

Understanding Post-secondary Student Mobility and its Impact on Wellbeing

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Abstract

There are approximately 30,000 Brock University and Niagara College students making their way around Niagara region to attend school, engage in social activities, and contribute to the local economy through their employment and shopping, among many other activities. Unfortunately, however, transportation barriers discourage or prevent many of these students from fully participating in community life. While numerous studies have examined the linkages between transportation and public health, few have been focused specifically on the post-secondary student demographic, including Niagara's university and college students. Through the application of a mobilities lens, along with *The Five Ways to Wellbeing* and Determinants of Health frameworks, this study examines the ways in which students' levels of transportation accessibility impact their levels of mobility and subjective wellbeing. By applying a mixed methods approach, including an online survey and a photovoice project, this study has found that there are geographic-type and person-type barriers that create inequities and, in some cases, exclusions. Geographically, students living in certain Niagara municipalities, or attending certain campuses, have longer and more convoluted trips leading to a lower sense of satisfaction and subjective sense of wellbeing. Person-type barriers are characteristics that are unique to populations of people such as being domestic or international students, gender and having hidden disabilities. Building on Cresswell's relational moments of mobility and Flamm & Kaufman's motility, this study exposes the 'hidden' power relations that are fundamental to being mobile subjects and, ultimately, students' subjective wellbeing.

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Chapter One: Introduction

There are approximately 30,000¹ students attending post-secondary school in the Niagara region² at Niagara College and Brock University. Niagara College has two campuses, one in Welland and the other at the outer edge of Niagara-on-the-Lake, on the border of St. Catharines and Niagara Falls. Brock University has two campuses in Niagara, the Marilyn I. Walker School of Fine and Performing Arts in downtown St. Catharines and the main campus at the southern edge of St. Catharines, on the border of the City of Thorold.³

Informal community consultations have identified that transportation constraints present challenges for post-secondary students in Niagara. Approximately 3,000 students live in residence at the two schools⁴, leaving approximately 90% of students residing off-campus and not necessarily within the same municipality as the one in which their campus is located. Many students do not have access to an automobile and, therefore, require public transit and active transportation infrastructure to get to school, employment, co-op placements, social activities, and other necessities of daily life. However, both the public transit and active transportation

¹ <https://brocku.ca/about/> & <https://www.niagaracollege.ca/planning-and-institutional-research/wp-content/uploads/sites/6/2017/12/nc-at-a-glance-december-2017.pdf> June, 2018 (18,000+ Brock + 10,100 full time NC + 1,100 part-time NC + 600 apprenticeship and ELS students = 29,800)

² **Note:** Throughout this document Niagara region will be identified in two ways. When the word “Region” is written with a capital letter “R”, as in Niagara Region, it is referring to the Regional Municipality of Niagara. The Niagara Region is an upper-tier municipal government made up of 12 local municipalities. Niagara Region governs an area of 1,852 km² and has a population of 449,098 people (Niagara Region, n.d.). When the word “region” is written with a lower case “r”, it refers to the geographic area of the Niagara region, which falls within the governmental jurisdiction of the Niagara Region. The Niagara region is located in southern Ontario between two of the Great Lakes: Lake Ontario to the north and Lake Erie to the south. It is bounded by the Niagara River and the United States to the east, and the City of Hamilton and Haldimand County to the north-west and south-west, respectively. The Niagara region has an urban and rural land use mix.

³ Niagara College and Brock University also have campuses outside of Niagara; however, the focus of this study will be on the campuses located within the Niagara region.

⁴ <https://discover.brocku.ca/living/>, & <https://www.niagaracollege.ca/event-services/accommodations/> November 15, 2019 (Brock 2,500 students in residence + Niagara College Niagara-on-the-Lake campus has 101 two-bedroom suites + 117 double-bedroom suites at the Welland campus equating to 436 beds)

systems in place across Niagara are disjointed, thus creating challenging commutes and, oftentimes, lengthy journeys. Furthermore, student travel times quite often fall outside the standard hours of transit operation⁵, for example, traveling home after evening classes or after a work shift (Saunders & Hazel, 2018) when bus service is decreased, or no longer operating. This can then further restrict students' accessibility levels and potentially negate employment and/or social opportunities (e.g., their ability to find work or remain employed, or to engage in leisure travel, such as attending sporting events or going out for dinner with friends).

Because the Niagara region has two tiers of governance, various government responsibilities are divided between the local and regional governments. At times, however, some responsibilities fall under provincial jurisdiction. For example, roads within Niagara can be local (such as neighbourhood streets), regional (if they are connector roads between municipalities), or provincial (such as highways and the bridges that cross provincial highways). Public transit service is also divided, whereby many of the municipalities have their own local transit system and the Niagara Region funds a separate transit system that aims to link people between municipalities. In addition, there are provincial government-funded GO buses, with daily GO train service scheduled to begin in Niagara in 2021.

Despite the widespread availability of transit services, the systems are disjointed, with varying wait times for passengers. A key theme identified during the preparation of the Niagara

⁵ There are multiple transit service providers in Niagara. Many transit services decrease the number of buses running in the evening. Some have fewer bus options on the weekend, for example Port Colborne currently does not have weekend service but will begin Saturday service in 2020 (<https://www.iphoneincanada.ca/news/port-colborne-saturday-bus-service-uber/>), and some do not run on Sundays. For students in service or tourism industry jobs, the evening and weekends are when they would likely be working, thus not aligning with the transit service hours of operation.

Region Transportation Master Plan was that the low level of transit service and route patterns “do not align to administrative boundaries, and residents and workers need to be able to travel throughout the Region easily and seamlessly. On average, the total transit travel time from point A to point B in the region is four times greater than for the same trip by car” (Niagara Region, 2017). The provision and maintenance of bicycle lanes, sidewalks, multi-use trails, and other active transportation infrastructure are also divided between levels of government (Niagara Region, 2017). All these divisions create disconnections for the user, a great many of whom are students attending Niagara College and Brock University.

In Canada between 20 and 40% of the population do not drive or have access to an automobile (Litman, 2018). Many of Niagara’s post-secondary students are among this group and instead rely primarily on walking, cycling, and taking public transit to get to school, work, social events, grocery stores, and other destinations. Poorly designed roadways that do not have adequate active transportation facilities also put people at risk. For example, in the late evening of October 4, 2012, a 19-year-old Brock University student was struck and killed by an automobile at the corner of Merrittville Highway and Decew Road, less than one kilometre from the university’s main campus, while riding his bicycle home from school (Niagara This Week, 2012). There were no bike lanes, multi-use pathways, or other separated bicycle facilities – nor were there any streetlights – to protect this young man from the fast-moving automobile traffic transitioning from an 80 km/hr rural highway into a 60 km/hr municipal roadway. This tragedy exemplifies the vulnerability of post-secondary students when it comes to the provision of local transportation services and infrastructure. Local active transportation committees and the University’s student union have been advocating for safer routes for Brock students for many years (Firth, 2017). Fortunately, a multi-use path, which keeps cyclists and pedestrians separate

from automobile traffic, and extensive lighting have been constructed since that incident (Dakin, 2017). However, more work needs to be done in many other areas near and away from the Brock University campuses (Niagara, 2017).

Students attending Niagara College also face challenges. Those studying at the Niagara-on-the-Lake campus struggle to reach this facility because it is situated in a rural-urban fringe setting next to the Queen Elizabeth Way (QEW) highway. For example, there are no active transportation facilities available at the Glendale Avenue overpass that crosses the QEW to support people who do not have a car. As another example, students at Niagara College's Welland Campus experience challenges with evening classes, as the last buses depart the college before the final classes end for the day.

Niagara Regional Council had identified "Moving People and Goods" and a "Labour Ready Workforce" as strategic priorities for the 2014-2018 Term of Council. To support these priorities there had been numerous municipal initiatives that included getting a provincial government commitment for the GO rail extension, developing a GO hub and transit study, creating a transportation master plan, acquiring support for a Regional role in facilitating inter-municipal transit, and addressing a youth retention study (Niagara Region, n.d.). A Brock District Plan, which includes improvements to the built environment around the main Brock University campus, was also developed (Niagara Region, n.d.). Similarly, a Glendale Niagara District Plan (Niagara Region, n.d.), which focuses on lands and roads around Niagara College's Niagara-on-the-Lake campus, is also in the process of preparation. Many of these initiatives will have the potential to improve mobility for Niagara's post-secondary students, among other groups.

Through the lens of mobility theory, this study aims to understand post-secondary student travel, or inability to travel, and its impact on subjective wellbeing. This research will be used by Niagara Region Public Health to bridge the knowledge to action gap, as well as meet requirements for a Master of Arts in Geography degree. It is anticipated that the study recommendations will be used to make policy and infrastructure changes in Niagara to improve transportation and wellbeing for Niagara's post-secondary students. More specifically, this study aims to address the following research questions:

- 1) In the context of the Niagara region, what influence do (a) the availability of transportation and (b) modal options have on post-secondary students' access to school, employment, recreational activities and other necessities?
- 2) What effect do (a) transportation availability, (b) modal options, and (c) mobility experiences play in Niagara region post-secondary students' subjective wellbeing?
- 3) What social inequities and exclusion are exposed by differential mobilities?

By framing the study findings in order of these research questions, this study will first understand the transportation strengths and concerns of Niagara students and will develop a better understanding of transportation's impact on student wellbeing. And lastly, it will expose the power dynamics and social relations that make mobility more or less available to some (groups of) people resulting in inequities that go beyond transportation.

Chapter Two: Literature Review

To fully appreciate the impacts of transportation on subjective wellbeing, one must first define what wellbeing is. This literature review explains how wellbeing was defined for this study and provides the criteria and tools used to measure wellbeing at a population level. The review also identifies a health framework, called the “Five Ways to Wellbeing” used to categorize and interpret data. Following wellbeing, the review considers other studies that have addressed transportation and its impact on health and wellbeing, and how this links with post-secondary student travel. The work of Lucas (2004), as referenced in Kenyon (2011), identified three causes of transportation exclusion which have a significant impact on overall wellbeing. The three causes of transportation exclusion shaped how the results were presented later in this study. Research on commuting and its impact on academic performance, participation in extra-curricular activities and sense of community conclude this section.

Before considering mobility theory, the influence of the Niagara region’s historical context on the development of urban centres and the ensuing road network will be explored. This section will also provide a short history of the North American automotive industry and how this resulted in the development of Niagara’s current transportation system.

Lastly, building on the pragmatic aspects of using transportation (infrastructure, modal options, systems) to move people from one place to another, whether by the individual’s own power or by mechanical device, mobility theory considers the meanings behind the movement. People are more than just moving beings, they are identified *by* their movement, such as pedestrians, automobile drivers, bus drivers, cyclists, and so forth, and those given labels are imbued with meaning and power (Cresswell, 2006). This literature review explores mobility theory as a means to expose power dynamics within the social relations of movement and how

several theoretical concepts regarding mobility can be used to expose mobility advantage, social inequities and exclusion within post-secondary student travel. The section concludes with the three attributes of motility, or potential mobility, which were also applied to the interpretation of students' travel experiences.

Wellbeing

In 1948, the World Health Organization (WHO) defined human health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” (WHO, 1948). While there has been some debate as to whether an individual needs to have *complete* physical, mental and social wellbeing in order to experience “health” or, if a person has some form of illness, whether they still experience some health in other ways, it is understood that health is comprised of these components and is greater than the pathology of the physical body alone (Callahan, 1973).

Global health leaders have recognized that disparities between social, political and economic factors, understood to be the determinants of health, result in health inequities (WHO, 2007). Numerous agencies and political bodies have taken these concepts and created their own lists. The Government of Canada, for its part, recognizes the following as the determinants of health: 1) income and social status, 2) employment and working conditions, 3) education and literacy, 4) childhood experiences, 5) physical environments, 6) social support and coping skills, 7) healthy behaviours, 8) access to health services, 9) biology and genetic endowment, 10) gender, 11) culture, and 12) race/racism. (Government of Canada, 2019). These 12 determinants are interrelated and have an impact on one another.

It has been well established in the literature that greater educational attainment is associated with better health outcomes (Ross & Wu, 1995; Eide & Showalter, 2011), with more

recent studies aiming to show a causal relationship between the variables due to the significant strength of this relationship (Eide & Showalter, 2011). Goldman and Smith (2011) considered the long-term implications of education on health as it pertained to five different self-reported chronic diseases: arthritis, diabetes, heart disease, hypertension, and lung diseases. They found that, as people aged, educational attainment was a strong predictor in the prevention of disease onset and that, for those with chronic illness, the health outcomes were better. For persons who were less educated, the impacts of disease were far more severe and progressed more rapidly. Goldman and Smith (2011) also found that people with higher levels of education had better health maintaining practices, such as regular vigorous physical activity and not smoking. Although people with a higher level of education have greater income potential, Goldman and Smith (2011) noted that education was a significantly stronger predictor of the onset of disease as compared to income.

Eide and Showalter (2011) reviewed empirical research that has attempted “to estimate the causal links between education and health” (p. 778). Their literature review confirmed the positive gradient between health and education and found that income, family background, knowledge, cognitive ability and social networks were also related, and improved with education. Interestingly, Ross and Mirowsky (2011) found that children of poorly educated parents, who themselves became poorly educated adults, had worse health outcomes than those who were not generationally poorly educated. Eide and Showalter’s (2011) and Ross and Mirowsky’s (2011) research emphasizes the importance of education to health. If transportation constraints serve as obstacles, or outright barriers, to Niagara students, this could result in their inability to remain in post-secondary education, which could then have consequential implications for their future health.

Cooke et al. (2016) note that, over the past several decades, greater emphasis has been given to psychological components of wellness and wellbeing, although there are significant discrepancies regarding how these concepts are quantified and measured. Cooke et al. (2016) reviewed 42 self-reporting instruments and identified four broad categories of tools that measure psychological health: “hedonic and eudaimonic well-being, quality-of-life, and wellness approaches” (p.730; hyphen use copied verbatim). Hedonic wellbeing focuses on pleasure and positive affect with the absence of negative affect. Eudaimonic wellbeing is broader and incorporates various life domains such as self-acceptance, autonomy, positive relationships with others, sense of purpose, growth, and competence. Quality of life is broader and includes subjective wellbeing in “physical, psychological, and social aspects of functioning” (Cooke et al, 2016, p.732). The tools that addressed quality of life were often associated with a specific group that shared common characteristics or a condition, such as cancer or hemophilia (Cooke et al, 2016). Lastly, the wellness approaches were commonly embedded in counseling and were less clearly defined. The word wellness was regularly used interchangeably with wellbeing (Cooke et al, 2016).

In 2008, the United Kingdom government commissioned a committee of over 400 experts, including psychologists, psychiatrists, neuroscientists, education professionals and economists, to review the current knowledge on what makes people happy and what keeps them healthy. They identified “that wellbeing and mental illness may in fact be better conceptualized as two correlated but essentially separate dimensions” and “that the opposite of mental ill-health is not merely the absence, but rather the presence of positive psychological states” (Aked & Thompson, 2011, p. 5). They also identify that “wellbeing is positively associated with various positive health outcomes” (Aked & Thompson, 2011, p. 6). The significant research findings of

the committee resulted in the New Economics Foundation being commissioned to take the academic evidence and create mental health messaging that corresponded with an already popular campaign about eating five fruits and vegetables per day to maintain physical health. This resulted in the “Five Ways to Wellbeing” messaging (Aked & Thompson, 2011), which has been used for campaigns in the United Kingdom, Australia, and Canada, including Hamilton and Waterloo⁶.

The “Five Ways to Wellbeing” include: “connect”, “be active”, “take notice”, “keep learning”, and “give”:

- “Connect” relates to building social connections that will support and enrich people’s lives. The research found that happier people have greater social connections. Strong social relationships are supportive, encouraging and meaningful, while social networks act as a buffer against poor mental health.
- The “Be Active” component encourages regular physical activity as it has been found that being active is associated with lower rates of anxiety and depression, an increased sense of self-efficacy and skills mastery, and protection against cognitive decline.
- “Take Notice” encourages people to engage in the world around them and reflect on life’s experiences. It encourages heightened self-awareness.
- “Keep Learning” encourages people to learn new things or revisit old interests as a means of building confidence, cognitive development, enhanced self-esteem, and resilience. Learning opportunities also provided the chance for people to interact with others.

⁶ Based on a scan of other health units that have used the Five Ways to Wellbeing framework conducted by Niagara Region Public Health.

- “Give” is meant to encourage volunteering, as neuroscience shows that giving stimulates the reward centres of the brain and improves one’s sense of self and positive feelings (Aked & Thompson, 2011).

These categories will be used to help frame the notion of student wellbeing in this research.

The Association of Ontario Health Centres (AOHC) created the “Be Well” survey, which was based on the Canadian Index for Wellbeing. This tool is being used to create a baseline of wellbeing for the clients of community-governed primary care health centres “with meaningful [equity-informed] performance measures that capture improved population health and wellbeing” (AOHC 2016, p.4). The validated questions within this tool tease out issues of “social inclusion, sense of community belonging, and self-assessed mental health” (AOHC, 2016, p.4). The Canadian Index for Wellbeing has numerous domains and the questions within the “Be Well” survey address community vitality, leisure and culture, time use, education, environment, democratic engagement, living standards and healthy populations, many of which are important to this study’s work. These domains tie well into the eudaimonic understanding of wellbeing and the categories in the “Five Ways to Wellbeing”.

Wellbeing and Transportation

In order to be able to realize the many benefits available within community, and to feel connected *to* community, people must be able to get to where they would like or need to go (Delbosc & Currie, 2011). Getting from one place to another can include a variety of transportation means, both active (such as walking, bicycling, using a wheelchair, or skateboard) and motorized (such as public transit, motorcycle, or automobile). These different forms of transportation allow people to be mobile and to interact with their environment. However, not all people have the same number of mobility choices available to them, and community design can

affect their ability to use certain means of transportation (Manaugh et al., 2015). For example, if a person relies on walking and public transit to get from one place to the next, sidewalks and paths linking destinations are needed, as is public transit service that is timely and linked to the trip origins and destinations. If any of these variables are missing, that individual's mobility is negatively affected (Delbosc & Currie, 2011) having implications for people's wellbeing.

Lucas (2004), as referenced in Kenyon (2011), identifies three causes of transport-related exclusion: "person-type, transport system and spatial factors" (p. 764). Person-type mobility exclusion is experienced by the individual and caused by structural social inequity (e.g., women travel shorter distances than men; lower income people use public and non-motorised transportation more than people with higher incomes) (Kenyon, 2011). Transport system mobility exclusion is a result of inadequacies within the transportation system that make it unacceptable, inaccessible, unaffordable, and unavailable (e.g., poor public transit services for people who work outside of traditional "9-to-5" office hours) (Kenyon, 2011). Lastly, spatial mobility exclusion "includes both physical proximity of activities and environmental features, which influence the accessibility of non-motorised and motorised mobility (including crime; the condition of bike lanes; pavements and roads; street lighting; topography; weather)" (Kenyon, 2011, p. 765). These three aspects of mobility-related exclusion have significant impacts on one's overall wellbeing.

When it comes to the length of time spent commuting to work, longer journeys have adverse effects on one's subjective wellbeing (Chatterjee et al., 2017), but not on one's overall life satisfaction (Chatterjee et al., 2017; Lorenz, 2018). Walking and cycling to work are associated with people having higher job satisfaction and an increase in leisure time satisfaction, especially for women. Conversely, commuting to work by bus is associated with lower self-

reported health, lower job satisfaction and strongly reduced mental health (Chatterjee et al., 2017). In considering health, Chatterjee et al. (2017) noted that evidence in their study suggests that people using the bus were less healthy, as opposed to bus ridership resulting in poorer health. They also noted that “mental health decreases to a greater extent with every additional minute of commute time [by bus] ... and suggests that long commutes involving bus travel create difficulties in coping with everyday life” (Chatterjee et al., 2017, p. 25). What was lacking in this British study was a greater understanding as to why this is the case.

Lorenz (2018) noted that commuting had minimal influence on affective wellbeing but that it did impact cognitive wellbeing, which included items such as satisfaction with work, income, health, family life and leisure time. It is unclear if a parallel can be drawn between people’s sense of wellbeing and commuting to *work*, and people’s sense of wellbeing and commuting to *school*; however, McCool et al.’s (2017) study found that commuting to school-related placements led to a “significantly greater impact on academic work, health and well-being and student finances” (para. 1) to the detriment of the student. Students identified that the additional commute to their placements negatively affected their academic performance (McCool et al., 2017; Kenyon, 2011), increased their feelings of tiredness, decreased the amount of time available to see friends and family (McCool et al, 2017), decreased participation in extra-curricular activities, reduced time to study (Kenyon, 2011) and impacted childcare for the students who had children (McCool et al., 2017; Kenyon, 2011). Also, McCool et al. (2017) noted that students’ additional transportation costs were managed through student loans, therefore also impacting them financially.

Sense of community “is a function of both the individual and the environment” (Kirk & Lewis, 2015, p. 49) and includes membership, influence, integration and fulfillment of needs and

shared emotional connection. A deeper collegial sense of community is associated with increased satisfaction with the university, greater positive affect, better life fulfillment, stronger self-efficacy and lower negative affect (Kirk & Lewis, 2015). Kirk and Lewis (2015) found that university students who commute to campus (i.e., those who did not live on campus) report a lower collegial sense of community and partake less in campus events. Barriers to participation in campus events include transportation and scheduling issues. Commuting students are also more likely to drop out of post-secondary education prior to completing a degree (Kirk & Lewis, 2015; Kenyon, 2011) which, as identified earlier, has implications for their future health status.

A Brief History of Niagara's Infrastructure Development and Automobile Dependence

Niagara has 12 municipalities with 26 urban centres that are widely spaced apart from one another. The settlement of Niagara's urban centres, and resulting road network connecting them to one another, date back to the 1780s when Colonial settlers penetrated the Niagara Peninsula through four entry points established by Indigenous people along the Niagara River: Niagara-on-the-Lake, Queenston, Chippawa and Fort Erie (Burghardt, 1969).

Much of the early settlement was strategic to establish British dominance through a military stronghold. Roads, wide enough for a horse-drawn wagon, were designed to connect these military centres. The Indigenous people had created a trail along the Lake Iroquois terrace from Queenston to Hamilton just below the Niagara Escarpment, which ran parallel to it. The trail was a major trade route and connected the six nations of the Iroquois federation. White settlers also used it as a trade route, as well as for military purposes (Burghardt, 1969). This route eventually became what is now known as Highway 8 or Regional Road 81, a major east-west corridor in Niagara.

Niagara-on-the-Lake had been the administrative capital of Ontario and, thus, the first urban centre in the Niagara peninsula. Although it held that role of capital for only five years, it carried many of the administrative duties until the 1850s when the burgeoning city of Hamilton took over. Due to its importance, roadways were created to Niagara-on-the-Lake to provide access from all areas of the district including Swamp Road, which is now named Niagara Stone Road, that diagonally crossed the former marsh areas to shorten the distance from the administrative centre to the Iroquois Trail heading westward (Burghardt, 1969).

As the population began to grow, small urban centres began to pop up along waterways as the rivers and streams could be used as transportation corridors and sources of power for milling. Roadways, wide enough for a carriage, followed along the watercourses. With the development of the Welland Canal between 1825 and 1833 gridded road networks began to increase in number. Over time some of the smaller urban centres along waterways gave way to faster growing centres along the canal, including the current municipalities of St. Catharines, Thorold, Welland and Port Colborne (Burghardt, 1969).

The land survey system further added to the roadway network across Niagara through the creation of concessions, with the roads being aptly named “concession roads”. By 1851 this resulted in the major road systems having been established in Niagara to connect its dispersed towns. Many of the urban centres still remain widely spaced apart from one another (Burghardt, 1969). This next section will consider the evolution of motorized transportation and roadway design.

Western transportation development in North America

Most land transportation occurs on roadways that support travel for a variety of activities. The roadway design stipulates the types of transportation that can be used on it. This also

indicates, in part, what types of transportation people can use in this public space. The types of transportation also indicate who has mobility, and to what degree. For example, it would not be appropriate, or safe for a young child to skateboard down the middle of a busy arterial road. This road space design indicates it is meant for larger volumes of automobile drivers and possible truck movement. As children are below the required age to acquire a licence, this space is also for adults who drive and where children may participate passively as passengers. It also likely precludes other people who do not drive. This next section will explore the transportation modal shift to automobility and its influence on roadway design.

The change to roadways in North America, particularly in the United States, can be contributed to some extent to General Motors (GM) (Walker, 2016). In 1936, GM created Futurama, a traveling mechanized diorama of what future cities could look like. These future cities included broad sweeping highways with fast moving cars coursing through the heart of cities. It was the epitome of progress. GM aspired to “remake the North American landscape so that the automobile was elevated to a required necessity of daily life” (Walker, 2016, p. 90). Alongside of food, shelter and clothing, people would need an automobile (Walker, 2016). This free, World Fair-style traveling exhibit ran on and off for 20 years promoting the need for federally-supported highways and road infrastructure to support automobility. Approximately 20.5 million people viewed the display, 19.5 million of them from the United States with the others from Canada or elsewhere.

The display was staffed by 40 men sharing the great science and technology of the motor industry. GM insisted that this road show was an educational and scientific event, not a show about automobiles (Walker, 2016). The travelling road show was dubbed the Parade of Progress and featured two landscape dioramas that showed the 1900 city with horse and buggy and

trolleys making their way through the city grid. It then showed the rapid moving automobiles rolling freely through urban freeways uninhibited by intersections and the old cityscapes.

By the 1950's, cities were experiencing congestion. So, GM's traveling road show displayed the future design of suburbs. Highways could extend out of the cities into the quiet suburbs of domestic life (Walker, 2016). Cities were the domain of masculinity and suburbs became the domain of femininity and family life. Interestingly, the protection of children and women was not considered in the safe crossing of roads. Speed limits, roadway access and widths did not accommodate their active transportation needs (Schmucki, 2012).

One of the goals of the Parade of Progress was to advocate for Federal investment in the development of paved highways across the United States enshrining the automobile as a staple of the American family. In 1956, this was achieved when the American Congress passed the *Federal Aid Highway Act*, whereby \$30 billion was invested in interstate highways, land and building seizures and the demise of neighbourhoods, so that inner-city highways could be built (Walker, 2016). GM, a company who prided itself in progress, not only dreamt of the domination of the automobile, they actively shaped the future direction of transportation in the United States and North America. They solidified roads as spaces of speed, industry, science and the dominance of geographic space, at the hidden cost of road usage for those who did not own an automobile. Those people were often women, children and those with otherwise limited means. It was after this monumental win for the auto industry that GM ended the Parade.

St. Catharines, Niagara's largest urban centre, had been the site of two influential automotive companies, the REO Motor Car Company established in St. Catharines in 1910 and the still present General Motors which took over the location of McKinnon Industries, a carriage

and electric parts fabrication factory, in 1929. This development has contributed to automobile dominance at the expense of other transportation modes.

Mobility and Motility

As Cresswell (2006) so eloquently states, “mobility is central to what it is to be human” (p. 1). Mobility is the movement of the human hand, the act of driving to the grocery store, emigrating, exploring, and holiday travelling. Mobility has cultural, social, and philosophical meanings attached fundamentally to geographical aspects of being. Mobility invokes numerous meanings, “as progress, as freedom, as opportunity, and as modernity, [as well as] shiftlessness ... deviance and ... resistance” (Cresswell, 2006, pp. 1-2). One could argue that the same forces or powers that impact wellbeing, referred to earlier as the determinants of health, also play roles in the realm of mobility, whereby those who have greater access to the various determinants have greater health and likely greater mobility (Perchoux et al., 2014).

Mobility, as defined by Cresswell (2006), is “a socially produced notion [that] is understood through three relational moments” (p. 3) that are intimately connected and intertwined. First, mobility includes movement, as in the act of a person or thing moving from one place to the next. For example, transportation engineers study the movement efficiencies of vehicles that are measured by traffic volume, time and speed. Second, mobility is conveyed through diverse representations. It is the ideological meaning of movement, or how movement is understood; for example, mobility can be conveyed through photography, law and literature. In Western society mobility is a fundamental right of citizenship as conveyed through law and government policy (Cresswell, 2010). This implies that all people should have the same rights and access to mobility; however, people of different genders, races, cultural backgrounds, and

other socio-economic and demographic characteristics can experience mobility quite differently, thus exposing social productions of power and politics.

Lastly, mobility is experienced. It is how people embody mobility through feeling, practicing and expressing it. These three relational movements, which “have broadly traceable histories and geographies” (Cresswell, 2010, p.18), are entangled into what Cresswell calls *constellations of mobility*. Cresswell’s intention was not to separate the three relational movements as independent components of mobility, but, rather, to reveal particular politics of mobility – the social constructs, discourses and powers at play that are produced and reinforced by each of these movements.

To help further the understanding of mobility theory, Cresswell (2010) identifies six typologies of mobility: motive force, velocity, rhythm, route, experience, and friction. Motive force considers why people move or remain fixed in place, and can be internal to the person, or an external force that pushes a person to action. For example, a wealthy individual may choose to travel by personal choice, for perhaps vacation or work-related purposes. However, a homeless person may be forced to move by being “thrown out” of a place. Velocity is the speed at which people move. Getting to some place quickly is often associated with distinctiveness and privilege, whether it is moving into a higher position in employment or social status, or to a physical location, as opposed to limited upward movement or slower modes of transportation (Cresswell, 2010).

Rhythm “is part of any social order or historical period” (Cresswell, 2010, p. 24) and consists of repeated movements. For example, an individual’s movements that do not follow the socially expected rhythms can be identified and corrected through actions of law (e.g., having an odd gait in an airport could be suspicious and result in additional law enforcement measures).

Route implies the channels through which movement is directed, whether it be the way that water is forced through hydroelectric canals or the built form of cities that direct, and privilege, transit services to certain areas within the community (Cresswell, 2010).

Experience is how people feel through their mobility experience. Two people could be making the same trip, in the same airplane, but have two uniquely different experiences. One person could be in the executive seats with ample legroom, lay-down seats and bar service, while the other is in the more cramped seating of the economy class, with limited room to recline and fewer meal and beverage options. Lastly, friction represents the reasons and amount that mobility is slowed down or stopped. For example, borders, controlled access areas, walls and gates are created to slow people down from entering a space or stop them from entering altogether. These six elements are important components of what it means to be mobile. Each element is linked to identities of mobile subjects and their mobile behaviours. This study has applied these elements to post-secondary mobility within Niagara, to expose potential mobility inequities or facets of exclusion.

Cass et al. (2005) utilized mobility theory to expose social exclusion. They believe that the nature of access is affected by different social networks and relationships. Social networks (e.g., friends, family, work, organizational connections) require sporadic travel in order to form, maintain, sustain and establish a degree of intimacy achieved through eye contact and proximity. Those with fewer networks, networks that overlap, or networks that are widespread over various localities, can experience social exclusion when transportation availability does not meet their temporal or spatial mobility needs, thus resulting in poorer life satisfaction. They identify four dimensions of access that, when managed, can reduce the burden of social exclusion. They are: financial, the costs to use a certain form of transportation; physical, the design of cities and

modes of transportation, along with personal capacities; organizational, the ability to access places and services based on available transportation and the ability to negotiate travel by those modes to the desired destination; and temporal, the timing of available transportation and its efficiency.

To add additional depth to the understanding of mobility, “motility” considers the *potential* mobility of an individual or group of individuals. This potential mobility may not be immediately transformed into travel, but may be saved for future use to maximize possibilities (Flamm & Kaufmann, 2006). In this way, motility is a form of capital, independent of other forms of capital, that allows people the ability to mobilize their goals and ambitions (Flamm & Kaufmann, 2006). Motility provides a conceptual tool, to interpret the systemic components (e.g. transportation systems, information and communication technology) of spatial mobility and the interactions between them. It does so by considering three factors: access, aptitude, and appropriation.

Access refers to possible mobility options (e.g. transportation, communication technology) available for use by actors afforded with various resources (e.g. financial, time availability, social network, social hierarchy) and constraints (e.g. regulatory pricing, transportation scheduling, transportation options, geography, land use policies, accessibility to mobility options) (Flamm & Kaufmann, 2006). Access is therefore shaped by options and conditions. Options refer to a suite of instrumental resources that a person has the right to use. Flamm and Kaufmann (2006) refer to these resources as an “access rights portfolio”. This access rights portfolio can reflect an individual’s innermost reasons and ideals for choosing a range of resources that support mobility – for example, whether one chooses membership to certain travel modes (e.g., carshare) or private ownership (e.g., private automobile). These reasons are

influenced by various internal values (e.g., the desire to travel in a particular way) and how one responds to external social pressures (e.g., pressure to reduce one's contribution to carbon emissions through single occupant automobile trips). Financial resources, or socioeconomic status, residential location, the physical environment, employment, and gender can all impact a person's access rights portfolio.

Aptitude considers the complex set of skills that one must possess in order to be able to use a particular mode (Flamm & Kaufmann, 2006). Each mode has its own required set of skills. For example, in order to drive an automobile, one must have a certain level of cognitive ability (e.g., to understand rules of the road), certain motor skills (e.g., to apply the brakes; turn the steering wheel), be able to anticipate others' movements (e.g., to avoid collisions), and so forth. These skills may be very different from the aptitudes required to take public transit (e.g., reading and understanding the bus schedule and route maps). These aptitudes require repeated practice and a certain level of fortitude to master. In addition, mobility is socially learned. Certain modes of transportation may be preferred societally over other modes, which could influence one's ability to develop ample experiences to influence aptitude for a variety of travel modes.

Lastly, cognitive appropriation considers the individual's ability to evaluate the range of mobility options available within the built environment and transportation infrastructure that the person deems suitable for their needs (Flamm & Kaufmann, 2006). Mobility potential is affected by people's thought processes, which are highly subjective. People choose modes to meet a variety of needs. They may choose a mode for personal transportation or for the conveyance of other people or goods. The purpose of the trip may influence their modal options; for example, dropping children off to daycare may be easier and more practical in a minivan than in a convertible sports car. The mode of transportation may also take in a secondary function, such as

storage for objects like car seats, additional clothing, or sports gear. People are required to make judgements regarding the various means of transportation, and the utility of those modes, based on the circumstance's unique needs. Thus, motility is a form of capital that is used by a person to serve a function or meet their needs (Flamm & Kaufmann, 2006). This form of capital is a resource similar to other forms of capital, such as social, cultural and economic capital. This study applied the motility concept in the context of understanding post-secondary student modal options in accessing daily needs. Closely examining mobility and motility may bring to light differential mobilities and reveal social inequities and exclusion.

Chapter Summary

This chapter brought together the literature on transportation and its impact on wellbeing. Wellbeing, in this study, takes a holistic understanding of what it means to be well including a person's mental, physical and social wellness (WHO, 1948). Disparities in population health go beyond the individual's control. They are influenced by societal, political and economic factors known as the determinants of health (WHO, 2007). One of these determinants, education, is a significant predictor in positive long-term health outcomes (Ross & Wu, 1995; Eide & Showalter, 2011). Ensuring that students have reliable and readily available transportation to access higher education can have implications for the health of a population.

The New Economic Foundation, out of the United Kingdom, identified five dimensions of wellbeing that are associated with positive health outcomes called the "Five Ways to Wellbeing" (Aked & Thompson, 2011). These five dimensions (connect, be active, take notice, keep learning and give) provide a framework that will be useful in analyzing student data. Cooke et al. (2016) noted there are numerous assessment tools and surveys that measure wellbeing. Of particular relevance to this study is the "Be Well" survey, based on the Canadian Index for Wellbeing and

developed by the Association of Ontario Health Centres (2016), that is being utilized to assess the population health of clients accessing community-governed primary health centres.

