BICYCLING IN HAMILTON

BICYCLING IN HAMILTON: CHALLENGES ASSOCIATED WITH BICYCLING AND CYCLISTS' SUBJECTIVE IDENTITIES

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Challenges Associated with Bicycling and Cyclists' Subjective Identities

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ABSTRACT

In order to adequately design for and promote safe and regular use of the bicycle as a form of active transportation, researchers and policy-makers alike would benefit from the input of practiced bicyclists. These lay experts possess unique experiential knowledge of local routes, gaps in the network and the degree of comfort afforded by different types of infrastructure. Furthermore, these individuals are adept at commenting on subjectively valuable aspects of bicycling, which may assist in informing promotion and marketing of this activity. This research draws on the knowledge of lay experts who regularly bicycle in Hamilton, Ontario. The objectives of this research were to identify and understand the challenges associated with bicycling in Hamilton, and to explore the subjective identities of Hamilton's cyclists. A thematic analysis of 10 semi-structured interviews was conducted and the following themes were identified and explored: an array of physical, structural and social deterrents to bicycling exist in Hamilton; and the identities of Hamilton's cyclists are complex, locally rooted and multidimensional in nature. Using a critical lens, with the help of the Social Ecological Model of Health and Identity Theory, this study draws the following conclusions: cyclists are well-equipped to critically evaluate the urban spaces through which they travel; cyclists may play an important role in encouraging non-users to take up bicycling; and cyclists and auto drivers may benefit from collaborating over mutually beneficial goals. Furthermore, while many individuals who ride bicycles do identify themselves as "cyclists" this terminology can be contentious and the identity is heavily rooted in cyclists' local context. Although this identity is primarily experienced individually, a sense of community does exist; and the identity often spans beyond the simple action of riding a bicycle.

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Chapter 1: Introduction

Bicycling represents the confluence of productive travel time, light physical activity, and oftentimes a rewarding sensory experience. Increasing levels of urban cycling offers many potential benefits, including: improved population health, a reduction in daily commute times, mitigating air and noise pollution and the creation of calmer urban streetscapes. Countries in Europe have been developing cycling infrastructure for decades, and municipalities in North America are increasingly following suit. All too often, however, infrastructure is developed without consulting the very population it is designed to support. In order to design effectual and sustainable interventions, it is necessary to first understand the challenges experienced by people on bikes, and moreover, the many reasons these individuals value and continue to engage in cycling. One means through which to explore these constructs, is through the notion of identity.

Exploring constructs of cyclist identity enables the opportunity to conceptualize cycling as more than simply a mode of urban transport. Understanding who bicyclists are and what cycling means to them allows policy-makers, advocacy groups and urban planners to design optimal physical and social interventions; to both increase cycling modal share, which refers to the number of individuals who bicycle; and to create an experience that is joyful for riders. Notably, cycle infrastructure and intervention are often relegated to fields such as transport planning or sport and recreation. Exploring the individual and social perspectives that surround cycling reveals fascinating opportunities for continued inquiry into the social and physical realities of contemporary urban life. Correspondingly, this Masters thesis has two primary intentions: firstly, this research

seeks to identify the challenges that exist when bicycling in Hamilton, Ontario; and secondly it explores the subjective identities of Hamilton's cyclists.

1.1 Background Information

Hamilton is a mid-sized city, with a population of roughly 520,000 residents (Census Data for Hamilton, 2015). The city is approximately 1,117 square kilometers, spread over a diverse landscape that includes the shoreline of Lake Ontario, upper and lower portions of the Niagara Escarpment, the Valley of Dundas and the communities and farmlands eastward to Winona (Weaver, 2015). While Hamilton is subject to Canadian winters, the lake effect produced by Lake Ontario tends to render the city's winters relatively mild, often characterized by less snow than many other areas in the province. Due to these factors, the city is well suited to cycling for much of the year, and many residents take advantage of this opportunity.

According to the 2011 National Household Survey, 0.7% of Hamilton residents commute to work by bicycle (Statistics Canada, 2015) placing Hamilton below the provincial average for bicycle commuting, which is 1.2% (Ontario Ministry of Finance, 2013). Despite the low number of commuters, cycling culture in Hamilton is visible; with a number of city councilors, non-profit organizations and businesses supporting the continued effort towards a stronger cycling network. In 2013, Share the Road awarded Hamilton Silver in their Bicycle-Friendly Communities award (Share the Road, 2016); and the city has been steadily making improvements to its cycling network. As such, Hamilton has the potential to become a progressive leader in cycling-friendly initiatives, given the appropriate action in upcoming years.

1.2 Justification for Research

There are many compelling reasons to increase urban cycling rates. Statistics obtained by the 2011 National Household Survey (NHS) indicate that roughly 93% of employed Ontarians commuted to work in 2011 (Ontario Ministry of Finance, 2013). Of these commuters, a mere 1.2% rode bicycles (Ontario Ministry of Finance, 2013). The NHS also indicates that Ontarians have the longest average commute times in Canada, roughly 27.6 minutes, compared with the national average of 25.4 minutes (Ontario Ministry of Finance, 2013). As well, concerns exist surrounding many North Americans' sedentary lifestyles and the health complications that result. For example, Wing et al. state: "A large number of epidemiological studies show that obesity and a sedentary lifestyle are independently related to the chances of developing diabetes" (Wing, et al., 2001, p. 117). Various studies have confirmed correlations between lifestyle factors, such as a lack of regular physical activity, and the onset of type 2 diabetes in later life (Simpson, Shaw & Zimmet, 2003; Hu, et al., 2001). According to the report *Diabetes in Canada*, 2.5 million Canadians were living with diabetes in 2008/2009 (Public Health Agency of Canada, 2011). A recent World Health Organization report estimates the global prevalence of diabetes at 8.5% in the adult population; nearly double it's 1980 figure (WHO, 2016). The report specifically calls upon governments and planners to create built and social environments that enable physical activity. Sedentary lifestyles are also known to increase the risks of obesity (Manson, Skerrett, Greenland & VanItallie, 2004; Martínez-González, Martinez, Hu, Gibney & Kearney, 1999), cardiovascular

disease (Barnes, 2012; Wilmot, et al., 2012), and challenges associated with mental health (Bonnet, et al., 2005).

Taking into account commuter times, vehicle congestion, population and environmental health, an argument exists for enabling and encouraging active transportation amongst Ontarians. I have chosen to conduct this research in the city of Hamilton, Ontario, due to my geographical proximity to the city, my access to various resources and social networks within the city, and due to Hamilton's already existing momentum towards active transportation and cycling.

To encourage cycling as a means of active transport, it is necessary to understand the challenges that people riding bikes currently face. To do this, I will draw on the knowledge of 'lay-experts', individuals who regularly cycle throughout Hamilton. Furthermore, I wish to explore how these individuals subjectively understand themselves and what role cycling plays in their lives. Damant-Sirios, Grimsrud and El-Geneidy (2014) suggest that understanding 'types' of bicyclists can assist in creating better policy interventions, which in turn helps increase local cycling modal share and frequency. Furthermore, the following explanation by Skinner and Rosen explicates the importance of understanding identity when planning for cycling:

> To analyze this fully, it is helpful to deploy the concept of identity: this term enables us to think about the relationship between the individual and their social context. The notion of identity can help us move beyond a 'rational choice' model of transport behaviour posited on an abstract universal individual, and replace it with an account of the differences in perspective and action that emerge from

> cultural variations between social groups. This should help us better appreciate the dynamics and difficulties of modal shift – and hence imagine more credible ways of achieving this. (2007, p. 85).

Presently, there is quantitative Ontario-based research related to bicycle route choices (Aultman-Hall & Kaltenecker, 1999), national research comparing helmet legislation and corresponding use (Dennis, Potter, Ramsay & Zarychanski, 2010) as well as much research surrounding accidents and fatalities (see Rowe, Rowe & Bota, 1995 and Aultman-Hall & Hall, 1998). However, there is a distinctive lack of qualitative social science literature regarding cycling in Ontario.

This research is important for a number of reasons. Studying cycling from a purely quantitative outlook omits a thorough understanding of cyclists' experiences, resulting in a one-dimensional perspective guided largely by statistics and numerical data. This fails to grasp the highly experiential nature of cycling, a facet which desperately requires attention if more individuals are to be encouraged to ride. Purely quantitative data cannot explore the impact of social constructs such as gender, age, worldview, and social status on a user's experience cycling throughout a city. Without this valuable knowledge, city planners and cycling advocates alike run the risk of perpetuating disparities which already exist in cycling, thus continuing to build on a unilateral movement that fails to adequately embrace and accommodate newcomers. According to Rosen, Cox and Horton (2007) "the term 'cycling' tends to homogenize a remarkable plurality of lifeworlds, histories, structures, and cultures and a vast range of sometimes parallel and sometimes interwoven activities" (p. 1). A qualitative exploration of cyclists is beneficial in exploring the

overlapping and diverging trends, patterns, understandings and meanings inherent to this complex practice.

1.3 Research Questions and Objectives

This project is designed to identify the strengths and weaknesses of the current cycling conditions in Hamilton; and to explore the subjective identities of Hamilton's bicyclists. The research questions guiding this study are as follows:

1) What are the physical, structural and social challenges associated with bicycle riding in Hamilton? If applicable, how are participants overcoming these challenges?
2) Do individuals who ride bikes in Hamilton identify themselves as 'cyclists'? Why or why not?
3) If applicable, how were participants' cycling identities formed? How do they define or understand this identity?

In line with the above research questions, this project aims to satisfy the following research goals: to gain a multi-dimensional understanding of the challenges associated with bicycle riding in Hamilton; to explore and learn more about individuals who cycle, and what role bicycling plays in their lives. To satisfy these goals, the research objectives of this thesis are as follows:

1) To identify the challenges associated with cycling in Hamilton by drawing on the knowledge of current bicyclists who are familiar with the city;

2) To determine whether or not individuals who bike in Hamilton identify themselves as 'cyclists';
3) To explore why individuals do or do not identify as 'cyclists', and what this identity means to them.

1.4 Conceptual Frameworks

For the purposes of this study, I approach cycling from a critical perspective, with a secondary focus on health and wellness. I believe that some individual lifestyle changes and resulting improvements to population health might be achieved if deterrents to cycling are addressed. Furthermore, many models related to public and population health focus on individuals altering unhealthy behaviours in favour of adopting a healthier lifestyle. For instance, the Theory of Planned Behaviour (Ajzen, 1991) centers on an individual's intention; and the Stages of Change Model (Prochaska, 2013), outlines 6 distinctive steps a person undergoes in order to achieve change. Both place a great deal of onus on the self-determining individual.

In the interest of consciously rejecting these somewhat punitive approaches to health and wellness, I utilize a holistic framework that acknowledges multifaceted influences on human health. Accordingly, I am using the Social Ecological Model of Health (SEM) as a framework to analyze challenges involved when bicycling in Hamilton (Stokols, 1996). At SEM's core is the acknowledgement that human behaviour is subject to multiple levels of influence, including intrapersonal (biological and psychological), interpersonal (social and cultural), organizational, community, physical environment and policy (Sallis, Owen & Fisher, 2008). This multidimensional approach makes SEM an

excellent framework to apply to this research study as it effectively captures the complexities inherent to individual action, and the myriad of influences that affect cycling in Hamilton, Ontario.

To assist in conceptualizing the identity component of my thesis, I draw from identity theory, which is a microsociological theory. According to Hogg, Terry & White (1995) identity theory examines the reciprocal relationships between an individual and society in order to understand social behaviour. The theory asserts that there is a relationship between individual identity and behavioural outcomes, and that behaviour is influenced by the identities an individual regards as the most self-relevant (Hogg, Terry & White, 1995). This concept, referred to as 'identity salience' suggests that: "identities positioned higher in the salience hierarchy are tied more closely to behaviour" (Hogg, Terry & White, 1995, p. 257). This research does not attempt to categorize bicyclists based on an assessment of their dedication to the action of cycling. Instead, identity theory will assist in interpreting the experiences of bicyclists' in Hamilton, and striving to understand why these individuals self-identify as cyclists, what this identity means to them, and how this identity is actualized on a regular basis through cycling and other actions. Rooted in symbolic interactionism, identity theory provides a lens through which to understand the experiences of bicyclists and what it means to identify as a "cyclist" in an auto-dominated city such as Hamilton. It should be noted that when referring to a self-identified or otherwise categorized "cyclist", I use this term in place of the word "bicyclist", which is used more generally to refer to a person who rides a bike.

1.5 Positionality

The epistemological stance I adopt is that of constructionism. According to Burr (1995) "from a constructionist perspective, meaning and experience are socially produced and reproduced, rather than inhering within individuals" (as cited in Braun & Clarke, 2006, p. 89). Qualitative research recognizes the existence of multiple truths, realities and experiences, and as such does not seek to uncover a single objective answer to the research questions (Sparkes & Smith, 2013). Thus, as a researcher, I adopt an interpretative, exploratory approach to understanding the challenges bicyclists face in Hamilton, Ontario and the subjective identities of these individuals. As an individual for whom cycling has been important for the past seven years, and as someone who experiences bicycling in Hamilton, I acknowledge my connection to this subject. According to Adler and Adler (1987), I am a complete member researcher, as I am already a member of the group that I research (as cited in Dwyer & Buckle, 2009). Therefore, I recognize that my perspectives are in many ways informed by my own understandings and interpretations of the questions, responses and data provided by my study participants. This complexity is further discussed in Chapter 3.4.

1.6 Organization of the Thesis

This thesis has been divided into 5 chapters. Chapter 2 provides an overview of the existing literature; the first section focuses on impediments to bicycling and active transportation; and the second section explores current research related to cyclist identity. Chapter 3 describes the methodologies undertaken to recruit, collect and analyze data. Chapter 4 elaborates on the results of the analysis, incorporating literature where relevant

to discuss and further understand key findings. Finally, Chapter 5 details the conclusions that have been derived from this research, and provides some recommendations for further inquiry.

Chapter 2: Literature Review

This chapter of the thesis provides an overview of the existing literature regarding deterrents to bicycle riding, and bicyclists' identities. The review is divided into two sections. The first addresses challenges associated with cycling on environmental, structural and social levels, and the second addresses previous attempts to categorize or understand bicyclists' identities. The chapter concludes with a discussion of the importance of examining deterrents to cycling, and constructs of identity in relation to one another.

2.1 Physical Deterrents to Bicycling

Research suggests that a number of environmental challenges to bicycle riding exist, including: built environment, land-use, urban density, a lack of bicycle-specific infrasturcture, and network connectivity (Gatersleben & Haddad, 2010; Pucher & Buehler, 2006). The following review summarizes key findings and trends within the literature, related to the above topics.

Built Environment. Research in the field of urban planning differentiates between the macro-level built environment and micro-level infrastructure, which exists within built environments. Handy, Boarnet, Ewing and Killingsworth (2002) suggest that built environment is a multidimensional concept, that "comprises urban design, land use, and the transportation system, and encompasses patterns of human activity within the physical environment" (p. 65). As such, the built environment refers to the physical layout of an urban or rural space, and the pre-existing systems that operate within this area to support and enable daily human activity. Infrastructure consists of micro-level

patterns of human activity, in this case related to transportation, which have been retroactively established within the pre-existing context of the built environment. As such, infrastructure is dynamic and the built environment is relatively static, established generations ago and not easily altered. This differential between built environment and infrastructure will be maintained throughout the course of this research. From this perspective, the built environment constitutes city designs, structures and systems that are relatively fixed and were set in place generations ago. Infrastructure, however, exists on a smaller-scale and is adaptable. As such, changes to infrastructure can be more easily implemented in stages, thus representing the potential to fundamentally alter human activity within the built environments of cities. These intricacies will be discussed further throughout the course of this research.

Scholars acknowledge the inherent interconnectivity between transportation modes, the built environment, and human health. Handy et al. suggest that a built-environment that is oriented towards active modes of transportation, such as walking and cycling, can enhance both the viability and attractiveness of these activities, as well as reduce physical and psychological barriers to engagement (2002). Specifically, mixed land-use, street connectivity and good design are all factors that contribute positively to this goal. Heinen, van Wee and Kees Maat (2010) note that compact cities, characterized by mixed-land use and a denser road structure, facilitate active transportation. "The argument is that in denser urban areas, distances between locations are shorter, and consequently can be bridged more easily on foot or by bicycle" (Heinen et al., 2010, p. 62). One fact to note is that higher density urban areas inadvertently lead to lower levels

of car ownership, which can have a positive impact upon cycling (Litman, 2007); this is especially true when compared to residents living in suburban areas (Dill & Voros, 2007). Mixed-land use, understood as the number and variability of amenities available within a reasonable distance of one another, also positively impacts cycling (Heinen et al., 2010).

When promoting physical activity with the aim of improving population health, the primary challenge is to understand the relationship between the built environment and individual travel choices, then design urban transportation models that facilitate increases in human activity, thus improving physical and mental health (Handy et al., 2002; Jackson, 2003). My research endeavours to understand this relationship and acknowledge its wider implications for population health.

Infrastructure. Handy et al's definition suggests that " 'transportation system' includes the physical infrastructure of roads, sidewalks, bike paths, railroad tracks, bridges and so on, as well as the level of service provided as determined by traffic levels, bus frequencies and the like" (2002, p. 65). This research project addresses human activity within transportation systems, as it relates to cycling.

An abundance of research indicates that the presence of bicycle-specific infrastructure positively correlates with the number of bicyclists on the road. For example, a review conducted by Pucher (2001) indicates that countries with more developed cycling facilities and infrastructure not only boast a higher cycling modal share, but also have improved levels of bicycle safety. Likewise, Pucher, Dill and Handy suggest: "most of the aggregate-level studies [find] a positive and statistically significant relationship between bike lanes and levels of bicycling" (2010, p. 107). Bicycle-specific

infrastructure includes measures such as: on-road bicycle lanes, off-street paths, bicycle boulevards and cycletracks. Bicycle lanes are typically designated by a white line painted on each side of the road, with a bicycle icon and signage indicating the lane is to be used by bicyclists. Dill and Carr found that, "higher levels of bicycle-infrastructure are positively and significantly correlated with higher rates of bicycle commuting" (2003, p. 7). The authors were able to quantify this correlation, declaring that an approximate 1% increase in workplace bicycle commuters exists for every additional mile of on-street bicycle lanes in the United States (Dill & Carr, 2003).

Off-street paths are paved, and separated from motor vehicle traffic (Pucher et al., 2010). Several studies have measured the influence off-street paths have on cycling behaviour and the data suggest mixed results. Factors such as gender, proximity to paths, availability of other infrastructure and confidence all influence the likelihood bicyclists will make use of off-road paths. While some studies found no correlation between the introduction of off-road paths and the number of bicyclists (Evenson, Herring & Huston, 2005), others determined that not only will bicyclists go out of their way to use off-road paths; but some individuals state they would seek other modes of transport if such facilities were not available (Pucher et al., 2010). In support of the latter, increases ranging from 1-2 % have been measured in some areas following the construction of bicycle paths (Barnes & Thompson, 2006).

Bicycle boulevards are defined as signed bicycle routes, typically found on low-traffic streets. These streets often contain other traffic calming methods, such as stop signs and speed bumps (Pucher et al., 2010). Several studies have determined that

bicyclists favour this type of infrastructure. Dill and Gliebe (2008) state that women, and less experienced bicyclists, display a particular affinity towards quieter routes such as bicycle boulevards. A survey conducted by Emond, Tang and Handy (2009) indicates that respondents are most comfortable riding on a "quiet street" – such as a bicycle boulevard.

Cycletracks are common in European cities, and are slowly being introduced in some North American cities as well. Cycletracks are similar to bike lanes in layout, however they offer a further degree of separation from motorized traffic; for instance using a curb, raised pavement or a line of parked cars (Pucher et al., 2010). Results related to cycletracks are very positive, users typically rate them higher than painted bicycle lanes (Bohle, 2000; Jensen, 2007), and studies have found an increase in bicycle traffic and a decrease in vehicular traffic following the introduction of cycletracks (Jensen, 2008; Transport for London, 2004).

Evidently, transport systems such as bicycle lanes, off-road bicycle paths, bicycle boulevards and cycletracks have meaningful contributions to make towards not only frequency of usage, but also bicyclists' perceived and real safety and comfort levels. Therefore, further understanding the impact of bicycle-specific infrastructure on Hamilton's bicyclists is a valuable and relevant pursuit.

