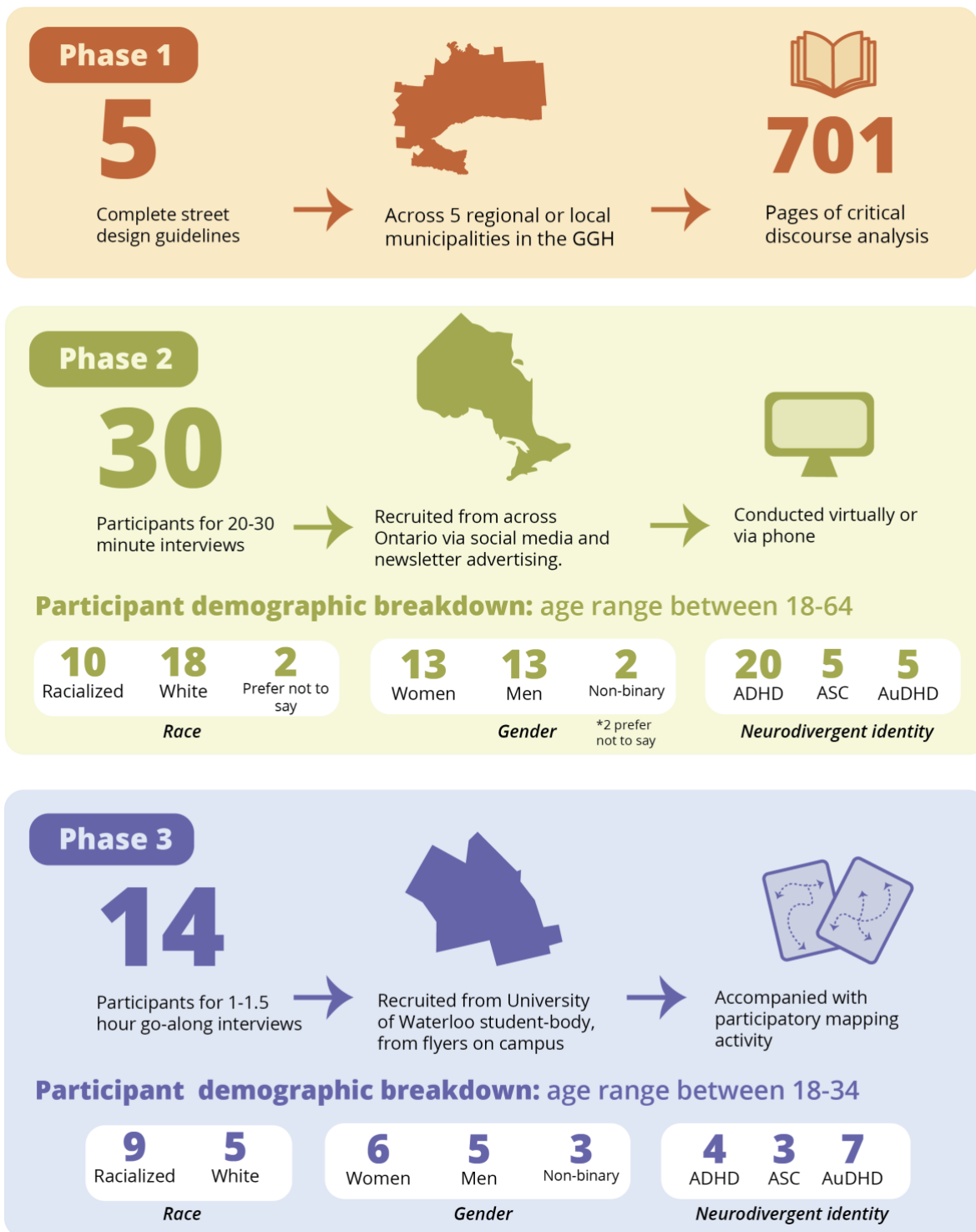


Figure 4: Summary of research phases

### ***2.2.2 A note on conducting research with people who are neurodivergent***

Importantly, in conducting research with people who are neurodivergent, I wanted to ensure I curated an accessible experience that was responsive to potentially differing needs. As noted, all participants that were recruited for this study actively travel (take the bus, walk, cycle, or drive) in their day-to-day lives. In this, participating in either the sit-down interview or the go-along interview did not require them to participate in any activities that were outside of their everyday life.

However, interviewing with people who are neurodivergent may require different practices. Historically, people who are neurodivergent have not been the ones being interviewed, with much research instead being over-represented by interviews with carers, parents, or ‘experts’ (Kaplan-Kahn & Caplan, 2023; Szulc, 2022). Moreover, qualitative research on neurodivergence is also emergent in comparison to a longstanding quantitative research program (Bolte, 2014). As such, this thesis was scoping a relatively novel research design in the Phase 2 and 3 interviews.

To ensure accessible and responsible research design, existing research on best-practices for interviewing with people who are Autistic and neurodivergent was scoped to guide the interviews (Cridland et al., 2014; Szulc, 2022; Kenna, 2023; Kaplan-Kahn & Caplan, 2023; Kakoulidou et al., 2024). Key recommendations from this review include a life-cycle approach to interviews, wherein accommodations are put-in-place from recruitment to post-interview follow-up. This could include alternative recruitment accommodations, including showing-extra information on what to expect and sharing information on the research team (Szulc, 2022) and opting for online recruitment methods that don’t require participants to call or email (Cridland et al., 2014). In preparing the interview, it is recommended that a neurodivergent researcher should be involved from the beginning of preparing interview questions and scoping the study (Kaplan-Kahn & Caplan, 2023). Additionally, researchers should ask participants for accommodations they may need before-hand and ensure the interview can take place in a venue with minimal distractions (Szulc, 2022). During the interview it is recommended that researchers discuss the positionality they are willing to share (especially if the researchers are neurodivergent) and be adaptive to change communication measures if needed (such as turning off video during an interview or allowing participants to wear noise cancelling headphones) (Kaplan-Kahn & Caplan, 2023). After the interview, it is recommended that researchers follow-up with next steps

as soon as possible, and if possible, engage participants in data-analysis (Cridland et al., 2014; Szulc, 2022). At the close of the study, participants should be informed of research findings (Cridland et al., 2014).

In this thesis I utilized my positionality as a neurodivergent researcher to inform the formation of recruitment, interview-structure, and communication (including reminders for scheduled interviews). Moreover, I interviewed all participants and self-disclosed as the start of the interview to build-trust and ensure participants did not feel ‘othered’ during the interview (Kaplan-Kahn & Caplan, 2023).

Additionally, adjustments were made in recruitment, wherein I opted to use a website as opposed to requesting participants to email or call to participate, which has been found to limit participation for people who are neurodivergent (Cridland et al., 2014). Moreover, in preparing interview questions, an adaptive approach was taken wherein participants were encouraged to lead the conversation in whichever direction they felt most relevant. The researcher could refer to the question script as a guide, but conversations were meant to respond to the context presented by the participant and build-naturally. This was meant as a strategy to build trust and autonomy for participants in the absence of a co-designed research process (Kakoulidou et al., 2024). Given this, interview questions were not provided in advance, but sample questions and interview-themes were included in the Letters of Information (LOI) (See **Appendix A**), and I also discussed types of questions during the preamble of each interview with participants. Moreover, following Szulc (2022), regular signposting was conducted throughout the interviews even when going ‘off-script’ to ensure participants knew the structure of the interview (i.e. “we have two more questions left” or “we will discuss another three topics”).

Member-checking was also conducted as part of both Phase 2 and Phase 3 to ensure findings accurately reflected what was heard in the interviews. For Phase 2, this included a summary of the first phase of findings, which allowed for participants to comment on theme-generation and direction of the data analysis. For phase 3, this included a summary of key-takeaways from the interview. These efforts of member-checking contributed to the rigour of the study and ensured that the enclosed findings aligned with the experiences of the participants (McKim, 2023). More information on learnings from the interview-process are included in **Section 7.4.2**.

### 2.2.3 Data sourcing and recruitment

For the policy review, documents were sourced from what was publicly available on municipal websites and based on a review of Complete Streets for Canada policy database<sup>11</sup>. The selection process for documents is included below, in **Figure 5**.

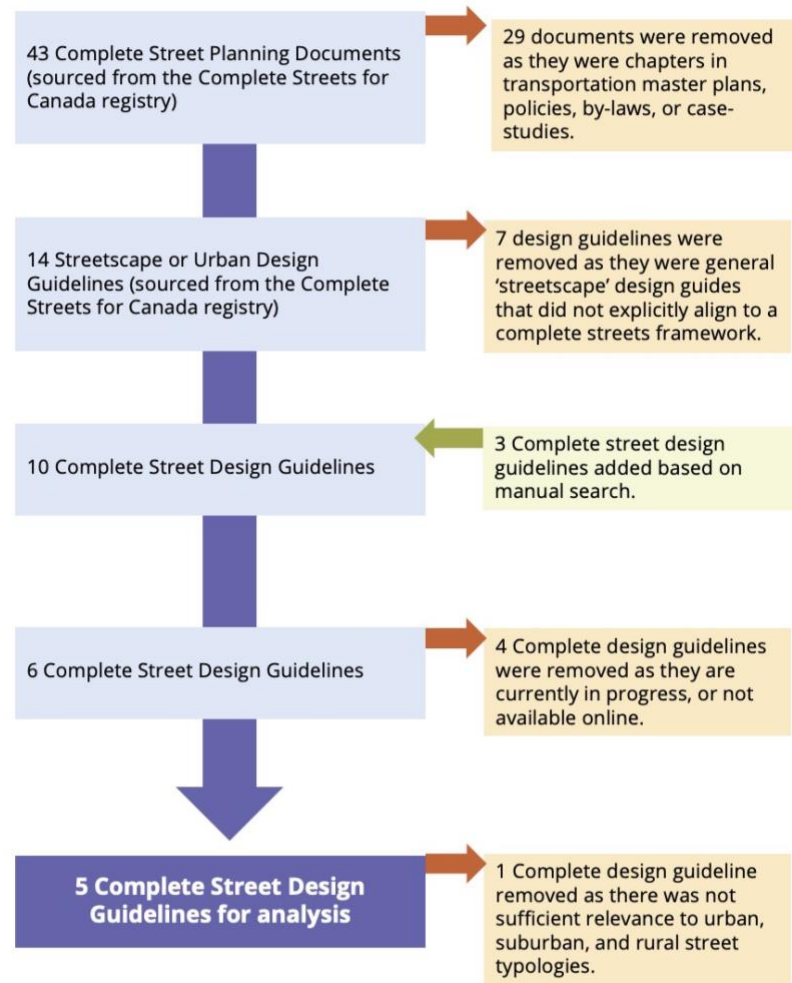


Figure 5: Data selection process for phase 1

Participants for phases 2 and 3 were recruited from online advertisements across social media platforms, placements in newsletters for ADHD awareness groups, and flyers on university campus. Interested participants scanned a QR code that was available on all recruitment

<sup>11</sup> <https://completestreetsforcanada.ca/locations/>

materials and linked to the study website ([www.uwaterloo.ca/mindfulstreets](http://www.uwaterloo.ca/mindfulstreets)). On the study website there was information on the two phases of the study, including the Letter of Information (LOI), and webforms for people to leave their contact information if they were interested in participating. The recruitment materials, including sample social-media posts and graphics, the flyer design, and the Letter of Information (LOI) are included in **Appendix A**. For participants who were interested in phase 2, sample maps of each route were uploaded directly to the webpage and included in the letter of information.

Since both phase 2 and phase 3 involved human-participants, ethics approval was obtained from the Research Ethics Board of the University of Waterloo (REB#: 45403). A copy of the ethics approval is included as **Appendix B**. For phase 2, participants were not offered any remuneration and participated as volunteers. Given the greater time commitment of the phase 3 go-along interviews, participants were offered a \$40 VISA gift card as remuneration.

#### *2.2.3.1 Recruitment and sourcing limitations*

It is important to note a few limitations in the recruitment and sourcing approach. Firstly, in Phase 1, the policy review scoped complete street design guidelines as to engage with the embedded politics, ideologies, and values of complete street planning paradigms. As noted, there are various forms of planning policy that can include complete street policies or recommendations; however, for the purpose of the critical discourse analysis the policy review was scoped down to just design guides as these provide the most fulsome discussion of complete street values and principles. Future research could examine other forms of complete street planning documents (including chapters of TMPs, Official Plan policies, etc.) to expand on this analysis. Moreover, similar analyses could also be conducted for adjacent planning paradigms, such as walkability, bikeability, or transit-friendly communities.

Secondly, as this study relied on voluntary methods of recruitment for phase 2 and 3 (such as coming across the study on social media, seeing an advertisement in a newsletter or flyer, or word-of-mouth), the sample cannot be considered representative of all neurodivergent populations and may over-represent a population who had pre-existing thoughts or feelings regarding transportation accessibility. In this, the open-ended methods of recruitment had limitations in ensuring a representative sample; however, for this research purpose, was the

preferred method. Open-ended recruitment supported a demographically and geographically diverse sample and allowed for the exploratory scoping of neurodivergent mobility-practices. Given the current scarcity of research on the topic, taking a ‘broad-brush’ to recruitment allowed for phase 2 of the methods (sit-down interviews) to engage with many different neurodivergent perspectives, across age groups, race, gender, and geography. Moreover, in phase 3 go-along interviews, the recruitment methods supported engagement with a diverse-sample of the University of Waterloo student body. However, in phase 3, another limitation is the age of the population, which (as limited to university students) was entirely between 18-34. Each substantive chapter (4, 5, and 6) includes a limitations section which goes into more detail on the particular limitations of the framing of the manuscript and methods, and there is further discussion of this limitation in **Section 6.5**.

As research on the intersections of transportation and neurodivergence continue to develop, it is recommended that more research deploy recruitment methods that reach populations who would not ‘self-select’ themselves for participation in a study. This could include taking gate-keeper methods to recruitment via engaging with established organizations or groups (Andoh-Arthur, 2019).

#### **2.2.4 Methods**

As mentioned, there were multiple different forms of data collection deployed as part of this research design. Detailed descriptions of the different methods are included in each of the substantive chapters; however, the following is meant to provide an overview of the enclosed methods and their application throughout the thesis.

In **phase 1**, a policy review was conducted. Policy reviews can be quantitative, if reviewing for count of terms, or qualitative, if concerned with the narrative content. For this study, the policy review was qualitative in nature, focused on uncovering the positionality of these plans within the wider politics of mobility through critical discourse analysis (Lemke, 2003; 2005).

In addition, during **phase 2** sit-down interviews were deployed to capture the experiential accounts of getting around whilst neurodivergent. Current research on neurodivergent mobilities is sparse, and only further limited by a lack of research that engages directly with people who are

neurodivergent (Kenna, 2023). Indeed, most research on Autistic individuals do not speak with Autistic individuals, preferring interviews with carers, experts, or second-hand texts (Kaplan-Kahn & Caplan, 2023; Szulc, 2022), including current research on the built-environment (Cecchini et al., 2018; McAllister et al., 2022; Vanolo, 2023). However, as noted in the introduction, the absence of dis/ability perspectives in transportation planning literature and practice is worrisome. Particularly, there is a lack of engagement with the lived experiences of getting around whilst differently abled. As such, this thesis prioritized talking directly with people who are neurodivergent. The sit-down interviews utilized an in-situ approach to gather data on the landscape of current everyday mobility practices negotiated by people who are neurodivergent (May & Lewis, 2020), including via strategies of ‘virtually go-along’ stories of everyday commutes, discussing sensory-experiences of transport-spaces, and centering conversation on personal lived-experiences (May & Lewis, 2020). The application of this method thus challenges the dichotomy often placed between ‘standard’ and ‘innovative’ methods and was developed and analyzed as an explorative inquiry which allowed for substantive knowledge to be generated on the broad landscape of everyday neurodivergent mobility practices. The interview script is included in **Appendix C**.

This approach was then expanded upon in **phase 3**, via go-along interviews. Once a broader understanding of what it means to get around as neurodivergent was established via phase 2, go-along interviews were then conducted to spatialize this understanding in different types of everyday transport spaces (including streets, trails/paths, and transit stops/stations) to uncover how people who are neurodivergent understand, and navigate transport-spaces in real time (Dean, 2016). Of note, the go-along interviews allowed for information on everyday mobility practices to be further spatialized and center how mobility is embodied by participants (Kenna, 2022). Particularly, go-along interviews are a sensuous process which permitted for not just recounts of everyday mobility, but observations and engagement with actual mobility-practice to be part of the data analysis (Kenna, 2022; Dean, 2016).

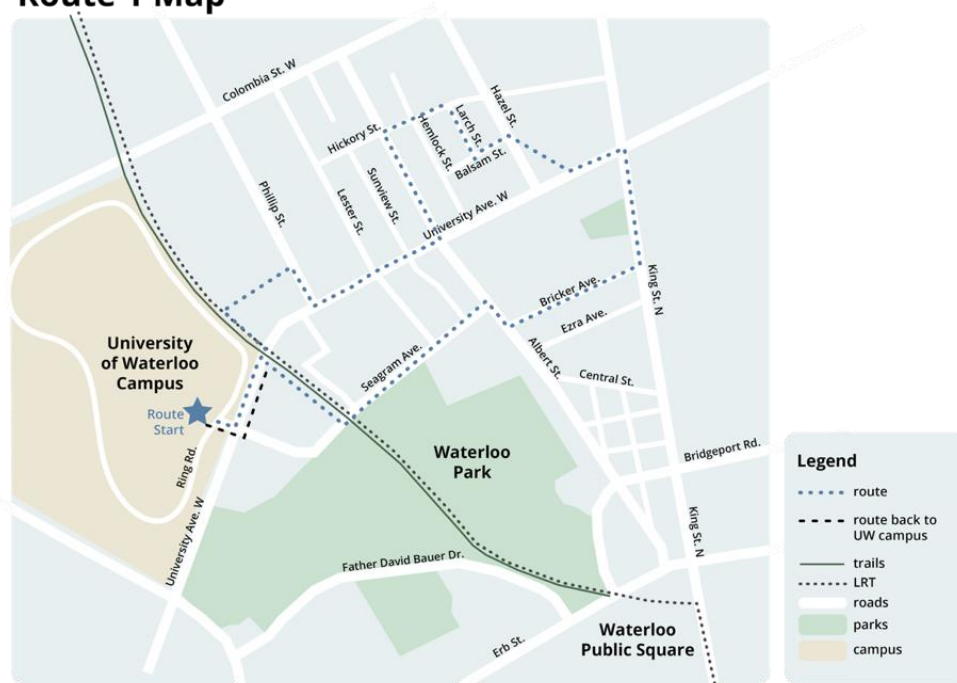
However, drawing from the best-practices on interviewing with people who are neurodivergent, the go-along interviews were also accompanied by a participatory mapping activity which allowed for experiences along the route to not only be dictated but also annotated. Accommodating multiple ways of conveying how participants felt during the go-alongs ensured

that findings did not only rely on what could be spoken, but also give space for participants to communicate embodied, sensory, experiences along the route.

For this thesis, the go-along interviews followed two routes within Waterloo, ON that traversed a variety of everyday transport-spaces near the University of Waterloo (See **Figure 6**, below).

Particularly, routes were scoped to interact with infrastructure and street-designs that are typically defined as ‘complete’ or for ‘all abilities’ as well as infrastructure that had been identified as potentially challenging in emerging work on neurodivergence and the built-environment (Cecchini et al., 2018; Tola et al., 2020; Kenna, 2023). This thus concluded with a route design which traversed typical ‘complete street’ typologies (being street with recent improvements to pedestrian, cyclist, and transit facilities), a wide range of transit-stop typologies, riding the LRT (for those who selected Route 2), a multi-use path, a shared-street (woonerf), typical autocentric street-design, and a variety of intersections and crossings. These interviews expanded upon the sit-down interviews to engage with how understandings of every-travel spaces are formed by people who are neurodivergent and provide more depth on the experiences of being-in-travel. Questions predominantly focused on feelings of comfort and understanding when navigating the routes, and the interview guide is included in **Appendix D**. More information on the routes and the construction of this method is included in **Section 6.3.2**.

## Route 1 Map



## Route 2 Map

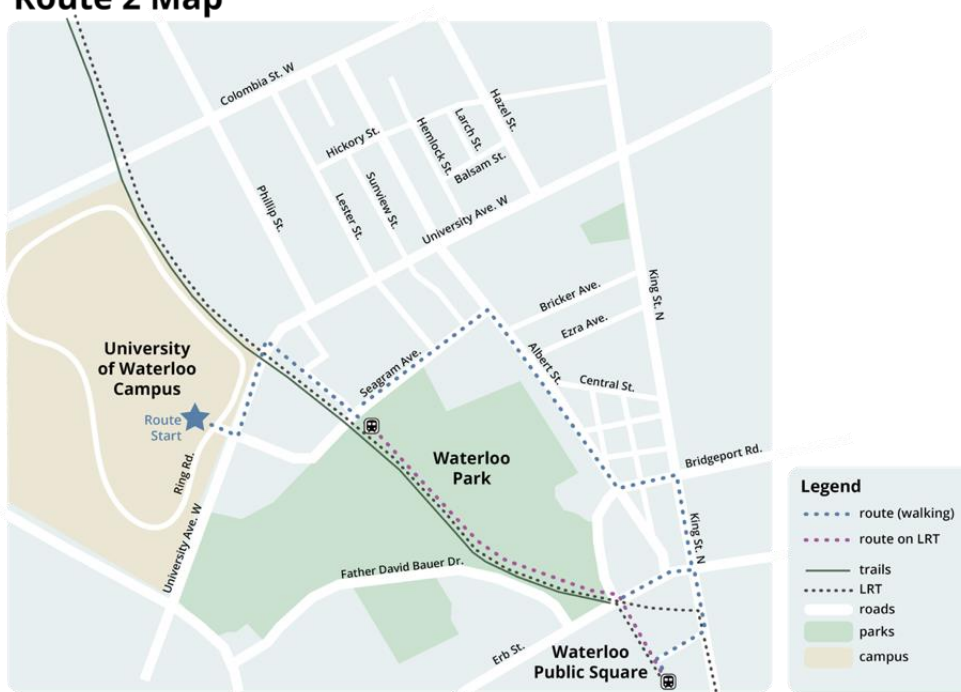


Figure 6: Phase 3 route maps

### ***2.2.5 Analytical frameworks***

All analytical frameworks utilized within this thesis needed to align with the overall ontological and epistemological positioning. Aptly, the following analytical frameworks were deployed to frame, collect, and analyze the data enclosed within this thesis: critical discourse analysis, grounded theory, and thematic analysis. Each of these practices rely on reflective practice and a constructivist perspective that uncovers multiple meanings and understandings of place and identity. Critical discourse analysis allows for a mapping of the mobility representations that are formed in textual politics, specifically within complete street design guidelines. This maps how ideologies and values are embedded within forms of text, specifically drawing upon the ways in which institutionalized documents (like planning policies) can be a means to understand broader societal values.

To understand the embodied and experiential dimensions of mobility, particularly for those who identify as neurodivergent, this thesis deployed both grounded theory and thematic analysis. Grounded theory was utilized as a means to build new theory around the politics of neurodivergent mobility (Charmaz, 2014). Such grounded theory approach allowed for exploratory and iterative analysis which was then further refined in a later thematic analysis of the go-along interviews. Both analytical frameworks worked together to meaningfully engage with the lived experiences of travelling whilst being neurodivergent. Particularly, in using both grounded theory and thematic analysis with the interview-datasets, this thesis was able to scope both new theoretical and empirical knowledge about the politics of neurodivergent mobilities.

### 3 THE PRODUCTION OF MOBILITIES IN CURRENT TRANSPORT PLANNING: A THEORETICAL FRAMEWORK

#### *OVERVIEW*

Efforts to make transportation planning more accessible and inclusive are becoming increasingly prevalent across North American contexts. However, as these initiatives become popularized so too have critiques that posit the outcomes of these initiatives are not fulfilling the promises. In order to respond to this gap, this chapter scopes a theoretical framework that situates transportation planning paradigms within the broader production and politics of mobility, particularly examining how transportation planning paradigms both produce and are produced by the macro and micro politics of mobility. This theoretical framework is meant to offer new ways of thinking about the underlying politics and assumptions which continue to inform and construct even progressive transportation planning paradigms, and the potential of moving from rational to relational epistemologies.

**“In contrast to privileging efficient flows of traffic and unfettered mobility, whether that be for the fast-moving pedestrian or the rush-hour automobile commuter, we might argue that there are “vital frictions” that take place within the uneven terrains of corporeal mobilities...” – Mimi Sheller, 2018 p. 56**

**“Man, there’s an opera out on the turnpike  
There’s a ballet being fought out in the alley”  
...  
“Outside the street’s on fire in a real death waltz  
Between what’s flesh and what’s fantasy  
And the poets down here don’t write nothing at all  
They just stand back and let it all be”**

**- Bruce Springsteen, *Jungle Land***

*“Outside the street’s on fire in a real death waltz”* writes Bruce Springsteen, *“between what’s flesh and what’s fantasy”*. This lyric speaks poignantly to the ongoing –and seemingly impossible to manage– contestation (*death waltz*) for the street, and for whom it functions. Particularly, as highlighted by Springsteen, this fight is one between what is lived (*the flesh*) and what is ideology (*the fantasy*). Indeed, as noted in the introduction, competing ideologies of for whom the street should prioritize has left unmet inclusivity promises in current transport planning that then construct the lived-experiences of everyday travel for those who have historically faced mobility-marginalization (Stafford et al., 2022). Aptly, although the supposed complete street ‘paradigm-shift’ that promises to accommodate diverse-mode users of ‘all ages and abilities’ has been ongoing for over 20 years<sup>12</sup>, many transport-spaces remain exclusionary as the discipline of transportation planning more broadly grapples with an existing set of tools and approaches that, as I will go on to argue, may be ill-equipped to confront such a *death waltz*.

Indeed, since the very conception of transport planning, the planning and design of streets and transport systems have been firmly rooted in rationalism; basing decision-making on abstracted, logical assumptions, and economic models (Schiefelbusch, 2010). The impact of this history is tangibly visible in much of current transportation infrastructure wherein, per Sheller, “efficient flows of traffic and mobility” are privileged (regardless of mode) over the “vital frictions” of corporeal mobilities (2018 p. 56). In this, the messy and uneven politics of mobility that occur in everyday transport spaces– *from the opera on turnpike to the ballet in alley*– are unexamined. Rather, time in transport is theorized as abstracted and ‘placeless’ or, in the language of transportation planners and engineers, mode and route choices are decided upon solely by what takes the least amount of time and money (Schiefelbusch, 2010). Indeed, per Cresswell (2010), in current theorizations of transport and mobility, time-spent in travel is understood as ‘dead time’, aimed to be minimized. To this end, transport planning becomes solely concerned with distances between point A and point B, rather than interrogating experiences of being-in-travel.

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<sup>12</sup>The term complete streets emerged in 2003 as the ‘catchier’ iteration of routine accommodation and context-sensitive-solutions (CSS). In this, ‘complete streets’ and ‘planning for all ages and abilities’ are only the most recent ‘brand’ of ideologies that have been struggling to gain a foothold since the 1970s (Bas et al., 2024).

Even in the mobilities-turn, which interrogated the ‘sedentarism’ of the social-sciences in the wake of an ever more-mobile world (Sheller & Urry, 2006), transportation planning and transport theories have remained curiously apathetic to what it means to be mobile, and the experiences that are constructed by the mobile-body. Per Schiefelbusch (2010) *“As travel is an integral part of transport, one would expect transport science to have taken some interest in the different effects the different forms of movement (walking, cycling, etc.) have on people and their travel decisions. However, while a large body of research has sought to understand and model patterns of mobility and in particular modal choice, the actual act of travelling has attracted surprisingly little attention.”* (p.201).

This disembodiment of being ‘in-travel’, even ‘inclusive’ transportation efforts (such as complete streets planning paradigms) are limiting the understanding of how being-mobile is negotiated, especially across diverse bodies, identities, and lived-experiences (Sheller, 2018; Waitt & Harrada, 2023). A gap which has been identified across disciplines, wherein there have been persistent calls to align mobility studies and critical dis/ability studies (Goggin, 2016; Matereke, 2020; Parent, 2016; Stafford et al, 2022; Waitt & Harrada, 2023). Parent (2016) particularly notes that for people with physical dis/abilities *“little is known about what it means to move through cities while using wheelchair”* (p.32). Such gap could be then limiting the potential of the inclusivity promises embedded within these initiatives. This is especially pertinent for complete street planning paradigms, which are listed as a principle of mobility justice (Sheller, 2018).

To this end, this chapter contends that current transportation planning needs to be resituated to respond to the challenges at hand. Particularly, I argue that a lack of critical engagement with the underlying theories and epistemologies of transportation planning has led to transportation planning paradigms that are untethered from the (often uneven) politics which construct them. Such abstraction then has serious implications on the then available tools for transportation planners to meaningfully engage with and accommodate for the produced differential mobilities.

The objective of this chapter is to situate complete streets as a planning paradigm within the dominant histories and theories of transportation. From this, I then scope a theoretical framework for positioning the practice of transportation planning within the broader politics of mobility, as a

means to center experiences of ‘being in-travel’ and conceptualize the production of mobilities within ‘complete street’ planning paradigms. I attest that this framework allows for a better understanding of the relationship between mobilities produced from “above” and “below” and can decenter transportation planning paradigms that privilege ‘efficient movement’ and move towards more meaningful engagement with the ‘vital frictions’ produced in everyday transport spaces.

### **3.1 *DEFINING AND CONTEXTUALIZING COMPLETE STREETS***

Before diving into the theoretical argument, it is important to first define complete streets. ‘Complete streets’ are one of the more prevalent planning tools and frameworks currently deployed as part of the inclusive-transportation paradigm-shift. Across North America, complete streets are defined as efforts to “ensure that the entire right of way is routinely designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages and abilities must be able to safely move along and across a complete street” (McCann and Rynne in Zvestoki and Agyeman, 2015 p. 3).

In the U.S. there are over 1300 current complete street initiatives (Elliott et al., 2022) and in Canada there are over 100 complete street policies, guidelines, and planning documents identified by Complete Streets for Canada (Complete Streets for Canada, n.d.). Despite this widespread adoption of complete streets, very little research has engaged with the politics of complete streets, beyond positioning complete streets as a ‘good’ thing for cities (Gregg & Hess, 2019). However, per Golub (2014) “Complete streets concepts didn’t fall to Earth, they also arise in a particular social context” (p. 37). Indeed, complete streets are not an uncalled-for shift reconceptualizing the very politics of transportation planning, rather they are particularly situated within the context of transportation planning legacies. As noted in the introduction, complete streets were originally theorized as a politically informed response to the ‘value-neutral’ legacies of autocratic transportation planning (Prytherch, 2025).

To this end, complete streets could not exist without autocracy, because the ‘complete street’ planning paradigm is a direct response to the rise and subsequent plateauing of autocracy as a planning ideology. Tied to the emergence of Fordism, car-centric decision-making was built upon an era of heavy government funding for economic expansion. However, the rapid and

boundless growth was unsustainable. As quickly as cars became the dominant mode of travel, the faults of such prioritization began to show. In the 1970s, the supply of land that accommodated the suburban development patterns of new highways and roads dwindled. Gas prices skyrocketed and car ownership was no longer ‘cheap’. In response, the economy blundered, and government spending was discouraged (Golub, 2014).

In the subsequent emergence of neo-liberal politics, the car rebranded into a poster child of efficiency and ‘freedom’; conveniently shedding the years of heavy government subsidy that permitted for the expanse of carcentric infrastructure we know today (Walks, 2015; Golub, 2014). Such ideologies proved to be resilient. Even as the fault lines of autocentricity became more visible, with clogged highways and roads, unaffordability, and unignorable environmental impacts, the ideologies of the car as ‘efficient’ ‘free’ and ‘productive’ movement remained.

Now many communities (especially across North America) are dependent on the car as years of heavy investment in roads and highways correlated with divestment from public transit systems and active transportation infrastructure (Levinson et al., 2017). Moreover, the spatial-development patterns that are supportive of the car (such as highways, large block sizes, suburban cul-de-sac roads, and vast parking lots) made counter-intuitive conditions for mass public-transit and active transportation networks which rely on tight-knit grid-networks (Levinson et al., 2017). Therefore, for many, there are no other options to get around but by car. In this, all emergent transportation paradigms remain wound up in the dominant and persistent ideologies of automobility. Jones & McCreary (2022) call this resistance to change ‘zombie automobility’, in that it remains engrained in decision-making long after the severe societal and environmental fallouts became unignorable.

The positioning of complete streets within this politics of automobility raise critical questions. Although often positioned as the antithesis to such legacies of autocentricity, complete streets are equally wound up in such legacies of automobility and ongoing neoliberal politics (Golub, 2014). In this, some scholars have grappled: did complete streets planning ideology emerge as the natural next step after autocentricity proved to be no longer economically sustainable? Or is it a confrontation on the values of autocentricity to right the wrongs and mobility injustices? (Golub, 2014; Zavestoski & Agyeman, 2014). On paper, one might argue the latter. ‘Complete

streets’ are listed as a principle for mobility justice, to “ensure that all modes of moving are afforded space and that streets are not dominated by one mode, such as cars” (Sheller, 2018 p.172). Even more, design guidance of complete streets often promote infrastructure that supports a broader range of users, specifically users of ‘all ages and abilities’ (AAA). In this, complete streets as a concept pushes beyond solely mode-based equity, to also interrogate how different identities (often based in income, race, age, ability, and gender) are accommodated, or not, in the current priorities of street-design.

However, there have been issues raised with the gap between the inclusivity promises and outcomes of complete streets (Gregg & Hess, 2019; Zavestoski & Agyeman, 2014). Although well-meaning, efforts to make ‘complete’ streets that work for ‘all’ can unintentionally uphold unequal power relations and continue to produce disabling spaces. Particularly, the ways in which planning for ‘all ages and abilities’(AAA) is operationalized has been contentious. Laberee et al., (2023) note that although there is a near consensus on what it means to plan for ‘all’ ages, to plan for ‘all’ abilities is comparatively murkier. Per Elliott et al., (2022) only 7% of complete streets policies consider racialized populations, low-income populations and women and although 80% consider people with dis/abilities, the consideration often lacks depth and nuance.

Such a gap demonstrates that although there are attempts to include all, the lived experiences of people who have different abilities remain under considered in even inclusive planning paradigms (Stafford & Baldwin, 2017; Stafford et al., 2022; Schiefelbusch, 2010; Terashima & Clark, 2021). To this end, although complete streets represent a topical shift in transportation planning ideologies, there is more to know regarding the theoretical foundations of such initiatives. The following section traces the histories of transportation planning, and implications for inclusivity and justice potential of ‘complete’ streets.

## 3.2 A BRIEF REVIEW OF TRANSPORTATION PLANNING THEORY

### 3.2.1 A long history of being rational

Transportation planning theory, as a subject-specific discipline within planning theory is remarkably undertheorized<sup>13</sup> (Willson, 2001; Divall, 2014). Long rooted in non-political traditions stemming from the close interrelationship with civil engineering, transportation planning theory has mostly stayed positioned within rationalism (Schiefelbusch, 2010), particularly instrumental rationality (Willson, 2001). In this, transportation planning research is largely overrepresented by quantitative research (Klien et al., 2025) and objective assumptions regarding the interactions between transport, land-use, and populations. Per Willson (2001), in the instrumental rationalist paradigm, transportation planning “*maintains that what we know is based on what we can observe in a neutral and dispassionate manner*” (p.3)<sup>14</sup>. As a result, traditional approaches to transportation planning are often abstracted, and intriguingly, immobile (Divall, 2014). Rather than engaging with experiences of being ‘in-travel’, (Schiefelbusch, 2010) time spent getting around is theorized as ‘dead’ and, aimed to be reduced as much as possible (Cresswell, 2010). Moreover, such approaches are often aspatial, presuming “*space is an empty background that transportation infrastructure simply moves through*” (Sheller, 2018 p. 23). These limits have led rationalism to be critiqued (Willson, 2001; Schiefelbusch, 2010), however such legacies of rationalism in transportation planning have proven difficult to unsettle, with “this model of transportation planning” remaining “*remarkably unchanged over the last 50 years*” (Willson, 2001, p.4).

### 3.2.2 Theorizing transport-justice

In this, conceptualizing how to make transportation planning more just can also be limited (Pereria, et al., 2016). Although considering transportation disadvantage and social inequity has been a part of transport planning since the 1960s and 70s, alongside the civil rights movement

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<sup>13</sup> A search of the Journal of Planning Theory resulted in only six articles regarding transportation planning (Title search for “transport”, “mobility” or “transportation”). Of the six, only one provided novel discussion into the histories and futures of transportation planning theory.

<sup>14</sup> Willson (2001) notes that true instrumental rationality is rarely achieved in practice, due to political influences. However, this paradigm theoretically informs transportation planning and its assumptions.

(see, for example, Wachs & Kumagi, 1973) the underlying assumptions of a ‘rational’ planning process has been informing the conceptualization of such efforts (Willson, 2001).

Aptly, transport justice has typically been scoped to addressing the availability and accessibility of transportation infrastructure and services, otherwise known as distributive justice. Throughout transportation planning history, distributive justice has been approached in a variety of theoretical paradigms (Pereria et al., 2016; Martens, 2012). One of the most common is utilitarianism; wherein justice is scoped via cost-benefit-analyses and the goal of achieving ‘the greatest good for the greatest number’ (Pereria et al., 2016; Sheller, 2018). However, this approach prioritizes the aggregate welfare and does not consider implications to the least well-off, meaning “*high earners have higher priority*” (Sheller, 2018 p. 23). These assumptions are correlated with investment in carcentric infrastructure over public-transit and active transportation. Aptly, utilitarian justice is widely critiqued in the application of transport justice (Pereria et al., 2016; Sheller, 2018).

In response, transport-justice is often also scoped through Rawls egalitarianism (Pereria et al., 2016). Rawlsian justice argues that people can (and should) have freedoms and liberties, but only if they do not come at the expense of another. Moreover, Rawls contests that inequities are only ‘fair’ if 1) they emerged from freedom of choice as opposed to social conditions and 2) benefit the least well-off in a society (Pereria et al., 2016; Sheller, 2018). In this, complete street redesigns that reclaim the street from domineering autocentricity through “*policies that prioritise public transport, walking, and cycling over cars*” (Pereria et al., 2016 p. 12), could be considered a form of Rawls egalitarianism. Such theorizations of distributive-transport justice begin to reconceptualize transport planning from underlying non-political assumptions; however, as noted above, complete streets did not “fall to Earth from outer space” (Golub, 2014 p. 37).

Indeed, the justice potential of complete street initiatives is dependent on the context in which they were implemented. Injustice in transportation is not only held within transportation planning paradigms but are rather constituted by the wider societal power structures. However, distributive justice approaches, including those proposed by Martens (2012) and Pereria et al. (2016), often do not engage with the broader politics of unequal society of which distributive transport justice occurs within (Sheller, 2018). In this, such approaches can deploy a ‘superficial

fairness’ (Sheller, 2018 p. 28) which may ignore the complex micro and macro-production of mobility capabilities. To this end, Pereria et al. (2016), particularly note that more comprehensive justice frameworks are challenged by the realities of current transportation planning paradigms. Specifically, they note that *“to address accessibility as a result from a combination of personal abilities and the social, economic, and built environment... is a more complex and multidimensional concept of accessibility than often used in transport studies”* (p. 14). This is visible in current complete street planning paradigms wherein frameworks for monitoring impacts have been less-than effective in understanding how complete streets reconcile transport injustice (Bas et al., 2024; Jordan & Ivey, 2021).

### ***3.2.3 The rational-travel-user and the unimagined mobile subject***

As such, these legacies in transportation planning rarely engage with the bodily politics of mobility (Pereria et al., 2016) and instead assume (and uphold) a ‘rational-travel user’ (Schiefelbusch, 2010) whose decision-making around mode choice and routes are based only in what will take the least amount of time and money. Many transportation paradigms assume this ‘rational travel-user’ as the archetype for transportation modelling, even in modelling equity. For example, El-Geneidy et al., (2016) “move the needle” on transportation equity by considering not only travel-time, but total travel-cost, for socio-economically disadvantaged groups in Montreal; demonstrating the deep-rooted assumptions of time & cost as the only two motivators and barriers of travel.

Importantly, the ‘rational-travel user’ exists in the abstract, unburdened by the *politics of mobility*. In this, achieving equity or justice for the rational travel user is defined by a framing of accessibility which prioritizes reducing times between origins and destinations, rather than engaging with the politics and processes of mobility practice. Such assumptions perdure the non-political legacies of transportation planning (Schiefelbusch, 2010; Prytherch, 2025), ignoring how mobility affordances and potentials are dependent upon distributions of both power and powerlessness (Cresswell, 2010; Jensen, 2011; Jensen, 2013; Sheller, 2018). In this, when choosing how to get around the ‘rational-travel user’ does not experience nor face the consequences of systemic racism, he does not fear walking at night due to threats of sexual-violence, he is not challenged by ableist infrastructure. He simply travels based on what takes the least amount of time and money. For him, distributive justice is an ideal solution, as he is

unaffected by the wider uneven politics of mobility-capabilities. To put it simply, in many North American planning contexts, the ‘rational-travel user’ is who Jensen (2011) calls an ‘imagined mobile subject’: an able-bodied and minded, cis-heterosexual white man (Stafford & Baldwin, 2017; Sheller, 2018). However, it is known that transportation decision-making is constructed in far more complex ways (Andrews et al., 2012). Dean et al., (2020), found that avoiding discomfort and seeking pleasure was a primary driver of route selection in everyday walking, mirroring the argument of Schiefelbusch (2010) in recognizing the importance of the emotional and affective in producing mobilities. Particularly, in theorizing everyday mobility practices within the broader politics of mobility, there is clear evidence that mobilities are produced relationally by the mobile-body and its surrounding-environment (Cresswell, 2010; Dean et al., 2020; MacPherson, 2010; 2011). A relationship that is only further complexified when layering societal power-structures which then construct mobility-potentials differently across different identities and bodies (Sheller, 2018).

This is to say, the current theorizations of transportation planning are not meaningfully unsettling injustice and rather falling to ‘superficial fairness’. In this even ‘inclusive’ transportation efforts such as reprioritizing the space for different modes on the street are limited by a glass-ceiling of rationalism legacies that then epistemologically struggle to engage with 1) the broader politics of mobility-potential produced within an uneven society and 2) the bodily-politics of mobility and the lived experiences of being ‘in-travel’.