The review then looked to the literature to understand transportation's impact on wellbeing. Delbosc & Currie (2011) noted that to feel connected to community people need to be able to access the benefits and resources within that community for which transportation and community design play an important role (Manaugh et al., 2015). There are three types of transport-related exclusion that can impact wellbeing: "person-type, transport system and spatial factors" (Kenyon, 2011, p. 764). Additionally, commute length and mode can influence subjective wellbeing (e.g., long commutes, especially by bus, negatively impacted wellbeing such as academic performance, tiredness and self-reported health (McCool et al., 2017), while walking and cycling increased life satisfaction and job satisfaction (Chatterjee et al., 2017)). It was also noted that students who commute to campus were more likely to drop out of school compared to those who live on or near campus (Kirk & Lewis, 2015).

In order to understand commuting in Niagara region, a brief history of the establishment of municipalities, road networks and economic drivers was provided. The summary established that Niagara's multiple municipal urban centres are widely spaced apart and the road network favours automobility, making other modes of transportation less desirable and difficult to use, or precluding their use altogether.

The chapter then turned to mobility theory to explore the meaning and power dynamics imbued in movement (Cresswell, 2006). Cresswell (2010) identifies three relational movements (the act of a person or thing moving, representation and experience) that are entangled into what he calls *constellations of mobility*. These relational movements reveal particular politics of mobility. Using mobility theory, Cass et al. (2005) explore the nature of access to expose social

exclusion. They posit that access is affected by differential social networks and relationships that require sporadic transportation to maintain, sustain and establish a degree of intimacy. Access has financial, physical, organizational and temporal aspects that when managed can reduce exclusion.

Flamm & Kaufmann (2006) add additional depth to mobility theory through motility which is the potential mobility of an individual or group of individuals. Motility is a type of capital that allows people to achieve their goals and can be used as a conceptual tool to interpret systemic components (e.g., transportation systems) through three factors: access, aptitude and appropriation.

This literature review has set the foundation to better understand the impact of transportation on post-secondary student wellbeing by developing an understanding of wellbeing, exploring transportation's impact on wellbeing, and providing a theoretical framework from which to interpret the students' data.

Chapter Three: Research Design and Methodology

As previously noted, this study was conducted to address the knowledge gap about how Niagara's post-secondary students were traveling within the Niagara region and the impact of transportation on Niagara post-secondary students' subjective wellbeing. To be able to address all three research questions, there was a need to gather both quantitative data and qualitative data. This chapter begins by exploring the pragmatic research paradigm applied in this study and the epistemological underpinnings of pragmatism. It will then provide an overview of the methodology and data collection tools as they relate to this study's aims. This will lead into how students were recruited for the study and how the data were analyzed. Lastly, it will discuss ethical considerations associated with this research.

Pragmatism

This study was based on the pragmatic research paradigm. Kaushik & Walsh (2019) state that "pragmatism is a paradigm that claims to bridge the gap between the scientific method and structuralist orientation of older approaches and the naturalistic methods and freewheeling orientation of new approaches" (p. 2). It is often employed in social research to solve practical everyday problems by choosing the methodology, or methodologies, that make(s) the most sense given the research question(s) and the researcher's past experiences (de Kock 2015; Kaushick & Walsh, 2019).

Epistemologically, pragmatists believe that "knowledge is always based on experience [and that] one's perceptions of the world are influenced by our social experiences" (Kaushick & Walsh, 2019, p. 4). Pragmatists share three tenets: 1) that actions are situated in the context that they occur; 2) that if the same action occurs, but in a different situation, the outcome or consequences of that action can change; and, 3) that every person has their own experiences

unique from another's experiences such that their worldviews cannot be the same. Having said that, two people can have varying degrees of common beliefs derived from varying degrees of shared experience (Kaushick & Walsh, 2019).

Pragmatists generally do not start with a theory. Typically, pragmatism is allied with abductive thinking that oscillates between deduction and induction. As such, the research is dynamically creating data and theories (Kaushick & Walsh, 2019). This liberty of creating theories was applied to the data analysis process in that the themes could emerge inductively based on the stories shared by the students through the photovoice data and based on the analysis of the quantitative online survey. However, mobilities theory was also used to guide the discussion about inequities and exclusion as they pertained to the differential mobilities of certain people, as will be discussed later in this chapter.

This study applied mixed methods, which is common with pragmatic research (de Kock, 2015; Kaushick & Walsh, 2019). Elwood (2010) defines mixed methods as approaches “that rely upon multiple types of data, modes of analysis, or ways of knowing, but may use these elements in a variety of ways in relationship to one another, for multiple intellectual and analytical purposes” (p. 95). Bergman (2011) identifies seven different purposes for choosing mixed methods over a single method. They were: complementarity, to gain complementary views on a phenomena or relationship; completeness, to gain a fuller picture of a phenomena; developmental, which is tied to sequential data collection where one phase of the study informs the next phase; expansion, to add to a previous strand of the study; corroboration/confirmation, used to confirm one approach against another approach; and finally, diversity, to find divergent understandings of the same phenomena that could be compared and contrasted.

The three research questions for this project lent themselves to a mixed methods approach. The online survey, which mainly included multiple-choice questions, generated a large volume of responses to better address the first two research questions about modal usage to various places and the impact of transportation on wellbeing. Photovoice provided personal narratives and photographs used to further build on the understanding of the second research question and it provided rich data that could be used to address the third question about inequities and exclusions created by differential mobilities.

The online survey and photovoice were conducted separately from one another, and participants in one method of data collection were not necessarily participants in the other. The online survey, promotional resources and the photovoice support materials were compliant with the *Accessibility for Ontarians with Disabilities Act* (see Appendices A, D, E & C). The data collection methods are described in the next two sections following the acknowledgement of the project steering committee.

Project Steering Committee

Because this study will also be used to inform municipal policy and projects in Niagara region, a steering committee was developed to ensure this research was able to inform key stakeholders and decision makers and to establish buy-in for this work so that action will be taken on recommendations that will result from this study.⁷ To be clear, the thesis is called *Understanding Post-secondary Student Mobility and its Impact on Wellbeing*; however, this project's 'public-facing' name is *Students on the Move*.

⁷ Please note that the recommendations that will result from this study's findings fall outside of the purpose of this thesis. Therefore, recommendations will be made public through the Niagara Region council reporting process at a date yet to be determined (as of April, 2020).

The steering committee is comprised of student union and staff/faculty representatives from Brock University and Niagara College, municipal staff from each Niagara municipality that has a post-secondary campus within it, as well as representatives from the local and regional public transit agencies (St. Catharines, Welland, Niagara Falls and Niagara Region). Niagara Falls Transit was included due to the large number of international students living in Niagara Falls and commuting by bus to the various campuses. The committee also has representation from various Niagara Region departments, including Public Health, Planning and Development Services, and the Transportation and Transit divisions of Public Works. Recruitment of specific committee members was based on the member's role within their organization or department and their ability to act upon the study's findings and subsequent recommendations.

The committee's terms of reference identified that they would meet every other month and remain active until the completion of this project. However, meetings were held in April and May of 2018 to shape the project and to ensure the research tools would gather the information everyone needed, and then it met again in January, May, September and December of 2019 once data were collected. The 2019 meetings provided the researchers with an opportunity to share some of the research findings with the committee and to gather members' input on what was happening locally in order to provide additional context for subsequent interpretation of the data. The committee continues to help guide the next steps for knowledge sharing beyond the completion of this thesis. Unlike the thesis supervisory committee that presided over this study and provided specific direction and methodological expertise, the steering committee's role is to help identify trends within the community, provide connections to community members, or resources that can support this work, and help with the development and implementation of recommendations generated from this study's findings. There has been no obligation on the part

of the researcher to follow the steering committee's recommendations; however, the members' practical knowledge and deep insights have been assets to this work and continues to be influential and highly valued.

Data Collection

Online Survey

In order to investigate students' modal options, commute patterns and experiences, and subjective wellbeing, an online (mostly) quantitative survey web link was sent to Niagara College and Brock University students through their student email accounts. (The online survey questions are presented in Appendix A). Using the SurveyGizmo survey generation program, the survey was sent to about half of students in the fall term of 2018 and the other half of students in the winter term of 2019 in an attempt to capture seasonal differences in mobility, such as those that may be influenced by the varied durations of daylight hours among the seasons. The goal was to collect information on student travel patterns at these different time points as this factor could reflect differential familiarity of the institution and surrounding community over the course of the school year. However, unforeseen delays, combined with an early snowfall in the fall of 2018, resulted in similar weather conditions and hours of daylight during the two sampling periods, thus making any seasonal comparisons impossible.

The online survey was sent to all full-time and part-time Brock University undergraduate and graduate students by the school's Office of Institutional Analysis and Planning. In the fall, students with a last name that started with A to L, while those whose last names started with M to Z received the survey in the winter term. Because this study focused on Niagara-based post-secondary students, students attending Brock University's Hamilton campus were excluded from the survey.

Due to the large number of other surveys already sent out to Niagara College students throughout the school year, only about two-thirds of full- and part-time students (approximately 7,200) attending either the Niagara-on-the-Lake campus or the Welland campus students were invited to take part in the Students on the Move survey. Half of that number received the survey via email in the fall term and the other half in the winter term. In keeping with Niagara College policies, only students aged 18 years or older as of October 2018 received the invitation email.

Students at both institutions received the survey within the same timeframe, between mid-November and mid-December in the fall term of 2018-2109, and between mid-February and mid-March in the winter term. The survey was open for one month in each case. In order to achieve a representative sample of students, 372 students from Niagara College and 377 students from Brock University were aimed for in each term, which would provide a statistically significant sample at a confidence level of 95% and a confidence interval of 0.05. This study was able to partially meet this requirement. For both terms there were more than the required number of respondents at Brock University. However, in the first term at Niagara College, fewer than 372 students replied to the survey. In the winter term this was exceeded by over one hundred students. The lower Niagara College fall response rate did not impact the interpretation greatly as both fall and winter data were analysed separately and then compared for difference. This will be discussed further in the results section. See Table 3.1 for the number of survey respondents

before and after data cleaning⁸ in comparison to the number of students needed for this to be a representative sample of students.

Table 3.1
Number of Survey Reponses in the Fall and Winter Terms

	Niagara College			Brock University		
	Representative Sample Size	Responded	After Cleaning	Representative Sample Size	Responded	After Cleaning
Fall 2018	372	311	262	377	658	589
Winter 2019	372	531	453	377	577	517
Total	744	842	715	754	1,235	1,106

The online survey had two components. The first section of the survey was made up primarily of closed-ended questions where students could occasionally type in responses, such as “other, please explain”. These questions were used to collect information on student demographics, housing situation, health and wellbeing, ease of commute to various places, and transportation options. They were designed to address the first research question about the modes of transportation that students use to get from one place to another and the second research question about the impact of students’ transportation circumstances on their subjective wellbeing. A few of the questions looked at factors that may exclude people from using particular modes or being able to access certain places or life necessities, which touches on the third research aim. Questions considered Cresswell’s (2006) three relational movements and

⁸ In the fall survey 1,020 students entered the survey link. Six people did not consent, 44 provided consent but did not provide any meaningful responses, 311 students responded from Niagara College and 658 from Brock University. One student identified that they were no longer attending school. In the winter survey 1,180 students entered the survey link. Eight people did not give consent, 57 provided consent but did not provide any meaningful responses, 531 students responded from Niagara College, 577 from Brock University, and five preferred not to say which school they were attending.

mobility elements (Cresswell, 2010), as well as the three components of motility (Flamm & Kaufmann, 2006) (see Appendix B for examples).

The second section of the online survey was optional. Students could provide a one-day travel log to share their travel routes and modes, along with their experiences of those routes and modes. This portion of the instrument combined both quantitative data, through route mapping, and qualitative data in the form of students' comments about their individual travel experiences.

One of the intentions of collecting the travel logs had been to gather data on the routes students most often traveled to get to work, school, recreational activities and other destinations so that policymakers could develop a deeper understanding of how users experienced those routes and how this affected their subjective wellbeing. Fielding (2008) calls this use of multiple methods of data gathering, analytic density. Students were asked to indicate where they began their journey, where they went, what mode of transportation they were using, how long the journey took, the ease of travel (using a rating scale of 1-5, where one was not at all stressful and five was very stressful), and an opportunity to provide comments about their travel experience. In retrospect, it may have been better to have asked students to provide their exact travel route, as the route responses gathered were often vague and unmappable. However, some useful information was gathered on modes of travel, destinations, and infrastructure concerns, which were then shared with the project steering committee for their departments or agencies to take into consideration and act upon where warranted. In total 250 people completed the travel log in the fall term and 262 did so in the winter term. Unfortunately, the qualitative responses in the travel log were not well completed and provided little useful information. Therefore, this thesis will focus on the first portion of the survey.

Transportation survey questions were derived from two existing survey tools: the Niagara College Student Transportation Survey, and the StudentMoveTO survey, conducted by Ryerson University, University of Toronto, York University and OCAD University. The questions adapted from StudentMoveTO were transcribed from a YouTube video (demo.studentmoveto.ca, 2016) showing how to use the survey. Some survey questions addressed issues, or concerns, identified by members of the steering committee. Other questions were taken from Delbosc and Currie's (2011) work designed to "explore self-reported measures of difficulties with transport, how types of difficulties vary between particular social groups and how they relate to social exclusion and wellbeing" (p.171). The questions posed in their research were easily applied to this study in order to address barriers to travel based on personal, societal and systemic access issues.

There are many different tools to assess and interpret wellbeing. To help determine tools and/or questions that were relevant to this work, the following criteria were applied:

- The tool had to be able to address wellbeing through a self-administered tool versus a clinical measurement tool,
- It had to be simple to use and brief,
- It had to be able to make individual measurements versus group measurements, and
- It had to look at general wellbeing questions/tools versus a tool that measures the wellbeing of people with specific conditions or diseases as questions were not used to identify or diagnose any specific pathology.

Based on these criteria, questions were adapted from the "Be Well" Survey, Phase II, Extended Version (The Association of Ontario Health Centres, 2016).

The Association of Ontario Health Centres (AOHC) created the “Be Well” Survey to establish a population health wellbeing benchmark for people who were accessing their services. The survey was adapted from the Canadian Index of Wellbeing, with a specific focus on health equity, the determinants of health, and community development. The tool considered “social inclusion, sense of community belonging and self-assessed mental health over time” (AOHC, 2016, p.4). The purpose of the tool was to gain a better understanding of what was contributing to their clients’ wellness or what was making them unwell. This perspective appeared to have the greatest applicability to this study.

Photovoice

Photovoice actively engages research participants in the creation of visual data. It is a means for researchers to learn about the life experiences of the participants through the images and stories created by the participant (Glesne, 2016). Photovoice has been used (1) to empower people to document and think about their community's assets and deficits, (2) to further important discussions and knowledge exchange about important issues through group discussion, both large and small, of photographs, and (3) to engage with and influence policymakers (Wang & Burris, 1997). This method of research “has several names and variations: photovoice, photo-elicitation, self-directed photography [and] autophotography” (D. Butz, personal communication, May 3, 2018). For the purposes of this research, the term photovoice will be used.

Photovoice was used as a tool for students to share their positive and negative travel experiences as captured through photographs and short written descriptions of their photos. The photos and descriptions were used to elicit conversation in a one-hour recorded interview. Twenty students participated, nine in the fall term and eleven in the winter term. The photovoice stories were used to gain a more in-depth understanding of student transportation behaviours,

transportation challenges, modal preferences, ability or inability to get to certain destinations, the social discourses around movement and modes of travel, and how students perceived that their mobility or immobility has impacted their health and wellbeing. It was also used to help reveal social inequities and experiences of exclusion (Wang & Burris, 1997; McIntyre, 2003).

To recruit students, several Brock University professors were personally asked to support the promotion of photovoice participant recruitment by sharing a PowerPoint presentation at the start of their lectures (see Appendix C). Additionally, student union representatives at Niagara College and Brock University reached out to students to make them aware of the project. Lastly, photovoice participants encouraged people that they knew to participate as well. Interested students were directed to contact me personally via my work email, work phone number or through the project's website (www.niagararegion.ca/projects/students-on-the-move/default.aspx).

Once students contacted me, an introductory email was sent to them (see Appendix D for a sample). The purpose of the email was to acquire demographic information about the students, which included the institution and campus they attended, their gender, their status as domestic or international students, age, student status, and municipality of residence. If students replied to the demographics survey, they were then invited to meet to discuss the project further, receive an information package, and sign the consent form (Appendix E).

The consent form gave the researchers permission to use the students' written photo descriptions, interview transcript and photos for this research, future publications (scholarly and government reports), presentations and public display. The meeting also included discussions on ethical considerations when taking photographs and some basic photography tips.

The photovoice package was adapted from Hamilton Public Health's Neighbourhood Action Strategy Photovoice Toolkit. There is some debate in the literature about providing instructions to participants on how to take engaging photos, especially in situations where there are vast power dynamic differences between the participant and the researcher and the researcher's influence could alter the participant's representation of themselves to please or conform to the researchers ideologies (Johnsen, May & Cloke, 2008). However, I felt that, with the common practice of students taking pictures with their cell phones, students have already created their own sense of what makes a photo attractive and that the power dynamic would be minimal since I, the lead researcher, am also a student. A review of the literature on public health photovoice projects, conducted by Catalani & Minkler (2010), indicated that many of "these early projects typically included a brief training on photography skills, photovoice ethics, and safety" (p.438). Although there could have been some influence on the types of photos and the way that the photo had been taken, the photo examples within the student package were used to discuss the importance of personal safety practices, even if that was at the cost of not taking the most engaging photo to capture the significance of what the student wanted to share. The photo examples were also used to introduce the photo consent form required by Niagara Region's legal department, which students were required to use if any people in their photos were identifiable. This undoubtedly impacted what students photographed as most students wanted to avoid having to complete the additional paperwork and/or to request permission of the photographed person(s). Reflecting back on these instructions, I could have had students photograph more freely and then have chosen photos for publication that did not have identifiable people. This would have protected the organization I am employed at from potential liability, while at the

same time reducing my influence on the students and possibly providing more richness in the photos.

Following the first meeting, an email calendar invitation was sent to the students to meet again in about four to six weeks to go through their photos and narratives in a one-hour, one-on-one recorded meeting in order to elicit more information about their travel experiences. Students were asked to create high-resolution digital pictures with their own phone or camera. The students also emailed their photographs and accompanying narratives to me.

Although the students had agreed to being recorded in the final interview at our first meeting and on the consent form, verbal consent was once again obtained before recording began. Most interviews were conducted at the student's home campus; however, a few students preferred to meet at the public library or in a coffee shop. A quiet and semiprivate space was sought so that students could feel comfortable sharing the more personal aspects of their travel, as well as provide better recording conditions. All students who expressed interest in participating were invited to be part of the study. In total there were 28 expressions of interest, 24 people attended the first meeting and signed the consent forms, and 20 students completed the project. There were equal numbers of Brock University and Niagara College students (Table 3.2). Students were from all of the municipalities that have a campus, with the most students coming from St. Catharines, as well as two students from Port Colborne. Similar to the on-line survey more females than males participated in photovoice and most students were between the ages of 20-24. What was interesting is that nearly a third (28%) of photovoice participants were 30 years of age or older, which was higher than the on-line survey (10%). All students who

participated in the photovoice component of the project were given a \$50 Tim Horton's gift card at the final interview⁹.

Table 3.2

Student Participation in Photovoice by Campus

Institution	Number of Participants	Total Students per Institution
Brock University Main Campus	8	10 Brock University
Brock Marilyn I. Walker Campus	2	
Niagara College Welland Campus	4	10 Niagara College
Niagara College Niagara-on-the-Lake Campus	6	
Total	20	

The photovoice package indicated that a maximum of 40 students could participate in the project. This was based on the available project budget and the administrative capacity to manage that many students, more so, than it having been based on other photovoice research practices. However, even attracting the 20 students who completed the project was administratively challenging. Nonetheless, their photos, narratives and interviews have provided a wealth of information and insight. This, in concert with the online survey results, has provided a richer understanding of post-secondary student travel and wellbeing.

Study Recruitment

To support the promotion of the surveys, a recognizable image was created with support from the Niagara Region Public Health graphic artist (Appendix F). Input on the logo and final logo selection was sought from the project steering committee and from student interns at

⁹ Those who withdrew partway through were sent an email asking the student how to best provide them with the gift card; however, none of the students who withdrew wanted the card, even at my insistence. Gift cards were purchased by Niagara Region Public Health. In addition to the gift card, students were also provided with a non-alcoholic beverage of their choice to enjoy during the initial meeting and again during the final interview.

Niagara Region Public Health, the latter of whom helped to capture a youth perspective on the logo's attractiveness. This image was used on each of the survey tools and promotional items, and will also be used on reports shared with Council and the community. Using the same image on all the products creates a sense of familiarity with this research study which may have increased student participation. Promotional tools included emails, posters and table tent cards (Appendix G).

From the onset of the project, student union representatives at Niagara College and Brock University were engaged to support the promotion of this study. The representatives used their knowledge of where students travel around the campus, and students' preferred areas to "hang out", to determine where to place posters and table tent cards throughout all the campuses. They also understand the policies and procedures as to where within the campuses such promotion and recruitment is permitted. The Brock University Student Union was a bit more limited in their promotion as they have specific areas of where they are permitted to hang promotional materials; however, Dr. Fullerton was able to work with the appropriate administrative authorities to include more areas. To communicate with students by email, Dr. Fullerton worked with Brock University's Office of Institutional Analysis and Planning and I worked with the Niagara College representative from the project steering committee to organize the email promotion strategy.

Students who participated in the shorter version of the survey, which excluded the travel diary, had the opportunity to win one of one hundred \$10 gift cards in each term, with a total of 200 gift cards available to Niagara College students and 200 for those at Brock University. Students who participated in the survey *plus* the travel diary component had the opportunity to win one of fifty \$20 gift cards per term, in this case totalling 100 gift cards for Niagara College students and the same number for Brock University students. Niagara College- and Brock

University-based project partners had been consulted on appropriate prizes and Tim Hortons gift cards had been identified as suitable incentives as they would be desirable to many students. An advantage of Tim Hortons cards was that they could be sent electronically to students via their email, thus eliminating the challenges of physically distributing cards to hundreds of students.

Students who indicated they were interested in participating in the draw for the prizes were asked to provide their names and email addresses, which were then housed in an Excel spreadsheet separately from the survey. Winners were drawn at random using a number generation program in Excel. Niagara Region Public Health paid for and administered the email distribution of the gift cards. Once the names were drawn and the prizes distributed the Excel file was destroyed.

Data Analysis

The online survey and photovoice data were collected and analysed in parallel. It was not until the interpretation stage that results from one methodology were compared to the results of the other. The following section outlines the data analysis process of each tool.

Online Survey

The online survey had two sections and the SurveyGizmo tool housed each section's data in different files. Additionally, data from the first section did not necessarily correspond with the order of the data in the second section; therefore, data could not be linked to any particular student, thus eliminating the chance of participant identifiability. Data from SurveyGizmo were organized in Excel spreadsheets and analysis of these data sections was conducted independently.

The first section of the online survey for the fall and winter data were cleaned by me. Data were analysed in Excel, mostly comparing one set of variables against another in order to

generate simple percentages. Because this research project is being used by Niagara Region Public Health, and within tight timeline requirements, analysis of these data was shared by me and Niagara Region Public Health's Research Intern. I analysed the fall data and Research Intern replicated the analysis process for the winter data. Significant differences between the fall and winter analysis were noted and where appropriate a Pearson's Chi Square Test was used to assess how likely the difference between the fall and winter data sets happened by chance. Because there were few differences between the data sets, those fall and winter data that were comparable were combined and analysed to give the data greater power.

For the optional travel log portion of the online survey, the Research Intern conducted the coding in consultation with me. Data were analysed for three different aspects. The first aspect considered was about where students are coming from and going to. This information was of particular importance to the steering committee as part of their concern is ensuring the infrastructure to support student transportation reflects actual student travel destinations. The resulting list of Niagara destinations was similar to what was identified in the first portion of the survey, as could be expected, since they were the same students completing both portions. It had been hoped that students would identify destinations beyond school, work and home, which were covered in the first portion of the survey, however student answers were often vague and did not lend themselves to "mappable" destinations; e.g., went to a friend's house. Identifiable beginning or end points were also similar to travel destinations noted by photovoice participants, although they were not likely the same students as the ones completing the online survey. When the steering committee members were consulted, they felt the destinations were reflective of what they were observing in the community. Students were also asked about their travel mode and the

length of time it took to get to where they were going, but again this was reflective of what was answered in the earlier portion of the survey.

The second aspect of the travel log analysis was about travel experiences. Some students provided comments for each trip they made throughout the day. Rudimentary codes were developed inductively as students' comments were read line-by-line. Some codes were in-vivo, reflecting students' actual words, for example, "concerned about being late for class", and the Research Intern and I constructed other codes based on an interpretation of the students' thoughts (for example, "sharing the road"). Initially, there were 120 codes identified for the fall data.

To make the comments more relevant and accessible to the steering committee, further distillation of the codes was done into what we termed solvable problems. So, for example, the issue of "not enough buses" has potential for improvement, but "weather" is not controllable and, therefore, was not included. This resulted in 53 codes. After further analysis, many of the issues identified were not specific enough to act upon, such as a pothole in the road with no named road, so additional work was done to come up with actionable items and 11 final codes. These specific items were shared with the steering committee for action as appropriate (see Appendix H). There were no groups, themes or codes determined in advance. They were created inductively based on the words of the students.

The third aspect of the travel log analysis was the student stress rating. While asking the "degree of stress" question connected well to the purpose of the study, analysing the data to interpret any meaning did not prove practical. At best, people identified being stressed for different reasons, all of which could have been surmised or read about in the literature. For this reason, the rating scale was omitted from the analysis. The written comments were more

valuable and provided a better sense of student travel experiences. Their wording choices better reflected the stress level they were experiencing.

Fall and winter travel log data were kept and cleaned separately. However, codes and themes from the fall term were used to sort the winter data as the comments were similar to the fall data. Winter data cleaning resulted in nine codes for actionable items.

Although it had been hoped that students would identify specific travel routes, the data lent themselves better to start and end locations. In the future, if a similar survey was to be conducted, either the questions need to be reworded to capture exact travel routes, or a different data collection methodology should be considered, such as geospatial tools where students can draw their routes. The results of this section of the survey were disappointing as the intention of asking for the travel log was to develop a deeper understanding of exactly where to and how students were traveling. If exact routes could have been determined, and an understanding of the degree of stress students were experiencing on those routes, then action could have been taken to improve student's experiences. Although some actionable items were identified, for the potential volume of data, so much more could have been done. This type of information would have likely been better gathered in a geospatial data collection tool, or through focus groups, or interviews.

Photovoice

The photovoice data had three components: the photo(s), the description of the photos written by the students, and the recorded interview. Interviews ranged in length from 15 minutes to just over an hour. Recorded interviews were transcribed into a Microsoft Word document. The photos were used to generate and focus verbal and textual accounts of the students' travel experiences and were not analysed for their visual content. During the interview process, all of the photos were printed in colour in advance and spread out on the table. Students were asked to

share their photos with me in their order of preference. Generally, that was enough to bring about spontaneous conversation with the students as they recounted their travel experiences and why they had taken each photo. Interviews were conducted in an informal conversational style with no preplanned script, thus allowing for free-flowing dialogue. As students shared their stories, the only question that was consistently used across all the interviews was, “How do you think this impacts student wellbeing?” Other questions were asked in-the-moment so that deeper insight and clarity could be given by the participant and understood by the researcher. It also gave the participant the autonomy to share their travel experience in a way that was meaningful to them. For some it was the aesthetic of the photo that they were proud of, while others recounted the feeling of their experience at the time they took the photo and what had happened in advance of and post picture taking. Each story was unique to the teller.

At the end of the interview, students were asked if there was anything else they wanted to share and were encouraged to contact me if they thought of something they wished they had shared in the interview. No students took me up on my offer. Students were then provided with a \$50 Tim Hortons card in appreciation for their time. No further contact was made with the students. The recorded interviews were transcribed but were not returned to the students for additional feedback due to the limited time available to the researcher and the timing of the interviews in relation to the school year, which in both semesters fell around exam time.

Because this was a massive amount of data, the first attempt at organizing the data was mostly to group the results by rudimentary codes under common categories. The process was somewhat iterative. As more codes were identified, codes began to show some form of commonality that led to the creation of a category. Sometimes a category emerged from other categories that seemed to better represent a collective meaning. As Glesne (2006) writes,

“coding is a progressive process of sorting and defining, and defining and sorting those scraps of collected data” (p.195) in a way that helps to answer the research questions.

As the codes and categories emerged, they were kept separately on post-it notes so that it was easier for me to recall what I had thought of in a previous day’s work (see Figure 3.1). Microsoft Excel was used to store the sorted data. The large categories were assigned a tab in an Excel book and then, on each page, data were sorted into codes. Transcribed interviews, as well as written narratives provided by the students, were analyzed line by line and the exact words of the interviewees were copied into the appropriate Excel spreadsheet. This resulted in 171 codes under 20 categories.

As I read through all the data, I kept notes on my thoughts in the Excel spreadsheet. These reflective notes, larger categories and rudimentary codes helped to guide the further synthesis of the final codes.

Ethics Review

This study was reviewed and received ethics clearance through the Brock University Research Ethics Board (file # 18-041); Niagara College Ethics Board (file # NC2018-12); and, the Niagara Region Public Health ethics review committee.

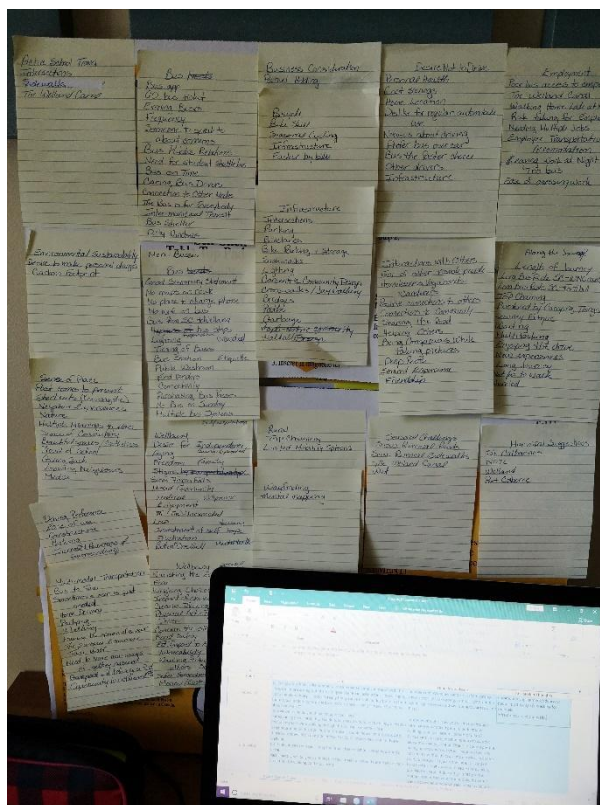


Figure 3.1. Rudimentary codes and categories
Photo: Jacqueline Gervais, 2019

Chapter Four: Findings

To begin to answer the three research questions posed by this study, the results chapter has been divided by the research question it aims to understand. Within each research question subsection, there are additional subsections to further explore the unique demographic characteristics within the post-secondary population such as the municipality the students live in, the campus the students attend, gender and status as a domestic or international student to see if there are differences in freedom of mobility (e.g., the mobility typologies of motive force or friction) (Cresswell, 2010). The first two research questions have multiple components to them, therefore requiring subsections to address each component. Additionally, demographic characteristics were compared for each subcomponent resulting in multiple layers of reporting within the findings. Each research question sets a foundation for the next research question leading to a deeper understanding of the impact (im)mobility has on post-secondary student wellbeing.

Research question: In the context of the Niagara region, what influence do (a) the availability of transportation and (b) modal options have on post-secondary students' access to school, employment, recreational activities and other necessities?

Getting to Where Students Need to Go: Modes of Transportation and Demographic Characteristics

The first section of the study's findings develops a picture of Niagara's post-secondary students. It will share some of the demographic characteristics of the students within the geographical framework of Niagara's various municipalities and consider the types of transportation students have available to them and how these modal options influence students' access to school, employment, recreational activities, and other necessities. The data have been further disaggregated by campus, gender, and whether students are domestic or international in

order to explore potential inequities between demographic groupings. Data on ethnicity were also collected; however, due to the deeper cultural nuances these data will not be analysed in this study, but may be used in future research. The same ethnicity questions that had been used by Student Move TO were used in this study, but in retrospect each description may have been too broad to properly analyse. For example, the description of South Asian could identify where the student's family roots were from, but it does not take into consideration for how long, or for how many generations, a student has lived in Niagara and the impact of that duration on social and cultural understandings. It may have also been more useful had a question about length of time in Canada, or in Niagara, been included. Most of these data are quantitative and were collected using SurveyGizmo (see methodology for more detail). Data were collected in the fall term of 2018 and the winter term of 2019. As noted earlier, fall and winter data were analysed separately, but, where there were no significant differences between the fall and winter data, they were combined to give the data more analytic power.

The Access Rights Portfolio: Modes of Transportation

Post-secondary students are traveling by many different means to get to where they are going and may have more than one transportation option to get there, aside from walking. This sub-section on modes of transportation speaks to Cresswell's (2010) first relational moment, movement, and Flamm & Kaufman's (2006) factor of access. In this study, the data showed that the majority of students (75%) had a bus pass, followed by access to their "own" car (45%), the ability to borrow a car (33%), the ability to sometimes borrow a car (21%), bicycle (22%) and getting a ride from others (11%) (Table 4.1). The fact that 75% of students had an annual or monthly bus pass likely reflects the college and university student unions' policies of providing full-time students with bus passes, called the U-Pass. For an additional ancillary fee, eligible

students can receive a sticker for the back of their student card, that allows them access to certain transit commission buses without having to pay cash or use transit commission issued bus cards to board the bus. The U-Pass fees are part of students' tuition, with additional subsidies from the student unions. As a point of clarity, Niagara region has different public transit agencies for each of the municipalities, with the exclusion of a few of the smaller municipalities. It also has a Regional bus service to connect the municipal transit agencies' service areas (Table 4.2).

Although not all students take the bus, all full-time students must pay for the bus pass in their student fees. Student Union representatives have identified some resistance to paying the fees on the part of students who do not use public transit; however, these collective contributions are necessary to make the U-Pass program viable. Additionally, students who would otherwise drive to school but instead take the bus to reduce their travel expenses also reduce the number of people using the schools' parking lots, which students have noted at various campuses to be both expensive and filled over capacity – a point of friction (Cresswell, 2010). As this student noted,

"...all of the paid blocks [pay as you go] are closer than the parking pass. Like, Zone 2, at Brock, is, like, you know, across the street, but they oversold it. So, now every time I would go to the school, I would have to park as far as you can think. It's, like, literally the farthest spot that you could ever think of. That's where we have to park now because it's always full. I don't even bother looking for a spot, like, one of those random spots in the closer one, because it's just going to waste my time. Honestly!" (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

Sixty-seven percent of students had a full Class "G" driver's licence; however, of those, only 65% had access to their "own" car, which was defined in the survey as 'owning a car, or having access to a car that [the student] can call their own' – for example, a family car that the student uses most of the time. Thirty-three percent of students noted that they could borrow a car from friends or family when needed and 21% could borrow a car "sometimes"; however, they were not asked to quantify how often or under what circumstances they could borrow the car. It

is interesting to note that 55% of students did not own their own vehicle, which means that over half of students were relying on other means of transportation, or on automobile rides from other people.