Connectivity. Not only does the presence of infrastructure such as bike lanes play an important role in determining usage, infrastructure connectivity is also relevant. Connectivity can be understood as the physical linkages between bicycle-specific infrastructures, for instance bike lanes, cycletracks, and mixed or off-road paths. A disconnected network has bicycle infrastructure in pockets throughout the city, but

contains gaps between the pockets, obstructing bicyclists' ability to travel smoothly throughout the city. Instead, they are forced to merge with auto traffic during some portions of their ride, or divert from the most direct path to remain on safe, relatively bicycle-friendly routes.

Research by Titze, Stronegger, Janschitz and Oja asserts that connectivity of bicycle lanes is positively associated with cycling for transport (2008). A study completed in Delft, Holland, evaluated the impacts of improving the cycle route network connectivity. Researchers found a 3% increase in the share of bike trips in the intervention area, which received new bicycle underpasses and bridges, new bicycle paths, and exemption of cyclists from one-way traffic requirement; and observed no change within the control area during a 3-year follow-up (Wilmink & Hartman, 1987). Connectivity is particularly important for encouraging non-riders to take up cycling. Dill and Voros (2007) found that a lack of connected bicycle paths is a significant deterrent for non-cyclists: their participants suggested they would cycle more if connectivity were improved. More recently, Dill (2009) collected GPS data from 166 bicyclists in Portland, Oregon; determining that a disproportionately large amount of cycling trips occurred on streets with bicycle lanes, separate paths or bicycle boulevards. This reiterates the need for a connected cycle network that facilitates ease of movement between these routes. A network is arguably only as strong as its weakest connection. As such, even if excellent cycling infrastructure exists within a city – it's utility can ultimately be measured by how easily a bicyclist can move throughout it.

This section of the literature review outlined the importance of understanding a city's physical characteristics and transport systems as they relate to cycling. Topics reviewed include the built environment, specifically land use and density; infrastructure, such as bicycle-lanes, off-road paths, bicycle boulevards and cycletracks; and network connectivity. Cycling is an inherently physical, embodied experience, which is highly dependent upon context. Therefore, understanding urban layouts as they relate to daily physical activity and transport is crucial to determining the challenges that exist when bicycle riding.

2.2. Structural Deterrents.

Beyond physical deterrents to bicycle riding, such as lack of infrastructure, or poor urban layouts, structural deterrents also exist. Structural deterrents encompass measures such as bicycle-friendly workplaces and policy-level support for cycling. The following section reviews the literature related to structural elements that support or dissuade cycling.

Bicycle-friendly workplaces. The presence of bicycle-friendly facilities at the workplace produces mixed results in relation to employees' commuting modes. A number of studies have found that safe bicycle parking is the most important factor considered when an employee decides whether or not to cycle to work (Stinson & Bhat, 2004; Hunt & Abraham, 2007; Martens, 2007). Other factors garnered more ambiguous responses. Research by Kingham, Dickinson and Copsey suggests that, "creating or improving changing facilities and secure cycle storage would promote cycling use…" (2001, p. 158). However, Stinson and Bhat found that the installation of showers at the workplace did not

increase the frequency with which individuals who already commute by bike, ride to work (2004). Similarly, Handy and Xing report, "having bicycle facilities (racks, showers etc.,) close to the workplace does not show a significant influence on bicycle commuting, suggesting that although they may be a welcome amenity, they do not seem to be a determining factor for bicycle commuters" (2011, p. 10). Therefore, bicycle-friendly facilities at the workplace may not play a large role in determining individual travel behaviour. In all likelihood, and in accordance with the social ecological model of health and health behavior change, interventions across a number of levels are necessary to meaningfully influence commuter modal choice.

England's Cycle-Friendly Workplaces Challenge demonstrates the importance of enabling cycling across a number of different levels. Following implementation of the initiative, 42% of employees suggested their level of cycle commuting increased over the duration of the project, this figure included individuals who began bicycle commuting during this time (Cleary & McClintock, 2000). The initiative provided funding to 62 successful candidate workplaces, instigating diverse and multifaceted changes at their worksites to encourage bicycle commuting amongst the roughly 77,000 individuals targeted (Cleary & McClintock, 2000). Changes ranged from installing workplace shower and locker facilities and improved bicycle parking storage, to increased education around the importance of physical activity and interest-free loans to help employees purchase bikes and equipment. The project produced a more even dispersion of employee bicycle commuting over the course of the year, whereas prior to its implementation, cycle commuting was concentrated around the summer months (Cleary & McClintock, 2000).

While other mitigating factors did exist for some individuals, for instance a change in the distance between their home and workplace, the project broadly supported the notion that providing bicycle-friendly facilitates at workplaces, combined with multilevel interventions, encourages employees to commute by bike.

Policy-level Support for Cycling. Federal, provincial and municipal support for cycling is crucial in determining the availability of safe cycling options. Research indicates that political commitment and well-designed transport and land-use policy play an important role in determining rates of bicycle usage (Pucher & Buehler, 2006; Pucher et al., 2010). Currently, Canada has no overarching national cycling strategy (Canada Bikes, 2015). At the provincial level, Quebec has displayed the most initiative in supporting cycling. In fact, Transport Quebec, the provincial ministry of transport, alongside the cycling organization Velo Quebec, has been active in planning, coordinating and funding a province-wide network of cycling paths (Pucher & Buehler, 2006). This initiative is part of a larger provincial cycling policy, adopted in 1995, which mandated that all provincial transportation infrastructure projects incorporate the needs of bicyclists into their design (Pucher & Buehler, 2006).

The results are indeed impressive; the island of Montreal has approximately 425 km of cycling facilities, 264 of which are off-street (Larsen & El-Geneidy, 2011). While the official bicycle modal share for Montreal approximately reflects the national average, according to Velo Quebec, central areas fall between 6-7% (Larsen & El-Geneidy, 2011). Yet with the exception of Quebec, building cycling infrastructure in Canada is done at the municipal level, and only with the support of local decision-makers. As is visible above,

this support is necessary to make meaningful progress on a city's cycling network. Without a unified national cycling strategy, municipalities must apply for external funding, or self-fund cycling projects and initiatives. This means municipalities differ in terms of their support for, and the resulting availability of, bicycle-friendly infrastructure.

At the municipal level, the City of Hamilton does have a Cycling Master Plan. The plan, called *Shifting Gears*, was last updated in 2009 and aims to guide the development and operation of Hamilton's cycling infrastructure for the next twenty years: "The City's vision is to have a transportation system that offers a choice of integrated travel modes, emphasizing active transportation (walking and cycling), public transit and carpooling" (City of Hamilton, 2010, p. i). The strategy aims to increase the visibility and presence of bicyclists such that 15% of all daily trips are being made by foot or bicycle, by the year 2040 at the latest (City of Hamilton, 2010).

In 2008, the city was home to a 254 km network of bicycle facilities including bike lanes, paved shoulders and major trails (Social Planning Research Council, 2014). The Cycling Master Plan proposed a total of 1,196 km of bicycle infrastructure by the year 2029, however, according the Social Planning Research Council (SPRC) "at the current rate of implementation of 22 km per year, Hamilton's Cycling Master Plan won't be complete until 2053" (SPRC, 2014). The SPRC report, *Progress on Hamilton's Bike Network* suggests that progress is not moving in accordance with the proposed timeline, possibly resulting from a lack of political will or willingness to meet proposed deadlines.

A number of citizen organizations, advocacy groups and non-profit organizations have expressed concern and frustration over City Hall's reluctance to make bold

commitments to cycling initiatives in Hamilton. As such, this research project, which examines challenges associated with bicycle riding in Hamilton, is both necessary and timely in order to further understand lay experts' perspectives of the city's current cycling network, and the challenges faced by users.

2.3 Social Deterrents

Research focused on the social deterrents to cycling acknowledges that individuals are inherently social beings, immersed within unique and varying cultural contexts. As such, the decision to cycle is influenced by factors that span beyond logistical and practical matters, such as infrastructure and available facilities. In many ways, the decision to cycle must be considered within the broader social context that an individual resides in. Psychology's theory of planned behaviour (TPB) is helpful in further understanding these tensions. "According to TPB, not only personal attitudes, but also *perceived social norms* are key factors affecting decision-making. Social norms can be defined as norms held by a society, or by smaller groups, which influence and regulate behaviour by functioning as informal social controls" (Heinen et al., 2010, p. 71). Research supports the propositions put forth by the theory of planned behaviour. Dill and Voros (2007) indicate that if an individual's coworkers cycle to the workplace, then that individual is more likely to cycle as well. Research also suggests that the social environment of a workplace can be associated with employee bicycle commuting patterns. For instance, if an individual's supervisor disapproves of commuting by bicycle, the employee is less likely to do so (Handy & Xing, 2011).

Social support thus plays an important role in determining cycling habits. Titze et al., suggest: "a supportive social environment (support from friends or family members as well as observing others bicycling) are potential determinants of active mobility and should therefore be considered when designing interventions" (2008, p. 257). As such, while cycling is oftentimes an individual activity, the literature acknowledges that this activity does not take place independent of the broader social context. An individual's social context can be influential in that person's decision to cycle or not to cycle. Therefore, further understanding the social influences relevant to cycling in the City of Hamilton could be important when designing interventions that encourage non-users to begin bicycling. Potentially, related to this is the notion of identity. Understanding why individuals identify as cyclists, their perceptions, interpretations and understandings of this term, and how it influences their day-to-day decision-making could inform the broader social context of cycling in this region. The following section of this literature review examines the concept of bicyclists' identities, to provide a framework for further exploring the results of this research.

2.4 Cyclist Identity

The effort to understand who cyclists are, what they desire, and why they ride has been undertaken in a number of different contexts. Whether cyclists are being typified behaviourally based on their bicycling habits and motivations; or subjectively, based on their understandings of themselves – categorizing cyclists is valuable for a number of reasons. Understanding the composition of this population can assist policy-makers in better designing infrastructure, facilities, and promotional interventions or campaigns for

those who already ride. It can assist workplaces in accommodating and encouraging bicycle commuting amongst employees, and help marketers and bicycle advocates target their audiences more efficiently. This section of the literature review will begin with an examination of recent attempts to categorize cyclists, before narrowing its focus to the research that is identity specific.

Classifying Cyclists. Perhaps the most well known effort to classify cyclists was done by Roger Geller, Bicycle Coordinator in the Portland Office of Transportation. The categorization was first developed as a means to better understand who was cycling in Portland, and four main groups of individuals were identified: Strong and Fearless, Enthused and Confident, Interested but Concerned and No way, No how (Geller, 2009). While these categories were initially created and assigned by a professional in bicycle planning, they have since been supported through independent surveys, polls and other study data, also taking place in Portland (Dill & McNeil, 2013).

Portland's 'Strong and the Fearless' category represents less than 0.5% of the population, or roughly 2,000 individuals (Geller, 2009). These individuals are described as 'bicyclists', and for them cycling is a very strong part of their identity. They are typically unfazed by hostile road conditions and represent the demographic that would be riding even if the city of Portland had not made such tremendous progress in developing their cycling infrastructure. For instance, bike messengers who are typically young, fit and predominantly male fall under this categorization; alongside other comparably tenacious individuals (Geller, 2009).

The 'Enthused and Confident' had been attracted to the city of Portland by the city's significant advances in cycling infrastructure. While they are comfortable sharing the road with traffic, they prefer doing so within bicycling-specific infrastructure such as designated bike lanes, and they appreciate quiet streets such as bicycle boulevards. Estimates suggest this category is comprised of roughly 22,000 individuals who regularly ride throughout the city; and that this demographic of cyclists is the main reason bicycle commuting doubled in Portland between 1990 and 2000 (Geller, 2009).

A much larger demographic identified in Portland, and likely present throughout much of North America, are citizens who are 'Interested but Concerned'. These individuals are hearing positive messages about cycling, enjoyed riding bikes as kids, and perhaps occasionally ride on a trail, path, or very quiet residential street. However, they are nervous around high-speed vehicular traffic and fear for their safety on main routes serving commercial and employment destinations. Geller (2009) estimates that roughly 60% of Portland's population falls under this category, or approximately 300,000 individuals.

Finally, the remainder of the population was identified as "No way, No how". This group is currently not at all interested in bicycling, and likely will not become interested even with improvements to infrastructure or facilities (Geller, 2009). These individuals have likely had minimal positive exposure to bikes over the course of their lives; they perceive barriers such as topography and weather as insurmountable; or they are genuinely not interested in trying out cycling.

Geller (2009) acknowledges that the boundaries between these categorizations are fluid and not always clearly defined. However, research involving a random sampling of 908 adults in Portland concluded that nearly the entire sample fit clearly into one of the four categories (Dill & McNeil, 2012). As such, the categorization is relevant and has been independently supported by research. As well "it is fundamental to understanding both the market for increasing bicycle transportation and what needs to be undertaken to cater to [bicyclists]" (Geller, 2009, p. 9). Thus, while this categorization was not initially determined through bicyclists' and non-cyclists' self-disclosure, it has been externally validated, and is useful in understanding some demographic characteristics in relation to urban cycling.

Another attempt to classify cyclists was undertaken in the Canadian context. Research from McGill University expanded on a purely behavioural analysis of cyclists to include 35 different variables related to bicycle usage, as such employing a more multidimensional approach (Damant-Sirois, Grimsrud & El-Geneidy, 2014). Researchers sought to develop a new cyclist typology, arguing that previous attempts to categorize cyclists focused primarily on behaviour or perceptions of cyclists – assessments that were viewed by the authors as one or two-dimensional. Accordingly, the study includes variables such as: external conditions, infrastructure, personal identity towards cycling, motivations for or deterrents to bicycle use, and individual backgrounds – specifically past cycling history (Damant-Sirois et al., 2014). One of the primary hypotheses estimated that "if experience during childhood influences adulthood habits, such as

smoking and time spent watching television, it could also affect travel behavior once people become adults" (Damant-Sirois, et al., 2014, pg. 7).

Surveying 2,644 respondents, and including 2,004 participants in the final analysis, authors identified four distinct categories of cyclists: dedicated cyclists, path-using cyclists, fair-weather utilitarian's and leisure cyclists (Damant-Sirois et al., 2014). 'Dedicated cyclists' represented 24 % of the sample population. These individuals were not significantly swayed by weather conditions, and suggested that speed, predictability and the flexibility inherent to bicycle use were major motivations in the decision to cycle. Encouragement from respondents' social circles and employers was also identified as a key factor influencing this group. Interestingly, many of these individuals identified as 'cyclists' and suggested bicycling was enjoyable. These respondents were less drawn towards dedicated cycling infrastructure and did not receive specific parental encouragement to bike as children (Damant-Sirois et al., 2014).

'Path-using cyclists' represented 36% of this population's sample. Akin to dedicated cyclists these individuals identified as a 'cyclist', this identity served as one of their primary motivations for use. Path-using cyclists considered bicycling to be convenient and fun, and these respondents were only slightly more affected by weather conditions than the dedicated cyclists. One main diverging characteristic between the path-using and dedicated cyclists was the former's preference for "a continuous bicycle route that is separated from car traffic by a physical barrier with specific signalization" (Damant-Sirois et al., 2014, pg. 14). Another defining characteristic was the parental

encouragement individuals in this group received in their early years, to cycle for both utilitarian and recreational purposes.

'Fair-weather utilitarians' represented 23% of the total sample, and they were seen as "contextual users" (Damant-Sirois et al., 2014). As such, these individuals sought out other transport options in the event of bad weather, and would also choose another mode of transport if it were deemed to be more convenient. These individuals were not likely to consider themselves 'cyclists'; peers and institutional encouragement could sway them, and they preferred to ride on dedicated paths.

The final population, 'leisure cyclists' represented 17% of the sample. These participants did identify themselves as 'cyclists' and interestingly they did not ride because it was a fast and convenient mode of transport – but rather because they enjoyed it. Perhaps unsurprisingly, they preferred not to cycle in adverse weather conditions and did desire separated, dedicated infrastructure when riding. Participants in this group were characterized as individuals who cycle as a hobby or a family activity (Damant-Sirois et al., 2014). The above study did more actively incorporate subjective identity into its analysis of bicyclists, and moreover, suggested consistent connections exist between bicyclist behaviour and identity. This work leaves much room for further analysis, in the fields of identity and transport behaviour, and the connections that exist between them.

Cyclist Stereotypes. Shifting focus to examine more thoroughly the notion of identity and what it means to be a 'cyclist'; a study conducted by Gatersleben and Haddad (2010) used surveys to gather data from both cyclists and non-cyclists, identifying *perceptions* around 'who' the 'typical bicyclist' is. Responses identified four main

categories: responsible bicyclists, day-to-day bicyclists, lifestyle bicyclists and commuters. Responsible bicyclists and day-to-day bicyclists shared several characteristics; both groups were stereotyped as considerate, responsible and kind. Responsible bicyclists were also perceived as consistently abiding by the rules of the road, wearing reflective or high visibility gear, using appropriate lights and obeying traffic signals. Meanwhile day-to-day bicyclists did not own any special equipment; they tended to wear regular clothes while riding and used their bikes to complete quotidian activities such as shopping (Gatersleben & Haddad, 2010).

Lifestyle bicyclists were seen as more avid or enthusiast bicycle users. For these individuals the bicycle was used for a range of purposes, and a significant portion of time and financial resources were dedicated to bicycling. Such individuals were likely to own specific equipment such as helmets, mirrors, Lycra, and clip on shoes. They were seen as interested in touring the countryside and riding to maintain personal fitness, for environmental reasons, and to take part in charitable fundraising work (Gatersleben & Haddad, 2010). Finally, commuter cyclists were perceived as young, assertive, attractive and well-educated typically male individuals, who cycled in all weather to and from their workplaces. (Gatersleben & Haddad, 2010).

This research is certainly interesting, however, it less explicitly investigates the *subjective* identities of cyclists. Rather, its focus is on understanding how others view cyclists or how cyclists stereotype themselves as a group. This begs the question: what does it mean to be a 'cyclist'? While out-group perspectives are indeed worthy of study, as they shape individual and social stereotypes and thus can influence public policy and

decision-making; exploring whether or not individuals who bicycle subjectively define themselves as 'cyclists' is especially important to further understand this demographic, and support them in their decision to ride.

Cyclist Identities. The most thorough qualitative work conducted on cyclists' identities, comes from UK-based Rachel Aldred. Aldred also does some marrying of identity and transport choices, however she employs the concept of 'cycling citizenship' to facilitate her analysis. She seeks to transcend the preoccupation with car-based mobility, and argues that transport and citizenship are inherently linked. According to Aldred, the "vision of 'cycling citizenship' challenges the image of the individual as a neoliberal consumer and the citizen as conceived primarily in national, formal political terms" (2010, p. 35). Aldred found her participants linked the practice of cycling to both social and natural local relationships, in the interest of facilitating friendlier, safer and healthier communities. As such, she argues that the cycling citizen is embodied and uses the practice of cycling to connect with their community in unique and holistic ways (2010). While her participants did not explicitly use the terminology of 'citizenship' they did describe facets of their identities that Aldred (2010) interpreted as connected to notions of citizenship.

Aldred's (2010) analysis begins with an examination of transport types, and their respective associations with citizenship. Many authors argue that high levels of private vehicle use and ownership produce particular types of cities, which then further facilitate automotive transport (Aldred & Woodcock, 2008). Aldred asserts that the car represents the privatization of public space; and conversely, public transport encourages social

cohesion and interaction, and the sharing of public space (2010). Interestingly, cycling falls between the two – social interactions are easily facilitated when cycling, however the bicycle is still ultimately a private means of transport (Aldred, 2010). This produces important and fascinating implications for citizenship and identity.

Aldred identifies four primary types of cycling citizens: the environmental citizen, the self-caring citizen, the locally rooted citizen and the citizen in the community. The environmental citizen represents the smallest group, and is marked by participants' discussions of their local environments: "While people found the identity of a 'cyclist' difficult to assume, cycling was described as a positive activity denoting care for one's environment, natural or social" (Aldred, 2010, p. 43). For a minority of participants, cycling was explicitly described as an effort to maintain a 'green' lifestyle.

The self-caring citizen sees physical exercise as morally and personally beneficial. Cycling represents freedom, independence and psychological benefits; Aldred's participants describe feeling happier, experiencing improved self-esteem and enjoying a sense of achievement (2010). This notion of citizenship is most closely connected to neoliberal perspectives of health and behaviour, which applaud individual efforts to be physically active and view health as individually determined and maintained (Aldred, 2010).