These two omissions have serious implications for the potential of inclusivity promises in complete street efforts. To address these gaps, I attempt to reconcile mobility justice with transportation planning. Particularly, Sheller (2018) highlights that where ‘distributive justice’ is often scoped by accessibility and minimum capabilities, mobility justice goes beyond distributive justice to ‘mobilize’ spatial justice. In this, mobility justice is concerned with the politics, processes, and products of mobility. For example, taking a mobility justice approach would not only ask if one can access a transit stop within a reasonable distance but would further layer the understanding of how societal and spatial injustice constructs a mobile body; interrogating how access can be impacted by the societal exclusion of certain bodies based on the gendering, impairment, and racialization of mobilities.

I argue that mobility justice is an important framework for transportation planners, as Sheller (2018) cautions that an over-emphasis on the “superficial fairness” of urban design and policymaking in constructing access to transport can still be “*based on, and reproduce, unequal power, if it does not recognize the underlying wider politics of uneven mobilities*” (p.28). To this end, some complete streets policies (typically situated within the meso-politics of ‘the planning, designing, and building of infrastructures of mobility’ (Sheller, 2018 p. 16)) are incomplete in addressing injustice due to a lack of engagement with the wider politics of uneven mobilities that ‘complete street’ planning is based within (the macro-politics), and a lack of engagement with the bodily politics of mobility, including the sensorial, embodied, and experiential dimensions of getting around day-to-day (the micro-politics).

### **3.3 THE PRODUCTION OF MOBILITY: REPRESENTATION, PRACTICE, AND COMMON-SENSE**

Indeed, although complete streets may be positioned as ‘innovative’ (Golub, 2014), the epistemologies of complete streets are often rooted in the ‘superficial fairness’ that Sheller (2018) suggests can still reproduce unequal power structures. Moving towards inclusive transportation requires more than just a topical shift in transportation planning. The ideologies of ‘who should be mobile’ are archetypes of transportation planning past, often abstracted from both space and power (Jensen, 2011). The following section introduces a framework that positions mobilities as produced in representation and practice to scaffold an approach that reconciles the gaps between mobility justice and transportation planning theory.

#### **3.3.1 Constructions of mobility representations and practices**

The first step in reconciling the gap between transportation planning and mobility justice is politicizing transportation planning theorizations. As previously mentioned, efforts of transportation planning, even those that are ‘inclusive’, often remain rooted in non-political traditions (Dean et al., 2020; Schiefelbusch, 2010), even if conceptualized as the opposite (Prytherch, 2025). However, all forms of mobility are political (Cresswell, 2010; Sheller, 2018), constructed by the macro-politics and micro-politics of what it ‘means’ to be mobile. In order to address this, I aim to map the ‘common senses’ of being mobile, which is to say the unspoken rules of how mobility ‘ought’ to be.

To this end, it is well-known within critical mobility studies that mobility is produced both from “above” and “below” (Jensen, 2013), or what Cresswell (2010) calls in representation and practice. Representations of mobility refer to the ways that being mobile is given meaning through culture, power-structures, and societal ideologies. Think: mobility as freedom, as independence, as threatening (Cresswell, 2010). The representations of mobility determine how certain forms of being-mobile are associated in public-opinion and pop-culture. For example, the meanings of a highway, as a space of freedom and opportunity.

In contrast, practice refers to the means that mobility is experienced in the body, and the pluralistic senses of mobility. Jensen (2013) discusses ‘practice’ as mobility produced “from below” and includes both interactions and embodied practices. Simply to say, mobility-practice is the experience of being-in-travel; the realm of the ‘vital frictions’ on the street. Importantly, representation and practice are closely intertwined, as mobility-practice is adaptive and responsive to the societal-ideologies it occurs within. Per Cresswell (2010):

*“Driving a car is liberating, or nerve wracking, or, increasingly, guilt ridden. Whether we have chosen to be mobile or have been forced into it affects our experience of it. Sometimes our mobile practices conform to the representations that surround them. We do, indeed, experience mobility as freedom as the airplane takes off and the undercarriage retracts. At other times there is a dissonance between representation and practice. As we sit in a traffic jam maybe. Mobility as practised brings together the internal world of will and habit.” (p.20)*

Indeed, mobility-practice is inferred in part from societal expectations of what mobility ought to be. In earlier writings, Cresswell similarly highlights this connectivity between ideology and practice noting *“ideological beliefs are important because they affect what people do. Ideologies are not a simple set of ideas. They are ideas that influence and guide actions.”* (1996, p.16)

Yet in that same breath, practice is similar to both a form of ‘consumption’ and ‘production’, in that the actor acts according to dominant ideologies (consumes), and then in turn can also reproduce them and strengthen what Cresswell (1996) calls ‘commonsense place meanings’. One speeds on a highway because of the societal-ideology of mobility as freedom, however in the act of speeding perpetuates the place-meaning of the highway as a space of unfettered movement; in this, it becomes common-sense to speed (See **Figure 7**). As such, both place and practice

become producers of common senses in the built environment, which can result in a dogma as to who is in or out of place (Cresswell, 1996). For example, cyclists are out of place on a highway both in ideology and in practice.

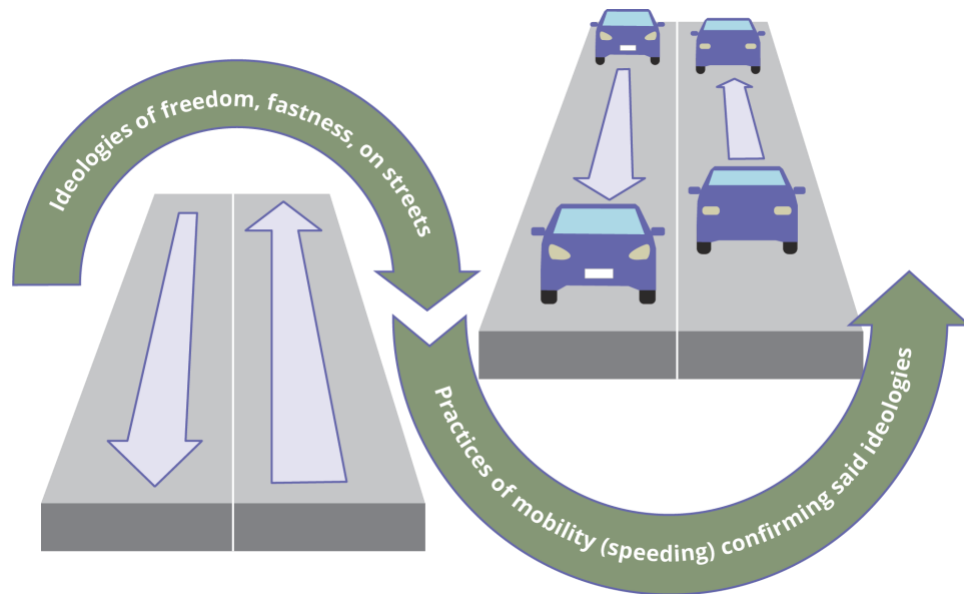


Figure 7: The construction of common-senses

In returning to the ‘imagined mobile subject’ it is easy to then see how this representation of how mobility ‘ought to function’ and ‘by whom’ is a product not only of identity but also of habit. Those that are unimagined on the street are done so not only in representation but through practice that upholds unspoken common senses of ‘how to’ be mobile.

### 3.3.2 Situating transportation planning in the production of mobilities

In Jensen (2013)<sup>15</sup>, he attests that a facet of what constructs mobility from “above” is the planning, design, and regulation of the material spaces of transport (such as streets, transit stations, and paths/trails). Contrary to the non-political stances of much transportation planning theorizations, this positioning thus argues that the ways that planners, engineers, and other transport decision-makers influence transportation system priorities through design informs the subsequent practices of mobility that can occur, and for whom. For example, in the era of autocentricity, the prioritization of car-based street design messaged for whom the street was for

<sup>15</sup> Jensen (2013) also thus provides a framework of how mobilities are produced from “above” and “below”. Figure 8 (following) was in part developed based on his framework of in-situ mobilities.

and precluded certain users as the infrastructure was either absent or not-supportive for their needs. Part of this construction of mobility from “above” are the funding decisions of what is planned and built (Jensen, 2013).

These planning and design decisions are part of what forms the common senses on the street. The sensorial, affective dimensions of embodied mobility practices and interactions are constructed in the design of the street, and the ways that design can indicate who the street is for. Indeed, decisions such as design-speed and vehicles, lane-widths, slopes, accesses, and signage (although technical) are symbols that construct and perpetuate the common-sense of the street.

Even more, just as previously noted, the practices of everyday mobility that occur onto planned transport spaces constitute everyday mobility practices in constructing common senses of how the street ought to function and for whom. In this forming of common senses, those who are ‘unimagined’ may become even more out-of-place (Cresswell, 1996). Notably, per the rationalism traditions of transportation planning theory, this occurs both in certain identities that go unimagined (such as through gendered, racialized, and impaired mobilities (Sheller, 2018)), but also in ways-of-being, including the emotional and affective.

However, the planning, design, funding, and regulation of transport spaces are not exclusively how mobility is constructed from “above”. These mesa-politics are embedded within broader societal ideologies and power-structures (Harvey, 2012; Sheller, 2015; 2018; 2020; Urry, 2004; 2007; Walks, 2015). As previously noted, automobility is a product of capitalist and neoliberal ideologies, which favoured the prioritization of privatized and individualistic travel, subsequently defunding and de-incentivizing mass-transit and other collective travel practices that challenged the underlying values of mobility as productive and efficient. This is to say, it was not just urban planners that contributed to the politics of automobility, rather this politics is representative of other macro-political influences.

In this, I draw from Cresswell (1996) in arguing that material transport spaces are both producers of ideology that then impact practice, as well as being produced by ideology, a relationship that is visualized in **Figure 8**. Even the inclusive transportation efforts of complete street planning exist within this complex relationship, even though the current ways in which transportation planning is theorized may continue to conceptualize them as not (Sheller, 2018). In applying a

relational framework of how mobility is constructed from 'above' and 'below' I open up further exploration into 1) the ways in which broader injustices of society impact the staging of mobilities that occur in the planning and design of material transport spaces, and 2) the ways that mobility practices are constructed, especially for those who are not planned for or who challenge the imagined mobile subject.

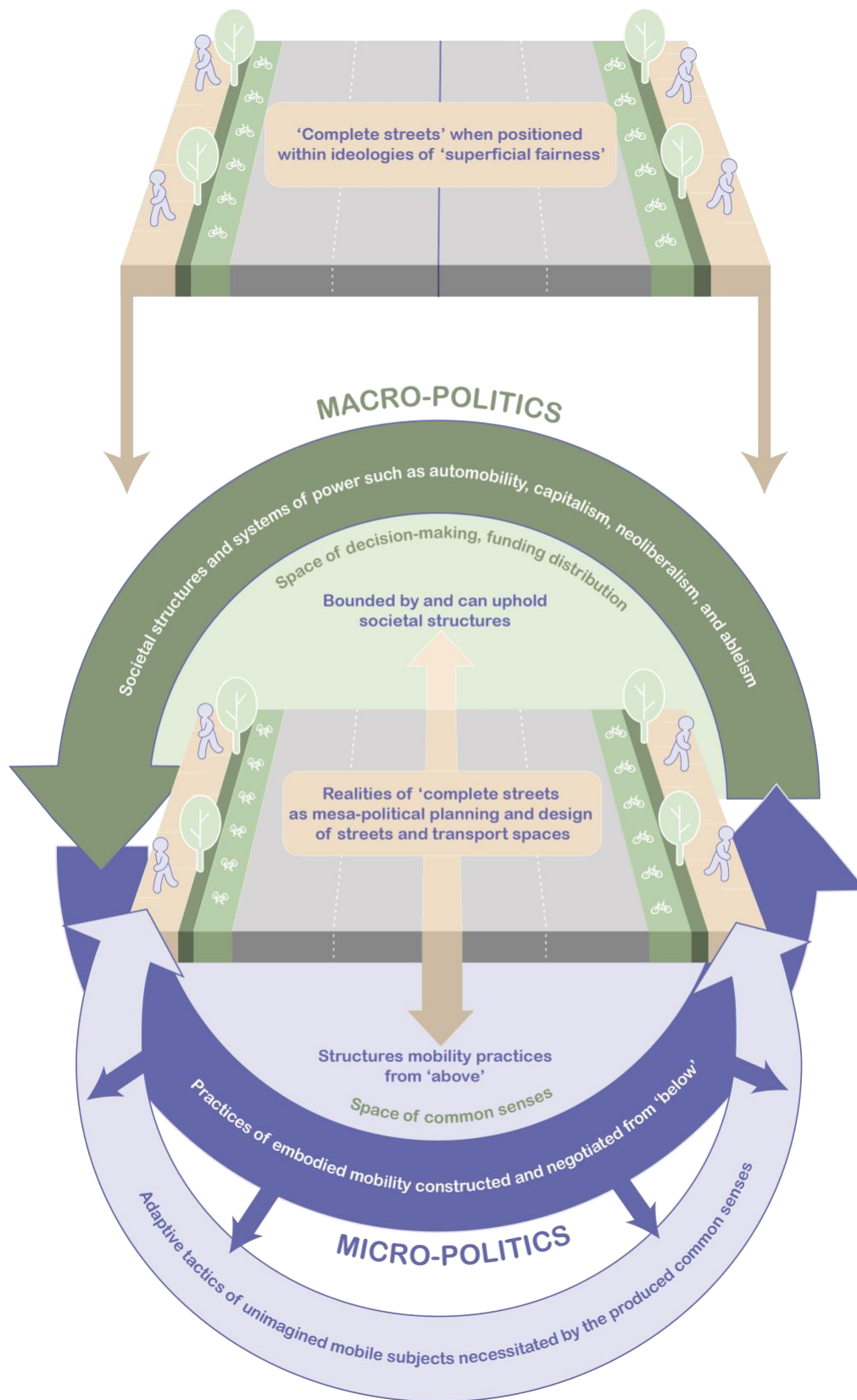


Figure 8: The production of mobilities in transport planning

Importantly, this framework is distinctly *mobile* and *spatial*. Rather than focusing on travel as abstracted time between destinations, I instead center the production of the mobility-practice, both from ‘above’ and ‘below’. Moreover, this framework is concerned with complete streets as places, and the relationality between ‘macro’ and ‘micro’ politics in constituting these places. As such, this framework is a direct response to Mimi Sheller’s call to “*understand the ways in which uneven mobilities produced differentially enabled (or disabled) subjects and differently enabling (or disabling) spaces*” (2018, p.28)

### **3.4 CONCLUDING THOUGHTS: FROM RATIONALITY TO RELATIONALITY IN PLANNING FOR ALL?**

In conclusion, I argue that by unsettling complete streets from rationalist transportation planning traditions there is a greater opportunity to meaningfully act upon inclusivity promises, such as planning for ‘all ages and abilities’. The proposed framework provides a means to resituate complete streets (and similar inclusive planning paradigms) into the wider politics of mobility and engage with the meanings and realities of being-mobile. In this, this framework merges transportation with the ongoing calls from critical dis/ability and geography scholars to engage with the bodily politics of mobility, and how moving through the city whilst dis/abled can ‘constitute’ the city (Stafford et al., 2022; Sheller, 2018; Waite & Harada, 2023; Waite, et al., 2024). Per Waite and Harada (2023): “we agree with Sheller (2018) for the need to understand mobility justice not only in terms of how social norms may erase the legal rights of people with disability from the city, but how subjectivities and space are co-constituted through the mobile body.” (p.116).

I particularly position transportation planning at the center of this feedback loop between the representations and practices of mobility, informed by broader societal power structures but also informing ‘expected mobility practices’ which are then upheld by mobile ‘common senses’ (what I argue is how space is co-constituted by mobile bodies). In this both the imagined and unimagined mobile subject can be unpacked and, for those who are unimagined, the processes of becoming out-of-place both in the representation and practice of ‘complete streets’ can be better understood and addressed.

As noted in the introduction, current efforts to plan for ‘all abilities’ in complete streets planning efforts often lack nuance and depth (Elliott et al., 2022; 2024). Particularly, there is little consideration for the plurality of dis/ability (especially for people with non-mobility related disabilities) (Levine & Karner, 2023; Terashima & Clark, 2021; Stafford et al., 2022). In this there are still mobile subjects and practices that are ‘unimagined’ even in planning efforts to accommodate ‘all’. As argued throughout this chapter, these limitations are rooted in legacies of automobility and rationalism in transportation planning which ideologically and epistemologically limit supposed ‘inclusive’ transportation planning efforts. Particularly, I discussed how transportation planning theory, broadly, often operates on the assumption of a ‘rational travel user’ whose mobile practices are independent of broader societal power structures and the affectual.

However, for those who are unimagined in everyday transport-spaces, the experiences of getting around are not rational, and cannot be abstracted from societal power structures and the experiential, emotional influences of everyday mobility. One can argue the unimagined are the irrational travel users; negotiating everyday transport spaces in ways that are not planned, because their identities and senses are not planned (Sheller, 2015). Valuing alternate ways-of-being, and challenging the hegemony of the underlying imagined-mobile subject is needed to move towards future transportation planning that can truly accommodate ‘all ages and abilities’.

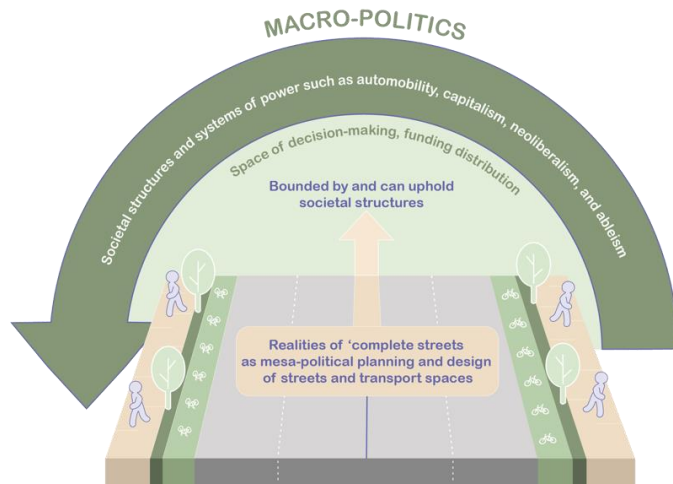
In this, this framework lends itself to a relational construction of ability and place (Hall & Wilton, 2017). Both bodies and practices are in constant (re)form by both the representations and practices of mobility that occur within them. Particularly, this framing draws from MacPherson (2010, 2011) on conceptualizing body-landscape relations and how dis/ability is constructed and constructs spatialized-mobility practices. This thus challenges the current ‘stagnant’ (Matereke, 2020) and ‘flattened’ (Stafford et al., 2022) paradigms of disability planning, allowing for an unfurling in how enabled or dis/abled subjects are produced in navigating through enabling or dis/abling spaces.

To end, in engaging with how transportation planning paradigms construct and are constructed by the representations and practices of mobility, there is an opportunity for the discipline to have a stronger theoretical positioning into understanding the differential mobilities of those who have

often faced the mobility-marginalization. This framing permits for transportation planning to unsettle from rationalism, which prioritizes efficiency and unfettered movement, regardless of mode, and instead engage with the relationality of body and place constructed within the moments of vital friction. Indeed, the *death waltz* on the street is a result of competing and unreconcilable values of for whom the street functions, resulting in chasms between what is imagined and what is lived. Yet, I end with the argument that engaging with proposed framework is one way that the discipline of transportation planning can, so to say, learn the dance.

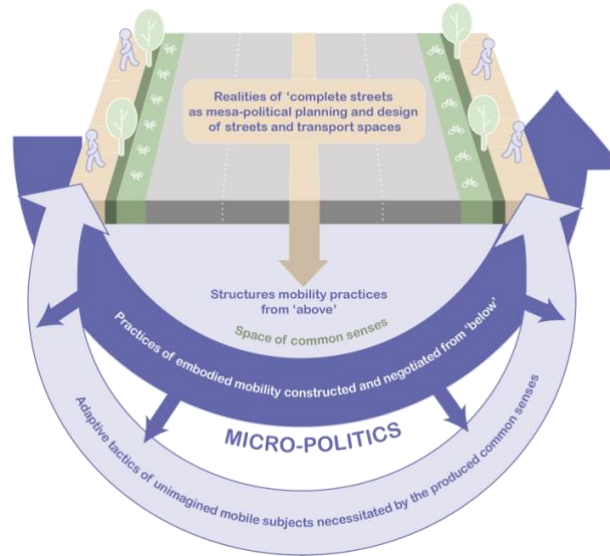
### **3.5 APPLICATION OF THE FRAMEWORK IN THE THESIS**

The remainder of this thesis then applies this framework in various ways to respond to the research questions. Chapter 4 explores how broader politics of automobility continue to constrain complete street planning-paradigms, engaging with how broader (uneven) societal power structures can shape how inclusivity is operationalized. Chapter 5 then engages with the practices of mobility produced from ‘below’, and particularly how adaptive tactics are constructed by those who differential mobilities are unimagined in current transport planning. Chapter 6 then engages with how common senses of everyday travel form experiences of navigating everyday transport spaces and provides a framework for embedding ‘uncommon senses’ into the approaches to plan for ‘all abilities’. The application of the framework across the thesis is visualized below in **Figure 9**.



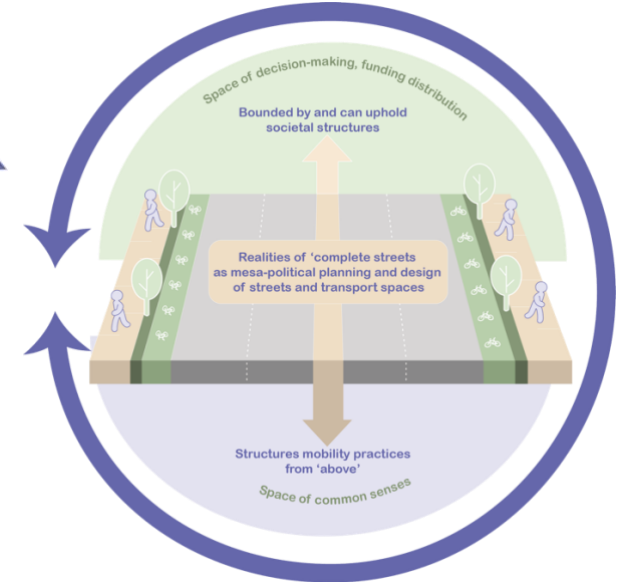
## Chapter 4

- Examining the relationship between complete streets and broader societal power structures, namely automobility, neoliberalism, and capitalism



## Chapter 5

- Examining how mobilities are negotiated from 'below', particularly examining how adaptive-tactics are (re)formed in everyday mobility and the implications for inclusivity promises.



## Chapter 6

- Examining the relationship between the space of 'decision-making' and the space of 'common sense' and how to better accommodate different ways-of-knowing into how streets are planned.

Figure 9: Application of the theoretical framework

## 4 MANUSCRIPT #1

### **Automobility, velomobility, and complete streets? Discursively analyzing the politics of complete street design guidelines in Ontario, Canada**

**Authorship details:** This paper is co-authored with Dr. Jennifer Dean. I am the lead author, having conceptualized the paper, collected the data, analyzed the data, and drafted the manuscript. Dr. Dean provided supervisory support, including in scoping methods, providing feedback on draft manuscripts, and editorial assistance.

**Publication status:** Published in *Mobilities*. Leger, S., & Dean, J. (2025). Automobility, velomobility, and complete streets? Discursively analyzing the politics of complete street design guidelines in Ontario, Canada. *Mobilities*, 1-18.

## **OVERVIEW**

Complete streets are a widely used planning concept that decenters cars and provides roadway and boulevard space to pedestrians, cyclists, and transit; often with the objective of accommodating road users of ‘all ages and abilities’. However, the inclusivity of complete streets has been recently called into question due to a disconnect between what is promised and what is realized. We argue that to understand this gap, we must first understand the politics of mobility— including the ideologies, norms, and values— produced and reproduced within complete streets planning processes. We conducted a critical discourse analysis of five complete streets design guidelines from Ontario, Canada, examining the plans for their relationality to automobility and velomobility, including the mobilities supported, places produced, and types of bodies and identities considered. In this, we found that complete streets reproduce ideologies of automobility through positioning sustainable transportation modes and the public space of streets as efficient and economically productive. Such entanglements to automobility can limit the potential of complete streets to meaningfully accommodate ‘all ages of abilities’. These findings suggest that understanding the positionality and politics of complete streets is essential in reaching their potential within a just mobilities future.

## 4.1 INTRODUCTION

The mobility injustices of autocentricity are omnipresent across North America. Over the past several decades, we have designed our communities in the image of the car, and in doing so, defied opportunities for transportation equity, improved public health, and environmental sustainability (Miner et al., 2024). Now, we are witnessing a response from decision-makers (including politicians, planners, and engineers) wherein the priority has shifted towards sustainable transportation, with initiatives to prioritize walking, cycling, and taking transit within planning processes and practices. One such tool of urban planning policy and design is known as *complete streets*: a renewed approach to street planning which decenters the car and provides roadway and boulevard space for pedestrians, cyclists, and transit.

In addition to reforming transportation options, complete streets also typically embed a reformation of place, through reclaiming streets as public spaces (Prytherch, 2021). In this, complete streets have promised benefits to not only mobility, but also to health, well-being, social justice, economic productivity, and environmental sustainability (Vandegrift & Zanoni, 2018). Importantly, these benefits are often promoted to be for ‘everyone’ or ‘all’. By definition, complete streets are meant to address the mobility injustices of transport-planning practices of the past by supporting streets that accommodate ‘all ages and abilities’ (McCann & Rynne, 2005).

Yet, emerging research has flagged a notable disconnect between the promises of complete streets, and what is actualized (Jordan & Ivey, 2021; Lenker et al., 2016). For instance, a 2022 study looking into the range of all-ages-and-abilities considerations within U.S. complete streets policies found that only 7% of policies acknowledge low-income populations, racialized populations, or women as part of their all-ages and abilities discussions (Elliot, et al., 2022). This gap raises important justice and inclusivity concerns as to what sorts of ideologies, values, and norms are upheld and produced through complete streets planning practices, and most importantly, how this goes on to influence what sorts of behaviours and identities feel safe and comfortable on a ‘complete’ street.

We argue that to understand complete streets and these potential gaps between the promises and outcomes, we must first understand their positionality and politics. Streets have always been the sites in which the messy politics of the everyday play out. They are the places in which power and vulnerability can be felt, wherein democratic processes can be upheaved and fought for (Fyfe, 2006). Further, there is a politics to all mobility (Cresswell, 2010), a dimension Sheller (2023) calls the ‘kinopolitical’. From global migration to daily walks, there are societally constructed ideologies, norms, and values embedded into how we move (Cresswell, 2010; Sheller & Urry, 2006; Sheller, 2023).

Although complete streets (and the sustainable transportation modes supported within) are often framed as a solution to the fallacies of automobility through a street-level means to achieve mobility justice (Sheller, 2018), the connection between complete streets and the politics of mobility has yet to be meaningfully interrogated. Our work aligns with the growing body of research that critically engages with the politics of the sustainable transportation turn, recognizing that more than just solutions to automobility, sustainable transportation modes are their own complex practices of mobility, and contain distinct politics and ideologies on how the street ought to function (Cox, 2023; Hoffmann, 2014; Kęblowski, et al., 2019; Ravensbergen et al., 2023; Sheller, 2020). Per Reese (2016), such analyses are critical to map the relationality between emerging transportation politics and the legacies of automobility. We extend this argument to the planning policy and design tool of complete streets, analyzing their positionality between the dominant mobility paradigm of automobility and its contesters: velomobility and autonomobility. This allows us to unpack the underlying and socially constructed meanings of complete streets and the (im)mobilities embedded. Understanding these politics allows for a more nuanced exploration into what initiatives such as complete streets are attempting to achieve, and for whom.

The objective of this research is to visualize the politics of complete streets; unpacking the complex and evolving relationship between the ‘complete’ streets we know today and a just mobilities future. Through this analysis we inventory the types of identities and bodies considered and planned for within the complete street policies, calling attention to the uneven distribution of the term ‘all ages and abilities’. We further then explain these inclusivity shortcomings by mapping the potential ways in which the ideologies of automobility remain

rooted within complete streets policies, particularly when and how they uphold ideologies of economic productivity, efficiency, and abstraction of place. Finally, we explore how complete streets align to the imaginaries of velomobility, positing complete streets for their potential to align with post-car and mobility just futures.

To do so, we look at how complete streets are written. The discourses of mobility reveal the relationality between the idealistic promises of complete streets and the social structures that shape our ideologies, norms, and values (Fairclough, 2001; Lemke, 2005; Doughty & Murray, 2014). As such, our study aims to shed light onto those relations through a critical discourse analysis of complete streets planning documents from Ontario, Canada.

## 4.2 AUTOMOBILITY, VELOMOBILITY, AND THE CONCEPTION OF COMPLETE STREETS

As part of the sustainable transportation turn, complete streets are wrapped up in the contestation for both roadway space and function. To frame the emergence of a politics of complete streets, we must first unpack the ideological values, expectations, and norms of an autocentric society. After all, it was the widespread prevalence—and consequences—of automobility which led to the conception of complete streets as a counter-practice of transportation planning.

This dominant culture of automobility has now been widely (and critically) analyzed for its contributions, failings, and resistance to change (Beckmann, 2001; Bonham, 2006; Featherstone, 2004; Hagman, 2006; Jones & McCreary, 2022; Newman, 2016; Rajan, 2006; Sheller & Urry, 2000; Urry, 2004; Walks, 2015). Entangled within the dominant culture of automobility are ‘common senses’; social norms and expectations of how society ought to function (Cresswell, 1996). As cars are both ‘processes and products’ of modernity (Rajan, 2006), these expectations are often aligned with progress, productivity, efficiency, and freedom. In automobility, it is believed that as a driver you should be able to go wherever you want, whenever you want (Hagman, 2006). Cars are emblematic of economic productivity, both at the individual and societal level. Societally, autocentricity is synonymous with booming economies and reforming streets as “productive state expenditures” which boost capital flow (Harvey, 2012, p.41). Individually, owning a car is representative of financial stability (Sheller & Urry, 2000).

Yet, the expectations of automobility remain just that, *expected*. Although often posited as a democratic form of mobility by its supporters, cars leave a legacy of uneven (im)mobilities that we are now shaped by, both spatially and socially. Particularly, inequities of both race and class have always been ingrained in North American automobility (Sheller, 2015; 2018; 2020).

Historically, the assumed freedom of the car was only for upper-class, white, residents who did not (and continue to not) face the severe policing of access felt by the ‘mobility poor’ (Cresswell, 2006). An unequal freedom that was further lamented by the disinvestment of rail, cycling, and walking infrastructure in autocentricity. Simply put, in automobility mobility freedom of the few is built on the back of immobility for the many (Adey, 2017; Cook & Butz, 2018). However, the detriments of automobility are felt by all. Such expectations of economic productivity and freedom shaped our spatial materialities of automobility, producing placeless spaces that

prioritize speed of movement for both people and capital over public and collective transportation options (Newman, 2016).

Despite the failed promises of automobility, buy-in to its common senses remain dominant in North America, an inertia Jones & McCreary call ‘zombie automobility’ (2022). Sheller (2020) argues that automobility’s hold on Western mobility practices is in part because of its close entanglement with other dominant structures of power, including both capitalism and neo-liberalism. Such power structures necessitate the injustices of automobility and make its ‘common senses’ difficult to unsettle (Jones & McCreary, 2022; Braun & Randell, 2023; Bonham, 2006; Walks, 2015). Understanding the legacies of automobility in sustainable transportation planning is critical to illuminate assumptions of how mobility *ought to* function. Automobility’s prioritization of speed and efficiency results in abstracting or disembodiment of mobility (Adey, 2010; Cook & Butz, 2018; Cresswell, 2010; Solnit, 2001), wherein experiences of moving are separated from the limits and realities of the human body. Per Cresswell, many transport studies equate time spent in transit as ‘dead time’ that good planners aim to minimize as much as possible (2010).

Yet, alternate imaginaries do exist. Scholars have begun to reconceptualize mobility frameworks beyond the car and autocentricity and towards movement by cycling, walking, and rail transit, known as velomobility and autonomobility (Furness, 2007; Cass & Manderscheid, 2018; Cox, 2023; Ravensbergen, et al., 2023). Importantly, velomobility and autonomobility are not simply about vehicle replacement and adherence to the same assumptions and ideologies applied to the automobile (Cox, 2023). Rather, velomobility is often described as a communal and caring practice (Furness, 2007; McIlvenny, 2015; Ravensbergen et al., 2023) that subverts the individualistic expectations of automobility and acts as a form of resistance to the dominant politics of mobility. Such ideation leans toward theorizing *mobility as commons* (Nikolaeva et al., 2019; Sheller, 2020), which imagines a transformative politics of mobility wherein a ‘collective rethinking into how mobility is performed and governed’ (Nikolaeva et al., 2019 p. 354) takes place.

As such, the alignment between sustainable and/or active transportation initiatives and the principles of velomobility or autonomobility cannot be assumed as of right. Conflating

velomobility and sustainable or active modes of travel (like bicycling) is at least partially, an overstatement (Cox, 2023). Per Cox (2023), a truly ‘post-car’ future, cannot “replicate those features of automobility that make automobility problematic from the perspective of mobility justice” (p.267)

To this end, it makes sense that velomobility is but a ‘daydream’ (Cox, 2023), that has yet to truly exist. The few examples of velomobility that have been researched have been only momentary, such as critical mass bicycle rides that temporarily disrupt automobility both as a form of mobility *and a set of values* (Furness, 2007). This thus raises an important question as to where current sustainable transportation initiatives (such as complete streets) align between automobility and velomobility, and their relationship to mobility justice.

Efforts like complete streets are far from a ‘daydream’; they are being implemented (in at least some capacity) across Canadian and American cities both in policy and design. As of 2023, the Complete Streets Canada advocacy organization lists over 80 complete streets guidance documents across Canada (Complete Streets for Canada, n.d.). Complete streets was conceived as a form of sustainable transportation policy in the early 2000s, as a response to the longstanding traditions of autocentricity within North American communities (McCann & Rynne, 2005). Fundamentally, complete streets reconceptualize streets to work for all modes and all users. In Canada, the ideology of complete streets is implemented through many forms of policy and planning documents. Complete streets can be written into the primary municipal planning policy such as Official Plans, Comprehensive Plans or Development Plans, or written as a stand-alone policy as a component of a Transportation Master Plan (TMP) or as a design guideline.

In some ways, these initiatives challenge dominant power structures of automobility through redistributing and reprioritizing the space of the street, but these initiatives have been stifled by the realities of transportation policy implementation (Bonham, 2006). Negotiation, balance, and trade-offs have been central to how active and sustainable transportation projects have been able to move forward over the years (Sadik-Khan & Solomonow, 2017). Due to ‘zombie automobility’, even the incremental change of the sustainable transportation turn has been faced with backlash and resentment. In response, most of the existing research on complete streets has

focused on promoting their benefits to encourage uptake. From the research that advocates for financial or economic benefits (Anderson et al., 2015; Shapard & Cole, 2013; Tolford, Renne, & Fields, 2014; Vandegrift & Zanoni, 2018), to the equity benefits (Jensen et al., 2017; Keippel et al., 2017), complete streets have largely been discussed as an equitable and ‘good’ practice.

However, the promise of complete streets to make the street accessible, safe, and comfortable for *all* has been recently challenged by critical mobility scholars. Even in unrooting from some core beliefs of automobility, the “sustainable transportation turn” has been criticized for contributing to uneven economies of privilege, that manifest across both class and race lines (Kęblowski, et al., 2019; Sheller, 2020). To this end, complete streets have been critiqued for contributing to neoliberal city politics (Hoffmann, 2014), gentrification (Cadji & Alkon, 2014; Jordan & Ivey, 2021), health disparities (Ingram et al., 2020) and upholding politics of aesthetics and behavioural control (Langeegger, 2014); all of which hold legacies of injustice and inequity reminiscent to automobility.

Thus, we argue that it is by interrogating the embedded politics of mobility (referring here to both automobility and velomobility norms, expectations, and common senses) within sustainable transportation initiatives that we can critically unpack why the assumed equity promises have yet to fully materialize. To explore this line of thinking, this study sets out four objectives:

- a) Identify the types of bodies and identities that are considered and planned for in complete streets policies;
- b) Examine how complete streets policies relate to central ideological common senses of automobility: efficiency and economic productivity;
- c) Explore the relationship between complete streets policies and the publicness of place; and
- d) Illuminate spaces of resistance within current complete streets policies that could inform a just mobilities future.

### **4.3 METHODOLOGY**

This qualitative study utilized critical discourse and content analyses of complete street planning documents in Ontario to interrogate the politics of mobility wound up within sustainable transportation initiatives. Ontario is the largest and most populous province in Canada, with a range of geographies from dense urban and suburban cores with regional and local transit systems, to northern and rural communities that are without transit systems. Most municipalities in Ontario, regardless of size and geography, have prioritized car travel evident through sprawled suburban development, large rights-of-way, and limited active transportation and transit infrastructure. To that end, as of 2024 approximately 81.5% of daily commuters in Ontario drive (Statistics Canada, 2024b), reflecting the long history of autocentric decision-making within the province. However, municipalities across Ontario are adopting sustainable transportation planning initiatives as means to support more active and sustainable travel (Complete Streets for Canada, n.d). In Ontario, the Complete Streets for Canada directory identifies over 40 ‘complete streets’ supportive planning documents and policies which range from active transportation master plans, transportation master plans, land-use plans, by-laws, design guidelines, and case studies.

This study opted to analyze complete streets design guidelines as data sources as they are the most comprehensive tool for implementing complete streets projects at the municipal level. It is important to note, that complete street guidelines in Ontario are not regulatory documents; they are recommended design guidance that can suggest design and function improvements to roadways. In the policy hierarchy, these plans work alongside the road classifications in the municipal Official Plan to redesign a municipality’s streets to accommodate various mode users.

#### ***4.3.1 Analytical framework and approach***

This research used the analytical framework of textual politics, which links the textual and political through critical analysis of ideology and the underlying meanings embedded into our everyday words (Lemke, 2003; 2005). This framework is then operationalized through the method of critical discourse analysis, which itself is both a methodology and a method that includes ‘techniques for conducting structured, qualitative investigations of texts’ and ‘a set of assumptions concerning the constructive effects of language’ (Phillips & Hardy, 2002, p. 5).

Both textual politics and critical discourse analysis are rooted in the theory that our use of language is purposeful, and can reveal certain beliefs, values, and norms of how our society *ought* to function (Phillips & Hardy, 2002; Lemke, 2003; 2005). Analysis using these approaches can then uncover social inequities and injustices that are present in our society and embedded into our language (Lemke, 2005). Simply put, textual politics and critical discourse unpack our language to ask: what common sense is perpetuated? And who does that common sense serve?

As guiding government-issued planning documents, complete streets design guidelines are representative of the political positioning of streets and sustainable transportation initiatives and give insight into the values of both the decision-makers (such as politicians, planners, and engineers) as well as the society in which these decisions are being made (Turner, 2001). Critically exploring the words and phrases within the complete streets design guides can reveal the rooted assumptions of these plans and allow for the terms and concepts of these plans to be problematized not just for their prevalence, but for the ideological values represented.

To deploy critical discourse analysis as a method, this review follows the Critical Discourse Analytical Framework outlined in Fairclough (2001). To apply this framework, our analysis is guided by the following analytical questions that align with the research objectives:

- a) What identities and (dis)abilities are considered within complete streets planning? (*The problem*)
- b) How do complete street plans align with the ideologies of automobility? (*The discourse*)
- c) How do complete street plans conceive of place? (*The discourse*)
- d) How do complete street plans align with the ideologies of velomobility? (*The discourse; the resistance*)

**Table 3** summarizes the analytical framework of the proposed research, illustrating the analysis questions and the sub-codes that were used to analyze the plans.

Table 3: Analytical framework

| Analysis Question                                                             | Deductive                              | Inductive                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                               | Code                                   | Sub-codes                                                                                                                                                                                                             |
| What are the identities are considered within complete streets planning?      | Complete Streets-Identity (CSI)        | Women<br>Gender-diverse<br>Persons with disabilities<br>Persons with low-income<br>Racialized populations<br>LGBTQIA+<br>Indigenous populations<br>Older adults<br>Children                                           |
| What types of (dis)abilities are considered within complete streets planning? | Complete Streets-(Dis)abilities (CSDA) | Visual disabilities<br>Hearing disabilities<br>Physical mobility issues<br>Cognitive disabilities                                                                                                                     |
| How do complete streets align to the ideologies of automobility?              | Complete Streets-Automobility (CSA)    | Maintaining vehicular traffic<br>Efficiency<br>Individualism<br>Economic productivity<br>Streets as placeless<br>Control/Mode separation<br>Benefit to traffic                                                        |
| How do complete street plans conceive of place?                               | Complete Streets- Place (CSP)          | Vibrant/Liveable<br>Public<br>Sustainable<br>Competitive/Productive                                                                                                                                                   |
| How do complete streets align to the ideologies of velomobility?              | Complete Streets-Velomobility (CSV)    | Prioritizing vulnerable road users<br>Historic recognition of automobility<br>Slower traffic<br>Permitting/planning for ‘illegal’ movements (i.e. jaywalking)<br>Sharing roadway space<br>Promoting social behaviours |

### 4.3.2 Data collection and analysis

Ontario complete streets planning design guidelines were sourced through an online review, consulting with the directory of complete streets documents housed on the Complete Streets Canada webpage (Complete Streets for Canada, n.d.). For this analysis, we specifically looked for municipal-wide complete street-design guidelines, in either local or regional municipalities. Streetscape or urban design guidelines that did not explicitly reference complete streets were not included in this review. Further, we focused on mid-sized municipalities whose street networks include urban, suburban, and rural typologies and whose efforts to accommodate complete streets reflect a recent shift from autocentric planning narratives. In total, five complete streets design guideline documents were sourced across Ontario. The five chosen design-guidelines are all from municipalities located within the Greater Toronto-Hamilton Area (GTHA), and their census information<sup>16</sup> is summarized below (**Table 4**). Of note, all of the design guidelines were completed between 2017-2022.