Table 4.1
Availability of Transportation Modes to Students

Do you ride a motorbike	2%
Do you ride a moped or scooter	1%
Are you a carshare member?	8%
Did you use a rideshare (carpooling) service in the last year? Ex. Niagara Rideshare	11%
Do you have a monthly or annual bus pass?	75%
Do you have a full driver's licence? This includes G, G2, unrestricted licence issued outside of Ontario, but not a G1	67%
Do you own a car or have use of your "own" car?	45%
Can you borrow a car from friends or family when needed? (yes)	33%
Can you borrow a car from friends or family when needed? (sometimes)	21%
Do you own a bike that is available to you while you are at school?	22%
Percentage of those who have a G licence that own a car or have use of their "own" car.	67%

Table 4.2
Availability of Public Transit Service, Niagara Municipalities

Municipality	Local Transit	Niagara Region Transit
Grimsby	None	No
West Lincoln	None	No
Wainfleet	None	No
Lincoln	uLinc	No
Port Colborne	Port Colborne Transit (serviced by Welland Transit)	Yes
Fort Erie	Fort Erie Transit	Yes
Welland	Welland Transit	Yes
Pelham	Pelham Transit	Yes
St. Catharines	St. Catharines Transit	Yes
Thorold	Thorold Transit (serviced by St. Catharines Transit)	Yes
Niagara Falls	Niagara Falls Transit & WEGO	Yes
Niagara-on-the-Lake	Niagara-on-the-Lake Transit	Niagara College only

Nearly a quarter of students (22%) had immediate access to a bicycle and almost another one-fifth (21%) identified that they had a bicycle, but that it was not available to them while they were at school. Some students noted that they would like to ride a bike and that they would use it to connect to other modes of transportation. As this participant stated, “I intend to buy a bike in maybe two more weeks or something. So, I intend to buy a bicycle, ride to [the] Welland campus and take a bus to [the] Niagara-on-the-Lake campus” (Photovoice Participant 11, female, Niagara College Niagara-on-the-Lake campus, March 1, 2019). She also noted that she would prefer to ride a bicycle because it is faster than walking, which is what she was doing at the time of the interview to get to the bus. Having a bicycle would increase her access rights portfolio (Flamm & Kaufmann, 2006) through the addition of a new mode, while also increasing the velocity (Cresswell, 2006) of her mobility.

Carshare is a program where people pay for a membership to share access to various cars within that program’s fleet, vehicles that they can reserve for a desired length of time. There is

usually a monthly fee to be a member, with additional fees for each time the car is used. Carshare allows people access to a vehicle when they need it, without having to own a car. Eight percent of students identified that they were part of a carshare program, which is higher than what could be expected given that carshare is still in its infancy in Niagara; however, it is also quite possible that there was a misunderstanding about the meaning of “carshare” on the part of some survey participants bringing to question the validity of this data.

Rideshare is an organized or formalized approach to carpooling. Most rideshare structures are online, whereby drivers can post their availability to drive and passengers can connect to drivers. Conversely, rideshare is also a way for people who need a ride to post their information and for drivers to connect to the passenger. The way that the survey question was worded, people who were part of a less formal carpooling structure (for example, getting a ride with a classmate) were able to choose that option as well. Eleven percent of students identified that they were part of a rideshare, or carpool. This is the same percentage of people using carpooling as in the Stats Canada 2016 data¹⁰. As the word carpool was also used when describing this mode of transportation, it is more likely that this percentage is accurate. Very few students identified that they rode a motorbike (2%) or a scooter (1%).

Access Geographically: Municipality of Dwelling while Attending School

Students were living across Niagara, and beyond. Most students lived in the major urban centres, St. Catharines (39%), Niagara Falls (17%), Thorold (17%), and Welland (11%), with a

¹⁰ <https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016029/98-200-x2016029-eng.cfm>, accessed on February 12, 2020.

further 4% of students living in Niagara-on-the-Lake and another 5% traveling to school from outside of Niagara (Table 4.3). Brock University's main campus is located in St. Catharines, on the border of the City of Thorold, and the Marilyn I. Walker campus is in downtown St. Catharines. Niagara College has a campus in Welland and another in Niagara-on-the-Lake on the border of St. Catharines, Thorold and Niagara Falls.

Upon closer examination, the municipal share of student dwelling locations was different between campuses. It could be imagined that students would live close to their campus; however, this was not always the situation. Indeed, most Brock University main campus students lived in St. Catharines (50%) and Thorold (26%), resulting in three-quarters of students living, more or less, in the same municipality as the campus. The Marilyn I. Walker campus response rate was quite small, but of the reportable responses most students lived in St. Catharines. For the Welland campus of Niagara College, 36% of students lived in Welland, but nearly the same number of students lived in Niagara Falls (32%). At the Niagara-on-the-Lake campus, students were split between St. Catharines (30%) and Niagara Falls (24%) with the next largest portion of students living in Niagara-on-the-Lake (18%). For both Niagara College campuses, many students were traveling from outside of the municipality of their campus to attend school (Table 4.3). This will be discussed more in relation to transportation later in the findings, but constraints to motility (Flamm & Kaufmann, 2006) can already be imagined because of geographic location of dwelling compared to campus location.

Understanding more about the Impact to Student Access: Gender, Year of Study, Campus and Municipality of Dwelling

To begin to separate respondents into different social groups and possibly expose social exclusions (as per Cass et al., 2005), comparisons were made by gender to see if there was a

difference between students living in the same municipality as where they attended school. Because there were very few people who identified with a gender other than male or female, and those numbers became even smaller once divided between campuses, only male and female numbers are reportable.

The percentage of students who live in the same municipality as their campus was much lower at the college campuses than at the Brock main campus. At the Brock main campus, similar percentages of females (50%) and males (49%) lived in the same municipality as the campus they attended (i.e. St. Catharines). Those numbers increased to 76% and 75%, respectively, if we include students who lived in Thorold which is contiguous to the Brock main campus. Forty-eight percent of females lived in the same municipality as the Marilyn I. Walker campus. There were too few male respondents to report. At the Niagara College Welland campus, the percentages of students who lived in the same municipality as their campus were similar, 35% for females and 32% for males. For the Niagara-on-the-Lake campus this decreased to 18% of females and 15% of males.

Table 4.3
Municipality of dwelling during the school year, overall percentage of students for all campuses

Municipality of Dwelling	Across All Campuses	Brock Main	Marilyn I. Walker	Welland	Niagara-on-the-Lake
Fort Erie	1%	1%	NR	3%	NR
Grimsby	1%	2%	NR	NR	NR
Lincoln	1%	1%	NR	NR	2%
Niagara Falls	17%	9%	NR	32%	24%
Niagara-on-the-Lake	4%	1%	NR	1%	18%
Pelham	1%	1%	NR	1%	2%
Port Colborne	1%	0%	NR	2%	NR
St. Catharines	39%	50%	59%	18%	30%
Thorold	17%	26%	24%	1%	7%
Wainfleet	0%	NR	NR	NR	NR
Welland	11%	3%	NR	36%	7%
West Lincoln	0%	0%	NR	NR	NR
Do not live in Niagara	5%	5%	NR	3%	8%

NR = not reportable due to the low number of responses

Because the university and college residence policies provide preferential placement to first-year students, it could be expected that first-year students would live in the same municipality as their campus. As such, in the fall term 80% of females and 85% of males in their first-year of study at Brock lived in the same municipality as their campus when St. Catharines and Thorold responses were combined. The percentage of students living in the same municipality as the campus continued to remain high as the year of study increased for both fall and winter student data sets. However, in the winter term there was a marked decrease in first year students living in the same municipality as the campus (67% of females and 46% of males). One possibility is that this may be representative of new first-year students coming to Brock in January and therefore not having access to residence due to the residences being filled earlier in the fall for the duration of the school year.

In comparison to Brock there were far fewer students in the first year of a multi-year program, or in a one-year program, at the Welland Campus of Niagara College who lived in the same municipality as the campus. And, the percentages of students living in Welland based on the year of study were vastly different for the fall students compared to the winter students (Table 4.4). This may be reflective of the small fall sample size, or the record number of students who enrolled at the college in the winter term¹¹, or other phenomena not answerable though this study.

¹¹ Torok, J. (January 3, 2019) NC welcomes record number of students for winter term
<https://www.niagaracollege.ca/insidenc/2019/01/03/nc-welcomes-record-number-of-students-for-winter-term/>

Table 4.4
Welland Campus Students Living in Welland, By Year of Study

Program Length	Females		Males	
	Fall	Winter	Fall	Winter
One-year program or less	25%	36%	50%	21%
First year of a multi-year program	32%	30%	40%	30%
Another year of a multi-year program	57%	31%	20%	33%
Final year of a multi-year program	47%	34%	38%	50%

The Niagara-on-the-Lake campus data showed even less of a pattern than the Welland campus data in that the students' responses from the fall and winter surveys were quite different from one another and there did not appear to be any correlation between year of study and whether students lived in the same municipality as their campus.

Gender in relationship to living near campus seemed similar between college and university students. However, Brock students', regardless of gender and year of study, lived in the same municipality as their campus, which could be seen as more of an asset in the students' access rights portfolio (Flamm & Kaufmann, 2006) assuming daily travel to campus would be easier with decreased distance and a single transit commission. Niagara College students, regardless of gender or year of study, were not afforded the same ease.

Understanding more about the Impact to Student Access: Domestic and International Students, Campus and Municipality of Dwelling

A vast majority of Brock domestic students (74%) reported living in the same municipality as the campus, with 47% living in St. Catharines and 27% living in Thorold. More domestic students who attended the Welland campus of Niagara College (36%) lived in Welland compared to the other municipalities, such as St. Catharines (23%) and Niagara Falls (19%). However, domestic students who attended the Niagara-on-the-Lake campus were not likely to

live in Niagara-on-the-Lake (17%), which came in second behind the proportion of students who lived in St. Catharines (27%). For both Niagara College campuses far more domestic students were traveling across municipalities to attend school compared to those attending Brock University's two St. Catharines campuses which has implications in modal options, transportation experiences (e.g. having to use multiple bus systems to get to school) and, potentially, wellbeing.

Eighty percent of international students who attended the Brock University main campus lived in St. Catharines (67%) and Thorold (13%). This was down slightly from the fall data where 94% reported living in either St. Catharines or Thorold. This percentage was substantially higher than that for international students who attended the Welland Niagara College campus (34%) or the Niagara-on-the-Lake campus (18%) and lived in the same municipality as their campus. The majority of Niagara College international students reported that they live in Niagara Falls (Welland campus 36% and Niagara-on-the-Lake campus 55%). These findings corroborate observations made by the transit agency representatives who participate on this project's steering committee.

In ease of access to the campus, assuming living in the same municipality as the campus makes it easier and quicker to get from home to school, both domestic and international Niagara College students have the greater geographic constraints vis-à-vis those attending Brock University (Flamm & Kaufmann, 2006).

Understanding more about the Impact to Student Access: Living Circumstances and Modal Options

Post-secondary students lived in various dwelling arrangements. Fifty percent of students lived with roommates, 31% lived with parents, 10% lived with a partner, and 7% lived alone. Not surprisingly, because St. Catharines, Thorold, Welland and Niagara-on-the-Lake are

municipalities associated with post-secondary institutions, students living there were more likely to report cohabitating with roommates. Students from the other eight Niagara municipalities were the most likely to report that they lived with their parents/family, followed by living with a partner or alone. Of those living with a parent/family, 68% reported owning a car. This percentage increased with students living in municipalities that are further from the campus; for example, 100% of Fort Erie students reported having a car, as did 83% of students living in Grimsby. Of students who reported they lived with roommates, most students identified having a bus pass (87%), with car ownership as a distant second (27%). These responses likely reflect various internal values of the students as well as external pressures that have an impact on motility (Flamm & Kaufmann, 2006), especially when considering the costs and benefits to living arrangements and the suite of modal options available to them.

Students were asked to choose the top three factors that influenced their most recent choice of dwelling. Interestingly, certain housing factors were more indicative of modal options especially when considering the two most dominant modes, car and bus (Figure 4.1). As the bus pass is included as part of the student ancillary fees, it is not surprising that a large percentage of students had access to a bus pass. However, there were marked differences in car ownership when considering housing features. At the bottom end of car ownership, 22%, were students who chose a home location with close proximity to public transit. Bus access would likely have been an important feature since Niagara's development is more sprawled-out, making active transportation less possible and thus requiring students to rely on motorized transportation. And, if students do not have a car, public transit would be the most economical option. Eighty-nine percent of these students also indicated they had a bus pass.

At the top end of car ownership, 69%, were students who indicated that they chose their dwelling location to live with parents/family. Their bus pass access was conversely lower at 61%. Although all full-time undergraduate students have the bus pass available to them, students who have regular access to an automobile are less likely to activate their student card for use as a U-Pass, which is what allows them to take the bus free of charge. It can be imagined that students who remain living with their family would have more access to the family's resources (i.e. a car, free or reduced cost for housing, home-cooked meals), making it easier for them to balance the costs of transportation, such as the expenses of car ownership (i.e. gas, car maintenance, parking), all factors that influence the students access rights portfolio (Flamm & Kaufmann, 2006).

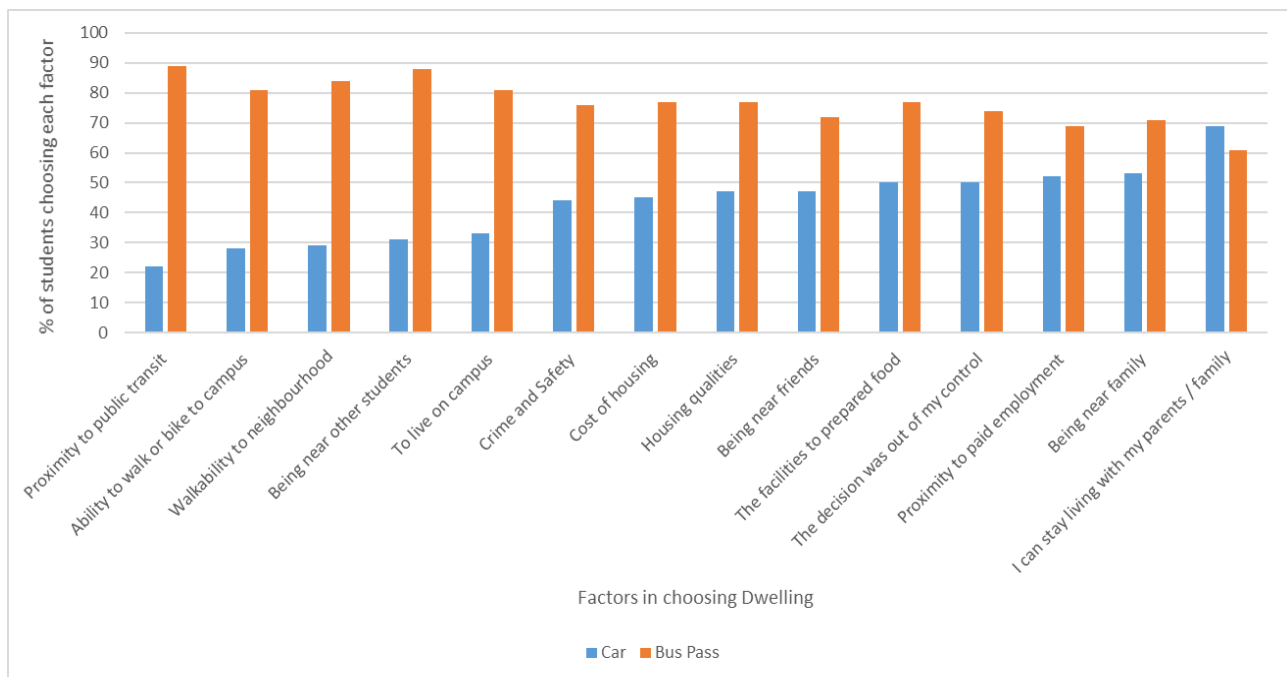


Figure 4.1. Bus use and car ownership in relation to housing features of dwelling choice

Exploring the Dimensions of Temporal Access: Transportation Options and Access to School, Employment, and Recreational Activities Travel to School

Regardless of age, gender, international or domestic status, institution, campus, or residential location, most students commuted to campus four or five days a week. When considering what means of transportation, or mobility options (Flamm & Kaufmann, 2006), students recalled using over the past month, public transit (60%) and the automobile dominated student commutes to school. Of those who commuted by automobile, 43% drove alone and 38% arrived to school as a passenger. Just over one-quarter of students identified walking (27%). Taxi and Uber/Lyft made up a combined 17% of commutes over the same time period. On average students reported using 2.2 modes of travel to get to school over one month's time. For the trip home there was a 2% increase in the number of students leaving school as a passenger and a 1% decrease in public transit use, likely reflecting students arriving to school by one means and leaving by another means.

There were differences in mode percentages between the campus (Table 4.5). When students were asked which modes they had used to get to school over the past month, most Brock students identified that they took public transit (74% at the Marilyn I. Walker campus and 67% at the Brock main campus). Many Niagara College students took the bus as well, but by percentage were much lower than the Brock students (49% at the Welland campus and 48% at the Niagara-on-the-Lake campus). It was also interesting to note that, overall, there were lower percentages of Niagara College students using most modes of transportation than university students. This could indicate that Niagara College students are using a fewer number of modes to get to school than university students, indicating fewer modal choices – a possible resource constraint (Flamm & Kaufmann, 2006).

Table 4.5
Mode of Transport to School, By Campus

Campus	Brock Main	Marilyn I. Walker	Niagara-on-the-Lake	Welland
Drive alone	45%	48%	41%	39%
Driver with passenger	26%	29%	13%	15%
As passenger	46%	48%	24%	26%
Bike	3%	NR	5%	5%
Public Transit	67%	74%	48%	49%
Walk	28%	32%	21%	29%
GO Bus	4%	3%	13%	5%
Uber	15%	NR	3%	6%
Taxi	3%	NR	10%	5%
Public Transport (e.g. Megabus)	8%	NR	NR	5%

NR = not reportable due to a low number of responses

On average, 57% of students reported their commute to school taking 20 minutes or less; however, 16% reported commutes of more than 45 minutes in one direction. This adds a significant amount of time onto an already long day of studying. This was one woman's experience of traveling from Welland to her home in St. Catharines.

“And then when you leave class, you have had a long day. You want to leave just after class. It is not happening. You are going to — there is a good chance you are waiting another hour before you can actually get out of college. When your journey is 90 minutes, an hour sitting at college — you're waiting at college for an hour and then another 90 minutes on top of that, it just, it makes your day long. You could sit and study, but I have been in college all day” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

The above example speaks to Cass et al.'s (2005) temporal dimensions when considering the efficiencies of travel to school such that the timing and availability of the bus made Participant 6's travel experience long and arduous.

Forty-five percent of students were satisfied with their commute; conversely, 19% were unsatisfied or very unsatisfied. Females were slightly less likely to indicate that they were

unsatisfied or very unsatisfied with their commute (18%) compared to male students (23%). The difference was even wider between domestic (17%) and international students (27%) for poor satisfaction. If we were to consider satisfaction, nearly half of domestic students were satisfied or very satisfied (47%) with their daily commute and only 38% of international students felt the same way. There were also differences between campuses. Brock main campus showed the highest satisfaction rate with the daily commute and Niagara-on-the-Lake and Welland campus students showed the least satisfaction (Table 4.6). This may, in part, be related to the better availability of public transit.

Table 4.6
Comparison between campuses of student satisfaction regarding their commute to school

Degree of Satisfaction	Brock Main	Marilyn I. Walker	Niagara-on-the-Lake	Welland
Satisfied-very satisfied	49%	42%	40%	40%
Neutral	32%	39%	39%	39%
Unsatisfied-very unsatisfied	19%	19%	22%	20%

There were some relationships between students' satisfaction with their daily commute and various aspects of their trip, although none were particularly strong. The strongest relationship was between satisfaction and the ability to get to places quickly which was also seen as important in mobilities research (Cresswell, 2010) (Table 4.7).

Table 4.7
Relationship between students' satisfaction with aspects of their daily commute

Aspect of students' trip	Coefficient of determination (R² value)
Getting to places quickly	0.19
Finding transportation so you can travel	0.13
Being able to travel when you want to	0.12
Being able to get around reliably	0.12
Buses being available to you on the weekends	0.05
Buses being available on the weekends	0.05
Having to rely on others for transportation	0.03
Covering the cost of your transportation	0.03

Transportation and Co-op Placements

Of students who responded to the question about the number of days that they commuted to co-op placements, 41% indicated that the question was not applicable to them. However, of those who indicated that co-op placements were applicable, 59% indicated that they commuted no days to co-op. This may be that the placements were located close to school or home such at the commute distance was negligible, or that they had co-op placements, but not at the moment that they were answering the survey, or perhaps there was a misinterpretation of the survey question. The largest percentage of students who indicated zero days of commuting to co-op were the same regardless of gender, age, domestic or international status, geographic location within Niagara, or campus. There was variability of between four to nine percent of students indicating they commuted to co-op two to five days per week, with 14% indicating one day per week.

Of the students who indicated that they could not take a co-op placement due to transportation constraints, 72% indicated that they did not have a car; nor did the 77% who indicated that transportation made getting to co-op difficult. Eighty-six percent of these students relied on the bus. Niagara's community design and modal preference for automobility excludes

those who do not have an automobile (Cass et al., 2005). As this student shared, she relied on a peer from her class to get to her co-op placement because she did not have a car and the co-op placement was earlier than the bus service was available.

Interviewer: “So, do you have an automobile yourself?”

Participant: “I do not. I am looking to get one for next year, once I get a job and everything.”

Interviewer: “Right, and I guess that’s kind of the tricky part too. You need a car to get to those jobs for those hours.”

Participant: “But I need the hours and the money to get the car.”

Interviewer: “Right, how have you managed your internships then?”

Participant: “Um, I’ve been carpooling, which actually is here [showing picture]. Yes, I’ve been carpooling with one of my classmates that goes to the same placement as me. He’s also coming from Welland. So, we usually go up Highway 20, all the way from around the Fonthill area, up until Lundy’s Lane, where we go to placement at Morrison and Dorchester. Yes, we go up at — we get there for 6:45 [a.m.]” (Photovoice Participant 17, Female, Niagara College, April 10, 2019) (Figure 4.2).

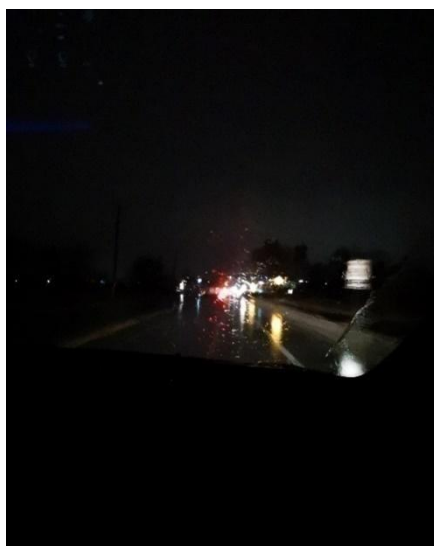


Figure 4.2. Getting a ride with a peer to get to co-op in the early morning hours

Photo credit: Photovoice Participant 17, Female, Niagara College, April 10, 2019.

Employment

In order to explore the impact of transportation on students’ access to employment, this section will first provide an overall picture of students’ perceptions of being able to access

employment. It will then outline students' current employment situation, followed by student's current employment in relation to transportation.

A little over one-fifth of students (21%) found that transportation always or often impacted their ability to access employment. There were some differences depending on the municipality in which the students lived. Students who lived in Welland were more likely to indicate that transportation was a barrier to employment (29%), followed by Thorold (28%), Niagara-on-the-Lake (23%), St. Catharines (21%), and Niagara Falls (17%). This woman's partner lived in St. Catharines without a car and relied on the bus, which made gainful employment in Pelham a near impossibility. As she said,

“So, we both have bikes and we both have bus passes. We are doing okay, but my boyfriend has been offered work in, somewhere near, somewhere outside of Welland. Fonthill area. There, it is very difficult to get a bus there. It is also in the evenings and I think the last bus back from Welland in the evenings is, like, eight o'clock or 8:30. Because I have tried to get— I have been to events at the college before and I have — I usually have to leave early to get the last bus. I feel, I feel like it is 8:30 or nine o'clock. So, if he was finishing work at 9:00, he wouldn't, he is not going to get back in time to get the last bus.” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

Of students who indicated that transportation was a barrier to accessing employment, students at the Niagara-on-the-Lake campus (46%) were more likely to see it as a challenge, compared to 37% of Welland campus students, 33% of Brock main campus students and 27% of Marilyn I. Walker students. Males and females had expressed similar experiences (36%); however, of domestic and international students who identified that transportation impacted access to employment, 32% and 45%, respectively, felt that transportation was often or always a hindrance. Geographic location as well as particular individual attributes (being a domestic or international student) were contributing factors that impacted access (Flamm and Kaufmann, 2006) to employment.

Current Employment.

Over half of students (53%) identified that they had employment, with St. Catharines and Niagara Falls being the major employment centres, followed by Niagara-on-the-Lake and Welland. When asked how many days per week employed students commuted to work, most students identified that they commuted three days per week (29%) followed by two days per week (25%) (Figure 4.3). These results were similar for both males and females and across age groups.

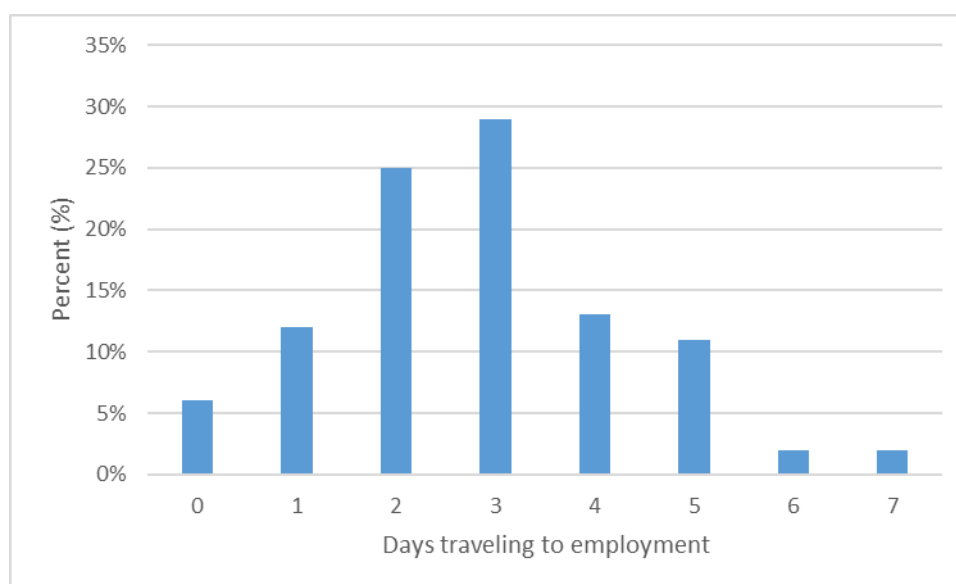


Figure 4.3. Number of days students travel to employment

Source: Survey Data

Employment and gender.

Regardless of gender, over half of the students participating in this study had some form of employment. Half of employed students (51%) were working between 11 and 20 hours per week, followed by one-third working 10 hours or less (33%). More females than males reported working 10 hours or less and more males than females reported working 11 to 20 hours per

week. Many fewer students were working more than 20 hours per week and the gender splits were similar.

There were notable differences between the fall and winter data with regard to the percentages of men or women who live and work in the same municipality. In both genders, there were more people working in the same municipality as they live in the winter term compared to the fall term, particularly for men (Table 4.8). This may be an anomaly, or could be related to other factors such as the ease, or challenges, of traveling in the different seasons (e.g., daylight hours, snow). It could also be a reflection of the amount of time needed to travel to work across municipalities and this competing with the time needed for studying, similar to what McCool et al.,(2017) noted with student commuting to co-op placements.

Table 4.8
Students Living and Working in the Same Municipality,
Fall and Winter Semesters

Gender	Fall	Winter	Total
Female	52%	58%	52%
Male	54%	65%	56%

There were also conflicting findings between the fall and winter data regarding whether more men or women work in a particular municipality, specifically St. Catharines. In the fall term, there were more women than men reporting working in St. Catharines and the opposite for women and men in the winter term. There was also an increase in the percentage of women working in Niagara Falls during the winter term. These results may be a reflection of the findings in the prior paragraph where more students were working closer to home in the winter semester. Overall, 24-34% of female students and 19-28% of male students lived, worked and attended

school in the same municipality.¹² There was an increase in the percentage of women and men who were traveling less than 3 km from the fall to the winter term, with a decrease in the percentage of females traveling over 10 kilometers to their paid employment (Table 4.9) The increase in students traveling fewer kilometers to work could be a reflection of wanting to travel less in the winter, or a means by which students are looking to ease the time pressures of longer commutes to work.

Table 4.9
Differences in Commute Distance between Genders and Terms

Gender	Fall 2018		Winter 2019	
	3 km or less	> 10 km	3km or less	>10 km
Female	32%	28%	40%	24%
Male	34%	26%	36%	27%

Employment and Age.

Students were divided into four age categories, including 19 and under, 20-24 years old, 25-29 and 30 or over; however, regardless of age category, students were most likely to work between 11 and 20 hours per week (Table 4.10).

Table 4.10
Hours Worked per Week by Age Cohort, Fall and Winter Semesters

Age	<10 hours/week	11-20 hours/week	21-30 hours/week	31-40 hours/week
19 & under	41%	47%	10%	1%
20-24	32%	53%	10%	4%
25-29	24%	60%	8%	6%
30 or over	32%	41%	7%	17%

¹² The first number in the range, is if we consider students who lived, worked, and attended school in the same municipality. The second number in the range, is if we include students who lived in Thorold, but who worked and went to school in St. Catharines because Brock University sits right on the edge of St. Catharines and Thorold.

As St. Catharines is the largest municipality in Niagara, it is not surprising that the majority of people across all age categories worked in St. Catharines, followed by Niagara Falls, Niagara-on-the-Lake, and Welland. Interestingly, across three age categories, the percentage of employed students went up in Niagara Falls for the winter semester. Conversely, in three out of four age categories, percentages of students who worked in St. Catharines, as well as students who worked outside of Niagara, went down. It is more difficult to discern a pattern in Niagara-on-the-Lake and Welland due to the number of unreportable categories.

Students who worked outside of Niagara were greatest in the 19-and-under and in the 30-and-over categories. In both age categories there were significant decreases from the fall to the winter term (Table 4.11). Although there is limited capacity within this data set to further understand this finding, it is possible that people aged 19 and under were still living with their parents and were therefore working outside of Niagara in their home municipality. At the same time, people 30+ were returning to school but still had other commitments within their home municipality outside of Niagara. It would be interesting to understand the reason for these decreases to see if they are related to perhaps changing home or work locations, changes to seasonal employment, or if students were leaving post-secondary education due to travel demands. Unfortunately, this study will not be able to provide a definitive answer based on these results alone.

Table 4.11
Employment by age and municipality for fall and winter semesters

Municipality	19 & under		20-24		25-29		30 and over	
	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter
Niagara Falls	19%	29%	21%	24%	30%	27%	15%	27%
Niagara-on-the-Lake	10%	7%	14%	11%	NR	13%	NR	NR
St. Catharines	41%	36%	42%	39%	43%	41%	36%	40%
Welland	NR	NR	7%	8%	NR	8%	NR	NR

Outside of Niagara	20%	13%	9%	8%	NR	6%	26%	9%
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NR = not reportable

Across all age groups, with the exception of people aged 30 and over in the fall cohort, more than half of participating students lived in the same municipality as the one in which they worked. In three out of four age categories this increased in the winter term (Table 4.12)

Table 4.12
Students who lived and worked in the same municipality by age category and semester

19 & under		20-24		25-29		30 and over	
Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter
56%	63%	51%	54%	68%	60%	31%	55%

Employment and Campus.

There were variances in employment rates between the three large campuses.¹³ At the Niagara College Welland campus, 57% of students worked. At the Niagara College Niagara-on-the-Lake campus, 58% of students worked. At the Brock University main campus, 50% worked with 57% working at the Marilyn I. Walker campus. International students were far more likely to have employment if they attend Niagara College compared to those international students attending Brock University (Table 4.13).

Table 4.13
Employment by Campus

Campus	Total Student Employment	Domestic Student Employment	International Student Employment
Niagara College Welland	57%	51%	65%
Niagara College Niagara-on-the-Lake	58%	56%	60%
Brock University Main	50%	52%	31%
Brock University Marilyn I. Walker	58%	60%	NR

NR = Not reportable

¹³ The Marilyn I. Walker campus of Brock University data are quite small and likely not representative.

When considering what municipality students worked in relation to the campus they attended, Welland campus students were more likely to work in Niagara Falls (43%), St. Catharines (19%) and Welland (16%). Like the Welland campus, more Niagara-on-the-Lake students were likely to work in Niagara Falls (30%), then Niagara-on-the-Lake (27%) and St. Catharines (21%). Brock Main campus students tended to work in St. Catharines (55%) and then Niagara Falls at 12%. Student work locations relative to campus locations indicated that many students were traveling across municipalities for employment and school (Table 4.14).

Table 4.14
Municipality of Employment by Campus

Employment Location	Location of Student's Campus			
	Brock main campus	Brock MIW campus	Niagara-on-the-Lake campus	Welland campus
St. Catharines	55%	56%	21%	19%
Niagara Falls	12%	28%	30%	43%
Niagara-on-the-Lake	8%	--	27%	8%
Welland	3%	--	4%	16%

Employment and domestic and international students.

Nearly 53% of domestic and 54% of international students had paid employment. For comparison between domestic and international students only two time categories are reportable, less than 10 hours per week and between 11 and 20 hours. Domestic students were more likely than international students to work 10 hours or less per week, at 37% and 18%, respectively. Conversely, international students were more likely than domestic students to work 11-20 hours per week (78% and 44%, respectively). These findings make sense given international student visa policy allowances. Student visas permit international students to work up to 20 hours per week during the school year.

The top four municipalities listed for employment for all students were St. Catharines, Niagara Falls, Niagara-on-the-Lake and Welland, with the latter two having similar percentages of domestic and international students who worked within them. However, it is noteworthy that 44% of domestic students worked in St. Catharines and 17% in Niagara Falls, whereas it was the opposite for international students with 47% who worked in Niagara Falls and 27% who worked in St. Catharines. International students (11%) were slightly more likely to report commuting zero days per week than domestic students (4%), while 34% of international and 28% of domestic students commuted three days per week.

An interesting finding was that about one-half of domestic students (48%) choose to live near their employment, while that increased substantially among international students (66%). It is also notable that only 17 to 19% of international students and 24 to 36% of domestic students lived, worked and attended school in the same municipality. This indicated that many students were more likely to live where they worked than where they attended school, thus requiring them to travel across municipalities to go to school. This was especially prevalent among international students.

A representative on the Students on the Move steering committee provided some insight into Niagara Falls employment, explaining that the peak working months in Niagara Falls' tourism industry were previously between June and August, but now are between April and October, thus offering more employment opportunities. This is particularly relevant to international students who have international connections to the hospitality industry.

Employment and Transportation.