The 'locally rooted citizen' reiterates cycling as a highly embodied experience. Aldred's participants characterize cycling as "a pleasurable activity promoting rootedness in the local environment through which they travel" (2010, p. 46). As such, the speed of travel is seen as ideal, as is the opportunity to explore unique urban spaces with more ease

than is permissible while driving. Individuals discuss specific routes and the sensory experience that cycling facilitates; and "while there was a sense that cycling allowed a deeper relationship to one's surroundings, this was characterized as being flexible; people described different cycling practices allowing different ways of connecting to the local environment" (Aldred, 2010, p. 47).

Finally, the 'citizen in the community' experiences cycling as a shared social practice that permits deep and meaningful connections to family, friends and others (Aldred, 2010). While most of the cyclists interviewed were not actively involved in bicycle advocacy, many still described a notion of community and feeling connected to others through the practice of cycling (2010). Women particularly described the sense of safety that accompanies cycling, which positions the activity "as more socially inclusive and egalitarian, [and] linked to the discussion about how cycling could provide mobility and freedom to those culturally constructed as dependent" (Aldred, 2010, p. 47).

Aldred concludes from this research that cycling citizenship enables independence and freedom while simultaneously nourishing communication and rootedness in one's local environment (2010). By encouraging a blending of environments: social, travel, commercial and leisure; this articulation of citizenship inherently challenges the compartmentalization of modern day life (Aldred, 2010). This work also suggests cyclists are reflective and self-aware, and are able to clearly describe the importance cycling holds in their lives.

The notion of a cycling identity is further explored in Aldred's later work, which focuses on bicycle commuters (2013a). Commuting is often portrayed as a 'legitimate'

use of road space as it is purposeful as opposed to leisure-oriented, and it enables opportunities for paid employment (Aldred, 2013a). The commuter cyclist is goal-oriented and legitimized through their direct contribution to economic productivity. While this research is based in London, England, aspects of it resonate with Ontario's built environment and economic structures. In both locations, years of suburbanization have left many individuals feeling defined and confined by the space between their homes and places of employment (Aldred, 2013a).

The identity of a 'cyclist' can also be value-laden and problematic in many contexts. Aldred (2013a) explores this phenomenon in her research with Londoners on Bikes, a bicycling advocacy organization established to influence local cycling related politics. The decision to begin the organization's name with "Londoners" was purposeful, since it prioritized the identity of being a London resident over the identity of being a cyclist. In this particular instance, the creation of an identity is used strategically for politically motivated reasons (Aldred, 2013a). "The words 'cycling' and 'cyclists' were seen as in themselves problematic and generating discrimination; initially the group were frightened of negative responses" (Aldred, 2013a, p. 198). Participants described the terms as 'dehumanizing', and a disassociation from the fact that one was corresponding with people. Others made reference to the comments sections in papers, and how horrible things were often said of people riding bikes. Yet shying away from the term becomes complicated, when advocacy groups and organizations must build a political constituency around people who cycle – whether they are defined as "people on bikes" or "cyclists" (Aldred, 2013a). Ultimately this campaign sought to eschew divisive terminology, which

supports the notion that it may not always be personally or socially advantageous to refer to oneself as a 'cyclist', despite the fact that an individual may be a frequent bicycle user. Aldred's (2013a) work concludes that identifying oneself as a cyclist can be undesirable in some contexts, which could certainly deter individuals who ride from claiming this identity.

Contentions surrounding the term 'cyclist' point to the obvious possibility that some stigma exists in the worlds of transport and cycling. Aldred (2013b) investigates notions of stigma experienced by cyclists. Her research reveals not only highly stereotyped associations with the identity of the 'cyclist', but also a tenuous relationship between appearing adequate, without seeming overly confident. "Cyclists struggled with the fear of being labeled a 'bad' or incompetent cyclist while categorizing others in this way, simultaneously fearing being *too* associated with cycling as a 'proper' or 'sporty' cyclist" (Aldred, 2013b, p. 14). Connotations surrounding the identity of the 'sporty' cyclist were defined largely by factors such as distance, speed and athletic gear, and extended to anxieties about body, fitness and appearance. While some individuals took pride in the 'sporty' cyclist identity, most sought to distance themselves from this stereotype; while still wishing to be seen as confident and capable. Evidently, many cyclists experience either real or perceived stigma in relation to their cycling identities. Policy-makers should carefully consider this internalized stigma, to ensure no unintended consequences result from pro-cycling initiatives (Aldred, 2013b). Aldred's (2013b) research provides an excellent framework for further exploring and understanding cyclists' identities.

Research related to cyclist types, categories and identities has been conducted within the fields of geography, transport planning, and the social sciences. Previous research related to identity aimed to organize, categorize, or typify cyclists. This endeavour is certainly interesting and important for a number of reasons, especially on a citywide scale for marketers, transport planners and advocacy groups. My research takes a slightly different approach, seeking to validate cyclists and their sundry experiences of riding in Hamilton; as well as communicate their unique individual perspectives, without presupposing a type or classification upon them. For these reasons, I have focused on exploring participants' understandings of their cycling identities, rather than organizing them into sub-groups based on their dialogues.

2.5 Linking Deterrents and Identity

Skinner and Rosen (2007) problematize the notion that improved cycling-friendly infrastructure will lead "unproblematically" to increased rates of bicycle use. They go on to suggest "Such assumptions are generally accompanied by a somewhat limited analysis of the attitudes and behaviour of cyclists and potential cyclists that focuses on 'human factors' and so-called 'barriers' to cycling, concepts that can be hamstrung by a static, undifferentiated account of people's understandings and experiences" (Skinner & Rosen, 2007, p. 84). Skinner and Rosen warn against treating deterrents to cycling as fixed entities, asserting that factors preventing individuals from bicycling may indeed exist, but they are often fluid in nature, and vary in accordance with individuals' personal circumstances (2007). Alongside personal factors that may impact modal choices, people have pre-existing routines, attitudes and character traits that contribute to difficulties in

achieving meaningful modal shifts (Skinner & Rosen, 2007). Such attitudes are informed by a cultural proclivity towards automobile transport that has prevailed since the 1960s, and has been particularly important in shaping transport planning and urban development (Skinner & Rosen, 2007).

According to Skinner and Rosen, and in line with the Social Ecological Model, "people's decisions over which transport mode to use for a specific journey are not strictly individual choices, but are mediated by shared norms and expectations linked to cultural and material changes" (2007, p. 85). The social ecological model recognizes multiple levels of influence over individual behaviour, including: intrapersonal, interpersonal, organizational, community, physical environment and policy (Sallis, Owen & Fisher, 2008). At the interpersonal and community levels, cultural notions around car-ownership are both ingrained and pervasive. Marketing for cars often involves selling a 'lifestyle', and their suggested appeal is linked to notions of privacy and self-expression (Skinner & Rosen, 2007). Individual behaviour is mediated by national identity and social location; therefore discourses surrounding decision-making and modal choice must be problematized.

To assist with this, Skinner and Rosen recommend examining the concept of identity. Identity provides a means to examine the relationship between an individual and their social context: "The notion of identity can help us move beyond a 'rational choice' model of transport behaviour posited on an abstract universal individual, and replace it with an account of the differences in perspective and action that emerge from cultural variations between social groups" (Skinner & Rosen, 2007, p. 85). Exploration of this

often-neglected facet of human experience can assist researchers and policy-makers alike in better understanding their target audience, thus enabling meaningful change towards lasting modal shifts (Skinner & Rosen, 2007).

My research questions fill important gaps in current knowledge, by seeking to understand who cyclists in Hamilton are, and why bicycling is important to them. While the above literature provides a solid foundation upon which current research can build, it fails to grasp how the cyclist identity is subjectively understood; what impact this understanding has on individual action; and how action further influences identity. Broadening the analysis beyond the physical deterrents to cycling, for instance by examining social, psychological and structural challenges, may allow researchers to engage in a more nuanced conversation, which captures the complex factors associated with transportation choice, and challenges taken-for-granted assumptions about travel. A focus on why bicycle-riders do or do not identify as cyclists, and what this identity means to them, assists researchers in understanding the unique and varied experiences this demographic faces.

Furthermore, a focus on identity permits researchers to view cycling on a social, as opposed to purely functional level. While functional factors such as capability, fitness, and access to resources are undoubtedly relevant; an analysis of identity elevates the exploration to include more abstract social and emotional constructs such as confidence, perception, and milieu. Focusing on identity allows researchers to assess cycling at a new level of analysis, which can result in novel approaches to addressing identified challenges. Researching notions of identity as they relate to daily action and activity holds

the promise of further understanding exactly why individuals choose to ride bikes and how cycling can be made more pleasant and feasible for these bicyclists.

Chapter 2 has provided an overview of the existing literature as it relates to challenges association with bicycling and cyclists' subjective identities. As well, the latter portion of this chapter outlined in greater detail the importance of considering the construct of identity when discussing the deterrents individuals may face while bicycling. This concept will be further developed throughout the remainder of this thesis.

Chapter 3: Methodology

The following section outlines the methods employed throughout the course of this Masters thesis. The McMaster University Research and Ethics Board approved all study procedures including recruitment of participants; participant interviews; and the awarding of randomly selected thank-you prizes. This section of the thesis details the processes of recruitment, summarizes participant demographics, and describes the steps taken during data collection and data analysis.

3.1 Recruitment

Recruitment for this research project took place through a number of different avenues. Pamphlets and posters were distributed to various businesses, such as coffee and bicycle shops in the downtown Hamilton area as well as on McMaster University campus. These materials stated the details of the study, such as my name and my supervisor's name; the purpose of the study; the required time commitment and the inclusion criteria. The inclusion criteria were threefold. Participants needed to: 1) be residents of Hamilton or the surrounding area; 2) ride a bicycle on a regular basis and; 3) describe cycling as a preferred means of transportation. I purposefully did not include the word "cyclist" as part of the inclusion criteria, however the poster does indicate that the research was focused on the subjective identities of Hamilton's cyclists (Appendix A).

The poster was also shared via social media. SoBi Hamilton, Hamilton Bike Party, the McMaster Cycling Group and Cycle Hamilton shared an image of the poster on both Facebook and Twitter, where applicable. The social media advertisements garnered the greatest response, however, some individuals did respond to the posters and pamphlets.

3.2 Participants

I interviewed a total of 10 individuals for this research project. I made the decision to use a sample size of 10 participants for several reasons. Firstly, qualitative research often favours smaller sample sizes over the larger participant sample sizes frequently visible in quantitative research. According to Marshall (1996) a misconception exists suggesting that for research to be valid, it must be generalizable. Marshall states: "an appropriate sample size for a qualitative study is one that adequately answers the research question" (1996, p. 523). Although I developed the interview guide over the course of the data collection process; new categories, themes and explanations in response to the research questions were becoming less common, thus indicating that by the 10th interview I had achieved appropriate data saturation to begin analysis (Sparkes & Smith, 2013). As well, there were time constraints inherent to the completion of this thesis, therefore to gather a sufficient, but not overwhelming amount of material I decided to include only 10 individuals.

Participants were selected on a "first-come, first-served" basis. The response from the community was overwhelming; I received at least 15 emails within the first 2 weeks of publicizing the study. I responded to each interested individual, thanking them for their interest and forwarding them a copy of the consent form (Appendix B), and some available interview times. At this stage, interested candidates who responded in a timely manner to set up an interview were selected for the study. My sample is comprised of five men and five women, spanning from 21 – 56 years in age at the time of the interview. Two of the participants were students, while the remaining eight were employed either

part or full-time in fields ranging from research, to medicine, to the skilled trades. All participants met the criteria for inclusion, as stated above.

3.3 Data Collection

The project utilized semi-structured, open-ended interviews to gather data. According to Sparkes and Smith "in semi-structured interviewing the researcher uses a pre-planned interview *guide* to direct the interaction, and relies predominantly on open-ended questions" (2013, p. 84). Examples of open-ended questions that I asked include: "Do you experience any specific deterrents to bicycling in your community? If so, what are they and how do you navigate them?" and "What does it mean to you to be a 'cyclist'? Why have you adopted this identity?" (Appendix C).

Alongside listening to participants and asking them questions about statements they made or opinions they expressed, when asked, I also openly identified myself as a bicyclist. Many of the questions I asked were guided by my own experiences of cycling in the city of Hamilton, and I shared several moments of amusement or frustration with participants, as well as personal anecdotes to assist in maintaining or spurring conversation. I discuss the implications of my participation in the research process in greater detail in section 3.4.

Participants were interviewed at the time and location of their choosing. I offered McMaster University as an option for an interview location, but indicated that I was happy to meet participants elsewhere provided it was a quiet public space, such as a local library. All participants elected to visit the university for the completion of their interviews.

All participants received their consent forms in advance and the majority had them signed before the interview commenced. I brought extra consent forms to the interviews in the event that participants forgot or had not yet signed one. Participants were informed that they were under no obligation to respond to all interview questions, and they could simply state, "pass" should they feel uncomfortable answering a particular question. Interviews spanned from 45 minutes to nearly 2 hours in length. With the participants' permission, all interviews were audio recorded. Participants names were then entered into a draw for 2 different prizes, both provided free of cost by local cycling businesses or organizations. Participants were thanked for donating their time, experiences and expertise and asked about their experience of the interview, and whether they had any suggestions for improvements. All of the participants described the interview as an enjoyable process, some even using terms such as 'rewarding'; 'fun' or describing specific questions as 'very interesting'.

3.4 Data Analysis

The majority of my training in qualitative research was developed in advance of my undertaking this thesis. I worked as a research assistant for Dr. Jessica Anne Gish for roughly 8 months prior to the outset of my research project. As such, I was trained in tasks related to qualitative research such as: recruiting and screening participants, developing an interview guide, conducting interviews, transcription, coding and thematic analysis. I consider this experience; alongside the support I received from my committee; to be paramount to the ease and confidence with which I approached this research project.

Sparkes and Smith describe qualitative research as "a form of social inquiry that focuses on the way people interpret and make sense of their experiences and the world in which they live" (2013, p. 14). My research seeks to understand the challenges individuals face when cycling in Hamilton; and whether people who ride bikes in Hamilton adopt the identity of a 'cyclist'. Thus, participants are asked to make sense of their bicycling experiences, as influenced by socially and culturally constructed factors such as gender, ethnicity, education, and socio-economic status.

Although I gathered and reviewed some literature prior to the outset of my data collection, my interview questions were largely developed from my particular interest in this field. I had a desire to understand what, in the opinion of current bicyclists, impedes their more frequent and/or more joyful use of the bicycle in urban transport? Furthermore, I wished to understand if and how being a 'cyclist' played into participants' quotidian lives. I sought to know how this identity was defined by bicycle-users, and whether it was an important aspect of their subjective self-evaluation.

The approach I took in my research was a combination of inductive and deductive analysis, sometimes referred to as abductive reasoning (Sparkes & Smith, 2013). An inductive approach more closely aligns with the process of producing grounded theory; as such the themes identified in the analysis may "bear little relationship to the specific questions that were asked of the participants" (Braun & Clarke, 2006, pg. 12). Comparatively, deductive research typically involves the use of predetermined theories and frameworks to guide the analysis of the data (Sparkes & Smith, 2013). According to

Braun and Clarke, deductive analysis often provides a less rich description of the data overall, but instead completes a more detailed analysis of some aspect of the data (2006).

My approach was a combination of both inductive and deductive reasoning. Deductive analysis occurred in that I used predetermined themes and frameworks, such as the Social Ecological Model of Health to guide the analysis of my data. However, analysis became inductive as I identified new themes within my data that had not specifically been discussed elsewhere in the literature. Given the highly complex nature of my research questions, I felt a combined inductive and deductive approach, alongside the use of thematic analysis, was the best means to capture the intricate and layered experiences of individuals' lives.

An important aspect of this thesis is my own position in relation to my study population. In Chapter 1, I identified myself as a complete member researcher, as such I am conducting insider research, and identify as a member of the group that I am researching (Dwyer & Buckle, 2009). "Insider research refers to when researchers conduct research with populations of which they are also members (Kanuha, 2000) so that the researcher shares an identity, language, and experiential base with the study participants (Asselin, 2003)" (as cited in Dwyer & Buckle, 2009, p. 58). It is important to acknowledge several variables that accompany this position, and the effects it might have upon the research outcomes. Firstly, participants may make assumptions about the researcher's prior knowledge or understanding of the subject area, and thus fail to fully explain their experiences. As well, it is possible that the researcher's previous understandings and perceptions of the subject matter may cloud their interpretations of

the participants' experiences. This can sometimes produce an interview that is guided more by the researcher's experiences than the participant's. Finally, undue influence on the part of the researcher may result in an emphasis on shared factors between the participant and researcher and a de-emphasis on diverging factors (Dwyer & Buckle, 2009).

In order to control for these variables I exercised a great deal of self-awareness and reflection throughout the interview and data analysis process. Dwyer and Buckle state that the most important factor is not the researcher's status as either insider or outside, but rather their ability to be "open, authentic, honest and deeply interested in the experience of [their] research participants, and committed to accurately and adequately representing their experience" (2009, p. 59). In accordance with this recommendation, if and when participants inquired, I openly disclosed to participants my interest in cycling, and my self-identification as a person who bicycles. I also listened closely to their experiences and ensured my interview questions were built off of participants' stories and phrasing as opposed to my own. As well, I was sure to validate participants' perspectives and encourage them to speak as freely as they felt comfortable.

I do acknowledge, however, that it was not possible for me to entirely remove my perceptions and experiences from my interpretation of the data. Qualitative researchers can never be truly separated from the participants in their study, instead researchers are firmly entrenched in the research process from it's beginning to end. As such, "the intimacy of qualitative research no longer allows us to remain true outsiders to the experience under study and, because of our role as researchers, it does not qualify us as

complete insiders" (Dwyer & Buckle, 2009, p. 61). Thus, qualitative researchers must always be conscientious of occupying the spaces and tensions that characterize this type of research. Every effort much be made to approach it with as little bias as possible, and with an enthusiasm to learn about and communicate the experiences of others.

3.4.1. Thematic Analysis. According to Boyatzis (1998); thematic analysis "is a method for identifying, analyzing, and reporting patterns (themes) within data. It minimally organizes and describes your data set in (rich) detail. However, it also often goes further than this, and interprets various aspects of the research topic" (as cited in Braun & Clarke, 2006, p. 79). The process of thematic analysis is both dynamic and iterative. Thematic analysis begins when the researcher starts to take note of patterns of meaning and topics of interest in the data, which can occur as early as the data collection stage (Braun & Clarke, 2006). This was indeed the case in my research project, as my interview guide was revised and developed continually throughout the interview process, in relation to new and interesting phenomena that arose from each interview.

Braun and Clarke (2006) suggest that writing is an integral component of data analysis. Writing should begin in the form of short notes outlining concepts, ideas and potential coding schemes, and continue throughout the course of coding and analysis (Braun & Clarke, 2006). "Moreover, analysis is not a *linear* process where you simply move from one phase to the next. Instead, it is a more *recursive* process, where you move back and forth as needed, throughout the phases" (Braun & Clarke, 2006, p. 16). Braun and Clarke (2006) outline six distinct phases of thematic analysis within qualitative research. They are: familiarizing yourself with the data, generating initial codes,

searching for themes, reviewing themes, defining and naming themes and producing the report.

Braun and Clarke (2006) recommend the researcher read through the data set in its entirety prior to beginning the coding process. I chose to forego this stage, having personally conducted and transcribed all of the interviews I was already familiar with their content. Although some time passed between the interview process and transcription, the act of listening and simultaneously transcribing data allowed for some preliminary interpretation and analysis to take place. Transcribing can feel frustrating and time-consuming, however, Lapadat and Lindsay (1999) recognize transcription "as an interpretative act, where meanings are created, rather than simply a mechanical one of putting spoken sounds on paper…" (as cited in Braun & Clarke, 2006, p. 17).

To assist in the transcription of interviews I used ExpressScribe, version 5.70. This software allowed the playback of Mp3 audio files at a reduced speed as I typed out both my and the participants' words verbatim into a Microsoft Word document. I paid careful attention to tone of voice, pauses, emotional expressions such as laughter or sighs of frustration; and made note of these utterances in the transcripts using either square brackets or punctuation. Braun and Clarke describe this meticulous process as "important [so] that the transcript retains the information you need, from the verbal account, and in a way which is 'true' to its original nature…" (2006, p. 17). Following these recommendations enabled me to interpret and analyze data that was as close to its original form as achievable, while providing me the ease of working from written transcripts. Subsequent to the data analysis stage, and in order to improve readability and flow, I did

edit the quotations of participants eliminating excess utterances such as "uh" and "like" for the final written version of this thesis. Furthermore, during the transcription stage, each participant was assigned and thereafter referred to using a pseudonym to protect their identity.