Table 4: Summary of municipalities

| Municipality   | Population | Regional or Local municipality | Sq.km of land area | Year of Plan |
|----------------|------------|--------------------------------|--------------------|--------------|
| Municipality A | 717,961    | Local                          | 292                | 2022         |
| Municipality B | 569,353    | Local                          | 1,118              | 2019         |
| Municipality C | 256,885    | Local                          | 136                | 2019         |
| Municipality D | 543,551    | Local                          | 2,661              | 2018         |
| Municipality E | 477,941    | Regional                       | 1,852              | 2017         |

Each of the above plans was then coded based on the content and discourse analyses. The first question was answered via a content analysis of the plans, wherein the plans were read for the types of abilities and identities that were included within the planning considerations. Following this review, plans were then read in-depth and coded based on the analytical questions' general

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<sup>16</sup> Census data retrieved from: <https://www12.statcan.gc.ca/census-recensement/index-eng.cfm>

theme, looking for sections of the plan that related to automobility, velomobility, and place. This review focused on the discourse of these plans and their underlying and socially constructed meanings. The subcodes were reviewed not only for their prevalence within the plans but how they were used. Therefore, with subcodes such as *efficiency*, the aim was not to document the number of times this word was used in the plans, but instead critically engage with these terms for *when* they were used in the plan, *in which contexts*, and the *narrative framing* (Kress, 1990; Fairclough, 2001). Critical discourse analysis is fundamentally semiotic by design (Lemke, 2003); looking to uncover the meanings embedded in the language that we use. Therefore, an inductive coding strategy, wherein deductive codes were expanded upon as the analysis was conducted, allowed for flexibility and responsiveness to the contents of the plan and how certain language was operationalized within the plans.

The plans were uploaded into NVIVO software and coded based on the aforementioned analytical framework. Once each of the plans had been organized based on the subcodes, the coding categories were reviewed, and general findings and takeaways were noted from the excerpts included in each code. During this review, the research team members assessed the codes interdiscursively, analyzing how the complete streets discourse relates to other discourses entrenched within the plans (Fairclough, 2001). Emergent findings were shared within the team of researchers to combat subjective bias from one research team member.

## 4.4 RESULTS

The results have been organized in alignment with the analytical framework. We first discuss the current effort of these plans to accommodate ‘all ages and abilities’, documenting the identities and abilities that are discussed within the plans, and in which contexts. We then chart the politics of complete streets and how this politics draws from or challenges the ideologies of both automobility and velomobility. Throughout this section we interrogate these relationships and their impact on the types of ‘places’ and (im)mobilities that are discursively produced.

Throughout the results section, there are illustrative quotes from the complete street design guidelines. At times, we (the authors) have included emphasis on the quotes to highlight key terms and associations.

### 4.4.1 Complete streets and the promise of ‘all ages and abilities’

The first question that we looked to answer within this analysis was the question of whom. In these planning documents, who is the benefactor of complete streets? One of the first answers to this question was typically ‘all’ or ‘everyone’ in some capacity. Often, within the first few sentences of the plan, such a statement would arise, claiming that complete streets work for *‘everyone, regardless of age or ability’* (Municipality C).

Further, each plan referenced ‘all ages and abilities’, at least one time. Typically, the term was used either when referring to the design of cycling facilities, or the overall promised function of a complete street. However, this guarantee of widespread safety, comfort, and inclusion was often met with little to no definition, beyond implying *‘designing for comfort and safety’*-Municipality B. Further, the statements were typically made in isolation without supporting information on how the promise would be achieved.

In some plans, a blanket statement on all ages and abilities would be made to help scope which populations the plan was referring to in ‘all ages and abilities’. Particularly, Municipality A and C provided such statements that promise to *‘improve equity among all ages, gender identities, abilities, ethnicities, incomes, sexual identities, and underrepresented populations’* (Municipality C).

One of the most common means of understanding different experiences of mobility was through age. Throughout the five plans, both older adults and children were referenced a total of 24 and 25 times respectively. In comparison, women were only directly referenced twice, and in only one plan. **Table 5** below summarizes all populations that were considered within ‘all ages and abilities’ promises and their prevalence within the plans. Generally, different abilities or identities were mentioned either in the blanket statement on all ages and abilities, in specific design recommendations which considered different needs of the population, or in recommending specialized engagement practices for certain groups to ensure they are represented and informed of the complete streets project. To this end, older adults and children were considered beyond the blanket statement of ‘all ages and abilities’, with specific design recommendations which considered their unique mobility capabilities.

Equally, physical disabilities were prominently considered with 32 overall references to persons with disabilities, and even more specific consideration to specific forms of disability (n=50). Such as those with visual disabilities (n=24), hearing disabilities (n=2), and physical mobility disabilities (n=24). Importantly, cognitive disabilities were not explicitly mentioned in any of the plans.

Table 5: References to different abilities and identities

| Identity                          |                                | # of references across all plans | Consideration                                                                                                                                                                                 |
|-----------------------------------|--------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Women</b>                      |                                | 4*                               | Blanket all ages and abilities statement; design recommendations<br>*Two of these references are blanket all ages and abilities statements with 'gender' noted as an identity characteristic. |
| <b>Gender-diverse populations</b> |                                | 2                                | Blanket all ages and abilities statement                                                                                                                                                      |
| <b>Racialized populations</b>     |                                | 3                                | Blanket all ages and abilities statement                                                                                                                                                      |
| <b>Indigenous communities</b>     |                                | 2                                | Engagement consideration                                                                                                                                                                      |
| <b>Persons with disabilities</b>  |                                | 32                               | Blanket all ages and abilities statement; Design recommendations                                                                                                                              |
|                                   | Visual disabilities            | 24                               | Design recommendations                                                                                                                                                                        |
|                                   | Hearing disabilities           | 2                                | Design recommendations                                                                                                                                                                        |
|                                   | Physical mobility disabilities | 24                               | Design recommendations                                                                                                                                                                        |
| <b>Older adults</b>               |                                | 24                               | Blanket all ages and abilities statement; Design recommendations                                                                                                                              |
| <b>Children</b>                   |                                | 25                               | Blanket all ages and abilities statement; Design recommendations                                                                                                                              |
| <b>LGBTQIA+</b>                   |                                | 2                                | Blanket all ages and abilities statement                                                                                                                                                      |
| <b>Persons with low-income</b>    |                                | 6                                | Blanket all ages and abilities statement; Engagement consideration                                                                                                                            |

As shown in the distribution of identities written into the complete streets planning documents—other than older adults, children, and persons with disabilities—very few marginalized groups who have faced historic mobility barriers were meaningfully considered. This is despite certain plans recognizing their role to ‘*eliminate... structural barriers to mobility*’ (Municipality A).

These incomplete promises that were embedded into the plans show a disconnect between the intent and outcomes of complete streets. Although these plans hinge their definition in

functioning for ‘all’, the differed mobility experiences of certain populations remain scarcely discussed (Elliot, McLeod & Bopp, 2022), which is a critical gap as representation in policy is an indicator of whose needs we consider in society more broadly (Ingram et al., 2020). As such, the lack of representation of different groups, especially those who have historically faced mobility barriers, contributes to the politics of complete streets. The remainder of the critical discourse analysis refocuses on how complete streets planning documents fall short of their intent, *and why*.

#### **4.4.2 Complete streets as they function for cars.**

To better understand how inclusivity and justice promises are (not) operationalized into complete streets planning documents we must first explore: How do complete streets align to the ideologies of automobility? As the unjust predecessor to complete streets planning initiatives, the relationality between complete streets and automobility is vital to unpacking the justice and inclusivity promises within complete streets planning narratives. The following section discusses the narrative of the car, and its legacy, in complete streets planning documents.

As an initiative which is fundamentally based on ‘balancing’ the space of the street, each of the plans requires to have a section on designing vehicular traffic. In each plan the chapter or section discussing vehicular travel would be discussed last, signifying the comparative de-prioritization to other modes such as pedestrians, cyclists, and transit. These sections tend to focus on slowing the speed of traffic (both in recommending speed limit reductions and in design guidance that encourages slower speeds), with over 30 references being made to slowing traffic between the five plans. Often, slow traffic on complete streets is designed through *narrow lanes, traffic calming measures, on-street parking, street-oriented buildings, and trees located closer to the street* (Municipality A). Slow speeds were promoted to reduce the severity of collisions for both vulnerable road users and car drivers/passengers, and support streets as places. Per Municipality A:

*“Actively designing for safe vehicle speeds is critical to safety.. Reducing vehicle speed opens a range of design options that allow a street to function and feel like part of a city, rather than a highway.”* – Municipality A

Despite the common narrative to reduce and slow vehicular traffic on streets, the plans often balanced conflicting priorities between vulnerable road users and vehicles. Although protecting and prioritizing vulnerable road users was central to complete street planning practices, these prioritizations were often offset by necessitated legacies of automobility, such as taxi services, emergency vehicles, maintenance vehicles, service vehicles, and freight traffic.

*“The motor vehicles considered in this section include personal vehicles, taxis, and ridesharing vehicles, trucks, and other large vehicles, and emergency services vehicles. Ensuring the efficient movement of goods, enabling rapid responses to emergencies and providing residents with the option to travel by car are important priorities for the City.” - Municipality D*

The excerpt from Municipality D (above) reflects this challenging balance. Although the plan had previously recommended prioritizing vulnerable road users, it also prioritizes the option for vehicular travel and the essential services that are provided.

How complete street plans grapple with automobility is nuanced. As the normalized expectation for movement, balancing car traffic with vulnerable road users and transit was a central theme of all of the plans. Typically, the plans managed these conflicts through unsettling historic planning practices which overprioritized the car, including discouraging design speeds that were set above posted speeds, shifting the requirements of design and control vehicles, and challenging level of service grading systems which prioritized unencumbered vehicular traffic. The below excerpt from Municipality B demonstrates the narrative of moving away from unquestioned autocentric planning:

*“The roadway serves an important role in providing for efficient goods movement and emergency response, and in allowing people to freely move about the City. Historically, roadways have... operational conditions that are favourable towards speed, travel time, freedom to manoeuvre, and comfort and convenience for motor vehicles.” - Municipality B*

Importantly, the above excerpt from Municipality B also begins to peel away at the underlying ideologies of automobility in speed, efficiency, convenience, and freedom which have informed how streets have been planned and designed. The following section refocuses not just on how

complete street plans discussed the car, but how the values of automobility informed how other modes, such as walking, cycling, and transit, were discussed and planned.

#### **4.4.3 Complete streets as efficient**

Even when deprioritizing car traffic, complete streets often maintained the expectations of mobility rooted in automobility; particularly, through efficiency and productivity. As noted in the literature review, automobility extends neoliberal ideologies in its prioritization of ‘efficient’ mobility that hinges on both the excess speed and productivity in being mobile. Such neoliberal values have led to heightened individualism and the erosion of collective care and action in mobile practices (Walks, 2015; Golub, 2015; Sheller, 2018). Within the complete street plans, sustainable and active modes of travel were often contrasted with the car, specifically the unburdened efficiency of automobility. This was especially evident in discussions of cycling, and transit operations. Municipality B framed bicycle lanes as *‘a highly efficient use of space in terms of people-movement capacity’* establishing the argument for bicycles within the language of automobility.

Often, this focus on efficiency also translated into quickened paces and reduced interaction between modes to get the transit rider, cyclist, or pedestrian to their destination as quickly and as unencumbered as possible. In this, the need for mode separation became a point of tension. Typically, the separation of vulnerable road users (such as pedestrians and cyclists) from motor vehicles is a critical safety intervention to reduce points of conflict and avoid unintentional injury or harm (Speck, 2013). The guidelines continually called for mode separation, often justified through the argument of safety for those most vulnerable. Per Municipality C: *‘A pedestrian experience that avoids stressful interactions with other travel modes encourages more people to walk’*.

Yet, in addition to safety, the argument of efficiency was also often deployed to justify dedicated and separated infrastructure, as demonstrated by Municipality B: *“Prioritize transit and active transportation to maximize capacity. Dedicated bus lanes or bus queue jumps can help improve the efficiency of public transit along these avenues.”*

Mode separation as a tool of fast and efficient travel realigns itself to legacies of automobility whereby the potential of the street was minimized once more to its capacity for productive movement. Buses (which are in themselves, automobiles and can often reproduce automobility) and bicycles were framed as ‘vehicles’ expected to operate similarly to cars in their dedicated lanes; narratively disembodied cyclists and transit riders and prioritizing the *mode* over the *people* using the mode. Further, in limiting bicycles and buses to function just as the car did, the narrative framing of complete streets plans can reduce the potential of such modes as either a caring or collective practice; when both cycling (Sheller, 2018) and transit (Sheller, 2023) have been studied for their resistant potential to automobility.

The co-option of ‘mode separation’ as efficient is further entangled by the logic that separation always benefits the car. When giving space to bicycles and buses, cars were then given more freedom and could maintain higher travel speeds without needing to slow down and navigate conflicts with other modes. To this end, the greater degree of separation for active transportation infrastructure was often dependent on the speed of the motor vehicle with, for example, ‘*cycling facilities on all arterial streets, separated and protected from motor vehicles.*’ (Municipality C). In Ontario, complete streets are often rooted in a roadway classification system that is based on vehicle capacity and speed, with arterial roads serving as the venue to move the most cars, the quickest. Although such recommendations could again be framed for the safety of the vulnerable road user, they also ground the safety and efficiency of space given to other modes with that of the car. The more efficient car travel was then the more ‘efficient’ was the potential of cycling and transit.

*“Mobility-focused streets prioritize safely providing a high degree of people–or goods movement capacity. On these streets, there is greater separation between different road users, more limited access to the roadway, and higher motor vehicle operating speeds. In contrast, streets with a placemaking or a property access function prioritize the role of the street as a means of accessing destinations, and often prioritize the role of the street as an important public space with an attractive environment built at the pedestrian scale.”- Municipality A*

The above excerpt from Municipality A demonstrates this phenomenon and particularly highlights how streets that are ‘mobility-focused’ are representative of automobility values and norms including the greater degree of separation, higher speeds, and increased people and goods movement capacity. This association posits that complete streets uphold the autocentric and modern image of mobility as a freedom and productive venture (Mitchell, 2003).

#### **4.4.4 Complete streets as economically productive**

As a tool of capitalism, automobility reformed mobility as an economically productive practice, and the conception that mobility practices are meant to be intrinsically productive and competitive. This thus set up an imperative for sustainable transportation initiatives to market their economic viability (Stehlin, 2015). Throughout the plans, achieving economic productivity was vital to the definition and implementation of complete streets. Particularly, this was evident in the promised production and flow of capital and cost-effectiveness embedded within the justification of complete streets.

In terms of production and flow of capital, complete streets often proposed a dyad. Streets which were conceived as places for pedestrians and cyclists were economically productive through monetary spending and increased land value. Typically, these streets were aligned with commercial and mixed-use land uses.

*“Emphasize vitality such that new and renewed streets attract pedestrians with an enhanced sense of place, benefiting local commuters, businesses, and property owners. Whether out for a relaxing stroll, running errands, or meeting with friends, pedestrians bring economic and social activity to the Municipality’s streets.”- Municipality D*

In contrast, complete street typologies which accommodated goods movement and vehicular traffic were typically tied to industrial and employment lands. In these instances, economic vitality was tied to the ongoing flow of capital through the movement of both people and goods. Per Municipality A:

*“Industrial Streets play a major role in supporting goods movement and employment activity. The destinations along these streets are also workplaces for significant numbers of people. As*

*such, this typology aims to provide a range of mobility options for people travelling to work, while providing appropriate accommodation for large trucks. ”- Municipality A*

These archetypes of economic productivity have nearly always existed in the conception of streets and mobility (Harvey, 2012). However, it was not just in generating and flowing capital that complete streets were economically rooted. Aligning with Stehlin (2005), complete streets were often framed for their cost-effectiveness as a means of ‘selling’ the initiatives. Often, this condition of cost-effectiveness went beyond a beneficial framing of the initiative, to a condition of its viability, as shown in the narrative shift between Municipality B and D, where complete streets are promoted to *‘reduce the number of costly retrofit projects needed in the future* (Municipality B) and encourage *‘cost-effective’* decision making to *‘not place undue short- or long-term financial burden on the City for street construction, operations, and maintenance.’* (Municipality D).

This frames complete streets as both an effort to generate capital (through spending and employment) and retain capital (through lowered infrastructure costs). In this, complete streets have become even more entangled with proving their economic productivity than car-centric street design. Not only must complete street initiatives maintain the economic conditioning of mobility, but they must also not cause undue spending in their design and development. A condition which was never forced onto autocentric street design, wherein investing in highways and expressways was taken as intrinsically responsible and indicative of a strong economy (Harvey, 2012). These tensions speak to the ongoing pressure of neo-liberal cost effectiveness on transportation initiatives.

#### **4.4.5 Complete streets as public places?**

As mentioned, automobility disembodied and abstracted mobility as a practice, and in doing so being in motion was akin to being out of place (Cresswell, 2010; Mitchell, 2003). In contrast, complete streets are framed as *placemaking* (Zavestoski & Agyeman, 2014). As initiatives that look to break down the notion of the street as a private space for the car, complete streets are also exemplary of returning publicness and place to the street (Prytherch, 2021). Per Municipality C:

*“Streets typically represent the largest area of public space a community has, and a large portion of people’s daily lives are conducted in the context of a street.”- Municipality C*

In some ways, the places created within complete streets push back against ideologies of automobility. Social practices on the street, from interactions between modes to staying activities (sitting, talking) reflect one form of resistance. Social practices are often precluded in the disembodiment and abstraction of mobility within automobility. In contrast, complete streets are designed to be distinctly social.

*“While pedestrians are often thought of as being constantly in motion, people benefit from places to stop, rest, and socialize. Shade, seating, interesting views and storefronts all contribute positively to the pedestrian environment.” – Municipality A*

Interestingly, even in identifying the social value of the street, being in movement is not discussed as intrinsically social, despite the known social practices experienced in everyday walking (Middleton, 2018). Further, the types of sociality promoted within complete streets remained entrenched in unjust power structures. Often, place-focused complete streets were described as both productive and competitive, reflecting the irremovable conditions of both capitalism and neoliberalism that are embedded into these plans. Complete streets often aspired to be ‘attractive’ places (Municipality, A; C) that ‘generate economic activity’ (Municipality C; D).

In this, the places formed in complete streets are public, but the types of behaviours that are expected in these spaces may not reflect *all publics*. In addition to being attractive, complete streets were also often described as ‘aesthetic’, with efforts to ‘*beautify the streetscape*’- Municipality C. Importantly efforts to beautify the street were typically tied to either green infrastructure such as trees and plantings and character elements, such as distinctive lighting or benches.

*“(Streets) contain vibrant greenery, beautiful art and practical amenities. Some streets can also be heritage landscapes.”- Municipality C*

However, much like the references to ‘vibrant’ and ‘attractive’ places, the plans rarely delved into what qualifies as ‘beautiful’ or ‘aesthetic’. To combat this, one of the complete street plans

referred to specialized engagement programs to ensure the priorities of the community are accurately reflected, yet it was the only one with such a consideration:

*“The city should identify priority populations to be consulted, and structure plans to deliberately engage with that audience... Having previously marginalized communities see their priorities reflected in the direction of the project will help to build trust and is a vital step towards more equitable implementation of this Manual.”- Municipality C*

Therefore, the assumptions built into the words that describe complete streets may reflect dominant ideologies of what good public space ought to be. As evidenced in the first section of this analysis, equity-deserving groups who may have different lived experiences regarding what qualifies as ‘safe’ or ‘comfortable’ mobility and place were not meaningfully mentioned in these plans. This leaves the promise of streets that work for ‘all’ to not be unsettled by dominant common senses which may not truly reflect *all* groups.

#### ***4.4.6 Towards emancipation: Complete streets as velomobility***

Despite the centrality of automobility within complete street plans, there was discourse which resisted the dominant social ordering and ideologies wrapped up in automobility. In these instances, complete streets became a tool of resistance, challenging the norms and expectations of an unjust transportation system.

The most obvious way in which this was done was by requiring slower speed limits and changes to design to promote slower traffic. These initiatives, although often clouded by economic conditioning, make streets safer and are a critical tool for making streets that work better for all road users.

Ideologies of velomobility could also be traced in how the plans discursively reprioritized mobility as an embodied, and human, practice. All mobility practices are embodied (Cresswell, 2010; Adey, Doughty & Murray, 2014), yet oftentimes autocentric systems abstract and deprioritize this embodiment in the name of efficiency and speed as discussed earlier sections. In some instances, complete streets pushed back against the machinery of automobility by planning for alternate common senses such as pedestrians jaywalking or cyclists riding through

crosswalks. Such acknowledgment deprioritizes the dogmatic regulations of automobility to instead leave space for human behaviour and choice.

*“Cyclists are required to dismount and walk through crosswalks, but generally will not and the design should anticipate this behavior.” – Municipality B*

*“On low-volume streets, rather than creating designated crossing points, it may be preferable to design the street for crossability by creating safe crossing conditions along the entire length.”- Municipality A*

This phenomenon was extended into the practice of driving, where some plans acknowledged the humanness that remains embedded within the machinery of the car: the driver.

*“Designers need to introduce transition design changes that will safely lower the speed of motorists who are changing from one context to another by sending a clear message to the driver that a change is approaching.”- Municipality E*

Considering *the driver* was not guaranteed. Still in some plans, cars were still discussed as objects rather than a form of human mobility. By discussing the driver, complete streets planning documents allow for driving to be seen as an embodied practice of mobility and help to increase awareness of the relationship between the driver and other road users, such as pedestrians, cyclists, and transit users.

## 4.5 DISCUSSION & CONCLUSION

The purpose of this paper was to problematize the politics of complete streets, and the implications of this politics on inclusivity. The findings highlight 1) the centrality of automobility in policies seeking to reduce its prominence, and 2) the implications of such legacies in the types (im)mobilities and places produced within complete streets planning documents.

Before discussing the findings in more detail, there are first limitations to note. As this analysis evaluated Ontario-based complete streets planning documents, it is geographically bound to a certain set of politics and may not be reflective of other geographic scopes and scales. Moreover, for this analysis, our aim was not to compare and contrast the municipalities but to provide insights into the broader narrative of complete streets in this time and space. However, we then do not discuss the localized spatial politics that are also impacting how these plans are written and their resulting narratives. Future research could explore a similar analysis in differing geographic contexts across Canada and the U.S.A. and expand upon this work by comparing the spatial politics of place to the discourses of complete streets planning guidelines.

One of the most ubiquitous findings of this review was that complete streets are framed as a separation from automobility, but there are ideologies, norms, and practices that are stickily embedded into contemporary sustainable and active mobility planning practices. Particularly, this was evident in the commodification of mobility for economic productivity and consumerism. Complete streets, as a concept, were introduced into a transportation system that needed a promise of economic productivity to justify existence (Stehlin, 2015). To push for safer and more comfortable streets for pedestrians, cyclists, or transit riders, complete streets had to both present economic productivity *and sustainability*. Often, economic productivity was advertised by promoting retail activity and through raising property values through the redevelopment of the street.

Economic sustainability, in contrast, refers not to the generation of capital, but to the retention of capital. In our analysis, complete streets were consistently framed as cost-effective. Not only must they generate capital, but they mustn't spend undue funds on their development. Our findings align with previous literature which has specifically framed complete streets as cost-

effective (Anderson et al., 2015 ;Shapard & Cole, 2013; Tolford, et al, 2014) However, this economic conditioning of sustainable transportation has shifted from being an effort to ‘speak the language’ of automobility to a foundation of how sustainable transportation is planned and implemented (Stehlin, 2015). In upholding the economic productivity, individualism, and rigidity of automobility in complete streets planning, these plans (though advocating for sustainable transportation) fall short of contributing to the future of a mobility commons.

Moreover, complete streets as *places* were often described as attractive and competitive; with an explicit goal to bring more residents and visitors and raise property values (Municipality A; Municipality D). This aligns with previous studies on the neoliberal co-option of sustainable transportation initiatives (Hoffmann, 2014). Moreover, the ideals of ‘publicness’ are also impacted by economic conditioning. Although our review found that many plans envisioned making the street a public space to gather and socialize for ‘all’ (Municipality A; B; C; D), the descriptors of complete streets as a place were more aesthetic than they were public.

This finding speaks to the wider issue of certain common senses being perpetuated within these plans. These common senses may not reflect the different lived experiences rooted in age, ability (both physical and cognitive), race, gender, and sexuality (Lemke, 2005). Particularly, although the promise of operating for ‘all ages and abilities’ was included in every plan, very few populations were given specific design considerations, and larger promises such as publicness were never problematized for whom they included and excluded.

To this point, although physical disability is one of the more common abilities considered within all ages and abilities promises, the wider discourse of streets as economically productive and capitalist then fails to truly consider disability and remain ableist through accommodating accessibility under the presumption of productivity. Per critical disability studies, recognizing disability is not only considering how to “fit” disability into our existing societal expectations but also imagining new futures wherein accommodation respects the (dis)abled person for the value their differed abilities bring to society, rather than a hindrance to be “solved” (Devlin & Pothier, 2006). Additionally, although a few plans centred unsettling historic mobility injustices as part of their equity-centred approach to complete street planning (Municipality A; Municipality D; Municipality E), none acknowledged historic racist mobility injustices that can still impact how

mobility is seen and experienced today. We also found this to be a gendered issue. According to one 2017 article, complete streets can be a champion for gender equality on the street by addressing concerns of “safety” and “comfort” (Keippel et al., 2017). Yet, within our review, gendered immobilities were scarcely discussed (4 references to women; 2 references to gender diversity).

The promise of complete streets to accommodate ‘all’, was one way the plans serve as street-level solutions for mobility justice. However, as illustrated by our results, this promise was discursively unfulfilled. Populations who historically faced mobility-marginalization remained under-discussed in these plans, mirroring the findings of Elliot and colleagues (2022). Here we return to the concept of the ‘kinopolitical’ (Sheller, 2023) whereby the mobility-potentials evidenced in the accommodations within complete street design guidelines in fact construct a distinct politics of mobility that only serves to uphold mobility injustices of the past. In this analysis, we saw most prominently how automobility remained entangled in the ideologies of complete streets, with efficiency, economic productivity, and individualism remaining fundamental to the very conceptualization and practice of mobility. When thinking about transformative politics of mobility, untethering these politics from what it means to be mobile is fundamental to true mobility justice. That is to say, designing streets that function for ‘all’ cannot be achieved whilst also upholding unjust legacies from the era of automobility.

On a practical end, we recommend that planners, and decision-makers responsible for developing complete street plans be cognizant of the entanglement between automobility and complete streets and look to unsettle unjust power structures to promote a production of streets which can achieve a more just mobilities future. This would involve not only considering how vehicular traffic is discussed within the plans but also the ideologies of automobility which may be dictating how alternative modes are discursively framed. Further, we recommend that planners and decision-makers lean into the emancipatory potential of complete streets to resist the (automobile) powers that be. In doing so, complete streets could more closely align with the theoretical ideals they claim to emulate, such as mobility justice.

In sum, there is still much more to understand regarding complete streets, in terms of the places they produce, their power dynamics, publicness and resulting mobilities and immobilities. This study provided an exploratory analysis of how complete streets are constructed discursively through complete streets planning documents. Our analysis uncovered the hidden ideologies of automobility which are continuing to shape complete streets; solidifying that complete streets are indeed both a product and defiance of automobility. Further, this analysis also uncovered that how complete streets are situated, as a balance and trade-off, can limit the potential of their inclusivity promises. Planning a street for ‘all ages and abilities’ is not practical when not interrogating the common senses of society that dictate how the street functions and for whom. Although truly *just* streets may still be far-off in our current capitalist and neoliberal society, complete streets can be part of our mobility justice solutions when they acknowledge the forms of power upheld and reproduced.

## 5 MANUSCRIPT #2

**Title: “I miss the bus, or I take the wrong bus, so many times”:  
Understanding the micro-politics of everyday neurodivergent  
mobility practices for inclusive transportation planning**

**Authorship details:** This paper is co-authored with Dr. Jennifer Dean. I am the lead author, having conceptualized the paper, collected the data, analyzed the data, and drafted the manuscript. Dr. Dean provided supervisory support, including in scoping methods, providing feedback on draft manuscripts, and editorial assistance.

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## **OVERVIEW**

Despite increasing prevalence of accessibility and inclusivity in transportation planning paradigms, there remains a disconnect between critical mobility and disability studies, wherein the lived and pluralistic experiences of getting around whilst dis/abled remain under-researched and perpetuate ‘one-size-fits-all’ considerations for accommodating different abilities. This in turn limits the understanding of how everyday mobility practices are felt and negotiated by dis/abled people, especially those with less-visible forms of dis/ability such as cognitive difference and neurodivergence. Guided by a theoretical framework of how mobilities are produced both by strategies “from above” and the micro-political practices and tactics “from below”, this paper responds to this gap by examining how everyday mobility practices are embodied by people who are neurodivergent as they navigate and negotiate their everyday commutes via a grounded theory approach and qualitative interviews with 30 people who identify as Autistic or with Attention Deficit and Hyperactivity Disorder and reside in Ontario, Canada.

Our results explain how transport spaces are negotiated and reformed by the differential mobilities of neurodivergence and the ways these negotiations form mobile ‘geographies of neurodivergence’. Through this analysis, we argue that the absent consideration of neurodivergence in inclusive transportation planning is wound up within the narrow consideration of dis/ability that flattens ‘ability’ to either something that is had or not had as opposed to emergent, affective, and relational. We argue that by acknowledging the micro-politics of mobility, particularly the experiences of being-in-travel whilst differently-abled, inclusive transportation planning efforts can more meaningfully accommodate pluralistic perspectives of dis/ability and move towards more just mobility futures.

## 5.1 INTRODUCTION

Over the past few decades, a paradigm shift in North American transportation planning has aimed to introduce more inclusive practices (such as planning for complete streets), that strive to accommodate more sustainable modes through dedicated infrastructure and supportive policies that make getting around without a car more feasible for many who previously could not do so. Specifically, these emergent planning paradigms attempt to make transportation infrastructure and systems more accessible and inclusive for people with dis/abilities (Elliott et al., 2022; McCann & Rynne, 2005; Zavestoski & Agyeman, 2015). Across the U.S., over 84% of complete street planning documents drafted since 2015 mention planning for or accommodating persons with disabilities in some capacity (Elliott et al., 2022).

However, how these plans attempt to unsettle ableism often does not meaningfully engage with the differential mobilities of navigating space whilst dis/abled (Stafford et al., 2022; Sheller, 2018; Terashima & Clark, 2021; Waite & Harada, 2023; Waite, et al., 2024). Rather, there remains minimal engagement with how everyday-mobility practices are experienced by people who are dis/abled (Goggin, 2016; Matereke, 2020; Parent, 2016). Such a disconnect is prevalent across mobility studies, which have been continuously unengaged with the differential-mobilities produced by dis/ability (Matereke, 2020).

As a result, current planning paradigms lack understanding and tools for how to meaningfully accommodate differential abilities (Biglieri et al., 2025; Terashima & Clark, 2021). Elliott et al. (2022), state that although many complete street planning documents discuss accommodating persons with disabilities as part of planning for ‘all ages and abilities’, this consideration was often brief and lacks any reflection of the heterogeneity of dis/ability. This approach is reflective of a long-standing tradition in transportation planning in which the lived-experiences of ‘being-in-travel’ are rarely meaningfully explored, opting for rational models of travel behaviour, rather than relational ones (Schiefelbusch, 2010; Dean et al., 2020).

Stafford et al. (2022) calls this a “one size fits all” approach to accommodating dis/ability in transportation planning wherein the plurality and relationality of negotiating space with dis/ability is flattened. As a result, there is an entrenched ableism that remains in the ways ‘inclusive’ transportation systems and infrastructure are planned (Stafford et al., 2022;

Terashima and Clark, 2021); especially for those who have non-mobility related dis/abilities (Terashima & Clark, 2021; Levine & Karner, 2022).

Particularly, Leger & Dean (2025) found that in a review of complete street planning documents in Ontario, Canada, that despite consistent mentions of ‘people with disabilities’ within planning for ‘all abilities’, there was little to no consideration for cognitive forms of dis/ability, such as developmental disabilities, learning disabilities, memory disabilities, and mental-health-related disabilities. This finding builds-upon emergent trends in transportation-dis/ability studies which have found that current considerations are often limited to considerations and accommodations for mobility-related dis/abilities (Levine & Karner, 2023; Terashima & Clark, 2021).

More recently, forms of cognitive difference have been referred to as neurodivergence, within the neurodiversity paradigm. This shift resulted from decades of advocacy to destigmatize cognitive differences and dis/abilities; moving away from deficit-based language which often claimed neurodivergent conditions as curable, and resulted in lacking-supports in societal structures like education, employment and the built-environment (Botha et al., 2024).

Neurodivergence is an umbrella-term and can diagnostically encapsulate Autism Spectrum Condition (ASC), Attention Deficit and Hyperactivity Disorder (ADHD), as well as other cognitive dis/abilities or differences (See Walker, 2021 for more detailed explanations of neurodiversity and its definitions). Within the context of this paper, our reference to neurodivergent refers to our studied populations: those who are Autistic, those who identify with ADHD (ADHDers), or those who identify with both (hereby referred to as AuDHD).

In Canada, it is estimated that more than 1.1 million people identify with having a learning dis/ability (like ADHD), and more than 300,000 people identify with a developmental dis/ability (like ASC) (Statistics Canada, 2022), and emergent research has begun to indicate that being neurodivergent can affect how everyday-mobility practices are constructed and negotiated (Haas et al., Kenna, 2023; 2020; Kersten et al., 2020; Vanolo, 2023). Particularly, Kenna (2023) noted that there are ‘geographies of neurodiversity’ constructed in the ways in which people who are neurodivergent navigate and negotiate everyday-spaces, including transport spaces.

Aptly, when striving to further mobility justice for those with dis/ability, there is a need to critically engage with not only the ways that nuanced considerations of dis/ability are absent

from normative transportation planning strategies, but also the experiences of ‘being-in-travel’ and the ways in which differential-mobilities of dis/ability are relationally produced through interaction, sense, and affect (Sheller, 2018; Waitt & Harada, 2023). Sheller (2018) calls these the ‘vital frictions’ of the ‘uneven terrains of corporeal mobilities’, otherwise known as the ‘micro-politics’ of mobility (Bissell, 2018; Middleton, 2018).

In this paper, we conceptualize a framework to engage with embodied, sensorial, and affective experiences of ‘being in travel’ for people who are neurodivergent, substantiated through a grounded theory approach via qualitative interviews about how everyday commutes are navigated and negotiated. In doing so, we aim to expand our current understandings of dis/ability within transportation and provide insights on the relationality of ‘ability’ to affective dimensions of being mobile. To this end, we pose the following research questions:

- 1) How does neurodivergence construct the ways in which every day travel is navigated and negotiated?
- 2) In what ways do these micro-politics of mobility inform experiences of travel, and what can we learn from these when planning for just and inclusive transportation strategies?

Accordingly, our results uncover how everyday commuting practices are navigated and negotiated by those who are neurodivergent, with an explicit focus on the micro-politics of embodiment, interactions, feelings, and senses. From this, we explore the relational and spatial geographies of neurodivergence that are produced when ‘in-travel’, including how such geographies were (re)formed through adaptive tactics. These learnings provide a more in-depth understanding of dis/abled mobility practices and offer further evidence of the importance of understanding the emotional and embodied experiences of everyday travel when planning for inclusivity.

## ***5.2 BEING IN TRAVEL: HOW MOBILITY IS PRODUCED BY THE MICRO-POLITICAL, THE RELATIONAL, AND THE ‘UNIMAGINED’***

Typical transportation planning approaches have long relied on rational models of travel-behaviour, based on a ‘rational travel user’, whose decisions on travel-preferences solely consider the time and money involved (Schiefelbusch, 2010). Such understandings of travel, and

how it is navigated and negotiated, thereby exclude differential mobilities that are produced by impairment, gender, and race (Sheller, 2018), constructing an ‘imagined mobile subject’ who is immune to the ways that uneven power-structures construct lived-mobility practices (Jensen, 2011). Particularly, meaningful and pluralistic examinations of the lived experiences of dis/abled people are often lacking from planning (Terashima & Clark, 2021), even if there are broad inclusionary statements, such as those often included via ‘all ages and abilities’ promises (Elliott et al., 2022; Levine & Clarke, 2023). Particularly, this results in unmet ‘subject-centered’ claims of inclusivity that ‘flatten’ dis/ability and dis/ability considerations (Stafford et al., 2022). This was noted in ‘all abilities’ planning promises that offer blanket statements to plan for people with dis/abilities but lack nuance and depth in what this means or how to achieve it (Elliott et al., 2022).

In this, the production and politics of dis/abled mobilities are equally flattened as current transportation planning paradigms struggle to engage with the relational and value-laden realities of mobility-practices and transport spaces– and their relational and value-laden role in shaping them (Prytherch, 2025; Schiefelbusch, 2010). However, per Jensen (2013): *“Mobilities do not ‘just happen’ or simply ‘take place’... We should think of mobilities as being carefully and meticulously designed and planned ‘from above’, as one might say. However, they are equally importantly acted out, performed and lived ‘from below’”* (p.4).

Particularly, Schiefelbusch (2010) argues that current transportation planning does not engage with how mobilities are produced from “below”. Including the differential ways in which mobility-practices are embodied and felt, and the ‘emotional influences’ of mobility practice; otherwise known as the micro-politics, or what Bissell (2018) calls the *“barely perceived transitions in power that occur in and through situated encounters”* (p.397). To this end, Middleton & Spinney (2019) argue that existing research in examining transportation inaccessibility favours consideration for ‘objective causes’ and ‘outcomes’ of inaccessibility and “much less attention has been focused on ‘making’, ‘gaining’, or ‘doing’ access – in other words, the *experience* of actually being mobile” (p. 83).

However, previous studies have identified that affective experiences construct everyday mobility for people with dis/abilities (Feldman et al., 2020; Saltes, 2018; Wait & Harada, 2023; Waitt, et

al., 2024). In this, examining micro-politics of mobility is critical in understanding not only the unevenness of power distributed across identities within a society but also the ways in which fleeting and momentary encounters shared in everyday mobility form enablement and constraint on the street. Such framing positions the ability to participate within and perform everyday mobility practices as relational and in constant (re)form, shifting in response to other bodies, places, and societal power-structures. How mobility practices are embodied thus becomes a process. Per Bissell (2018), the micro-politics of mobility allow us to understand bodies not only through identity but also in the constantly shifting and responsive capacities to do and sense things.

It is important to note, that cognitive-function is at-times theorized as ‘abstracted’ from embodiment. Indeed, unlike other forms of dis/ablement, the neurodiversity paradigm is rarely theorized as ‘spatial’ (Sarraf, 2025), perhaps a result of the abstraction of the cognitive from relational conceptions of bodies-in-space. However, this manuscript aligns with embodied-cognitive geographies to instead conceptualize that *“the body, its social/environmental milieu, and meaning making (semantics) are primary issues for cognition in that it is rooted in situated, felt, emotional bodily experience, not in disembodied logical calculations.”* (Butcher, 2012 p. 91). In this, cognition is intertwined within the process of embodiment.

Given the legacies of the rational-travel-user and imagined mobile subject, these embodied and micro-political everyday-mobility practices can exist in alignment with how mobility is planned and designed, yet can also often be emergent— especially for those who subvert or challenge the hegemony of mobility expectations (Cresswell, 2010; Sheller, 2018), such as those who are dis/abled (Feldman et al., 2020; Goggin, 2016; Imrie, 2000; Parent, 2016; Saltes, 2018; Wait & Harada, 2023; Waitt, et al., 2024). Aptly, Hall & Wilton (2017) write that dis/abled bodies (and minds) are *“emergent, unfinished and relational (with other bodies and objects) shaped by everyday practices of affect and desire, yet with the constraints and contexts of dominant socio-spatial cultural constructions of dis/ability”* (p. 743). All practices of mobility are constructed by dominant societal-structures but can equally challenge and (re)construct them.

To this end, De Certeau’s (1984) concept of everyday strategies and tactics offers terminology to explore the production of everyday mobility from “above” and “below”, particularly for those

who are not ‘planned for’. Strategies come from positions of power and plan the city from “above” and tactics are the response of those on the ground level (from “below”), in the messiness of how places function rather than how they *ought to* function. Tactics are performed by those that exist outside of the ‘imagined mobile subject’ (Jensen, 2011) of planning strategies, which is often cis, male, and almost always able-bodied (Cresswell, 2006; Jensen, 2011; Middleton & Byles, 2019). Per De Certeau “*the space of a tactic is the space of the other. Thus, it must play on and with a terrain imposed on it and organized by the law of a foreign power*” (1984, p. 37).

In this, the insurgent everyday practices of dis/abled mobilities (re)form space through tactics. Waitt & Harada (2023), in their study on the rhythms and repetitions of everyday mobility practices for power-assisted mobility device users, refer to this as “*moments of deterritorialization and efforts to re-territorialize*” (p.121), tracing the ways that dominant strategies in urban planning/design plan for a certain ‘subject’, and how bodies that exist outside of those ‘normative parameters’ negotiate space while in movement. Saltes (2018), in studying the tactics of dis/abled people using mobility devices further notes that “*exclusionary spaces are not fixed, but open to reconfiguration*” (p.81). These emergent tactics challenge the hegemonic power structures and uncover how the ‘strategies’ fall short of inclusive planning and design, carving ‘the space of the other’ (per De Certeau, 1984). Yet, in tracing this space of otherness, we can more appropriately identify routes toward inclusion. This is why Waitt & Harada (2023) consistently refer to their work as building on Sheller’s (2018) call for “embodied and spatial understandings of mobility justice” (p.128), a call that we similarly address through this paper.

### **5.3 NEURODIVERGENCE IN THE PRODUCTIONS OF MOBILITY**

As of current, literature on neurodivergence and everyday mobility practices is still emergent. Indeed, neurodiversity is notably absent from current research, both in literature on embodied mobility practices and dis/ability (Feldman et al., 2020) and accommodating dis/ability in planning practices (Terashima & Clark, 2021; Levine & Karner, 2022; Leger & Dean, 2025).

In 2022, a call to action was put out to better understand the embodied and relational experiences of navigating a city with neurodivergence (Kenna, 2022). Such a call was in response to a landscape of literature which has predominantly focused on children with Autism Spectrum

Condition (ASC) and closed-dedicated spaces, like care facilities, homes, and schools (Cecchini, et al., 2018; Kenna, 2022; Kersten et al., 2020; Tola, et al., 2020; McAllister et al., 2022).