There appears to be a correlation between students' number of hours worked in paid employment and mode of transportation. People working fewer hours were more likely to have a

bus pass and people working more hours were more likely to own a car. Comparably, 65% of students who did not own a car also did not have employment, while 54% of students who had employment owned a car. Having a car was related to working more hours; however, what is not known is whether students were working to afford their car, or if having a car afforded students more or better employment and co-op opportunities. Table 4.15 shows the percentage of students who had various modes of transportation available to them based on number of hours they worked per week. The post-secondary working student rideshare numbers seemed in line with what might be expected, as the St. Catharines-Niagara census metropolitan area rideshare to work average is 12.7%¹⁴ (Stats Canada, 2017).

Table 4.15
Modal Type by Number of Hours Worked

Transportation Mode	<10 hours/week	11-20 hours/week	21-30 hours/week	31-40 hours/week
Public Transit	76%	73%	59%	40%
Own Car	53%	48%	71%	83%
Bicycle	31%	24%	28%	38%
Rideshare	13%	12%	5%	4%
Car share	9%	8%	10%	20%
Motorcycle	3%	2%	--	6%

Employment, transportation and gender.

Working male and female students reported having a bus pass, owning a car and having a bike as their top three available modes of transportation in both the fall and winter data. Bus pass and bike percentages were similar between the two cohorts; however, fewer females indicated owning a car in the winter sample (53%) compared to the fall (61%).

¹⁴ <https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016029/98-200-x2016029-eng.cfm>
October 16, 2019

In the fall data there were greater numbers of females than males who lived and worked in the same municipality if they did not have a car, but this was reversed in the winter data set. Either way, between 50 and 60% of students who did not own a car worked in the same municipality as where they lived. When thought about in reverse, this means that 40-50% of students had to travel across municipalities to get to work by bus, bike, or other non-automobile modes having implications in access to employment (Flamm & Kaufmann, 2006).

Employment, Transportation and Age

Working students in age categories 19 and under and 20-24 were more likely to indicate that they had a bus pass compared to people 25 and older. More than 50% of employed students in all age categories had their own car; however, there did not appear to be a pattern of car ownership in relation to age. Between 19 and under up until age 29, about a quarter of people had access to a bicycle. That increased for people 30 or over (Table 4.16).

Table 4.16
Transportation by mode and age category for fall and winter semesters

Mode	19 and under		20-24		25-29		30 or over	
	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter
Bus	71%	67%	71%	77%	68%	71%	56%	58%
Own car	55%	55%	56%	50%	51%	56%	77%	51%
Bike	23%	26%	33%	25%	23%	20%	49%	38%

Employment and transportation for domestic and international students

There were significant differences in modal usage between domestic and international working students. Given seven modal options to choose from (motorcycle, moped/scooter, carshare, carpooling, bus pass, car, bicycle) working students identified having an average of 1.7 modes of transportation available to them. This excluded being able to walk to their destinations (1.8 domestic; 1.46 international). Working international students relied heavily on public transportation, as 85% of working international students did not have a car. They also were more

likely to carpool than domestic students. Table 4.17 shows the top four transportation modes used by domestic and international students.

Table 4.17
Modal usage for Domestic and International Students

Mode	Domestic Students	International Students	All Students
Bus pass	66%	86%	71%
Own car	66%	15%	54%
Bicycle	33%	10%	28%
Rideshare	8%	21%	11%

Of domestic students who lived in the same municipality as where they worked, 56% did not own a car. This was significantly lower than international students, whereby 70% of those students who did not have a car lived in the community where they worked. This was further corroborated by the data as 35% of international students and 27% of domestic students traveled less than 3 km to get to paid employment compared to 28% of domestic and 26% of international students who commuted more than 10 kilometers to get to work. This international student, who did not own a vehicle, made an articulate point about work and co-op opportunities. She said,

“Something that has definitely happened to me a lot, is that, I see job postings, but I can’t really apply for them because I can’t get there. So, where we are [referring to the campus], we are right next to Niagara-on-the-Lake. People think about it, but there is a lot of job opportunities in Niagara-on-the-Lake, but there is no bus to there. There is one bus ... that runs in Niagara-on-the-Lake each hour, and of course it’s only once, so the route is very, very simple. So, most of the jobs that you have seen there, I’ve lost opportunities for applying for my co-op, plenty of times” (Photovoice Participant 15, female, Niagara College Niagara-on-the-Lake campus, March 20, 2019).

Anecdotal evidence suggests that many international students chose to live in Niagara Falls because there was an existing community of other international students with whom they shared a nationality, which does not exist in Welland, Niagara-on-the-Lake, or St. Catharines, where the post-secondary schools are actually located. As most working international students did not have

a car, so by living in the same municipality as their employment, they could rely on active transportation and public transit to get to work. But this also means that they mostly relied on public transit to travel inter-municipally to school. Anecdotal evidence also suggests that those international students who own a car do not drive during the winter months due to fear and uncertainty of weather conditions. This could further explain the high numbers and usage of bus passes among this population of students. Being an international student has mobility implications.

Transportation to Recreational Activities

On and Off Campus Events and Activities

About half (49%) of students participated in campus events and activities and about the same number (47%) participated in off-campus events and activities. However, about a quarter of students noted that transportation constraints often or always impacted their being able to participate in these activities.¹⁵ Students living in Thorold (29%), Niagara Falls (29%) and Niagara-On-the-Lake (28%) were more likely to report that transportation impacted their ability to participate in on-campus events. At the same time some 41% of students who lived in Thorold reported that transportation impacted their ability to participate in *off*-campus events. Campus location also made a difference for students who noted that transportation often or always impacted their ability to participate in on- and off-campus events and activities, with the Niagara-on-the-Lake campus students experiencing the greatest challenges. (Table 4.18).

¹⁵46% of students said that transportation rarely or never impacted their ability to participate in campus activities and events, 28% sometimes and 25% often or always. 44% of students said that transportation rarely or never impacted their ability to participate in activities and events outside of campus, 28% sometimes and 29% often or always.

Table 4.18
Proportion of Students who Indicated that Transportation Impacted Their Ability to Participate in Events, By Campus

Campus	On campus events & activities	Off campus events & activities
Brock Main	32%	37%
Marilyn I. Walker	30%	43%
Niagara-on-the-Lake	44%	45%
Welland	37%	37%

NR = not reportable

Women and men who reported always and often having challenges attending activities and on- and off-campus events due to transportation constraints had relatively similar levels of difficulty: between 34 and 39%. On-campus was at the lower end of that percentage range and off-campus was at the higher end of the range for both genders. However, there was a wider gap between domestic and international students. Of domestic students who reported that transportation impacted their ability to participate in campus events, 32% indicated often or always compared to 41% of international students. This difference increased somewhat with 27% of domestic students reporting transportation always or often impacted participation to off-campus events and activities and 40% of international students.

Social leisure activities.

Of all post-secondary students who participated in the survey, about one-fifth (19%) often or always experienced transportation constraints as a barrier to participating in social leisure activities. Students who spent less than an hour per week in social leisure activities were more likely to report transportation as a barrier (24%) compared to those who reported between one and five hours of social leisure activities (17%). However, there was a rise in the percentage of students (23%) who were engaged in social leisure activities for more than 10 hours per week. It

may be that they were highly social people who would like to be even more socially engaged but felt limited, to some extent, by transportation.

Like students reporting challenges attending off-campus activities due to transportation, Thorold students again had the highest percentage of students reporting that transportation always or often impacted their ability to participate in social leisure activities at 24%, followed by Niagara Falls, St. Catharines, Welland and Niagara-on-the-Lake (all 17%). By campus location, however, Niagara-on-the-Lake-based Niagara College students showed the highest proportion of participants limited by transportation for social leisure (32%), followed by those at the Brock main campus (24%) and Welland campus (23%).

Between females and males, the percentages of students who found transportation often or always impacted their ability to participate in social leisure activities was comparable, at about a quarter of students. However, international students (32%) are more likely to report that transportation impacts their ability to participate in social leisure activities compared to domestic students (23%).

Physical leisure activities.

Half of students spent one to five hours per week engaging in physical leisure activities, followed by 32% doing less than one hour per week. Over half of students indicated that transportation was not a barrier to participation in physical activity (58%), with 16% indicating that transportation often or always was a barrier. Similar to other questions about transportation being a barrier to activities, students who lived in Thorold were more likely to have challenges getting to physical activities (24%), followed by Niagara-on-the-Lake and Niagara Falls (both 17%), then St. Catharines and Welland (both 14%). By campus, 32% of Niagara-on-the-Lake

students, 25% of Welland campus students and 22% of Brock Main campus students reported that transportation was often or always a barrier to participating in physical leisure activities.

Males (27%) who identified that transportation was a barrier were more likely than females (22%) to say that transportation often or always impacted their ability to participate in physical leisure activities. There was an even broader difference between domestic (22%) and international students (31%).

Section Summary

In this section the influence of transportation availability and modal options were studied to begin to understand what impact they had on Niagara post-secondary students' access to school, employment and recreational activities.

As noted in the second chapter, the Niagara region has urban centres that are widely spaced apart with infrastructure that gives preference to automobility. Given that 55% of post-secondary students do not have access to their own automobile, over half of Niagara's post-secondary students are at a transportation disadvantage due to physical access barriers (Cass et al., 2005). In addition to that, organizationally (Cass et al., 2005) the current transportation systems are not well integrated and provide preferential services for daytime riders, which creates friction (Cresswell, 2010) for students who require the bus for evening travel.

With St. Catharines being the largest urban centre in Niagara region, and with 60% of post-secondary students attending Brock University located in St. Catharines on the border of Thorold, it is not surprising that most students live in those two municipalities (56%), of which 76% of Brock students indicated they were dwelling. However, far fewer students were living in Welland (11%) and Niagara-on-the-Lake (5%) where the two college campuses are located. Additionally, there is a large population of post-secondary students living in Niagara Fall (17%)

where there are no post-secondary school campuses. A third of Welland campus students and 24% of Niagara-on-the-Lake campus students were dwelling in Niagara Falls.

There were also differences between the university and college regarding the percentages of domestic and international students. Brock University has an international population of less than a fifth of their students, whereas two-fifths of the college population is international. Data show that many of the international students are living in Niagara Falls. Anecdotal evidence suggests that there is an established network of connections to housing and employment through the international community in Niagara Falls. This results in easier access to employment, but in more challenging commutes to campus as evidenced by the 86% of international students who do not have an automobile.

Most post-secondary students indicated they commute to campus four or five days per week with bus being the primary mode. Not surprisingly, given the geographical challenges presented by Niagara's community design and transit system, less than half of students were (very) satisfied with their commute to school with an additional fifth who were (very) unsatisfied. Dissatisfaction was more evident among the international student population.

Students who did not have a car and who relied more on public transportation were more likely to indicate that transportation negatively impacted their ability to participate in co-op placements/internships, or have employment. Of those who had employment, students with an automobile worked more hours than students without an automobile. This could be a result of an automobile providing more access to employment, or more employment being needed to afford the expenses associated with automobile ownership. However, this is not discernable through the data collected. Students were also more likely to live where they work than where they go to school. This was even more apparent with international students.

When it came to participating in on- and off-campus events and activities, the campus location, municipality of dwelling and modal options remained a strong theme, as did differences between domestic and international students, whereby international students struggled more. It was interesting to note that students who lived with family or parents were more likely to have an automobile compared to students who lived with roommates.

It was clear that access to mobility options (Flamm & Kaufmann, 2006) was impacted by the various dimensions of access noted by Cass et al. (2005.) The physical design of Niagara and the organizational dimensions (Cass et al., 2005) unevenly impacted people who either had an automobile or relied on transit, or were either domestic or international, resulting in differential mobilities (Flamm & Kaufmann, 2006), differences in the way that mobility was experienced (Cresswell, 2010) and exposed some inequities. This next section will focus on transportation availability, modal options and mobility experiences as they impact wellbeing.

Research question: What effect do (a) transportation availability, (b) modal options, and (c) mobility experiences play in Niagara region post-secondary students' subjective wellbeing?

Effect of transportation availability, modal options and mobility experiences on subjective wellbeing

This next section will consider the effect that transportation availability, modal options, and mobility experiences play in shaping Niagara region post-secondary students' subjective sense of wellbeing. Through a systematic process of data coding inductive themes were derived from the data. The following section has been divided by those themes that provide descriptions of people's everyday travel experiences and how they have expressed the impact of travel on their subjective wellbeing.

Transportation is more than just starting in one place and ending up in another. It is also about the experiences that people have along the way. It could be the visceral reaction to aspects of the transportation environment or to the quality of the mode (Cresswell, 2006). In the photovoice interviews, some people talked about traveling alone, others talked about the people they met along the way, sometimes in a good way and at other times less so. For some it was the company they kept, while for others it was the anticipation of who was waiting at the end of the journey.

Transportation Availability Experiences

Transportation has degrees of availability, or access (Flamm & Kaufmann, 2006), that can impact the way that people experience mobility. Not all transportation experiences are as dramatic as these two examples, but they illustrate the changing nature of transportation options.

“I had a bike, it got stolen. Yeah, which really sucked. Yeah, I had a bike last year and it got stolen over the summer, ‘cause I left it at the house and I don’t know what happened. But it’s gone” (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019).

“I was actually sitting in between classes in the Core having lunch. I had another class to go. And they called me and they were like, ‘Do you have a silver Jeep in lot C?’ And I was like ‘Yah I do, yes.’ And they were like, ‘It is currently on fire’...I’m like seriously, what am I going to do. I, um, this is my only mode of transportation” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018) (Figure 4.4).



Figure 4.4. The loss of transportation mode due to fire.

Photo: Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018.

In the first situation, the mode of transportation, a bicycle, was now gone and has left this female student feeling disappointed about its absence. Fortunately, she was able to, and had already been using the city bus, and when there was ample time she walked home from school, but her mobility suite (Flamm & Kaufmann, 2006), had been decreased through the loss of her bike. For the second person, he knew of no other way to travel from St. Catharines to Welland. Throughout his interview he had a strong sense of automobility and participated in a community of other Jeep owners. He also had a strong sense of pride in his vehicle and performed his own mechanical work. When he lost his vehicle, he really did not know how he was going to meet his daily travel needs. Even a short-term modality change can be impactful to a person's everyday travel practices and how they might organize their day as they may not have the aptitude (Flamm & Kaufmann, 2006) for other modal options, like the Jeep driver.

Availability, for the purposes of this paper, refers to two aspects. The first, which was captured in the previous example, is the actual availability of the mode of transportation to the individual, for example having a car to drive, a bike to ride, or public transit as an option, as per Flamm & Kaufman's (2006) notion of access. The second is the availability of a particular mode at the time that the person needs it, such as being able to catch the bus home from work in the evening, or on the weekend, temporal dimensions (Cass et al., 2005). Having the required mode available at the right time creates ease in travel experiences and can make the experiences quite pleasant. When those ingredients do not come together in that way, travel can be cumbersome. In the online survey, 23% of students identified finding transportation for daily travel as difficult or very difficult, 26% of students were neutral and 44% identified it as easy or very easy. There were very apparent differences between domestic and international students where 36% of international students compared to 20% of domestic students noted that finding transportation was (very) difficult (Table 4.19).

Table 4.19
Comparison of Difficulty Finding Transportation for Daily Travel,
Domestic verses International Students

Level of Difficulty	Domestic Students	International Students
Easy or Very Easy	48%	33%
Neutral	26%	29%
Difficult or Very Difficult	20%	36%
Not Applicable	6%	3%

The second understanding of availability was talked about significantly more by the participants and most often in relationship to public transit. There were almost 200 comments coded within the category of "bus". Some of the themes included the frequency of buses, the timeliness or tardiness of buses, evening and weekend buses, connectivity between buses and

connections to other modes of transportation. Students also shared experiences of relying on others for transportation, or ‘hitching a ride’.

Frequency of Buses: Temporal Access.

Buses in Niagara run anywhere from every five minutes to once an hour depending on the bus route, time of day and the transit authority. Students have identified that more buses are needed to meet the student demand. As one Niagara College student noted,

“College has classes sometimes until 9:30. That is the latest if I am not mistaken. So, the Niagara Falls buses are a big, big problem. They’ve been trying to deal with it. It’s slightly better than it was before, but it’s quite bad. There’s too many people and not enough buses. They have to change things” (Photovoice Participant 15, Female, Niagara College Niagara-on-the-Lake campus, March 20, 2019).

In part, there are more people than bus seats available, but it also speaks to the need for buses to be more frequent in high demand areas. As one woman stated,

“There doesn’t need to be that many cars on the road. People could easily walk to these places, or you know jump on the bus. But it does make it difficult when the buses, when they are not frequent enough” (Photovoice Participant 6, Female, Niagara College Welland campus, December 19, 2018).

Another challenge that students identified, was that the timing of the bus was not synchronized with the start and end times of class. This particular student shared,

“So, they arrive at the college after class starts. And they leave before class finishes. Or they leave when class finishes. They leave 20 past the hour and our classes finish at 20 past the hour. So, you are lucky sometimes that they will finish at half past the hour. So, this bus means, I took this bus when I was late for class” (Photovoice Participant 6. Female, Niagara College Welland campus, December 19, 2018).

This lateness could be alleviated with more frequent bus options and speaks to the temporal dimension of access (Cass et al., 2005).

Timeliness or Tardiness of Buses: Temporal Access.

Bus operators, like automobile drivers, are subject to the same traffic and road conditions that impact the speed at which they reach their destination. They are channelled though the same routes with the same impact to velocity (Cresswell, 2010). However, bus operators have people relying on their scheduled arrival and departure times, unlike the private automobile driver.

Thus, public transit timeliness or tardiness was captured in the students' travel experiences. This first observation reflects the more positive experience of bus schedules, "I wanted to show that the bus is arriving on time, at 10:42[pm] is the scheduled time that it is supposed to be there, and it is there" (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).

This second observation shared the frustration of late buses,

"I was waiting for the Second woods bus. It comes just on that platform and it was late and it is perpetually late. I don't know why, but like some days it is on the ball. It is going to be there exactly when it needs to be. And, other days you are waiting like 20 minutes and it's hard to gauge because I don't like to wait in the terminal 'cause sometimes you wait inside the glass area, you come out to catch the bus, the bus driver is late, closes the door and drives away 'cause he doesn't see somebody coming up to him" (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).

In the situations where things did not go as planned regarding catching the bus, students expressed feelings of frustration and anger. As this student noted of people catching the bus at the St. Catharines bus terminal,

"I also thought it was valid to mention that day, not only that day, but it happens quite often, unfortunately. The bus driver almost left a couple minutes early! And when they do that, there's people arriving. So, he was leaving and he actually had to stop the bus. Right by the sidewalk, because there was people running the direction of the bus. It's not great, it happens, and people usually get mad when it happens!" (Photovoice Participant 15, female, Niagara College Niagara-on-the-Lake campus, March 20, 2019).

Evening and Weekend Buses: Temporal Access.

Depending on the transit system, evening buses may end sooner than others. This Port Colborne student shared the challenges of evening recreation,

“Thinking about going out tonight? Perhaps to a show in St. Catharines at the First Ontario Performing Arts Centre? Or maybe just an evening of shopping at the Seaway Mall? If you are from Port Colborne and depend on the bus for transportation, it just isn’t possible. The last bus from Welland back to Port Colborne leaves the Welland Terminal at 6:45pm. In other words, if you want to ride the bus, you have to do so during the day. There is no evening service. How many Port Colborne residents would go out more often in the evening if there was good evening bus service?” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018).

In other areas there is later bus service, but not nearly late enough for some, as pointed out by this student leaving school in the evening,

“I remember rushing out of my last class of the day trying to get on the bus that says it’s leaving at 9:15. It doesn’t actually leave until 9:30. But it says 9:15, so I’m like running out of class, I have to be on the bus at 9:15, ‘cause I’m not going to get home. That’s my last bus, that’s my last chance to get home” (Photovoice Participant 17, female, Niagara College Welland campus, April 10, 2019).

Working students are also challenged by evening bus schedules,

“So, this is a picture that I took after work. I work on Bunting Avenue [and Carlton] and because I’m a student, they schedule me when I am not at school. Which is usually at night time. This particular photo was taken at 11:00 o’clock in the evening, so, it was like 11:30 I want to say. I’ve been checking my phone more now because I’m trying to sell my car, so I am checking to see how feasible it’s going to be to take the bus home, but it’s impossible at 11:00 o’clock, unfortunately. So, there are no buses, I mean I could take the last bus at 11:00 which is the Bunting bus, I don’t know what the number is. But the connecting one is gone” (Photovoice Participant 8, female, Brock University main campus, December 21, 2018) (Figure 4.5).



Figure 4.5. Late at night after work; having a car is almost the only choice to get home.

Photo: Photovoice Participant 8, female, Brock University main campus, December 21, 2018.

Students also struggle on the weekend when there is limited or no bus service. This is of particular concern because many students have employment on the weekend and require transportation to get there. Sometimes it takes great ingenuity to figure out a means of getting to work. As this student shared,

“The other day I was trying to get on a bus. On Sundays bus services don’t seem to exist. I can’t get to Welland on a Sunday. So, if I have, even if I wanted to, which [cough], I wouldn’t be able to get to Welland on a Sunday, I think. I had a job the other day, a temporary job at Niagara-on-the-lake, the only bus I could get through there was a GO bus” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

One location that was mentioned a few times was the Outlet Collection Mall in Niagara-on-the-Lake across from the Niagara College campus. It is a large retail centre that employs many students and is a popular shopping destination.

“This is the Outlet Mall. So, the 300 Taylor Road is across the street from us. So, actually I took a picture here because it’s on a Sunday. She’s walking to her car, I checked. She’s not waiting for a bus because a bus isn’t coming. So, no city buses come to the Outlet Mall on Sundays, so it makes it very difficult for people to get to work, not only students but people who have full-time jobs to schedule around that. The buses also do not work with mall’s extended hours for holidays” (Photovoice Participant 2, female, Niagara College Niagara-on-the-Lake campus, December 17, 2018) (Figure 4.6).



Figure 4.6. The bus stop at the Niagara Outlet Collection Mall in Niagara-on-the-Lake on a Sunday afternoon. No buses.

Photo: Photovoice Participant 2, female, Niagara College Niagara-on-the-Lake campus, December 17, 2018.

Connectivity between buses.

This statement made by one female student who has used transit systems around the world articulates well the current situation with bus connectivity between the various transit providers and connection to conveniences.

“If I stay within St. Catharines, generally the bus service is good. If I try to connect to — going into other towns, Welland, Niagara Falls, or Niagara-on-the-Lake, things don’t connect as well. And even within St. Catharines, those connection points are awkward. The downtown terminal, it is downtown, it is not near anything! I’m used to be able to sort of, a bus station being close to a supermarket or even a mini supermarket” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

Participant 6’s statement speaks to two dimensions of access. Temporally (Cass et al, 2005), the bus services are inefficient and do not connect well. Organizationally (Cass et al., 2005), the services do not fully access desired destinations, such as a convenient grocery store.

Currently, Niagara Region is helping to facilitate the discussion between transit providers to harmonize services. This intermunicipal transit committee is aware of the challenges and is trying to negotiate terms by which the services can be better integrated. But in the meantime, the systems have left students confused and frustrated. As this befuddled man states,

“You know every single day people do this and it’s terrible! It is not a good system whatsoever. You can’t go, and that’s not even the Regional bus. This is the Brock, I don’t know, Brock Bullet or something. It’s the one, it is a direct line from Niagara College to Brock University. If you get on the Regional bus that 25 minute [car] trip from Niagara College to Brock turns into an hour. Just to get down there. Then, and then, people have to do that because that Regional bus is the only way that it lines up for them to get home. Once they do get to St. Catharines, right, I don’t know how many times this term people have messaged in our Facebook group that they were rushing to try to catch their bus then they get, they live in St. Catharines, and they got on the Niagara Falls bus. They live in Niagara Falls but they got on the St. Catharines bus because there is nothing very clear and quite honestly, when the buses come to the campus the drivers disappear or they’re too busy talking to everybody else to even answer a question for you. You just get on a bus and cross your fingers and hope for the best [laugh]” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

In this example the student captured the confusion created by multiple transit systems as well as the friction (Cresswell, 2010) these multiple systems create. Because of this, students have longer and slower mobility experiences than what this student sees as acceptable.

Connections to other modes of transportation, organizational access.

In addition to connecting to buses within Niagara region’s multiple bus system network, students also identified connecting to other modes of transportation. This student took the bus one way and Uber home, even though her intention was to take the bus both ways,

“My friend wanted to out to for St Patrick’s. So, obviously we were not going to drive. So, we took the bus there, but we didn’t know the bus stopped at 11. So, we had to Uber back. Like, we were relying on taking the bus back” (Photovoice Participant 5, female, Brock University main campus, December 19, 2018).

What is interesting about this comment is that the student had access to an automobile, but chose public transit as a safer way home after a night out. Her temporal access (Cass et al., 2005) to the

bus was not as she would have liked or expected; however, organizationally she was able to access (Cass et al., 2005) another available means to transportation that got her home. This next fellow noted that taxis were usually available at the Welland Transit station.

“There are sometimes cabs, but not always, and that is just on the opposite side of where that picture is. And, normally, there can be up to one to three available. But again, that is not always consistent either” (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).

Sometimes students start with a car and hop on a bus to finish the journey. This student reflects on the challenge of getting buses from Port Colborne to Brock University. Therefore, students with a car take their vehicle until a certain point and then take the bus for the remainder of the route. He stated,

“These vehicles can be found most days in the parking lot of Jeff’s Bowl-a-Rama in Welland? Why? Because there is no solution, or only a very inconvenient solution, to get them from home to school. One vehicle belongs to a Port Colborne student who has to drive to Welland daily and catch the Brock link, or Niagara Region Transit 75, from this bus stop to Brock. He has classes that end at 7 and 8 p.m. After those hours, there are buses that will take him back to Welland, but not back to Port Colborne. Another vehicle belongs to a student living in Pelham. If she took the bus from Pelham to Welland, she would have to wait 40 minutes at this bus stop in order to catch the next bus to Brock. Some students get dropped off at this stop and take a bus to Brock for the same reason – the connections are not convenient” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018) (Figure 4.7).



Figure 4.7. Jeff’s Bowl-a-Rama parking lot in Welland, where post-secondary students park their cars to catch the bus into school.

Photo: Photovoice Participant 1, male, Brock University main campus, December 14, 2018

Hitching a ride.

Not all students who do not have an automobile take the bus. Some carpool with others to get to where they need to go. This female student reflected on her carpool experiences with different people.

“So basically, everywhere I go I get driven. Which is very convenient for me. I don’t have a car, personally. I get there’s the environmental impacts. There’s money. I can’t afford it. And so, all of first semester, Sandra and I were together all the time. She was my ride everywhere. She had no problem; we usually did everything together anyways, so it wasn’t a big deal. We did grocery shopping together. If we wanted to go out on the town on the weekends, we would go out together. She always wanted to drive anyways. It made life very simple. And then this semester things changed a little bit. Now my roommate has a car, so she takes me grocery shopping, but it’s kind of around her schedule. Which is fine. The day she wants to go I am free anyways. Um, but we have to coordinate my schedule and two of my roommates’ schedules to kind of figure out when we go. We only go to like one grocery store. We go to Zehrs cause its 10% off on Tuesdays, but Food Basics is still

cheaper” (Photovoice Participant 14, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019).

While she felt good about the carpooling benefits to the environment and the cost savings by not owning a vehicle, she also had to forgo the choice of where she wanted to go, in this case a particular grocery store. She would have chosen a different and more economical option if she had full freedom in her mobility. Her access was constrained (Flamm and Kaufman, 2006) by her transportation options, finances and the parameters placed on her by another person. Her quote leads well into the next section on modal options.

Modal Options

Students identified a multitude of reasons for choosing one mode over another based on their own sensibilities. It is more than the mode type itself. It is also the experience that a particular form of mobility offers. Flamm & Kaufman (2006) refer to this as an access rights portfolio. The following section explores student experiences from the quality of the transportation experience, choosing a certain modal type based on a strong preference or ideology, and belonging to a broader transportation community.

Quality of Transportation Experience.

Not everyone sees or experiences things in the same way. The students’ transportation stories reflected many different perspectives. However, underlying their ideas, observations and expressions about their daily journeys, was a desire for high quality travel options. The attributes, or standards, by which one measured quality were subjective. For some students it was about specific features within their current mode that could be improved to increase efficiency, safety or enjoyment for the user. For others, it was the comparison of their present mode to a mode they would rather be using. This next section will explore both.

Current Mode - Improvements to Infrastructure, Physical Access.

Ground travel in Niagara is mostly limited to roadways, with some trail options for cyclists and pedestrians. The only rail options are passenger trains, VIA/Amtrak and GO, which are mostly for people coming to and going from the region. They are not practical for inter-municipal travel within the Niagara region. In Niagara, there has been a preference for automobile travel. Therefore, the sprawling regional development pattern and roadway network favour those who travel by automobile. As one student stated,

“There is no big mall in Niagara Falls, so you go shopping in the Pen Centre in St. Catharines. It’s a whole other town. I study in Niagara-on-the-Lake. That is another one again. So, everything is so connected, but at the same time it’s not, because you can’t get there unless you have a car” (Photovoice Participant 15, female, Niagara College Niagara-on-the-Lake campus, March 20, 2019).

This type of community design is exclusionary to people without cars. Cass et al. (2005) call this the physical dimension of exclusion. Even though study participants have expressed concerns, they provided many comments on ways to improve infrastructure for all road users and modal types. For this section on students’ *current mode - improvements to infrastructure*, road infrastructure will be considered first, then transit infrastructure, and lastly, wayfinding.

Road infrastructure quality. Road infrastructure includes the provision of appropriate infrastructure for the user type. This could include, but is not limited to, the roadway for automobiles, bicycle lanes and sidewalks. It also includes all of the ancillary features such as lighting, signs, benches and signals. There were many infrastructure-related comments provided by students, all of which have an impact on the quality of transportation and, hence, their travel experiences. This section will first start with the more vulnerable road users, people who walk or ride bicycle, then will move into motorized vehicle users.

In Niagara, many municipalities have an active transportation committee or a committee that recognizes specific groups of people (for example, people with accessibility requirements or

older adults). What these groups have in common is an identified need for infrastructure that supports walking and cycling. From the comments that post-secondary students made in this study, this need for sidewalks and safe bicycle facilities is still a concern. In Welland, this student captured the advocacy work of the community for sidewalks in close proximity to an elementary school and adjacent to a neighbourhood.

Participant: “I, like, I saw this first as the number one issue that I ever encountered with the area. Um, there are signs that are along Quaker Road, asking for a sidewalk going up to the elementary school. It’s really funny ‘cause it’s all muddy there. So, then there’s just random signs posted around the place, saying “sidewalk”, or “how about sidewalk?”

Interviewer: “Who do you think put up those signs?”

Participant: “Parents probably. I could totally see, I would not be happy if I had to find out my kids were walking through this ‘cause I know there’s a neighbourhood on this side. But, there’s also a couple houses on this side and there’s no sidewalk on that side either. So, I don’t know where their kids are walking” (Photovoice Participant 17, female, Niagara College Welland campus, April 10, 2019) (Figure 4.8).



Figure 4.8. Signs posted on trees asking for a sidewalk along Quaker Road in Welland.
Photo: Photovoice Participant 17, female, Niagara College Welland campus, April 10, 2019.

This student could identify with the parents in that she, too, would be concerned if she had children walking to school. This road design excludes certain types of people – in this situation children and people who walk (Kenyon, 2011). Similarly, this student, who typically drives, expressed concern for students walking along the roadway near the college (Figure 4.9).

“So this is a photo of Glendale Road, right after the bridge going towards Niagara College, Niagara-on-the-lake campus. Um, so, the reason I took a photo here was because the whole, okay, so the road has, it has a bike lane. But it has no sidewalk. So, the issue I kind of face here, a lot of times, mostly at night going to school for an event or coming home from school, I notice a lot of students who will walk on the road, usually on the other side. So, they are facing these and I’m driving towards them. So, it’s like they are walking on, into incoming traffic. And they are usually dressed in black and they don’t have reflectors on. Because students, young kids don’t think to wear reflectors. And

they're carrying their backpack, or grocery bags, or whatever it is. And they are walking pretty close to the road. And there are times where I am driving and I think I see something, but I can't quite tell, cause it's raining out, or for some reason there are kids out there in the rain, and visibility is already low and I come up on someone walking. I have never actually been fearful of hitting someone. There have been times that I have seen kids walking on the road and I know they could probably walk in the bike lane, but there are areas where it gets so thin and there are cars. I think the speed limit goes from 50 to 60 to 70 and there are cars that go like 80 or 90 there. Especially when they pass you and I just think it's, I think it's dangerous for both the drivers and the pedestrians that are walking...Um, so yeah that affects my commute because I see people and I'm afraid they are going to get hit...This is where I see most of the people...I see most of the people coming off the bridge and going onto the road. Especially during the winter, sometimes they will walk on the grass here. But in the winter, there is so much snowbanks, they have to walk on the road, especially up here where this little bridge, it's really thin up here. Um, so kids walk pretty close and people fly over that bridge” (Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019) (Figure 4.9).

There were many problems captured in this observation. The first was the identification of missing sidewalks, transportation system mobility exclusion (Kenyon, 2011). Because of the missing sidewalks, students have no other options but to walk on the grass or on the side of the roadway, and in some sections in the bike lane. There was the observation that, at one point, the roadway narrows over a bridge and despite this roadway constriction car drivers continue to speed, which further jeopardizes the safety of pedestrians, a form of spatial mobility exclusion (Kenyon, 2011) that did not consider the spatial needs of pedestrians. There were also seasonal challenges identified. Visibility can be compromised for automobile drivers during the rain and at night. Also, many of the student pedestrians about whom she spoke were difficult to see because of their dark clothing. Lastly, winter presented additional complications, as the snowbanks made walking on the side of the road much more difficult. Although this student did not perceive her driving as a safety issue to the pedestrians, she did fear for their lives at the hands of other drivers who may not exert the same caution as she does.



Figure 4.9. Glendale Avenue, St. Catharines on the east side of the Welland Canal across from the General Motors parking lot entrance. Note the lack of sidewalks. On the left side of the photo, see the pedestrians walking even though there are no pedestrian facilities.

Photo: Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019.

Where there *were* sidewalks, some of the students identified they were not on both sides of the road. Others noted that there was poor lighting and/or snow removal that impacted their daily commute, physical dimensions of access (Cass et al., 2005). This student recounted her challenges walking along an uncleared sidewalk where the roadway had a slight incline (Figure 4.10).

“So, it’s right between this, the red brick...and the police academy. That’s the very, very slippery area. These houses here [pointing to picture] they never ever clean their sidewalk. I have never seen it clean. I almost fell there a couple of times too! It’s simply by the fact that they never clean. Exactly there. And they have cars. So, what happens, they go back and forth, like driving the cars, so the snow that was there gets packed and it becomes ice.

And it becomes even more slippery!” (Photovoice Participant 15, Niagara College Niagara-on-the-Lake campus, March 20, 2019).



Figure 4.10. Academy Street, Looking South from Church Street, St. Catharines.

Note the snow across the sidewalk on Academy Street and the slight grade on Academy Street that makes the walk from the bus station, which is beneath the tall brown office building in the background, to home treacherous.

Photo: Photovoice Participant 15, Niagara College Niagara-on-the-Lake campus, March 20, 2019.

As noted earlier, many students do not drive or have access to an automobile, so walking is an important mode of transportation. Having the infrastructure needed, along with proper seasonal maintenance of those facilities, supports safer walking and modal inclusion (Cass et al., 2005).