The transcriptions were imported into NVivo, which is a software designed to assist with qualitative data analysis. Word documents can be directly imported into the software, coded, organized and reviewed using a number of strategies and tools offered by the program. The decision to use NVivo to guide the coding process was made for several reasons. Firstly, some authors suggest utilizing software such as Nvivo can improve upon the quality and rigour of a study (Leech & Onwuegbuzie, 2011); as well as increase flexibility and efficiency during data organization (Ozkan, 2004). Another study describes the software as enabling the researcher to observe the development and progression of ideas, within a system that resembles the 'by hand' method of data gathering and analysis; while reducing clutter, ensuring confidentiality and maintaining back-up copies of the research (Walsh, 2003). Therefore, I elected to code all 10 of my interviews using NVivo.

According to Braun and Clarke (2006) the analyst develops codes to identify features of the data that are interesting or remarkable. Codes refer to "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998 as cited in Braun & Clarke, 2006, p. 18). The process of coding organizes the data into meaningful and workable groups and thus is a part of the analysis process (Braun & Clarke, 2006). It is of course important to

differentiate between codes and themes. While coded data is a process of content organization, themes are often broader in scale, visible across data sets, and are the result of an interpretative process, one which produces an argument about the phenomena being examined (Braun & Clarke, 2006).

Following coding, I began the process of finding themes. This phase, which re-focuses the analysis at the broader level of themes, rather than codes, involves sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes. Essentially, the researcher starts to analyze her codes, and consider how different codes may combine to form an overarching theme (Braun & Clarke, 2006, p. 89). As previously stated, the process of thematic analysis is iterative. While I developed an initial set of themes, I frequently moved back and forth between the coded data, and several versions of thematic maps that were developed throughout the ongoing process of analysis. Themes and sub-themes were identified, developed and re-arranged in order to describe the data in a consistent and meaningful way. Finally, in accordance with Braun and Clarke's (2006) suggestion to 'review themes' I re-read all of the data to ensure quotes and excerpts accurately reflected the sub-themes under which they were categorized, and the sub-themes were appropriately grouped under broader, over-arching themes. This process was completed two separate times, first for the analysis of the challenges associated with cycling section, and then for the analysis of the identity section.

Chapter 3 of this thesis has outlined in detail the methodologies employed throughout the course of this Masters thesis. This chapter described the recruitment

process, which was done mainly through posters and social media; information regarding the selection of participants; data collection in the form of semi-structured interviews; and qualitative data analysis. The remainder of the thesis presents the major findings of this research, how these findings contribute to existing literature and the study's discussion and key conclusions.

Chapter 4: Challenges associated with bicycling – Findings

4.1 Challenges Associated with Bicycling in Hamilton

The first section of my results focuses on challenges associated with bicycle riding in Hamilton. For the purposes of this study, a challenge is broadly defined as any obstacle, physical, structural or otherwise that a participant encounters, which dissuades him or her from using a bicycle. The term "challenges" is used interchangeably with other terms such as "deterrents" or "impediments". When discussing challenges, participants often spoke figuratively, for instance, describing situations or components that they see as challenges to non-users taking up cycling. Oftentimes these are challenges that study participants have already overcome, or have learned to work around.

The following themes are interwoven with, and conceptualized in relation to, the findings of the literature. Upon conducting a thematic analysis, four main challenges associated with bicycle riding were identified: challenges related to the built environment; the infrastructure that exists within it; structural challenges such as laws and legislation; and social deterrents.

4.2 Built Environment

I chose to differentiate between challenges related to the built environment and those specific to infrastructure. As outlined in Chapter 2, the built environment represents relatively static and pre-existing systems, structures, and patterns of land-use. Since World War II, there has been a rise in suburban dwelling. This is characterized by interconnected road and highway systems, enhanced consumerism and large de-centralized shopping centers, along with the accommodation and growing ubiquity of

private automobile transport (Mieszkowski & Mills, 1993; Kaiser, 2004; Cohen, 2004). The built environment in Hamilton is necessarily divided by the escarpment, and is characterized by facets of auto-centric mobility such as: highway 403 splitting the east and west sides of the city, Main and King streets which accommodate fast-moving, one-way traffic and residential suburbs such as those in Ancaster, on top of the mountain and in Stoney Creek. Contrarily, infrastructure can be conceptualized as occurring *within* the built environment and represents the potential for retrofitting urban spaces to create transportation systems that stimulate meaningful change. Without overhauling the very established currents of city, we can develop bicycle-friendly infrastructure to encourage movement within and between these currents. In accordance with these distinctions the following section will examine large-scale facets of the built environment that make cycling difficult or unappealing, such as Hamilton's 'superhighways', mixed versus fixed land-use and assumptions surrounding citizens' travel preferences.

4.2.1. Superhighways. Multiple participants discussed the problems that arise from both Main Street and King Street – referred to here as 'superhighways'. These roadways contain between four and six lanes of fast moving, one-way traffic, and have almost no bicycle infrastructure on them. Main and King are difficult to navigate and represent a barrier to bicycle riding in the downtown core. The general consensus amongst participants is that these streets are unpleasant, inhospitable and at times outright dangerous for cyclists. Clark (age 43) communicated his concern by saying:

> You know I don't, I'm okay to take the side routes, the, side roads. I'm not keen on, you know biking down Main St, like that's not something I'm interested in. It

> wouldn't be an enjoyable ride I think I'd be fearing for my life. But I know a lot of people do that, but yeah I intentionally make it that route so I can, enjoy it and not have to be concerned.

Others support this perspective, for instance Lisa (age 34) suggested she does not ride on these two roads for more than a short distance and describing them as "huge barriers". Reid (age 46) saw one-way streets in general as a disincentive:

> One-way streets are a disincentive for people to cycle because I don't want to ride the wrong way down a one-way street because a) it's illegal, but more because it's dangerous. But if you're.. if time is of the essence and the streets are such that it is a lot more of an effort for you, that creates a disincentive for you to be on your bike.

While these two 'superhighways' running through the center of Hamilton are the result of decision-making that occurred many years ago, steps could be made to improve them today. For instance, a number of participants suggested they would like to see Main and King converted to two-way streets or, more importantly, equipped with bicycle-friendly infrastructure. Participants noted that individuals should be able to travel from one side of the city to the other, on a connected, efficient and protected pathway. This desire is certainly attainable since the built environment to accommodate it already exists. Currently however, the infrastructure only supports the movement of cars, and as such would have to be modified to better incorporate bicycles.

4.2.2. Mixed versus fixed land-use. Participants also discussed the need to diversify land-use in order to create pleasant and supportive streetscapes for bicycling.

Currently, while downtown Hamilton has some integrated land-use, for instance shops, with offices or residences above them; nearby parks and trails; and businesses dispersed throughout – much of the city is divided between residential and commercial land-use. This creates environments that are described as both unpleasant and inhospitable to cycle within. The following excerpt from Lisa (age 34) demonstrated:

> … suburbs are a barrier. You know I'm very comfortable cycling in the urban core. But, I find outside of that when the built environment changes it's a very unpleasant place to cycle. So it's not just the distance from where I am in the urban core that's a barrier it's like, 'No I don't want to, you know, I don't want to be riding through that environment, it's unpleasant'.

Abigail (age 35) reiterated this sentiment, suggesting she has ridden through the Meadowlands in Ancaster, but found the environment very unfriendly towards active transport users due to a lack of cycling infrastructure and high traffic volumes. Many participants in the study referenced high-density mixed land-use as a way to mitigate the focus on automobility, which is characteristic of the suburbs. These comments are supported by research, which indicates that mixed and high-density land use positively affect cycling rates (Heinen et al., 2010).

4.2.3. Car is King. Participants also shared their frustration with the fact that automobility is heavily ingrained within transport networks in both downtown Hamilton, and more broadly in much of North America. Participants reflected on this notion, for instance by stating, "… roads were never built with bikes in mind" (Clark). This fact becomes particularly clear when comparing the routes cyclists are recommended to take,

versus those offered to automobile drivers. Abigail's discontent was visible in the following statement:

> Yeah and I guess just the whole idea of when you see those cycling signs, when you have to do this zig-zaggedy period to get somewhere, whereas cars can just go straight, right. It's just like, why? [Chuckles]. Why do I have to do this round about way when the cars can go straight. And I will do the round about way because my safety is more important to me than going some place faster, but again it's like, cycling is, if you're a cyclist you're seen as fringe, you know second-class in the car dominated society, so nobody cares. Which, is ridiculous.

Here, Abigail evokes the notion of citizenship as it relates to transport. This supports Aldred's proposition that transport and citizenship are inherently linked (2010). Aldred described the cycling citizen as "embodied and [seeing] their wellbeing in holistic and relational terms" (2010, p. 35). Describing herself as 'fringe' and as existing in relation to automotive traffic, Abigail demonstrates the ability to think critically about habitual aspects of daily life such as transport modes and route options. Bicyclists are forced to regularly evaluate routes for their relative safety, feasibility and directness. This positions the bicyclist as a citizen who is connecting with his or her environment in a highly analytical way.

The assumption that residents wish to travel via private automobile, and as such vehicular traffic should be prioritized, has permeated the transport network of Hamilton. Vehicular traffic is not only given priority in the majority of situations, but the routes for automobiles are much more direct, better maintained, and more efficient. As such,

bicyclists are left feeling like 'second class' citizens. While these aspects of the built environment are difficult to undo, building supportive, safe and connected cycling infrastructure into the built environment is one very positive way of moving towards a more bicycle-friendly environment.

4.3 Infrastructure

Infrastructure often represents a challenge to would-be and currently practicing cyclists who wish to travel throughout the city. I have conceptualized 'infrastructure' as medium-scale physical and organizational aspects of the built environment, as they relate to bicycling. These include but are not limited to: bicycle-specific infrastructure, infrastructure that supports bicyclists making left-hand turns, connectivity, and pavement conditions. A small number of participants described the infrastructure in Hamilton as satisfactory or 'pretty good'; however, they all had a number of suggestions for improvements. This section of the analysis will focus on areas deemed problematic by participants.

4.3.1. Lack of bicycle-specific infrastructure. Some participants felt more comfortable than others cycling on streets without designated bicycle infrastructure. Yet, all participants acknowledged the merit of having protected bicycle lanes and bicycle specific infrastructure, as well as the dangers that result from a lack of such infrastructure. These assertions are often connected to encouraging non-users to take up cycling. Kyle (age 23) discussed his comfort level with cycling on the road with traffic:

> I would say I'm more comfortable than most people, riding in mixed traffic. Um, obviously I'd still like to have bike lanes, but for me it's not a huge barrier if there

> aren't any. But I know for other people for sure. They will not ride on the road unless there's a bike lane. Or multi-use path. So that's a huge one. Hamilton could definitely do a lot better.

Several other participants stated that bicycling infrastructure has become less important to them, especially with their increased comfort and ability cycling. Crucially though, when discussing the likelihood of non-users to take up cycling, participants suggested that dedicated infrastructure is very important.

Most participants conveyed a general sense of dissatisfaction with the availability and quality of cycling infrastructure in Hamilton. Referencing specific locations in their communities, or places within the city they find particularly dangerous, participants articulated the need for more, and better dedicated cycling infrastructure. Marvin (age 49) described places where protected cycling lanes suddenly felt very insufficient, for instance as they crossed over highway on and off ramps:

> You know for example there are three places where the bicycle lane crosses an on or off ramp from the 403 which is basically, my joke is you should leave a suicide note every time you try to ride down there right? ... Main and King, and Plains they all… that's stupid. Like it's dangerous. I'm surprised they haven't had a lawsuit.

A lack of dedicated infrastructure or adequate planning for bicyclists results in this area being very dangerous for vulnerable road users. Firstly, automotive and non-automotive road-users are required to cross paths and negotiate shared space. Secondly, vehicular traffic is moving at a very high-speed, typically gaining speed as drivers approach the on-

ramp and prepare to merge with highway traffic. Finally, the area is dimly lit at night, and the barrier between vehicular and non-vehicular traffic consists of nothing more than paint and flexible bollards. Abigail reiterated how dangerous a lack of infrastructure can be; referring to the conditions cyclists currently must endure while moving up or down the mountain:

> But if people, again, don't know about that, how are people supposed to get up the mountain if they want to cycle? They're going to cycle up the Queen St hill? They're going to cycle up the Jolly Cut? Like, that is bananas. I've seen people do it and, there's no room for them. And it's super dangerous.

Words such as 'stupid' and 'dangerous' were often used to describe the cycling infrastructure, or lack thereof, in Hamilton.

Consistently experiencing a lack of accommodation on roadways perhaps explains why some bicyclists are unlikely to place much faith in the cycling infrastructure in Hamilton. This lack of faith was visible in the following statement by Carmen (age 56): "And you know, yeah I do not assume that the infrastructure has taken me into account because most of the time it hasn't." Evidently, bicyclists in Hamilton feel the infrastructure could be vastly improved upon.

4.3.2. Left-hand turns. Left-hand turns were a cause of stress for many of the participants. Their feelings spanned from being comfortable joining traffic to make left hand turns; to reluctantly making them but preferring to cross at pedestrian crossings. Some went as far as to plan routes that completely avoided left-hand turns, as they are perceived as uncomfortable and unsafe. The following quote, spoken by Reid,

demonstrated his comfort with making left-hand turns: "I do a left turn whenever I get it. Almost every case. I get my hand out, and go when it's safe." Similarly, confidence while making left-hand turns is reflected in the following statement by Madeline (age 29), however she acknowledged that this comfort has not always been present:

> So just knowing people who did those things and kind of set an example and showed me that this is possible, it's not unreasonable, it might not be the safest, all the time but, I'm also just more.. I've gotten more comfortable just knowing people that also ride a lot more than I did. So I know a couple of summers ago I hated doing left turns. […] Um, and then I started riding with people a couple summers ago who did left turns as if they were a vehicle. And I, I was really nervous with it at first but now it's just second nature to me…

Madeline explicitly attributed her comfort making left-hand turns to the influence of, and modeling done by, others. This reinforces the Theory of Planned Behaviour's proposition that perceived social norms could affect decision-making and subsequently behaviour (Heinen et al., 2010). Had Madeline not seen this behaviour modeled by a small group of individuals, she may not have become accustomed to it as 'normal' and as such would be less likely to merge with traffic when making left-hand turns. This has important implications for increasing cycling rates amongst current non-users. Normalizing cycling and safe cycling behaviour could be paramount to increasing cycling numbers.

Other participants, however, are less comfortable making left-hand turns. Abigail described her tendency to avoid left-hand turns, and to claim space and ride in the center of the lane when a left-hand turn was unavoidable. She discussed the importance of being

a confident bicyclist, but described turning left with automotive traffic as 'scary'. "Yeah. It's scary at times, and it's also, it's scary because you're with all these cars that could kill you." This discomfort is also present in the following statement by Lisa, whose uncertainty was heightened by factors concerning visibility:

> I know it's the right thing to do, but, in high-speed traffic I am reluctant to do it. And it's mainly, that I don't feel confident that I've been noticed. It's hard to read the eye contact […]. If there's an easy, like if it's a pedestrian crosswalk I will often you know just opt to swing out. So, I'd say, I guess I don't feel that confident taking a left hand turn.

Lisa's discomfort stemmed from merging with high-speed traffic, and with nervousness around her own visibility.

The most extreme examples, however, involved participants who felt so unsafe making left-hand turns that they were forced to re-route themselves, or ride off their intended course to avoid turning left. Marvin described his absolute discomfort turning left while cycling:

> I almost never make left hand turns, they terrify me. So, I will go out of my way to not have to make left hand turns unless it's unavoidable.[…] They're just, they're just so dangerous right? So I would say that I almost never make a left hand turn. Oddly enough, I will actually get off my bike and walk it across an intersection, to avoid having to make a left hand turn.

Marvin reiterated several times his discomfort with left-hand turns, suggesting that he previously had not considered how frightening he found them, yet he routinely altered his

course to avoid turning left. While left-hand turns could be mitigated using a number of different tactics, in all likelihood an increase in clear, dedicated, and safe infrastructure, such as roundabouts with separated lanes for bicycles and automotive traffic, or two-stage intersection crossing, could assist bicyclists in comfortably making left-hand turns.

4.3.3. Lack of connectivity. Where cycling-friendly infrastructure in Hamilton does exist, it is often poorly connected and thus does not render a smooth or coherent network for bicyclists who are traveling throughout the city. Participants described places within the city where a lack of connected infrastructure hindered or diminished their ability to travel by bicycle while feeling safe, protected and secure. Abigail described: "I guess for me the biggest barriers, in terms of using my bike more is just the lack of infrastructure, and where there is infrastructure, the lack of connectedness or information about how to use the infrastructure in Hamilton." The lack of connected cycling infrastructure in Hamilton was a frequent cause of frustration and confusion amongst bicyclists – Abigail later stated: "I guess, so connectedness. Yeah, well bike lanes ending and then you're just like 'well, what am I supposed to do? Where am I supposed to go?' " Over half of participants reiterated concerns around disconnected infrastructure. Lisa stated:

> Like that's, we all know in Hamilton bike lanes are… bike lanes make a huge difference – oh but they're very disrupted in Hamilton. We do not have a connected bike lane system so, you kind of have to work around the major streets, the major east-west streets in this city.

Cycling infrastructure in Hamilton does have a tendency to stop and start sporadically. For instance, the eastbound Hunter Street contraflow bike lane ends suddenly at McNab resulting in bicyclists riding into one-way oncoming traffic; or forcing them to stop, wait for a gap in traffic then cross over two lanes to continue northerly. Clark described his concerns with this particular location:

> Because that's kind of the thing about it now is, yeah there's bike lanes at certain spots - in many areas it's fragmented. So you have bike lanes, here Hunter Street's a perfect example. Bike lanes till you get to McNab I think. And then nothing. And there's reasons for that I get it. But then it continues again.

This was one of two problem areas frequently referenced by participants – the other being the Cannon Street cycle track. While the presently available infrastructure is certainly appreciated, its truncated nature makes it difficult for individuals to benefit from, and creates a very disconnected, disjointed user experience. Titze et al. found that "bike lane connectivity was positively associated with cycling for transportation" (2008, pg. 257). Thus, in all likelihood, even a city that boasts an abundance of supportive infrastructure could fail to see significant modal shifts if bicyclists experience difficulty moving fluently throughout the network.

4.3.4. Pavement conditions. The quality of the pavement in Hamilton caused great frustration and concern for many participants. The city streets are riddled with potholes, loose gravel and deep indentations, which pose a myriad of risks for people on bikes. These conditions can result in bicycle wheels getting caught and riders being thrown from bikes; in riders slipping or skidding on loose gravel; or at worst having to

swerve suddenly to avoid something on the road, which places them directly in the path of vehicular traffic.

Perhaps even more concerning, however, is the reality that when pavement conditions are poor, bicyclists are forced to focus their attention downwards, as opposed to having their eyes up, monitoring the movement of traffic in the surrounding environment. Madeleine conveyed her concerns in the following statement:

> And it's not, there are so many reasons that it bothers me but in part, it's ruining my bike. And it's just so unsafe. Like it's unsafe for the fact that I could fall in and go flying at any point. But also that I'm not looking further ahead than the next two meters on the ground.

One factor that would greatly reduce wear and tear on city streets would also create better conditions for bicyclists. Creating separated, protected bike paths would mean less damage to pavement from the weight of motorized vehicles, and would preempt bicycles and automobiles from having to negotiate shared space.

4.4. Structural Challenges Associated with Bicycling

It is important to recognize that improving the physical infrastructure will not simply eliminate all of the challenges individuals face when cycling. The Social Ecological Model of Health acknowledges that multiple factors influence human behaviour (Sallis et al., 2008). The following section addresses factors related to culture, workplace norms and politics. Structural challenges identified in this research include: supportive facilities at the workplace, driver education and awareness, political will, and local laws and legislation.