However, in the past few years research has begun to scope the positioning of neurodivergence in affecting everyday mobility practice. Particularly there are multiple studies that examine the sensory geographies of Autistic individuals (Davidson & Henderson, 2010; 2016; McAllister et al., 2022; Toronyi, 2021; Tola et al., 2020; Vanolo, 2023). This research examines the hyper and hypo sensitives experienced within the public realm caused by fluorescent lights, strong odours, excess noise, uneven surfaces, and crowding. Notably, such sensitivities have been found to evoke intense or ‘visceral’ (Toronyi, 2021) reactions that are rarely understood by the neurotypical expectation. Toronyi (2021) discusses the autobiographical account of Autistic-author Gunilla Gerland, and these ‘visceral reactions’: “Gerland (2003) describes, as an Autistic person, their painfully visceral reaction to the sound of passing cars as if *‘they would explode inside me and make me lose all sense of the way my body related to my surroundings. It was like being flung out into space – woosh – quite without warning.’*” (p.133).

Moreover, uncertainty in the built environment has also been scoped in emergent research, alluding that navigating everyday travel can be disorienting (Davidson & Henderson, 2016; Haas et al., 2020; Lubin & Feely, 2016; Kenna, 2023; Kersten et al., 2020). Again, senses of uncertainty and disorientation have been linked to intense reactions. Davidson & Henderson (2010), discuss this as a sense of ‘otherworldliness’ wherein the cues of ‘what to do’ in the built- and social environment are sometimes so unfamiliar, it can feel as if one was dropped down from another planet. They state: “*While recognizing there are rules that others live by—rules that govern social and spatial worlds— (people who are Autistic) say they have no insight, no path to recognition of what those rules might look like.*”. They go on to reference Gerland (2003) and the ways in which she felt “*that others must know some secret, must have some magical ability to make shared sense of situations from which she is constantly excluded and confused by*”. (p.468).

This research, although built on limited studies, provides essential insights into the politics of navigating space whilst neurodivergent, and the uneven lines of exclusion or challenge that are at times ‘hidden’; meaning that the differential-mobilities experienced by people who are

neurodivergent are not apparent to those who are not experiencing them (Davidson & Henderson, 2010; Toronyi, 2021; Vanolo, 2023). In this, neurodivergent folk participate in the ‘barely perceivable’ transitions of power in navigating and negotiating everyday mobility – an expression of ‘deterritorialization and efforts to re-territorialize’ as noted by Waitt & Harrada (2023).

In the context of neurodivergence and mobility practices, there is a lack of research that explicitly unpacks the relationality of mobility to the body, other bodies, and space/place (Sarraf, 2025). Instead, the existing literature is limited to travel-behaviour studies for Autistic individuals. These studies conclude that those who are Autistic may be less likely to drive and thus rely on transit, but that transit can equally be unsupportive to the needs of those who are Autistic both in the sensory environment and wayfinding (Lindsay, 2017; Deka et al., 2016; Dirix et al., 2023; Lubin & Feely, 2016; Feeley, et al., 2015; Haas et al., 2020; Tola et al., 2020). These studies, although useful in understanding travel patterns and preferences of neurodivergent riders, rarely engage with embodied or affective performances of mobility, nor do they engage with the politics of mobility that are entangled in how neurodivergent people navigate and negotiate space. Very little recent research has begun to close this gap, examining the feelings of navigating everyday travel whilst being neurodivergent (Kenna, 2023; Haas et al., 2020; Kersten et al., 2020). This is a notable absence in current literature as Kenna (2023), in an exploratory study on experiences of the public realm for neurodivergent people, highlighted public transport as being ‘complex, layered’ and a perceived ‘exclusionary space’ (p. 377).

## **5.4 METHODOLOGY**

This study was completed via qualitative grounded theory, based on 30 semi-structured interviews with people who identify as neurodivergent living in Ontario, Canada. As a non-linear analytical framework, grounded theory hinges on an iterative process of collecting data, forming concepts from the data, grouping the concepts, and identifying relationships between the groupings (Urquhart, 2022). Grounded theory is a means to “*move qualitative inquiry beyond descriptive studies into the realm of explanatory theoretical frameworks, thereby providing abstract, conceptual understandings of the studied phenomena.*” (Charmaz, 2014 p.8, emphasis added), thus giving space for understanding qualitative data more deeply and constructing ideas around such data.

### **5.4.1 Data collection**

Participants were recruited for this study via an open call that was advertised on social media channels including Instagram, LinkedIn, and Facebook. Targeted posts were included on Facebook groups specifically for ADHD and Autism awareness. The study was also advertised in an ADHD Awareness organization newsletter. A webpage for the study was set up that included all relevant information on the study, and interested participants were referred to an online form where they could indicate their interest in participating.

To qualify for participation, interested applicants needed to confirm that they were above 18 years of age, self-identify or have been diagnosed with either ADHD or ASC, currently reside within the Canadian province of Ontario and actively and independently travel around their community whether that be via walking, bicycling, transit or driving. Upon confirming their eligibility, participants were invited to partake in the study via a 15–20-minute interview with the researcher. Both those who self-identify and who have been diagnosed were sought in this study so as to not reproduce harmful biases, in which both women and racialized populations are less likely to have sought and received formal diagnosis (Aylward et al., 2021; Giwa Onaiwu, 2020)

Interviews were conducted on a range of platforms, including on Zoom, Teams, and phone calls. All were conducted virtually to allow for a diverse geographic sample across the province of Ontario. The sample included participants from Kitchener/Waterloo, Toronto, Ottawa, Brampton, Barrie, Niagara Region, Hamilton, and Windsor-area. The interviews were conducted between November 2023 to January 2024. All interviews were semi-structured in nature, which aligns with best practices for interviewing with neurodivergent populations, as it allows space for interpretation of the questions, but also gives clear guidance on the expectations of the participant in the interview (Kenna, 2023). Participants were also always interviewed by a self-disclosing member of the neurodivergent community. In this, the interview was meant to be a non-judgemental space wherein participants could share their experiences without the risk of being ‘othered’ by neurotypical expectations. The positionality of the researcher as neurodivergent was important as it could foster greater trust between interviewer and interviewee. This trust is essential when focusing questions on both embodiment and affect within lived experiences. Charmaz (2014) notes that who the researcher is, including their

appearance and their association, can affect the interactions within the interview and how comfortable a participant is to be vulnerable with their own story.

Interview questions focused on current transportation preferences, in terms of modes used for everyday travel and the preferred conditions for each of these modes. Participants were then also asked about challenging experiences they had faced in getting around, and if they have any accommodations, they make for themselves to make stressful travel situations more comfortable. Each interview was audio-recorded and then transcribed anonymously. Pseudonyms are used in this paper to describe the participants. At the end of the interview, participants were asked to fill out a brief demographic survey that collected details on race, gender, age, and diagnosis/identity. Participants ranged in age from 18-24 to 55-64. The below tables (**Table 6** and **Table 7**) summarize the gender and race breakdown of the participant pool.

*Table 6: Gender-race breakdown*

| Race                     | Gender    |           |            |                   |           |
|--------------------------|-----------|-----------|------------|-------------------|-----------|
|                          | Woman     | Man       | Non-binary | Prefer not to say |           |
| <i>Racialized</i>        | 4         | 3         | 2          | 1                 | <b>10</b> |
| <i>White</i>             | 8         | 10        |            |                   | <b>18</b> |
| <i>Prefer not to say</i> | 1         |           |            | 1                 | <b>2</b>  |
|                          | <b>13</b> | <b>13</b> | <b>2</b>   | <b>2</b>          | <b>30</b> |

*Table 7: Diagnosis breakdown by gender*

| Neurodivergent Identity | Gender    |           |            |                   |           |
|-------------------------|-----------|-----------|------------|-------------------|-----------|
|                         | Woman     | Man       | Non-binary | Prefer not to say |           |
| <i>ADHD</i>             | 11        | 8         |            | 1                 | <b>20</b> |
| <i>ASC</i>              | 1         | 4         |            |                   | <b>5</b>  |
| <i>AuDHD</i>            | 1         | 1         | 2          | 1                 | <b>5</b>  |
|                         | <b>13</b> | <b>13</b> | <b>2</b>   | <b>2</b>          | <b>30</b> |

### **5.4.2 Data analysis**

Following the grounded theory tradition (Charmaz, 2014), this study's findings emerged alongside the review and analysis of the interview transcripts. Analysis was conducted via an iterative process of initial/open coding, memo-writing, and focused coding.

Interview transcripts first underwent an open/initial coding, wherein the researcher conducted a line-by-line analysis. The purpose of this coding was to closely engage with the information shared within the interviews and draw out potential themes. The open/initial coding stage was meant to 'stay close' (Charmaz, 2014 p.120) to what was shared by the interviewee.

Once the open/initial coding was complete, a memo was written summarizing emergent themes from the open coding and thematic categorizations were drawn from the interview transcripts. At this time, after all interviews had undergone preliminary thematic coding, an email was sent to all participants to ensure the preliminary results aligned with their experiences and recollections from the interview. Any participant who felt that their position was either misrepresented or missing from the analysis was encouraged to respond to the email and let the researcher know of any omissions or issues.

The researchers then returned to write another memo that refined the codes further and continued to construct emergent theories from the data. This memo was shared for review with the larger research team for discussion, and the researchers returned to the initial transcripts and initial coding, adjusting categorizations as needed. This process of drawing themes, writing memos, and discussing amongst the research team was repeated until all members of the research team were satisfied with the emergent theories from the work. All coding was conducted in NVIVO software.

#### **5.4.2.1 Feelings codes**

Since this paper is focused on the micro-politics of being-in-travel, results were additionally coded based on the affect or emotion evoked. Feelings codes were drawn from prevalent themes in earlier iterations of coding, particularly the line-by-line coding that stayed 'close' to the emotions and experiences shared by participants. Developing feeling codes helped to scaffold how the 'emotional influences of mobility' (per Schiefelbusch, 2010 p. 213) shaped

neurodivergent mobility practices, and offered a framework for examining the differential-mobilities produced by affective micro-politics of everyday mobility. Particularly in including both ‘positive’ and ‘negative’ codes, this additional level of analysis reveals emotional influences, but also the ‘emotional work’ of navigating and negotiating mobility in systems that do not meet participant needs (Middleton & Spinney, 2019). The codes that emerged included feeling: stress, burden, annoyance, spent, shame/at-fault, different, uncertain, idle, security, and unburdened. **Table 8** summarizes the relationship between the feeling codes and the emotional influences of mobility.

Table 8: Feeling code framework

| Emotional influences of mobility        | Description                                                                                                                                                                        | Feeling code (negative)                   | Feeling code (positive)         |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------|
| Comfort                                 | The physical accommodations in travel, including temperature or availability of seats/storage.                                                                                     | <i>Stress</i><br><i>Uncertain</i>         | <i>Security</i>                 |
| Relaxation                              | The ability to ‘unplug’ during commute due to services that alleviate the need for focus. Permits for other activities to occur (such as reading, working, or listening to music). | <i>Burden</i><br><i>Spent</i>             | <i>Unburdened</i>               |
| Entertainment and stimulation           | The stimulation of a commute/travel, the opportunity to experience interest or ‘sensual impression’.                                                                               | <i>Idle</i>                               | <i>Unburdened</i><br><i>Joy</i> |
| Communication and contact possibilities | The possibilities for connection or social value in a commute. The ability to ‘see or be seen’.                                                                                    | <i>Stress</i><br><i>Different</i>         | <i>Security</i>                 |
| Image or prestige                       | The possibility to ‘produce’ one’s image, both of how the transport user                                                                                                           | <i>Shame/At-Fault</i><br><i>Different</i> | <i>Security</i>                 |

|                                                |                                                                                                          |                                   |                                 |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------|
|                                                | sees themselves and how others see them.                                                                 |                                   |                                 |
| Substitute friend or partner                   | Feeling understood or supported by the vehicle/surrounding environment of a commute/travel.              | <i>Uncertain</i>                  | <i>Security</i>                 |
| Physiological stimulation                      | Sensual effects caused by travel (acceleration, vibrations, noise).                                      | <i>Stress</i><br><i>Annoyance</i> | <i>Security</i>                 |
| Feeling of freedom or thrill                   | The excitement of a commute. Ability to feel free, thrilled, joy.                                        | <i>Idle</i>                       | <i>Unburdened</i><br><i>Joy</i> |
| Regulation of aggression and mental imbalances | The ability to ‘let loose’ or experience heightened emotions in-travel to regain a sense of mental-calm. | <i>Overwhelm</i>                  | <i>n/a</i>                      |
| Finding identity and meaning                   | The ability to find a sense-of-self in preferred travel mode.                                            | <i>Uncertain</i>                  | <i>Unburdened</i>               |
| Regulation of privacy                          | The possibility for ‘personal space’ in travel that can be controlled independently.                     | <i>Overwhelm</i><br><i>Idle</i>   | <i>Security</i>                 |

#### 5.4.2.2 *Tactic codes*

In addition to the feeling codes, we also coded for ‘adaptive tactics’, which represented how people who are neurodivergent negotiated space in unsupportive environments, wherein their experiences of getting around were ‘unimagined’ (Jensen, 2011). Whenever participants discussed a means by which they adapted or (re)formed their everyday mobility practices to accommodate themselves we coded this as “action: tactic”. Such actions were usually in response to a particular feeling noted earlier in the quote and allow for a conceptual mapping of the means that environments were reconstituted by participants in their everyday mobility practices.

## 5.5 OVERVIEW OF RESULTS: SUMMARY OF MODE-CHOICE ACROSS PARTICIPANTS

Across the 30 participants, our analysis revealed a diverse set of commuting and travel behaviours and preferences. The majority (n=25) did not often choose to drive, either because they disliked the experience of driving and opted out of vehicle ownership (n=4), never chose to get a driver's license (n=9), or did drive occasionally but found it either too stressful or onerous to be their preferred mode for everyday travel (n=12). This finding, although statistically insignificant due to sample size, mirrors that of broader studies on neurodivergence and barriers to driving (Deka et al., 2016; Lindsay, 2017)

To that end, many participants stated transit was their preferred mode of travel (n=16), with some preferring to walk or cycle (n=8). Few (n=6) drove as the preferred or only mode of travel. **Table 9** summarizes the mode breakdown across participants.

*Table 9: Participant mode-breakdown*

|                                  | Primarily gets around by driving | Primarily gets around by transit | Primarily gets around by walking/cycling |    |
|----------------------------------|----------------------------------|----------------------------------|------------------------------------------|----|
| Does not drive, no license       | n/a                              | 7                                | 2                                        | 9  |
| Does not drive, but can          | n/a                              | 1                                | 3                                        | 4  |
| Does drive, but not frequently   | n/a                              | 4                                | 2                                        | 6  |
| Does drive, but does not like it | 1                                | 4                                | 1                                        | 6  |
| Does drive, preferred            | 5                                | n/a                              | n/a                                      | 5  |
|                                  | 6                                | 16                               | 8                                        | 30 |

Despite this heterogeneity across mode preferences for everyday mobility practices, a more in-depth analysis revealed parallels within the micro-politics of decision-making that were intrinsically tied to navigating and negotiating space whilst neurodivergent. Notably, we found

many participants to either directly or latently speak to the impact of executive function challenges and sensory sensitivities on their travel behaviours or preferences. Such impacts evoked feelings of overwhelm, burden, stress, and difference which could shape the experience of a commute and necessitate responsive tactics to manage such feelings. The discussion of results explores these sensorial and affective dimensions of travel, and how travel behaviours are (re)formed in navigating and negotiating space whilst neurodivergent.

## **5.6 PRESENTATION AND DISCUSSION OF RESULTS: THE MICRO-POLITICS OF EVERYDAY TRAVEL**

In the discussion of our results, we focus on further unpacking the motivations behind the mode choices presented in the result overview. Specifically, we map both the micro-politics of navigating everyday mobility while neurodivergent and negotiating everyday trips through tactics. This is organized as follows:

- Navigating executive dys/function in everyday mobility practices
- Navigating sensory overwhelm (and underwhelm) in everyday mobility practices
- Negotiating tactics: seeking predictability, agency, and interest

### **5.6.1 Navigating executive dys/function in everyday mobility practices**

A prevalent theme heard during the interviews was participants navigating discomfort due to challenges with executive function (often referred to as executive dysfunction), wherein working memory (ability to work with information without losing track), cognitive flexibility (adaptability to change), and inhibition control (tempering thoughts, feelings, and actions) are more challenging to manage. Executive dys/function impacts everyday activities for neurodivergent people, including difficulty taking in and processing heavy amounts of information at once (Burgess & Alderman, 2004). In the context of everyday mobility practices, we found that this translated into a sense of angst and overwhelm when travelling by certain modes or routes that require their full or undivided attention.

#### **5.6.1.1 ‘Needing’ to remember and habit-forming**

As noted, many of the participants either opted not to drive or did so sparingly. In our interviews, we found angst and nervousness around driving to be directly related to an overwhelming sense of burden around ‘remembering’ the practices of driving, especially in busy areas or where there were many cars, pedestrians and other road-users.

“I think just **being out in traffic used to really make me uncomfortable** (feeling stress) ... Just the traffic and all the people crossing and **the rules that everyone has to remember** (feeling: burden).”- Priya, diagnosed ADHDe

Such feelings of burden were mentioned throughout the interviews as driving was referred to as “bringing a lot of anxiety” (Jasmine, diagnosed ADHDer), “all the worst part of the cognitive stuff (Jordan, diagnosed AuDHDer), and “so many things to process at once with a lot of responsibility” (Wanda, diagnosed AuDHDer). These sentiments were also shared by those who had to navigate traffic when cycling, which was negatively associated with “too much stuff going on” (Jennifer, diagnosed ADHDer), and “requiring that driving attention, except you’re even more vulnerable” (Jordan, diagnosed AuDHDer).

Public transit was sometimes perceived to alleviate the stresses of driving or cycling as participants felt they had less perceived responsibility in this mode. Victoria, who is a diagnosed AuDHDer, spoke to this difference:

“And then I took the bus, and I was like, **wow, I love the bus! I don't have to do anything** (feeling: unburdened). **When I drive, I have to be watching everything.** (feeling: burden)”

Indeed, many participants were avid-transit users. Yet, experiences in transit were not always easy or unburdened. Many participants felt that transit could also stress their ability to focus, especially when routes were unfamiliar or unreliable:

**“I have to be anxious and remember to pay attention** (feeling: burden) **to the bus stops and keep my phone open at all times to see where we are in comparison to the bus stop I'm going to** (action: tactic).” – Jennifer (diagnosed ADHDer)

Notably, Jennifer uses the specific language of needing to ‘remember’ to pay attention, the same language Priya used when discussing needing to ‘remember’ traffic rules. What may commonly feel like ‘going through the motions’ for neurotypical people are active acts of cognition for those who are neurodivergent. This aligns with previous studies that have noted the difficulty for neurodivergent people to create habits, and how this could impact the sense of security and certainty in their built environments (Davidson & Henderson, 2016; Haas et al., 2020; Kenna, 2023; Vanolo, 2023), with Davidson & Henderson (2016) calling these ‘radical uncertainties’.

To this end, many participants shared feelings of exhaustion after navigating a trip that stressed their executive function since it took more cognitive effort and strain. Gilly, who is a diagnosed

AuDHDer shared that they ‘hate traffic’ because: **“by the time I finish driving, I feel really drained and irritable and snappy** (feeling: spent).”

In relating to the emotional influences of mobility, negotiating *relaxation* is more difficult for people who are neurodivergent, and commonly participants noted feeling ‘burden’ or ‘spent’ as what is expected to come by second nature, is instead constant and active thought (Davidson & Henderson, 2016; Kenna, 2023). This sense of burden is part of the micro-politics of neurodivergent mobilities. Habitual behaviours are often expected and subconscious practices of everyday mobility (MacPherson, 2010), yet with non-habitual actors (Like Jennifer and Priya who *need to remember*), these efforts never become part of the ‘auto-piloting’ of everyday mobility (Middleton, 2011).

#### *5.6.1.2 Navigation and spatial knowledge*

Anika, who is a self-identified ADHDer, expanded on this sentiment sharing that she not only felt difference when needing to focus, but also experienced challenges with navigating and understanding transit schedules and routing, mirroring the findings of previous studies on navigating transit when neurodivergent (Lubin & Feely, 2016; Haas, et al., 2020). This information did not come naturally to her and instead gave her a notable sense of ‘otherworldliness’ (per Davidson & Henderson, 2016) watching her close friends or family easily understand these systems and norms. She shared a story about feeling “*helpless*” when she went shopping with her friends as they were “*so confident*” in knowing which bus was the right bus.

**“I’m like, okay, that confidence that she possesses. I do not have that... There is this gap, I feel from other people: my husband or friends or family, they know what they’re doing. But I don’t** (feeling: different). And I miss the bus, or I take the wrong bus, so many times.”

In this quote, Anika speaks to another emotional influence of mobility, being *communication and contact possibilities*. In some ways, Anika relied on her proximity to friends or family to form senses of comfort in travel and even referred later in the interview to following strangers as well to help in such moments of uncertainty. In this, being seen and seeing others allowed her to get around by relying on these connections for navigation. However, equally seeing others easily navigate spaces that were to her, disorienting, caused feelings of difference.

### 5.6.1.3 Travel-disruptions and self-blame

Feelings of uncertainty, exhaustion, and stress were exasperated when there was a disruption in travel plans, such as a bus not showing up, construction, or people not driving according to the “rules”. Such disruptions often had more serious personal implications for participants. We heard about disruptions “setting the tone for the entirety of my day” (Evan), “ruining my whole day” (Gilly), “really messing me up” (Jennifer), “throwing me off my tracks” (Emma, diagnosed ADHDer), and “impacting my perception of autonomy and being able to carry on with my day” (Zach). Victoria (diagnosed AuDHDer) perhaps said it most concisely: “If I get a little bit lost, it’s not: ‘Oh ha, ha, I got lost. **If I get lost, it’s I’m going to cry**’ (feeling: overwhelm)”.

Interestingly, Schiefelbusch (2010) identifies *regulation of aggression and mental imbalances* as one of the emotional influences of mobility. Although we note that this terminology is perhaps reductive, such indicator is important as the supposed comfort from “let(ting) loose’ one’s emotions, in particular to compensate negative previous experiences elsewhere, in order to re-obtain the personal mental balance.’ (p. 213) was never discussed within the interviews.

Rather, the experiences of being in-travel (especially when facing a disruption) were often the cause of emotional dysregulation and stayed with participants, affecting their emotional-state for the whole day (as noted by Gilly, Zach, and Evan). This was especially relevant for ADHDer participants, who often spoke of harboured guilt and shame about being late or making a ‘mistake’. Evan (diagnosed ADHDer) shared: **if I’m late, I’ve failed, and everyone’s going to know it and hate me for it** (feeling: at-fault; shame).”

Feelings of shame would often lead to participants attempting to hide or conceal their perceived failures or mistakes. Kim (diagnosed ADHDer) discussed this feeling when making travel-plans with family:

“(My parents) will be like, what time are you coming out? **And I’ll tell them a window of when I’m catching the train** (action: tactic). Because **before, if I said I’m catching a certain one and then I miss it, well then, my mother’s narrowed in on her plans and I’ve just screwed it up** (feeling at-fault; shame).”

These efforts to conceal differences are often called ‘masking’ in the neurodivergent community, wherein one attempts to adjust or ‘cover-up’ their natural behaviours or inclinations to make themselves more palatable for neurotypical expectations (Miller et al., 2021). The exhaustion and shame discussed in these interviews uncover some of the hidden feelings of ‘getting by’ whilst neurodivergent. Particularly, such stories relate to *image and prestige* as an emotional influence of mobility. Participants felt that they had to maintain a certain image in travel, and that when that image was affected by being-late, it caused significant emotional-stress and could affect their mode and route choices.

### ***5.6.2 Navigating sensory sensitivities in everyday mobility practices***

Experiences of daily mobility practices were also impacted by sensory sensitivities. Many participants spoke to constantly feeling their attention bounce between other road users, perceived hazards, and visual cues in their surrounding built environment:

**“Everything in the outer environment is a lot to take in** (feeling: overwhelm), and (because I’m Autistic) **I don’t have a choice about taking it in** (feeling: different).” – Wanda (diagnosed AuDHDer)

Sensory sensitivities caused by neurodivergence are a well-known phenomenon (Davidson & Henderson 2010; Haas et al., 2020; Lubin & Feely, 2016; Toronyi, 2021; Tola et al., 2020; Vanolo, 2023), wherein many struggle with filtering sounds, smells and sights within the surrounding built environment. In our interviews we found the associated overwhelm could shape mobility practices. Throughout the interviews, participants spoke of sensory overwhelm caused by lights (such as bright headlights when night driving), noise (such as the ‘ding’ of a transit stop being requested, the bus engine, or abutting traffic when walking) and crowding.

In returning to Schiefelbusch (2010), both *comfort* (being physical accommodations such as available seats, and temperature) and *physiological stimulation* (being senses of acceleration/deceleration, noise, or vibration) are particularly relevant emotional influences of mobility when planning and designing for inclusive transportation. Sensory sensitivities can make such stimulation overwhelming and construct negative experiences in travel. These findings align to Toronyi’s (2021) study of the ‘hidden geographies’ of hearing and sensing

experienced by Autistic individuals, wherein they discuss the need for urban designers to think more critically about designing for Autistic perceptions of the sensory environment, and the ‘visceral’ reactions that can be caused by sensory sensitivities.

Particularly, crowding was a consistently discussed component of sensory overwhelm. When busses, trains, roads, or to an extent, sidewalks, were overfilled with other people, participants spoke of strong feelings of overwhelm, annoyance, and even fear. Such feelings were strongest when in constrained areas wherein it was not easy to leave or find an alternative route. Frederick, who is diagnosed as Autistic shared:

**“I really don't like being stuck in transit. If you're trapped in a jam and this car is to the side of you and a car behind you and you're not moving, you're trapped** (feeling: idle; overwhelm). Same with the subway. Something happens, you're stuck there.”

The phenomena of *feeling idle* transgressed in many ways in the interviews. Many felt idle when stuck in crowds, yet it also came up about any mode or trip which was perceived to strip participants of their autonomy to ‘get away’. Priya (diagnosed ADHDer) shared she often felt uncomfortable when driving or cycling because the presence of a vehicle took away her ability to ‘escape’:

If I'm on a bike **I cannot just drop everything and run in case something goes wrong** (feeling: idle; stress), in case there's an accident or I make a mistake or anything. I cannot just escape from there if I have a car or a bike with me.”

The above sentiment shared by Priya was common in the interviews. Many participants shared they felt a loss of control in navigating everyday travel with a vehicle. Zach discussed a sense of comfort that came from getting around without a car or bike, stating: **“You're responsible for your own body** (feeling: secure), your own safety. That's it. No piece of property you have to lug around”.

In this, participants spoke to *regulation of privacy* as an emotional influence of mobility. Schiefelbusch (2010) conceptualized this influence as having access to personal space that can be controlled independently. Fittingly, participants did feel stress and overwhelm when personal space was not attainable in travel, especially in circumstances where they felt ‘stuck’ and unable

to renegotiate their personal space. However, having access to the private space of a vehicle was not always comforting in this regard. Rather, being in a vehicle could equally bring up feelings of being ‘stuck’. Such finding indicates that perceptions of ‘crowding’ are also constructed relationally. Although the image of a packed sidewalk may seem more ‘crowded’ than a grid-locked highway, the ability to retain agency in walking and perform adaptive-tactics (such as stepping off the sidewalk or locating an alternative route with ease) made crowding in walking more preferable than circumstances of crowding that involved vehicles.

### ***5.6.3 Negotiating tactics: predictability, agency, and interest***

The above-mentioned stories begin to trace the tactics deployed by neurodivergent people to navigate themselves through everyday mobility practices. Just as argued by Saltes (2018), dis/abled people actively reconfigure their surrounding built and social environments via their embodied mobility practices. In the above sections, we focused on the challenge of navigating executive dys/function and sensory sensitivities in everyday mobility practices, and the feelings of burden, stress, difference, overwhelm, exhaustion, and shame caused. To mitigate these feelings, participants often adapted their behaviours, routes, or modes to minimize the potential emotional dysregulation. That could mean not driving at certain times of day (or at all), opting for familiar transit routes or higher-order transit (which was often perceived as easier to understand), relying on their phone or mobile device for constant navigation instructions, or seeking out alternative routes that minimize sensory exposure. Such practices formed the ‘tactics’ (Per De Certeau, 1984) of neurodivergent people to configure everyday mobility freedoms and potentials. Notably, most if not all these tactics had two common themes: the desire to make travel predictable or reliable and configure a sense of agency in their everyday mobility practices.

#### ***5.6.3.1 Negotiating predictability***

As mentioned, travel disruptions could cause noticeable impacts on emotions. Due to this, finding semblances of predictability and reliability in preferred travel modes was constantly mentioned throughout the interviews. Often, this was cultivated through the use of Google Maps and other assistive apps on their mobile devices, which were repetitively mentioned as a support in navigating everyday travel. Additionally, participants discussed how they would reconfigure their commutes around modes that felt reliable and predictable. Frederick (diagnosed Autistic)

discussed how he would prefer to take a subway and then walk to his destination as opposed to taking a connecting streetcar or bus. Many participants felt that transfers exasperated feelings of uncertainty and burden, preferring to walk over taking multiple forms of transit.

“If I could get somewhere by taking subway routes that I'd taken before, (even if) it would take a little bit longer- of course. (I avoid) taking a streetcar route I haven't taken before; **I take the two subway routes and walk the difference** (action: tactic).”- Frederick

To this end, participants often shared that while taking public transit they would opt for higher-order transit modes, like a Light Rail Transit (LRT) system, Subway, or Regional Rail as it felt more predictable and reliable, and by way of that, made participants have a sense of control over their everyday mobility practices. When discussing their local LRT systems, Priya (diagnosed ADHDer) said it “felt familiar”, Jasmine (diagnosed ADHDer) called it “straightforward and predictable”, and Gilly (diagnosed AuDHDer) said they liked how “you know what to expect”.

Often, these feelings were associated with the set routes and schedules, predictable seat layouts, doors that would consistently open at every stop, and route maps inside the LRT vehicles. These interventions made transit feel more reliable, predictable, and by association comfortable for neurodivergent people, who often struggle more with finding predictability and reliability in everyday practices (Tola et al., 2020; Cecchini, et al., 2018; Vanolo, 2023). Such tactics speak to the potential of *substitute friend or partner* as an emotional influence of mobility that could support people who are neurodivergent. The more that communicative-supports are built-into transportation infrastructure (including legible wayfinding, disruption/change notices, and reliable scheduling that make travel more predictable), the more the infrastructure itself can act as a travel-support, which as noted in the earlier section of 6.1.2, is currently sought out by some participants in friends or family.

#### *5.6.3.2 Negotiating agency & interest*

Participants often spoke of wanting to feel some sense of control or agency in how they got around day-to-day and felt this sense could also help make modes feel more predictable and reliable. Yet, navigating unsupportive environments for both executive dysfunction and sensory sensitivities could make participants feel uncertain, anxious, and per Zach (diagnosed Autistic) “stripped of autonomy”.

As a response, participants would reconfigure what it meant to have agency in travel. Reconfiguring trips in their image sometimes meant mundane tactics like always bringing noise-cancelling headphones, sunglasses, or fidget toys on everyday trips which could help soothe sensory overwhelm and reinject a sense of agency into a trip. Per Tomas (diagnosed Autistic):

**“I will not go on public transportation without having earbuds with me just because otherwise, it's way too loud** (action: tactic) ... I'll always have, like, the sound on loud enough that it just kind of drowns out everything else because otherwise, it's really intolerable for me.”

Sometimes participants spoke of layering small-scale tactics to (re)form a commuting practice. Nadine (diagnosed ADHDer) is one of our participants who did not like to drive but did so out of necessity:

**“I have a little routine that I am quite consistent with** (action: tactic). On the way to work, **I stop at my favourite cafe** (action: tactic). It's a quick in and out. Then I have a podcast that I really like for the morning. **And so I put the podcast on and then I drive to work** (action: tactic). **And I feel pretty comfortable because the traffic's not bad in the morning, and I am by myself, and I have all my little comforts** (feeling: security) that make it a more enjoyable experience”

Importantly, although these tactics come ‘from below’, they are a means of empowerment for neurodivergent people; a way in which they could reconfigure the space of a city and mobility freedoms and potentials within it. Wanda, diagnosed AuDHDer, discussed that in realizing they could remove themselves from uncomfortable trips they were able to take back their city and find a sense of control:

**“Also, just removing myself from a situation** (action: tactic) when I need to. **Realizing that I can do that has been empowering** (feeling unburdened), I guess. I have control of that.”

In this, Wanda highlights the empowerment felt by removing themselves from a stressful situation by an act as simple as getting off a bus. Such practice reflects the emotional influence of mobility, *finding identity and meaning* in travel. In this adaptive tactic, Wanda constructed a practice that respected her identity and abilities, and in that, negotiated agency.

In addition to the tactics discussed above, participants also often (re)formed their commute through walking. When walking, there was often a palpable sense of feeling in control and being more adaptive to surrounding environments that were sometimes eroded when needing to wait for public transit or ‘remember to pay attention’ when driving:

“For me, I think the reason why I would say **I prefer walking over taking public transit is just having a sense of control over my movement** (feeling: security). I really enjoyed that. **Just being able to walk at my own pace, enjoy my music, and just enjoy what's around me... I think it's just being able to walk freely, leave my house whenever I'm done getting ready versus following the schedule.** (feeling: unburdened; joy)” – Jasmine

Moreover, as a tactic, walking offered the flexibility to get out of overwhelming or stressful situations. David, who is diagnosed with ADHD shared: “**I think I would rather walk the entire length of the platform** (action: tactic) than be stuck in a line, slowly going down the stairs. **Even though it ends up taking me longer, I'm more happy to do that because I feel like I'm progressing and going somewhere** (feeling: unburdened; joy)”

To that end, we also heard that both walking and cycling were tactics to avoid *feeling idle* in daily travel. We found that for some participants (noted to be more common for those with ADHD), there was a need for ‘fun’ and interest in daily commutes. Aptly, walking and cycling were sometimes preferred for the ability to ‘seek out’ good stimulation and avoid traffic and delays. Emma, diagnosed ADHDee says:

“**It's the independence that I get from being able to go out when I want to** (feeling: unburdened). I think cycling is a very **high dopamine activity for me because there are so many different things that I can do** (feeling: joy).”

This finding again relates to the emotional influences of mobility, by demonstrating *entertainment and stimulation* as well as *freedom and thrill*. Being able to freely walk allowed for enjoyable sensory experiences that were sometimes sought out by participants, as described by Jasmine. Even more, for a subset of participants, cycling was not only *stimulating* but *freeing and thrilling*. Participants shared that being on a bike gave them the ‘flexibility of just stopping and starting’ (Jordan), take wrong turns and then ‘just turn around. It's not like a huge thing.’

(Paul, diagnosed ADHDer), and ‘have fun’ (Emma). Per Alexander (diagnosed ADHDer): I still get it (dopamine) when I’m out there, especially with the hills. **You get the top of the hill and it’s like, oh, yeah** (feeling: joy).”

### *5.6.3.3 Tracing the geographies of neurodivergence formed by tactics in-travel: recommendations for inclusive transportation planning*

The tactics formed both by seeking predictability, agency, and interest conceptually-mapped the ways neurodivergent people would negotiate everyday mobility practices. In this, we see the ‘hidden’ avenues of challenge (such as those discussed in sections on navigating executive dysfunction and sensory sensitivities), and ways neurodivergent people cope or get by in their routines and behaviours. These tactics form in part what Kenna (2023) coined as the geographies of neurodiversity, translating feelings and affect into spatial practices (as demonstrated in David’s avoidance of feeling idle translating into walking an entire train platform).

The geographies of neurodiversity reveal the relational ways that neurodivergent people experience and embody the city. Per Kenna (2023), this includes one’s relationality to the social (such as crowds and interactions with other road users), spatial (such as transportation infrastructures), and temporal (such as time of day). All of which, we found to construct the tactics of how predictability and agency were sought out. Importantly, as this work was centered on understanding affect, the tactics we traced were not singular nor universal. However, regardless of how the tactics negotiated comfort for neurodivergent people, they formed a distinct politics of mobility, one which is negotiated ‘from the below’ (per Jensen, 2013). Carly, in recounting how being Autistic most impacts her everyday mobilities, highlighted these negotiated practices:

**“I think it’s just like a switch in priorities compared to a lot of my neurotypical friends and peers (feeling difference). I’ll take the less busy bus routes. I’ll take a slightly longer trip if it means staying on a quieter street, or I’ll take weird shortcuts if that means I’ll avoid the busy streets** (action: tactic).”

In discussing “taking a long trip if it means staying on a quieter street” Carly points out how neurodivergent mobility practices may subvert the expectations of transportation planning strategies, which we also heard in participants who would walk longer distances to higher-order

transit stations, walk instead of waiting for a bus, or take only specific routes in driving. Such tactics would help participants avoid feelings of burden, stress and overwhelm when enacting daily mobility practices. Importantly, and as noted throughout our discussion, such decisions were often based in emotional influences of mobility. As such, these alternatives (re)formed mobility practices as Jensen (2013) calls “from below” and reflect the embodied and affective means in which mobility is performed and experienced. In this, the adaptive tactics discussed are both responses to the macro-politics of exclusion for persons with dis/abilities wound up in social formations and expectations but are also ‘momentary’ reactions to constantly shifting experiences of a daily commute.

This finding is a crucial insight, as in the current approaches to transportation planning, even inclusive transportation, these affective dimensions of travel are often missed (Schiefelbusch, 2010; Terashima & Clark, 2021). Future inclusive transportation planning efforts must engage with experiences of being-in-travel, especially for those who are ‘unimagined’ by existing social-norms and power-structures. By engaging with experiences of being-in-travel, planning efforts can elicit more insight on how mobility-practices are produced from “below”, and position inclusivity efforts (like planning for all-ages-and-abilities) to respond to these experiences. Particularly, it is recommended that planners engage more closely with the relational lived-experiences of people who are dis/abled or differently abled in scoping accommodations, rather than relying on ‘flat’ and subject-centered inclusivity promises. Indeed, the enclosed findings offer one avenue to ‘unflatten’ dis/ability accommodations by engaging with the affective and embodied practices of mobility.

## **5.7 CONCLUSION**

This paper explored the micro-politics of navigating and negotiating everyday mobility practices performed by people who identify as neurodivergent, and the implications for inclusive transportation planning. In our results, we found that mobility is practiced and performed differently when neurodivergent, often motivated by *emotional influences of mobility* with heightened feelings of stress, shame, idleness, difference, and burden associated with executive dysfunction and sensory sensitivities. From these challenges, we also saw moments of empowerment in the ways that the practice of mobility was then renegotiated by the participants via creating space for predictability, agency, and interest.

These findings mirror those of earlier studies that unpack and interrogate the politics of dis/abled mobilities, exploring how sensory and affective dimensions of being mobile form spatial ‘geographies of dis/ability’ or in this case ‘geographies of neurodiversity’ (Kenna, 2023). Distinctly, this study contributes insights into the importance of relational understandings of dis/ability within the planning and design of built environments (Hall & Wilton, 2017). Taking a relational perspective into dis/ability and mobility allows more meaningful engagement with the ways both bodies and space are (re)formed by micro-politics and the minute transgressions of power experienced in everyday mobility practices (Bissell, 2018). Indeed, current approaches to accommodating dis/ability in mobility studies and transportation planning lack depth and nuance, which per Stafford et al. (2022) can ‘flatten’ our understandings of dis/ability. Within our findings, ability to get around was not a binary which could be theorized in absolutes of either had or not had; rather it was wound up in the constant process of embodiment in mobility, constructed and renegotiated based on conditions of the self and of space. Engaging with the experiences of being-in-travel for people who are dis/abled or differently abled opens up a broader conversation into the relationality of mobility-potentials, especially when centering emotional and affective influences of mobility-practices.

To this end, our findings are not meant to generalize nor speak for all of the neurodivergent community yet do provide insight into how neurodivergence and cognitive difference can contribute to pluralistic embodied experiences within mobility. We were mindful when beginning this work that we did not want to perpetuate the idea there is *one way* of being neurodivergent, a common misconception which unfairly eradicates the plurality of such a diverse term (Giwa Onaiwu, 2020). Rather we lean into embodiment not as a window into identity, but a window into ‘complex personhood’ wherein our participants are telling their stories from the lens of neurodivergence, but that that does not eradicate or undermine their diverse and intersectional identities (Macpherson, 2010; 2011).

Hence, it is imperative to reiterate that in scoping this work we engaged with a subset of people who are neurodivergent and are able to travel-independently, thus omitting those who do not have the same affordances. This choice was done to explore the often ‘hidden’ avenues of exclusion faced by people who are neurodivergent who are getting around every day, yet whose experiences have been ‘left out’ of the discourse on dis/ability and everyday travel. Moreover,

this study was also scoped to people who are Autistic, have ADHD, or both. This scoping allowed for us to trace the ways in which everyday mobility practices could be influenced by shared experiences in executive disfunction and sensory sensitivities. However, future research should continue to engage with the pluralistic ways of being neurodivergent and the relationship to experiences of being-in-travel.

We also note the geographic limit of this research being based in Ontario, Canada. There are macro-politics of mobility that are rooted in the societal context in which the research is conducted, as such, this work is bound to the context of Ontario, Canada, and specifically mid to large-sized cities that the majority of participants were recruited from. It is recommended that future research explore this work in other spatial contexts.

We conclude that as we move forward to more just mobility futures that accommodate ‘all abilities’, the micro-political and affective processes of navigating and negotiating space need to be considered within our planning efforts. We recommend that inclusive transportation planning efforts engage with the lived-experiences of being-in-travel, especially for people who face mobility-marginalization and are currently ‘unimagined’ by the planning strategies from ‘above’. As evidenced by this study, there is much to be learnt in the everyday practices and tactics of mobility performed ‘from below’. Particularly, the emotional influences of mobility are significant in constructing everyday mobility practices and may be even more relevant for people who are neurodivergent or otherwise construct differential-mobilities. To move towards inclusive mobility justice, we must understand the many ways dis/abled mobility is embodied and move away from blanketing interventions which fail to acknowledge the diversity and plurality of the differently abled and dis/abled population; including those who think, feel, and process information differently. In doing so, we can move towards more inclusive mobility futures, wherein those who are neurodivergent do not need to reconfigure their social and built environments, but instead simply, exist.

## 6 MANUSCRIPT #3

**“How should we know when to cross”: utilizing go-along interviews and participatory mapping to explore how ways-of-knowing construct experiences of everyday travel for people who are neurodivergent**

**Authorship details:** This paper is co-authored with Dr. Jennifer Dean. I am the lead author, having conceptualized the paper, collected the data, analyzed the data, and drafted the manuscript. Dr. Dean provided supervisory support, including in scoping methods, providing feedback on draft manuscripts, and editorial assistance.