Cycling provides another alternative to automobile travel. This student showed enthusiasm for cycling most of the year and seems inspired by his mother.

“I do ride my bike around in Port Colborne. That is how I get around, well in the summer, spring and fall and when it is possible. Or walk, if it is a short distance. My mother’s one to walk instead of taking the car in summer. She rides her bike and she is 83 years old and still rides her bike!” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018).

However, unlike sidewalks, where no students identified that sidewalks were not needed, there were various perspectives on bicycle facility needs. This sentiment was shared by the same Brock student when asked about whether there was infrastructure to support cycling in Port Colborne. He replied,

“In Port Colborne I do not think it is a problem. I do not think we really need all that many bike lanes. We just do not have the traffic. There is no such thing as rush hour traffic in Port Colborne. There might be four cars lined up at a stop light. I would say that we do have some nice facilities in Port Colborne. I have ridden part of the Friendship Trail...I have not ridden the whole trail, but I have ridden some parts of it, the part that goes from Port Colborne to Confederation Beach. And, it is really nice!” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018).

Port Colborne is a small municipality with a population of just over 18,000.¹⁶ Downtown Port Colborne has enough density to make it walkable and bikeable; this is less the case in the more suburban and rural reaches. Riding a bicycle in parts of Niagara has its shortfalls due to the type of bicycle facilities provided. This student, who was originally from a large city outside of the region, but at the time of the interview lived in Welland, had a bicycle, but was afraid to ride it. She stated,

“Um, so around the schools I noticed, Brock and Niagara, they don’t have any biking lanes. Which I guess up the hill is not the most convenient thing to bike up it, but around Niagara College, there’s no really safe place to bike. I brought my bike down here from Mississauga with the idea, like I can totally go biking. It’s going to be fine. But then I

¹⁶ <http://portcolborne.ca/page/demographics>

realized I'm an adult, so I should be biking on the road. But the road doesn't feel safe to bike on...but I would definitely feel safer if I had an actual biking lane rather than being on the sidewalk" (Photovoice Participant 17, female, Niagara College Welland campus, April 10, 2019).

In this situation there is a lack of the proper bike lanes to make cycling a practical possibility for her. Another female student had a similar thought, but felt that what was really needed to make cycling safer was separation from car traffic. As she put it,

"It just makes me nervous to be so close to a car, when I'm not surrounded by a car. Because I'm like, 'cause I'm like biking in the same direction as the cars, right. So, if something passes by me, it's like zooming past my shoulder. I'm like A-H-H-H! I feel like I just got hit! 'Cause it's just like scary to be right next to that... I think if there was just a little bit of a divider, in between the bike lane and the ride, maybe? Or like, even if it was like the sidewalk and was a little bit raised. I think having that little bit of distance makes a difference between me and the car" (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019).

In this example, there is a bike lane that was more recently constructed, but it is right next to the moving traffic, leaving her feeling vulnerable and at risk of being struck by a car. Other students noted that even when there is a bike lane, it sometimes just comes to an end suddenly, leaving people to fend for themselves next to the motor vehicles. While there is progress in Niagara when it comes to providing bike lanes, the quality of the experience could be improved through a fully connected network separated from motor vehicles. Not having high quality transportation infrastructure, especially in the larger urban centres of Niagara, prevents people from being able to ride their bike, even if the desire is there. Fear for personal safety is a deterrent.

Intersections can be conflict zones when different modes of transportation converge and cross one another. The following example is of a residential intersection in St. Catharines, where the student recounts a near miss that she experienced earlier that day.

"So, when I walk my dog, or my mom walks the dog, no one stops here. So, this morning, me and mom are walking the dogs. We literally had to stop in the middle of the pedestrian

way because someone was rushing to get their kids to school. So, if we didn't stop, we would have all been hit, and I don't have small dogs! They are two big white dogs. So, you would have saw them if you were paying attention. But no one ever stops at this stop sign!" (Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018).

Her frustrations over the apparent inconsiderate actions of drivers were further exemplified when she stated,

"But it's, it's a really big problem right here...there is a little boy that lives right here, and he never looks when he crosses the street, ever! The amount of times that I have almost seen him get hit is crazy! Um, so yeah this area is really bad" (Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018).

There is a sense that a collision is imminent at this intersection, particularly between automobile users and pedestrians. Emotive words like 'no one ever', 'really big problem' and 'really bad' emphasize the degree of concern she felt. This concern was also voiced for the wellbeing of a child who, in her estimation, was not minding his own safety. She also emphasised that the people who were 'rushing' were parents taking their children to school. It could be imagined that parents would be even more aware when driving because they themselves have young passengers in their vehicles. In a situation, such as this, there is an opportunity to improve the quality of the intersection through road design that better delineates how different road users should use this space. There is also an opportunity to shorten the width of the roadway that the pedestrians have to cross with the use of pedestrian bump outs that shorten the distance, and amount of time, that pedestrians are at risk of conflict with drivers.

This next intersection, also in St. Catharines, was mentioned by two participants; one as a driver, the other as a pedestrian. It is a major thoroughfare that brings people out of (or into) the downtown core from James Street and channels them north along Lake Street, or east and west on Welland Avenue (Figure 4.11(a)). It is an unusually configured five-way intersection. Both

students shared confusion about the traffic patterns and identified making an effort to avoid using it whenever possible. As this female driver said,

“So, this section, here [pointing to a picture], is between Lake Street and Welland Avenue. So, this is Welland Avenue and this is Lake Street. And then right here, is James. So, there is three traffic lights within a meter of each other...so it is very confusing driving if this is red and that is green, because it’s that awkward situation of, do I stop here or not? And it’s just, unneeded stress while driving and I hate this intersection. So, I try to avoid it” (Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018).

The confusion of the intersection configuration was supported by a male Brock student who lives near the intersection (Figure 4.11(b)). He stated, “Honestly, I hear a car crash once every couple of weeks because people just don’t know how to approach it” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019). He also went onto note that,

“Even walking through it, you’re kind of scared, because again, if people don’t know how to approach it with cars, how do they approach it with people? And just the way the crosswalks are set up, you almost have to stop halfway through to make sure you know what’s coming from this way. It’s just very intimidating going through. ‘Cause I hear the car crashes, like I’m a little more cautious” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).



Figures 4.11(a) and 4.11(b). The five-way intersection at James Street, Welland Avenue and Lake Street in St. Catharines. In Figure (a) the student is heading west on Welland Avenue

looking south out the car window down Lake Street. In Figure (b), the student is looking north down Lake Street.

Photos: Figure 4.11 (a): Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018. Figure 4.11(b): Photovoice Participant 19, male, Brock University main campus, April 12, 2019.

His own experiences of walking through the intersection, along with hearing other people's crashes, had led him to believe that it was not a safe intersection to be in and using it creates a sense of fear. He provided a couple of suggestions to improve that area. The first had been instructional signage that could be added to the already existing signalization and line paintings on the roadway. The second had been a redesign of the intersection into a roundabout.

While some intersections are configured in such a way that conflict between road users is more likely to happen, in other instances, students identified that there were not enough places to cross busy roads, or that the distance to an intersection where there are crosswalks was too far, resulting in them having to double-back on the other side of the road. This distance can result in people choosing the most direct route across the roadway, in what is sometimes coined as 'jaywalking', thus resulting in the potential for them to become interspersed with moving automobiles. This student recounts her story of having to cross a busy roadway from her bus stop to the other side of the road (Figure 4.12). The posted speed limit is 80 km/hr on a wide road with a rural cross-section. This is a public transit flag-stop and there are no sidewalks along the roadway. It was not just a concern for herself that drives her apprehension, but a story from the past as well. She said,

"There's no crosswalk, no stop signs, no lights, nothing. So, it's just kind of judge when it's safe to go because right over here [pointing to picture] is this the closest to where there would actually be lights to cross. So, it would still be a 10-minute walk down to get here, if I were to go from the bus to the closest crosswalk, and then I would have to loop around and go all the way back...Um, in high school a friend of mine, her cousin was hit on that road, at night time, he was walking this way to visit his aunt at the retirement home. And he was hit by a driver and left there, and he died. So, again that's another thing that makes

me nervous about walking along these roads” (Photovoice Participant 7, Niagara College Welland campus, December 20, 2018).



Figure 4.12. Flag bus stop on West Side Road, Regional Road 58, Port Colborne. Regional roads are designed for transport truck movement and higher road speeds.
Photo: Photovoice Participant 7, Niagara College Welland campus, December 20, 2018.

The fear of injury or death is tangible in this example and these are the conditions that many students are experiencing in their everyday travels because the roadways were designed for fast moving automobiles, not for people moving under their own power who are, therefore, in competition with cars and trucks.

Another road crossing that was identified as dangerous was the intersection at Taylor Road and the entrance to Niagara College, Niagara-on-the-Lake campus. This intersection does provide a marked crosswalk on the roadway and a pedestrian activated signal to cross the road, but there is a very incomplete network of sidewalks forcing students to cross traffic entering and leaving the college driveway entrance. There is another intersection at the corner of Taylor Road

and Glendale that has completed pedestrian crosswalks and sidewalks but it is a lengthy walk. For the many students who live in the Niagara-on-the-Green neighbourhood, directly across from the campus, using this intersection would require them to double-back on their walking efforts to enter their section of the neighbourhood. To make the matter more perilous, there are no sidewalks on either side of Taylor Road, which is the road that runs parallel to the college property. This lack of pedestrian supports is putting student safety at risk (Figure 4.13).



Figure 4.13. Taylor Road, Niagara-on-the-Lake.

To the right is Niagara College and to the left is the Niagara-on-the-Green neighbourhood where many of the students live. There are not sidewalks along this section of the road and the marked speed is 60 km/hr.

Photo: Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake, March 14, 2019.

No matter whether the person rides a bike or drives a car, vehicle storage is a consideration. People who ride a bike need to leave it in a safe secure area, and people who drive need parking at their final destination. Depending on their dwelling situation, students who ride

a bike either had storage space to park their bike or they did not. This one female student noted that,

“I’m an exactly a four-minute drive from my driveway to the school. It’s incredibly close. In reality, I could definitely be biking on nicer days. But my apartment is so small, I don’t have room for a bike to be super honest. I have a great bike at home. I bike everywhere at home and I could have realistically, like today, could have biked here, 100%” (Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019).

Proper bike storage has the potential to reduce the number of car trips made; however, the right supports, like secure parking, need to be in place. Although not mentioned by the students, but potentially implied by the above comment, bike storage needs to be indoors, as bicycles rust when exposed to the elements if left outside, and there is a greater chance of theft. The students who mentioned bike parking made reference to keeping their bikes indoors.

Automobile parking had more comments and assorted challenges, which included being able to park at one’s home, parking at work, parking the car to make the remainder of the trip by bus, and parking at the school. The latter two were somewhat related, as parking elsewhere and completing the remainder of the trip by bus was a means of not having to pay for parking at the school. One student noted there was only one parking spot at the home she and her roommates rent. This became a challenge because, collectively, her roommates had three cars. Here is what she had to share,

“And the thing is that...the driveways in front of all the houses are pretty small. They only ever fit one car, or they’re just a really long driveway...So...a lot of people have driven over the lawn part...so much, because they have no parking, that the lawn is half dead. We gotten complaints from our neighbours because, like, people just in general, ‘cause we only have one parking space. We have three cars and then a lot of people come over, a lot. So, people have to end up parking on the side, a lot...There was one ticketing issue, but we are pretty sure it was that person who didn’t like us parking on their lawn. This happened like a month ago. First time in two years my roommate got a ticket for parking there...But yeah, there is no, “no parking” signs anywhere” (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019).

At her rental dwelling there wasn't sufficient parking provided, resulting in people making their own parking spaces on the lawn. Clearly, in this example, it created a conflict with the neighbours and also resulted in a parking fine and yet, the question remains, where can students park their vehicle when they are at home?

Work can also apply restrictions on parking. Students who drive to their employment at the Outlet Mall have restrictions placed on them and alternative parking arrangements provided. However, that too comes with its inconveniences as this woman noted.

“So, I feel like there's not enough parking here because some days, especially closer to Christmas, you can't find parking to save your life. Um, on Boxing Day, we are not allowed to park at the mall... Apparently they have a shuttle service with Niagara College, so they will be shuttling us over from 5am 'till 10:30. But, I know some jobs require them to stay until midnight on Boxing Day. So, we can clean the store and stuff for other things to go back. So, we would have to walk in the middle of the night back to Niagara College at 2 o'clock in the morning. Which is not a far walk but, in the middle of nowhere, in Niagara-on-the-lake, it is a far walk” (Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018).

Like the situation noted earlier about students who park at Jeff's Bowl-a-Rama, students are parking in other lots. This student made the following observations.

“I saw so many people from Brock and Niagara College, parking at the Pen Centre. So, they drive to the Pen Centre. They park at the Pen Centre. Then they jump on the bus so they go to Brock or Niagara College ... Because if they park at the Pen Centre it saves them another 20 minutes to a half hour, because they don't need to get that bus from there to the terminal and then from the terminal back to wherever they are going. So, they can drive there, park there for the day. Hopefully nobody hits their car 'cause then their expenses are going to go even further. They've got double the expense. They have the expense of the vehicle that is parking there, but they are alleviating some of their fuel costs because they are parking there and taking the bus in” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

Other students noted the cost saving by not having to park at the college or university. One student noted it cost them \$500 for one term of parking at Brock. It was also noted that at both college campuses, and at the Brock main campus, the parking lots are typically full and finding parking can be difficult.

While many of these students, within this section of *Current Mode- Improvements to Infrastructure* reported having transportation disadvantage due to community design and lack of supportive infrastructure, similar to the Delbosc & Currie (2011) article, they did not encounter decreased mobility. Instead the infrastructure design, in some situations, made them feel uncomfortable as they experienced varying degrees of vulnerability.

Additionally, the infrastructure spoke to social discourses (Cresswell, 2006). In many situations the infrastructure blatantly favoured the automobile user at the exclusion of non-motorized traveler. Students spoke of poorly maintained or non-existent sidewalks and bicycle infrastructure that did not create a feeling of safety for the user. Some noted that the automobile infrastructure threatened the safety of other road users, especially at intersections. In other situations, the social discourse was more subtle in nature. For example, the lack of secure bicycle parking suggests that bicycles are not a valued or recognized mode of transportation. This is further reinforced by the lack of protected cycling paths.

In other cases, the social discourse exposed values around certain types of people, in this case post-secondary students. Landlords benefit from renting to students, but then do not provide the necessary parking to accommodate their tenants' needs, neither bicycle nor automobile. The student's money is wanted but consideration for the student's needs is not given. This lack of concern for students is further reinforced through by-laws that prohibit and fine them for having created alternative parking arrangements when students are given no other options. The students' actions were considered deviant from the social norm (Cresswell, 2006), yet the appropriate mobility infrastructure was not made available to them. The student is punished but the landlord is not.

Transit infrastructure quality. Quality of the transportation issues were also identified by public transit users, and students mentioned many areas where there were opportunities for improvements. The following section will share students' observations as though they were being followed through a transit journey. It will begin with the bus transit app, where students selected their bus route options. It will then move to waiting for the bus as it pertains to the need for more bus shelters. Next, it will consider the on-bus experiences of accessibility and the ability to charge cell phones. After that, it will look at public restrooms and the opportunity to speak to someone about transit concerns. Lastly, it will end with a suggestion to ease bus congestion with student shuttle buses.

It was clear by the number of comments made by various students that the bus app was regularly used. Students remarked on the need to include GO transit in the app, the need to have a phone to use the app, which can be challenging when cell phones die or the student does not have a data plan or access to Wi-Fi, and the confusion when there are differences between the time indicated on the app and what they are seeing on the ground. This account by one student was almost comedic in the way it was stated,

“I don't know, the bus terminal advertises it [the bus app] all the time and every time you bring it up to a bus driver, the bus driver says, don't trust the transit app... You're like, great thanks! Because I've had some where it says five minutes until the bus comes and then I'm like, okay five minutes. I'll go out there, sometimes because I like just listening to music waiting for the bus, because I like to breathe in the air before getting on the bus. And then, all of a sudden, it says zero and you're like, is it coming? You look down the street and nothing. Then all of sudden, it says thirty minutes! Because for some reason, the bus went by, maybe the bus went down, maybe – I don't know exactly what happened. But for some reason, something happened” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).

The following statement sums up overall student experiences with the app,

“It can show you like where to go as well. Say you wanted to type in, 'I wanted to get to, like, Pen Centre'. Then it will show you the lines, like, close to you as well. So, if it says you might have to walk, like, five minutes, then you can get on a stop. Um, it's helpful in

that way. I use it every morning, but I do find it – sometimes it has glitches as well. Like it will say it's coming in five minutes, but you actually have to wait 10 minutes, or something like that. But, it's technology, so what can you expect?" (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).

Bus shelters were seen by some as a necessity, especially as it pertains to protecting them from the elements. This first situation is about a women's experience waiting for the Megabus from the bus's Brock pick-up location. The location is an unsheltered stop adjacent to the Lowenberger student residence parking lot.

"It was just, I was waiting for the Mega Bus...and for the Mega Bus, um, they don't have a shelter outside... Um, 'cause they want you to come 15 minutes ahead of time. So, if you are waiting 15 minutes outside and you are not dressed properly, or you don't have gloves or anything, then that can really do damage or hurt. So, then I was curious, how can we fix this situation? We can get bus shelters! And then I thought that bus shelters were like \$500 dollars. No, they are like \$10,000 to \$12,000 according to Google. Yeah, I just searched, how much does a bus shelter cost? So, then I was thinking if we charge 18,000 brock students, a \$2 fee, one-time, that's enough for three bus shelters. Yeah, which is an easy solution, I think. And \$2, you spend more at Market for food on one trip. So, I don't think it's that bad" (Photovoice Participant 10, female, Brock University main campus, February 28, 2019).

This next student felt that a lack of bus shelters at her bus stop waiting area was unjust, and that the location of the current shelter, which was not for her bus stop, is not situated appropriately to the prevailing winds (Figure 4.14).

"Yeah so, I didn't notice it at the beginning of the school year, just cause I'm still trying to take in everything, but that night — it's cold at night, really windy...So, I noticed, I'm standing right here. This is mostly where the Regional buses are and the Pen Centre bus...As I was waiting, I'm like, wow it's really cold over here. It's really windy and I know with my geography experience, we get a lot of wind there, because its uphill and whatever. I'm standing there, like wow, it's really freezing! And, I look over here and everyone is huddled in these bus shelters, and I'm like wait, how does this make sense? We don't have any shelter at all, or even a wall, or anything. And then just right across when, literally, from here to, like, ten feet, have a bus shelter. And, I walked over and it's not windy or anything...I'm like, well that's not fair! And, when you are standing over here, you can't really see the buses coming in from the highway. So, I can't go wait over there for my bus unless I see it come in, and I don't have enough time to chase it or run after it. It comes on this side" (Photovoice Participant 4, female, Brock University main campus, December 18, 2018).

Bus shelters do provide protection and more shelters would improve the quality of student travel experiences.

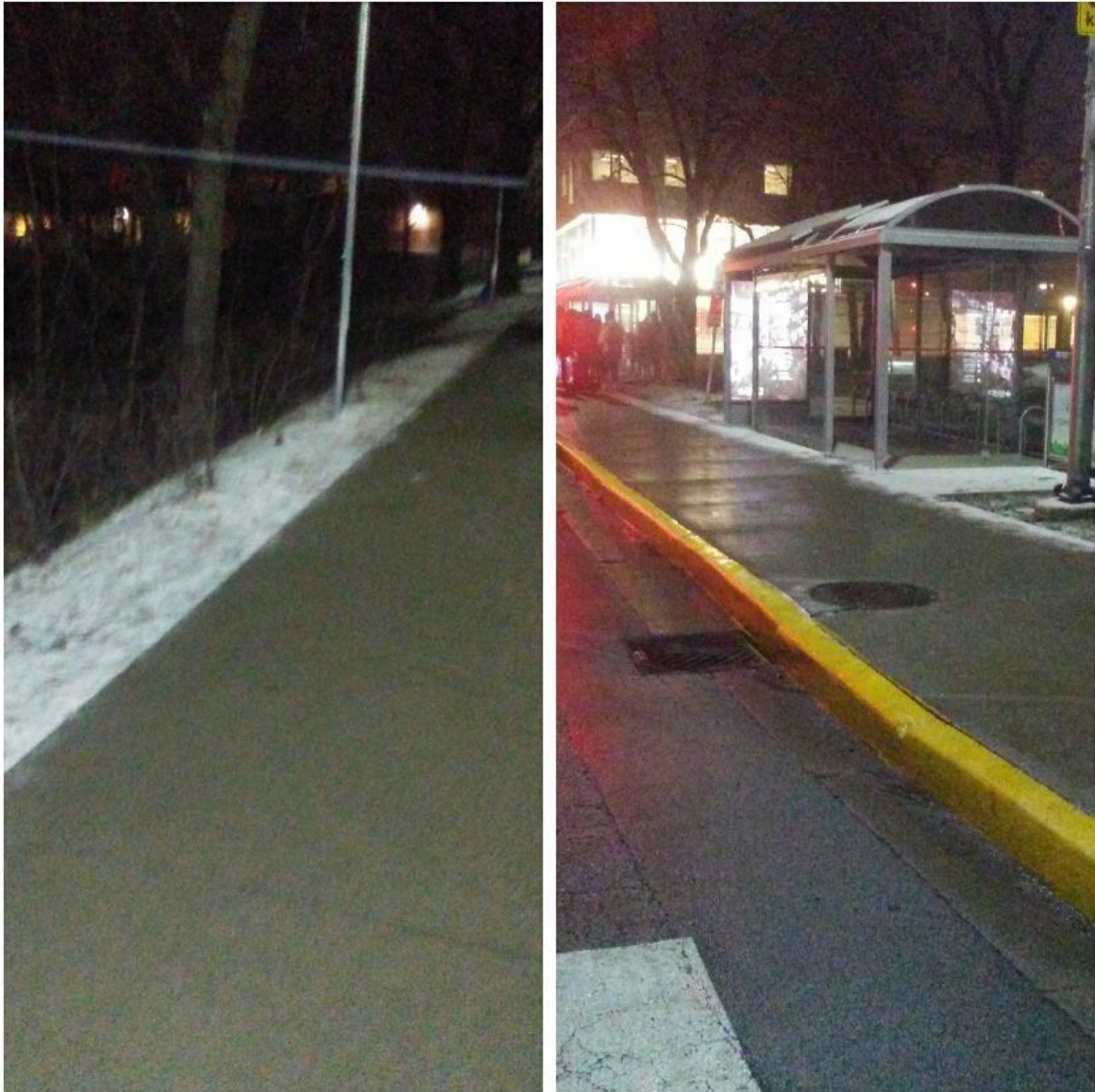


Figure 4.14. Regional bus stop waiting area on the left and municipal bus stop waiting area on the right at Brock University. No bus shelter on the left. Both waiting areas are within close proximity of one another.

Photo: Photovoice Participant 4, female, Brock University main campus, December 18, 2018.

Once on-board the bus, students provided other suggestions to make the journey more comfortable for people. The first observation was of a student concerned for people with disabilities.

“So, I was actually riding the bus...it’s the 321. I was actually riding to Brock Dental ‘cause I had to check for my tooth. And I noticed, and I see this a lot of the time, the buses don’t show the stops on the, like, LED panel, where it should say ‘Welland Avenue’ all that stuff. And, I was thinking, even coming from a TR [transit rider] perspective, for someone who may have an impairment, like a hearing deficit...they wouldn’t be able to know when their stop is...It just wasn’t showing up at all and like I didn’t know where I was going. So, I could like hear...but for someone who can’t hear, they rely on those LED’s to show them what stops. So, I kind of thought that was kind of crappy. Yeah, I’ve seen that a couple of times. That, or they won’t do, like, the audio, um, for some reason” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).

Even though this fellow was able to hear, having the visual notification of stop locations makes navigation easier. For others it is more than just a comfort, it is a necessity.

The other bus comfort people identified was the need for cell phone charging on the bus. Students identified that they often used their phones a great deal over the course of the day and that by evening their phone had lost its charge. For some, it was the enjoyment of being able to listen to music on long the journey, but for others it was a requirement for routing. As this woman stated,

“Well if your journey is 90 minutes there and back, on my way home my phone is dying, so, I need to plug it in. If I need to make a detour, and I have to take a different bus, maybe I need to do something on the way home and I have to take a different journey that I don’t know, and then I get there and my phone dies, and now I don’t know what time the bus is coming back, or where the bus stop is. Do you know what I mean?” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

This woman was newer to Niagara. Her phone was her means of mapping and finding her way to daily necessities. She also noted in a different part of our conversation that she wished all of the buses had Wi-Fi so that it would save her from having to use data and the additional draw on the cell phone’s battery.

The next part along the bus journey considers the human needs for public washrooms and communication with a live person to discuss transit concerns. The issues raised regarding the public washroom were for two transit stations, St. Catharines and Welland. In the St. Catharines transit station, public washrooms were found to be guarded by security and entrance was only permitted through the use of the security officer's swipe card. Once inside the ladies' washroom, it was noted that there were large gaps in the washroom stall doors, such that people washing their hands at the sink, could see into the stall where other women were seated. This lack of privacy and secure access to the washrooms made the student feel uneasy. She visibly grimaced while sharing her story.

At the Welland transit station, this gentleman noted that,

"...you would have to go, either go home, or take one of the last buses out to your destination and use the bathroom there. Because, in this area of town, everything is closed. Further up the street, both on the east end and the west end, there's bars, but they are about a kilometer away from this area" (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).

Having washrooms available at all times that riders are taking the bus, allows for more comfortable travel. The quality of the restroom experience also matters.

Although students noted using electronic devices to answer their transportation queries, students also identified that they would like to be able to talk to a person when they are unable to answer their questions otherwise. One student noted that when she was out of Wi-Fi range, she used the phone number on the back of the bus stop signs to determine when her bus would be arriving. Her experiences with the live customer service had been positive and that there had always been someone to check on the bus schedule. She also spoke to the fact that data is needed to make transit schedule inquiries which she did not have once she was out of Wi-Fi range from her apartment. She stated,

“It does require internet to update the scheduling. So, I mean, I live in that building [pointing to the picture], sometimes I can still catch the internet. But if I wanted to know if I missed it, or that live updates, then yes, I would need to have data to see the live updates. You can, on Google Maps, if you look up your scheduling before and then you take off the Wi-Fi, it will still relatively keep you updated. Compared to what those statistics were. So, if that bus is late, if it got stuck somewhere, or they had to take on, someone that needed some extra help to get on, I won’t know that because, it just keeps, oh, it will come in 10 minutes. And, it’s just pretending that its coming in 10 minutes. Then, I worry, I’m standing there like, did I miss it? And I call the number every time, and every time I call, they pick and up and say, it should be turning around the corner. Ugh. Because to me, if I miss that bus, it only comes every half hour. If I miss it, I need to take my car, I don’t have a choice” (Photovoice Participant 19, female, Brock University main campus, December 21, 2018).

It is interesting to note that this student also expressed a strong preference for taking the bus over using her automobile, as was articulated throughout her interview. For her, having to take the car to school was the less desirable choice.

Another example, shared by a student, was about the challenges and inconveniences faced by her partner, who is not a post-secondary student, when he was purchasing bus tickets.

“I am lucky because I have this, my student card; I get a free bus pass on my student card. My boyfriend has to buy a pass, the only place he can buy that pass is the downtown terminal...He doesn’t work downtown. We live in north St. Catharines. He works in the Scott Street area. So, if his bus pass runs out during the week, he needs to try to make a trip downtown to get a bus pass” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

During her interview she also expressed the need to be able to speak with a person to help her resolve her transit concerns so as to improve bus user experiences. She also felt that the busing system(s) in Niagara could use some positive public relations strategies.

The last item for the quality of transit experiences was an innovative idea to relieve bus congestion and to meet a specific transit niche for students who live in off-campus residences. The suggestion had been to offer a student-specific bus, or shuttle, that took students directly from their residence to the campus. In conversations with the steering committee, one of the bus routes that has presented a challenge for the bus system, is the route from the Brock main

campus, past the off-campus student residences, into Confederation Heights, where many students live. When the bus loads up at the university, there are more students than the bus can manage, yet within two to three stops from the campus the bus emptied considerably and is then under capacity for the remainder of its route. But, with a shuttle bus that made a continuous circuit to these locations, it could free-up the bus for other purposes.

The following interview excerpt speaks to the challenges of students living off-campus taking public transit to get to school and the need for a more post-secondary student-oriented system. Their perspective also exemplified how transportation can be a deterrent to attaining higher education. It can be seen, in this one example, how one's perception of transportation quality has a direct impact on subjective well-being.

“Travel, I don't know. I would like to say, because I know even though Brock has off-residence, I know Niagara College has an off-residence too. So, not just to have the busing system, because I speak to, like, city bus system only, like, have, I don't know, like a student bus. Because, I know there's a lot of kids from Niagara Falls that take an hour and a half to get to school, two hours to get to school. And they are leaving at seven o'clock in the morning for their 11am class. It's just like, uh, I could never do that...I would be, like, okay, bye, no more school for me. Because, I know a lot of students, it's not worth the transportation to come to school. So, I think that is a huge thing for transportation wise” (Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018).

Transit is heavily used by post-secondary students and, as noted by two of the students, a preferred mode of transportation. However, the trip quality provided by the transit agencies is serviceable but not optimal. The lack of appropriate resources (funding, customer services, current technology) is a reflection of societal values and hence the allocation of public resources. Transit is second to automobile usage and the people that use transit are marginalized (Cresswell, 2006). Most decision-makers, political or governmental, likely drive and have little exposure to transit and the experiences of transit riders, and thus provide minimal resources to the mode of transportation; clearly a reflection of the voting public's values.

Wayfinding. The last aspect identified for improving the quality of students' transportation experience was wayfinding. Wayfinding, for the purposes of this paper, are the means by which people can orient themselves. Landmarks, signage, route names and mapping tools, for example, help people to know where they are presently and can guide people to where they want to go. Students noted that wayfinding was poor across Niagara and, in particular, wayfinding for transit. The next figure (Figure 4.15) and statement by one student sums up what many students pointed out. As she said, "If my phone dies, this is the only place I can find out which bus goes where" (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

The adage that a picture is worth a thousand words is true for this illustration (Figure 4.15). The photo was taken at the St. Catharines bus terminal where paper maps have been taped to the window. It was the only place along this student's route where there were any maps to show her where the bus routes go and at what times. She also articulated that she needed her cell phone for wayfinding, but if her phone was not working, she no longer knew where she was. It is hard to imagine that when people are boarding a bus from other locations around the city, or region, that there are insufficient indications as to where that bus is taking them.



Figure 4.15. Paper transit maps taped to the windows of the St. Catharines bus terminal. These maps were the only maps the student saw along her route from St. Catharines to Welland. **Photo:** Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

Another student noted that, at the intersection where she boards the bus, there are three different bus options, but that the bus stop does not indicate what stop is for which bus. She was new to the area and had decided to test out the bus routes before she ventured to school. Her destination would eventually be Brock University’s main campus, but the buses at her stop go in other directions.

“This was like a regular intersection, regular place, in a suburban area, nothing too special about it. What is really interesting is, when I first moved here, I didn’t know anything about the public transit system. I had used it every now and then at my old place ... When I moved here, I started looking around and learning about the buses, I saw them go by, but I didn’t understand where they went ... So, there is a bus shelter in front of the Avondale, there is a bus stop here [pointing at photo], at this corner, and there is a bus stop here at this

corner. So, there is three individual bus stops...And at first, clearly, my first instinct is go to the bus shelter because that is where the buses go... So that is what I started with. But this bus actually goes down. So, this is the 318 Downtown. This is the 311 Hartzel and this one is the 318 to Pen Centre. So, there was only three buses. So technically, this is the one that changes to 315 once it's at the Pen Centre. So, it keeps going but it just becomes something else" (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

Had there been clear signage at each bus stop indicating what bus came to which stop, what times the buses arrived at and a route map, it would have been easier for her to determine the required bus and potential bus connections at other stops. A good wayfinding system would improve the quality of students' transportation experiences and the lack of wayfinding for pedestrians and automobile drivers yet again exemplifies the current politics (Cresswell, 2006) at play.

Preference for Certain Modal Types.

The first subsection about modal options for students considered how the quality of student's current transportation modes impacted their mobility experiences. It also considered comments that students provided on ways that travel in Niagara could be improved. This next section focuses on the effect modal options have on student wellbeing in order to understand how students choose certain modal types based on strong preferences, or ideologies, that individuals have about specific forms of transportation, the second aspect of a person's access rights portfolio (Flamm & Kaufman, 2006). The three modes of transportation that students preferred were their own personal automobile, public transit, and bicycle.

There were some common threads between people's preferences of one mode over another. The first two threads showed similar rationale by the interviewees: the belief that one mode is faster than another and that their preferred mode allowed them to get to know the community

better. The third thread is about the desirability of a particular mode. It is in this third thread that the rationale for those preferences were more diverse between the students' ideal modes.

Faster.

Given the particular context for which their preferred mode was being used, students identified that their mode was faster than another mode. This fellow felt strongly that all of the expenses of owning a vehicle outweighed the slow travel by bus.

“It’s going to cost you a bit more money, but I’m going to be home and you’re still going to be getting on your second bus by the time I get home. And, then you got a whole ‘nother bus to get there” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

Clearly for him, automobility allowed him to get there faster by one vehicle for the whole journey as compared to having to take multiple buses over a longer period of time to get home from school. However, this woman felt getting from home to school was faster by bus given the convenience of being dropped off at the door of the school and not having to find parking.

“I always take the bus to school every single day. I have realized that my total time in the bus, would take me maximum 40 minutes, I think, from, like, start to finish to my classroom. Whereas driving, which is usually faster, it will take me exactly 50 minutes to get me from my house, car to my classroom...I don’t have to worry about parking. I don’t have to worry about how far I’m going to be. If it’s raining, I don’t have to worry about an umbrella, instead just running inside. And it’s a big difference” (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

This student has factored in additional components to the journey, not just time spent in a vehicle, to determine why the bus is faster than the car. The inconveniences of parking, distance from parking to the classroom and the weather all factor into why the bus is faster than taking a car.

This third student often used a bicycle to get to work; however, she was challenged by poor or non-existent bike lanes and evening shifts at work. Her colleagues had insisted that she not

ride home at night and she found putting her bike in another's car to be a problem. However, she identified that both her bike and walking were faster than the bus.

“I no longer take my bike out as much, so I end up having to choose between my [two] legs walking, or the buses, that don't really, aren't really much faster than my [two] legs. Um so, it was last summer I used to work at Wendy's and the bike ride there was like 20 minutes. It was easy peasy. But then, through the whole incident with the car, and everything, I was like, you know what, I'll try walking a couple of times, see how that goes. It ends up being 45 minutes, makes my crappy job more crappy.” (Photovoice Participant 17, female, Niagara College Welland campus, April 10, 2019).

Regardless of the preferred mode, students noted that getting to where they needed to go by the fastest means was a desirable quality and what it means to be mobile (Cresswell, 2006).

Getting to know the community.

As noted in the literature review, sense of community is the relationship between the individual and the environment and includes a sense of membership, influence, integration and fulfillment of needs and an emotional connection (Kirk & Lewis, 2015). Students shared that their mode of travel helped them enjoy, interact with and feel connected to where they lived. This person felt that her car allowed her to have experiences that she might not have otherwise had. She stated,

“I guess without any of this, I mean without my car, I wouldn't have any experiences. So, that's why it was the last thing I really wanted to get a photo of, even though it might not be a road condition, it's something that still affects my travel. It is my travel” (Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019) (Figure 4.16).