While bicycle-friendly workplaces could be included in the infrastructure section, I have decided to categorize this indicator under structural challenges for three main reasons. Firstly, cycling is not the norm in North America. While employers may be expected to provide reasonable vehicular parking facilities at the workplace, they are much less likely to do so for bicyclists. Secondly, on-site showers have been shown to have some impact on the likelihood of employees to cycle to work (Kingham et al., 2001). Many countries and institutions in Europe provide such facilities at the workplace, whereas in North America the presence of locker rooms and showers are most likely related to the type of work being completed at the worksite, or the slim chance of the worksite having on-site fitness facilities. Finally, social and cultural change is unlikely to act as a catalyst for the introduction of such facilities to the average North American worksite. Policies, however, could be established mandating the availability of such facilities, to encourage employees to pursue active transportation options when commuting. As such, bicycle-friendly workplaces, as determined by the presence of bicycle racks and changing facilities are being discussed under the structural challenges section of this analysis.

4.4.1. Bicycle-friendly workplaces. Several participants referenced the importance of bicycle-friendly infrastructure at the workplace. For some, this infrastructure already exists. Marvin discussed having access to showers at his workplace, as well as an office to store his bike in during the day. These two conditions made his cycling into work feasible. Marvin's commute is approximately twenty kilometers each way, thus the option to ride a relatively high-end road bike, and take a shower upon his

arrival helped make this commute possible. He stated, "if you really want to encourage people you need to make them comfortable for doing it."

Clark described his workplace as very responsive to the request to accommodate bicycles; and he expressed a similar degree of comfort commuting. His workplace is, by chance, equipped with showers, laundry facilities and lockers. Additionally, Clark and several of his colleagues requested that secure bicycle storage be created at the site. Again, he appreciated the deterrents that would exist without these facilities. "So from, that makes things a lot easier so I can appreciate for people who don't have access to those things at the end of a bike ride it could be, you know either could be more difficult or prompt them not to cycle." The presence of accommodating facilities at the workplace enables these individuals to commute with ease.

Those who did not have access to bicycle-friendly facilities most frequently protested the lack of safe options for locking one's bike. Specifically, concerns included either a complete lack of bicycle racks at the workplace, or racks that were positioned in the middle of parking lots and other very exposed areas. While the current literature reports mixed results, one study by Cleary and McClintock (2000) suggests that measures such as well-designed and located bicycle parking facilities as well as improvements in showering and changing facilities can contribute to encouraging employees to commute to work. My research supports these findings, as participants who had access to such facilities acknowledged their merit and discussed how complicated bicycle commuting would be without them.

4.4.2. Driver education and awareness. This section addresses concerns raised by participants surrounding driver education and awareness. In this case, a great deal of overlap exists between social and structural factors. Structural factors, such as driver education, undoubtedly have some influence on behavior; while society and social norms in turn inherently shape the education that new drivers receive. Accordingly, I have listed driver education and awareness under the structural deterrents section with the assumption that improvements to policy and education represent more measurable and attainable goals, than changing societal norms.

Several participants spoke of near accidents, even while travelling on protected cycling infrastructure. For example the Cannon Street Cycle Track was a topic of popular discussion. The track is relatively new to the city, and many drivers are unfamiliar with the concept of contra-flow bikes lanes; bicyclists move in the opposite direction of the flow of traffic. Cannon is a one-way street moving westerly, and the cycle track is positioned on the south side of the road. This means that drivers turning onto Cannon must look right for a gap in traffic, and remember to look left to ensure no bicyclists are approaching. Marvin described the situation below:

> I've had a couple of close calls there, and when you mentioned close calls that was one where I have. And it's like.. either they need better signage or just more education but, people, and it's a battle if you're a pedestrian too. I mean if you're trying to cross the road and people are looking this way [right] and not looking this way [left].. you could get hit.

Marvin suggested, and other participants reiterated, that more education or awareness is required to assist in making the Cannon Cycle Track as safe as possible. Others point out that while the protected lanes are appreciated, implementation could have been improved. The city might consider signs, flashing lights or other reminders for drivers to look to the left for approaching bicyclists.

One participant felt the Ontario Ministry of Transport should improve driver education and awareness at a provincial level. For example, when changes to legislation are made, the government needs to educate citizens on these changes. Abigail indicated that she was aware of the most recent changes made by the government, including the requirement that vehicles leave bicyclists at least three feet when passing, and that drivers can be charged for 'dooring' (Ontario Ministry of Transport, 2015). However, she only became aware of these changes because she was interested in them, and therefore took the time to read about them. Abigail's frustration was visible in the following excerpt: "Is there any kind of information, is there any bulletin about it? I don't know, any kind of commercial, you know like it's, I think more could be done, but. They're not doing that." It could be that changes in the legislation as they relate to bikes are less likely to be noticed by non-bicyclists. As such, participants in this study feel that improved education related to cycling is required at both the municipal and provincial levels.

4.4.3. Lack of political will. A number of participants raised concerns surrounding a perceived lack of political will in city council, to both inspire and commit to change. Madeleine spoke of certain agendas being prioritized over others, as a result of neighbourhood politics and the political nature of decision-making. Kyle supported the

notion that decision-making at City Hall is inherently political, by pointing out that councilors have veto powers. "Like if there's something that is being constructed in their ward, and they're not happy with it then they can say 'No, that's not going to go in.' So, there's definitely barriers at city hall. For getting these cycling projects approved." Reid provided a direct example of such an instance, discussing the bicycle sharrows that were painted onto Governor's Road in Dundas to indicate an established cycling route.

> But within two days of them being painted, they were painted over. And no one knows why. And what's happened is that, obviously some anti-bike people, or people not friendly to bicycles freaked, called the local councilor and she probably made damn sure that they got painted over. Because she's not, the councilor out there was one of the ones that voted to kill the bus lane. And she is not very alternative transportation friendly.

Evidently, due to the configuration of municipal decision-making processes, even progressive, positive changes to the cycling network can be quickly undone based on an individual councilor's decision. This speaks to the lack of a broader system of governance or overarching action plan, which could produce more favourable long-term outcomes for bicyclists. Kyle reiterated this concern:

> And they don't have an official bike plan. I think. They might have an old one, but it's not being carried out essentially. So they're just kind of ad-hocking it. If they have road-resurfacing projects then usually, at least now they're starting to build bike lanes into their projects. Not always. But there's no will at city hall.

Several participants expressed the opinion that a lack of political will constitutes a structural level challenge to cycling in the city of Hamilton. This lack of political will lies in contrast to the province of Quebec. Since committing to a bicycling master plan, Quebec has made impressive improvements to its cycling network, including a number of protected cycle lanes and a province wide signed and connected bicycle route: La Route Verte (Damant-Sirois et al., 2011). This demonstrates the importance of a coherent, unified cycling plan across broad geographical areas, and the role political will plays in legislating these developments.

4.4.4. Laws and legislation. Participants also expressed frustration regarding the current rules and regulations governing bicyclists. The most frequently raised concern relates to the current legislation in Ontario, which positions bicyclists as small vehicles, thus requiring them to obey all vehicular traffic laws. Having to come to a complete stop at stop signs is an extra step most bicyclists would gladly bypass – especially when travelling uphill and therefore being forced to interrupt forward momentum. Abigail described:

> I think the government needs, the Ontario government needs to look at the, whatever the highway safety act is and revamp it. Because okay, bikes are considered vehicles, but we are required to act as a car. It's all in the favour of a car. Like we have to stop at a stop sign.

Many of the advantages that position bicycle riding as preferable in comparison to automobile use, are reduced or eliminated due to the bike being required to behave as a car, in a system which was built for cars. Most participants felt this legislation to be

impractical and in need of revision. Again, participants demonstrated the capacity to think critically about typically unchallenged modes of travel. Moreover, the presence of bicyclists on city streets can represent a source of anxiety, inconvenience and frustration to many auto drivers. Bicyclists, drivers and the many individuals who utilize both means of transportation; would likely benefit from adapting the network and legislation to better and more safely accommodate both transport modes.

4.5 Social Deterrents

The final challenges discussed in this section are broadly conceptualized as social deterrents to bicycle riding. The Social Ecological Model acknowledges interpersonal factors, such as social and cultural influences on behaviour. Automobile use and ownership are deeply ingrained in daily life in Hamilton and the surrounding area. Section 4.5 addresses the perceived social acceptability of cycling to the workplace, the ubiquity of car ownership, and the lack of awareness for people on bikes.

4.5.1. The social acceptability of cycling to work. The perceived social acceptability of cycling to the workplace was recognized as something that could be a barrier for some individuals, but was not a barrier for the participants interviewed for this study. Participants' responses fell onto a continuum. Some participants expressed that at times arriving by bike might not be socially acceptable. Others stated that it's not a relevant barrier for them personally, but they could envision it being a barrier to some individuals. Finally some participants described arriving by bike as a point of entry into a conversation, a new social circle, or a marker of individuality.

Reid spoke of being 'thin-skinned' as a potential problem for some individuals – he's received strange looks upon telling people that he bikes throughout the winter and endured comments from coworkers due to arriving warm and sweating to a meeting following a hot bike ride. Kyle reiterated this statement, suggesting that when travelling to a function there are many things to consider if he plans to bike. "And it's more difficult to do that than just taking the subway. Because you have to find a place to park your bike and then usually you have to clean yourself up, take a shower." Most participants acknowledged that cycling to the workplace could be awkward, especially in terms of clothing and appearances. None, however, state that it is currently a deterrent for them – all participants were in non-judgmental places of employment that did not adhere to business or business casual dress codes. Madeleine emphasized this:

> I'm lucky in terms of my professional life. I don't really feel like there's any stigma attached to me showing up at a community meeting.. you know and I'll have my gear with my panniers and coming in, you know sweaty and disheveled. There's not really, nobody really cares in my particular work setting. But I can see there being other work settings in more formal situations where, especially probably for a young woman professional.

Here Madeleine referenced the appearance expectations often placed upon women in social and professional settings. Women particularly are frequently praised or criticized based on their physical appearance, which may include being judged on aspects such as their clothing choices, makeup or hairstyle. Riding a bicycle may be viewed as an obstacle while striving to meet these standards. While participants recognized how the

professionalism or tone of a workplace might represent an obstacle, none were in such a situation at the time of their interview. Research done by Handy and Xing found that perceptions of co-workers' attitudes towards cycle commuting, professional dress codes and the perspectives of co-workers regarding fitness were not significantly correlated with bicycle commuting (2011). These findings suggest either that employees are simply not concerned with their colleagues' commuting choices, or commuting bicyclists do not place much emphasis on the opinions of those with whom they work. It is possible, however, that if an individual in a position of seniority was to discourage cycle commuting, participants' perspectives and behaviours could be influenced. This would support the findings of Handy and Xing (2011) that suggest supervisors' opinions affect employees' commuting choices.

One participant actually felt his cycling to work helped him stand out at his workplace. He works in a very professional position, and often travels between work sites throughout the day. Marvin described:

> I can absolutely see how that happens, but for me personally, people know who I am. They know that I obviously have a choice in how I get to work. And I think they, I think that it's actually been the opposite for me, that it's been socially enabling. It's certainly got me to meet people who I would never ever otherwise have met. Because I'm known as kind of a nutsoid bicyclist.

Marvin's modal choice has been incorporated to some degree into his personal and social identity, and thus allows him to stand out or be recognized by others in his work setting.

How cycling becomes adopted into an individual's identity will be further discussed in Chapter 5.

4.5.2. Ubiquity of vehicle ownership. Several participants also briefly discussed the social norm of owning a vehicle and the ubiquity of vehicle ownership in North American culture. Abigail described the cultural implications of her family's background, and how she frequently receives pressure from family members, both old and young, to purchase a vehicle. Reid discussed the cultural norms of vehicle ownership, even suggesting that he sometimes uses his vehicle as a scapegoat to avoid judgment:

> And I can always fall back on 'Well I do have a car, it's just that you know it's a family car. We share it.' I don't look like a total weirdo. Phew. I always thought about that as a teenager and a young adult. How am I expected to impress a girl if I don't own a car? Like what am I supposed to do? 'Yeah, let's go out to the movies you wanna drive me?' [Laughter]. 'You want to take the bus?' It's just such an ingrained part of our culture isn't it? My god.

Reid and others are able to critically reflect on the cultural significance that vehicles hold in North American society and, as visible above, some even used their car ownership as evidence of their 'normal' participation in this aspect of social life. While no participants explicitly suggest that social pressures for owning a vehicle constitute a barrier to their bicycle riding, many did make reference to this discourse.

4.5.3. Sharing the road. Perspectives around sharing space with other road-users are mixed, with participant experiences varying from unpleasant to generally acceptable. The majority of participants relayed at least one unpleasant experience when discussing

their interactions with other road users. Generally, the conflicts seem to stem from driver attitude, a lack of education or awareness, impatience and in some cases even verbal harassment. Clark prefaced his description of a specific incident with the following statement: "Yeah and that's, I think a very general issue where ever you go, I mean there's, there can be that conflict between drivers and people on bikes." He went on to describe an incident that occurred on his commute home from work one day, wherein he chose not to move to the edge of a narrow road, and subsequently was yelled at by a driver. He stopped to speak calmly with the driver, who was unapologetically ignorant to the fact that cyclists are entitled to 'take a lane'. The conversation ended with the driver yelling a profanity at him and driving away. While incidents such as this appear to be few and far between, they do result in some friction between road-users, and a lack of trust in one another – a feeling that could indeed be mutual.

Trust is an important element of urban cycling, as the Ontario Highway Traffic Act maintains that a cyclist must behave as a vehicle (Ontario Ministry of Transport, 2015). As such, in the majority of situations, bicycles and cars are sharing road space. Since bicyclists are vulnerable road users, they must place some degree of confidence in auto drivers to have their best interests at heart. For some participants in this study, experience has made it difficult to foster this sense of trust. Lisa discussed her tendency to not trust drivers and later elaborated on her perspective:

> Or I don't ever feel like, well I shouldn't say ever. I rarely feel like I'm being aggressively targeted because I'm a cyclist. But, I feel like there's a lot of people who are.. impatience is the worst, you know where people who want to get past

> you cut extremely close they don't give you enough space. And I'll aggressively take the lane. In some situations.

This statement and others, indicate that cyclists often cannot place their faith in drivers to respect and be mindful of them. Stanley (age 48) described:

> I have to deal with a lot of cars that are making a right hand turn from Dundas Street onto Cootes Drive. And everybody it seems, they don't look. They're looking to the left to see if there are cars coming. And if there are no cars coming they'll just go. Whether you're a pedestrian or somebody on a bike you've really got to pay attention because they just don't pay attention.

Friction and at times verbal harassment can result from interactions between cyclists and auto drivers.

Others, however, had few to no complaints. In fact, several participants feel drivers in Hamilton are 'better' than drivers in other cities – going so far as to describe them as 'courteous', 'considerate' and 'respectful'. Evidently, some cyclists experience very few problems while sharing space with auto drivers. Participants in the study did also acknowledge that at times, pedestrians and other cyclists could be a source of frustration.

4.6 Overcoming Challenges

While participants can certainly recognize and speak to many of the challenges associated with bicycling in Hamilton, they are also in most cases overcoming these obstacles. This research draws on the perspectives of "lay experts" to understand not only the challenges associated with cycling in Hamilton, but how participants approach,

navigate or bypass these obstacles. Due to the confines of this research, I will not discuss in detail participants' strategies for overcoming challenges, however I would like to briefly acknowledge them.

Participants make use of a number of tools or strategies to overcome the obstacles they face. For instance, many participants described a tendency to carefully plan their routes in advance, so as to avoid dangerous, uncomfortable or unpleasant situations. They also discussed consulting other cyclists as a means of expanding upon their knowledge of safe routes or to learn more about alternative options. Participants are very attentive to traffic and road conditions while cycling in mixed traffic, and pay careful attention to ensuring their bicycle's security by using one or more locks, or bringing bikes inside whenever possible. Finally, many participants described purchasing and making use of the appropriate gear to make all-season cycling possible, or altering plans and utilizing other forms of transport if necessary.

4.7 Discussion

This section examined challenges related to bicycle riding in Hamilton, Ontario. I identified four primary domains where participants faced deterrents to cycling: due to the built environment, as a result of the infrastructure within that environment, on account of structural factors such as education and policy, and due to social factors. Importantly, this section highlighted participants' capacities to think critically about often taken-for-granted aspects of urban life. In evaluating their ability to move throughout the city, cyclists re-imagined their relationships with the physical environment and its role in accommodating quotidian tasks. This appraisal revealed the ingrained presence of a

transportation system that Hamilton residents exercise almost no control over. Participants described frustration, and even contempt, for the ineradicable permeation of the automobile, and the primacy this vehicle is granted in everyday life. Participants even suggested their efforts to move throughout the city by bicycle render them as 'outsiders' or 'fringe' members of this well-established system.

Use of the bicycle obligates residents to work simultaneously within and outside of this system. Cyclists operate within the system, as they must navigate Hamilton using a pre-established network of roads, sidewalks, paths and transit routes, in the same way that all other residents do. Yet, as a cyclist, one is situated in the grey area between these networks, occupying the poorly defined space between a pedestrian and motorized vehicle. A bicyclist is independent and autonomous; unlike public transit users; quick and able to cover substantial ground with relative ease, unlike pedestrians; and physically exposed and connected to their surrounding environments, unlike auto drivers. Bicycling is an embodied experience, wherein users are experiencing first-hand the physical elements of weather and topography; the sensory inputs of sight, sound and smell; and social elements such as eye contact and ease of communication.

This embodied experience exists in opposition to what Wickham refers to as the 'carcoon' (2006). Automobile transport not only represents the privatization of public space (Aldred, 2010) it in fact facilitates a disconnection between transport realities and corporeal existence. Within the carcoon (Wickham, 2006), drivers can control the climate, employ various communication and entertainment technologies and physically separate themselves from the external environment. Cycling unapologetically immerses

individuals within their physical environments, consequently prompting a re-evaluation of these very spaces. Therefore, bicycling within a system that caters first and foremost to other transport modes forces riders to carefully consider their physical safety and comfort, thus enabling a conversation about the challenges they face.

When moving throughout Hamilton, participants were inevitably aware of the lack of designated physical space they had been allocated. This positions cycling as an intrinsically present-oriented experience. Some transport modes allow users to move along absent-mindedly without giving much consideration to their own wellbeing. Contrarily, in Hamilton bicycling often involves negotiating shared space with motorized traffic; and necessitates a degree of physical connection to the surfaces upon which one travels. The speed of travel maintained enables the rider to be immersed in, and attentive to, their surroundings. The convergence of these conditions positions bicyclists as residents who spend time *in* urban spaces, as opposed to time moving *through* them. This situates bicyclists as citizens who are an active part of their surroundings, thus reinforcing notions of cycling citizenship (Aldred, 2010); and producing inhabitants who, at the very least, are connected to their local environments as opposed to disconnected from them. Within this study, participants demonstrated a capacity to critically evaluate their surroundings, producing a constructive and insightful appraisal of these spaces in relation to bicycling. As such, individuals who already cycle are well positioned to comment upon and make recommendations regarding the current and future bicycling network in the city of Hamilton.

Participants expressed both positives and negatives within Hamilton's network. There may exist areas of overlap, where auto drivers might also protest the presence of cyclists, viewing them as a distraction, hazard, or even an illegitimate road-user. Perhaps the most amicable solution is to facilitate a conversation between cyclists and auto-drivers, encouraging both parties to support separated infrastructure. Many individuals already occupy both categories and neither can be deprived of their right to move throughout the city using their chosen means of transport. However, it would seem advantageous and safer for both parties to travel independently of one another. This allows cyclists to travel at a comfortable speed with much less worry for their personal safety, and leaves auto-drivers with uninhibited access to city streets without being inconvenienced or concerned with vulnerable road-users. Separated infrastructure is widely known to increase the number of bicycle users, as visible in cities such as Amsterdam, Copenhagen and even Montreal, Canada. Moreover, the most frequently referenced reason non-cyclists do not take up bicycling is a concern for their physical safety (Geller, 2009; Winters, Babul, Becker, Brubacher, Chipman, Cripton, Cusimano, Friedman, Harris, Hunte, Monro, Reynolds, Shen & Teschke, 2012). As such, separating cyclists from auto-users, or enacting other traffic calming safety initiatives, for example – Vision Zero, a multinational road safety effort which aims to achieve a transportation system with zero annual injuries or fatalities (Johansson, 2009); may significantly increase perceived and actual safety for vulnerable users.