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## OVERVIEW

Planning for inclusive transportation for people with disabilities has been an ongoing challenge for urban planners. Although there are efforts to plan for ‘all abilities’ as part of inclusive transportation strategies, what this means and for whom remains unclear. Particularly, people who are neurodivergent are rarely considered in current efforts to plan for ‘all abilities’, reflecting a flattening of disability accommodations wherein transportation planning efforts rely upon compliance-based agendas, which do not meaningfully engage with the lived and pluralistic experiences of being in-travel whilst differently abled. To respond to this gap, this study deploys a qualitative inquiry of 14 go-along interviews with people who are neurodivergent (identify as Autistic, as an ADHDer, or both) to explore how different ways-of-knowing construct experiences of being-in-travel, and the potential lessons for planning for ‘all abilities’.

The findings of this study demonstrate that neurodivergent ways-of-knowing can produce moments of spatial uncertainty and spatial/sensory overwhelm in everyday travel and transport spaces. Notably, transit-stops and stations, shared-spaces, and intersections and mid-block crossings were found to be specific transport spaces that can be the most challenging. We conclude with recommendations to urban planners and designers with ways to embed pluralistic ways-of-knowing into the scoping of planning for ‘all abilities’, particularly by centering place-legibility interventions that can mitigate moments of both uncertainty and overwhelm. Moreover, we attest that by engaging with different ways-of-knowing, transportation planning efforts can push-beyond the over-reliance of compliance-based agendas or ‘checkbox approaches’ in current disability accommodations, thus lessening the gap between current approaches to transportation-inclusivity and mobility-just accommodations of ‘all abilities’.

## 6.1 INTRODUCTION

Accommodating different abilities in transportation planning has been a long-standing objective (Stafford & Baldwin., 2017), one that has only become more apparent and pressured as transportation planning paradigms have attempted to become more ‘inclusive’ and ‘sustainable’ than the autocentric paradigms of yesterday’s transportation planner (Miner et al., 2024; Stafford & Baldwin, 2017). Indeed, from efforts to make cities more walkable, to reinvestments in local and regional transit, and complete-street redesigns that accommodate ‘all ages and abilities’, the new age of transportation planning promises a future of mobility that is more just than the predecessor. So much so that complete streets are listed as a street-level intervention for mobility justice (Sheller, 2018).

However, how these new paradigms of transportation planning grapple with accommodating differential abilities is unclear (Stafford et al., 2022; Stafford & Baldwin, 2017; Levine & Karner, 2023). Despite efforts to plan for ‘all abilities’ being prevalent in at least 80% of complete street policies across the U.S., critical scholars have noted an apparent gap between transportation planning and critical dis/ability theories (Ross et al., 2023), one that results in a ‘one size fits all’ approach to planning for disability which flattens dis/ability considerations and does not consider the nuanced experiences of navigating place– and specifically streets and transport spaces– whilst dis/abled or differently abled (Stafford et al., 2022). To this end, many of the current transportation plans rely on compliance-based agendas and often have limited scope to different dis/ability that is accommodated, with plans often having an over-representation of considerations for mobility-related dis/abilities and very little consideration for any non-mobility related dis/abilities (such as cognitive dis/abilities or differences) (Levine & Karner, 2023; Terashima & Clark, 2021). Simply to say, although planning for ‘all abilities’ is central to the new era of transportation planning, what it means to plan for all abilities, and how, remains murky (Laberee et al., 2023; Elliot et al., 2022; 2024).

Such a gap is particularly notable for people with cognitive differences, otherwise known as people who are neurodivergent. Neurodivergence broadly refers to a range of conditions, such as Autism Spectrum Condition (ASC) and Attention Deficit and Hyperactivity Disorder (ADHD), that can impact ways of knowing, choosing, and moving and are typically othered by the

neurotypical expectation (Judge, 2018). Currently, those who are neurodivergent are rarely considered within the attempts to accommodate ‘all abilities’ in inclusive transportation strategies (Leger & Dean, 2025; Leger & Dean, forthcoming), despite calls-to-action to more meaningfully engage with the lived-experiences of navigating cities whilst neurodivergent (Kenna, 2022). Indeed, emerging research has highlighted that navigating everyday transport spaces can be challenging for people who are neurodivergent, often due to unpredictable or ‘complex’ sensory and spatial environments which make for feelings of uncertainty and overwhelm when getting around in everyday travel (Biglieri & Dean, 2024; Cecchini et al., 2018; Haas et al., 2020; Kenna, 2022; 2023; Kersten et al., 2020; Leger & Dean, forthcoming; Tola et al., 2020; Toronyi, 2021; Vanolo, 2023). Such research suggests that “how to” navigate and way find everyday travel may be experienced differently by people who are neurodivergent and can potentially impact the accessibility of streets and everyday transport spaces.

Aptly, this study utilizes a mobility-justice framework to unpack how differential ways-of-knowing construct the experiences of being-in-travel for people who are neurodivergent. Particularly, 14 go-along interviews and participatory-mapping activities were conducted in Waterloo, ON, with people who are diagnosed or identify with ASC or ADHD. These interviews provided insights into the lived-experiences of navigating everyday transport spaces for people who are neurodivergent, and potential avenues for embedding multiple-ways-of-knowing into efforts to accommodate ‘all abilities’. Pertinently, this study-design allows for an interrogation into complete-streets and ‘all abilities’ promises as a solution for mobility justice and responds to the gaps in current transportation planning research on examining the ‘in-travel’ experiences of getting around with a dis/ability. Particularly we do by responding to the following research questions:

- A. How do neurodivergent ways-of-knowing construct experiences of everyday travel and transport spaces? and
- B. What can be learnt from these in informing more-inclusive planning and design for ‘all abilities’?

## 6.2 LITERATURE REVIEW

### 6.2.1 *Current practices of accommodating all abilities in transportation planning*

Over the past several decades, there have been varying approaches to accommodating disability in transport spaces, reflecting disciplinary divides within broader ‘urban planning and design’. In a 2021 scoping review of how disability accommodations have been addressed within urban planning studies, it was found that aside from urban design, which has had greater attention on ‘universal design’ and planning for ‘all’, other planning disciplines have been less concerned with disability accommodations (Terashima & Clark, 2021). In transportation planning, the influence of civil engineering has prolonged a rational, technical approach, which then minimized the means in which diverse populations have been engaged with (Schiefelbusch, 2010, Stafford et al, 2022).

In more recent years, there have been more attempts to embed accessibility considerations directly into transportation planning efforts, most notably through efforts to accommodate ‘all ages and abilities’ (AAA). To plan for all ages and abilities first emerged alongside ‘complete streets’ in the early 2000s (McCann & Rynne, 2005). Broadly speaking, AAA is designed to accommodate a range of street-users regardless of age or ability (including persons with disabilities, older adults, and children), however AAA has also expanded to address systemic mobility-barriers based in class, gender, race, and sexuality. As such, overarching statements for planning for all ages and abilities may also include references to planning for low-income populations, women, LGBTQIA+ populations, and racialized populations. Yet, as noted by Elliott et al., (2022), these considerations are not uniform. In a review of U.S. complete street policies, they found that only 7% of these policies had a reference to women and low-income populations. Moreover, consideration for different forms of disability is not guaranteed within these planning efforts. Although NACTO (National Association of City Transportation Officials), state that planning for ‘all’ abilities includes planning for people with various physical and/or cognitive disabilities (Laberee et al., 2023), current AAA promises do not always extend into specific dis/ability considerations, especially for cognitive disabilities (Leger & Dean, 2025; forthcoming).

Indeed, there remain many ‘unknowns’ with AAA, including what type of infrastructure qualifies as ‘AAA’ and what it means for design guidance to accommodate ‘all abilities’ (Laberee, et al., 2023). The chapter of *The Traffic Engineering Handbook* (published by the Institute of Transportation Engineers) on the Design and Operation of Complete Streets and Intersections states that “For equity as well as regulatory reasons, transportation facilities must be accessible for those with physical and cognitive disabilities” (Riegner, 2015, p.380). However, in addressing accessibility, only a few potential recommendations are included, particularly for sidewalk grade, cross-slopes, widths, surfaces, protruding objects and driveway-crossings, thus centering physical/mobility-related accommodations. Such guidance follows the requirements of the ADA<sup>17</sup>, and in many places across North America, this same ‘regulatory’ approach is taken, resulting in compliance-based agendas (Levine & Karner, 2023). In Ontario, the Accessibility for Ontarians with Disability Act (2005) integrated accessibility standards include similar regulations for transit, trails, and sidewalks. To note, in Ontarian planning documents, ‘AAA’ infrastructure complies with the AODA.

The dissonance between the ‘accessible’ design guidance and the overarching statement that promises accommodations for physical and cognitive disabilities shines a light on what many critical scholars have posited: current transportation planning efforts are not yet meaningfully engaging with the experiences of getting around whilst dis/abled, and it is limiting the accommodations put into transportation planning efforts (Kenna, 2022; 2023; Levine & Karner, 2023; Middleton & Byles, 2019; Sheller, 2018; Stafford & Baldwin, 2017; Stafford et al., 2022; Terashima & Clark, 2021). Particularly, the experience of being-in-travel are often discounted in traditional planning approaches, meaning the sensorial, affective dimensions of travel are not considered in transportation decision-making (Schiefelbusch, 2010; Terashima & Clark, 2021). This is especially true for people with non-physical dis/abilities (such as those who experience cognitive difference) who, despite being a population that are claimed to be planned for, are continuously ‘left out’ of specific recommendations in most (if not all) inclusive transportation planning strategies (Levine & Karner, 2023; Leger & Dean, 2025; Terashima & Clark, 2021).

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<sup>17</sup> To note, this document states this consideration of accessibility may be limited due to shifting regulatory guidance, however, still visualizes the limited accessibility considerations that are ‘legally’ required in the U.S.

### ***6.2.2 Accommodating neurodivergence in transportation planning***

Simply to say, in the landscape of dis/ability research, the lived experiences of navigating everyday travel with cognitive dis/ability or difference are especially understudied (Feldman & Wilton, 2020; Kenna, 2022; 2023; Biglieri & Dean, 2024). However, many people who are neurodivergent actively travel around every day (Kenna, 2023; Feldman & Wilton, 2020). Even more, over the past few decades, the societal understanding of neurodiversity has become more holistic and progressive, allowing for more people to access diagnoses (Walker, 2021). As conversations surrounding neurodivergence advance societally, there have been calls for more in-depth research on neurodiversity and the built environment (Kenna, 2022).

Currently, the majority of research on neurodiversity and surrounding environments focus on home or work environments, as opposed to the public realm (Cecchini et al., 2018). The few studies that have examined neurodivergence and travel-behaviour have found that people who are Autistic or are ADHDers may be less likely to drive regularly and thus may be more reliant on alternative modes of travel, including walking and transit (Lindsay, 2017; Lubin & Feely, 2016; Feeley, et al., 2015; Zivarts, 2024).

Additionally, there a few studies that have explored neurodivergence and the experiences in public realm, wherein navigating transport-spaces has been consistently flagged as discomforting and disorienting (Davidson & Henderson, 2010; 2016; Toronyi, 2021; Kenna, 2023; Tola et al., 2020; Cecchini et al., 2018; Lubin & Feely, 2016; Haas et al., 2020; McAllister et al., 2022; Kersten et al., 2020; Leger & Dean, forthcoming). Kenna (2023) in a study on navigating the public realm and neurodiversity, found that public-transit spaces were ‘complex and layered’ and thus ‘challenging’ to navigate.

These complexities, per Kenna (2023), are often related to both the spatial and sensory environment. Sensory environments are often overstimulating for people who are neurodivergent due to difficulties in filtering sights, smells, sounds, and touch. In this transport-spaces can often be overwhelming, such as in transit or vehicle noise, and crowding (Leger & Dean, forthcoming). Davidson & Henderson (2016) attest that people who are neurodivergent can experience ‘radical uncertainty’ in everyday spaces due to the unpredictability of the sensory environment. Moreover, spatial environments can be difficult to negotiate. Particularly Davidson

& Henderson state that a “sense of direction and orientation can be impossible to establish when circumstances are not exactly familiar (2010, p.469). This can result in a sense of ‘otherworldliness’, wherein understanding the social and cultural cues of everyday places can feel so ‘strange’ it is as if one comes from a different planet (Davidson & Henderson, 2010; 2016; Toronyi, 2021). Leger & Dean (forthcoming), discuss similar feelings in a study interviewing neurodivergent participants on navigating and negotiating everyday mobility practices, particularly they find that predictability and a sense of agency were critical to constructing senses of comfort in everyday mobility.

Aptly, some studies on neurodivergence and the built environment have promoted designs that enhance predictability and routine (Cecchini et al., 2018; Davidson & Henderson, 2010; 2016; Tola et al., 2020; Vanolo, 2023). Notably, both Vanolo (2023) and Cecchini et al., (2018) directly reference Lynch’s place-legibility as a potential solution to more inclusive wayfinding and navigation. Indeed, place-legibility has been recognized as a central facet of universal design, that promotes environments that accommodate *all* (Heylighen et al., 2017; Mondschieen et Moga, 2018). For example, Goodman et al. (2004) recommend legible landmarks as a means to make navigation more accessible for older adults, and Biglieri & Dean (2024) discuss the importance of wayfinding and legible built environments as a means to make more accessible places for people living with dementia.

### ***6.2.3 Examining ways-of-knowing: a conceptual framework***

As noted, traditional transportation planning approaches typically assume a rational approach which does not engage with the nuanced and relational experiences of getting around (Schiefelbusch, 2010), especially for those with non-mobility related dis/abilities, including cognitive difference (Terashima & Clark, 2021; Levine & Karner, 2023). In this, the design of transportation infrastructure may be reflective of a certain way-of-moving, and a certain way-of-knowing, which can exclude the ‘differential mobilities’ produced by people who are neurodivergent (what Kenna (2023) calls the geographies of neurodiversity) and thus uphold mobility injustices (Sheller, 2018). Particularly, the murkiness of AAA accommodations has left complete street planning efforts to not meaningfully engage with the nuance and plurality of getting around with a dis/ability (Elliott et al., 2022), even though complete street planning

interventions (as in, to redesign streets to work for all modes and AAA) are listed as a street-level intervention for achieving mobility justice (Sheller, 2018).

Pertinently, there is a fundamental gap between current ‘inclusive’ transportation approaches and meaningfully addressing mobility injustices faced by people with dis/abilities (Stafford et al., 2022). To respond to this gap, this study proposes a conceptual framework examining the pluralistic ways-of-knowing as to more meaningfully engage with the experiences of being-in-travel negotiated by people who are neurodivergent. Such framing aligns with the neurodiversity paradigm more broadly, wherein it is understood that neurodivergence “constitutes a different ‘way of being’” (Davidson & Henderson, 2010 p. 472), rather than less-than ‘normal’.

Respecting and acknowledging differential ways-of-knowing is a critical facet of mobility justice, which pillars epistemic justice (meaning the equity of how knowledge is valued, shared, and credited, especially for and by marginalized populations) (Sheller, 2018). Drawing from Mondschieen & Moga (2018) who interrogate the potential of cognitive-environmental research (particularly, the production of spatial-knowledge and place-legibility) in urban planning and design, we attest that meaningful examination into how ways-of-knowing is produced within everyday-travel can be a potential avenue in making more-just cities for people of different identities and abilities.

#### *6.2.3.1 Defining spatial knowledge*

The production of spatial knowledge is understood as not only the act of *understanding the built form*, but a system of thinking, perceiving, imagining, sensing, making, and problem-solving while in place (Vaez et al., 2016). Indeed, spatial knowledge is constructed across senses, including by what is seen, heard and smelt. This is what Davidson & Henderson (2016) discuss as the neuro-affective. Often, spatial knowledge is conceptualized as a ‘cognitive’ or ‘mental map’ which translates one’s observations into mental images that facilitate an understanding and discerning of the surrounding environment (Lynch, 1960; Vaez, et al., 2016; Held, 2013). Such cognitive maps are closely intertwined to the practices of being-in-travel (Ahmadpoor & Shahab, 2019; Ahmadpoor & Smith, 2020; Mondschieen et al., 2010; Mondschieen et Moga, 2018; Minaei, 2014; Vaez et al., 2016). Per Mondschieen et al., “*Cognitive maps are acquired, primarily,*

*through travel and interaction with transport systems, whether streets, sidewalks, bike paths or bus and subway routes. These cognitive maps, in turn, influence travel”* (2010, p. 3).

#### **6.2.3.2 Scoping relational constructions of spatial knowledge**

Since the 2010s, there has been more focus on understanding how spatial knowledge is constructed across different people and in the affective characteristics of place (Ahmadpoor & Shahab, 2019; Ahmadpoor & Smith, 2020; Mondschild et al., 2010; Mondschieen and Moga, 2018; Vaez et al., 2016). Such research challenges assumptions of a 'naturalized neuro-affective order' (Davidson & Henderson, 2016, p. 79) and rather recognizes that spatial-knowledge and subsequent place-legibility are constructed both objectively and subjectively, constituted by culture, positionality, and ability (Held, 2013; Musa, 2025; Vaez et al., 2016).

To this end, we conceptualize spatial-knowledge as not just an abstracted-cognitive processes, but rather as entangled within the places-navigated, the sociocultural landscape, and the body that one navigates within (Butcher, 2012; MacPherson, 2010; Held, 2013; Musa, 2025). In this, we understand cognition and embodiment to be co-constructed (Butcher, 2012). This thus conceptualizes spatial knowledge as relationally produced. In this, ways-of-knowing are not siloed nor abstracted from the construction of 'differential mobilities'.

Aptly, by adopting a conceptual framework rooted within relational constructions of spatial knowledge, we can explore the perceptual and experiential dimensions of getting around for people who are neurodivergent. This exploration into ways-of-knowing challenges the current conceptions of AAA and permits for a new approach into accommodating non-mobility related dis/abilities.

### **6.3 METHODOLOGY**

As this study is a relational inquiry into how people who are neurodivergent navigate and construct spatial knowledge of transport spaces, a qualitative research design was adopted. Perceptual data was gathered using go-along interviews and participatory mapping with 14

university students who identify as neurodivergent<sup>18</sup>. The data collected from the go-along interviews were analyzed via an inductive thematic analysis.

### **6.3.1 Geographic scope**

This study was conducted within the City of Waterloo, Ontario, which is a mid-sized municipality, with a population of just over 100,000. Although the commuting mode-split of Waterloo Region is 85% drivers or car-passengers<sup>19</sup>, over the past several years, the municipality has championed improvements to active and sustainable transportation. In 2019, the first two phases of the Regional Light Rail Transit system, known as the ION, were completed (Ellis-Young & Doucet, 2024). Equally, the municipality has undergone many recent improvements to active transportation, including streetscape redesigns of many main arterials to include wider-sidewalks, separated bike-lanes, and more trail development (City of Waterloo, 2020). In this, Waterloo offered ideal conditions to represent a wide-spread phenomenon of North American municipalities that have autocentric legacies in design and layout but are actively attempting to unsettle these legacies through progressive transportation planning strategies (McDougall & Doucet, 2022) that center ‘all ages and abilities’ (City of Waterloo, 2020).

### **6.3.2 Data collection**

Participants were recruited via flyers that were displayed across the University campus, with links to the study’s website and webform for interested participants. The webform confirmed contact information for participants and eligibility criteria, including that each participant was a current student at the University of Waterloo, above 18 years of age, and self-identify as either Autistic (ASC) or an ADHDer, or both (known as AuDHDers). Of note, each participant received a \$40 gift card as remuneration for their time. A breakdown of participants (identified with pseudonyms) is included below in Table 10.

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<sup>18</sup> For this study was scoped as either ASC or ADHD

<sup>19</sup> As of 2024, per census data: <https://www150.statcan.gc.ca/n1/daily-quotidien/240826/t002a-eng.htm>

Table 10: Participant summary

| Participant pseudonym | Summary of identity                                               |
|-----------------------|-------------------------------------------------------------------|
| Abe                   | Racialized. Man. Diagnosed as Autistic and with ADHD (AuDHDer).   |
| Anika                 | Racialized. Woman. Identifies with ADHD (ADHDer).                 |
| Bea                   | Racialized. Woman. Diagnosed with ADHD (ADHDer).                  |
| Brendan               | Racialized. Man. Diagnosed with ADHD (ADHDer).                    |
| Elliott               | Racialized. Man. Diagnosed as Autistic.                           |
| Francis               | Racialized. Man. Identifies as Autistic and with ADHD (AuDHDer).  |
| Jamie                 | White. Non-Binary. Diagnosed as Autistic and with ADHD (AuDHDer). |
| Josh                  | White. Man. Identifies as Autistic and with ADHD (AuDHDer).       |
| Leslie                | Racialized. Woman. Identifies Autistic.                           |
| Masie                 | White. Woman. Diagnosed as Autistic and ADHD (AuDHDer).           |
| Neda                  | Racialized. Woman. Identifies as Autistic.                        |
| Ollie                 | White. Woman. Identifies Autistic.                                |
| Kiran                 | Racialized. Non-Binary. Identifies with ADHD (ADHDer).            |
| Taylor                | White. Non-Binary. Diagnosed as Autistic and ADHD (AuDHDer).      |

Go-along interviews were chosen as the method of data collection as our research questions were distinctly spatial and mobile, focused on the production of spatial-knowledge in-travel and the lived-experiences of everyday transport spaces by people who are neurodivergent. The go-along interviews allowed for this study to directly respond to the lack of engagement with ‘being-in-travel’ within transportation planning (Schiefelbusch, 2010), particularly the realities of getting around with dis/ability (Terashima & Clark, 2021; Levine & Karner, 2023; Stafford et al., 2022).

As a ‘mobile ethnography’, go-along interviews ‘places the moments and spaces of inquiry “in-step” with participants’ everyday lives, routines, and experiences’. (Stiegler, 2020). The two pre-determined interview routes were constructed to traverse a diverse range of street typologies and transport spaces including intersections, sidewalk conditions, paths/trails, and transit stops, which were all features discussed by previous research to impact or construct experiences of transportation for people who are neurodivergent (Davidson & Henderson, 2010; 2016; Cecchini, et al., 2018; Kenna, 2023; Vanolo, 2023) or be representative of complete street planning ideologies. In this, the researchers were able to elicit findings on the ways participants negotiated ‘how to’ navigate these spaces, and the elements of the built-form which supported or challenged ways-of-knowing. Each go-along interview was approximately one to one and a half hours long. The first route walked through the University of Waterloo student-housing area,

whereas the second route took the Waterloo Light Rapid Transit system to Uptown Waterloo and back. Maps of both routes are included below in **Figure 10** and **Figure 11**.

Go-alongs are known as an in-situ practice (Dean, 2016), which often spur ‘of the moment’ discussion based on place-based cues. To this end, although the routes were pre-set, the go-alongs were adaptive. At times, some participants would turn up a different street or cross the street at a different spot than identified on the route. These discrepancies were encouraged by the researcher as analyzing how and where participants deviated from the route provided further insights how spatial knowledge was constructed and understood. Additionally, due to the place-based cues that emerged during the go-alongs, the interviews were at times semi-structured (with the interviewer having a script of potential questions), but at times unstructured as cues from the environment led conversation.

To further spatialize the findings, this study accompanied the data gathered during the go-along with a participatory mapping exercise wherein participants marked up a printed copy of the route with stickers and annotations summarizing their experience at the end of the go-along. This mapping method allowed participants to reflect on the go-along and provide overall perceptions of transport spaces that were supportive or challenging, comfortable or uncomfortable.

Moreover, including mapping along with recorded interviews allowed for participants to have multiple ways of expressing themselves so that if there were ever times during the walk participants did not feel comfortable verbally sharing their perceptions, there was an opportunity to communicate through annotating the map.

Each interview was recorded and transcribed. After transcripts were completed, they were closely read and given a preliminary line-by-line coding. These detailed summaries of key takeaways from the go-alongs were sent to participants to member-check the preliminary results, and ensure no information was missing or misrepresented by the analysis.

### **6.3.3 Data analysis**

Results were then iteratively coded based on thematic analysis (Braun & Clarke, 2022).

Thematic analysis is a form of qualitative inquiry which centers reflective practice and generating emergent results from data analysis. For this study, we followed the thematic analysis

process outlined by Braun & Clarke (2022), which centered on getting familiar with the dataset, coding the dataset, and generating themes. To do so, transcripts were first analyzed via a line-by-line coding, followed by a written summary of key takeaways. From this initial theorization the dataset was coded inductively, and themes were generated and refined. It is important to note that as this research focuses on being-in-travel via go-along interviews, the transcripts and participatory-maps were analyzed concurrently. Specifically, after the first analysis of the interviews, the participatory maps were summarized. From this exercise, places along the route where certain feelings were experienced were able to ‘rise to the top’. This allowed for analysis and themes to not only draw out feelings of comfort or discomfort from the participants but also tie specific feelings and senses to places experienced along the route.

After the interviews were conducted and preliminary analyzed, the researcher re-walked the routes and took photographs of different infrastructure conditions that were emerging as core places where participants were either supported or challenged in ways-of-knowing. This practice allowed the researcher to further familiarize themselves with specific locations along the route, with a mindfulness to the preliminary themes emerging from the work. In this, the photos acted as their own phase of data analysis which allowed for further thematic refinement. These photos are included in the results section accompanying certain quotes from participants.

As part of the data collection and analysis, the research team ensured that the thematic analysis was rooted in reflective practice that accounted for the researcher’s positionality. The primary researcher, who joined participants on the go-alongs and conducted the preliminary coding of the data, identifies as neurodivergent. This was an intentional practice that ensured the participants did not feel ‘othered’ during the research process. However, the role of the researcher as an ‘inside population’ (Braun & Clarke, 2022) also constructs this study and its analysis.

Throughout the coding process, the researcher engaged and interrogated how their positionality defined their engagement with the participants and later dataset. This included both their identity as neurodivergent, as well as their positionality as a white, straight, women, partaking in higher education at the University. To this end Olund (2024) cautions that empirical work on neurodiversity and spatiality often exists within ‘unmarked whiteness’, and that the power-imbalances of neurodivergence cannot be read in isolation to other power-structures such as race, gender, and sexuality. Throughout the interviews, the approach to asking questions was

amended to respond to a constant reflective practice of the researcher's positionality to the participants, this included asking questions in different ways, leaving more space for silence from the participant, and encouraging participants to engage with the go-along through their intersectional identities.

## **6.4 RESULTS**

### **6.4.1 Thematic overview**

In the participatory mapping exercise, participants placed coloured stickers along the route to indicate their emotional experience of everyday-transport spaces, with 'red' as bad 'yellow' as okay and green as 'pleasant'. Participants were also welcome to mark-up the map in other ways, and some chose to add additional comments and callouts. **Figure 10** and **Figure 11**, below, amalgamate the stickers and comments placed by all participants. Thematic analysis of both the mapping exercise, along with the transcripts of the interviews, sketched how ways-of-knowing were challenged and supported 'in-travel' for people who are neurodivergent, focusing on the construction of both spatial and sensory-knowledge during the go-alongs. From this analysis we found that the experience of being-in-travel, and particularly senses of comfort in-travel, were deeply intertwined with the surrounding sensory environment and the ease of understanding what 'ought' to happen in transport spaces.

It was found that red or 'uncomfortable' stickers were often correlated to moments of 'uncertainty', and 'overwhelm' during the go-along that resulted in participants questioning 'how to' navigate the space. For example, red and yellow stickers were more commonly placed both along busier roads or intersections (See, for example **Figure 10**, and the cluster of stickers along University Avenue), along roads that lacked clear information or signage, or at bus stops. In this, we echo findings of previous studies in attesting that predictability in the built environment is a critical element of planning and designing accessible environments for people who are neurodivergent (Davidson & Henderson, 2010; Cecchini et al., 2018; Vanolo, 2023; Kenna, 2023). Notably, both 'uncertainty' and 'overwhelm' were intertwined in ways-of-knowing and resulted in participants feeling uncertain or unconfident in getting around everyday transport spaces.

#### 6.4.1.1 *Moments of spatial uncertainty*

Spatial uncertainty emerged in experiences when participants could not easily discern how to navigate through or to a transport space, often related to the design, layout, or function of the space. This uncertainty was caused when there are “*too many changes going on to build up any comfort*” (Josh), the “*pattern is off*” (Kiran), or it is “*hard to decide what is the correct thing to do*” (Neda).

Per Neda, the challenges with understanding the ways transport-spaces ‘should’ function was a common theme in the interviews. Participants often shared a feeling of ‘otherworldliness’ wherein sense of direction or orientation were nearly impossible to negotiate, even in everyday transport spaces (Davidson & Henderson, 2010). In this, the routes of the interviews were spaces that participants commonly traveled in their day-to-day life, yet there were still deeply held feelings of uncertainty wherein participants commented that they “*still don't know what's the true thing to do*” (Neda), or would ask themselves questions of “*Am I crossing it from a wrong direction? Or should I be doing this from this way? Should I wait?*” (Anika).

Davidson & Henderson (2010; 2016) attest that these ‘radical uncertainties’ of getting around whilst neurodivergent are related to difficulty in discerning the spatial and sensory environment. In this, they find that feelings of being ‘out-of-place’ are common for people who are neurodivergent, who can feel then feel that “others must know some secret, must have some magical ability to make shared sense of situations that (they are) constantly excluded and confused by.” (2010, p. 468) Notably, these feelings of unbelonging can cause “powerful, bewildering effects” (2016, p. 79). To this end, the intensity of uncertainty is especially pertinent. Neurodivergent people do not just experience uncertainties, but *radical* uncertainties. In this, although the experience uncertainty may be momentary (such as, navigating to the wrong bus stop, as was commonly heard in the interviews), it often has lasting affective impacts. Taylor shared that feelings of otherworldliness and uncertainty could affect her emotions for the whole day. She attests: “*Nothing rolls off the back. It always gets stuck for just a little bit, at least.*”

#### 6.4.1.2 *Moments of spatial/ sensory overwhelm*

Conversely, spatial/sensory overwhelm emerged when participants faced *too much* sensory or spatial input, often related to the use of the space (such as in crowding, car speeds, and noise).

These moments of overwhelm were discussed by participants as “*overstimulating*” (Taylor), “*really, really startling*” (Kiran), “*frustrating*” (Elliott), “*exasperating*” (Neda), and “*irritating*” (Francis). As noted, sensory-inputs are intrinsic to production of spatial-knowledge and place-legibility (Lynch, 1960). People who are neurodivergent can struggle in filtering these sensory inputs, resulting in everything being taken in all the time (Davidson & Henderson, 2010; 2016; Kenna, 2023). In this, participants spoke to moments along the go-alongs where the surrounding environment became too stimulating, and some even noted such experiences constructed their everyday-travel, often avoiding the routes they expected could become overstimulating. This aligns to Toronyi (2019) in their analysis of sensory environments in the public realm, and the ‘*visceral reactions*’ (p. 133) that can be experienced by people who are neurodivergent. Davidson & Henderson (2016) argue that such moments of overwhelm also construct radical uncertainties, as there is an embedded unpredictability in the surrounding environment, with questions such of ‘whether there will be loud cars’ or ‘if a bus will be crowded’ not just being optional considerations but fundamental to the construction of spatial knowledge and legibility of place. Neda discussed such an experience during the go-along as we walked past an LRT crossing that had an auditory signal to announce an approaching train.

*“I hate this sound... It's really exasperating. It's like in my head. It feels like you are in danger, and you must do something and yet, something is just standing and waiting. It doesn't make sense. If you want me to stay, you should announce it with something calm.”*

The above themes were relevant across the interviews, however, as noted by **Figure 10 & Figure 11**, there were specific segments and spaces of the routes that received more ‘dots’ than others. The remainder of this results section explores how moments of ‘uncertainty’ and ‘overwhelm’ translated into tactics and experiences of specific transport-spaces, specifically, transit-stops and stations, shared-spaces, and intersections/mid-block crossings.

## Route 1 Map

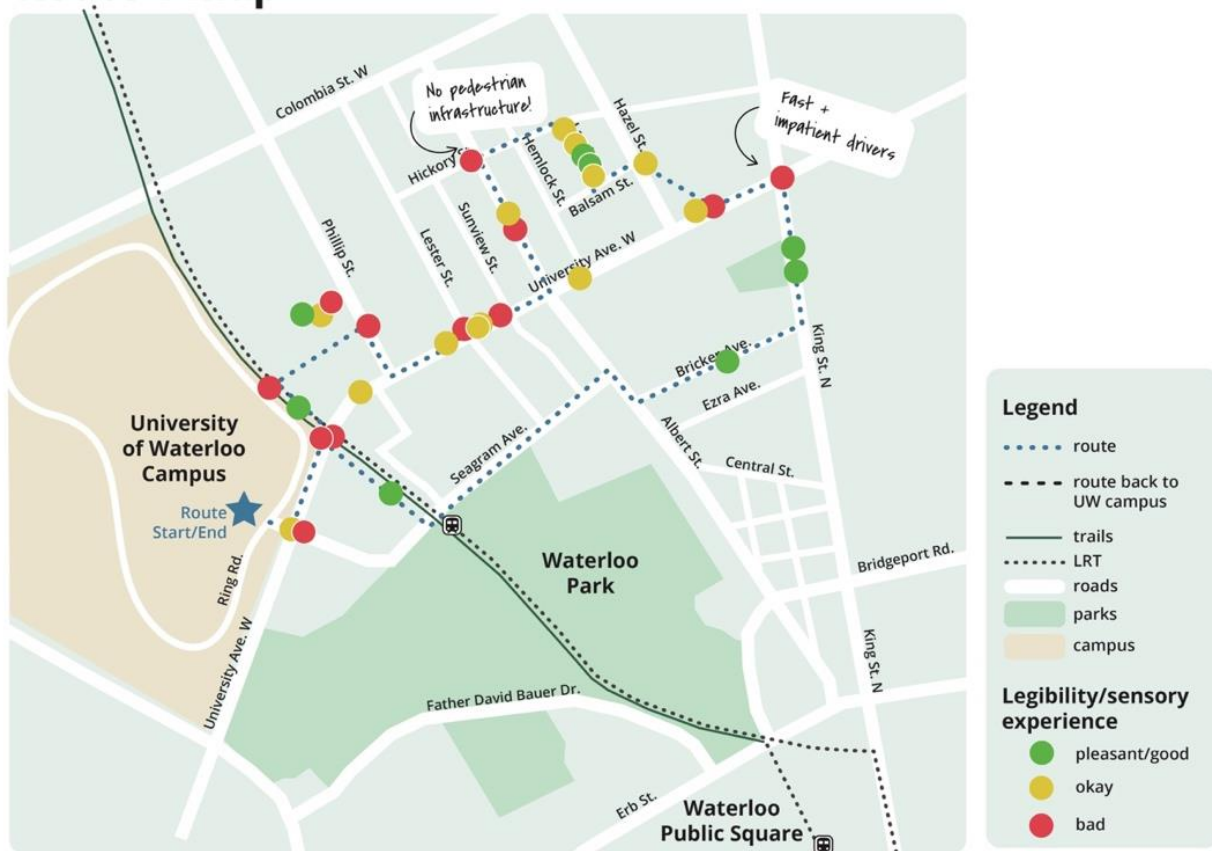


Figure 10: Route 1 overview

## Route 2 Map

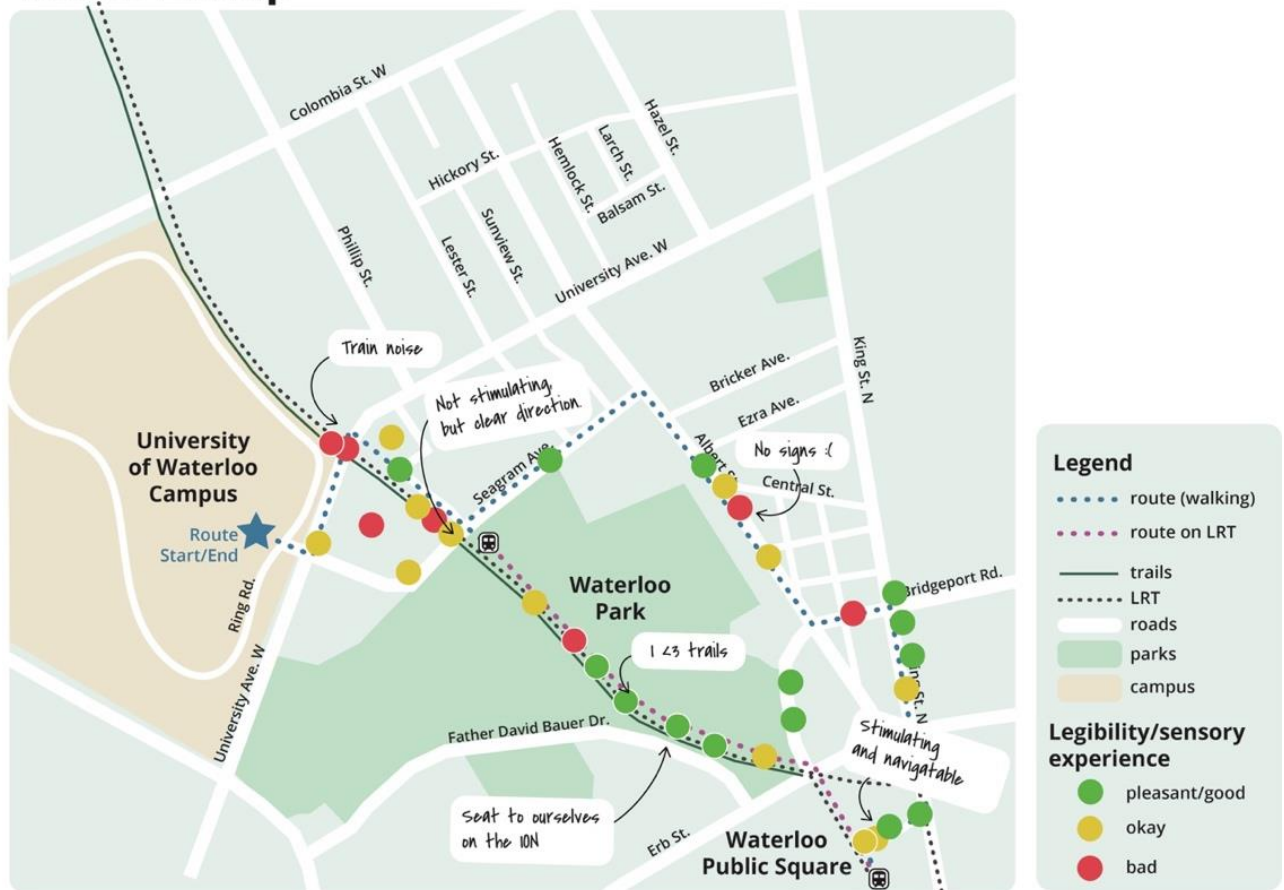


Figure 11: Route 2 overview

### ***6.4.2 Journeying along the route and experiences of transport-spaces***

The remainder of the results focuses-in on specific transport spaces and the moments of spatial uncertainty and spatial/sensory overwhelm constructed. Each subsection describes the experience of journeying and interacting with these transport spaces along the go-along route and is accompanied by a photo matrix to exemplify the conditions experienced by participants. We thus present the results as journey-maps that are organized as follows:

- Journeying to and through transit stops and stations
- Journeying shared infrastructure
- Journeying through intersections and mid-block crossings

#### ***6.4.2.1 Journeying to and through transit stops and stations***

Along the routes, participants engaged with a variety of transit stops and stations, including a multi-platform bus-terminal (#1), bus stops without shelters (#2), bus stops with shelters (#3), and a light-rail transit (LRT) stop (#4), seen on **Figure 12**. The experiences of navigating different transit systems were often discussed by participants, with many citing feelings of uncertainty due to the lack of reliability in the bus-system in particular. Although this was at times related to buses being late, or not showing up at all, we also found that the infrastructure of a transit stop impacted the spatial knowledge of ‘how to’ navigate the transit system and could exacerbate feelings of uncertainty.

## Route 1 & 2 Key Map: Transit stops and stations



Figure 12: Transit stops and stations

At the multi-platform bus-terminal (#1), we often heard that participants identified the terminal as a landmark, but that navigating within the terminal to a specific bus could be challenging (See **Figure 13**). This was because navigation apps, like Google Maps, did not communicate at which platform buses would stop. Often, participants discussed that they relied on such navigation apps to construct their spatial knowledge. This aligns to the findings of Ahmadpoor & Smith (2020) on how digital technology is reconstructing spatial knowledge. Both Josh and Francis discussed this spatial uncertainty:



*“The apps actually don't tell you what platform to go to. So you just have to look at the map for the location or just randomly walk around.” – Josh*



*“I sometimes I have to do like, a double take in terms of... like, okay, so I'm trying to go this direction. Which bus space should I be going to?” - Francis*

Figure 13: University of Waterloo bus terminal

This ‘uncertainty’ in knowing where to go for the right bus brought out feelings of otherworldliness wherein participants felt a deep difference from their peers. Per Anika:

*“I hate how everyone can be very calm about it. They're like, I can see it on the map. I'm like, how? How do you know that you can see it on the map?... And I phrase it very eloquently when I say, like, I get overwhelmed, anxious, but genuinely, I get mad at times. I'll get angry and very irritated” - Anika*

Indeed, where the platform was located reflected a ‘gap’ in spatial knowledge and made the terminal unpredictable and thus not legible. Josh noted that addressing this gap would’ve been an ‘easy fix’ through a more comprehensive platform map.

To this end, at traditional road-adjacent bus stops (#2 and #3), we often heard that the lack of a transit shelter could be equally disorienting as it made bus-stops non-landmarks that were difficult to discern within the built environment (see **Figure 14**). A lack of permanent infrastructure at a bus stop was associated to anxieties of missing the bus stop or the bus-driver missing them standing at the bus stop.