Figure 4.16. “It’s something that stills affects my travel. It is my travel”.

Photo: Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019.

This woman used her car to connect with nature.

“Decew Road! I love taking Decew road just ‘cause it’s right behind my house. So, it is the convenience of it. If I am ever stressed, I just like drive along that. And, just there is little ponds of bulrushes and stuff and there is animals and it is kind of comforting. I love the nature. Yes, it is definitely one of my favorite places. I just play some music and drive along there” (Photovoice Participant 5, female, Brock University main campus, December 19, 2018).

This student used her car to connect to the beauty around her while surrounding herself with music as she unwinds in her car. Both of these examples illustrate how the automobile allows people to experience where they live and to develop a stronger sense of community.

Bus riders, too, connect to where they live on another level. The next two quotes are about the walk to, or from, the bus as the means by which they experience the community. The first woman noted that,

“In neighborhoods, you know, sometimes I will walk to a bus stop and take a slightly different — you know I will walk up a different street, or I will find out if there is another bus that leaves just from over here. So, I will walk over to that part of the street. So, I just get to, get to discover more places I think, by taking the bus” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

For this student, the bus takes her to downtown and she loves to explore all of the little shops. She says,

“I love taking the bus downtown. I don’t have to find a parking spot downtown, which is literally next to impossible. Yeah, I love taking the bus downtown. It’s my favourite. There are so many cute and adorable shops downtown, that people aren’t even aware of, because they just hear about, or see on Instagram about it. But I have been really trying my best to go and support those small businesses. There is Garden City Essentials downtown; love them. Beechwood donuts; love them!” (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

The bus allows her to access some of her favourite places. Both women experience where they live and travel more intimately by walking, which the bus affords them the opportunity to do.

Bicycles also offer an opportunity to explore and get to know the community. This student didn’t have a bicycle, but would like to have access to one. He also talked about the notion of bikeshare programs. He felt that cycling was a more practical method of getting around than walking when it came to seeing other parts of the city. He pointed out,

“Like I was saying, with St. Catharines being so, like, spread out, I think it would also give people the opportunity to see parts of the city that they never had before. Like, I would go for a walk, maybe, and then walk back, but I wouldn’t want to go for an hour walk maybe. A bike would obviously cut your time down. So, just giving that option, seeing it from a tourism aspect. Even having a day bike, you know what I mean, a route that you could follow on a map. It would make sense especially since we’re on the water. You can see Toronto from here. It’s, like, a view you want to see. So yeah, I’m surprised they actually don’t” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).

Regardless of the mode of transportation, the mode offered an opportunity to see, explore and be part of the community.

Desirability.

The rationale for liking a particular mode of travel was similar between choosing the most expedient vehicle and being connected to the community. However, this next section on desirability of a particular mode shows more diversity in the answers. For the most part, this section will compare and contrast people with a preference for cars with people who have a preference for the bus. For bicycle, there was a desire to bike more, but there were barriers to

usage that prevented people from doing so. These barriers included poor infrastructure to support cycling and geographic barriers, such as the Niagara Escarpment. For that reason, only automobiles and buses will be discussed here.

There was an element of convenience to both the car and the bus. For the automobile it was about being able to come and go as the person pleased. As this gentleman stated,

“I think to myself, I am willing to take the extra expense for my vehicle for the peace of mind to go where I want, when I want, and how I want to do it. Not have, well you know what, my class doesn’t end for another 20 minutes but my bus leaves in 10. I got to go. Right? So, I am willing to make that sacrifice to make the extra added expense for the peace of mind to know that I can stay in class, but I am still going to be home before you. Right?” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

His last statement also referenced speed as part of the convenience.

For people on the bus, the convenience came from having time on the journey to do other things. This man noted that his time on the bus was very productive, more so than when he drove,

“I do prefer to travel by bus because I like to read and I have a lot of reading to do regarding my studies. And, when I am sitting on the bus, I have a book in my hand and I am reading and the time just flies right by. And, I like that because the time is really passing quickly and also, I am doing something productive. I am accomplishing some of the required reading for my courses. So, that travel time between Port Colborne and Brock is actually productive time. When I have to drive, I don’t enjoy it because it is not productive time and I am not reading. And, because I am not reading, the time passes much more slowly and I am aware that I am just driving back and forth. And, I am thinking about what I should be doing and the fact that I am not doing it. So, I would say that I prefer to travel by bus when possible” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018).

In the next comparison, the student compared her experiences of being a driver versus being a passenger in the bus. She saw the difference as being actively engaged in navigating the car compared to being inattentive to the surroundings when traveling by bus. As this woman noted,

“Because it was so easy for me to get around, and by having this vehicle, and taking the same route every day, I was able to identify what affected my transportation. ‘Cause when you are on a bus, you are on your phone. You’re not really paying attention. So, by driving places, I was able to identify okay this affects my drive, that affects my drive... When you are on a bus you are kind of passive. But, when you’re in a vehicle, you are actively, like, operating the vehicle. Um, so yeah, without my car I wouldn’t be able to do any of this” (Photovoice Participant 13, female, Niagara College Welland campus, March 14, 2019).

True to what the automobile driver noted, bus users are not actively engaged in the navigation so much and are engaging in other activities. This woman, similar to what the gentleman noted earlier, uses the ride on the bus to do other things. Here is how she identified using her time.

“I love how I can do something else, to distract myself, or just to make the time go by. Using it even to relax, because those 30 minutes in a car would not be relaxing” (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

Both women find opposite reasons for choosing their mode.

These next two reasons for preferring one mode over the other are quite different, but play to the person’s sense of wellness. For the automobile driver, there is a sense of freedom and personal control over one’s time by having a car at their disposal. For the bus user, it was a conscious choice to not have a car and the motivation was the benefits to physical health. Both reasons had an impact on the individual’s wellbeing. As this driver said,

“I’m kind of a control freak and I need to have my own transportation. I don’t like being, like, at the mercy of someone else’s time. So, this way, it’s like I have my own vehicle. I’m on my own time. I’m never going to be drinking downtown, so if I need to get out of somewhere, or go somewhere, or take someone somewhere, I have my car, and I know where it is and we can just go” (Photovoice Participant 13, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019).

For her, having a car meant freedom, self-reliance and the ability to be in control of her transportation decisions at any given moment.

For this next woman, choosing not to have a car was, in part, determined by her desire to be physically active. As she reflected,

“My health stays pretty good, because I have to walk. I am forced to walk places. I don’t have to buy a car. I don’t have to get a gym membership. So, I am not interested in living anywhere that doesn’t have a good public transit system” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

This particular student can drive and, in the past, has owned a car when she lived in communities where there were no public transit options; however, her preference for taking the bus was so great that when she moved to Niagara she chose to live where she could take the bus. She cited health as a major benefit to her preferred mode of transportation.

Belonging to a broader community.

Some people had such strong preferences for their mode of transportation that they actually identified themselves as belonging to a community of people who also have a preference for the same travel mode. Community, in this sense, could be formal, such as one participant who belonged to an off-road Jeep club, or, a less formal community, such as belonging to a group of other like-minded people who are passionate about taking the bus. Although the photovoice data only reflected strong identity preferences for Jeeps and buses, it could be imagined that others, in the general population, could have modal identities such as belonging to a group who ride motorcycles or bicycles.

This first example is of a student who identified with the formal Jeep community. He had belonged to a formal off-road club and taught others how to off-road with their Jeeps. Here is what he said,

“I was the director of the Ontario Federation of Four-Wheel Drive for four years. Um, I actually taught people how to off-road. So, we would get people who would come right off the lot...two weeks later I have them on the trail. Right? Teaching them how to do it properly so they don’t break their Jeep. Because if they break the first time they ever go out, they are never going to want to do it again. If we take them out on a newbie run, we would take 20, 25 people out at a time, out on a newbie run, different trails and different groups of guides, and we would teach them how to do it properly so that they are not going to break their stuff” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

In addition to belonging to a formal club, there is also some Jeep etiquette that Jeep drivers follow. Here he identified what those behaviours are and provided some history on how those behaviours came to be:

“My Jeep had a green wave, a hand. So, it’s kind of like motorcycle guys. So, when they ride by somebody they wave. Jeep guys, specifically Jeep Wrangler, we all wave to each other. Right? Always. The only people that don’t are typically soccer moms that don’t really know the Jeep culture. Jeeps, um, when they started way back in war era, um Ford was the original manufacturer of Jeep and then it ended up becoming the CJ. [CJ] was the first civilian Jeep. CJ became civilian Jeep, right? Um, then they moved from there. Ever since those days, way back then, its been, been a completely different type of vehicle. So, everybody that drives one just waves to everybody. It’s just that, it’s just that common. It’s just what you do” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

Lastly, within the Jeep community, there is a widespread sense of empathy when another member loses their Jeep. In this case, the student’s vehicle had caught fire. When the videos that people had taken of the fire were posted to social media, people within the broader Jeep community, even those he did not know, responded with compassion. This is a reflection of the depth of this community.

“People were standing on all sides. They were videotaping it and everything else. Within six hours, I was getting, I was getting messages from Facebook from Alabama. People saying, sorry about your Jeep bro, ‘cause Jeeps are a community, right? It’s a lifestyle” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

Aside from losing his main mode of transportation, he was also losing a part of himself because of the fire. His Jeep was his connection to a larger social network and he had great emotional investment in his prized vehicle.

Although no students identified belonging to a formal transit community, there were strong statements of having a pro-bus ideology with an emotional connection (Kirk & Lewis, 2015), or an identity with using public transit. This one statement captures this sentiment,

“After living somewhere where there wasn’t one [a bus], it’s — No, I’m not doing that again. And I just, I don’t like the idea of having to have a car. A car, I don’t think it’s nice

to have a car. I don't think I should have a car" (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

This person had such a strong conviction toward her desire to utilize buses, that she adamantly wanted to disassociate herself from ever owning a car. She also noted, at another point in the interview, that buses have a stigma that she felt could be improved upon with some public relations. Here was her take on it:

"I think there is a very strange mindset in, I don't know if it is Canada wide, but it has definitely been in the last couple of places that I have lived. If you take the bus you are, you are poor, or you're low income, or you are — you know, you know. I meet people who never take the bus. They feel, they think it is below them to take the bus ... They need, the bus service PR. They do, they need someone — Make people realize how cool it is to take the bus" (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

She was not alone in this feeling. Another student, who was inspired by another transit user, identified that the bus was for everybody and there should be no barriers (Figure 4.17). In her words she stated,

"So, this guy in the front there, there's another lady behind him, he has a hockey stick. He came into the bus with this full gear, a huge bag and a hockey stick. I just love it, because I'm a people watcher, not a people judger, just a people watcher. And on the bus, you can't tell where people are going. You can't tell what they are doing. I mean they could be doing anything. They could be going to a doctor's appointment, going home, going to work. The possibilities are endless, but you don't really think about that, where people are going when they are taking the bus. But this guy, clearly, he is playing hockey. He is either going or coming from hockey. To me, it's something that, someone might think of that as a barrier, like having to take public transportation to do other things other than just work and school and home. Clearly, this is not stopping him. Clearly, he is bringing his stuff in, and it wasn't even in the way. It wasn't too much stuff. The bus wasn't full. It was really interesting. It was very inspiring, because it was like, if he can take his whole hockey gear into the bus and gets where he needs to be, then anyone can!" (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

This energetic connection to others who use the same form of transportation lends itself well to identifying with a community of transit users. This particular student did own a car but was making every effort to use transit. She was in the process of considering how she could meet all

of her travel needs by bus so that she could sell her car. These three students showed a strong conviction toward their preferred mode, and in that sense, belonged to a larger community of like-minded individuals.



Figure 4.17. Taking the bus is for everyone, no matter where they may be going to or coming from.

Photo: Photovoice Participant 8, female, Brock University main campus, December 21, 2018.

Mobility Experiences and Subjective Wellbeing

There are many definitions and understandings of wellbeing. Although Huta (2015) found overlap in the literature about what defined hedonic and eudaimonic wellbeing, generally, hedonic is having positive affect where physical and emotional needs are satisfied and

eudaimonic wellbeing is about “fulfilling cognitive/value-based goals and standards” (p.7). Both hedonic and eudaimonic wellbeing are outcomes in the way one feels in the moment and the overall feeling of wellbeing one has about oneself. The experiences that one has, in part, have an influence on these outcomes.

As noted earlier, the United Kingdom-based Five Ways to Wellbeing campaign identified being connected to the community and other people, being active, taking notice of one’s experiences, continuing to learn, and giving were all associated with making people happier and healthier. The following section will use these categories to share students’ travel experiences as they relate to wellbeing. Giving will not be included as this research did not address volunteerism, or measures of how one might be giving back to others. There were over 300 coded responses related to wellbeing provided by students who participated in the photovoice component of the project.

Connect.

There was evidence, in this study, supporting students’ sense of belonging in relation to their ability to participate in on- and off-campus events or community events. In both cases, students who participated in campus or community events often or always, showed a stronger sense of belonging than students who rarely or never participated in these types of occasions. Conversely, students who rarely or never participated in campus or community events had a weaker sense of belonging, compared to those who always or often participated (Figure 4.18). Students who identified that transportation always impacted their ability to participate in campus events were more likely to have a weaker sense of belonging; however, all other categories of transportation’s impact on students’ ability to participate in campus events had similar results, inferring that transportation deprivation at the most extreme end has the strongest negative

influence on sense of belonging. There were no identifiable patterns in the off-campus event participation in relation to transportation, which may reflect students' life stage, where their main sense of community was likely their campus and the length of time they had lived in their current municipality while attending school may be quite short. As noted earlier in the results, about a quarter of students always or often find transportation a barrier to participating in on- and off-campus events.

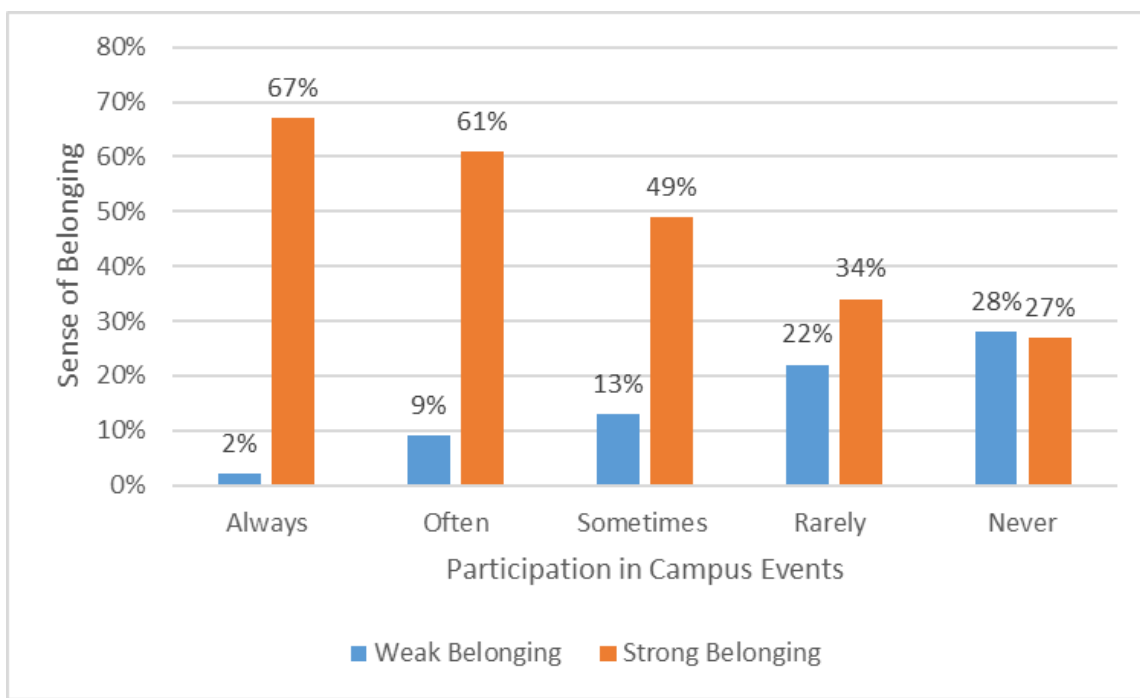


Figure 4.18. Relationship between Participation in On-campus Events and Students' Sense of Belonging. Students who participate more often in on-campus events had a stronger sense of belonging than students who rarely or never participate in on-campus events.

Part of the travel journey that people identified with was connecting with other people. For some students, it was the casual relationships they made with friendly bus drivers and, for others, it was the more intimate and deep connections they had with friends and family. Connecting with people is part of a student's travel journey and the experience of those interactions had an influence on how students' experience their day and experienced their mobility (Cresswell,

2010). As 75% of students identified that they had a bus pass, many students interacted with the bus driver as they boarded the bus. Here is one example of how a bus driver supported the student's commute.

“So, this is at Niagara College and we haven't even left yet, in this picture, and its 1:38 and my [connecting] bus is leaving at 1:45. And, if I miss it, I have to wait another hour. Um, usually I've had really awesome bus drivers who will, if I go to them and say, 'hey, like, I'm trying to make the Port Colborne link, can you just call ahead for me', they'll be like, 'yup, okay, no problem'” (Photovoice Participant 7, female, Niagara College Welland campus, December 20, 2018).

When this same student was asked about one thing she would like to share, or that she loved about her travel experiences, here is what she said,

“The bus drivers are enjoyable. Most of them are friendly, it depends on who it is, but they are mostly friendly. There's some that are a little not friendly but most of them are friendly” (Photovoice Participant 7, female, Niagara College Welland campus, December 20, 2018).

The casual interaction with the bus drivers was one of the most enjoyable parts of her travel. The connection to another friendly person, who for all intents and purposes is a stranger. But the stranger is a friendly and pleasant part of her commute.

In this next instance the same student enjoyed the warmth and solitude of starting the day in preparation for meeting up with people. However, she also enjoyed meeting up with friends on the bus.

“I love being able to relax and be warm in the bus and just look out the window ... and wake up in the warming. I don't have to make conversation with anyone, even though it's a longer travel experience, I can just sit there and just wake up. And when I get to school, actually be ready to talk to people. Um, or I love that, if I do take the 65 to get to the Welland Transit terminal, I get to talk to my friends a little bit longer, the ones that live in the Falls. We can sit together on the bus. So, there is, like, that. I like being able to choose which bus I take to get to the transit terminal. I know with Port Colborne there is only one option, but getting there like, it's just nice to be able to sit with my friends and chat after class, or whatever” (Photovoice Participant 7, female, Niagara College Welland campus, December 20, 2018).

This subsequent participant enjoyed reconnecting with people he has never had a conversation with and yet these strangers enhance his journey.

“Um, I think just seeing the people on the bus. I’m always a people watcher, so I just like seeing people and what they’re doing. There was one girl, last semester, at an 8am class, she would do her makeup on the bus ... I’m sure she had to get up early to take the bus, but she had a, like a, mirror and she’s doing like her foundation, or whatever. And I’m like, ‘good on you’. But it’s just kind of those things that you see in the morning, when you’re really tired, but it makes you happy when you see it. Even, whenever I take the Brock Bullet, there’s always a guy ... he wears, like, cheetah everything. And, like, he has, like, cheetah tattoos and, like, the jacket’s cheetah, and he has, like, a tail. It’s just cool seeing those people ... It’s kind of your way of catching up with everyone without talking to them” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).

The social connectedness to others, even those people one did not know, seemed to be an important part of the journey and provided comfort and enjoyment.

The former examples were about the enjoyment people experienced while using the bus. The next two examples are about where the journey takes them and how their means of transportation result in positive contributions to their wellbeing. This following individual shows gratitude for all of the carpool rides she has received. These rides have contributed to her social wellbeing and her mental health.

“Other than walking, my main method of commuting is done in the passenger seat of someone else’s vehicle. Without access to a vehicle, grocery shopping would be one of the most inconvenient things in the world, explained in the next picture (Figure 4.19). I would have next-to-no social life, and I wouldn’t be able to pursue certain volunteer/extra-curriculars off-campus. I live in an area where the closest grocery store is a 10-minute drive, and the nearest downtown is a 10 to 15-minute drive. Volunteering and extra-curriculars are either in St. Catharines, or somewhere that can only be accessed by vehicle, for example Short Hills Provincial Park. I know that if I did not have the means to get around, as I do now, my mental health would suffer. I am an individual who lives with at least two anxiety disorders. It would be very easy for me to hole up in my room, or the library, and talk to no one until I had to. I am grateful for every ride I have ever received here. My school experience would have been completely different” (Photovoice Participant 14, Niagara College Niagara-on-the-Lake campus, March 14, 2019) (Figure 4.19).

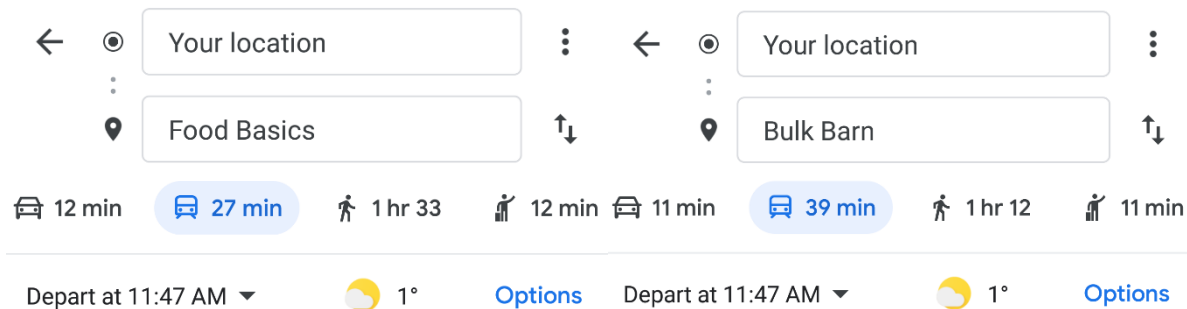


Figure 4.19. By Foot or By Car. Using a mapping tool, this student shows how long it would take by public transit and walking compared to using an automobile to get her groceries.
Photo: Photovoice Participant 14, Niagara College Niagara-on-the-Lake campus, March 14, 2019

Another student loved the journey because it meant being reconnected to her family and all that had been happening in her home life while she had been away at school.

“Yeah, just to get home. But that’s the, the highlight of my trip when I take the GO bus. Well, I guess in general, but especially when I take the GO bus, is that I have been building up this anticipation because I haven’t seen my mom all week. So, then I, — oh and we are also doing our basement. We are finishing it. So, I can’t wait to see what my uncle has done this week. So, I can’t wait to get home. So finally, when I get off the bus and then she is late, so she is not there, so I stand around and I see her van come around the corner and she pulls in. It’s like the highlight of my week! Yeah, and then I come back, and then I didn’t print the picture, but I have the picture on my phone, my dog comes and then he looks and he sees me, his tail starts going and its great. Its lovely! I will show you the picture now....Yes, he’s really cute. His name is Carmy, because he’s a bit of a caramel colour. He starts, just after this, turns in a circle, jumps up on you and he just can’t contain himself because he is so excited that you are here. Its great!” (Photovoice Participant 10, female, Brock University main campus, February 28, 2019).

When considering the online survey data, 51% of students identified that transportation rarely or never impacted their ability to participate in social leisure activities; however, that left almost half of the students sometimes (31%) or often and always (19%) missing out on social activities. As noted earlier, missing out on social leisure activities was experienced even more by international than domestic students, and more by students at the Niagara-on-the-Lake campus compared to those attending the Welland campus and Brock main campus.

Aside from personal experiences where students identified how their mode of transportation helped them to connect to other people, this student shared how not having transportation available at the time that she needed it resulted in her having to miss out socially.

“Even yesterday, I was supposed to go to Great Wolf Lodge with friends. My friend had some free tickets because she works there. I had to cancel because the bus just didn’t work out. The way the Niagara Falls bus times were, was that I would have to pay for the metro bus to get there, or I could get there at 11 o’clock or three o’clock and they were all meeting at a different time that didn’t correlate with that. So, it just didn’t work out, which sucked ... They all live in Niagara Falls and take the bus, which is easy for them because it’s right there, or they walk. Yeah, so I mean, that wasn’t too fun, because I was looking forward to it” (Photovoice Participant 7, female, Niagara College Welland campus, December 20, 2018).

Similar sentiments about modal availability and the ability to connect to others were shared by students making observations of aging people. One student identified that her grandmother had had a stroke and thus had her driver’s licence revoked. Although she was not supposed to drive, she did anyway because she had few people that she could ask for help from and she lived out in the country where driving was the only option. Another student noted that aging people in Port Colborne could benefit by having more bus options available to them, as older adults begin to drive less for a variety of reasons. As he said,

“So, the idea of the riding a bus might be more appealing to the older people and that is the kind of population that is becoming more and more predominate in Port Colborne. And, Port Colborne is becoming more of a retirement community. I think that it is getting out and living and participating in the community that definitely contributes to one’s wellbeing” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018).

In his last statement he really identified how important transportation is in helping people get out and participate in the community as a means of contributing to one’s wellbeing.

The observations about people being dependent on others for transportation was not limited to aging adults but was also observed in young adults who have to rely on their parents for transportation.

“Some of them [post-secondary students] depend more on their parents. They have their parents drive them to Welland. They are dependent on their parents. There was one girl, she was studying at Niagara-on-the-Lake campus. First, she got to Niagara College, and a few times late at the beginning. I guess she did not figure out the best connections, or the best options, so she was arriving late to her classes because she would arrive at the Welland Terminal, but she would not get to Niagara College Niagara-on-the-Lake campus on time. The Niagara-on-the-Lake campus was from Niagara College in Welland, so she would have to take the bus from Port to the Welland Terminal, then the Welland terminal to Niagara College, then from there, the bus to Niagara-on-the-Lake campus. And, sometimes she would be arriving late to her classes. And, in the evening, when she had late classes she would just be dependent on her parents to pick her up in Welland” (Photovoice Participant 1, male, Brock University main campus, December 14, 2018).

Another concern expressed by students was being dependent on other people and how this dependence could result in negative relations. In this example, the person was trying to get home from work.

“I do have friends that could, obviously, that could help me out ... I don't want to be a burden on other people. When my boyfriend is working, he's in bed by 9:00pm, so he can't come pick me up because he's already in bed. If it's a weekend, it's okay. He will come and get me. If it's the weekday, he can't come get me. I am a very independent person since I moved away from home, always have been. And it's just been really difficult to have to rely on someone else when I've been so use to relying on myself” (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

The above example had two interesting observations. The first observation was about not wanting to be a burden to another person and the second was about the desire to be independent.

Continuing with the idea that transportation experiences can contribute to negative experiences with connections to others, this next example was about one student's experiences of stigma on the bus while he was heading home at the end of the day with his son. Before school this student brings his son to daycare by bus and then takes the bus again to get himself to school. At the end of the day he takes the bus from school to the daycare, gathers up his son and then takes the bus home (Figure 4.20).

“And that one, I took to illustrate how he, [his two-year-old son] he sits on my lap while I'm on the bus. And sometimes I'm lucky and I'll get people that move out of the way and like help me out, let me sit down. And, other times, I have to hold him while I am standing

on the bus ... I feel like, since I am a single dad, I get a little bit more — everyone just automatically assumes that I am the one that left my ex and I am the one that did this and I am just a deadbeat. There's kind of like a lot of stigma — but I'm like, I'm just trying to get my son back home guys. But, if it's a single mom, everyone gets up instantly. To be fair, I have seen people come in with strollers, and some people almost still refuse to move. Then the bus driver had to be like, 'get up now or get off', because it is courtesy seating. It's not priority seating for parents" (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).

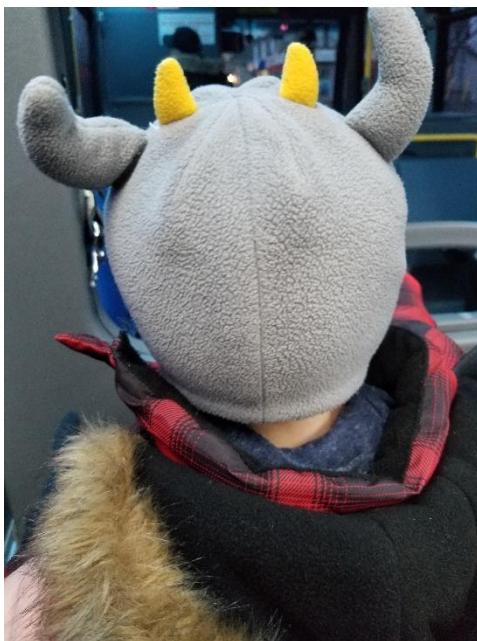


Figure 4.20. A dad, who was also a post-secondary student, was taking his son home on the bus.

Photo: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.

Differential (im)mobility experienced by post-secondary students resulted in some students being excluded from social interactions and likely poorer life satisfaction (Cass et al, 2005) and sense of belonging. The dimensions of access (Cass et al., 2005) will be explored further in the next section, Being Active.

Being active.

In the Five Ways to Wellbeing, being physically active was identified as important to overall wellness. However, to be active, the community in which one lives needs to be

supportive of the activity; in this situation by providing opportunities for active transportation. This section will first share how students used travel to achieve physical activity and then it will consider some of the environmental aspects that enhance or deter from the travel experience. It was good to note that 74% of students said their general sense of physical health was good to excellent.

Some students noted they were able to achieve physical activity through walking. The following students intentionally chose to add walking to their day. The first two students were walking and using the bus as their modes of transportation and the third student was simply walking.

Student 1: "I was just headed to the mall that day, then I walked back down Niagara Street. But that was at my choice, I just wanted to get some exercise" (Photovoice Participant 17, female, Niagara College Welland campus, April 10, 2019).

Student 2: "And my favourite part is the walking. Sometimes I walk. I will leave a little earlier and I will walk to another bus stop further down the road, just so I can get a bit of a walk in. But, I also — I get to meet a lot of dogs." (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

Student 3: "...Because the Dollar Store is just down the street and Tim Horton's, and I'm trying to think what else is down there, but I go there a little bit, every so often. If I just have to pick something up, I just run down there and grab it 'cause it's just easier to not park [the car] and walk, [to] get some exercise." (Photovoice Participant 18, female, Brock University main campus, April 12, 2019).

It was interesting to note in the second student's quote, that she not only enjoyed the walk for exercise's sake, she also enjoyed the social interaction with other people's pets, which ties well to Connect, the first category in the Five Ways to Wellbeing. The next students made note of the environment in which they are traveling.

Cass et al. (2005) considered the discourses of access and identified four dimensions of access: financial, physical, organizational and temporal. The dimension of access that relates well to this 'way' to wellbeing is physical. As Cass et al. (2005) state,

There are many physical aspects of access: as inability to get into or drive a car; difficulties involved in walking certain distances or within particular kinds of unsafe, unlit, uneven environments; the physical difficulties involved in entering particular sites; limitations on the capacity to read timetable information; physical constraints upon carrying or moving large or weighty objects and so on” (p. 549).

Community design, which includes infrastructure such as lighting, paths, enhancements that make a community attractive, and so forth, can support and enhance a travel experience.

This next student enjoyed the walk because it allowed her to observe what was happening in her community. This also ties well to Take Note, another of the Five Ways to Wellbeing.

“I think that the experience of walking down the street here [St. Catharines] is just very nice, very calming, and that’s why I walk so much. It’s just therapeutic for me, ‘cause I get to take that time and just look around me and see the city and see the people walking past me, like just enjoying their lives. I’m like, this is nice. So, I think that’s my favourite part about this whole thing, just being able to see how, how much more peaceful it is here, compared to what I grew up in” (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019).

Another student identified a key piece of trail infrastructure that supported her physical activity. This trail could be used as part of a commuting route, with walking as the means of transportation, or in this instance, for recreational purposes.

“I think this is part of [the] canal in Welland. [Welland Recreational Waterway]. Yeah, [the] first time I went here, with Niagara College to go out and kayak. Yeah, I really love it! I usually go there in the weekend, ‘cause they have place for walking and jogging sometimes” (Photovoice Participant 11, female, Niagara College Niagara-on-the-Lake campus, March 1, 2019).

While these first examples were positive experiences that contributed beneficially to student wellbeing, as Cass et al. (2005) noted, there are barriers that limit access. This next section considers the obstacles that students experience in their travel. Although not all students explicitly mentioned participating in their mode of transportation for the benefit of physical activity, walking and cycling inherently adds to a person’s daily exercise. Public transit usage was also included in this section because most transit trips begin and end with walking.

Numerous students noted the unhygienic conditions of their travel environment and how the lack of cleanliness affected them. A couple of students spoke to unsanitary or dirty situations on the bus that detracted from their travel experience. The first one is about not being able to see out the bus windows because of the salt build up on the outside created by the slushy winter roads (Figure 4.21):

Participant: “I took it when I seen it on the bus. And, I tried to take it like that so it not really look like a window.”

Interviewer: “No it doesn’t. I thought it was a concrete wall.”

Participant: “Yeah that’s the window of the bus.”

Interviewer: “That is a very dirty window.”

Participant: “Yeah in winter, I think they have no choice because like it’s snowing a lot. It’s really heavy. It’s yucky. But its better if they just clean it a little bit, because, like, when I’m sitting on a bus, I usually look outside, all the time. So, sitting in here, like, I don’t like it because sometimes I study a lot, study a lot. I spend all day in school. Really tired. So, when I go back home, usually I watch something outside and relax on the bus” (Participant 11, female, Niagara College Niagara-on-the-Lake campus, March 1, 2019).



Figure 4.21. ‘Looking out’ the salt and dirt covered bus window on a winter’s day.

Photo: Photovoice Participant 11, female, Niagara College Niagara-on-the-Lake campus, March 1, 2019.

For this international student the bus ride usually helped her to unwind. But not being able to see out the window took away from that experience. In her written narrative she wrote, “It made me feel oppressive like I was in a box, especially in the day that I have to study a lot and feel tired.” This same student also had a long bus ride as she attended school in Niagara-on-the-Lake and had to return home to Welland. The next student noted the sullied condition in which other bus users had left the bus (Figure 4.22).

“I just happen to notice all of the trash and what not. And I just know that always bugs me when I am on a bus. Um, I know they have one tiny little garbage bag at the very front of the bus, but every time I go to the back there is always— you’re not even allowed food on the bus! But like tons of litter back there and it just kind of makes you feel gross. Because you’re just trying to get through your day and now you have to sit in someone’s trash because they are too lazy to just put it in their pocket and throw it in the trash can” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).



Figure 4.22. People leaving trash on the bus.

Photo: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.

In both situations, the lack of cleanliness of the bus negatively impacted their travel experience. The second student had a visceral reaction to the trash making him feel disgusted, dirty and angry that others had been inconsiderate and ‘lazy’ by not using appropriate trash receptacles. The next two students were outdoors and both students were bothered by the mess others had left.

“This was my bus stop for almost a week, I don’t know what it was, someone dropped food. This was actually someone’s takeaway, I think, dropped on the floor, and then, right by the seat. There is only two seats at the bus stop. Someone dropped a takeaway on the floor and left it. A magazine and *that* was left on Wednesday and then Friday it is still there, and then Monday or Tuesday I went for the bus ... it’s gross ... this is just attracting vermin” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

In addition to someone just leaving their mess, the woman was not able to sit down on the bench at the bus stop because of the left-over food on the ground and the items left on the seat. She also stated in her interview that her bag was heavy and that she liked to place it on the bench to relieve the weight, but now with the mess, she is not able to be relieved of the burden. She also expressed concern about animals being attracted to the food debris (Figure 4.23).