Chapter 4 has presented the findings of this research as they relate to challenges associated with bicycle riding in Hamilton, Ontario. This research has identified and

categorized four main themes, each with sub-themes that function as obstacles to cycling. Section 4.2 discussed challenges related to the built environment. For the purposes of this research, the built environment was defined as static and pre-existing, without significant opportunity for alteration. Within the built environment participants identified three areas of concern: Main and King are large, multi-lane, one-way streets running through the downtown core; participants expressed concerns with land-use including a lack of integrated, mixed-land use; and they were bothered by the priority given to automotive traffic, before and over other forms of transport. Within the built environment, as discussed in Section 4.3, infrastructure exists to assist with the integration and flow of traffic. Participants expressed concerns regarding the lack of bicycle-specific infrastructure and issues of safety when completing left-hand turns. As well, the lack of connectivity between the infrastructure that does exist; and the dangers posed by potholes, cracks and loose rubble on the pavement were referenced.

Section 4.4 discussed the structural factors that inhibit cycling in Hamilton. In accordance with the Social Ecological Model of Health, this thesis identified multiple layers of influence that may encourage or discourage individuals who travel by bike. Participants identified the difficulties posed by a lack of bicycle-friendly facilities at the workplace; a lack of driver education and awareness; a lack of political will on the part of Hamilton's municipal politicians; and concerns with the laws and legislation which govern cycling in the province of Ontario.

Section 4.5 provided an overview of the social deterrents referenced by participants that may discourage bicycle use in Hamilton. Concerns related to the social

acceptability of cycling to the workplace; the ubiquity of vehicle ownership in this area; and frustrations which often accompany 'sharing' the road were voiced. As well, participants' strategies for overcoming obstacles were briefly discussed in Section 4.6. Section 4.7 presented the discussion on challenges associated with bicycling in Hamilton, wherein I drew on Aldred's notion of cycling citizenship (2010), and identified cyclists as local citizens who are inherently imbedded in and connected to their physical and sensorial environments, enabling them to think critically about these environments. These citizens move throughout the city in a highly present-oriented and embodied way, with much attention given to their personal safety and wellbeing. The chapter concluded with some recommendations for further steps to reduce or eliminate deterrents to bicycling in Hamilton.

Chapter 5: The Cyclist Identity – Findings

Chapter 5 outlines the results, findings, and discussion of the cyclist identity component of this thesis. Skinner and Rosen (2007) state: "The term [identity] encompasses both people's sense of who they are (what might be termed 'personal identity') and their sense of who they are like and who they are different from (what might be termed 'social location')" (p. 83). The following analysis addresses identity on both an individual level and through social location, hereafter referred to as 'community' level.

I used a thematic analysis to explore participants' perceptions and understandings of their bicycling identities, and developed four main themes from the analysis: (1) divisive or contentious connotations often surround the term 'cyclist'; (2) a cyclist's identity is largely informed by and embedded in their broader social context; (3) the cyclist's identity is primarily experienced on an individual level, however, a larger community of cyclists does exist and many participants relate to that community; (4) participants' understandings of their identities span beyond frequency or type of bicycle use and include notions such as citizenship and an affection toward all things cycling-related. These four themes and their respective sub-themes are explored more thoroughly below.

When asked whether or not participants identified themselves as 'cyclists', the response was an overwhelming 'yes'. In fact, 9/10 participants indicated that they do identify as a *cyclist*. Some excerpts demonstrating this affirmation follow. Lisa stated "Um, yeah. And I think it's become a major part of my identity in the past eight years."

This suggests that over time Lisa's cyclist identity has gained primacy in her understanding of self. Clark reiterated the identification of a cyclist: "Absolutely. Yeah it's um, kind of how I, I don't want to say I define myself as a cyclist, I am a cyclist obviously but um, when people ask me what I like to do that's what I tell them. So um, so that's a pretty important thing for me…" For Clark, being a cyclist was not simply a categorization of self, but also an important part of his subjective identity.

Although the majority of participants did identify themselves as cyclists, one participant did not identify himself as a cyclist. Despite being a frequent, all-season commuter, he distinctly stated that he does not identify himself as a cyclist. Stanley represents an interesting divergence from the overall trend found in these data. Stanley's reasons for not identifying as a cyclist were primarily related to the negative connotations surrounding the term, a sentiment that was expressed by other participants, and is explored in the following section. While the information conveyed by participants who identified as cyclists will form the basis of this thematic analysis, overlapping trends exist between participants who do, and the participant who did not identify as a cyclist. Stanley's situation is unique; however he shares several perspectives with other participants. These are explored further below.

When asked whether or not Bridget (age 21) identifies herself as a cyclist, she immediately captured the complexity of this question: "I think so… It's a very open, broad term. I don't know how you could start defining yourself as a cyclist". Factors such as how participants define or understand this identity, how this identity is formed, what it means to participants, and how important cycling is in participants' lives vary

considerably. The following section will further explore the relationships between individuals and their cycling identities, how or why these individuals came to see themselves as cyclists, participants' criteria for what constitutes a cyclist, and notions of community.

5.1 Contentious Semantics.

This research endeavours to answer the question of whether or not a group of bicyclists in Hamilton identify as 'cyclists', and what this identity means to them. As visible in research conducted by Aldred, words such as 'cycling' and 'cyclists' can be problematic and value-laden in some contexts; occasionally even giving rise to discrimination (2013a). Participants in this study also struggled with the label of 'cyclist'. When asked whether or not Madeleine identified herself as a cyclist, she stated:

> Yeah. I don't know that I use that word all the time. Um, in some, depending on who you're talking to some people hear that term and think, either professional or someone who races or, yeah. So I think some people read that term that way. I think it depends on your audience.

Madeleine continued to wrestle with the connotations that the term 'cyclist' carries:

> I associate it more with, when people are talking about the difference between drivers and pedestrians and cyclists. And that kind of like cycling culture. Um, but yeah I don't know how I refer to myself generally. I guess as a cyclist, someone who rides a lot. But again people kind of, so let's say I go to like a gym, or I go to like a physio appointment and they ask me what kind of physical activity I do. If I

> say cyclist, they tend to assume that I mean, that I race or I'm competitive. Which is not the case.

Madeleine made reference to the "us-versus-them" tribalism that often accompanies discussions involving cyclists (see Skinner & Rosen, 2007). Skinner and Rosen maintain that in fields such as public policy, media, and academia individuals are often categorized based on their modal choices; they are referred to as car drivers, public transit users, cyclists or pedestrians (2007). This use of language fails to acknowledge that many citizens regularly make use of multiple forms of transport.

In the above quotation, Madeleine ultimately conceded to the term, reluctantly admitting she is a cyclist. She continued to problematize this language, however, referencing certain contexts wherein assumptions are made about the type of cycling she engages in or the distances she travels. Evidently, the term *cyclist* can be seen as misleading; and it often presupposes a specific type or amount of activity on the user. This section explores the contentious semantics surrounding the term cyclist. First, I explore participant definitions of a 'cyclist'. I then discuss participants' self-evaluations of their own cycling identities.

5.1.1. Participants' criteria for being a cyclist. Participants were first asked whether or not they would categorize themselves as a cyclist. Following this, and after discussing any reflections or ideas that arose from this initial question, I queried what the participant's criteria for the label of 'cyclist' is, and how they fit or did not fit these criteria. Interestingly, participants' criteria for others, when describing what constitutes a

cyclist, was relatively consistent; however, their descriptions of what makes them a cyclist (explored further below) varied considerably.

Most participants linked the criteria for being a cyclist with the regularity of an individual's bicycle use. While few participants specified what constitutes 'regular' the general consensus seemed to be that an individual must be cycling as part of their quotidian routine, to claim the label of a cyclist. For instance, this statement by Bridget exemplified this sentiment: "Yeah, I would say it would have to be something that you regularly do. And that you work into your daily routine." In a slightly more detailed description, Reid stated:

> Um, it's a person for whom cycling takes up a significant portion of either their day or their week. […] Uh, routinely. And if, whether it's commuting, or as a hobby. Not just something you do with your kids every once or twice a summer, it's, something that you have to be doing probably at least three times a week. With regularity.

Accordingly, participants consistently felt that frequency of bicycle use was the most important criteria in determining a cyclist.

Type of bicycle use was seen as less important, however, Marvin stated that using one's bicycle in a goal-oriented fashion carries some extra weight: "Oh yeah. I think so, so a cyclist is anybody who rides a bike more than intermittently and is, you get a little extra plus after your name, if you use it for something that has a goal. So either for fitness, or to be social, or to raise money, or to commute." For Lisa, the criterion for being a

cyclist was linked to the willful decision to choose a bicycle over other forms of available transport:

> I'd say a cyclist is someone who, I mean I could be very utilitarian and say 'Oh it's anyone who rides a bike' but I guess I don't actually believe that. But it's somebody, you know you're a cyclist if you are, um, riding a bike and you're happy about it. You're choosing it. It's not, you know due to a lack of options. It's a real choice that you're making to ride. I think that's part of the identity.

This participant linked identity to agency in the context of transportation options. As is visible, understandings of what constitutes a cyclist vary to some degree, however most participants agreed that cycling with regularity is the most important factor when determining whether or not one is a cyclist.

5.1.2. Stereotypes associated with the term 'cyclist'. As is evident in the literature (see Aldred, 2013a), the narratives surrounding cyclist identities are complex. When describing themselves as cyclists, many participants took the time to qualify or explain their use of the term. Unanimously, the distinction being made was to clarify that the participant does not cycle for sport or exercise. This suggests that the term cyclist has pervasive connotations. For participants in this study, these overtones refer to road riders. These are individuals riding fast, typically expensive, bicycles; often dressed in very specific athletic clothing and riding long distances for a particular purpose. For example, Stanley stated:

> You see bicyclists riding in their groups and their three thousand dollar road bikes and they've got the fancy spandex on and this and that. Again, that's not me

> either. Um, I don't own any spandex. I'll never own any spandex. Even though it might be very comfortable to ride a bike in. I'm just a shorts and t-shirt casual kind of guy. Um, so if you say 'cyclists' I picture a guy with all the riding gear on, going down the street at a gazillion miles an hour with all his buddies. Um, blowing through stop signs. Not paying attention to any lights. Because, generally that's the way they are. Um, that's, when you say 'cyclists' that's what I picture.

This participant painted a vivid picture of what comes to his mind when the term 'cyclist' is used. The imagery is not particularly positive and other participants reiterated portions of it. Carmen stated, "I wouldn't say I'm a serious cyclist. […] I mean, I, you know next to, you know, these guys you see zipping around in spandex who are this wide, um, no I'm not a cyclist." Evidently, the term 'cyclist' carries with it strong connotations to specific types of bicycle users.

5.2 Cyclist identity is Embedded in Social Context.

Both theory and research support the notion that much of subjective identity is embedded in, or informed by, the social context within which an individual resides (Aldred, 2010; Skinner & Rosen, 2007). According to Hogg et al. identity theory examines the reciprocal relationships between an individual and society in order to understand social behaviour (1995). Conceptually, identity assists in making sense of both the complex nature of individual transport choices, and the ways in which culture mediates these choices (Skinner & Rosen, 2007). As such, the society an individual resides in is integral to the formation of their identity. Identity theory provides a lens through which to understand the experience of bicyclists and what it means to be a

'cyclist' in a car-dominated city such as Hamilton, Ontario. Throughout the course of this research I sought to understand what the identity of a cyclist *means* to participants. I was curious about how this identity was formed, how participants define or understand their cycling identity and what role this identity currently plays in their lives.

5.2.1. Cycling and transport. Several participants initially linked their cyclist identity to transport and movement. For instance, Abigail stated, "Um, yeah that's how I guess, I see myself. When I say I'm a cyclist, it's usually in that context. Of how you get around." As such, this participant defined her cyclist identity in relation to a bike being her primary means of transportation. She later clarified "Yeah, not like, exercise." As discussed previously, participants often situated themselves and their identities in comparison or opposition to other possible selves or identities (Hogg, Terry & White, 1995). Within the realm of transport, the comparison is typically made to automobile ownership. When asked to elaborate on how cycling has become a part of her identity, Lisa stated "… and you know you sometimes get asked at work or, you know I volunteer a lot, it's like 'Do you have a car?' I like to say 'No, but I have a bike'. You know I like to really assert that." As such, participants linked their identification as cyclists to cycling being one of their primary means of transport. These findings support the work of Aldred, who found that her study participants either explicitly or implicitly discussed attributes of cycling in relation to aspects of private car use (2010). In an auto-dominated society, such a connection is understandable.

Formation and articulation of individuals' cycling identities are rooted in facets of their social worlds. Throughout the study, participants described certain aspects of culture

in Hamilton as particularly important to the formation of their identity. The following sections examine how a cyclist identity is, for some individuals, a byproduct of dissent, deviation, distinction and finally the byproduct of being a cycling ambassador. These distinctions exist in relation to pervading social and cultural norms and the social context of Hamilton.

5.2.2. Cyclist identity: a byproduct of dissent. For one participant, having to "fight for" the ability to cycle, or frequently justify the choice to others, has solidified cycling in her identity. Facing adversity and the comments of those who felt cycling was unrealistic, unsafe or inappropriate, reinforced cycling and the decision to ride her bike as a part of this participant's identity. Lisa described this experience:

> The identity has been informed by, by sort of the opposition. You know the fact that it is considered different. I didn't, I didn't buy cute bicycle t-shirts in Montreal. You know I didn't, I wouldn't say, I'd say I was probably just someone who biked occasionally in Montreal. But it was when I came to Hamilton and decided to, you know make this choice and do this commute you know in the face of, a little bit of opposition that that, yeah that's really formed my identity. That's when I started describing myself you know probably as an advocate or you know an activist.

Here, Lisa describes how resistance from the broader social context has informed her identity as a cyclist. This is particularly visible in that her cyclist identity developed alongside changes to her social context. As such, this participant's cycling identity is

embedded within her social context, and in this case the identity was strengthened as a result of the enmity she encountered in Hamilton.

5.2.3. Cyclist identity: a byproduct of deviation. Several participants describe how their cyclist identity formed as a result of biking being a relatively uncommon activity in Hamilton. According to Hogg et al., "identity is the pivotal concept linking social structure with individual action; thus the prediction of behaviour requires an analysis of the relationship between self and social structure" (1995, p. 257). In Hamilton, private vehicle use is heavily embedded within the social structure of the city. Car use and ownership are implicitly accounted for in land-use and zoning decisions, educational or job opportunities, and participation in social life. Beyond simply a means of transportation, vehicle ownership is in many ways understood as a prerequisite for independent living. Individuals who reject these social norms by incorporating bicycling into their daily lives, adopt the identity of a 'cyclist' partially in response to the action of bicycling in a system that tacitly discourages this mode of transport. The following participants identify strongly as cyclists, attributing this identity partially to the social context within which they are embedded. Lisa described:

> But yeah I would agree with that, it probably, yeah it wouldn't have to be so strong a part of my identity. Yep. I, there'd probably be no need for it. You wouldn't have to, if everybody's doing it you don't have to define yourself you know, by doing it.

Lisa's cyclist identity is inadvertently solidified by her deviation from the social norms of her community. Carmen reiterated this sentiment, stating:

> You know, initially I would say cycling was just sort of something I did to get around, um, it's grown into my identity to an extent, it's not huge but because it's something that not everybody does and therefore gets noticed, you know it becomes part of your identity from other people's perspective and therefore it starts to become part of your identity.

Carmen articulated two interesting observations. Firstly, since bicycling is a relatively uncommon activity in Hamilton, it transitioned from representing a utilitarian means of transport, to being incorporated into her self-concept. Secondly, Carmen described this identity as solidified or reinforced by others. This latter point, is further explored below.

The following statement by Madeleine also supports the above two propositions: cycling has been incorporated into her identity since it is an activity that deviates from the norm, and others' perceptions of her have simultaneously reinforced this identity.

> So I think because of that a lot of people know me, in a way because I'm a cyclist. And because I use my bike a lot. Or they remember me, because I'm the one who biked to this meeting in Riverdale in the winter. And everyone kind of like laughed when I came in, and was like, rolling their eyes and chuckling.

Madeleine bicycling to a meeting in the winter was seen as unusual by her coworkers. Accordingly, this activity became integrated into her understanding of self, and her coworkers' reactions reinforced this understanding.

5.2.4. Cyclist identity: a byproduct of distinction. Participants discuss how cycling becomes a marker of individuality for them – it embodies notable aspects of their

character. Lisa described how her cycling identity represents a part of her personality that resonates with feeling unique.

> And I guess it's, you know a part of my identity that likes to maybe feel a little bit, a little bit different, a little bit you know quirky that.. and, you know it resonates with sort of a sense of independence. And maybe a little confrontational.

For Lisa, cycling is a marker of distinctiveness, something that sets her apart from others.

Several participants describe their cycling identities as indicative of their self-confidence. As such, they are positioning themselves as distinct from others in that they possess a great deal of self-assurance. Marvin demonstrated this sentiment in the following excerpt:

> It's um, manifestation of, the confidence that I have in the fact that I, you know I like riding my bike. If people find it funny that I dress like that, who cares? And, it a, gives you an interesting, I think it's a marker of a little bit of, it gives me a little bit more freedom than a lot of other people because, it's a marker that you're willing to put in a little bit more effort to get a little bit more flexibility.

Marvin's cycling identity represents not only an indication of self-confidence, but also a sense of distinctiveness. He is distinct from coworkers who are less willing to take extra steps in favour of added convenience. In this case, Marvin discussed the convenience of not having to park a car when transitioning between work sites. Again, this participant's cyclist identity is a manifestation of individual action, within the broader context of social structure (Hogg et al., 1995).

Notably, several female participants also link cycling and their cycling identities to their self-confidence. Bridget stated: "Um, I would say compared to, maybe to other girls I'm a bit more risk-taking or adventurous or confident in myself." Madeleine also felt her self-confidence was bolstered by cycling:

> Yes. Yeah I think it is a huge part, just because it's such, it's so much a part of my daily life and how I get around and how I, yeah like I said the confidence that I have and the physical strength that I have because of it. And because of like, the other.. it's not so much confidence it's like a weird kind of a pride thing. Just kind of like a personal pride that like.. yeah you're fucking right I rode eighty kilometers to get here. And I'm standing, I'm fine. I'm totally fine. I can do that, my body is totally capable. I'm a capable person.

Both participants describe themselves as confident or self-assured. This confidence is worthy of analysis, through identity theory, for several reasons. Firstly, Hogg et al. (1995) suggest that self-esteem is typically heightened by one's perception that they are successfully enacting a role, while self-doubt may result from one's self-evaluation presuming a poor role performance. As such, in the case of the cyclist identity, confidence may be derived from the subjective belief that one is succeeding at being a cyclist, or adequately enacting the role of a cyclist. This leaves room for further exploration. For instance, do individuals who do not feel they are sufficiently performing the role of a cyclist experience feelings of self-doubt; and subsequently not identify themselves as cyclists?

Moreover, women gleaning self-confidence from cycling or a cyclist identity could have important implications for opportunities surrounding female empowerment. Van der Kloof, Bastiaanssen and Martens support this supposition, linking bicycling lessons to improved self-esteem and self-confidence in female immigrants and refugees in the Netherlands (2014). More generally, Mitten (1992) reported improved self-esteem, feelings of empowerment, and improvements in psychotherapy progress following women and girls spending time being physically active outdoors. Aldred (2010) noted several psychological benefits of cycling experienced by both women and men in her study, including study participants feeling happier, a sense of achievement and improved self-esteem. Participants in this study echoed these perspectives, making this area worthy of further analysis. Here, the value of expanding areas of cycling research to include notions of identity becomes clear. Further understanding the reasons why some women link elements of cycling to feelings of empowerment could assist individuals, groups and organizations that work alongside women to increase self-esteem and self-confidence.

Distinct identities can also be used to separate cyclists from one another. Participants sometimes positioned themselves and their identities in contrast to other possible selves and identities. This phenomenon is visible in the following quote by Lisa:

> And my cycling identity is specific too. I view myself as an urban cyclist or a commuter. And certainly my cycling identity is, probably in, I'll talk disparagingly about the spandex guys and [chuckling]. Yeah, my identity is definitely consciously opposed to that.

Identity theory suggests this is the process of formulating 'role identities' (Hogg et al., 1995). Role identities are "self-conceptions, self-referent cognitions, or self-definitions that people apply to themselves as a consequence of the structural role positions they occupy, and through a process of labeling or self-definition as a member of a particular social category" (Hogg et al., 1995, p. 256). In this case, the self-designated position would be that of a commuter cyclist, thus declaring the individual distinct from other categories of cyclists. This could be a result of the individual questioning the legitimacy or authenticity of other types of cyclists, or wishing to distance themselves from stereotypes associated with this type of bicycle user.