*"I guess it's less obvious if it has no shelter. Because sometimes if I can't find the sign, I may accidentally walk to an extra block." - Bea*



*"I just feel like with the shelter there, I'm less worried that a bus is going to just drive past." - Jamie*

*Figure 14: Sheltered and unsheltered bus-stops along University Ave.*

In contrast, some participants spoke of the Light Rail Transit (LRT) stops (#4) as landmarks that they utilized to navigate around Waterloo, as they were perceived as more permanent and recognizable, and thus became a core facet of spatial knowledge. Kiran discussed how they utilized the LRT to situate themselves across the city (**Figure 15**):

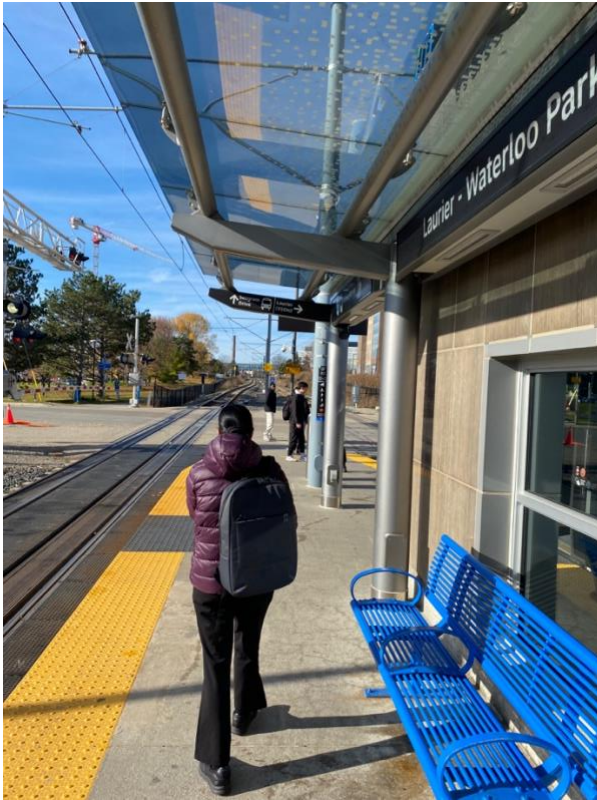


Figure 15: Light rail transit Station, Waterloo Park

*“A lot of times when I am lost and I don't really know where I am, I'm always near enough in the city where I can kind of find my way to an Ion station. And I think that really helps, you know, getting there and then being like, okay, now I can find my way back”-  
Kiran*

The difference between navigating LRT stops compared to bus stops underscores the importance of place-legibility in transit-space design. Throughout the interviews we found that the bus-system could challenge participants as information on ‘how to’ navigate was not easily discernable. Particularly, we heard that participants struggled to find bus stops and correct bus routes telling stories of when they “waited for the wrong bus” (Jamie), “did not know where the bus station was up until I saw the bus coming.” (Abe), and “took the wrong one and went in the opposite direction” (Leslie). Josh, shared that he often struggled with navigating the bus system, and that this lack of trust in the system meant he rarely chose it as a preferred mode of travel

*“(Speaking about the LRT) I think it's really simple. I mean, it's only one line. I actually quite like it because I find it's thoughtless transportation. I'm not putting in energy. But the bus, I'm putting in energy to deal with that experience... I would never take the bus to school, no matter how “convenient” it was, because it would just be... It's like a subtraction from whatever energy I already have.”*

In this quote Josh highlights how navigating the bus takes up more mental-space and cognition than the LRT, which feels more intuitive, and by extension trustworthy. This finding communicates that investing in legible and recognizable transit stop infrastructure can not only make the practice of commuting more comfortable but is also a critical facet of constructing spatial knowledge of both the transit system and the city itself. Simply put, when a transit system is legible it makes it more accessible.

In Ontario, current AODA standards require transit vehicle signs show the route and directionality, however for transit stops, the only standards regard boarding/deboarding and ensuring ‘accessible’ signage (related to accommodating for visual disabilities). However, McAllister et al. (2022) note that transit stops and stations are often ‘transition spaces’ which can have heightened importance in situating people who are neurodivergent in the built environment. In this, the legibility of these spaces should be paramount. We conclude that accommodating differential ways-of-knowing in transit stop design could prioritize having distinct stop names displayed on a shelter or sign and simpler system-maps which make it easier to understand which stop you have arrived at and where it connects (McAllister, et al., 2022).

Moreover, in the interviews, it was commonly discussed that participants would rely on online-mapping applications (like Google Maps) to situate themselves, mirroring a broader trend of spatial knowledge moving out of the physical realm and into the digital (Ahmadpoor et al., 2020). In response to this, some transit agencies have recently begun to deploy digital-applications that go beyond Google Maps to ‘close the gap’ of spatial-uncertainty for neurodivergent populations. For example, GO Transit in Ontario has recently partnered with MagnusCards which provide step-by-step instructions on ‘how to’ navigate transit, including how to plan your trip, find your stop, how to take a bus, how to take a train, how to read the digital information screen, and how to pay (Metrolinx, 2024). This aligns to a 2018 recommendation for the AODA to include training-programs to help people with dis/abilities navigate transit systems (Transportation Standards Development Committee, 2018). This form of technology is new, however has been scoped to be effective in addressing uncertainty of navigating transit stops and stations (Rezae, et al., 2022). However, these applications are limited to adoption by transit agencies and the availability of information, and as such cannot be the only solution for integrating place-legibility into public transit. Aptly, as noted by the participants in

discussing the bus-terminal (#1), when that digital-knowledge became unreliable it caused moments of disorientation and spatial-uncertainty. It should still remain a priority for transit stations to include extensive forms of physical wayfinding, including comprehensive signage (McAllister et al., 2022). Having tangible and digital information complement each other can help to minimize spatial-uncertainty and feelings of otherworldliness.

#### *6.4.2.2 Journeying shared infrastructure*

In addition to transit stops, feelings of uncertainty were often also evoked when participants needed to navigate shared infrastructure such as multi-use trails (#1) and woonerfs (#2), shown in **Figure 16**. Shared infrastructure is a contested debate in transportation planning and urban design. Often, road-based shared infrastructure (like woonerfs) challenges the ‘fast and efficient’ movement of car-travel and make more intuitive and legible transport spaces (Hamilton-Baillie, 2004). In woonerfs, traditional signage, pavement markings, signals, and curbs are removed to favour shared space that does not prioritize one mode over the other, instead relying on ambiguity that signals to the driver to naturally slow down (Hamilton-Baillie, 2004). In a similar sense, shared-active transportation spaces rely on communication and negotiation between pedestrians and cyclists to ensure no conflicts. However, shared spaces (specifically in the context of woonerfs) have been critiqued as ‘auto-disabling’ environments wherein the ambiguity does not accommodate people with cognitive or sensory disabilities (Imrie, 2012).

## Route 1 & 2 Key Map: Shared infrastructure



Figure 16: Shared infrastructure

The two shared-space typologies encountered along the routes were generally viewed positively as they either encouraged slow car use (in the case of the woonerf) or were entirely separated from cars (in the case of the multi-use trail). However, in ‘sharing’ space with other modes, participants felt more susceptible to unexpected interactions that could challenge the established spatial knowledge of the space and its functions, Masie commented whilst walking down the multi-use trail that it was difficult to “*know what to do or where to go*” when a cyclist approached from behind, a sentiment reiterated by Francis (**Figure 17**):



*“But I would say one discomfort would be maybe this section, because you see a lot of bicycles ... Like, for instance, there's a bike that needs to overtake, and sometimes it can be a little too close for comfort.” – Francis*

Figure 17: Multi-use trail for both pedestrians and cyclists

The heightened sense of awareness caused by attempting to ‘predict’ a cyclist made it difficult for participants to feel secure whilst walking the trail, even when it otherwise was a preferred form of infrastructure that provided access to nature and respite from interactions with cars. Such finding suggests that even though the ‘disabling’ environments of shared space have been limited to discussions of woonerfs, multi-use trails are equally spaces wherein knowing ‘how to’ navigate can be challenging.

This is an important finding as in current complete streets planning documents, multi-use paths are sometimes considered AAA facilities (NACTO, 2017). However, in a 2020 study looking to consolidate bicycle infrastructure naming and classifications, multi-use paths were listed as a medium-comfort bikeway, meaning some people find it comfortable but some do not (Winters et al., 2020). From the results of this study, we recommend that future designs of multi-use trails/paths should consider the space-in-use, including how to manage interactions between modes and wayfinding along the trail. Particularly, it is recommended that whenever space is available multi-use trails are upgraded to have a dedicated walking lane and cycling lane, which helps manage conflicts and increase the place-legibility as to what activities and for whom the

infrastructure is for (NACTO, 2017; Accessibility Standards Canada, 2023). When this is not possible, there should be attention given to designing trails that clearly communicate how to manage mode interactions, such as through horizontal-signage (signs on pavement) that could be utilized to indicate where there is a trail entrance-point/area with a heightened chance of conflict (Cecchini et al., 2018) or through including designated areas for passing (as recommended by the Design of Public Spaces Standard Development Committee for the AODA, in 2023<sup>20</sup>).

Additionally, participants on route 1 traversed a ‘woonerf’ (#2), wherein curbs, signage, and signals were removed in favour for a slow-speed shared space. The woonerf had mixed reviews within the interviews, with some participants feeling disoriented by the ambiguity of the street, calling it a ‘*confusing place*’ (Anika), whilst others found the street to be intuitive or ‘*how everything should be*’ (Elliott). Part of the critiques of woonerfs and shared spaces as ‘auto-disabling’ environments is that the space removes clarity of street-function and relies on ‘psychological traffic calming’ to slow cars down, but in doing so can still design spaces that allow for cars to become the default ‘prioritized’ mode (Imrie, 2012). The ‘woonerf’ in Waterloo featured sidewalk space that was at the same curb-level of the roadway, yet separated by a large greenspace, with ample benches and pedestrian-level lighting (**Figure 18**). As a residential zone it also had low-traffic volumes, although, during most interviews, a car drove along the street. In this, the street was a ‘woonerf’ but still created some separation of a pedestrian and car zone through the vegetation.

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<sup>20</sup> <https://www.ontario.ca/page/improving-accessible-built-environment-standards-2023-initial-recommendations-report#section-5>



Figure 18: Woonerf

*“(It’s) a very calming street. I have zero problems. I’ve used this street as a driver, biker, walker, and jogger. Zero problems at all. I find it very simple, and honestly, it’s just less complicated.” – Josh*

To this end, woonerfs were found to be potentially legible infrastructure when still designed with intentionality. However, not all woonerfs are made equal. Relying on ‘ambiguity’ without physical measures that slow-traffic or provide some clear indications of pedestrian-prioritization are at risk of (re)forming automobility, yet without clear delineation of spaces for vulnerable-road users which can in turn make streets even more exclusionary for people with cognitive or sensory dis/abilities.

#### 6.4.2.3 *Journeying through intersections and mid-block crossings*

Unlike the woonerf, wherein participants navigated alongside cars but could feel ‘prioritized’, traversing through intersections or mid-block crossings caused heightened senses of vulnerability and awareness and was referred to as ‘*uncomfortable and jittery*’ (Anika), ‘*an anxiety*’ (Jamie), ‘*annoying*’ (Brendan), and ‘*overstimulating*’ (Josh). This was felt during the go-alongs at major intersections (#1), mid-block crossings (#2), and in discerning pedestrian push buttons at certain intersections (#3 and #4), as shown below in **Figure 19**.

## Route 1 & 2 Key Map: Intersections and mid-block crossings

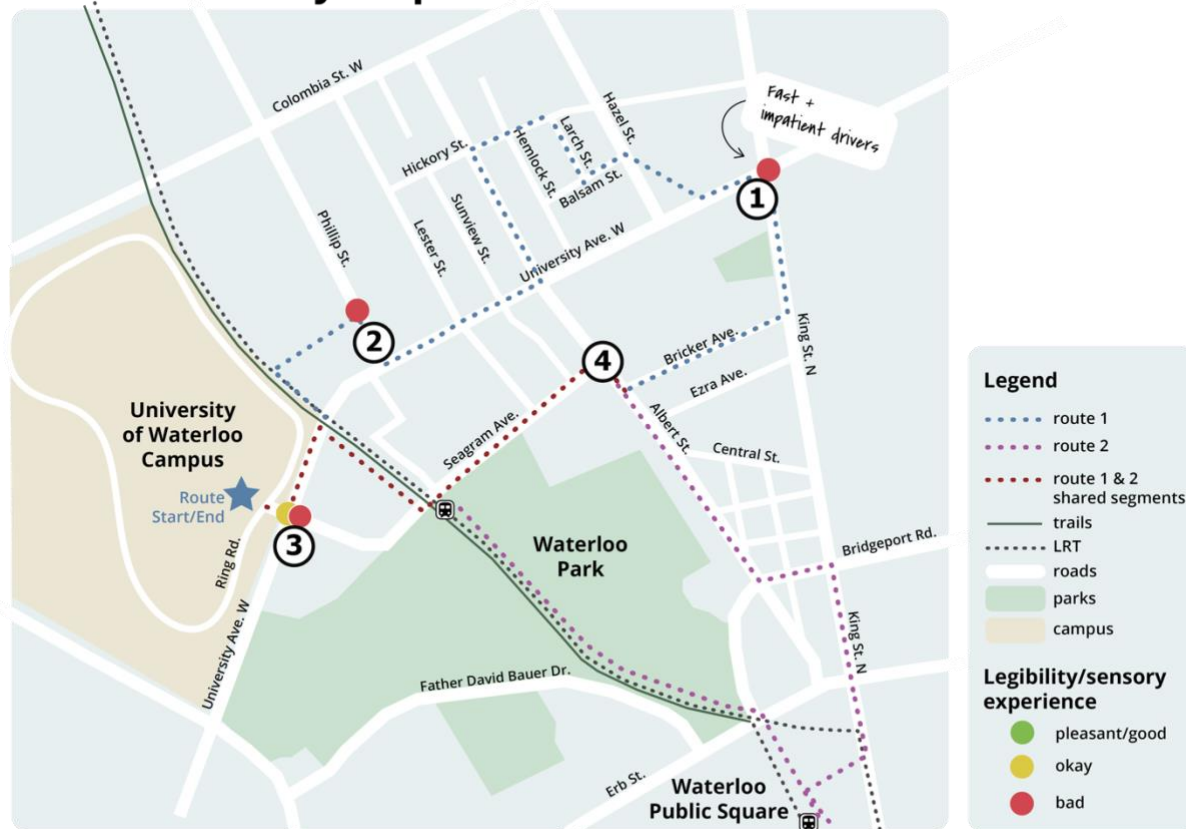


Figure 19: Intersections and mid-block crossings

When navigating a major intersection (#1), participants often shared feeling hyper-awareness of the surrounding environment and ‘*all the different things going on*’ (Bea). Moreover, participants also discussed that experiencing too much sensory and spatial inputs could muddle ‘how to’ navigate these intersections. Per Jamie:

*“Should I wait for this one (referring to pedestrian signal)? Or Should I wait for the other? Can I take a different route? How many people are there? Are there any cars? Are there any cars turning?”*

In the above quote, Jamie highlights how spatial knowledge-overwhelm made them feel uncertain of how to navigate the intersection. These feelings of uncertainty were often repeated when approaching a mid-block crossing (#2). For route 1, participants crossed a midblock crossing that required pedestrians to yield to car traffic and wait for a gap. However, there was

no signage indicating who had the right of way through the crossing, which resulted in a case-by-case use of the crossing. Sometimes cars would slow if they saw pedestrians waiting to cross and some would not (**Figure 20**). Many participants found this crossing to be disorienting and nerve-racking. Bea shares:



*“It's just too narrow. I feel like anyone could just hit me... it's never a fun time walking around here. Even sometimes I get shy to have the cars wait for me. So, I just see if anyone else is going, and then I follow them.” – Bea*

Figure 20: Midblock-crossing

In this quote Bea pulls out two key features of the midblock crossing that were uncomfortable 1) its width and 2) the lack of consistency in the interactions with the drivers. Unlike the woonerf, wherein the shared nature of the street was embedded into the design and for some helped with legibility, this mid-block crossing felt like an afterthought to participants that did not completely address the discomfort of crossing a busy street. Elliot stated when crossing this intersection that he feels it is a “*stop-gap solution*” as opposed to a “*perfect solution*.”

The lack of clarity in this design measure, including the lack of signage, made deciding when to cross an uncertainty. Anika paused at this intersection and felt that “*it would take her time to*

*decide*” what to do as there was “*no indication*” of when she could cross. Neda similarly paused upon approach and asked the interviewer “*how should we know when to cross?*”

To this end, knowing when to cross was a common theme when navigating intersections. Even in traditional four-way intersections, participants often discussed uncertainty of when the pedestrian signal would permit them to walk. This was due to some intersections having fixed-time (or automatic) pedestrian signals, and some having actuated signals (push buttons) for pedestrians to request to cross. Typically, larger intersections like (#1) operated with fixed-time signals, whereas smaller intersections (like #3 and #4) had actuated signals. Anika shared a sense of confusion over these inconsistencies as she approached the University Avenue and Seagram Intersection (#3):

*“Not every (intersection) will have an (automatic) pedestrian crosswalk (signal). And then I’ll start thinking like, oh my. Oh my God. Why isn’t it happening? Like, some of them, you have to press the button, but some of them you don’t, I guess.” - Anika*

The micro-inconsistencies of pedestrian push buttons demonstrate how even minor details of the built-environment still construct ways-of-knowing. Throughout the interviews smaller details of how an intersection functions whether that be consistency of when to press a pedestrian push button, what happens when a pedestrian push button is pressed, and whether the pedestrian push button is clearly placed/visible made big differences in comfort for participants, and were often discussed as impacting their understanding of the environment and how it should function (**Figure 21**). For example, Bea, when navigating intersection #4, pointed out that the pedestrian-push buttons faced two different directions on either side of the crossing:



*"I noticed that sometimes I don't know where this is pointing at...sometimes it's on the side, and I don't know if it's pointing that way or this way." – Bea*

*Figure 21: Pedestrian pushbuttons on either side of the Seagram-Albert intersection, indicating different directions*

Drawing from the Urban Street Design Guide (NACTO, 2017), fixed-time (automatic) pedestrian signals are generally the standard as opposed to 'actuated' (on-demand) signals, as they increase the predictability of the urban environment (NACTO, 2017). This study echoes the importance of fixed-time signals as a means to embed place-legibility into the design of transport spaces. Moreover, although the Urban Street Design Guide does permit for unsignalized mid-block crossings (such as #2), it is recommended that zebra crossings always be applied to ensure drivers can see the crossing. In this study, we also found that applying zebra (or marked) crossings not only help drivers, but can also make intersections more legible for people who are neurodivergent and face challenges in knowing how and when to cross:

*"I think (having) the zebra crossing- even if the push buttons are not in the right direction- is really nice. Even if there are no cars around, I know that this is, like, the right way." - Kiran*

In this, we found that existing best practices in intersection design can accommodate different-ways-of-knowing and help to again minimize feelings of ‘otherworldliness’ and radical uncertainty. Currently, these recommendations are typically positioned as safety interventions (as with the inclusion of the zebra crossings), however, we recommend that these interventions be recognized as accessibility interventions that help make the environment more manageable for people who are neurodivergent.

## **6.5 DISCUSSION & CONCLUSION: EMBEDDING WAYS-OF-KNOWING INTO PLANNING FOR ‘ALL ABILITIES’**

In this study, we found that people who are neurodivergent do experience different ways-of-knowing in-travel that are often constructed by moments of spatial uncertainty and spatial/sensory overwhelm. Navigating everyday travel in moments of uncertainty and overwhelm could make even everyday transport spaces feel challenging, especially transit stop/stations, shared spaces, and mid-block crossings/intersections. Examining how everyday travel is experienced people who are neurodivergent responds to a broader gap within transportation planning and dis/ability studies, wherein the experiences of people with non-mobility related dis/abilities are largely missing from current scoping of planning for ‘all abilities’ (Terashima & Clark, 2021; Levine & Karner, 2023).

Before discussing the core contributions of this study in more detail there are first some limitations to note. As a spatially bound study, the results are limited to the geographic context of Waterloo, ON. It is recommended that future studies explore the construction of spatial knowledge and place-legibility for people who are neurodivergent across other geographic contexts. Moreover, although the sample of participants were diverse across race and gender, all 14 participants were university students which resulted in homogeneity in age (all participants between the age of 18-34). It is recommended that age be considered as an additional variable in future studies, especially in considering the role of digital-technology and mobile-maps in constructing spatial knowledge (Ahmadpoor & Smith, 2020; Mondschien et Moga, 2018).

To that end, this study is reflective of only a subset of the overall neurodivergent population. This study engaged with participants who are actively able to travel around their community, which is not a universal experience of all people who are neurodivergent. Moreover, this study

was particularly scoped to people who are diagnosed (or identify as) Autistic or ADHDers. This scoping was done purposefully as to explore the means in which being neurodivergent can construct experiences of everyday travel-spaces. However, it is recommended that future studies also explore other pluralistic ways of being neurodivergent and the impacts on ways-of-knowing and being-in-travel.

Particularly, our findings suggest that different ways-of-knowing in everyday travel do (in part) construct differential mobilities. As noted in the conceptual framework, ways-of-knowing are not abstracted but rather intertwined and relational to body, place, and society (MacPherson, 2010; Butcher, 2012; Held, 2013). In journeying along the route with participants we mapped the everyday-transport spaces wherein ways-of-knowing constructed access, ability, and comfort. Particularly we found that the neurodivergent experiences of being ‘in travel’ are deeply affected by spatial-uncertainties and spatial and sensory-overwhelm. However, there are currently limited considerations to accommodating neurodivergence in planning for ‘all abilities’. In this, we attest that transportation planners and designers should embed pluralistic ways-of-knowing into planning for ‘all abilities’.

To do so, we echo the recommendations of Vanolo (2023) and Cecchini et al., (2018) in suggesting that place-legibility is a potential means to make more inclusive environments for people who are neurodivergent. Throughout our results, we traced ways that place-legibility could respond to moments of spatial-uncertainty and sensory-overwhelm, finding that clarity and predictability in the built environment could mitigate the visceral reactions to sensory-input and feelings of otherworldliness in ‘how to’ navigate certain transport spaces. In this, our findings mirror past-research on place-legibility and other forms of dis/ability in concluding that place-legibility is a facet of accessibility in the urban environment (Biglieri & Dean, 2024; Goodman et al., 2004). Aligning with Biglieri & Dean (2024), we recommend to not only design for what is recognizable for most but also consider “*the perspectives of those of marginalized groups... who experience specific issues related to navigation.*” (p. 1713).

Place-legibility, although a facet of universal design (Heylighen et al., 2017; Mondschieen et Moga, 2018), is not typically embedded into accessibility related design recommendations (Levine & Karner, 2023). We recommend that legibility interventions (such as simplified transit-

system mapping, clear zebra (marked) crossings, fixed-time signals, and delineated trail lanes) be rooted within AAA planning accommodations and adopted into standards for the built-environment, such as the Integrated Accessibility Standards in the AODA. Doing so would help to advance AAA promises and more meaningfully engage with the differential mobilities of those who are neurodivergent.

More broadly, we posit that engaging with different ways-of-knowing when planning for ‘all abilities can decenter the typical regulatory or compliance-based-agenda approach that is currently common in transportation planning (Levine & Karner, 2023). In this study, we found that engaging with how spatial and sensory knowledge were relationally produced gave insight into the affective experiences of being ‘in-travel’, including the ways that moments of uncertainty and overwhelm could impact emotions. Indeed, in unpacking different ways-of-knowing, we also uncovered different ways-of-feeling whilst in-travel, aligning with what Davidson & Henderson (2016) call the ‘neuro-affective’.

Pertinently, moments of uncertainty and overwhelm were felt deeply by participants, described as an ‘*intensity*’ and ‘*stickiness*’, wherein not only did participants more commonly face challenges in knowing ‘how to’ get around, but the emotional fallout of a missed bus, confusing crossing, or unexpected interaction on the street could ruin the day. In this, even if the experiences noted throughout the interviews are not exclusive to people who are neurodivergent (neurotypical people may face moments of uncertainty or overwhelm when getting around too), the resultant emotional impact was greater and more dysregulating.

Aptly, in considering different ways-of-knowing in planning for ‘all abilities’, transportation planning can both 1) more meaningfully accommodate people who are neurodivergent and 2) sketch a framework for ‘unflattening’ dis/ability accommodations by engaging with the pluralistic and affective lived-experiences of getting around with dis/ability. Considering differential ways-of-knowing does not only make transport-spaces more inclusive for people who are neurodivergent but can open up a broader conversation into the many ways that thinking, perceiving, imagining, sensing, making, and problem-solving construct experiences of being ‘in travel’, especially across different identities and abilities. We recommend that future

work continue to research ways-of-knowing as a potential framework for combatting rational ‘compliance-based’ approaches to accommodating dis/ability.

In sum, accommodating ‘all’ in the planning and design of transport spaces is work worth continuing towards. Planning for AAA has the potential to radically unsettle unjust transportation planning legacies and meaningfully contribute towards mobility just futures. However, getting there requires alternative ways of understanding to be centered rather than ‘checked’ (Stafford et al., 2022).

## 7 CONCLUSION

In conclusion, moving towards more-inclusive-transportation planning paradigms is no small feat. The current complex politics of mobility that are occurring in many North American cities has formed an ideological-polarization that is obstructing the potential of supposed inclusive transportation planning paradigm-shifts. In returning to the introduction, this is seen in competing ideological values of for whom the street should function, and this then constrains the ambitious inclusivity promises set-out by one side of the ideological polarization.

Indeed, throughout this thesis, I traced how promises to plan for ‘all abilities’ is challenged in current transportation-planning paradigms. I first examined the legacies of rationalism on transportation planning as a discipline, and how such legacies shape how inclusivity promises are operationalized. I then scoped the politics of complete street planning paradigms within the persistent politics of automobility, and the ways in which ‘all abilities’ promises are currently written about in these planning documents. From there, I examined the under-considered experiences of people who are neurodivergent via first-hand accounts collected in sit-down and go-along interviews. The findings scoped how people who are neurodivergent navigate and negotiate everyday mobility practices and the ways in which everyday transport-spaces can be designed in ways that confront a ‘neurotypical’ expectation, and thus more meaningfully plan for ‘all abilities’.

### 7.1 RETURNING TO THE RESEARCH QUESTIONS

At the outset of this thesis, the three overarching research questions were introduced, being:

1. What are the politics of complete streets? How does this politics impact the operationalization of promises to plan for ‘all abilities’?
2. What are the politics of neurodivergent mobility? How do these impact everyday mobility practices?
3. What can complete streets planning, specifically planning for all abilities, learn from an examination of the politics of neurodivergent mobility?

Each of these research questions was addressed by a substantive chapter in this thesis. Chapter 4 explored the ideological positioning of complete streets planning documents in the wake of automobility. The findings revealed that although complete streets initiatives challenge dominant ideologies of automobility, by for example, encouraging slower speeds and less street-space for cars, there are still many ways that complete streets remain stickily embedded within the politics of automobility. Most notably, I found this evident in the lasting ideologies of mobility and transport spaces as inherently efficient and productive. Such beliefs may be limiting the accessibility and inclusivity promises of complete streets, especially since some forms of accommodation may need to confront societal valuing of these very concepts of efficiency and productivity, especially in moving towards mobility as a caring and collective practice (Nikolaeva, et al., 2019; Sheller, 2018; 2023).

Moreover, in taking a critical dis/abilities perspective, the accommodation efforts for people with dis/abilities could also be limited by the ideological positioning of complete streets under capitalism and neoliberalism, which can hinge on minimizing differences in ability to continue to promote efficient and productive mobility. These limitations in how dis/ability is framed and approached in transportation planning has been consistently called out by many critical scholars who have highlighted the lack of engagement with the lived experiences whilst getting around whilst dis/abled (Ross et al., 2024 Stafford et al., 2022, Stafford & Baldwin, 2017, Sheller, 2018). In Chapter 3, I also analyzed how transportation planning has been limited theoretically by being rooted within rational non-political traditions (Schiefelbusch, 2010) that then further disembodied mobility-practice and limit the engagement with lived-experiences of people with dis/abilities (Stafford et al., 2022). In this, I concluded that the politics of complete streets need to be aware of (and challenge) these deeply seeded legacies in order to be transformative.

This analysis thus led into the second research question, wherein I further examined the lack of understanding of mobility practices embodied by people with cognitive dis/abilities or differences through an examination of the micro-politics of neurodivergent mobilities. As noted throughout this thesis, in the ‘flattening’ of understanding and accommodating dis/ability, what it means to negotiate everyday mobility with cognitive difference was often under considered or not considered at all. Of note, it was found in the Chapter 4 analysis that although every reviewed design guideline mentioned ‘people with disabilities’ in some way, none explicitly

mentioned cognitive disability/difference or neurodivergence. Therefore, this second research question was critical in mapping the landscape of neurodivergent mobility practices, and how getting around was experienced differently.

In chapter 5, I responded to this research question by exploring the micro-politics of everyday mobility practices produced from “below” by people who are neurodivergent. This chapter was both a theoretical and substantive contribution, wherein I found that the micro-politics of neurodivergent mobility practices are relational and affective, constructed by challenges of focus, habit, navigation, and sensory sensitivities. Moreover, this analysis concluded that there are ‘adaptive tactics’ constructed by being ‘othered’ in everyday transport-spaces. For people who are neurodivergent, this was exhibited in moments of being-in-travel which subverted the expectations of how space ‘ought’ to function. Notably, I mapped such tactics through exploring emotional influences of mobility and how affect is one way that mobility is produced from “below”. In this, I concluded that there is a politics of neurodivergent mobility, wherein challenges in executive dys/function and sensory overwhelm constructed how everyday mobility practices were performed, and in some cases, this could lead to an avoidance of modes that stressed executive function or sensory-sensitivity, or the development of adaptive tactics that renegotiated a senses of agency and predictability.

Importantly, I found that the influences of mode and route choice for people who are neurodivergent were deeply sensed and affectual. This challenged existing transportation planning approaches which do not approach ability as relationally constructed. I end by mirroring recommendations of past scholars (Terashima & Clark, 2021; Schiefelbusch, 2010) to argue that when planning for ‘all abilities’ in transportation, there is a need to engage with the lived-experiences of being-in-travel to ensure accommodations respond to the actual experiences of how ability is constructed.

To that end, I then explored how specific everyday-transport spaces are navigated by people who are neurodivergent, which better allowed me to address the final research question. Based in go-along interviews and participatory mapping, I engaged through a framework of differential ways-of-knowing to map how people who are neurodivergent made sense of everyday transport-spaces (namely: transit stations/stops, shared-spaces, and intersections). I found that moments of spatial-

uncertainty and spatial-sensory overwhelm were critical in forming experiences of travel, and that although place-legibility is rarely considered within current AAA accommodations, there is merit for it to be included and to ensure AAA design aligns with universal design. Aptly, I found that efforts to plan ‘inclusively’ can learn a lot by engaging with ways that dis/ability is pluralistically experienced, especially by those who experience non-mobility related dis/abilities, such as people who are neurodivergent. This can be done in direct interventions (such as including place-legibility considerations in design guidelines for AAA infrastructure, like trails and intersections) as well as in reframing how ‘ability’ is scoped within transportation planning. Indeed, by engaging with the politics of neurodivergent mobilities, the traditional ‘checkbox approaches’ to accommodating dis/ability were usurped and instead ability was engaged with as relationally produced, nuanced, and an ongoing process. In this, I offered a potential reframing to how planning for ‘all abilities’ is approached in transportation planning more broadly, which I discuss in more detail in **Section 7.2**.

## **7.1 LIMITATIONS**

Before diving into the contributions of this thesis, it is important to note the overarching limitations. Firstly, as noted in the introduction, this thesis is bounded to the geographic context in which it was developed. That is to say, the politics of transportation planning that exists in Western, and more specifically, North American cities and towns. Even more, the specific geographic, social, and regulatory context was limited to Ontario. Most notably, this means this thesis reflects the political context of Ontario as of 2025. Such contexts have critical impacts on existing scoping of transportation planning policies and practices. As such, it is recommended that future research explore some of the critical research contributions of the politics of complete streets across divergent geographies. This research agenda would allow for a more fulsome understanding of how geographic-contexts construct politics of mobility.

Secondly, this thesis reflected one of the first endeavours to explore neurodivergence and everyday travel as opposed to solely Autistic experiences. However, in scoping the study, the sample was limited to participants who either were diagnosed or self-identified with ADHD and/or being Autistic. In this, many novel findings were contributed, especially for people with ADHD (ADHDers), wherein there were functionally no studies examining experiences of the built environment. However, as an umbrella term, neurodivergence considers a range of different

learning and cognitive disabilities/differences beyond solely ADHD and ASC. Not all different cognitive abilities could be considered within this thesis, but it is recommended that research on neurodivergence be continued and expanded upon to cover other neurodivergent conditions.

Moreover, this thesis was focused on exploring experiences of being-in-travel, and therefore scoped participants who actively travel around their communities. However, this was not meant to be a holistic nor conclusive sample of neurodivergence and everyday travel, particularly as there are many people who identify as neurodivergent and do not actively travel independently day-to-day. People who are neurodivergent are an entirely heterogeneous population and each neurodivergent person will experience the built environment differently. As such, this thesis purposefully did not recommend rigid ‘guidelines’ or ‘recommendations’ for accommodating neurodivergence in transport planning and design, aside from recommendations on place-legibility, discussed in **Section 7.5.1**. However, the alignment of the findings within this thesis to earlier work on experiences of navigating the built-environment and transport-spaces suggests that there are appreciable experiences of ‘getting around’ whilst neurodivergent, and that these experiences matter (Davidson & Henderson 2010; 2016; Deka et al., 2016; Cecchini et al., 2018; Haas et al., 2020; Kerson et al., 2020; Kenna, 2023; Lubin & Feely, 2016; McAllister, 2022; Tola, et al., 2020; Toronyi et al., 2021; Vanolo, 2023; Lindsay, 2017; Lubin & Feely, 2016; Feeley, et al., 2015). Continuing research in this area is valid and necessary to continue to understand the nuances of the neurodivergent community and how to accommodate neurodivergence in the built-environment.

## **7.2 THEORETICAL CONTRIBUTIONS**

### **7.2.1 *Situating transport planning in the production of mobilities***

One of the most significant theoretical contributions of this thesis was the framework of situating transportation planning in the production of mobilities (see **Figure 22**). This framework allowed for a critical examination into how current transportation planning-paradigms are produced by and are producers of everyday mobility practices.

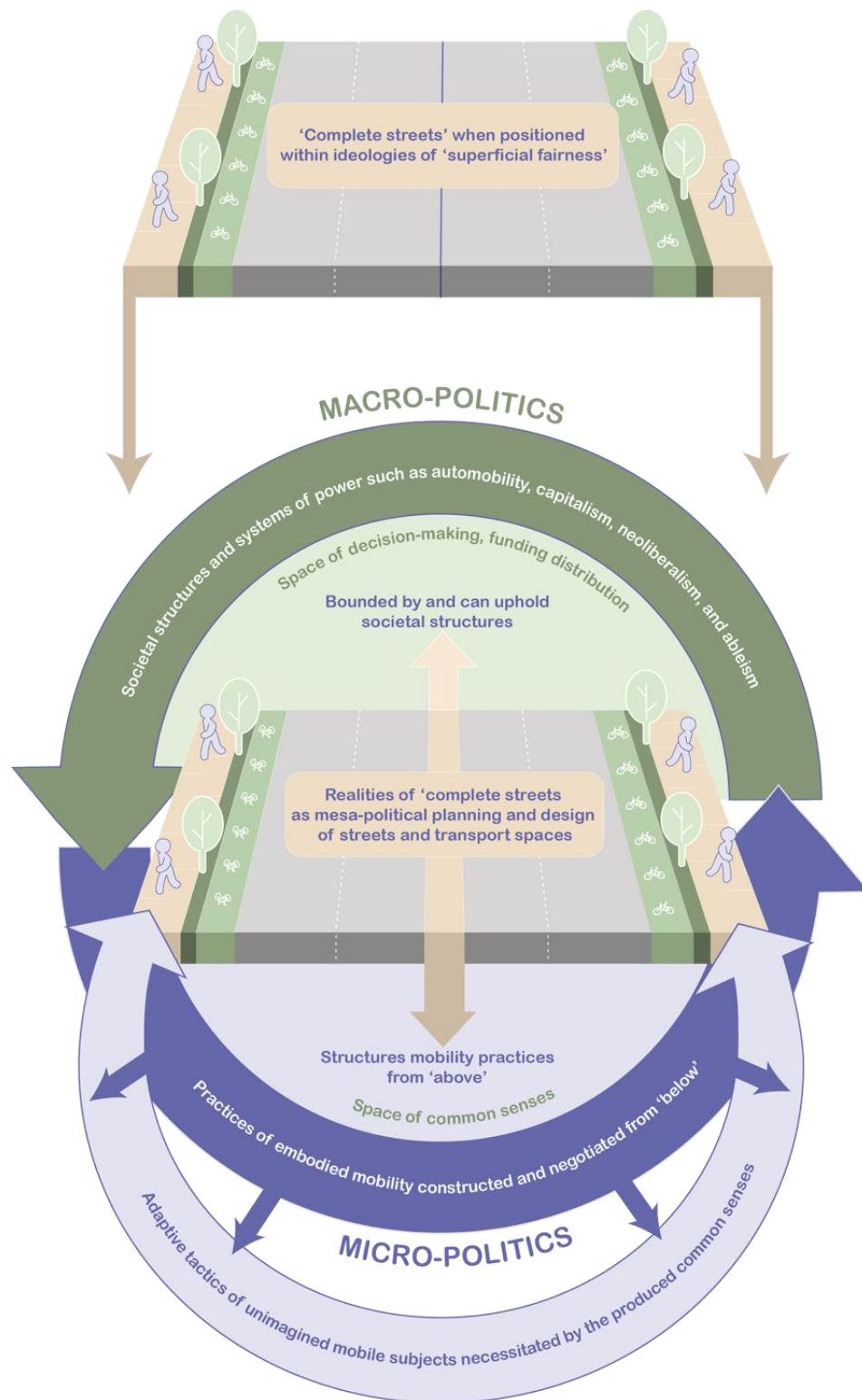


Figure 22: The production of mobilities in transport planning, revisited

Throughout this thesis, this framework was explored in different applications, which allowed for a meaningful interrogation of current transportation planning (namely complete street planning-paradigms) within the broader politics of mobility. Particularly, in **Chapter 4**, complete street planning paradigms were critically analyzed for the positioning within the politics of automobility; which per the discussion in **Chapter 3**, is a lasting political ideology in North America. Importantly, it was found that as complete streets still exist within the broader societal structures of neoliberalism and capitalism, which have long subverted mobility as a means to move and produce capital (Walks, 2014; Harvey, 2012). When automobility stopped being productive in the wake of the transition between Fordism and neoliberalism (or new-Fordism, per Walks (2014)), complete streets became a means to reinvigorate land-value, spur gentrification, and continue to class-mobility across income lines which reinforce racialized lines in much of the North American context.

To this end, **Chapter 4** did conclude that there are legacies of automobility that remain stickily embedded within complete streets mobility ideologies. However, this is not to say that complete streets is an as-of-right extension of automobility or its dogmatic belief system. Rather, I similarly found that complete streets demonstrated values of velomobility— which is by definition rooted in care, community, and collective practice. And, that it is in these moments of resistance wherein complete streets prove a value to mobility just futures. Such moments of resistance demonstrate that although complete street planning paradigms are influenced by societal power-structures from “above”, there is a possibility to subvert these expectations (see **Figure 23**).

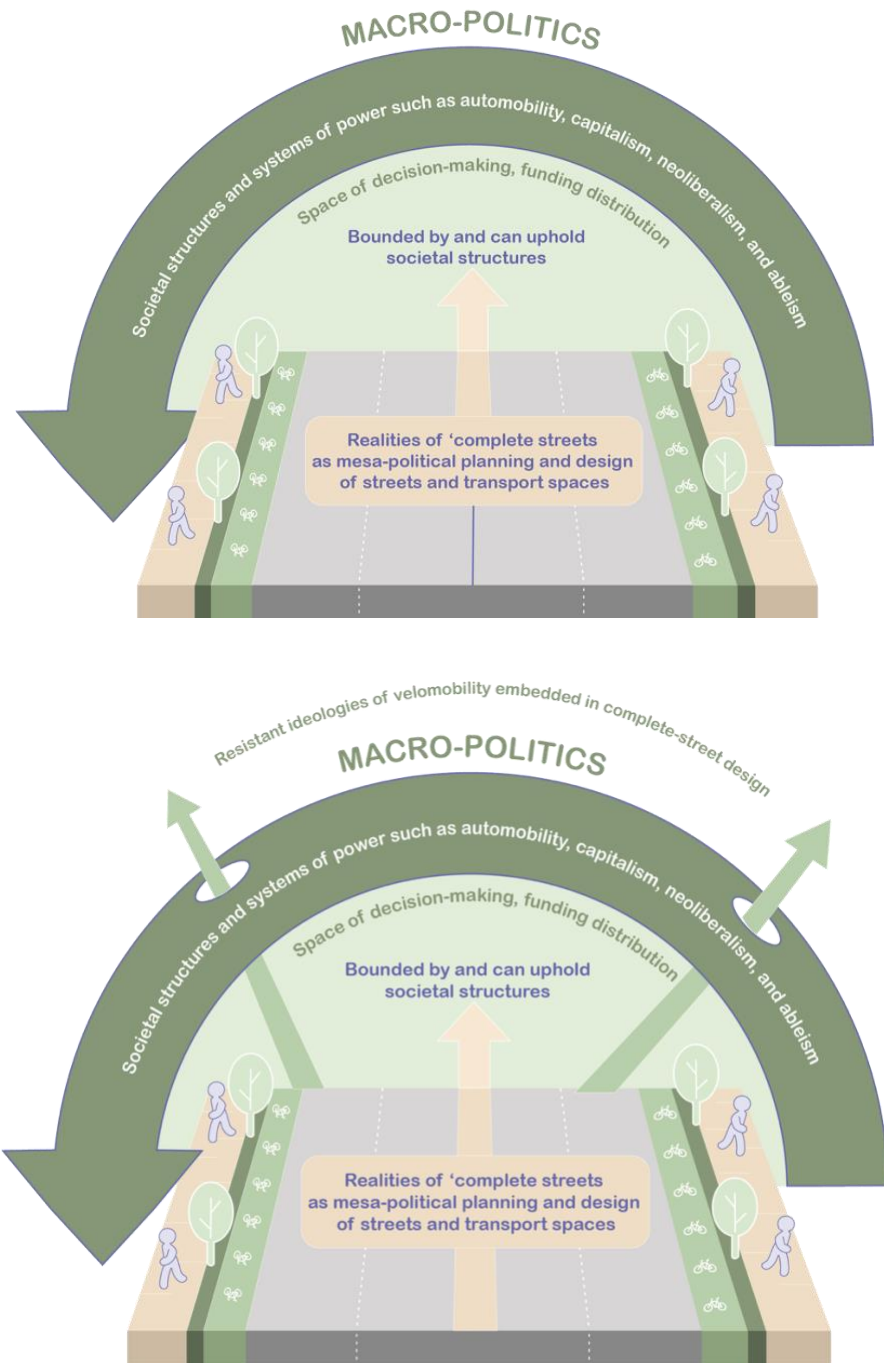


Figure 23: Velomobility as a form of resistance within relational transport planning

Future iterations of complete streets planning should be aware of this theoretical framework, and the politics of complete streets, as a means to ensure complete streets can enact upon their mobility justice promises.