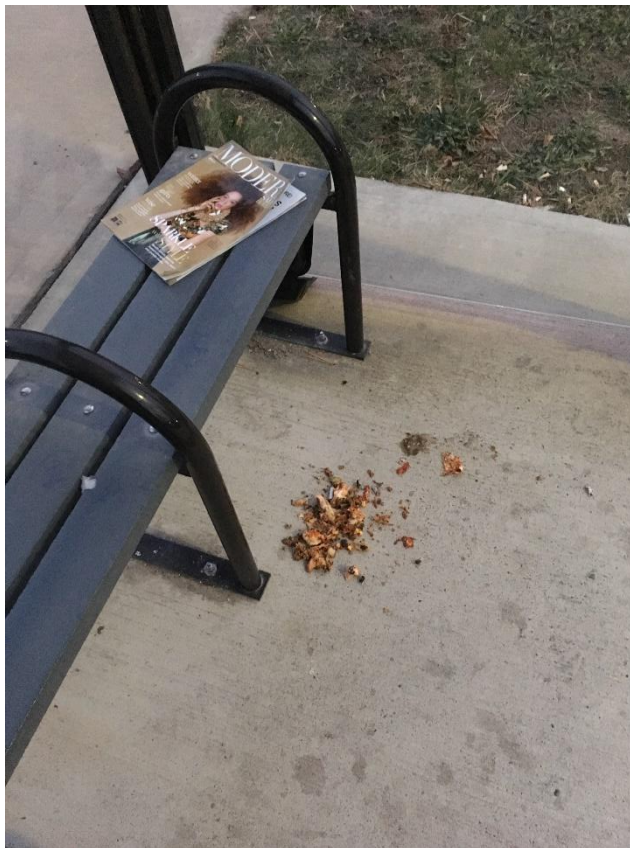


Figure 4.23. Food and other items left behind at the bus stop.

Photo: Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018.

The following man was walking downtown to run an errand and had to walk through cigarette butts that littered the sidewalk.

“This one I took on a Saturday afternoon. I was going to the bank to take out money, or something and I walked by— this is actually in front of the Merchant’s downtown. And, I just saw all these cigarette butts. And obviously I can see where — like, why they are there. ‘Cause obviously people were going out the Friday night. But I think they don’t have, like, options for people to, like, throw them away. I know those kind of, like, stand things, but honestly, I’ve never seen them anywhere here. So, people obviously throw them on the ground. And, even whenever I was walking by, I said, the quote here, someone said, “This is gross”. There was probably over like 60 butts! And, that was all downtown. I know it’s, like, from a health standpoint, it’s kind of gross. But even if I was near here, seeing if I wanted to live downtown, I’d be like, that’s kind of gross for the city to not clean it up. Especially if it’s an ongoing thing. They know we’re a university-based town, um, so I’m surprised they don’t have someone on that Saturday morning, or Saturday evening shift to kind of clean up downtown” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).

The cigarette butts symbolized many things to this student. For him it was very filthy and did not represent the city well, especially if the city is interested in attracting and retaining university students. It is also a matter of not providing the right type of garbage receptacle for cigarette butts so that people can dispose of their butts appropriately (Figure 4.24).



Figure 4.24. Cigarette butts litter the sidewalk in downtown St. Catharines.

Photo: Photovoice Participant 19, male, Brock University main campus, April 12, 2019.

A common word used by three of the four students on those examples was ‘gross’. Gross, in the context that they had used it, inferred a sense of disgust. It made people feel uncomfortable about being in a particular surrounding because of the presence of the unpleasant object(s); left over food, food wrapper trash, and cigarette butts. All of the students felt a sense of discomfort and uneasiness that took away from their travel experience. Although at the time of the interviews these students relied on walking and public transit for transportation, and these modes of transportation contribute to their physical activity level, which is beneficial for wellbeing, these negative experiences could later influence their desire to move toward a different mode of

transportation that could decrease their physical activity level. In the meantime, the experience has left them feeling less well off.

As noted earlier, the student waiting at the bus stop where food waste and others' trash had been left on and around the bench was also carrying a heavy bag. She noted that she was tired and needed a rest but could not just sit down and unload her bags because of the actions of a prior transit user. This student, too, was burdened by carrying his growing son while on the bus. In his photovoice example he had a photo of his son sitting on his lap, but this wasn't always the case (Figure 4.20).

“He is tall and he is heavy. He is almost, like, 40 pounds. So, I'm like holding him in my arms and I have, probably, about 30 to 40 pounds on my back and then I have to try to juggle it...I stopped bringing the stroller on the bus, because I don't like coming onto the bus, and making people move for me. Especially because it takes up a lot of space. Like, you have to fold up the seats and that's two seats gone for somebody else. Then it's me and an empty seat and nobody is going to want to sit next to me, like, once I have my baby. Sometimes you get an occasional person that will sit next to me. Yeah, like no, I personally don't like it. Yeah, so that's why I carry him everywhere. That's my own cross to bear, my own purposeful cross to bear” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).

The burden to oneself and being a burden to others are reflected in his statement, both of which reflect the access barriers written about by Cass et al. (2005). This next student also expressed the burden of carrying his heavy bags while making a long walk to school.

“Um half way there, like, my hips, my hips were sore, my feet where killing me, my shoulders, I had to keep changing my bag, my laptop bag around to the different shoulders, because it is a heavy laptop. It's a gaming laptop, so it's a high-end laptop. Um, so I just, I, I stopped at Merrittville Highway and Highway 20, at the Tim Hortons there, and I sat there for about 45 mins and — 'cause I was tired” (Photovoice Participant 9, male, Niagara College Welland campus, December 21, 2018).

Carrying heavy objects added to the burden of the journey. Students expressed fatigue and the need to shift the weight they were carrying. This burden did not make the journey an easy or pleasant one. For others, the burden was expressed in the length of the journey. Some students

were traveling upwards of 90 minutes to get to their destination on a daily basis. This was experienced by students traveling by public transit between Welland and St. Catharines, which is about 23 kilometres from the centre of one city to the centre of the other. These lengthy journeys were also experienced by public transit users coming from Port Colborne to Welland, or St. Catharines. As said by this woman, “My journey to college is 90 minutes there and 90 minutes back” (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018). That equates to three hours of travel each day to attend school. Another student, who works for the student union administration, has to travel between the two college campuses. As he put it, “So some days, I might have to go to the Welland, which is, which is not fun. It’s a long bus ride ... It’s about an hour I believe” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019). These lengthy journeys are not seen as enjoyable aspects of the students’ days. From a Five Ways to Wellbeing perspective, these lengthy periods of time sitting on a bus are not contributing to the students’ physical activity level, nor are they contributing to the overall wellbeing of the students.

Another physical access limitation that students reported were the crowded bus conditions. With 75% of students having a bus pass, there is the potential for as many as 22,500 students to be traveling by bus at various times during the day to get to campus, work and other life activities. This inexperienced public transit user expressed his experience of bus crowding with a sense of humour. He said,

“First, I have to find this bus to get to the Pen Centre, right? And those buses are super packed because Brock has a lot of students and as soon as you sit on a bus at Brock, you immediate — you pretty much have people sitting on your lap” (Photovoice Participant 9, male, Niagara College Welland Campus, December 21, 2018).

While it seems that he was able to find a seat, this next student was not so lucky. He was standing on the bus that takes the Skyway bridge between his campus and the St. Catharines bus

terminal after he had already missed the prior bus due to bus capacity issues. The Skyway bridge is about two kilometers in length and takes highway traffic travelling at 100 kilometres an hour over the Welland Canal. Because of the height of the bus, passengers can easily see over the concrete barrier at the edge of the bridge (Figure 4.25). He, too, used a bit of humour in his expression of feeling very uncomfortable standing on the bus. Here is a sample of the interview.

Participant: “Uh, this um, was taken just, I believe, last month. I got out of class early, but the bus was extremely full, so I had to wait for the next one. So, that was me just kind of going like, dang.”

Interviewer: “How often do you miss the bus?”

Participant: “Um, it doesn’t happen too, too often. The first semester was really bad. You get people— it’s so crammed on the bus and it’s standing— and I personally, even if it is full and the bus driver says I can go on I try not to because we still go over the bridge right. And I don’t like standing up on it and then I feel like nightmare on Elm Street where Freddy Kruger drives off the street, like it just, it just weirds me out!” (Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).



Figure 4.25. Taking the city bus on the Queen Elizabeth Way highway over the Welland Canal.

Photo: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.

The bus crowding issues cost him time and comfort. This next student made an observation about the buses going from the Niagara-on-the-Lake campus to Niagara Falls.

“Now, whenever I hear about people busing to and from Niagara Falls, that’s always the worst buses. There’s never anywhere to sit, there’s no— there isn’t even room to breathe on the bus. Um, yeah, I don’t know what to say for that. I would think that the Region

would just add more buses to the schedule to alleviate that. I'm just not too sure what's going on there" (Photovoice Participant 15, female, Niagara College Niagara-on-the-Lake campus, March 20, 2019).

This student questioned why the regional government had not done anything to address the overcrowding. It was felt that action should be taken to improve access for students.

Although nutrition is not identified in the Five Ways to Wellbeing, it does play an important role in wellness. These next students identified that there were few options to find nutritious food along their travel route, or that the grocery stores were not readily available given their means of transportation. And, although the students were able to access the food resources, it was not always what they wanted or convenient.

"I have a very heavy bag because I carry a laptop and I have a lot of books to carry. Carrying food on top of all of that is just not an option. But there is nowhere on my journey for me to eat anything. Even — this is a picture of the old café. I believe that was in the bus station. I mean, it was never a particularly — it was never somewhere I was going to eat anyway. But it just, I have, if I want to eat to anything, I have to run into downtown and try to pick something up from, and it is usually a muffin is all I can get ... There are vending machines that sell the usual rubbage food and then there used to be coffee shop" (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

As this woman experienced, there were no healthy food options, for a meal or snack, along her route. She further went on to note that for meal preparation at home, there were no grocery stores within easy access of her current bus route. As it was, her journey was taking 90 minutes by bus from Welland to St. Catharines, but if she added on the buses to the grocery stores, her journey would increase by another 30 to 60 minutes.

"There is not even, if I want to stop and pick up groceries on the way home, it is also incredibly difficult. I already have to take at least two buses to and from college. If I want to stop at a grocery store, I would have to take another bus to a grocery store and then take another bus into. It would be, it would then be a two, a two-and-a-half-hour journey home, just because I need to pick up something for dinner on the way home" (Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018).

This next male student lived downtown. When asked about being able to purchase groceries downtown the following was his reply:

“Um, not really. So, the way like, I find St. Catharine is spread out, if that makes sense, even the downtown. So, for say, I live off of Wellington and Lake. So, if we wanted to get groceries, we go to the Walmart. That’s like across the bridge over on, like, Fourth Avenue, which is probably like a five-minute car ride. But, the bus, I think, is 10 to 15 minutes. And especially on the weekends, if you don’t have that option of a bus, you’re not getting groceries. And like the next closest one would be, um Costco. But even Costco is over way by like the Chapters, and stuff like that. And, that’s longer, maybe 10 to 15 minutes driving. I wouldn’t even want to bus, if I had the option, ‘cause it would be half hour, 45 minutes. And that’s kind of your only options, unless you go to Giant Tiger, but that’s obviously your option. Um, and that’s close for us, but I personally have never gone there” (Photovoice Participant 19, male, Brock University main campus, April 12, 2019).

It was interesting to note that 35% of students indicated that transportation sometimes, often or always impacted their ability to access food. And, of people who indicated that transportation impacted their ability to access food, males (31%) reported always and often more than females (24%). More Niagara-on-the-Lake students (32%) said they often or always found transportation to be a barrier to accessing food, followed by Brock Main campuses (27%) students and Welland campus students (24%).

Returning to the dimensions of access that expose inequities or exclusions (Cass et al., 2005), the community design, or physical access of the community was both a support and a hindrance to wellbeing. For some it provided a means to get exercise through active transportation, such as the students who chose to walk to their destinations to be more active, while at the same time it was an antagonist to wellbeing by not providing the ability to access needed resources like groceries or health food options (organizational access), or were in dirty and unhygienic conditions. Even the timing of buses (temporal access) resulted in overcrowded buses and uncomfortable situations impacting students’ sense of wellbeing. Interestingly, these

students were using modes other than an automobile, further exemplifying the predominant discourse (Cresswell, 2010) of automobility at the exclusion of those who use other travel means.

Take notice.

Take notice is about people's engagement in the world around them and reflecting on their experiences. Numerous students made note of their surroundings impacting the way that they felt. For some people it was relaxing and peaceful, contributing positively to their wellbeing, like the woman quoted in the category of physical activity above, who found walking downtown peaceful. For others, it was adverse experiences having a negative effect. These first examples explore the positive experiences on wellbeing, as students take note of their surroundings while traveling on the bus.

“This one was just taken in the morning. I just kind of liked it ‘cause the way the sun was coming in through [the window]. And it just seemed like a nice quiet thing. Like everyone is just off in their own world. And that's what – I always like the early buses for that reason, because there is obviously nobody on it” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019) (Figure 4.26).

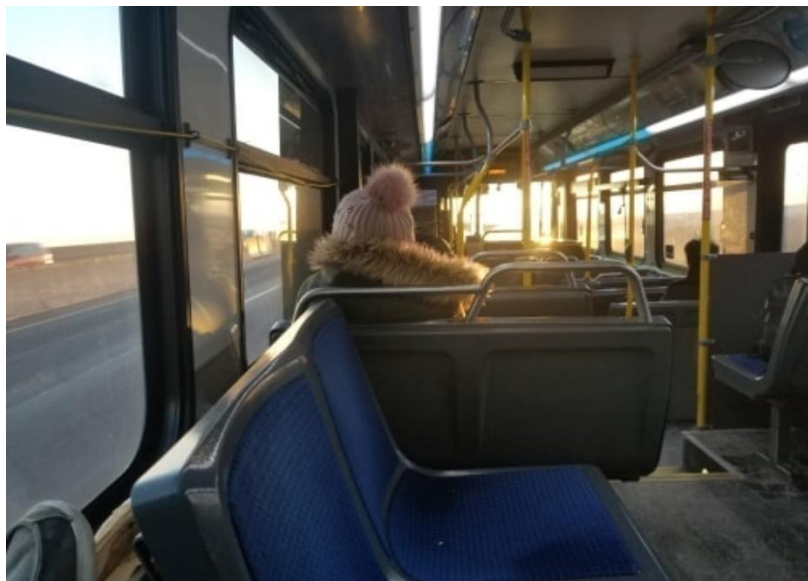


Figure 4.26. Quiet morning on the bus as the sun streams in.

Photo: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.

Later, this same student noted,

“I like all the trees along the route in St. Catharines, specifically. I like looking at them, because they have a lot of them. I like to think since we are the garden city, that we have a little bit more garden-y items than other cities. And most of the routes go past by the creek, and what not, which is a very forest-y area, which is something I really enjoy because I grew up in the heart of Merritton. At the time there were a lot more trees and now there a lot less trees because of houses. But, no, I have always loved them. Enjoying nature, to sum it up” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019).

This student enjoyed nature through the window of the bus, whether it was the sun streaming in or the plentiful trees along the route. This next student also enjoyed looking out the window, but was less specific in her description of what she saw. However, the bus trip was an opportunity for her to unwind.

“This is my favorite part of taking the bus! ... I get to relax by doing things that would otherwise be impossible in a car. Honestly, I think that it makes up for the fact that public transportation may take me longer to get somewhere. If I get to spend my time doing other things, that’s just as good of a compensation to me. I get to de-stress and use my time management skills to take advantage of the bus rides to and from school. Sometimes, the mental break we need every now and then, could be as simple as just taking a moment and looking out the window while enjoying the ride” (Photovoice Participant 8, female, Brock University main campus, December 21, 2018).

The following students also enjoyed taking in their surroundings but did so while walking.

The first are experiences with nature, such as Niagara’s topography, wooded areas and wildlife.

Student 1: “Oh, I don’t have any good showy pictures here, but I love how flat the area is. Like in Mississauga everything is high-rise, you can barely see the sky in that area. But here, there’s the big trees. You can actually see the sunrise and set. It’s lovely. I love it! I love seeing nature!” (Photovoice Participant 17, female, Niagara College Welland Campus, April 10, 2019).

Student 2: “As much as I complain about it being in the middle of nowhere, I also love that, because you have the escarpment. You have the wildlife. Like you are a little bit displaced and for me that feels like home, because I’m from the country. So, I am a lot displaced from everything. I just have more means of transportation available to me there. Um, yeah, I love that it, that I have that access to the wilderness, even though I am still in the city” (Photovoice Participant 14, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019).

Student 2 also noted,

“So winter for me is usually, like a down time. Every single person in my family, we always get down in the winters. So, this, like, kind of spring like day was really nice, but then seeing the muskrat was awesome too! ‘Cause, my walk is so short right, so I don’t really see anything. It’s like home-school, school-home, home-school, road, so, the muskrat, seeing that it was like right there. I was probably less than two meters away from it and I passed it. I passed it and I was like, wait a second, and I walked back to it. And, it just stood. It was just there hanging out. And then, when I came back, there was two of them! And, they were still just hanging out. Like, you could have got super close to them and they didn’t care. So, I got to watch them for a while” (Photovoice Participant 14, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019) (Figure 4.27).

For each of these students there was a sense of amazement at the beauty of nature in an urban or semi-urban/semi-rural area. Both students expressed strong emotion through words like ‘love’.

The second student identified her walk home from school on that particular day as ‘an awakening of spring’. The winter blues she had been experiencing were lifted by the nice spring day and the presence of the little muskrats.



Figure 4.27. Early morning muskrat in the pond by the Niagara-on-the-Lake Niagara College campus.

Photo: Photovoice Participant 14, female, Niagara College Niagara-on-the-Lake campus, March 14, 2019.

The next two students were experiencing the same infrastructure, one from above and the other from below. The Burgoyne Bridge in St. Catharines has been a topic of much debate since its construction and it was still a topic of discussion with these two students. The first two quotes are from the same female student, and the third quote is from a male student walking on the trail which passes under the bridge.

“I remember when we were first talking about the project. I knew these were the first ones [pictures] I wanted to take. So, I was like, I literally, like at least once a week, walk along this bridge. Even if it’s, like freezing outside, ‘cause I love this bridge so much! I love that I can walk down it for like 10 minutes and just have peace and quiet” (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019) (Figure 4.28).

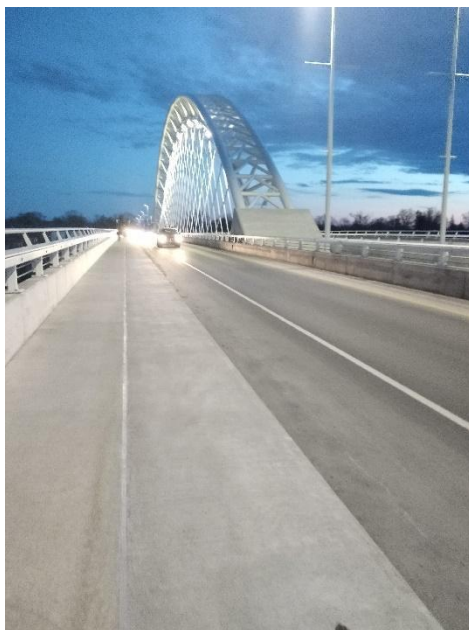


Figure 4.28. Burgoyne Bridge, St. Catharines

Photo: Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019.

She later goes on to say how her walking journey changes once she leaves the bridge.

“So, like, that peace and quiet that I have on the bridge, as soon as I get off the bridge and get closer to turning onto Pelham, I’m like, alright now I have to prepare, ‘cause there’s nothing around me. And so, it’s this weird juxtaposition between this place that I find so safe, like the bridge, versus, as soon I turn onto Pelham Road, I’m in attack mode. I’m like in fight or flight mode. I don’t like it. No, it’s just a very stressful situation, walking on a road that should be normal for, like 15 minutes” (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 4, 2019).

Through these quotations it can be quickly seen how the mode of transportation, walking, and the surrounding community can really impact the experience; from blissful to fearful and stressful. This next student contemplates mental health along his walk.

“I took that [the photograph] along the Twelve Mile creek, um, I think under, kind of like underneath the Burgoyne bridge area. And I was like, I kind of like that area anyways, but also it was kind of like with all the stuff that’s going on with that bridge specifically, it’s kind of like made me want to go down to that area. And then I saw this and I was like, whoa. I have to take it! Well it just kind of made me feel good, walking through. It’s nice. I try to go on mental health walks a lot. Because it was a pretty rough day at school. Because

I believe we were going through midterms. Yeah, so it was just 30 million things going on at once” (Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019) (Figure 4.29).



Figure 4.29. Walking along the 12 Mile Creek under the Burgoyne Bridge, St. Catharines
Photo: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.

While some of the students’ experiences were pleasant, some also created feeling of discomfort. These last two examples are about uneasy feelings that people experienced along their journey. There was a sense of vulnerability that people experienced when they were walking alone, or walking in the dark and the feeling of wanting protection. Here was one woman’s experience of being alone, isolated, and about feeling that there was safely in numbers.

“I don’t think it’s the lack of lighting, ‘cause there are actually a lot of lights on the street. I think that’s one of the first things that comes to mind. I think it’s just the fact that there are not a lot of, there’s not a lot of things going on down there. A big thing of mine is that I get very freaked out, where it’s like—If I’m going, for example, to work, where it’s very early in the morning. This happened last year, in Mississauga. I went to work really early in the morning. I was taking the bus at like 7:00am on a Saturday. Who’s awake at 7:00am on a Saturday? I was awake. So, I was walking to the bus stop and there was like, no cars on the road. Literally, no cars on the road. No people on the street. I was like, it’s bright and early 7:00 in the morning. The sun is out, like birds are chirping, but I still feel weird ‘cause there’s nobody around me. It’s like I feel lonely. It’s like ah, there’s nobody around here. If I just dropped right now, nobody would find me until people actually woke up. And so, I think that’s part of what it is. That’s not really a thing that you can fix. I don’t think it’s making more traffic on Pelham. But like, it’s just a weird feeling, like nobody is around me. But, if someone was, nobody would see that” (Photovoice Participant 16, female, Brock University Marilyn I. Walker campus, April 14, 2019).

Her last statement was particularly interesting. It identified the fear of an unknown person and that which was not visible – the feeling that “what if” someone did have harmful intentions and there was no one to bear witness or come to her aid. Another woman expressed a similar fear.

“So, I will leave things early to get home before it gets dark., because it’s just stressful for me. I don’t enjoy— and I think other people feel the same way, especially women. You know, not to stereotype or anything, it is definitely something that we deal with pretty frequently, and I think definitely something could be done about it. It’s just, yeah, it’s very stressful the more I think about it. It’s like yeah, I kind of try to put it out of my mind. Yeah, you know, I walk with my cell phone in my hand. I actually have an emergency trigger on my phone. So, if I hit my locked button 5 times, it sets off an alarm and calls 911 for me. So, like, things like that, I have safety precautions in place. But on the flip side, should I have to have them in place? What could be done to make this safer for me” (Photovoice Participant 7, female, Niagara College Welland, December 20, 2018).

This woman identified two areas of vulnerability. The first was walking in the dark. She left activities early to ensure she was walking when it was light outside. The second was her gender. She felt that as a woman she had to take extra measures to protect herself. This gendered sense of safety, especially walking at night, was also expressed by this male who met his girlfriend at the bus stop at night, so that she would not have to walk home alone.

“It is also my girlfriend, because we are Indigenous there is a heightened sense of vulnerability and susceptibility to being victims of violence, especially among Indigenous women. So, that is why I ensure wherever she is dropped at later hours after the [bus] facility is closed, especially, I will meet her to support her home” (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).

Here it was not only the dark and the fact that his girlfriend is female, it is also that she is Indigenous. Indigeneity has other vulnerability factors that heighten the sense of danger to his partner. Interestingly, these same fears are not noted during the daytime. In his interview he identified that he did not meet his girlfriend at the bus terminal to walk her home during the day. Even for his own safety he identified that he felt safer during the day.

Interviewer: “And do you feel safe during the day there?”

Participant: “Oh yeah for sure, especially just because you can see everything. ..., if these were more well lit and I seen someone that I didn’t feel comfortable crossing paths with, then I can just cross the street” (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).

The dark seemed to hold concern during the interviews. This woman used the dark to hide herself from others and yet, at other times, she wanted to be seen.

“And depending on the type of night, there are certain nights where I’ll take the right side because it’s dark and I don’t want anyone to see me. And then there are other times I would want to be seen by some of the houses and that, so I feel like at least someone sees me there while I’m walking. But then I’ll notice someone taking the dark side, that creates an element of like, ‘wow who’s there’ kind of thing, which I’m sure I’ve installed in other people in taking that alternate side” (Photovoice Participant 4, female, Brock University main campus, December 18, 2018).

For this man, it is the dark of nighttime that allows for unknown people to take advantage of another’s vulnerably.

“So, when we look at picture number 3, we see East Main Street at approximately 10:45 in evening. And this would have been an option for someone looking to leave the terminal because there are no buses running and they have just been dropped off. This is one of my first options to returning home from the terminal. Being that it is a main street, you wouldn’t be able to tell from this picture because it’s not as well lit as I think you’re accustom to seeing on a main street. It’s desolate. There is no real traffic. I mean, I can see the headlights of one car coming down, but at that hour at night, and with that, not many people around, you don’t know what to make of that headlight as just uh, a regular everyday driver or someone who is trying to seize an opportunity. There is this element of the unknown, in the night becomes threatening, especially in this area of town” (Photovoice Participant 3, male, Brock University main campus, December 18, 2018) (Figure 4.30).

He also went on to say,

“I have to admit that even internally, I feel that my safety could be jeopardy and it is just not a very comfortable feeling. It’s almost like, uh, you almost have to mentally prepare yourself before you, you get off the bus. That you could encounter something like that. I mean, you could do that with any situation, but knowing this area of town, the different things that have taken place, the different crimes that have taken place, the characters you have seen and stories of people encountering certain people who are in an altered state of mind. It’s a cause for concern” (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).



Figure 4.30. This one headlight coming down the road could be a “regular everyday driver or someone who is trying to seize an opportunity” on this poorly lit main street in downtown Welland.

Photo: Photovoice Participant 3, male, Brock University main campus, December 18, 2018.

Something this same gentleman noted in his interview as comforting were the actions of the bus drivers. He felt cared for because the drivers waited at the terminal to ensure people had cleared the terminal.

“One of the things that I notice, and I don’t know if this is a policy or not, but it seems to me as though, sometimes, the bus drivers stick around until the entire — I don’t know what you would close — the terminal is cleared of people ... At least that is some type of security measure in place” (Photovoice Participant 3, male, Brock University main campus, December 18, 2018).

This was especially reassuring to him because the bus terminal was already locked-up and closed when he arrived at the bus terminal at 10:45pm on his way home from class.

From all of the examples in this section, it can be seen that people’s modes of transportation and the experiences (Cresswell, 2010) that they were taking notice of along the way had both positive and negative impacts on their wellbeing. This was even when they were on the same route, but just at different times of day. These students’ experiences of being mobile subjects reflect the ever-changing dynamic of mobility. At times being mobile allowed the students to connect to their surroundings in a positive way, like the feeling of being connected to

nature and the presence of wildlife and other the warm glow of the sun helping the students to ‘recharge’ and release tired or mildly depressive feelings. At other times being mobile exposed gendered inequities, where women, and their partners, were afraid for their safety.

Keep learning.

The last recommendation for improving health in the Five Ways to Wellbeing is continuing to learn. As all of the participants in this study were post-secondary students, it was inherent that these people were practicing this component of wellbeing. However, one comment that an Indigenous female participant made especially emphasised the strong desire to overcome transportation obstacles in order to keep learning. Although she was one voice, she could be the voice of many students who have enormous struggles to overcome. When she was asked if there were parts along this route that she really loved or enjoyed, here was her response.

“I don’t know. Like, I don’t know, not really. I like, I just like walking. I really like walking around school. I like walking during the day. It’s nice, nice people, traffic, but it’s still, you know— my neighbors are nice, and you know and I like feeling – my joy is feeling I am going to better myself at the end of this. It’s basically what I enjoy out of the whole thing. I’m going to go and do something that’s going to help my family, help me. I’ll be the first one in my family to have a degree. You know what I mean? So, it pushes me like that. To me, this is something good that is going to come out of it. So, that is the best part that I am worried about, getting through the route. It’s nothing physical or materialistic that I could feel better about. I want to, like— I feel like I want to run my own projects and do stuff that you are doing. Running a whole thing— a bigger impact of change. I feel like the system makes it [such] that you have to get a degree, you have to get a higher degree. Diploma I’ve done. I loved it. Loved it. But, I’m like, I want to run my own project, like this. You’ve given me a taste, now I want the whole cookie jar. Let’s do it. I’m like, well I can make those cookies, but I have to get a degree. The systems made it that you have to get a degree. Experience is not like what it was before. The more experience you have the more you can do stuff. But now it’s the more education you have the more you can do stuff. So, now I’m like, okay now I have to get this degree”
(Photovoice Participant 4, female, Brock University main campus, December 18, 2018).

Although she was living in a lower-income neighbourhood, had passed used syringes on the ground on her route to school, and feared for her safety at night, she was willing to endure the challenges to better herself and her family.

Transportation was not a deterrent for attending school for 42% of the students; however, 37% said it was and 21% said sometimes. When looking at segments of the student population, domestic students (44%) were more likely to indicate that transportation did not discourage them from attending school compared to international students (35%). And between campuses, Welland campus students (51%) were least likely to report that transportation discouraged them from attending class compared to Niagara-on-the-Lake (43%). Marilyn I Walker (43%) and Brock main (37%) campus students. For those who were discouraged by transportation most of them reported having taken the bus in the past month to school (73%), followed by getting a ride from others as a distant second (44%). Interestingly, 34% of people who drove alone also found that transportation discouraged them from attending school. It would be interesting to be able to understand the reasoning behind this, as perceivably using a personal vehicle is often the fastest and easiest mode of transportation in Niagara. Thirty-nine percent of students indicated that their not attending school because of travel affected their grades, 35% said that it had no impact, and 26% were unsure. Fifty-eight percent of students always or sometimes chose their courses based on transportation availability. What is clear is that transportation can have an impact on elements of academic success.

Section Summary

This section aimed to understand the influence that transportation availability, modal options and mobility experiences have on Niagara post-secondary students' subjective wellbeing. Flamm and Kaufmann's (2006) conceptual tool of motility, the potential for students to be mobile, provides a mobility framework by which to interpret the students' data.

Access - Although Niagara region's community design is autocentric and over half of post-secondary students do not have their own automobile, many students were able to find modes of

transportation to get where they needed to go. Students noted drawing upon their resources (Flamm & Kaufmann, 2006), such as being able to take the bus because of their student bus pass and their social networks; however, it was not always as convenient or accessible, like having to buy groceries at a more expensive store because of carpool arrangements or not being able to call upon someone for a ride home because it was too late at night.

The constraints (Flamm & Kaufmann, 2006) for the students became issues around the long time it took to travel by bus, the need for increased frequency of buses, more buses to particular locations, buses being available in the evenings or on weekends, poor sidewalk maintenance and availability, and limited cycling infrastructure and supports, creating friction and impeding mobility (Cresswell, 2010). These constraints are outcomes of land use policies and government investment in infrastructure that favours automobility over public transportation and active transportation, with the latter modalities often being associated with lower income people (Manaugh et al., 2015).

Aptitude – In order for people to develop skills to use particular modes of transportation, people need a supportive environment (e.g., others to demonstrate how to use a mode, written or oral instructions) and practice. In Ontario, there are many supports to learn how to drive, such as driver handbooks, training and testing, to ensure drivers have the skills needed to operate a motorized vehicle. The built environment provides appropriate road markings, traffic control, lighting, signage and parking to support automobile usage. However, students noted that the supports for using transit were of poor quality, or altogether lacking, making it difficult for them to use. Trip planning was a challenge due to technical glitches associated with the transit app. There was virtually no wayfinding at transit stops guiding students where to go, and protective shelter and comfort stations were poorly maintained or non-existent.

Given the poor supports for transit users, which could help people to develop the skills needed to use this mode, it was no surprise that certain people struggled more than others to develop transit aptitude. This was exemplified by the student who lost the only mode of transportation he knew, his Jeep, and had to learn new ways to meet his mobility needs. His need to learn how to use the bus, and the lack of information he had to work with, gives a glimpse onto what it must also be like for international students learning how to use Niagara's multiple transit systems, especially since most of them do not have an automobile as an option. Overall, international students were more likely than domestic students to indicate that transportation impacted their daily commute to school, work and social activities. As greater participation in campus events is associated with a stronger sense of belonging, and transportation is a barrier to accessing these types of activities, the lack of transportation and mobility is borne more heavily by international students.

Cognitive appropriation – Students regularly assessed their modal options to suit their needs. Some students expressed strong convictions towards their preferred mode of transportation, such as the two women who could drive but found that public transit better aligned with their values. Others wanted to use a particular mode, but social pressures and community design did not support them. The woman who wanted to ride her bike to work but was strongly discouraged from riding home at night was a testament to this. Others still had no other choice, like the women who walked home at night through the darkened streets concerned for their personal safety. While all of these students considered their mobility options, some of them had limited choice.

Students in this study had embodied mobility (Cresswell, 2010) experiences differently, which, in turn, impacted their wellbeing. Some students experienced feelings of joy and

connection to nature and to other people. Others experienced feelings of stigmatization, exclusion from opportunities, and fear. While mobility is a fundamental right of citizenship (Cresswell, 2010), not all students necessarily had the same mobility equity. This next section will more deeply explore mobility inequities and exclusions.

Research Question: What social inequities and exclusions are exposed by differential mobilities?

Inequities and Exclusion Exposed by Differential Mobilities.

An Australian study on the “social and psychological links to transport disadvantage” conducted by Delbosc and Currie (2011, p. 170) identified a group of transport users who were categorized as vulnerable or impaired. This group of people did not struggle with having transportation means, but was more likely to feel unsafe or to be excluded from using transportation due to health limitations and, as a result, had more difficulty accessing activities. In the study, retired women, women who had health issues, or those who had ill or disabled people to care for at home, were more likely to fit within this group. Although this current study addresses post-secondary student mobility and its impact on wellbeing, like the Delbosc and Currie (2011) study, females were more likely to identify with access challenges associated with feeling unsafe. Similarly, photovoice participants with health concerns also experienced access challenges. Interestingly, one male participant did express concern over his own safety; however, he felt that being male made him less vulnerable than his girlfriend, who he often met at the bus station at night in order to escort her home. The next section will consider two types of transportation exclusion, person-type (through gender, disability and international student status) and spatial mobility (Kenyon, 2011).

Transportation and gender.

Like Delbosc and Currie’s (2011) findings, access to various modes of transportation was not identified as a challenge for women or men participating in the “Students on the Move” survey. There were slight differences in bicycle and motor vehicle ownership, such that males were 25% more likely to own a bicycle than female students, and females who had a full G licence or an unrestricted licence from outside the province were marginally more likely to own a car compared to males in the same category. However, in Ontario, the difference in automobile ownership could reflect the higher cost of car insurance for young adult males. As for all other transportation modes, men and women demonstrated similar usage patterns. Interestingly, however, about one-quarter of women and men expressed difficulty finding transportation when they needed it and a little more than a quarter struggled with getting around reliably (27% both genders). More than one-third of students (35% of males and 37% of females) found it difficult or very difficult to travel *when* they want to, and many more said that transportation constraints prevented them from getting somewhere (Table 4.20). These points speak more to transportation challenges within Niagara for post-secondary students than to gender.