Naming oneself a cyclist is not simply a declaration; it can also be an action intended to distinguish. Role identities both enable a precise understanding of self, and they allow an individual to distinguish particular roles from other germane complementary or counter-roles (Hogg et al., 1995). For instance, participants in this study distinguished between themselves as every-day cyclists, and other bike users as sport, exercise or 'serious' cyclists. This differentiation is visible in a quote by Lisa "I think that really tells me you know that I'm not, I'm not a sport-cyclist. You know it's really sort of embedded into my life." Hence, individuals draw on role identities to establish their own unique cyclist identity, in comparison or opposition to other possible cycling identities. This phenomenon is consistent with findings from Skinner & Rosen: "Far from seeing themselves as in conflict with 'the motorist', as car advocates might assume, the identity of people who commute by bicycle tends to involve them setting themselves apart more from *other cyclists*." (2007, p. 92).

5.2.5. Cyclist identity: a byproduct of designation. A number of participants describe their identities as in part confirmed or reinforced by others in their social networks. Whether they are known as 'the bike guy'; acquaintances are asking them questions about bikes; or they are being tagged on social media for bicycle-related news – participants indicate that their cycling identities are not formed independently from their social worlds. Bicycling is very visible and therefore this identity is enforced and reinforced by participants' social networks.

Marvin described himself as meeting an expectation that has been placed upon him by others: "That's an interesting question what does it tell me about… well it's part of, people know me as the guy who does a lot of cycling. So it's part of fulfilling an expectation amongst others." This statement is reinforced by Carmen's perception that over time, as a result of labeling by others, she incorporated a cycling identity into her understanding of self; "…you know it becomes part of your identity from other people's perspective and therefore it starts to become part of your identity." This suggests that adopting the identity of a cyclist is an exercise that simultaneously occurs internally and externally. This proposition is supported by identity theory which states that "Ultimately it is through social interaction that identities actually acquire self-meaning; they are reflexive (Burke & Reitzes, 1981). Others respond to a person in terms of his or her role identities. These responses, in turn, form the basis for developing a sense of self-meaning and self-definition" (as cited in Hogg et al., 1995, p. 257). Participants in this study confirm this supposition by suggesting that their cycling identities are in part formed or confirmed by others within their social circle.

5.2.6. Cyclist identity: byproduct of being a bicycle ambassador. An aspect frequently referenced by participants when discussing their own cyclist identities, was a tendency to encourage others around them to try out the activity. As such, these individuals may see themselves as ambassadors of the cycling community. This too, can be understood as embedded within the larger social context. In countries or cities where cycling is the norm, individuals would not have to be encouraged to ride a bike; for instance in the Netherlands children are typically transported by bike before they are able to walk. On account of its relative rarity in Hamilton, trying out cycling may require some encouragement from others in one's social circle. Participants in this study described themselves as cyclists, in part due to their tendency to encourage others to try out the activity.

The following excerpt from Clark's interview illustrated this tendency; Clark was asked what identifying as a cyclist tells him about himself: "I would say I don't know other than that I love it. That's the only thing I can think of. I mean again I try to urge people who are interested in trying it out to see if they like it. But yeah it's just that I love it and I'll try to [ride my bike] whenever I can." This trend has important implications for encouraging non-users to start cycling. Research suggests that social support and modeling are positively correlated with cycling for transport (Titze et al., 2008). Authors state, "a supportive environment (support from friends or family members as well as observing others bicycling) are potential determinants of active mobility" (Titze et al., 2008, p. 257). This study substantiates the above assertion, as many participants identified

social support and encouragement from peers as catalysts to their interest in bicycling. For example, when asked why she began cycling Bridget explained:

> I always used to bike to school, especially public school when I was younger. So it was just a mode of transportation. And then it decreased a lot in high school because my parents would usually drive me to school. And then when I was in high school probably at about grade twelve, is when my friends tried to get me back in, get into mountain biking. So um, I got into mountain biking probably around grade twelve, when I was about eighteen, and I've been doing that since.

Clark expressed a similar experience, although it was coworkers whom spurred his interest.

> Um, it would have been approx- the year itself would have been about 2000 I want to say. And I was working with the city but at a different location. And a couple of my friends were, couple people I worked with were um cycling on a regular basis. So, I had decided that I would buy a bike and try that, and one of my work mates lived near me. So we would cycle in together. Cycle home together. And from that point I was hooked.

Madeline exemplified both the importance of being a bicycle ambassador, and the power a bicycle ambassador has when modeling cycling behaviour:

> I think it was actually just knowing other people who, I had a bike that I would use to just kind of putter around, or go on shorter distances, um, but I wasn't using it for commuting I was taking public transit for the most part. Um, and just kind of meeting more people and knowing more people who would do certain rides. So I

> would go to, I would be comfortable say doing this distance, and then I would have a meeting that was over here so I would take a bus. And then I would get to the meeting and then one of my colleagues would have biked there from a much further distance and then I thought "Okay, it's a further distance" and it, for me it just seemed like an awkward, like there weren't any bike paths, you kind of had to go on an overpass and there were, it didn't seem like a very pleasant ride and it seemed, like I couldn't wrap my head around what a good and safe route would be to get there. Um, so just knowing people who did those things and kind of set an example and, and showed me that this is possible, it's not unreasonable, it might not be the safest, all the time but, I'm also just more.. I've gotten more comfortable just knowing people that also ride a lot more than I did.

It is possible that individuals who currently identify as cyclists, and who link this identity with a tendency to motivate others, may have an important role to play in encouraging cycling within their social networks. Furthermore, and in response to the social deterrents discussed in Chapter 4.5, social support and modeling may be crucial to increasing the number of safe and confident cyclists in the city of Hamilton.

This section has addressed questions surrounding how participant's cycling identities are formed, how they are defined and what they mean to participants. Nearly all participants described their cycling identity as embedded within their broader social context. Specifically, this identity can arise as a byproduct of dissent, deviation, distinction, designation, or from being a bicycle ambassador. The cyclist identity more broadly relates to transport politics and the experience of using an alternative form of

transport in an auto-dominated society. Identity theory views the self "not as an autonomous psychological entity but as a multifaceted social construct that emerges from people's roles in society" (Hogg et al., 1995, p. 256). Accordingly, participants' understandings of self would be naturally derived from the social world and social context within which they reside. The following sections will address notions of individuality and community, citizenship and an affection for all things bicycle-related, or what I have termed displays of 'bikelove'.

5.3 Identity: Individual or Social?

Participants in the study were asked if their identity as a cyclist exists on an individual-level, as a subjective understanding of self; or if this identity is socially or group based. Responses varied, however the following two trends will be explored in greater detail throughout this section: the cyclist identity is individual; the cyclist identity is individual however camaraderie is frequently experienced.

5.3.1. Identity is individual. Many participants described their cycling identities as personal or individual. The primary reasoning given for this understanding of self is that bicycling is a solitary activity for these participants. Participants are typically cycling for either commuting purposes or recreational rides – and while at times a coworker, friend or partner may accompany participants, the majority of trips are done alone. This prompts participants to describe their cycling identity as individual or personal, as opposed to social or shared. In the following excerpt, Bridget explained why her cycling identity is a personal one: "I would say personal because, unless you're physically seen with your bike, or carrying your helmet, or maybe you have a tattoo or buttons, or stickers

that are promoting it, it's something that's internal. It's kind of more of a mental perception I guess. Being a cyclist, per say." Similarly, Clark and Madeline respectively described their cycling identities as personal since cycling is a solitary activity for them both. "Uh for me it would be more personal. Because I don't do a lot of cycling, like it's not a social thing for me, necessarily." Madeline stated: "And for me cycling is very often a very solitary activity, I'm often going.. I'm often commuting I'm often going on long rides by myself." Below, Reid elaborated on why he considers his cycling identity a personal one:

> I'm somewhat of an existentialist. […] And to me it's like, and one of the things I just, it took me my whole adult life to do, but, one of the things that has been a consistent presence is, has been cycling. Since I became an adult it's one of the things, you know I was single for the longest time then I met my common law partner, in my mid-thirties. And, you know we got a place together, we bought a house we started having kids. Still biking. Still biking all that time. […] But, so it is something I cultivate as an individual identity like I'm not part of a group that cycles. I've joined groups of people that have biked and it's like well.. I've learned. I enjoy this more doing it myself. So I would call it, definitely an individual identity.

Reid's cycling identity is individual as a matter of personal preference, as a result of history and as informed by his wider worldview. Many participants in this study agreed that the cycling identity is individually experienced.

5.3.2. Identity is individual, but camaraderie is appreciated. As indicated above, many participants defined their cyclist identities as 'individual'. A number of participants, however, added a qualifier – while their cycling identity is largely experienced individually, participants enjoy the camaraderie or fellowship that they are exposed to from other cyclists in the community. For instance, this statement by Carmen depicted this sentiment:

> But yeah I'd still bike. Because I have my own reasons for doing it, it's a convenient way to get around, I enjoy it. It's good for me, it's better for the environment what's not to like? Um, at least in good weather. And but I do enjoy the fact that there is a cycling community and that it is kind of on the city's radar screen and I, you know, I'm kind of a fringe member of the cycling community I'm not real active, but it matters to me that it's there and I like it.

Carmen asserted that she would ride her bike regardless of whether others around her were cycling, as there are elements of cycling that she finds intrinsically rewarding. Nonetheless, she does appreciate the presence of a cycling community in the city. Other participants have gleaned satisfaction from their involvement with various cycling sub-communities. For instance, Lisa and Bridget respectively are associated with bicycle advocacy and competitive mountain biking:

> Yeah. So I enjoy that camaraderie and you know I, I volunteered for the Yes We Cannon campaign to get the, you know Cannon Street bike lanes put in. [I] enjoyed that camaraderie but at the same time, I think just because of the particular circumstances on how my identity was formed. Where maybe I'd been

> in a group, you know in Montreal the sort of social pressure that got me into it, but then in Hamilton when I started cycling I didn't have a big network at all when I moved back here. So it was an individual choice for me. At the time so, so I'll say, I feel a lot of camaraderie with other cyclists but it was kind of an individual identity.
>
> But I think there definitely is, like I was saying with the cycling team we definitely have a sense of camaraderie and teamwork. And there are, you know the national Canadian team, they train together. Even though they compete on their own. So I think it's kind of a balancing act between the two.

Thus, while these participants still experience their cycling identities as individual, they have made meaningful connections with either specific cycling sub-communities, or a broader community of cyclists that exists within the city.

Camaraderie between cyclists is not only appreciated, it is frequently reinforced. Seeing other cyclists on the road can elicit notions of community or solidarity. Clark described notions of a cycling community by commenting on a connection he experiences to other cyclists he encounters, whether he is on or off his bicycle.

> That I see them doing that, and that there is, there is a shared connection there. Whether it's I'm driving by or, I'm on my bike passing them. Like you always, there's always a nod or a hello. There is that shared connection there when you see people who have the same interest as you.

Carmen described feelings of camaraderie in the following excerpt: "But, generally speaking you know whether I'm walking or cycling or driving I see a bike and I [gesturing thumbs up] go team! You know." Kevin discussed passing other cyclists on the road as inspiring feelings of happiness:

> I, I'm happy. Yeah I love it. Every time, I almost just want to like give a salute to everyone I pass. Right cause it's, it's cool. Yeah, I totally dig it. It's like we're both helping each other just by being on the road and taking up space, you know. Getting to that critical mass. So, it's all good it's good for both parties. So it definitely is cool.

Many participants described feelings of conviviality, mutual support and respect associated with passing other cyclists on the road.

Contrarily, frustration and even irritation can also characterize feelings between cyclists. Lisa captures the complexity inherent to these experiences, "Um, I feel that slight pang of annoyance with um, and it's awful, people, you know they're very dedicated, I don't know anything about them. But I do tend to roll my eyes a bit at the spandex guys sailing by in their clips." Here, Lisa expresses mixed emotions in relation to passing other bicyclists on the road.

The concept of identity salience is helpful in exploring the complexity of this emotional reaction. Identity salience links various role identities to affective outcomes and recognizes that some identities have more self-relevance than others (Hogg et al., 1995). Lisa previously described herself as an urban cyclist or commuter, thus her role identity in this case is positioned in comparison to those who bicycle strictly for

recreation or sport. Further, while Lisa may identify as a cyclist, identity salience suggests that this identity can be eclipsed by the more precise identification of 'urban cyclist'. Here, Skinner and Rosen's assertion that cyclists often distinguish themselves from other cyclists is visible (2007).

5.4 Other Facets of Identity

Participants ranged in their explanations of what makes them subjectively identify as a cyclist. While factors discussed above, such as cycling for transport, cycling in an auto-dominated society and identifying with a community of cyclists are important, there were an array of other ideas put forth. These explain how or why an individual has claimed the identity of a cyclist. Two themes are explored in the following section. The first adheres to Aldred's (2010) notion of cycling citizenship, and the second refers to a particular fondness bicyclists discussed in relation to all things bicycle-related – or what I have termed 'bikelove'.

5.4.1. Cycling citizenship. This section builds on the work of Rachel Aldred, who examines notions of cycling citizenship in the UK (2010). Aldred argues that transport and citizenship are inherently linked: "Different transport modes enable different types of public spaces and social interactions, which may encourage different articulations of citizenship" (Aldred, 2010, p. 39). As previously discussed, while the car can be used to privatize public space (Aldred, 2010), cycling in many ways celebrates the sharing of public space. Aldred's vision of citizenship challenges standard national and political definitions of what it means to be a 'citizen'. Findings within this research project support the results presented by Aldred (2010), indicating that cyclists link the practice of cycling

to both social and natural local relationships, often with the focus of creating safer, less polluted and more pleasant streetscapes. Aldred explicitly links citizenship with identity stating, "While individuals may well not refer to 'citizenship', they may describe facets of identity that analysts would see as connected to citizenship" (2010, p. 39). Several participants in this study suggest that for them, a cycling identity is linked to notions of collective conscience, social justice, and environmental action; which can be broadly understood as articulations of local or social citizenship. Specifically, two participants describe how cycling is an embodied representation of their personal belief systems. The following quote by Lisa demonstrated this idea:

> I think, you know what it shows is I like to put my actions inside some, you know larger moral or social framework, whether it's justified or not. You know, and, I guess I don't feel that, I do feel that our actions have consequences and the, feelings.. I guess I like to feel that this choice I'm making is meaningful. And beneficial. And try to find, yeah meaning in my actions. I think that's what it says about me.

Lisa connects her cycling identity to her broader worldview. In this case, she is able to enact her principles and values through her actions and by adopting a cyclist identity. She also feels that a part of her identity seeks social justice, and feels that "we as a society would be a lot happier and healthier if we moved away from some of these very embedded cultural and social beliefs that we have." She acknowledges that her ability to cycle is made possible due to the privilege she has to make decisions around transportation. For instance, Lisa made the decision to live in a metropolitan area, and

look for employment within a reasonable distance to her home. These decisions were supported by the fact that she is well educated and qualified, thus was able to find work nearby. As such, privilege and opportunity are an implicit but important part of many individuals' access to bicycling.

Kyle also finds meaning within his decision to cycle. "Also, uh being healthy. Living an active lifestyle, that's very important. And kind of leading by example. Being the change that I want to see. So like, walking the walk. Or I guess, riding the ride." Both participants discuss values which are important to them, that bicycling enables them to uphold. In this way, a subtle collective identity does appear to exist amongst this population. While participants did not necessarily describe their cycling identities as socially formulated or maintained, they did reference aspects of cycling that resulted in them feeling supported, or experiencing brief connections with other cyclists. Using phrases such as 'go team' or words such as 'we', and describing a perception of overlapping perspectives and values does suggest that some participants in the study may experience a sense of collective identity as it relates to cycling.

5.4.2. Engagement in local politics. Several participants described their investment in local cycling politics as a component of their cycling identities. In fact, for Kyle this reasoning was one of the first provided when claiming the cyclist identity. "Because I do, um, I'm interested in bikes, I'm interested in civil politics, making cities better, ecological transportation options and all that stuff. I feel, yeah cycling, yeah I definitely do see myself as a cyclist." Here, Aldred's (2010) construction of cycling citizenship is again visible. Aldred suggests that the cycling citizen "represents a response

to contemporary social problems and strains (including climate change) …" (2010, p. 50). As such, an overlap between a locally conscious and engaged citizen, and the identity of a cyclist exists. Personal values and beliefs are incorporated into an individual's identity and then enacted through the action of bicycling. Carmen also speaks to an investment in local politics:

> You know I'm not what you would call a serious athlete. I'm not an athlete period. And certainly not a serious cyclist. At the same time I'm a frequent cyclist and I like, I mean I find it interesting to know what's, at least in a general sense, what's happening for cyclists. I care about cycling in Hamilton and, kind of keep my antennas up for, for things that affect us.

This statement indicates an interest in politics related to cycling, and directly links the notion of identity – defined as a subjective understanding of self – to conventional notions of citizenship – a local or national inhabitant of a particular area.

5.4.3. Displays of bikelove. Participants often used references to material objects to qualify their cyclist identities. Participants would discuss bicycle-themed possessions such as jewelry or clothing, images such as profile pictures on social media, or other memorabilia for instance tattoos or buttons, when asked about what makes them a cyclist. The most popularly referenced demonstration of 'bikelove' was via social media. Social media is a virtual presentation of self, and as such images representing a person's identity, beliefs or interests frequent their online profiles. Reid described his photos below:

> Yes there is. You look at my Facebook and Twitter, there's always these bike-cycling memes or sometimes my profile picture is me, is something to do with…

> one of the things I have on my Facebook wallpaper is 'Keep calm and ride your bike' [Laughs].

Several participants referenced the presence of bicycles on their social media accounts. As well, women in the study referenced bicycle-themed jewelry and clothing. Abigail states "I'm always looking for cool bike art, or jewelry, well.. maybe some jewelry. Yeah so, yeah totally. I'm down with it." Participants credit their cycling identities, partially to their interest in bicycle-related memorabilia. The notion of 'bikelove' captures participants' tendency to elevate the bicycle beyond simply a mechanical means of transportation. The bicycle comes to symbolize not only a valuable component of participants' lives, but also in many cases a declaration of individuals' personal beliefs and principles. Evidently, aspects related to bicycling or being a cyclist are important to participants, and in many cases this importance permeates their lives in deep and meaningful ways.

5.5 Discussion

In many instances, participants were not able to discursively capture what is important to them about cycling, but instead likened cycling to youthfulness, or used abstract terms such as 'freedom' to describe the experience. This section postulates on the potential 'freedoms' made available by the bicycle. It is my belief that we live in a capitalist society that is not only founded upon consumerist ideologies, but in fact actively engages in consumption as a means of maintaining its status quo. The automobile operating as the primary means of transport for most North Americans is no coincidence. Cars are sold as 'lifestyle items', articulations of the American Dream, and American

corporations spend billions of dollars annually on advertising for cars (Kay, 1997). By design, automobiles are ceaselessly consuming, and from a young age citizens are taught to embrace this consumption. A near constant stream of messages inundates people with the belief that they will be more satisfied if and when they have purchased the latest version of clothing, computer, cell phone or car.

In a system that strives to keep individuals focused on the illusion of a more desirable future, bicycling can epitomize a present-oriented, sometimes anti-consumerist activity, a self-powered mode of transport and even participation in a counter-culture (Desmond, McDonagh & O'donohoe, 2000) lifestyle. This research supports Aldred's assertion that bicycling represents "more or less conscious non-consumption" (2010, p. 36). While an individual must initially acquire a bicycle, aside from the occasional costs associated with maintenance, cycles are currently free to own and operate in Ontario. This positions them in stark contrast to the culture of automobility and consumerism, and thus represents interesting possibilities for sites of resistance and nuanced manifestations of contemporary life. Furthermore, in a society that increasingly lauds contrivances of disconnection, primarily via technology, cycling comes to symbolize an activity that challenges contemporary constructions of fulfillment (as defined by consumerist culture), by allowing individuals to exist in an inevitably present-oriented, embodied incarnate. Considering the potential significance of these factors, it logically follows that for those individuals who cycle on a regular basis this experience comes to symbolize something far greater than a utilitarian means of transport. It becomes incorporated into their sense of self in a way that is unique, momentous and unconditionally valuable.