Moreover, in **Chapter 5** this framework was applied to explore how mobilities are produced from “below” and the adaptive tactics of those who are unimagined on the street. Particularly, in this chapter, I found that certain everyday tactics of people who are neurodivergent subvert the expectations of everyday travel that ‘ought to occur’ especially per a ‘rational travel user’. In this, I explored how such adaptive tactics then (re)form space as visualized in **Figure 24**.

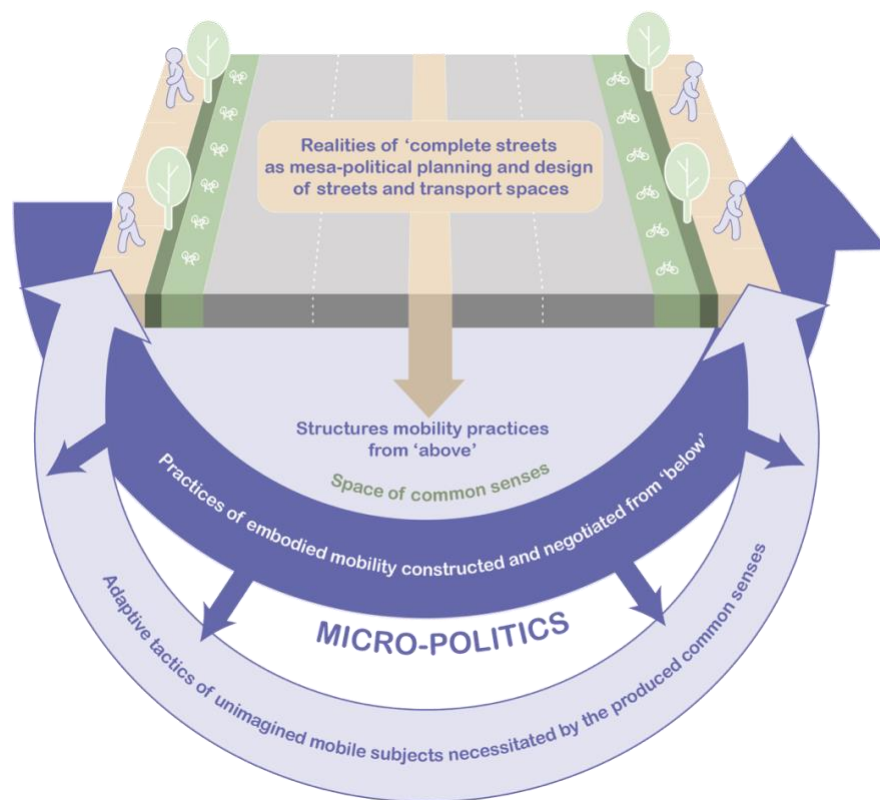


*Figure 24: The production of mobilities from "below"*

From this, I conclude that the functions of the street and everyday-transport spaces can be challenged from both “above” and “below”. By which, transportation planning is reframed as not a rational, but a relational practice. I attest throughout this thesis that by engaging with ‘relational’ transportation planning there is more potential for actually accommodating

differential abilities on the street and in everyday transport-spaces, as a relational framework of transportation planning defies the rational legacies, which may have led to ‘checkbox approaches’ and compliance-based agendas that are often the current standard for accommodating dis/ability (Levine & Karner, 2023).

Even more, although this framework was explored in-depth for ‘complete streets’ within this thesis, relational transportation planning could be applied to all emerging transportation planning paradigms including walkability, bikeability, 15-minute cities, and transit-friendly cities. Examining each of these paradigms from a relational framework can unlock the potential of these initiatives to be part of a more mobility just future. Aptly, I contend this relational framework is necessary to make the concept of complete streets measure up to their inclusion as a principle for mobility justice.

### ***7.2.2 A framework of ways-of-knowing***

The second significant theoretical contribution of this thesis was the introduction of a framework of differential ways-of-knowing in **Chapter 6**. In this chapter, I explored how everyday transport-spaces are navigated by people who are neurodivergent, particularly examining how differential ways-of-knowing produce differential mobilities. This provided important theoretical contribution in two ways. Firstly, as noted throughout this thesis, there is a lack of engagement with the lived experiences of getting around with a dis/ability, and how the mobile dis/abled body can ‘constitute’ the city (Waitt & Harrada, 2023). Such absences have implications for mobility injustice, wherein Sheller (2018) attests that unpacking bodily politics and the legacies of mobility exclusion and marginalization that exist across ability, race, and gender is critical in scoping mobility just futures. However, to that end, most theoretical literature on critical dis/abilities or embodiment is rooted in bodily politics. This by nature, can sometime exclude cognitive difference or neurodiversity (Sarraf, 2025), which is understood only as a ‘logical’ or ‘abstract’ process that exists outside of the body (Butcher, 2012). However, in bridging embodied cognitive geographies, **Chapter 6** was able to theorize cognition as embodied, and as such, part of the complex facets of social-constructed identity which forms mobility-potentials.

Secondly, and further to the above contribution, the differential ways-of-knowing framework provided a means to theorize new ways of accommodating dis/ability. In existing transportation

planning, there is little depth and nuance in accommodations for different abilities, however, I argue that that in a framework of differential ways-of-knowing, the complex and uneven ways in which knowledge is produced could become center within how planning for ‘all abilities’ is scoped. Such a reframing would ‘unflatten’ dis/ability accommodations, allowing for plurality within the heterogenous (yet often theorized as homogeneous) population of people with dis/abilities.

Even more, the differential ways-of-knowing framework provides a tangible way to lessen the gap between transportation planning and mobility justice by centering epistemic justice. Although pluralistic ways-of-knowing was utilized in this thesis to explore how people who are neurodivergent construct spatial knowledge, it could equally be used to explore how knowledge is unequally understood and accessed across various groups who have faced mobility marginalization. To put it simply, this framework resituates ‘knowing’ as an ability rather than a given, and in this may offer an alternative way of theorizing bodily politics which bridges what is felt in the body to what is understood in the mind.

Indeed, the differential ways-of-knowing framework furthers current conceptions of embodiment, rather than replacing it. In this, I see the ways-of-knowing framework as a means to also challenge autocentric expectations of mobility practice that hinge on disembodiment. Every moment of pause, interaction, and conviviality on the street exists in spite of the system of automobility, with a need for the driving body (and mind) to be ‘disciplined’ (Urry, 2007). The ways-of-knowing framework allows us to ask what dogmatic forms of ‘knowing’ are upheld in autocentricity and who is excluded? When mapping the everyday mobility practices of people who are neurodivergent, I found that driving was an especially stressful way of getting around, precisely because of the quickened pace which did allow for moments of mental processing. Who else may also face exclusion due to these narrow expectations of cognition, which does abstract the ‘driving mind’ from affect and emotion?

To this end, I visualize differential ways-of-knowing as being “layered on” to the framework of relational transportation planning as an encompassing lens which understands ways-of-knowing as produced through both the representations and practices of mobility (**Figure 25**). Engaging with ways-of-knowing including how knowledge is produced, how certain forms of knowledge

become ‘common sense’ and validated within society can tell us more about how differential mobilities are then produced and perpetuated in current transportation planning paradigms.

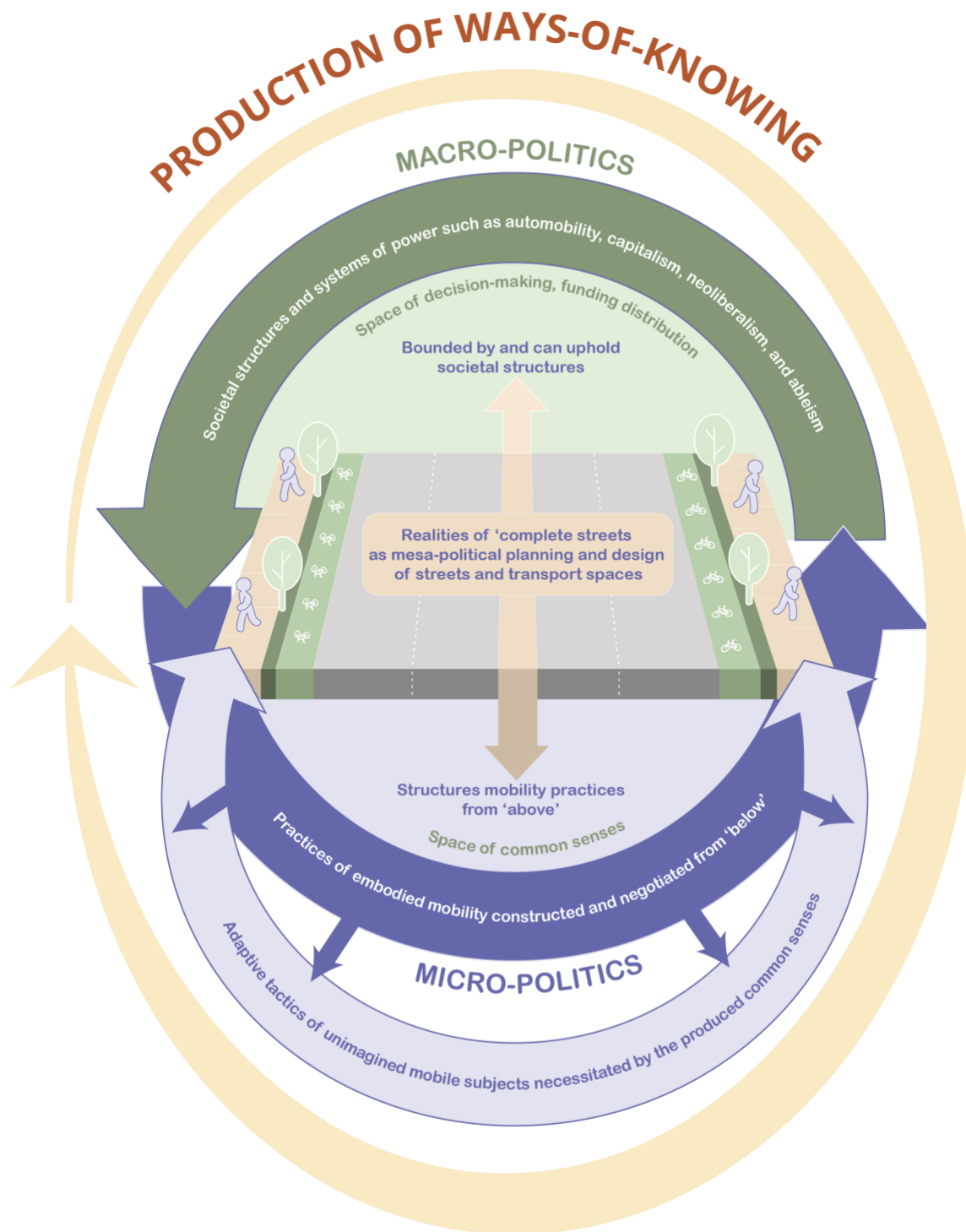


Figure 25: Layering ways-of-knowing on relational transportation planning

## **7.3 SUBSTANTIVE CONTRIBUTIONS**

### ***7.3.1 A more complete understanding of complete streets***

In terms of substantive contributions, this thesis positions complete streets within the broader politics of automobility and velomobility, contributing to the ongoing critical scholarship of the limits and potentials of complete streets (Zavestoski & Agyeman, 2014; Jordan & Ivey, 2021). Current transportation scholarship was at odds in understanding complete-streets with some studies hailing the radical potential of complete streets as “good for” cities (Anderson et al., 2015; Shapard & Cole, 2013; Tolford, Renne, & Fields, 2014; Vandegrift & Zanoni, 2018; Jensen et al., 2017; Keippel et al., 2017) and others flagging concerns over equity, justice, and inclusivity (Zavestoski & Agyeman, 2014; Jordan & Ivey, 202; Golub, 2014). As such, a core contribution of this thesis was to position complete streets within wider politics and provide essential commentary on why there may be such an ideological gap between what complete streets ‘promise’ to do, and what is actualized. In this, I found that both the mobility-practices and the places produced by complete street planning-paradigms can be ideologically limited by longstanding politics of automobility which still inform certain expectations and norms about how mobility ought to function, most notably in prioritizing efficiency and productivity. This therefore evidenced that it is not enough for complete street planning-paradigms to only contribute a topical shift in transportation planning, this shift needs to be epistemological; challenging assumptions about what mobility means in modern society and by extension for whom it is for. This contribution allows for critical mobility scholars (and even transportation planning scholars and practitioners) to better ‘unlock’ the mobility justice potential of complete streets. As noted in the theoretical contribution, I argue that although this political positioning was only unpacked for ‘complete streets’ within this thesis, there is the potential to apply a similar framework to all types of emerging transportation-planning paradigms.

### ***7.3.2 Empirical data on neurodivergent mobility practices***

Secondly, this thesis provided one of the first explorations into understanding neurodivergent mobility practices that was informed from first-hand accounts of people who are neurodivergent. As noted earlier in this section, the neurodivergent community is, by definition, heterogeneous, encompassing a range of different ways-of-knowing and being which should never be minimized

into broad-brush statements. However, what was found in this exploration of neurodivergent mobility practices was that there is increasingly more prominent evidence that travel is experienced differently by people who are neurodivergent and that existing ‘common-senses’ embedded into the planning design of transport-spaces are based in a ‘neurotypical expectation’ (Kenna, 2023; Davidson & Henderson, 2010; 2016; Vanolo, 2023; Cecchini, et al., 2018; Tola et al., 2020; Toronyi, 2021; Kersten et al., 2020; McAllister et al., 2022). This work provided novel contributions into how people who are neurodivergent navigate and negotiate everyday transport spaces, including examining current mobile practices, adaptive tactics, and ways-of-knowing in travel.

This thesis contributed further validation that sensory-sensitivities can be dis/abling for people who are neurodivergent causing visceral reactions that are not well understood by the neurotypical-standard (Toronyi, 2021; Davidson & Henderson, 2010; 2016; McAllister et al., 2022; Vanolo, 2023). In travel, many participants spoke of this in relation to the noises of cars on the street, or the ‘ding’ of transit stops being requested, or the rumble of bus-engines. Additionally, smells could be disorienting and overwhelming as could crowding and the associated feeling of being stuck.

Moreover, previous studies had scoped that driving was a non-preferred option of getting-around for people who are neurodivergent (Lubin & Feely, 2016; Lindsay, 2017; Haas et al., 2020). In this thesis I expanded on this knowledge by examining more deeply into *why*. Although further research would be needed to confirm these findings, this research suggests that driving is an overstimulating practice which requires excess mental-focus and can be difficult to ‘learn’ and ‘remember’ (aligning to emergent findings of Lubin & Feely, 2016). In this, alternative modes like walking, or taking transit may be preferred for people who are neurodivergent, thus further exasperating the need for such transport-modes (and spaces) to be designed in ways that do not uphold a neurotypical expectation.

Finally, this thesis substantiated emergent research on the differences in the production of spatial knowledge for people who are neurodivergent. Some studies had previously scoped feelings of uncertainty associated with travelling to and from transit stops, especially regarding worry of missing a bus-stop or not understanding routing (Lubin & Feely, 2016; Haas et al., 2020). In this

thesis, I found that participants often spoke to these anxieties and uncertainties, and that there were many ‘hidden’ tactics that were done to mitigate such feelings of uncertainty. Moreover, these findings extended beyond just navigating to and from transit stops, but to other everyday transport-spaces, including knowing when to cross at intersections and knowing how to interact with other modes in shared-spaces.

Importantly, these moments of self-doubt constructed by everyday transport are not easily ignored for people who are neurodivergent. Rather, these feelings of difference or even inadequacy were found to be felt deeply and intensely. In this, even though many of the challenges noted in this section may equally be felt by people who are neurotypical, it is the level of intensity which marks particular difference for people who are neurodivergent. What may be a minor inconvenience for someone who is neurotypical (such as getting on a wrong bus) was found to have the potential to feel fundamentally dis/abling for someone who is neurodivergent. Anecdotally, one of the most common heard phrases throughout both phases of the interviews conducted as part of this thesis was the potential of everyday-travel to ‘*ruin the day*’.

Beyond confirming and building-upon previous findings of past research, this thesis also offers novel insights by engaging not only with participants who identify on the Autism-Spectrum (n=8), but also with participants who identify with ADHD (n=24) or AuDHD (n=12). Nearly all of the cited research (save for Kenna, 2023), only engages with Autistic experiences of everyday travel and the built environment. As such this thesis provides one of the first substantive studies on ADHDers and everyday travel behaviours. The results suggest that ADHDers are equally experiencing differential mobilities, however, these experiences have been nearly entirely side-stepped in current literature. Particularly, although participants with ADHD shared many of the previously noted experiences in travel (including sensory sensitivities, and challenges in navigating unpredictable transport environments), there was also an emergent finding of the search for ‘fun’ in commutes for ADHDers. In this, certain modes that were perceived to be boring or stagnant were actively avoided, and commuting-modes that could be perceived as interesting and at times even adventurous were instead sought out.

As stated at the outset of this thesis, transportation planning is attempting to become more inclusive. However, there were well-documented limits to how different abilities are considered

within current inclusive transportation planning efforts (Stafford & Baldwin 2017; Stafford et al., 2022; Elliot et al., 2022; Levine & Karner, 2023). In these limits, people who are neurodivergent are under-considered, even when transportation planning promises to consider and accommodate ‘all abilities’ (Leger & Dean, 2025) demonstrating an overrepresentation of only certain-types of dis/abilities in current considerations (Terashima & Clark, 2021; Levine & Karner, 2023). Part of this absence is due to not as much being known about cognitive difference and how such non-mobility related forms of dis/ability can produce differential mobilities (Sarraf, 2025). As such, the results from this thesis provide further evidence that experiences of neurodivergence in the built-environment (and particularly in everyday-travel) should be considered in planning for ‘all abilities’.

### ***7.3.3 Place-legibility for all-ages-and-abilities***

Learning from this, I also offer some recommendations on how to do so. Particularly, I found that place-legibility can be a useful tool in resituating AAA promises which account for neurodivergent ways-of-knowing. This contribution aligns to other work in the field which has also highlighted place-legibility as an accessibility measure (Biglieri & Dean, 2024; Goodman et al., 2024; Heylighen et al., 2017; Mondschieen et Moga, 2018). In **Chapter 6**, I examined how such considerations could be applied to transport-spaces such as transit stations/stops, multi-use trails, and intersections.

Importantly, although this thesis focused on the experiences of those who identified as either ASC or ADHD, in centering more-inclusive futures that plan for legibility, predictability, and agency with the design interventions of transport spaces, this dialogue can open up to thinking more broadly about neurodiversity– being the full range of cognitive function. To that end, potential supportive built-environments for people who are neurodivergent would likely make every day travel more accessible for not only those who are neurodivergent, but others who experience any form of cognitive or sensory difference, such as older adults (Goodman et al., 2004), children (Buzatoni et al., 2021), people living with dementia (Biglieri & Dean, 2024) or people with visual or auditory disabilities (Imrie, 2012).

Finally, I want to note that in this contribution I focused predominantly on the design of the built environment. However as noted by Ahmadpoor & Smith (2020), spatial-knowledge is shifting

from being produced in the physical-spaces to being produced in digital spaces. In **Chapter 6**, I also briefly discussed digital-place legibility interventions that are being adopted in some transit agencies across Canada and the U.S. that are specifically designed to assist with neurodivergent navigation (Metrolinx, 2024; Rezae, et al., 2022). Such apps have been preliminary reviewed as effective in helping people who are neurodivergent navigate transit (Rezae et al., 2022). As such, I conclude that place-legibility can be achieved across physical and digital realms, and that assistive-apps could have particular-use in ‘retrofitting’ the legibility of built systems that are not easy to navigate. However, the design of the built-environment is still paramount in facilitating place-legibility, and should be continually considered, even in the rise of assistive-apps.

## **7.4 METHODOLOGICAL CONTRIBUTIONS**

### **7.4.1 Complete streets discourse analysis framework**

**Chapter 4** utilized critical-discourse analysis to analyze complete street planning design guidelines. Although both policy reviews and critical discourse analysis are not “new” methods nor analytical frameworks, this study was one of the first to engage critically with the textual politics of complete street planning and design guidance. The resultant framework from this chapter, including how to code for the relationality of the plans to automobility, velomobility, places-produced as well as identities and abilities considered, can be replicated across planning documents in different jurisdictions (Refer to **Table 11: Discourse analysis framework**). Moreover, this methodological approach constructed a critical and qualitative approach to conducting policy reviews, which in transportation planning are typically quantitative. This methodology can be used to bridge traditional transportation planning outputs (like policies and design guidelines) to the broader politics of mobility (Jensen, 2013).

Table 11: Discourse analysis framework

| Analysis Question                                                             | Deductive                              | Inductive                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                               | Code                                   | Sub-codes                                                                                                                                                                                                             |
| What are the identities are considered within complete streets planning?      | Complete Streets-Identity (CSI)        | Women<br>Gender-diverse<br>Persons with disabilities<br>Persons with low-income<br>Racialized populations<br>LGBTQIA+<br>Indigenous populations<br>Older adults<br>Children                                           |
| What types of (dis)abilities are considered within complete streets planning? | Complete Streets-(Dis)abilities (CSDA) | Visual disabilities<br>Hearing disabilities<br>Physical mobility issues<br>Cognitive disabilities                                                                                                                     |
| How do complete streets align to the ideologies of automobility?              | Complete Streets-Automobility (CSA)    | Maintaining vehicular traffic<br>Efficiency<br>Individualism<br>Economic productivity<br>Streets as placeless<br>Control/Mode separation<br>Benefit to traffic                                                        |
| How do complete street plans conceive of place?                               | Complete Streets- Place (CSP)          | Vibrant/Liveable<br>Public<br>Sustainable<br>Competitive/Productive                                                                                                                                                   |
| How do complete streets align to the ideologies of velomobility?              | Complete Streets-Velomobility (CSV)    | Prioritizing vulnerable road users<br>Historic recognition of automobility<br>Slower traffic<br>Permitting/planning for ‘illegal’ movements (i.e. jaywalking)<br>Sharing roadway space<br>Promoting social behaviours |

#### ***7.4.2 'In-travel' accounts of getting around whilst neurodivergent***

In **Chapter 5 and 6**, this thesis introduced new methods for engaging with people who are neurodivergent in built-environment research. Go-along interviews are still an emerging method of research design but have shown strong applicability in unpacking relationships between the spatial and the body (Dean, 2016) and have also been previously recommended for spatialized research with neurodivergent populations (Kenna, 2022). As noted, in Section 1.4.3., most research on people who are neurodivergent still focuses on children on the autism spectrum and their experiences of closed spaces, like schools and daycares. Even more, the research that does explore neurodivergent experiences in the public realm may focus on second-hand accounts in books or text (Davidson & Henderson, 2010; 2016; Toronyi, 2021), literature reviews (Tola et al., 2020) or interviews or accounts with carers or 'autism experts' (Cecchini et al., 2018; McAllister et al., 2022; Vanolo, 2023). Very little research has engaged directly with the lived experiences of people who are neurodivergent (Kenna, 2022; 2023; Dirix, et al., 2023; Haas et al., 2020), and even less research has explored these relationships in-situ, via go-along interviews (Kersten et al., 2020). As such, this research was methodologically significant in being among the first to engage with the experiences of everyday travel for people who are neurodivergent from first-hand perspectives.

Indeed, both the sit-down interviews (described in **Chapter 5**) and the go-along interviews (described in **Chapter 6**) uncovered lived-experiences of being in-travel, which are too often neglected in traditional transportation planning, both in research and practice (Schiefelbusch, 2010; Klein et al., 2024). Even Schiefelbusch (2010), concludes that emotional influences of mobility can be extracted in surveys and observational research, but does not recommend qualitative interviews. Qualitative research in transportation planning is often undervalued due to the rational planning legacies. However, the nuanced accounts of getting around collected through this study made the 'hidden geographies' of neurodiversity visible (Toronyi, 2021; Kenna, 2023), especially in mapping adaptive tactics (**Chapter 5**) and ways-of-knowing (**Chapter 6**). In this, we attest the value of qualitative research, especially in unspooling affective and emotional experiences of being in-travel.

Moreover, this research also revealed best-practices for engaging with people who are neurodivergent in interviews. Before beginning the interview process, the existing literature on

conducting qualitative research with people who are neurodivergent was reviewed (Kaplan-Kahn, & Caplan, 2023; Cridland et al., 2015; Szulc, 2023; Kakoulidou et al., 2024). However, as this research design was novel in nature, there were many lessons learnt in developing and delivering the research design. As such, I scope the following recommendations for conducting interviews with people who are neurodivergent.

#### **A. Design for low-barrier recruitment**

As noted by Cridland et al., (2015), recruiting people who are neurodivergent for academic studies should be more particular. Typical recruitment strategies can be exclusive, especially when requiring an onerous process in getting involved. To respond to this, I set up a study-webpage that featured a webform for recruitment. As such, participants did not need to call or email to get involved, which I found this to be a successful strategy in recruiting participants. Moreover, the website offered a low-barrier venue for learning more about the study. All information, including a summary of the research program, letters of information, and researcher bios were included on the webpage so that potential participants could familiarize themselves fully with the study before reaching out to get involved.

#### **B. Provide as much information upfront as possible**

In both the sit-down interviews and go-along interviews it was found that the most preparing information that could be given, the more comfortable the participants were in the interview process (Szulc, 2023). In both the go-along interviews and the sit-down interviews, details of the interview, including the expected length and question types were shared before the interview began. Although specific questions were not shared in advance for this study (this allowed for the interviewer to adapt and be reflective during the interview), sample questions were included in the letter of information (**Appendix A**). In the go-along interviews, the route maps were also shared upfront, and participants were able to choose between the two based on their comfort/interest. Anecdotally, this strategy was noted to be appreciated by multiple participants during the go-along interviews.

#### **C. Provide multiple ways to engage**

Respecting and responding to different ways of thinking requires pluralistic ways to engage with the research. During the sit-down interview phase, different phone-in models were used, including Zooms, Teams, and phone-call. However, a few potential participants were ‘missed’ as they were uncomfortable with an interview but would’ve been willing to participate in a survey. This highlights the importance of providing multiple ways to engage. Having a survey to accompany the interviews would’ve allowed for a broader participant pool.

In the go-along interviews, I responded to this concern of having too narrow data collection means by adding a participatory mapping exercise to the end of the interviews. This activity was meant to give reflective space to participants, who may not have been able or comfortable to share all of their feelings during the go-along. Per the study findings, people who are neurodivergent may experience sensory-overwhelm when walking, and I was concerned that some may find narrating their feelings whilst walking overwhelming. As such, the participatory mapping exercise took place at the close of the interview, and maps were marked up while participants filled out the demographic survey and received their honorarium. Although initially introduced as a means to make the interview more inclusive, I realized upon reflection that providing the multiple means of engagement did not only benefit the participants but also added rigor to the methodology of go-along interviews. By adding an additional spatial-lens, the participatory mapping exercise allowed for specific feelings around infrastructure types to be uncovered and cross-referenced to the transcripts of the go-along interviews and contributed greatly to the formation of **Chapter 6**.

#### **D. Leave space for silence**

In all best practices for interviewing, it is recommended that interviewers leave space for participants to work through their thoughts– and in that need to be comfortable with silence (Charmaz, 2014). This was found to be even more important in interviews with people who are neurodivergent. Giving space to process, think through questions, and provide clarification if needed allowed for more meaningful responses, and built trust between the interviewer and the interviewee.

## **E. Prepare multiple ways to ask questions**

To that end, there was an interview script developed for both the sit-down interviews and the go-along interviews (see **Appendix C and D**), however, when needed, questions were adapted to be either more open-ended or more direct depending on participant preferences. When working with people who are neurodivergent, questions may be understood differently, and it is important to be responsive and adaptive to different needs and understandings. An example of a question reframing utilized in this study (during the go-alongs) is included below:

*Question format 1: How does this street make you feel? Can you comment on anything you are noticing?*

In this question format, I left it open-ended, and participants could guide the conversation based on what they noticed on the street.

*Question format 2: As we walk this street, I'm wondering if you can comment on any of the infrastructure conditions, like the sidewalk width, vehicle speeds, greenery, lighting, or adjacent built form? Are these features positive or negative to you?*

In cases where open ended questions were not conducive to the participant (for example, they found language around what they felt or noticed to be too vague), I then restructured questions to have more parameters built-into the question, giving examples of different street-features they could discuss.

## **F. Be aware of positionality**

In this thesis, I (as someone who also identifies as neurodivergent) directly engaged with the participants. This was an intentional practice to reduce feelings of ‘othering’ that could be evoked if participants felt their experiences of challenge, or difference, were being scrutinized by someone who could not understand them in their own experience. I self-disclosed to all participants at the start of the interview, so that they were aware the intent was not to make them feel ‘othered’ but rather part of community. In certain cases, when relevant, I could also share my own experiences to open dialogue around experiences of transportation. Future researchers who choose to conduct interviews with neurodivergent populations should remain mindful of

their own positionality. Drawing from Kaplan-Kahn & Caplan (2023), if neurotypical researchers are interviewing neurodivergent participants, best-practice would include involving a neurodivergent researcher throughout the construction and operationalization of the data collection to ensure researcher-positionality is accounted for.

### **G. Co-construct findings**

Importantly, engaging with people who are neurodivergent does not end at the interview. In qualitative research, it is becoming increasingly popular to involve participants in data analysis to ensure accurate and reflective results, a trend that is mirrored in best-practices in research with people who are neurodivergent (Kaplan-Kahn, & Caplan, 2023; Cridland et al., 2015; Szulc, 2023; Kakoulidou et al., 2024). For both the sit-down and go-along interviews member-checking emails were sent out to summarize initial findings from the interview and ensure that participants felt their stories were accurately represented. Participants were encouraged to respond to the researcher with any omissions or corrections. In future research conducted, I would like to extend this practice and engage in more rigorous co-constructing practices, including joint-analysis of the transcripts (Kakoulidou et al., 2024).

### **H. Be open and adaptive**

Finally, through this study it was evident that considering neurodivergence requires considering plurality. No two participants would respond in the same way, and as such the researcher needed to be adaptable and flexible. Such approach is useful for all research designs but was found to be especially helpful and appreciated in the context of conducting interviews with people who are neurodivergent.

## **7.5 PRACTICAL CONTRIBUTIONS**

Practically, this thesis provides the scaffolding for more-inclusive, relational transportation planning efforts. Planning for inclusivity is both a broader initiative of planning ideologically and is also mandated for urban planners through the requirement to plan for the ‘public interest’ (Dadashpoor & Sheydayi, 2021), particularly in Canada that requires that planners “practice in a manner that respects the diversity, needs, values, and aspirations of the public and encourages

discussion on these matters” (Canadian Institute of Planners (CIP) Code of Conduct, 1.4<sup>21</sup>). As planners attempt to be more inclusive and accommodating, especially for people with dis/abilities (Stafford et al., 2022; Ross et al., 2024), this thesis provides an entrance point into thinking more critically about how to meaningfully engage with different abilities.

Notably, in **Chapter 3** I examined the limits of rationalist legacies on the inclusivity-promises of current transportation planning paradigms. Further, in **Chapter 4** I then traced how the politics of automobility is continuing to impact ‘complete street’ ideologies, particularly in a belief system that mobility should be above-all efficient and productive. This is to say, these two chapters highlight an important takeaway for practice: it is critical to understand the foundations that guide your work. Planning practitioners should critically think about the assumptions which drive their planning-paradigms, and how such assumptions could be unsettled.

Importantly, this also means that there is a need to planners to understand the limits of the discipline within broader power-structures. Urban planning is a form of governance which does have currency in planning from “above”, however, it is not untethered from the contexts of the society it plans within. These ideologies construct meanings to everyday practices such as transportation and can then become an ‘invisible hand’ onto the planning profession.

Particularly, transportation planning has attempted to uphold non-political traditions, but in doing so the ‘full picture’ of what then happens on the street is both under-examined, and at times, ignorable.

However, urban planners and transportation planners play a critical role in achieving mobility justice by designing the spatial layout and function of streets and transport spaces (Sheller, 2018). When this potential is limited by taking only a partial-view into how mobilities are produced by transport planning, there can be significant impact to who can access the street. Yet, in tracing these legacies and the ongoing impact of these systems of power on the planning profession, it is possible to see the avenues of resistance for planners. Planners have power in shaping the accessibility of built-environments, and the more these efforts are cognizant of the systems of power which limit them, the more likely they can address the real barriers that are faced by people with different abilities. Simply to say, when ignoring these systems of power

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<sup>21</sup> <https://www.cip-icu.ca/membership/professional-codes-of-conduct-ethics/>

that planning cannot escape, we uphold them. Planning has the potential to be part of the resistance rather than part of the powers-that-be, but to do so we must first situate the practice of planning.

To this end, part of ‘situating’ planning is also engaging with how mobilities are constructed from “below”. As noted throughout this thesis, the current ways in which planners are accommodating dis/abilities is not meaningfully addressing inaccessibility. Most notably due to an overrepresentation of mobility-related dis/ability accommodations (Terashima & Clark, 2021; Levine & Karner, 2023), and a lack of meaningful engagement of being-in-travel, for both those who are dis/abled or abled (Schiefelbusch, 2010). This (along with the broader uneven societal power structures) construct inclusivity promises that lack depth and nuance, including how current ‘all ages & abilities’ promises are scoped (Elliott et al., 2023; Laberee et al., 2023).

As such, the final practical contribution of this thesis is providing an evidenced accounts as to why transportation planners should not discredit qualitative research. Although even transportation literature struggles to validate qualitative contributions (Klien et al., 2024), there is evident value in engaging with the lived experiences of being-in-travel, particularly for planning for dis/ability accommodations. When gathering information from the public, there should be diverse methodologies, perhaps pushing beyond the ‘travel survey’ to understand how everyday travel is actually experienced. Again, in returning to the CIP Code of Conduct planners must also “provide opportunities for meaningful participation and education in the planning process to all interested parties” (1.4). Transportation planning has long let rationalism define its methodologies; however, this thesis challenges the discipline to think of the radical-potential of planning for transportation based-off of lived travel experiences. In practice this could look like public consultation events that include walk-along/go-alongs, interviews with marginalized populations based on their current-experiences getting around, and cognitive-mapping exercises.

### ***7.5.1 Recommendations for planning practice***

Building on the above practical contributions, the following practical recommendations have been compiled. These recommendations are organized into three categories: planning-framework recommendations (which approach broader issues in the structuring of planning practice), infrastructure design recommendations (which scale-down to specific and tangible interventions

for creating more-inclusive streetscapes and transport spaces) and planning-process recommendations (which relate to public consultation and engagement processes). In this, I attempt to further scope the potential of urban planning as a response to furthering the neurodiversity paradigm, especially in spatial and mobility justice (Sarraf, 2025).

### **Planning framework recommendations**

- A. Unsettle the rational-travel user in modelling transportation decision-making.** A critical step towards more inclusive transportation systems is to meaningfully engage the pluralistic and ever-relational motivators and barriers people consider in everyday-transportation. Current ‘status-quos’ for transportation planning often assume that time and money are the only motivators (or barriers) to everyday-travel and decision-making around modes and routes. However, as evidenced throughout this thesis, transportation decision-making is relational, emotional, and embodied. The perceptual metrics of why people choose to get around how they do should be better understood by transportation planners. Such insights are particularly important in engaging with people with dis/abilities, who due to mobility-marginalization may be negotiating everyday travel behaviours based on ‘hidden’ barriers that are not currently accommodated within the built-environment. Interrogating the rational travel user is the first step in confronting, and potentially unsettling, the many unjust-power structures which are inadvertently perpetuated by a model-travel-user whose only considerations are time and money.
- B. Integrate place-legibility accommodations into accessibility standards.** One of the findings of this thesis is that current legislative frameworks for accessible-design do not meaningfully engage with principles of place-legibility. However, the legibility of a place can be critical in scoping and forming ways-of-knowing in everyday-travel, and if done right, can contribute to heightened accessibility. As such, it is recommended that principles of place-legibility be brought into accessible design standards to provide further accommodations for different ways-of-knowing and navigating (further articulated in the below section on infrastructure design recommendations).

C. **(Canadian specific) Adopt the ACA disability definition in scoping AAA statements.**

Finally, the 2019 ACA introduced a comprehensive definition for dis/abilities which does not center solely mobility-related dis/abilities within its scope. This is an important step forward to broadening and ‘unflattening’ the conversation of dis/ability accommodations in planning. It is recommended that whenever planners are working on projects that require a definition for ‘disability’ or ‘barrier’, this definition is referenced, especially in scoping considerations for AAA statements.

Infrastructure design recommendations

A. **Include unique stop-names and simplified route-mapping at transit-stops (especially bus-stops).**

As discussed in **Chapter 6**, bussing can be a disorienting experience for people who are neurodivergent, especially due to a lack of consistency in bus stop appearance, naming, and signage. As such, it is recommended that more inclusive bus-stops could include 1) unique and clear stop names that are clearly displayed at the stop 2) and indication of path of travel, whether it be directional or landmark-based and 3) simplified route mapping that indicates which routes and ‘core’ destinations the stop connects (see **Figure 26**, for a conceptual visualization). These small changes to how bus-stop signage is organized and explained can increase the legibility of the system and foster a more reliable experience.

B. **Prioritize spaces for passing along multi-use trails and clearly communicate points-of-conflict.**

Managing conflicting users in shared spaces is a core concern in accessible and universal design. In Chapter 6, it was found that many participants found traversing multi-use paths uncomfortable or disorienting due to unpredictable interactions with cyclists. To address this, shared paths should include a separated lane for cyclists and pedestrians whenever possible. This aligns with best practices advised by NACTO and the Canadian Accessible Design for the Built Environment Standards. In circumstances when two-lanes are not feasible, spaces for passing should be included in the design of the trail (conceptually visualized in **Figure 27**), and signage should indicate potential conflict-areas, both through vertical and horizontal (on-path) markings.

**C. Ensure clearly marked zebra-crossings at intersections and mid-block crossings.**

Finally, it was found that distinguishing where and how to cross intersections and mid-block crossings was further disorienting and complex for participants. As such, it is recommended that crosswalks should always be marked, whether in a mid-block crossing or conventional intersection. In all cases, there should be clear indication as to when pedestrians have the right-of-way, either through signage or design.

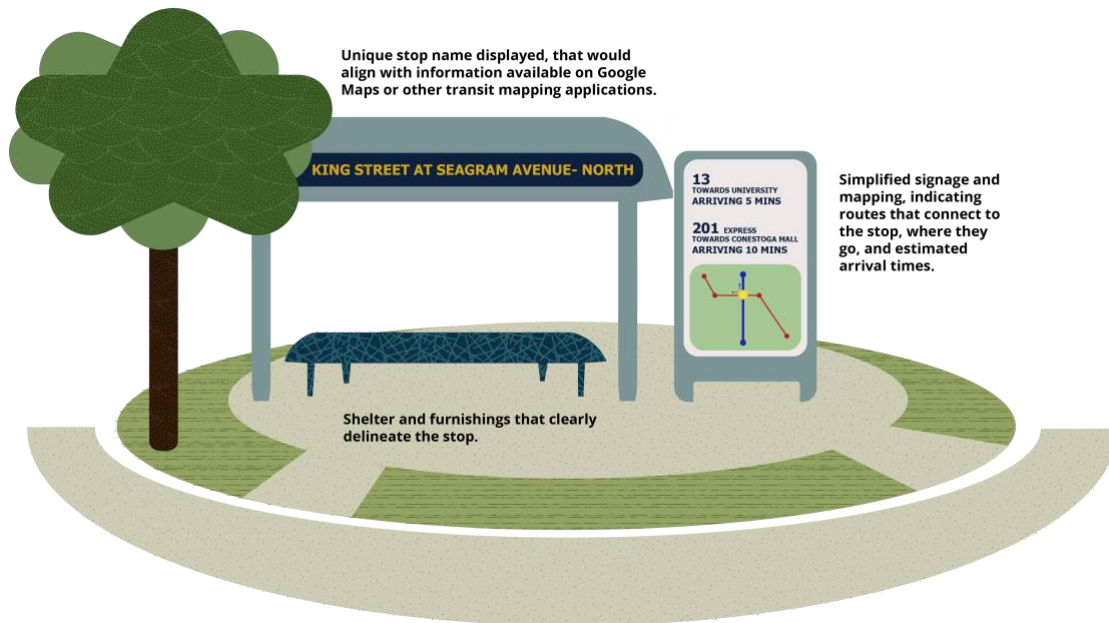


Figure 26: Conceptual vignette of a legible bus-stop redesign

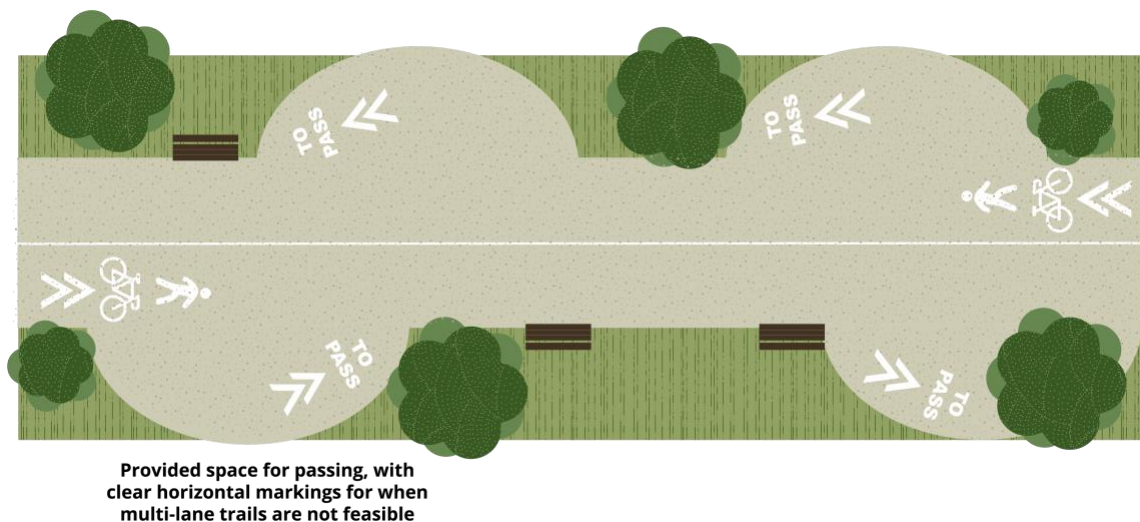


Figure 27: Conceptual vignette of a multi-use trail with space for passing and horizontal signage

## Planning process recommendations

1. **Move beyond the travel-survey.** Relating to planning framework recommendation #1, transportation planners should engage with alternate means of collecting data about travel behaviours and preferences. One of the most significant gaps in the current literature is the lack of research which engages with the lived experiences of people with dis/abilities in travel. As noted above, there are a suite of alternative data collection metrics (such as including go-alongs in public consultation, or participatory mapping). However done, planners should provide more opportunities to meaningfully understand the lived experiences of dis/abled and differently abled people in their work, especially in unpacking travel behaviour and preferences.
2. **Consider neuro-inclusive ways to engage in public consultation (refer to section 7.4.2).** Finally, planners should engage with the means in which public-consultation events and processes are structured to unsettle potential ‘neurotypical’ expectations that exist not only in the outputs of planning, but in the processes of planning as well. Per Saffar (2025) and Saloman & Cho (2022), autistic people may experience challenges and ‘othering’ in current planning consultation frameworks. Although this thesis did not directly engage with public consultation processes, the learnings of effective interviewing techniques (listed in **section 7.4.2**) could be applied in designing more-inclusive public engagement processes. This could include providing multiple ways to engage, co-constructing engagement sessions, ensuring engagement sessions are advertised with ‘low-barriers’, and providing as much information upfront as possible prior to a scheduled engagement session.

## **7.6 FUTURE RESEARCH AND PRACTICE**

As a novel and exploratory study, there are many ways this thesis could be expanded upon. Most prominently I see avenues for future research that continues to build-up the framework of differential ways-of-knowing. This way of thinking through transportation planning provides an alternative approach into accommodating ‘all ages & abilities’. Rather than considering dis/ability through ‘check-box approaches’ or compliance-based agendas, the ways-of-knowing framework proposes a relational and affective understanding of how dis/ability is experienced in space. At this time, the framework is still in its infancy, and has yet to be scoped for or applied to the development of planning initiatives, including complete street design guidelines. Future research could continue to scaffold this framework and engage with planning professionals on the potential suitability of it within planning practice.

Particularly, this framework could be used to better accommodate people who are neurodivergent in the planning and design of everyday transport spaces. As critically noted in this thesis, current approaches to street and transit-station design can be exclusionary or challenging for people who are neurodivergent, and current approaches to accommodating for ‘all abilities’ do not often consider neurodivergent ways of being or knowing in the design of spaces. Future research could explore more in-depth on some of the emergent findings of this thesis, including adapting street and transit-station design requirements to accommodate neurodivergent ways-of-knowing. This should include more fulsome policy reviews that expand beyond Ontario to explore how cognitive differences and dis/ability are written into planning documents throughout Canada and the U.S. Moreover, there is a need to explore planner knowledge around what it means to ‘plan for all’ and the challenges they face in moving towards more inclusive transportation-paradigms.

To this end, there is much more to be known about the current politics of complete streets and the implications for inclusivity. More research that applies the complete streets discourse analysis framework to policies across geographic areas could allow for better understanding of complete street-paradigms across Canada and the U.S.

Such future research opportunities will be in part addressed by a 2026 SSHRC postdoctoral fellowship, wherein I have proposed to build upon my PhD research and further examine how

dis/ability accommodations (including for neurodivergence) are approached in current transportation planning documents across Canada. This fellowship will ‘scale up’ the critical discourse analysis policy review conducted in this thesis and engage more closely with planning-practice. Particularly, I will respond to some of the ‘unanswered’ questions of this thesis, including in exploring how more meaningful dis/ability accommodations can be incorporated into current transportation planning initiatives, and the perceived barriers to such alternative approaches from the eyes of practicing municipal and private-sector planners.

## 7.7 TO END

At the very outset of this thesis, I included this quote from Taylor, a participant in the go-along interviews:

*“But I just feel like—and this just goes for everything—that nothing is made for neurodivergent people, and everything is just made... I mean, not even for neurotypical people because think, they don't think about it, but a lot of things that neurodivergent people ask for or need would actually really just benefit everyone. But again, because they're not bothered by it, they don't really see how that could bother them.” – Taylor (from a go-along interview)*

In this quote, Taylor speaks to a critical finding of this thesis. In engaging with the stories and experiences of being-in-travel for people who are neurodivergent, I was able to trace avenues of difference and challenge that constructed neurodivergent mobility practices across everyday-transport spaces. However, in unpacking neurodivergent ways-of-being and knowing, I also found that there is a possibility to open-up ‘all abilities’ planning to be more representative of many pluralistic ways-of-being. By engaging with the challenges and exclusion of people who are neurodivergent, there is the possibility to make ‘complete’ streets and everyday transport-spaces that simply work for more people, including those who are ‘neurotypical’. This is to say, planning and designing places to be more accessible for a group that experiences a form of societal ‘othering’ often simply results in places that work better for everyone. By examining the experiences of people who are neurodivergent in navigating everyday travel, I uncovered the potential to more meaningfully engage with the relational, unfinished processes in which ‘being able’ is constructed across transport spaces, notably both from “above” in societal power-structures and “below” in common-senses and affect.

In conclusion, I return to the Bruce Springsteen Jungleland lyric introduced in **Chapter 3: Context and Theoretical Framing**, although the poets may *write nothing at all*, and rather just *stand back and let it all be*, I conclude that transportation planning scholars and practitioners alike have a responsibility to engage with the complex politics of mobility that produce everyday mobility practices. As evidenced by this thesis, it is by engaging with both ideologies of transportation and mobility along with the lived-experiences of navigating everyday-travel that we can meaningfully move towards transportation planning futures that are unsettled from the unjust autocentric legacies of the past and fully unlock the inclusivity potential of alternative modes. In this, such inclusive transportation planning paradigms (like complete streets) can be a meaningful facet of achieving mobility justice and acknowledge and advocate for pluralistic ways-of-knowing and being-in-travel. This is perhaps, the closest we can get to meaningfully planning ‘for all’.

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## APPENDICES

*Appendix A: Recruitment Materials*

*Appendix B: Ethics Approval*

*Appendix C: Interview Guide sit-down interviews*

*Appendix D: Interview Guide go-along interviews*

## **APPENDIX A: RECRUITMENT MATERIALS**

### **Letter of Information and Consent**

**Mindful streets:** understanding neurodiverse transportation behaviours and the implications for complete streets planning.

**Phase 1:** Understanding neurodiverse transportation behaviours across Ontario.

#### **What is this letter about?**

This letter is to help you make an informed decision regarding your participation in the research study *Mindful Streets*. This letter will explain what the study is about, the possible risks and benefits, and your rights as a research participant. If you do not understand something in the letter, please ask one of the investigators prior to consenting to the study.

#### **Who is leading this study?**

This research is conducted as part of a PhD Dissertation. The lead researchers for this study are Samantha Leger, PhD Candidate for the School of Planning, University of Waterloo and Dr. Jennifer Dean, Associate Professor at the School of Planning, University of Waterloo.

#### **What is the study about?**

In recent years we have learnt more about neurodiversity, who it impacts, and how. Diagnoses such as Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) are now better understood for how they can present in different populations, such as adults and women. As diagnoses became more accessible and less stigmatized the number of those who identify with ADHD and ASD has risen. Despite this emergence, very little research has explored how being neurodivergent can impact experiences and perceptions of everyday life in the public realm, including everyday travel. Many people who identify as neurodiverse are independently mobile, partaking in daily commuting and recreational trips around their

communities. However, their unique needs and perceptions may not be accounted for in how the streets are planned and designed.

This is particularly pertinent for transportation planning given the rise of 'complete streets'; a growing planning effort that aims to comfortably accommodate a range of modes and users on the street through dedicated infrastructure, wayfinding, and streetscaping. Complete streets are often promised to be for 'all ages and abilities', with specific efforts that make streets more comfortable and accessible for vulnerable populations. Yet, in current complete streets planning practices, 'all ages and abilities' has narrowly considered age and some physical disabilities and is missing more fulsome consideration to different mental capabilities, and how these can influence access and comfort on the street.

To address this issue, this study aims to understand neurodiverse transportation experiences, and explore how these experiences can be better reflected in complete streets planning practices. Through sit-down and walk-along interviews with participants who identify as either Autistic or as having ADHD, this study will:

1. Assess route and mode choices of neurodiverse populations and examine the variables (in both the built and social environment) that can impact these choices.
2. Determine the types of streetscapes that are comfortable and accessible for neurodiverse populations (those with ADHD or who are on the autism-spectrum) and compare how these relate to complete streets planning practices.

### **What does participation involve?**

Participation in the study will consist of one one-on-one interview with the student researcher, Samantha Leger. The interview can be conducted via online video chat or phone call. In this sit-down interview, you will be asked about:

1. Your current transportation practices, and
2. Your preferred conditions for different transportation modes.

It is expected this interview will take approximately 20 minutes of your time. These interviews will be audio-recorded to help the researcher with transcription. A summary of the interviews will be sent to you at the conclusion of this phase of research.

By talking about your experiences, you will help urban planners design more inclusive streets which accommodate for the needs of those who are neurodiverse.

### **Who can participate in the study?**

In order to participate in this study, you must be at least 18 years of age and self-identify as either Autistic or with ADHD. Both those who have self-diagnosed and been professional diagnosed are eligible to participate. You must also actively walk, cycle, take transit, or drive around your community and be a current Ontario resident.

This phase of the study will involve up to 40 participants.

### **Is my participation voluntary?**

Yes, this study is completely voluntary.

### **Are there risks to participating?**

As this research will be focused on your personal mobility experiences, there is some risk to the questions evoking negative emotions and/or memories. If a question, or the discussion, makes you uncomfortable, you can choose not to answer. You can stop participating in the interview at any time. If you choose to withdraw, your data will be deleted.

You will not be identified by name in any publications or presentations that arise from this research. However, the interview will be conducted over Zoom. Zoom has implemented technical, administrative, and physical safeguards to protect the information provided via the Services from loss, misuse, and unauthorized access, disclosure, alteration, or destruction. However, no Internet transmission is ever fully secure or error free.

### **Will I receive anything for participating?**

No. Participation is voluntary and will not be compensated.

### **What are the benefits to participating?**

Participation in this study will not provide any personal benefit to you. The findings of this research will enhance our knowledge on transportation behaviors of neurodiverse populations, and how to plan more inclusive streetscapes and mobility options. Findings of this work will be shared to both academic researchers and practicing urban planning professionals.

### **Will my identity be known?**

Only the researcher will know which data is from your participation. The interviews will be audio-recorded and transcribed verbatim. Excerpts from the interview discussion may be quoted in publications and/or presentations that arise from this research. These quotes will be anonymous and not be attributed to identifying information from any individual participant.

### **Will my information be kept confidential?**

Only the researchers will have access to the names of the participants. Your identity will be kept confidential by assigning ID codes to the transcriptions, so they do not contain any identifying information. Audio files will be deleted once transcribed. The list of names will be deleted upon study completion when they are no longer required to authenticate the results. For the duration of this study, all interview transcripts will be securely stored on team members' password-protected computers and in an encrypted cloud-based data management platform. After seven years, all information collected from the study will be deleted.

### **Has the study received ethics clearance?**

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #45403). If you have questions for the Board, contact the Office of Research Ethics, toll-free at 1-833-643-2379 (Canada and USA), 1-519-888-4440, or [reb@uwaterloo.ca](mailto:reb@uwaterloo.ca).

### Who should I contact if I have questions regarding my participation in the study?

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact Samantha Leger by email at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) or Dr. Jennifer Dean at 519-888-4567 ext. 49107 or by email at [Jennifer.dean@uwaterloo.ca](mailto:Jennifer.dean@uwaterloo.ca)

Thank you for your interest in this research study,

Samantha Leger

PhD Candidate, RPP Candidate

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## Consent

**Mindful streets:** understanding neurodiverse transportation behaviours and the implications for complete streets planning.

**Phase 1:** Understanding neurodiverse transportation behaviours across Ontario.

Prior to the interview you will be asked if you have read and understood the Letter of Information and provide your consent to the following questions:

1. Do you agree to participate in this research study?
2. Do you agree that the interview can be audio-recorded?
3. Do you agree that anonymous quotations can be used in reports, be used in publications and/or presentations that arise from this research. These quotes will be anonymous and not be attributed to identifying information from any individual participant.

## Phase 1 Recruitment Materials:



**We want to speak to you about how to design more inclusive streets for those who are neurodiverse!**

For more information on the study, or to register for participation, please see our website:

This study is being conducted as part of a PhD dissertation. The lead researchers are PhD Candidate Samantha Leger, [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) and Associate Professor Jennifer Dean [jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)



This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board.



This study is being conducted as part of a PhD dissertation. The lead researchers are PhD Candidate Samantha Leger, [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) and Associate Professor Jennifer Dean [jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)



This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board.

## Social media templates

## Mindful Streets News Release- Phase 1

**Do you identify as Autistic or with ADHD? Do you actively walk, cycle, take transit or drive around your community?** If so, we want to speak with you about how to design more inclusive streets for those who are neurodiverse.

In recent years we have learnt more about neurodiversity, who it impacts, and how. Diagnoses such as Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) are now better understood for how they can present in different populations, such as adults and women. As diagnoses became more accessible and less stigmatized the number of those who identify with ADHD and ASD has risen. Despite this emergence, very little research has explored how being neurodivergent can impact experiences and perceptions of everyday life in the public realm, including everyday travel. Many people who identify as neurodiverse actively and independently travel, partaking in daily commuting and recreational trips around their communities. However, their unique needs and perceptions may not be accounted for in how the streets are planned and designed.

This is particularly pertinent for transportation planning given the rise of 'complete streets'; a growing planning effort that aims to comfortably accommodate a range of modes and users on the street through dedicated infrastructure, wayfinding, and streetscaping. Complete streets are often promised to be for 'all ages and abilities', with specific efforts that make streets more comfortable and accessible for vulnerable populations. Yet, in current complete streets planning practices, 'all ages and abilities' has narrowly considered age and some physical disabilities and is missing more fulsome consideration to different mental capabilities, and how these can influence access and comfort on the street.

To address this matter, the University of Waterloo School of Planning is launching a research project entitled **Mindful Streets** wherein we are looking to speak with individuals who identify as Autistic or with ADHD to better understand their transportation experiences, and explore how these experiences can be better reflected in complete streets planning practices. Participation will involve a 15-20-minute virtual interview, and is open to anyone who identifies with ADHD or ASD, is above the age of 18 and lives in Ontario.

If this project sounds of interest to you, please visit our website at [WEBSITE LINK](#) to learn more or fill out our contact form to register for participation.

If you have any questions regarding the study you can reach out to the researchers, Samantha Leger at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) or Dr. Jennifer Dean at [jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca). This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board.



**Subject Line:** Invitation to participate in Mindful streets: understanding neurodiverse transportation behaviours and the implications for complete streets planning Phase 1.

Hello <First name> <Last name>,

My name is Samantha Leger, and I am a PhD Candidate from University of Waterloo. I am reaching out about your potential participation in a research study about the **transportation experiences of neurodiverse populations and the implications for complete streets planning**.

Recently you indicated your interest in participating in the study through our website. Thank you again for your interest, I am pleased to invite you to participate in the study.

As part of this research, you will be asked to take part in a one-on-one interview with the student researcher. The interview can be conducted via online video chat or phone call. In this sit-down interview, you will be asked about:

1. Your current transportation practices, and
2. Your preferred conditions for different transportation modes.

It is expected this interview will take approximately 20 minutes of your time. These interviews will be audio-recorded to help the researcher with transcription. A summary of the interviews will be sent to you at the conclusion of this phase of research.

For more information, you can read the FAQ page of our website (LINK) which answers common questions about the study or download the Letter of Information from the study website.

To schedule a time to speak, you are welcome to book an interview directly through our Calendly site: LINK. I have dates available Tuesday-Friday, 9:00am-5:00pm. If you prefer, you are also welcome to simply reply to this email with your preferred date and time.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board.

I look forward to speaking with you and if you have any questions about the study or the interview, please do not hesitate to contact me at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca).

Sincerely,

Samantha Leger, PhD Candidate  
School of Planning  
University of Waterloo



[sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca)

Dr. Jennifer Dean  
School of Planning  
University of Waterloo  
[jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)



### Interview Appreciation E-mail Phase 1

Dear: [NAME],

A sincere thank you for your participation in this phase of the *Mindful Streets* research study about the **transportation experiences of neurodiverse populations and the implications for complete streets planning**. Your feedback is helpful to better understand how to plan and design inclusive streetscapes that accommodate all ages and abilities.

At this time, the first phase of interviews has now concluded. I have summarized key highlights from the interviews below:

#### LIST SUMMARY HIGHLIGHTS

If there are any key elements of your experience you do not feel are captured, or any that you feel are misrepresented, please let me know at your earliest convenience. This will ensure our analysis is as accurate to your lived-experience as possible.

Please remember that your identity will be kept confidential and securely stored. Once the study is complete, general anonymized findings will be combined and reported in summary research reports and publications. If you wish to obtain a summary report of the study, please contact Samantha Leger at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) or visit the study website at WEBSITE LINK

As a reminder, this research has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #45403). If you have questions for the Board, contact the Office of Research Ethics, toll-free at 1-833-643-2379 (Canada and USA), 1-519-888-4440, or [reb@uwaterloo.ca](mailto:reb@uwaterloo.ca).

Please do not hesitate to contact us if you have any questions or comments using the contact information available on the website.

Sincerely,

Samantha Leger

Samantha Leger, PhD Candidate  
School of Planning  
University of Waterloo  
[sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca)

Dr. Jennifer Dean  
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## Letter of Information & Consent

**Mindful streets:** understanding neurodiverse transportation behaviours and the implications for complete streets planning.

### Phase 2: Neurodiversity on the street: walk-alongs in Waterloo.

#### What is this letter about?

This letter is to help you make an informed decision regarding your participation in the research study *Mindful Streets*. This letter will explain what the study is about, the possible risks and benefits, and your rights as a research participant. If you do not understand something in the letter, please ask one of the investigators prior to consenting to the study.

#### Who is leading this study?

The lead researchers for this study are Samantha Leger, PhD Candidate for the School of Planning, University of Waterloo and Dr. Jennifer Dean, Associate Professor at the School of Planning, University of Waterloo.

#### What is the study about?

In recent years we have learnt more about neurodiversity, who it impacts, and how. Diagnoses such as Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) are now better understood for how they can present in different populations, such as adults and women. As diagnoses became more accessible and less stigmatized the number of those who identify with ADHD and ASD has risen. Despite this emergence, very little research has explored how being neurodivergent can impact experiences and perceptions of everyday life in the public realm, including everyday travel. Many people who identify as neurodiverse are independently mobile, partaking in daily commuting and recreational trips around their communities. However, their unique needs and perceptions may not be accounted for in how the streets are planned and designed.

This is particularly pertinent for transportation planning given the rise of ‘complete streets’; a growing planning effort that aims to comfortably accommodate a range of modes and users on the street through dedicated infrastructure, wayfinding, and streetscaping. Complete streets are often promised to be for ‘all ages and abilities’, with specific efforts that make streets more comfortable and accessible for vulnerable populations. Yet, in current complete streets planning practices, ‘all ages and abilities’ has narrowly considered age and some physical disabilities and is missing more fulsome consideration to different mental capabilities, and how these can influence access and comfort on the street.

To address this issue, this study aims to understand neurodiverse transportation experiences, and explore how these experiences can be better reflected in complete streets planning practices. Through sit-down and walk-along interviews with participants who identify as either Autistic or as having ADHD, this study will:

3. Assess route and mode choices of neurodiverse populations and examine the variables (in both the built and social environment) that can impact these choices.
4. Determine the types of streetscapes that are comfortable and accessible for neurodiverse populations (those with ADHD or who are on the autism-spectrum) and compare how these relate to complete streets planning practices.

This research is conducted as part of a PhD Dissertation.

### **What does participation involve?**

Participation in the study will consist of a two-part one-on-one interview with the student researcher, Samantha Leger. The first portion of the interview (~20 minutes) will be conducted in-person, and will focus on questions regarding:

1. Your current transportation practices, and
2. Your preferred conditions for different modes.

After this interview is complete, you will then go on a walk-along with the student researcher to discuss your experiences of different street typologies and streetscape elements. During the

interview, you will be asked questions such as *How does this street make you feel? What features of the street are most noticeable to you and in what way? Would this be a street you typically travel on? What modes would you feel comfortable using on this street?* You will have the options of two routes to partake in for the walk-along. Both routes will start from the University of Waterloo campus. In Route 1, you and the researcher will walk into the Northdale community and loop back to the University of Waterloo campus. In Route 2, you and the researcher will walk to the Waterloo-Park ION stop and take the ION to Uptown Waterloo and then walk back. A map of both routes are included below. **Please bring your WatCard with you for the interview if you are interested in going on Route 2 as it will be needed to access the ION.**

During the interview, the researcher will bring printed-out copies of the route and you will have the option to mark-up and annotate a copy of the route during the walk.

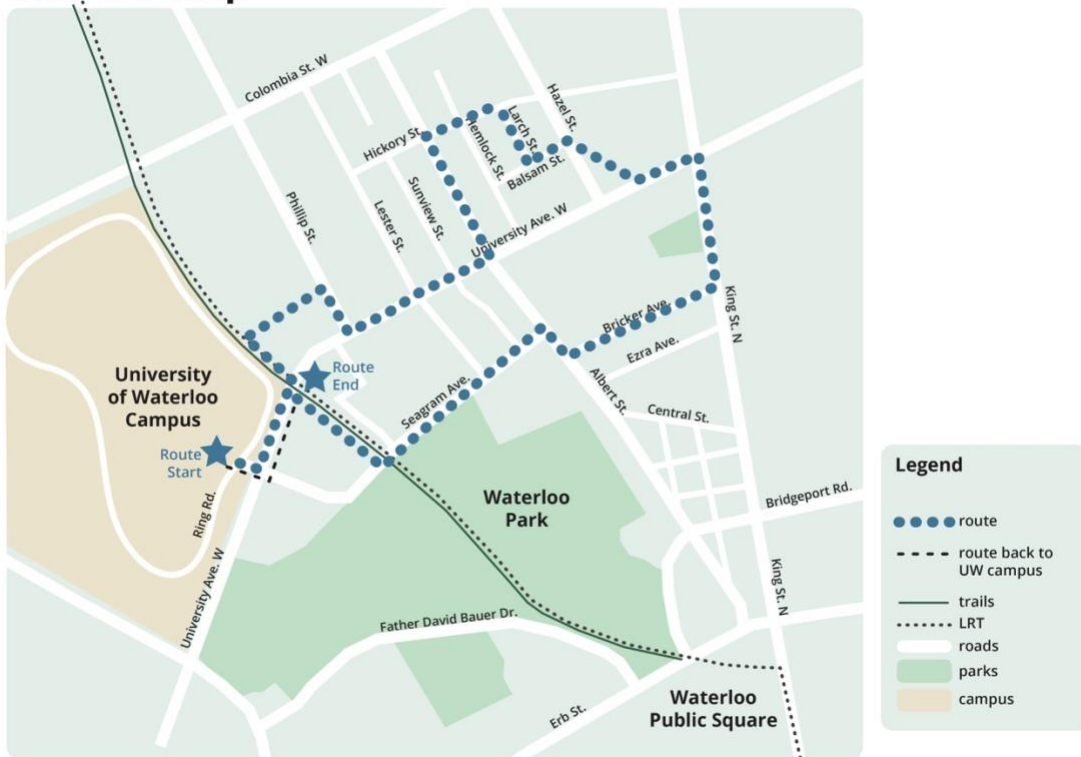
If a part of the pre-planned route becomes uncomfortable at any given time during the interview, an alternate route will be sought. You will not be taken anywhere that does not feel safe or comfortable to you.

The route will take 1 hour, and then the student researcher will walk with you back to campus (approximately 1.5 hour walk overall). A summary of your interview will be sent to you at the conclusion of this phase of research.

In total the time expected of you to participate in this interview will be approximately 2 hours. By talking about your experiences, you will help urban planners design more inclusive streets which accommodate for the needs of those who are neurodiverse.

After your interview, the student researcher will follow up with a summary of key findings from your interview to review.

## Route 1 Map



## Route 2 Map



### **Who can participate in the study?**

In order to participate in this study, you must be at least 18 years of age and self-identify as either Autistic or with ADHD. Both those who have self-diagnosed and been professional diagnosed are eligible to participate. You must also actively walk, cycle, take transit, or drive around your community and be a current student at the University of Waterloo

This phase of the study will involve up to 15 participants.

### **Is my participation voluntary?**

Yes, this study is completely voluntary.

### **Are there risks to participating?**

As this research involves walking and potentially taking transit in community, there are some risks to participating. Firstly, participants will be required to walk along various types of streets for approximately 1.5 hours and make crossings at intersections between the University of Waterloo and Uptown Waterloo. To mitigate risks to the walk, a series of precautions will be followed: crossings will only occur when prompted by the signalized intersection, and participants will only walk on the dedicated pedestrian infrastructure during the walk. If at any time a portion of the pre-planned route feels unsafe or uncomfortable to a participant, the interview will be stopped, and an alternative route will be sought. If you become tired, or feel fatigue, the interview will be stopped. The researcher will come equipped with water bottles for any participant who needs hydration during the walk. The researcher will also have a cellphone on hand in case of any emergencies.

You will not be identified by name in any publications or presentations that arise from this research. However, when out in the community, there is some risk to being identified. The

researcher cannot control who hears/sees participants partaking in the study whilst out on the walk-along interview.

Finally, as this research will be focused on your personal mobility experiences, there is some risk to the questions evoking negative emotions and/or memories. If a question, or the discussion, makes you uncomfortable, you can choose not to answer. You can stop participating in the interview at any time. If you choose to withdraw, your data will be deleted.

### **Will I receive anything for participating?**

Yes. For your time and effort participating in the study you will receive a VISA pre-loaded gift card of \$40. The amount received is taxable. It is your responsibility to report this amount for income tax purposes.

### **What are the benefits to participating?**

Participation in this study will not provide any personal benefit to you. The findings of this research will enhance our knowledge on transportation behaviors of neurodiverse populations, and how to plan more inclusive streetscapes and mobility options. Findings of this work will be shared to both academic researchers and practicing urban planning professionals.

### **Will my identity be known?**

Only the researcher will know which data is from your participation. The interviews will be audio-recorded and transcribed verbatim. Excerpts from the interview discussion may be quoted in publications and/or presentations that arise from this research. These quotes will be anonymous and not be attributed to identifying information from any individual participant.

### **Will my information be kept confidential?**

Only the researchers will have access to the names of the participants. Your identity will be kept confidential by assigning ID codes to the transcriptions, so they do not contain any identifying information. Audio files will be deleted once transcribed. The list of names will be deleted upon

study completion when they are no longer required to authenticate the results. For the duration of this study, all interview transcripts will be securely stored on team members' password-protected computers and in an encrypted cloud-based data management platform. After seven years, all information collected from the study will be deleted.

### Has the study received ethics clearance?

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #45403). If you have questions for the Board, contact the Office of Research Ethics, toll-free at 1-833-643-2379 (Canada and USA), 1-519-888-4440, or [reb@uwaterloo.ca](mailto:reb@uwaterloo.ca).

### Who should I contact if I have questions regarding my participation in the study?

If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact Samantha Leger by email at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) or Dr. Jennifer Dean at 519-888-4567 ext. 49107 or by email at [jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)

Thank you for your interest in this research study,

Samantha Leger  
PhD Candidate, RPP Candidate  
School of Planning  
University Waterloo  
200 University Avenue, West  
Waterloo, ON N2L 3G1  
[sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca)

Dr. Jennifer Dean  
Associate Professor  
School of Planning  
University Waterloo  
200 University Avenue, West  
Waterloo, ON N2L 3G1  
519-888-4567 x49107  
[jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)

## Consent

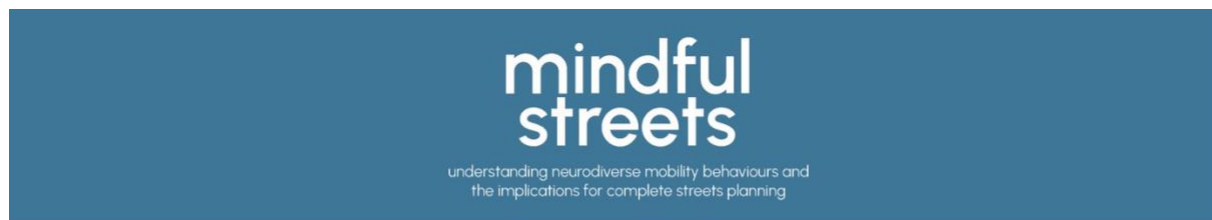
**Mindful streets:** understanding neurodiverse transportation behaviours and the implications for complete streets planning.

### Phase 2: Neurodiversity on the street: walk-alongs in Waterloo.

Prior to the interview you will be asked if you have read and understood the Letter of Information and provide your consent to the following questions:

4. Do you agree to participate in this research study?
5. Do you agree that the interview can be audio-recorded?
6. Do you agree that anonymous quotations can be used in reports, be used in publications and/or presentations that arise from this research. These quotes will be anonymous and not be attributed to identifying information from any individual participant.

Phase 2 recruitment materials:



# Do you identify as Autistic or with ADHD?



Are you an active walker, cyclist,  
transit rider, or driver?

**We want to speak to you about how to  
design more inclusive streets for those  
who are neurodiverse!**

The University of Waterloo School of Urban Planning is conducting a study to **explore current transportation practices and preferences for different modes of travel for students who identify with ADHD or ASD (Autism Spectrum Disorder) through go-along interviews.** This study will help transportation planners better accommodate the unique mobility needs of people who are neurodiverse in their policies and practices.

For more information on the study, or to register for participation, please see our website: [uwaterloo.ca/mindful-streets-project](http://uwaterloo.ca/mindful-streets-project) or scan the QR code below.



This study is being conducted as part of a PhD dissertation. The lead researchers are PhD Candidate Samantha Leger, [sjleger@uwaterloo](mailto:sjleger@uwaterloo) and Associate Professor Jennifer Dean [jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)



This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board.

**\$40**

Visa giftcard  
provided for  
participation

## Draft Email Script: Phase 3

**Subject Line:** Invitation to participate in Mindful streets: Phase 2.

Hello <First name> <Last name>,

My name is Samantha Leger, and I am a PhD Candidate from University of Waterloo. I am reaching out about your potential participation in a research study about the **transportation experiences of neurodiverse populations and the implications for complete streets planning**.

Recently you indicated your interest in participating in the study through our website. Thank you again for your interest, I am pleased to invite you to participate in the study.

As part of this research, you will be asked to take part in two one-on-one interviews with the student researcher, Samantha Leger. The first interview (~20 minutes) can be conducted virtually, and will focus on questions regarding:

1. Your current transportation practices, and
2. Your preferred conditions for different modes.

We are scheduling virtual interviews throughout June. You are welcome to book an interview time directly through our Calendly site: [LINK](#). I have dates available Tuesday-Friday, 9:00am-7:00pm. If you prefer, you are also welcome to simply reply to this email with your preferred date and time.

After this interview is complete, we then invite you to go on a go-along with the student researcher to discuss your experiences of different street typologies. You will have the options of two routes to partake in for the walk-along. Both routes will start from the University of Waterloo campus. In Route 1, you and the researcher will walk into the Northdale community and loop back to the University of Waterloo campus. In Route 2, you and the researcher will walk to the Waterloo-Park ION stop and take the ION to Uptown Waterloo and then walk back. A map of both routes in the attached Letter of Information. **Please bring your WatCard with you for the interview if you are interested in going on Route 2 as it will be needed to access the ION.** During the interview, you will be asked questions such as *How does this street make you feel? What features of the street are most noticeable to you and in what way? Would this be a street you typically travel on? What modes would you feel comfortable using on this street?* A summary of your interview will be sent to you at the conclusion of this phase of research.



For more information, you can read the FAQ page of our website (LINK) which answers common questions about the study or review the Letter of Information which is attached to this email.

We are scheduling walk-along interviews between (INSERT DATES). You are welcome to book directly through our Calendly site: LINK. If there is not a convenient time available for you, please let me know and we can look to later weeks.

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board.

I look forward to speaking with you and if you have any questions about the study or the interview, please do not hesitate to contact me at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca).

Sincerely,

Samantha Leger, PhD Candidate  
School of Planning  
University of Waterloo  
[sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca)

Dr. Jennifer Dean  
School of Planning  
University of Waterloo  
[jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)



### Interview Appreciation E-mail Phase 2

Dear: [NAME],

A sincere thank you for your participation in this phase of the *Mindful Streets* research study about the **transportation experiences of neurodiverse populations and the implications for complete streets planning**. Your feedback is helpful to better understand how to plan and design inclusive streetscapes that accommodate all ages and abilities.

At this time, I have reviewed the transcript of our interview and have summarized the below key highlights:

#### LIST HIGHLIGHTS

If there are any key elements of your experience you do not feel are captured, or any that you feel are misrepresented, please let me know at your earliest convenience. This will ensure our analysis is as accurate to your lived-experience as possible.

Please remember that your identity will be kept confidential and securely stored. Once the study is complete, general anonymized findings will be combined and reported in summary research reports and publications. If you wish to obtain a summary report of the study, please contact Samantha Leger at [sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca) or visit the study website at WEBSITE LINK

As a reminder, this research has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB #45403). If you have questions for the Board, contact the Office of Research Ethics, toll-free at 1-833-643-2379 (Canada and USA), 1-519-888-4440, or [reb@uwaterloo.ca](mailto:reb@uwaterloo.ca).

Please do not hesitate to contact us if you have any questions or comments using the contact information available on the website.

Sincerely,

Samantha Leger

Samantha Leger, PhD Candidate  
School of Planning  
University of Waterloo  
[sjleger@uwaterloo.ca](mailto:sjleger@uwaterloo.ca)



Dr. Jennifer Dean  
School of Planning  
University of Waterloo  
[jennifer.dean@uwaterloo.ca](mailto:jennifer.dean@uwaterloo.ca)

## APPENDIX B: ETHICS APPROVAL

### UNIVERSITY OF WATERLOO

#### Notification of Ethics Clearance to Conduct Research with Human Participants

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Principal Investigator: Jennifer Dean

Student Investigator: Samantha Leger

File #: 45403

Title: Mindful Streets: understanding neurodiverse transportation behaviours and the implications for complete streets planning.

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The Human Research Ethics Board is pleased to inform you this study has been reviewed and given ethics clearance.

**Initial Approval Date: 07/20/23 (m/d/y)**

University of Waterloo Research Ethics Boards are composed in accordance with, and carry out their functions and operate in a manner consistent with, the institution's guidelines for research with human participants, the Tri-Council Policy Statement for the Ethical Conduct for Research Involving Humans (TCPS, 2nd edition), International Conference on Harmonization: Good Clinical Practice (ICH-GCP), the Ontario Personal Health Information Protection Act (PHIPA), the applicable laws and regulations of the province of Ontario. Both Boards are registered with the U.S. Department of Health and Human Services under the Federal Wide Assurance, FWA00021410, and IRB registration number IRB00002419 (HREB) and IRB00007409 (CREB).

This study is to be conducted in accordance with the submitted application and the most recently approved versions of all supporting materials.

**Expiry Date: 07/21/24 (m/d/y)**

Multi-year research must be renewed at least once every 12 months unless a more frequent review has otherwise been specified. Studies will only be renewed if the renewal report is received and approved before the expiry date. Failure to submit renewal reports will result in the investigators being notified ethics clearance has been suspended and Research Finance being notified the ethics clearance is no longer valid.

Level of review: Delegated Review

Signed on behalf of the Human Research Ethics Board



Karen Pieters, Manager, Research Ethics, karen.pieters@uwaterloo.ca, 519-888-4567, ext. 41495

This above named study is to be conducted in accordance with the submitted application and the most recently approved versions of all supporting materials.

Documents reviewed and received ethics clearance for use in the study and/or received for information:

file: Mindful Streets\_email invitation\_phase 1-July Updates.pdf

file: Mindful Streets\_Draft Contact Form\_Phase 1-July Update.pdf

file: Mindful Streets\_Draft Contact Form\_Phase 2- July Updates.pdf

file: Mindful Streets\_email invitation\_Phase 2-July Update.pdf

file: Mindful Streets\_Poster\_Phase 2-July resubmit.pdf

file: Mindful Streets\_Email Script Interview Refusal\_Both Phases.pdf

file: Mindful Streets\_Website Information-July Updates.pdf

file: Mindful Streets\_News Release Phase 1-July Updates.pdf

file: Mindful Streets\_News Release Phase 2-July Updates.pdf

file: Mindful Streets\_Draft Interview Guide.-July Updatesdocx.pdf

file: Mindful Streets Phase 2\_Sample Route Map.pdf

file: Mindful Streets\_Methods FlowChart\_BothPhases.pdf

file: Mindful Streets\_Demographic Questionnaire-Allphases- July Update.pdf

file: Mindful Streets\_LOI & Consent\_Phase 2-July Updates.pdf

file: Mindful Streets\_LOI & Consent\_Phase 1-July Updates.pdf

file: Mindful Streets\_email appreciation script\_Phase 1-July Updates.pdf

file: Mindful Streets\_email appreciation script\_Phase 2- July Updates.pdf

Approved Protocol Version 3 in Research Ethics System

**This is an official document. Retain for your files.**

**You are responsible for obtaining any additional institutional approvals that might be required to complete this study.**

## **APPENDIX C: INTERVIEW GUIDE SIT-DOWN INTERVIEWS**

Hello, and thank you for joining me today to discuss mobility patterns of neurodivergent populations. In this study, we are interested in exploring the different transportation behaviours, opportunities, and challenges for those who are neurodivergent, including those who are autistic or have ADHD. We want to stress, there are no right or wrong answers to the questions today. Our goal is to better understand the unique transportation experiences and needs of those with neurodivergence. **Provide time to self-disclose as member of neurodivergent community.** We expect the interview to take up to 20-30 minutes. Everything you share with us today will be anonymized in our reports and presentations. You are, of course, welcome to skip any question that you are not comfortable answering, and you can stop the interview at any time. If you would like me to repeat or rephrase a question, please do not hesitate to ask. Before we get started, I am going to ask a few questions to confirm your consent in participating:

- Have you received and read the Letter of Information?
- Do you agree to participate in this research study?
- Do you agree that the interview can be audio-recorded?
- Do you agree that anonymous quotations can be used in reports/publications and/or presentations that arise from this research. These quotes will not be attributed to identifying information from any individual participant.
- Any other questions before we start?

### **BLOCK 1: BACKGROUND**

1. To start, would you mind sharing with me your name, and your current city/community and for how long you've lived there, and what you currently do for a living?
2. How do you identify as neurodivergent and In your opinion, how does being neurodivergent most impact your everyday life?

## BLOCK 2: CURRENT TRANSPORTATION BEHAVIOUR

1. Can you tell me about a common trip you take, including where you go, why, and what mode (cycling, walking, transit, car) you chose for the trip?
2. Does this trip reflect how you normally travel?
3. How do you feel in this trip?
4. What factors affect your decision-making around what modes you take for your trips? (prompts: finances, timing, mode availability, purpose of trip, vs personal factors)
5. Can you tell me about a challenging experience you had getting somewhere?
6. Are there any accommodations you make for yourself to avoid those challenges?
7. Are there any types of scenarios or conditions you specifically look to avoid when choosing your mode of travel for a trip?
8. Referring back to the last trip you took, if your regular mode was not available to you, would you have an alternative? What factors influence your choice for a preferred alternate mode?
9. Are there any modes you currently avoid, or prefer not to travel by? If so, why?
10. What type of trip would you take if you were to use this mode? What conditions would make it more comfortable/accessible to you?
11. When you need to travel somewhere new, how do you plan your trip? What are your steps for situating and navigating yourself in a new place?
12. Do you have a preferred mode for when travelling into a new place?

## BLOCK 3: PREFERRED CONDITIONS

13. What are your favourite places to walk/cycle/drive in your community? Why is that?

## BLOCK 4: FUTURE TRANSPORTATION DIRECTIONS

1. What ways do you think being neurodivergent most impacts the transportation behaviours we discussed above?

2. If there could be one thing you could tell transportation planners or engineers about your travel needs or preferences, what would it be?
3. Is there anything else regarding your travel behaviours and preferences that you would like to share with us?

## APPENDIX D: INTERVIEW GUIDE GO-ALONG INTERVIEWS

Hello, and thank you for joining me today to discuss and reflect on street typologies and preferences of neurodiverse populations. Over the course of the next hour, we will walk various ‘complete streets’ within Waterloo, and our goal is to understand what elements feel comfortable, or uncomfortable to you and why. We want to stress, there are no right or wrong answers to the questions today. Everything you share with us today will be anonymized in our reports and presentations. You are, of course, welcome to skip any question that you are not comfortable answering, and if you would like me to repeat or rephrase a question, please do not hesitate to ask. **Provide time to self-disclose as member of neurodivergent community.** Before we go, we will review our route together. If during the route you feel uncomfortable or unsafe, the interview will be stopped. If you would like to change the route or avoid any particular street, please let the researcher know and this will be accommodated. Before we get started, I am going to ask a few questions to confirm your consent in participating:

- Have you received and read the Letter of Information?
- Do you agree to participate in this research study?
- Do you agree that the interview can be audio-recorded?
- Do you agree that anonymous quotations can be used in reports/publications and/or presentations that arise from this research. These quotes will not be attributed to identifying information from any individual participant.
- Any other questions before we start?

*\*\*As these interviews will be based on the perceptions of the participants, the questions are meant to help guide discussion and will be based on the below topics\*\**

1. As we walk down this street, how do you feel? What elements of the street stick out to you?
2. Can you tell me what’s noticeable, and why?
3. What senses are notable? What do you hear, see, or smell? which sense is most prominent and why?
4. Would this be a street you would choose to travel on? Why or why not?
5. ION stop: how do you find this stop- can you walk me through how you would navigate to the train?
6. Ask about bus stops- signage, wayfinding signage.

7. What modes (cycling, walking, transit, or driving) would you feel comfortable taking on this street?
  - a. Ask about:
  - b. Setbacks- Separation distances of pedestrian infrastructure to the street (perceived noise/sensory overwhelm)
  - c. Bike-lane infrastructure
  - d. Transit stop infrastructure
  - e. Streetscape furniture
  - f. Intersection/crossing design
  - g. Enclosure
  - h. Driveway entrances/ conflict points
  - i. Signage and wayfinding
  - j. Landscaping/shading
  - k. Lighting
8. How does this street compare to the previous street?
9. If you were travelling with friend or family member- does this change how you feel/experience places? Who and why?