This research suggests that the bicycle has come to symbolize more than a tool for moving throughout urban landscapes – it in fact can be an avenue through which to exercise one's values, beliefs and visions for the future. This reiterates my above assertions that bicycling can be used to reject contemporary social norms related to consumption, disconnection and social isolation. Bicycling can be used to liberate individuals from aspects of contemporary life that they may find undesirable or unwanted. As individuals incorporate the cyclist identity into their understanding of self, they are able to actualize their personal beliefs and values through action. This distinguishes them from others and produces a meaningful understanding of self. Bicycling plays an important role in each of these participants' lives; whether they have chosen to adopt the identity of a cyclist or reject this identification.

Moreover, in a context that not only does not support but in fact rarely promotes bicycling, adopting a cyclists' identity can be a means of justifying one's actions within a broader moral and social framework that views this behaviour as unusual. In this way, the bicycle becomes removed from its functional role as an object of transportation, and comes to represent a means through which individuals can express themselves and enact their beliefs. As such, the bicycle becomes a tool used to access mental or emotional places wherein freedom, serenity and enjoyment characterize typically mundane activities such as commuting or errand running. The bicycle can thus be used to represent a wide-array of personal beliefs and values. This includes but is not limited to: one's investment in the environment, personal health and fitness, creating more pleasant streetscapes and communities, social justice, personal satisfaction and happiness, anti-consumerism and

more. Moreover, wherein the bicycle can be used to actualize personal values, an individuals' understanding of him or herself can be further solidified. While further research is required to understand the causal relationship between the identity of a cyclist, and the action of riding a bicycle, this research concludes that the identities of bicyclists in Hamilton are complex, often value-laden, carefully considered and differently actualized constructs of being. While there are areas of overlap and shared experience, there are also many sites of tension, divergence, and distinctive understandings of self, expressed by Hamilton's bicyclists.

Chapter 5 has explored participants' understandings of the cyclist identity; how participants defined this identity, how this identity was formed, and what role it plays in participants' lives. I utilized components of identity theory to assist with the analysis, as well as building upon Rachel Aldred's (2010) notions of cycling citizenship. The chapter opened with a discussion of the divisive and in many ways contentious term "cyclist". While the vast majority of participants did define themselves as cyclists, most also viewed the term as value-laden, often implying negative or otherwise distorted connotations. Notably, participants' criteria for what makes others a cyclist, and their reasons for labeling themselves a cyclist, differ slightly. When defining the term 'cyclist', participants referred to concepts such as frequency or type of bicycle use, and agency.

Section 5.2 explored how both the physical setting and its accompanying social context can influence an individuals' cycling identity. This research asserts that a cyclists' identity can be formulated and understood through a number of avenues: as a result of transport choices, expressions of dissent, deviations from the norm, distinguishing oneself

from others, being designated a cyclist by others and finally, adopting the role of a bicycle ambassador.

Section 5.3 explored individual and social enactments of the cyclist identity, concluding that while the majority of participants understand this identity on an individual level, nearly all appreciate the expressions of camaraderie and community they encounter through cycling. This section also speaks to the tensions that exist between cycling sub-communities, and acknowledges the multiple meanings and emotions that accompany this process of partitioning. The concept of identity salience is employed to further interpret these participants' experiences.

This chapter concludes with a discussion of participants' multifaceted and novel explanations of their own cyclist identity, building on Aldred's concept of cycling citizenship and describing participants' particular affection for symbolic or representative bicycle items, which I have here referred to as "bikelove". The discussion section ruminates on the symbolism of the bicycle in contemporary life, and the many ways in which bicycling contributes to dynamic identities and individual modes of being.

Chapter 6: Study Conclusions

This thesis has explored the challenges associated with bicycle riding in Hamilton, and the subjective identities of Hamilton's cyclists. It concludes that deterrents to bicycling exist on a number of physical and non-physical levels and that the majority of individuals who bicycle on a regular basis do identify themselves as cyclists. This research acknowledges the complex, multi-dimensional nature of identity and explores various facets of identity as they relate to individuals' cycling habits. Furthermore, this research proposes that bicyclists are well equipped to discuss the challenges they face to bicycling, as cycling is an inherently embodied, connected and present-oriented activity, positioning bicycling as a means of emancipating individuals from unwanted facets of contemporary physical and social life. The following section outlines the study's limitations; it's contributions to current research and presents the final conclusions of the study.

6.1 Study Limitations

Several factors limit these findings. Being qualitative in nature, this study did not attempt to count, measure, or otherwise objectively assess bicycling infrastructure and barriers to cycling that exist in Hamilton. Rather, it draws on the experience of lay-experts to identify and describe challenges on various levels, in accordance with SEM. Being exploratory in nature, this research does not seek to categorize or organize cyclists into classifications based on their subjective cycling-related identities. As such, conclusions are broad, interpretative and complex, as opposed to being practical or reductionist.

Despite attempts made to adhere to best practices in qualitative research, several factors exist which may affect the outcomes and results of this research. Study claims were constrained by a small sample size, which consisted of ten individuals residing in Hamilton and the surrounding area. A lack of diversity characterized this sample, while the sample does maintain gender parity; it does not necessarily reflect the actual numbers of Hamilton's cyclists by gender. Much research indicates that more men bicycle than women (Aldred, Woodcock & Goodman, 2016; Dickinson et al., 2003; Moudon et al., 2005), and it is likely that gender disparity also exists in Hamilton's cyclists. Further, I did not ask for participants' self-identified ethnic backgrounds, their personal incomes or education levels and as such it is possible that the sample fails to adequately represent diversity in these characteristics. While I recognize that this thesis may have benefited from the deeper levels of analysis afforded by such information, in order to ensure the comfort and ease of my participants I decided to bypass questions that could be interpreted as unnecessary or overly personal.

Another limitation was the recruiting processes involved. While I did attempt to advertise my study in publicly accessible locations, much of the recruitment was done either through social media, or in commercial or educational institutions, all of which required individuals to possess the capital to access these physical and virtual spaces. Future studies may wish to advertise projects in more accessible spaces such as community centers, churches, non-profit organizations and health clinics. Finally, my perspectives and experiences as both a cyclist and the researcher may have impacted the research at various stages of the project. As such, and in accordance with best practices in

qualitative research I have made every effort to acknowledge my personal background and how it affected the collection, analysis and presentation of data.

6.2 Study Contributions and Opportunities for Further Inquiry

Despite the limitations, this research does contribute to an existing body of knowledge related to bicycling, active transport, health and identity. Minimal data exploring bicycling in Ontario exists, and the majority of it is focused on accident prevention, helmet-use and injuries (see Rowe, Rowe & Bota, 1995; Rowe, Thorsteinson & Bota, 1994; Schwartz & Brison, 1996; Wesson et al., 2000; Wesson et al., 2008;). There is a distinctive gap in the qualitative literature exploring bicycling in Ontario, and I could find no qualitative literature examining bicycling in Hamilton specifically. Despite the lack of existing research, exploring the experiences of bicyclists from a qualitative perspective is crucial for a number of reasons. Studying notions of identity reveals the opportunity to approach challenges associated with cycling with a nuanced understanding of who cyclists are and why cycling is so important to them. To successfully promote bicycling and consequently improve population health and mitigate vehicular emissions, policy-makers and planners require an understanding of the population who currently bicycle. It is important to know why these individuals choose this mode of transport, and what positions bicycling as more desirable than other alternatives. Without this information, and the ability to target potential bicycling demographics efficiently, meaningful shifts in modal choice will not be easily achieved. Beyond the promising health, environmental and social benefits, many users also describe gains in mental health derived from bicycling (Aldred, 2010; Willis, Manaugh & El-Geneidy, 2013; Garrard,

Rissel & Bauman, 2012). A greater understanding of what specific components of bicycling inspire improved affect and other mental health benefits, will enable bicycling advocates and policy-makers to capitalize on these conditions and plan accordingly.

The action of bicycling represents a unique and very important aspect of participants' lives to the point that the activity has been adopted into many individual's self-concept in the form of an identity. This suggests that beyond the widely recognized advantages of improved population health, a reduction in vehicular emissions and establishing more peaceful and pleasant streetscapes; bicycling holds profound promises for future generations. Bicycling has the capacity to contribute to positive social change and to serve as a means of empowerment. It may also provide an opportunity for individuals to actualize their personal beliefs, and to return citizens to a place wherein they are deriving joy from the journey, as opposed to craving satisfaction achieved from an outcome. Far from being an idealistic reality that exists only in well-established bicycling cities such as Amsterdam and Copenhagen; lay experts who ride in Hamilton have demonstrated the capacity to provide meaningful and transformative input into their local physical and social worlds; and as such continue contributing towards the growing movement that seeks to incorporate the bicycle more fully into everyday systems of transportation.

Moreover, when asked to reflect on the interview process, all participants spoke positively about the experience of sharing their stories for the purposes of this research. This suggests that even an action as simple as speaking with cyclists about their experiences can be pleasant, validating and inspire critical engagement and reflection

with both local communities, and individuals' understandings of themselves. Thus, not only is qualitative research in relation to cycling valuable for improving infrastructure design and marketing, but it could hold much potential for encouraging cyclists' to ignite and contribute to locally-driven change in their communities. It may also encourage introspective consideration of individuals' identities as cyclists; and build momentum for the growing movement towards road-safety and active transportation initiatives.

Areas for further inquiry could consider employing a Social Ecological Model of Health to health behaviour change initiatives, and designing interventions and campaigns to target modal shift on a number of different levels. In order to successfully run such campaigns, a thorough understanding of the social and cultural determinants that affect bicycling is required. Qualitative research is well equipped to explore such domains. Future research should aim to improve upon sample diversity in order to gain a more complete understanding of bicyclists in Hamilton, and the unique challenges that users face.

Furthermore, due to the confines of this study I was not able to fully explore a number of areas of inquiry that arose from the interviews. For instance, further exploration into what inspired individuals to begin bicycling is relevant for marketers and advocates; understanding bicyclists' perceptions of bike maintenance and their bicycle shop experiences could have important implications for self-efficacy and accessibility. As well, I found the 'city visions' participants identified for the future of Hamilton particularly fascinating. A number of potential opportunities for exploring the experiences of bicyclists in Hamilton, or elsewhere, have been identified throughout the course of this

research. This research is important in order to understand the unique needs of current and potential bicyclists in the city, and to cater to these demographics in policy, urban-design and implementation. Alongside a complete lack of adequate physical and social infrastructure, producing infrastructure that does not meet the needs of bicyclists, and has been implemented without first consulting the very population it is meant to serve, will render efforts to improve safety, experience and utility, futile. As such, much research, qualitative and otherwise, is required as Hamilton moves towards a more bicycle-friendly future.

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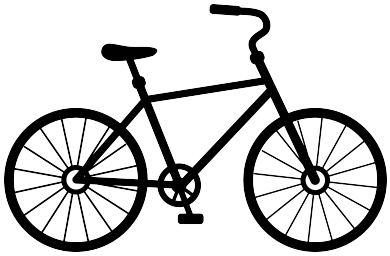
APPENDIX A

Hamilton Rides!



Are you a resident living in or around the Hamilton area?
Do you ride a bicycle on a regular basis?
Would you describe bicycling as a *preferred* means of transportation?

If you answered, "yes!" to some or all of the above questions – we need you! I am a graduate student from the Health, Aging and Society Department of McMaster University, conducting a research study that explores the physical and social barriers to bicycling in Hamilton, ON; and the subjective identities of Hamilton cyclists. The study involves meeting for one face-to-face interview with the student researcher, to discuss your insights and experiences of bicycling in Hamilton. All participants who complete the study will be entered into a draw for a prize. This research study is being supervised by Dr. James Gillett.

For more information, or to participate in the study please contact Benita at vanmilb@mcmaster.ca

APPENDIX B

DATE: June 16, 2015

APPENDIX 7
LETTER OF INFORMATION / CONSENT

A Study of Bicycling in Hamilton

Student Investigator:
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Hamilton, Ontario, Canada
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Purpose of the Study: The purpose of this study is to explore the physical and social barriers to bicycle riding in Hamilton and the surrounding area and; to understand the subjective identities of Hamilton's cyclists. A smaller component of the research, also examines the experiences of some individuals residing in Amsterdam, Netherlands. This research is being completed as part of my Masters thesis, and is supervised by Dr. James Gillett.

Procedures involved in the Research: Participation in this study involves completing one face-to-face interview, during which I will ask you open-ended questions about your bicycle use, and your insights or experiences related to bicycling in Hamilton. I will also ask you whether you would describe yourself as a "cyclist" and what this identity means to you. The interview is expected to take between one to two hours of your time, and will be conducted at a time and place of your choosing (for instance: your home, an office on campus, a quiet public space). In appreciation of your time, your name will be entered into a draw for a prize.

With your permission, the interview will be recorded for transcription purposes. Some types of questions you may be asked are: Do you experience any barriers to bicycling in Hamilton?; Would you use your bicycle more often if these barriers were addressed?; What does being a cyclist mean to you? I may also ask you for some demographic/background information like your age and education.

Are there any risks to doing this study? There are no known risks involved in the completion of the study. However, all questions are optional, and if you would prefer not to answer or disclose information related to a specific question, please just let me know and we will skip that question.

Are there any benefits to doing this study? Some potential benefits to this study include but are not limited to, contributing to the bicycling community of Hamilton; and contributing to society at large by sharing your insights and expertise related to bicycling. Active transport assists in improving individual and population health, reducing greenhouse gas emissions, and decreasing vehicular congestion. Your participation in this research study may also assist you in identifying barriers to cycling and ways to navigate them, as well as cultivate a greater understanding of yourself and the ways bicycling has impacted your life. I hope to give voice to cyclists by exploring and commenting on the safety and ease of use of bicycles in Hamilton. I wish to complete this study not merely as a component of my Masters degree, but as well to give back to cyclists in the community and make meaningful change related to health and the environment in the future.

Reimbursement: In appreciation of your time, your name will be entered into a draw for a prize. Should you choose to withdraw at any time prior to or during the completion of the interview, your name will still be entered into the draw.

Confidentiality: All audio files, written transcripts and completed questionnaires will be stored on locked computers and USB sticks, and will be available to only myself (the student researcher) my supervisor (Dr. James Gillett) and if necessary my Thesis committee members (Dr. Meridith Griffin and Dr. Michael Egan). In the event that I quote you in the write-up, you will be given a pseudonym and all identifying characteristics (such as the names of family members, friends, or your workplace) will be removed. The data will be retained for two months following the completion of my Masters degree. The expected completion of my degree is April 2016, and I will delete/destroy all audio files, consent forms and questionnaires two months after the oral defense of my Thesis. While every effort will be made to protect your confidentiality and privacy it must be noted that we are often identifiable through the stories we tell.

Participation and Withdrawal: Your participation in this study is voluntary. If you decide to be part of the study, you can withdraw from the interview, analysis and write-up for whatever reason, even after signing the consent form or part-way through the study or up until approximately January, 2016, when I expect to be submitting a rough draft of my Thesis. If you decide to withdraw, there will be no consequences to you. In cases of withdrawal, any data you have provided will be destroyed unless you indicate otherwise. If you do not want to answer some of the questions you do not have to, but you can still be in the study.

Information about the Study Results: I expect to have this study completed by approximately April, 2016. If you would like a brief summary of the results, please let me know how you would like it sent to you.

Questions about the Study:
If you have questions or need more information about the study itself, please contact me at:

vanmilb@mcmaster.ca

This study has been reviewed by the McMaster University Research Ethics Board and received ethics clearance. If you have concerns or questions about your rights as a participant or about the way the study is conducted, please contact:

McMaster Research Ethics Secretariat
Telephone: (905) 525-9140 ext. 23142
C/o Research Office for Administrative Development and Support
E-mail: ethicsoffice@mcmaster.ca

CONSENT

- I have read the information presented in the information letter about a study being conducted by Benita van Miltenburg of McMaster University.
- I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.
- I understand that if I agree to participate in this study, I may withdraw from the study at any time or up until approximately January, 2016.
- I have been given a copy of this form.
- I agree to participate in the study.

Signature: _____ Date: _____

Name of Participant (Printed) _____

1. I agree that the interview can be audio recorded.

   Yes ☐
   No ☐

2. Yes, I would like to receive a summary of the study's results.
Please send them to me at this email address _____
Or to this mailing address: _____
_____
_____

3. I agree to be contacted about a follow-up interview, and understand that I can always decline the request.

Yes. ☐ Please contact me at: _____

No. ☐

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APPENDIX C

Interview Guide

If there are any comments or thoughts you'd like to add or mention please feel free to step in and elaborate at any time.

Background Information:

1) To begin with, could you describe how many bicycles are in the home, and how many of them you use regularly?
2) How and when do you use your bicycle(s)?
    - How do you make the decision of which bike to ride?
3) What is your primary means of transportation?
4) What is your secondary means of transport? Feel free to break these down by category if that's the most applicable for you (eg., work, social errands).
5) Do you feel that these modes of transport complement one another? Could they better integrated?
6) What is it that you like about cycling as a mode of transport?
7) When and how did you start cycling? How are people getting into this?

Challenges:

1) Do you experience any deterrents to bicycle riding in your community?
2) If so, what are they and how do you navigate them?
3) Are there any specific social barriers you experience? If so, what are they, and how do you navigate them?
4) Has your gender ever influenced the way you experience bicycling in your community?
    - Does your bike give you a sense of security or insecurity?
5) What do you like about bicycling in your community?
6) What do you dislike about cycling in your community?
7) Could you explain or describe some instances where you felt supported as a cyclist?
8) Can you describe or remember any instances in which you felt vulnerable?
9) Are you satisfied with cycling in your community? Would you like to see anything changed?
10) If you find yourself dissatisfied, are you frustrated in principle with cycling here, or do you have a basis for comparison? Ie) How does Hamilton compare to your other cycling experiences?
11) Has anything changed in recent years that have encouraged your bicycle use?
12) Has anything changed in recent years that has dissuaded your use?

Identity:

1) What role does cycling play in your life?
2) What does cycling mean to you/What is the importance of cycling in your life?
3) How does cycling fit into your day-to-day life?
4) When and where do you enjoy cycling and what does that tell you about yourself?
5) How does riding a bike make you feel? What do you like or dislike about this feeling?
6) What is it that you like about this activity?
7) *When you think about yourself or your identity, is there a part of your identity that is strongly associated with, or related to, cycling?*
8) *How would you identify yourself in relation to cycling?*
9) Would you identify yourself as a "cyclist"?
10) What is your criteria for a cyclist, and why do you meet or not meet this description?
11) Why do you identify or not identify as a cyclist/What makes you identify yourself as a cyclist, or fit or not fit your own criteria?
12) If not – what other sorts of identities take precedence in your life?
13) What does this identity mean to you?
14) Would you describe this identity as personal, or shared? So for instance, do you see yourself as part of a community of cyclists, or do you feel that this identity is more personal to you, and that you're independently a cyclist? Do you like to identify with a visible community or are you a cyclist for your own self-motivated reasons?
    a. For instance – is this a social identity, such as being a redhead, or an individual identity, such as loving dark chocolate?
15) Would this identity play out or become apparent in different social settings, or does it come and go as your mount or dismount your bicycle?
    a. For instance – people who know very little about you, would they know you're a cyclist? Do you carrying your helmet around with you as a marker of your cycling identity?
16) Do you share this activity (/identity) with others in your immediate social circle (for instance your family and friends), or is it relatively individual?
    a. For instance - is cycling your single point of connection with people in your life?
    b. Do you feel that if these people weren't able to join you for some reason you would be less likely to cycle?
17) When you see other cyclists on the road what does it make you think or feel?
    a. How do you respond to this encounter?

18) Can I ask you to think about some of the regular interactions related to cycling? For instance, how do you feel when entering bike shops, or repair shops? Do you prefer to visit a mechanic or fix your own bike?
    a. How do these interactions make you feel?
    b. Do you experience any sense of pride or frustration in this activity?

<u>SoBi:</u>

1) Are you a member of SoBi Hamilton?
2) So far, how has your experience with SoBi been?
3) Have you ever been involved with any other bicycle share programs? If so, what was that experience like?
4) Do you feel SoBi is impacting bicycling in Hamilton in any specific ways?

Just for fun – does your bike have a name?

How did the interview go/feel for you, and do you have any recommendations for how I might adapt or improve the interview for my next participant?