Table 4.20
Percentage of students who found that transportation prevented them from getting somewhere

Gender	Frequency of Transportation as a Constraint to Travel		
	Never	Sometimes	Frequently
Female	39%	40%	21%
Male	38%	40%	22%

Given that both genders had similar availability of modal options and struggled in similar ways as just mentioned, the survey data were analysed to see if there were differences in being able to get to certain places named within the survey. Again, there were few notable gender-based differences. Men and women: were likely to commute to school the same number of days

per week; were alike when considering if transportation discouraged them from attending class; were similar in having the transportation needed to access employment; had the same number of co-op days and distances to travel to co-op; having transportation to get to where they wanted to go; and transportation impacted them similarly for being able to participate in on- and off-campus activities and social leisure activities. Men, however, seemed to experience more challenges accessing physical leisure activities and food due to transportation constraints compared to females.¹⁷ Interestingly, when male and female students were analyzed separately based on their status as domestic or international students, domestic male and female students were similar for being able to access physical leisure activities. However, male international students struggled more than international females in being able to participate in physical leisure activities due to transportation constraints.

There were also more subtle differences expressed around the nature of the students' experiences. Men were more likely to have stronger feelings about their satisfaction or dissatisfaction with their typical daily commute than women, while women were more likely to indicate that they felt neutral compared to men (Table 4.21). Males also identified that finding time to travel was easier and women found that it was more difficult (Table 4.22). In fact, in all of the following areas women had found their travel experiences more difficult than men: relying on others for transportation; getting to where they wanted to go; the bus operating frequency; ability to take the bus on the weekend; making bus connections; and taking evening buses.

¹⁷ Males (27%) who indicated that transportation impacted their ability to participate in physical leisure activities were more likely than females (22%) to report 'often' or 'always'. Of people who indicated that transportation impacted their ability to access food, males (31%) reported 'always' and 'often' more than females (24%).

Table 4.21
Ratings of satisfaction with typical daily commute by gender

Degree of satisfaction	Women	Men
Very unsatisfied - satisfied	18%	23%
Neutral	39%	29%
Satisfied – very satisfied	43%	49%

Table 4.22
Ease of finding time to travel for daily activities

Degree of ease	Women	Men
Difficult- very difficult	26%	22%
Neutral	28%	24%
Easy – very easy	42%	51%

Women (23%) were far more likely than men (8%) to identify having safety from theft and attack related to their daily travels as difficult or very difficult. However, this fear for safety appeared to be related to the areas of daily travel just mentioned for both genders, such that those individuals who had stronger concerns for their safety were more likely to experience greater levels of difficulty. For example, 74% of women who identified that feeling safe from theft or attack was very difficult also found that getting a bus in the evening was difficult or very difficult. (See Appendix I for tables relating aspects of transportation to feelings of safety.) This gentleman noted his personal safety concerns, and concerns for his partner, about their regular late evening arrivals at the Welland bus terminal after school. The following was from his interview.

“That’s one of my main concerns. You know, more or less I experience that concern for my girlfriend. But you know, I have to admit that even internally, I feel that my safety could be in jeopardy and it is just not a very comfortable feeling. It’s almost like you almost have to mentally prepare yourself before you get off the bus that you could encounter something like that. I mean, you could do that with any situation, but knowing this area of town, the different things that have taken place, the different crimes that have taken place, the characters you have seen and stories of people encountering certain people

who are in an altered state of mind, it's a cause for concern.” (Photovoice Participant 3, male, Brock University, December 18, 2018).

He had also noted in his interview that there were no security personnel or emergency call boxes available to summon help should an incident arise. He also went on to say that “it's almost like a grim outlook, because I don't feel like it is ever getting better, either. And it's almost like a countdown to when is something going to happen now. I am thankful that nothing has happened, and I hope that that continues” (Photovoice Participant 3, male, Brock University, December 18, 2018). It is clear from his statement that this has been a longstanding concern for him and that not much has changed over time.

Another way in which women and men differed was the *sense of ease in navigation*. In the following three areas males found it easier than females: being able to get information about transportation options; being able to understand where to go; and being able to get information about bus service. Again, when analysed against sense of safety, individuals who had greater concerns about being safe from theft or attack also found it more challenging to navigate their way from place to place. It may be that the available navigation tools do not clearly provide features or information that appeal to people's safety concerns and, as more women than men identified safety as a concern, this had a greater impact on women's sense of ease in navigation compared to males (see Appendix I). Although it should be noted that males who felt less safe were closely divided between “very easy to easy” and “difficult to very difficult”, when it came to finding information about transportation options and information on bus services, women tended to be in the “difficult to very difficult” category, inferring that sense of safety was a more common concern within this group of post-secondary students.

Transportation and (hidden) disability.

In the online survey there was one question that asked students about the level of difficulty they experienced in finding transportation to accommodate their mental health issue and another about the level of difficulty they experienced in finding transportation to accommodate their disability. For mental health, 62% of women and 69% of men said the question was not applicable. Only a small percentage of women (5%) and men (4%) found it difficult or very difficult. Finding transportation to accommodate a disability, 75% of female and 72% of men said it was not applicable, with a small portion identifying it was difficult or very difficult (women 2%, men 3%). More students identified that getting on the off the bus was applicable to them, but few identified it as a challenge (3% both genders). Even at the lowest percentage of students who found disability impacted their travel (2%), with 30,000 post-secondary students in Niagara that could equate to 900 students.

Some of the students shared in their photovoice photos, narratives, and interviews what I have called *hidden* disabilities, physical or mental challenges experienced by the individual that may not be immediately obvious to a passer-by. As a first example, this photovoice participant expressed how having irritable bowel syndrome (IBS) made her daily travels very challenging. In this situation she was going to purchase groceries:

As I mentioned there, I have digestive issues. I have IBS. So, depending on what I have eaten that day, I may not be able to leave the house for a few hours kind of thing ... cause there have been times where I was like, I'll just catch the bus, and right before I go, I'll go pee really quick. We're good. I go and then we have issues. And then, by the time I get out, I'm like, 'okay I've missed the bus. Now I have to wait for the next half hour to roll around.' So, it just becomes a cycle of that" (Photovoice Participant 14, female, Niagara College, Niagara-on-the-Lake, March 14, 2019).

Aside from making public transit challenging, she also noted that being in the car for too long can make her nervous because she is worried about needing the bathroom.

“Anytime I am in a vehicle, even for more than 40 minutes, I get a little anxious just because I’m like, what if my stomach wants to cooperate today, or I ate a lot of this stuff last night and I know it’s going to react eventually, but I don’t know when. So sometimes I can plan for it, and other times I can’t. So that deters me.” (Photovoice Participant 14, female, Niagara College, Niagara-on-the-Lake, March 14, 2019).

In addition to the IBS she also had a nervous bladder caused by stress. She said, “Everywhere I go, something that I have to do is map out where the bathroom is” (Photovoice Participant 14, female, Niagara College, Niagara-on-the-Lake, March 14, 2019). As noted by other students in the photovoice interviews, there were very few public washrooms available, especially along the bus routes, making travel for someone with IBS or bladder issues both challenging and exclusionary.

Another student had a slight visual impairment that impacted her vision in the dark mornings, especially when it was raining. She noted:

“Yeah, many rainy days. Like, the rain in the morning, honestly, one of the scariest things ever ‘cause of that lack of visibility and then everything’s shiny. And then I have a stigmatism, so everything looks extra shiny to me. So, its just like freaking out in my head” (Photovoice Participant 17, female, Niagara College, Welland, April 10, 2019).

This next student had been in a few motor vehicle accidents that have left him with permanent spinal damage. As he put it:

“I have an open spine, I have a disk that is no longer an O, it’s a C, and every time I get banged or bumped, that C opens a bit. And every nerve in my body screams and you can actually see the divot in my spine, you can actually poke your finger in and touch my spinal cord. Which is, uncool, I can’t describe it other than saying it’s very uncomfortable. So, I try to avoid public transit” (Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019).

When it comes to the ease of access to the Marilyn I. Walker building, there are no public transit drop-off zones at the building. All students who use the bus are dropped off on St. Paul Street or at the bus terminal on Carlisle Street, requiring students to walk the rest of the way to the school. As the school is located in a former creek bed, the bus stops are at a higher elevation

than the entrance to the school. The following pictures depict the topography and infrastructure around the Marilyn I. Walker (Figures 4.31-4.33). This man not only identified his own long-term mobility challenges as a result of his spine injuries as he navigated the slopes, but also the short-term challenges experienced by other students. Here is what he wrote.

“Please view the distance from the terminal to St. Paul St. From here, if you are able to navigate the stairs (which I am not during the winter months) this is the choice: walk past the First Ontario Performing Arts Centre (FOPAC) and take this steep hill and then lengthy staircase ... It must be pointed out that these stairs are steep with a rather high step-rise. On days with slippery precipitation, they can easily become difficult to navigate safely. If one needs a cane, they are impossible to use because they are open grid steel stairs that are NOT conducive to crutches nor canes. One, therefore, MUST take the other stairs which offer only marginally better safety with a cane or crutches. This leaves only one other alternative: walk all around the buildings on often-unplowed-or-cared-for sidewalks that are, in themselves, dangerously steep for anyone who is required to walk with crutches or cane. PLEASE NOTE, last year, two students were required to navigate these hurdles using crutches after suffering knee or foot injuries. When I spoke to an official at the bus station, I was told to just go through the FOPAC. Well, that would require that the FOPAC be open, which it is not, at the times of day that these students required better accessway.” (Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019).

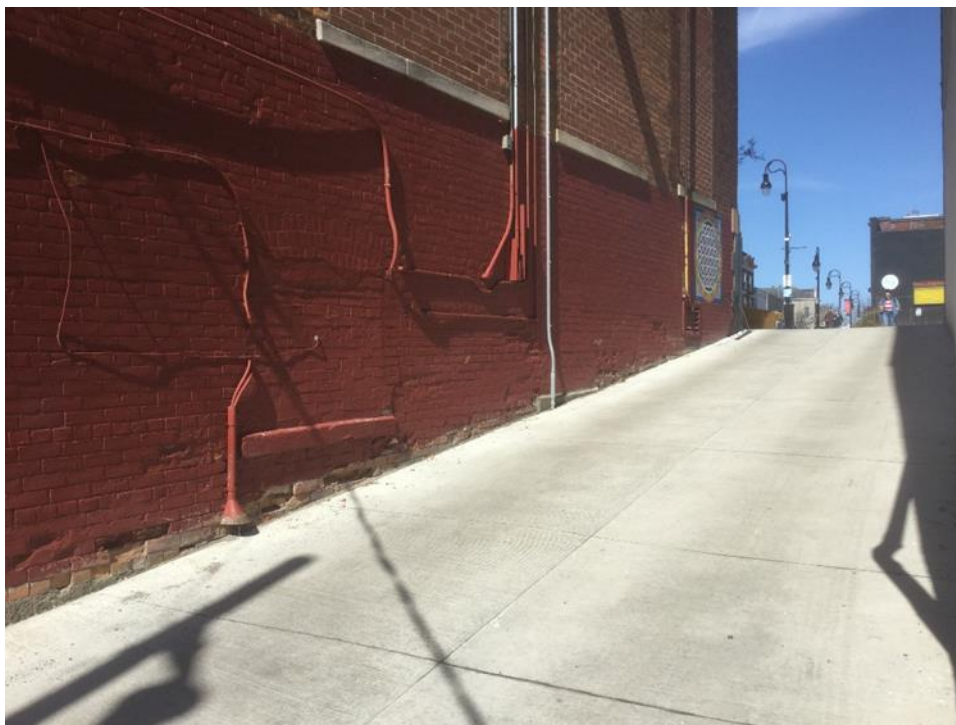


Figure 4.31. The steeply sloped alleyway toward to the metal staircase access to Marilyn I. Walker School of Fine and Performing Arts.

Photo: Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019.



Figure 4.32. The steep metal staircase access to Marilyn I. Walker School of Fine and Performing Arts.

Photo: Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019



Figure 4.33. The alternative route to the Marilyn I. Walker campus which is a longer walk around the building down the sloped sidewalk at Carlisle Street in St. Catharines.

Photo: Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019

There was one last point that this gentleman made about the ease of access to the building. There were no buses that dropped students off at the school entrance. He had been able to drive himself to school and park in the accessible parking near the front of the school but was in the process of finding other means of travel due to a heart condition that he was experiencing. Although public transit was not the best option for him given his spine condition, it also posed a challenge for him to walk the distance from the downtown bus terminal to the school. As his health deteriorated, and with limited financial resources, his access to daily activities was dwindling.

Inequities between domestic and international students.

In almost every category of quantitative analysis there were some notable differences between domestic and international students. Most of these reflected international students

having to struggle more with transportation constraints than domestic students. To begin, international students were 1.8 times more likely to identify that *finding transportation* was difficult than domestic students (Table 4.19). The former group was also much more reliant on public transit and far less likely to have an automobile than domestic students. International students were more likely to report that transportation constraints impacted their ability to participate in physical and social leisure activities and to take part in on- and off-campus events. They were also more likely to report that transportation concerns sometimes discouraged them from attending school.

To some extent that last statement is not surprising. Many international students were employed (54% international, 53% domestic) and worked a greater number of hours per week while attending school than domestic students; they also reported more often that transportation constraints impacted their access to employment. Of those with jobs, international students were more likely to live and work in the same municipality, which for a large proportion was Niagara Falls. This then put them at a transportation disadvantage, as they then had to travel to Welland, Niagara-on-the-Lake, or St. Catharines to go to school. Interestingly, international students attending Niagara College were as much as two times more likely to have employment than those attending Brock University. Overall, international students were also much less satisfied with their daily commute.

Geographic and systemic mobility inequities between campuses.

The urban or semi-rural location of certain campuses has created differences in modal availability and/or usage by students. In the top five most used modes of transportation by all students (public transit bus; car alone, with passengers and as a passenger; and walking), greater percentages of university students utilize those modes than college students (Table 4.23).

Because many Brock students live in St. Catharines and Thorold, and because both Brock campuses are within St. Catharines, the largest urban centre in Niagara, students have easier access to the top five modes. For example, with the transit system, buses are provided for St. Catharines and Thorold by one transit authority. Also, since most students live in close proximity to the university, carpooling arrangements, or catching an occasional ride with another student who has a car, is easier to facilitate. Nearly a third of students were able to walk to the Marilyn I. Walker campus due to its downtown location and pedestrian supportive infrastructure.

Comparatively, fewer college students reported living in the same municipality as their campus, likely resulting in fewer modal options. This can be seen by the lower percentages of modal use across the top five options by college students in comparison to university students. It is likely that college students are consistently relying on one or two modes of transportation to get to school, whereas university students are utilizing more options. The significantly lower numbers of college students reporting public transit usage is likely a function of poor bus connectivity and multiple transit systems required to get from the municipality where they live to the municipality the campus is located. Some of the college students who relied on public transit, reported long commute times in the range of 60 to 90 minutes. In addition, students reported that there were not enough buses from Niagara Falls to the Niagara-on-the-Lake and Welland campuses to accommodate the demand, creating significant transportation challenges. This often led to serious overcrowding on the buses or, in some cases, students waiting at stops being passed by buses that did not have any room to take on more passengers.

Table 4.23
Mode of Transportation to School, by Campus

Mode of transportation	Campus Attended			
	Brock University Main	Brock University Marilyn I. Walker	Niagara College NOTL	Niagara College Welland
Bus pass	67%	74%	48%	49%
Own car, alone	45%	48%	41%	39%
Car as passenger	46%	48%	24%	26%
Car with passenger	26%	29%	13%	15%
Walk	28%	32%	21%	29%
Uber	15%	0%	3%	6%
Taxi	3%	6%	10%	5%
GO bus	4%	3%	13%	5%
Private bus (i.e. Megabus)	8%	0%	1%	2%
Bike	3%	0%	5%	5%

Section Summary

This section aimed to acknowledge the social inequities and exclusions exposed by differential mobilities. Kenyon (2011) noted three types of transportation related exclusion. Here, person-type and spatial mobility exclusion were applied.

In person-type transportation exclusion (Kenyon, 2011), this study identified that women experienced mobility differently than men. Although men and women had many modal option similarities and travelled as often, women found the experience of travel less enjoyable. Women were more likely to fear for their personal safety, which then coloured the way that they experienced transportation, especially in the evening, on weekends, and through navigation. As one student noted, at nighttime there are few people around to call out for help to and, at the same time, someone with bad intentions might be watching.

People with hidden disabilities also experienced person-type exclusion (Kenyon, 2011). The rigidity of the transit system (in both stop locations and bus frequency) and the lack of public washroom facilities made travel by bus nearly impossible for some students resulting in

missed opportunities. To compensate for their disabilities, they looked to alternative transportation arrangements such as carpooling. One student was still uncertain how he was going to meet his transportation needs.

Lastly, international students struggled more than domestic students with person-type transportation exclusion (Kenyon, 2011). Working students were more likely to live close to where they work. For international students this employment was often located in Niagara Falls, where there are no campus locations, especially for Niagara College students. This resulted in challenging public transit commutes to campus, which resulted in poor transportation satisfaction. Additionally, working international students were more likely to work more part-time hours than working domestic students. Earlier in this chapter it was noted that international students struggled more than domestic students to participate in many of life's necessities as a result of organizational access (Cass et al., 2005) barriers, whereby their current living location is not in proximity to their school or social opportunities.

In spatial mobility exclusion (Kenyon, 2011), college students were at a greater transportation disadvantage than university students. For both Niagara College campuses, poor transit access often resulted in long and convoluted bus travel. In comparison to university students, college students by percentage used fewer modes to get to school, likely due to the location of the campuses. This spatial mobility exclusion was further exaggerated by the number of international students attending the college and living in Niagara Falls, where neither college campus is located.

Chapter Five: Discussion

The findings of this study revealed different levels of mobility among Niagara's post-secondary students. Similar to three causes of mobility-related exclusion noted by Kenyon (2011), the mobility variances appeared to be related to: Niagara's geography (spatial mobility exclusion); infrastructure design and features (transportation system mobility exclusion); and gender, (dis)ability, and one's status as a domestic or international student (person-type mobility exclusion). This next section will consider these differences through the application of mobility theory.

Mobility-related exclusion – spatial factors and transport systems.

The distances between urban centres across Niagara created through colonialism and industrial dominance, as well as the historic favouring of the automobile and the automobile's economic importance in Niagara, have created a foundation for inequitable mobility. Photovoice participants noted the sprawling development of even the most populous Niagara cities, such as St. Catharines. These spatial factors (Kenyon, 2011) make walking to destinations less possible, forcing students to rely on other modes of transportation to get from one place to another.

Aside from travel within a single municipality, many students were traveling between towns – for example, having to get from where they live to the municipality in which their campus was located (Table 4.3). Municipalities that had a more established public transit system (Table 4.2) and had a post-secondary institution within that same municipality were more likely to have students living there (Table 4.3). Municipalities that were further from the campus and had limited or no public transit had fewer students living there. Regrettably, students were only asked where they lived while attending school and not where they lived prior to attending school. It would have been interesting to see if students living in more distant Niagara municipalities,

prior to going to post-secondary school, moved closer to the campus, which would, in part, explain why there were fewer students living in some Niagara municipalities. Anecdotally, the project steering committee identified that this was happening with some students who could afford the additional living expenses of moving away from home, on top of their school expenses. It would be unfortunate if people who lived in these more distant Niagara municipalities were not attending post-secondary school because of transportation constraints and the geographical distance, which would be a gross example of spatial and mobility-related exclusion. This inability to acquire an advanced education could restrict future employment opportunities and, as already shown in the literature (Ross & Wu, 1995; Eide & Showalter, 2011), could lead to poorer health outcomes. Undoubtedly, this is something worth studying in future research.

Students also noted the long travel times between municipalities, especially if they were using public transit. Students travelling about 25 kilometres to get from St. Catharines to the Welland campus, for example, were experiencing bus commutes of up to 90 minutes each way. Students commuting to school by bus from Port Colborne were experiencing 60-minute commutes. Similar experiences were reported by students commuting from Niagara Falls, with the additional discomfort of often being forced to endure consistently overcrowded bus conditions. Despite these long commutes, many students did not live in the same municipality as their campus, especially Niagara College students. Nearly three-quarters of Brock students lived in St. Catharines or Thorold, which aligns well with the location of the two Brock campuses. However, only about one-third of Welland campus students and one-fifth of Niagara-on-the-Lake campus students lived in the same municipality as the campus, therefore requiring

intermunicipal commutes by many students. Differences were seen between women and men as well as domestic and international students, both of which will be discussed later in this chapter.

There was also a correlation between the features students looked for when choosing a dwelling location while in school and their modes of transportation. For example, students who chose a home location based on proximity to the bus were the least likely to have an automobile (19%), whereas students who chose to live with family or parents were more likely to have a car (74%) (Figure 4.1). The percentage of students who lived with their family and had a car increased in the more distant municipalities from the campuses, such as Fort Erie and Grimsby. Again, if students from these locations did not have access to a car, their ability to attend post-secondary school in Niagara would be greatly hampered. Half of students lived with roommates and, of those, 86% reported having a bus pass, with car ownership as a distant second (27%). Those living with roommates also reported living in a campus municipality. While it may appear convenient for students to live in the same municipality as their campus, other life circumstances sometimes dictate otherwise (e.g., employment).

When asked about available modes of transportation, results showed that most students relied on public transit (75%), which was likely reflective of both schools having a U-pass program, with less than half of students having their own vehicle (45%). About one-third of students could borrow a car when needed and another one-fifth said that sometimes they could borrow a car. Only about a fifth of students had access to a bicycle and 11% could get a car ride from others (Table 4.1). Overall, this requires more than one-half of post-secondary students to rely on transportation means other than an automobile, which in a community that is spread out

and auto-centric, excludes about 16,500¹⁸ people – more than the population of either Wainfleet¹⁹ or West Lincoln²⁰, two of Niagara’s municipalities. Even if all of the students who had a full G driver’s licence (a requirement to drive in Ontario) had a car, there would still be a third of students who would need transport alternatives to the automobile. For those with a G licence who do not have a car, requiring an automobile would put many of them at a financial disadvantage, given the expense of car ownership. This added expense may even preclude them from attending school. Moreover, the increased number of automobiles would put additional demands on public and post-secondary institution infrastructure to accommodate automobility, most significantly in the form of parking lots.

Something to be noted about the U-pass program is that it is only valid on certain public transit systems and routes. Furthermore, it is a student union-subsidized program that also requires mandatory contributions from all full-time students. Due to the cost of running the U-pass program, there have been rumblings about the student unions cutting the program, thus making the program vulnerable and putting student mobility at risk. It should also be noted that not all municipalities have transit services, resulting in students being auto-reliant based on geography (Table 4.2).

¹⁸ 30,000 students x 55% = 16,500 students without an automobile.

¹⁹ <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=3526014&Geo2=PR&Code2=35&SearchText=Wainfleet&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=3526014&TABID=1&type=0> Taken February 2, 2020

²⁰ <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Code1=3526021&Geo2=PR&Code2=35&SearchText=West%20Lincoln&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=3526021&TABID=1&type=0> Taken February 2, 2020

There were some notable findings in the modes that students reported using to get to school over a one-month period. While transit (60%), automobile as a single occupant (43%) and automobile as a passenger (38%) were the most-reported modes, over one-quarter of students walked to campus. This is important as walking has many social and health advantages (Lancée et al., 2017). However, proper infrastructure is needed to make walking a safe and viable option. This was very apparent in the comments made by photovoice participants. Photovoice Participant 17 identified missing sidewalks along Quaker Road near the Welland Niagara College campus (Figure 4.8). Although she had identified this as a barrier for elementary students, college student also walk along this corridor. Photovoice Participant 13 pointed out the missing sidewalks on Glendale Avenue, a high-speed, high-traffic regional road that runs between St. Catharines and the Niagara-on-the-Lake campus (Figure 4.9), as well as missing sidewalks on Taylor Road in front of the school entrance (Figure 4.13). There are no transit services on these road segments. As this participant stated, students were often walking along Glendale Avenue at night carrying groceries. Another two photovoice participants noted poor sidewalk maintenance in the winter and the unsafe walking conditions created by slippery, snow-covered sidewalks (Figure 4.10 for one example). These are examples of where road rights-of-way and snow removal practices favour automobile traffic at the expense of pedestrians, the most vulnerable road users.

About one-fifth of students reported taking a taxi, Uber or Lyft to get to school. It would be interesting to understand these trips as this comes at a greater expense than some other modes of transportation. This could be a way for students who are time-poor to manage their daily demands or their inability to have the right mode of transportation available at the right time.

Future research into this mode could prove valuable as this may be showing support for other shared-economy modes such as rideshare.

There were differences between the campuses in terms of the most used mode of transportation to get to school reported by students over a one-month period. Greater percentages of Brock students reported using the bus, driving a car alone or with passengers, travelling by car as a passenger, or walking than college students. The significantly lower numbers of college students reporting public transit usage is likely a result of poor bus connectivity and the transferring between buses and transit systems required to get from the municipality where they live to the municipality the campus is located, all of which create lengthy travel journeys. This was also seen with students' means of transportation having impacted their ability to participate in co-op or internship placements. Three quarters of students who could not take a co-op or internship, or for whom transportation made participation in a co-op placement difficult, relied on public transit. Eighty-six percent of these students did not have a car. These same transportation challenges were noted by numerous photovoice participants. Again, this exemplifies the spatial and transportation system inequities (Kenyon, 2011) experienced by the students.

Spatial and transportations system impact on employment.

Not only do students have to get to school and school-related co-op placements or internships, they also must get to work. More than half of students had paid employment (53%), with slightly more than half working between 11-20 hours per week, a third working 10 hours or less and the remainder working over 20 hours per week. Of the post-secondary students who worked, many travelled across municipal boundaries to go from home to school and work, with only about a quarter of students actually living, working *and* going to school in the same

municipality. Employment was concentrated in St. Catharines, Niagara Falls, Welland and Niagara-on-the-Lake.

Having employment was somewhat related to having a car, whereby 54% of working students had a car and 65% of non-employed students did not own a car. Additionally, the number of hours worked per week was related to automobile ownership (Table 4.15). The more hours a student worked per week, the less likely they were to rely on the bus. Conversely, the more hours a student worked per week the more likely they were to have an automobile²¹. What is not known about automobile ownership and employment is whether students were working to afford their vehicle and/or if their geographic location was forcing them to need a vehicle. What is known is that, of those students who indicated that transportation *did* impact their ability to get to work, 46% of Niagara-on-the-Lake campus students said it happened often or always, as did 37% attending the Welland campus and 33% from the Brock campus. It makes sense that Niagara-on-the-Lake students experienced more transportation barriers to employment as that campus specialises in viticulture and tourism, which for Niagara, is tied to agriculture and agritourism which are in rural areas. Therefore, it could be imagined that many students from that campus would be looking for employment within their chosen field, making transportation a barrier if they did not have an automobile.

There were also some seasonal differences in employment. Students were more likely to work fewer hours during the winter term compared to the fall term and students were more likely

²¹ Students who worked 10 hours a week or less were more likely to have a car (53%) than students who worked 11-20 hours (48%) however this will later be examined with the differences in employment between domestic and international students which are affecting the numbers. Student working more that 20 hours per week we more likely to have an automobile.

to work in the municipality that they lived in during the winter compared to the fall. While it cannot be definitively answered through this survey, it is likely that these differences reflect balancing school and work commitments, the ease or challenges of traveling during different seasons, and the time needed to travel to work across municipalities. A little more than a third of students worked within three kilometers from where they lived, which corresponds to 53-61%²² of students indicating that they worked in the same municipality as the one in which they lived. A little more than a quarter of students worked more than 10 kilometers away from their home.

Spatial and transportation system impact on social activities.

Along with school and employment travel needs, students were also asked about the influence of transportation on their ability to participate in on-and off-campus events and activities, social leisure activities, and physical leisure activities. About one-half of students said that they did participate in on- and off-campus happenings, and about one-quarter of those indicated that transportation often or always impacted their ability to participate. Just shy of a fifth of students indicated that transportation often or always prevented them from participating in social (19%) or physical leisure activities (16%).

When comparing participation in these social activities across campuses, Niagara-on-the-Lake students were more likely to indicate that transportation constraints prevented them from participating (Table 5.1). Despite their inability to participate in activities due to transportation constraints, Niagara-on-the-Lake campus students ranked in the middle among those from other campuses for poor sense of belonging. Brock University students had the poorest sense of

²² The first number in the range, is if we consider students who lived and worked in the same municipality. The second number in the range is if we included students who lived in Thorold but who worked in St. Catharines as Brock University sits right on the edge of St. Catharines and Thorold.

belonging. This may be reflective of the number of students who live in Thorold attending Brock, as they struggle the most with transportation exclusion (Table 5.2). In every category, except for transportation having an impact in participation in on-campus events, Thorold had the poorest results. As identified in the employment section, transportation exclusion was also a challenge for working Thorold students, suggesting that there is an opportunity to conduct further research into understanding why.

Table 5.1
Student sense of belonging and transportation having an impact in activity/events participation by campus

Campus*	Sense of belonging **	Transportation impact on physical leisure ***	Transportation impact on social leisure ***	Transportation impact on participation in off-campus events ***	Transportation impact on participation in on-campus events ***
Brock Main	20%	22%	24%	37%	32%
Marilyn I Walker	20%	NR	25%	43	30%
Niagara-on-the-Lake	15%	32%	32%	45%	44%
Welland	13%	25%	23%	37%	37%
* The Marilyn I. Walker campus has a very small student population and thus was not reported					
** Sense of belonging measurements were the results for weak-very weak					
*** All measures of transportation results were for often and always impacting participation. For on- and off-campus activities if students never participated and transportation was never an issue, their responses were removed before analysis was conducted.					

Table 5.2
Student sense of belonging and transportation having an impact in activity/events participation by municipality of dwelling during the school year

Municipality *	Sense of belonging **	Transportation impact on physical leisure ***	Transportation impact on social leisure ***	Transportation impact on participation in off-campus events ***	Transportation impact on participation in on-campus events ***
Niagara Falls	11%	17%	17%	27%	31%
Niagara-on-the-Lake	15%	17%	17%	29%	24%
St. Catharines	19%	14%	17%	26%	20%
Thorold	20%	24%	24%	41%	29%
Welland	18%	14%	17%	30%	19%
* only municipalities that were reportable across all categories were shared					
** Sense of belonging measurements were the results for weak-very weak					
*** All measures of transportation results were for often and always impacting participation					

As noted earlier, the Five Ways to Wellbeing campaign identified that being connected to the community and to other people was associated with people being healthier and happier. Prior analysis in Chapter 4 showed that students who participated in campus and community events often or always had a stronger sense of belonging than students who rarely or never participated in these types of occasions (see Figure 4.18). Students who identified that transportation always impacted their ability to participate in on-campus events were more likely to also feel a weaker sense of belonging; however, all other categories of transportation's impact on students' ability to participate in on-campus events had similar results, inferring that transportation deprivation at the most extreme end has the strongest negative influences on sense of belonging. Therefore, from a health and inclusion perspective, more attention needs to be given to improving transportation to encourage student participation in events, especially those events on campus. The Niagara-on-the-Lake campus and the municipality of Thorold would be good places to concentrate efforts. It should be noted that the municipal findings were for only five out of

twelve municipalities as only they had enough data to report on in all categories. This was reflective of where most post-secondary students are living.

As can be seen by many examples, the favouring of automobility in Niagara puts most post-secondary students at a transportation disadvantage by excluding those who do not have an automobile or who would prefer to travel by other modes. In addition, automobile dominance prevents or discourages some from working, participating in co-op and social and physical leisure activities impacting students sense of belonging in the community; as it could be imagined, this relegates certain “car-less” people to the status of second-class citizens. As so eloquently stated by photovoice participant 6, “I think it is a very strange mindset...in the last couple of places that I have lived [in Canada]. If you take the bus you are, you are poor, or you’re low income, or you are – you know...” (December 19, 2018).

(Im)mobile post-secondary women in Niagara.

Research has shown that women’s spatial range of mobility is smaller than that of men, and that women work closer to home, use an automobile less often, drive fewer kilometers, participate in more non-employment travel, do more trip-chaining, and run more errands for the household (Turner & Grieco, 2000; Hanson, 2010; Loukaitou-Sideris, 2016). Hanson (2010) cautions that these quantitative results do not consider the reasons for these gender differences nor the social/cultural or geographical contexts in which they occur, all of which could be further explored through qualitative research.

This study’s findings showed some similarities to what is found in prior quantitative research. Although not a direct measurement of distance, per se, when considering whether women lived in the same municipality as their campus, slightly more women attending the Brock

(50% women, 49% men), Welland (35% women, 32% men), and Niagara-on-the-Lake (18% women, 15% men) campuses lived in the same municipality as their campus compared to men.

Employed post-secondary women were more likely (24-34%) than men (19-28%) to report that they lived, worked and went to school in the same municipality. Most students were traveling less than three kilometres to go to work, and women (30%) and men (29%) were comparable. Similar findings were had for students commuting to work more than 10 (men 28% and women 27%). Men were also more likely to report working 11-20 hours/week whereas women were more likely than men to report working 10 hours or less per week. Although not vastly different across all areas, it would appear from the school and work data, that women were working and going to school slightly closer to home and working fewer hours per week than men, likely indicative of a slightly smaller spatial range.

Though there was no direct measure in this study of how often, or how much, women used a car in comparison to men, women were more likely to report having their own vehicle (46% and 41%, respectively). This difference in vehicle ownership increased with employed students, where 57% of working females owned a car compared to 48% of working males. Women and men equally reported having a bus pass (71%). So, from this research it is not possible to ascertain if women used automobiles less than men or if motorized transportation availability promoted or restricted women's mobility. However, given that women were more likely to live, work and go to school in the same municipality, the distances that they would have traveled by car would have likely been shorter than their male counterparts. However, despite the shorter trip distances, women did note that they struggled more than men to find the time they needed to travel when they wanted to. Women (26%) were more likely than men (22%) to identify this as difficult or very difficult, and men (51%) were more likely than women (42%) to identify this as

easy or very easy. As noted earlier in Chapter Four, women are more likely to run errands and trip chain. Although this was not asked of the students, it may be a contributing factor in women's lack of time.

Loukaitou-Sideris (2016) attributes women's restricted mobility to four barriers: "cultural, economic, physical and psychological" (p.550). Culturally, women have been the main carers of children and elderly parents along with the responsibilities associated with the household (Loukaitou-Sideris, 2016; Scheiner, 2014). Research from the United Kingdom and the United States has reported that even women who work outside of the home still contribute significantly more time to these responsibilities (Loukaitou-Sideris, 2016). These demands have resulted in women's time poverty (Turner & Grieco, 2000). Although these examples are not necessarily reflective of post-secondary students, specifically, research on young caregivers shows that females are more often the carers (Smyth et al., 2011). Many post-secondary students have come directly from secondary school and could be young carers, but there are also many post-secondary students who are returning adults with families of their own. These additional responsibilities may be contributing to this study's results.

Economic constraints include access to an automobile and other means that allow for ease of mobility and access to resources. Although there is an increase in the number of women who drive and/or who own cars in the Global North, women living in poverty or those who are immigrants often rely more heavily on public transit or active transportation than men (Loukaitou-Sideris, 2016). In this study, there was no indication that women experienced more constraints than men in accessing an automobile, nor was there any major difference in being able to utilize other modes of transportation. It would appear that modal options are on par between the genders.

Physical barriers consider how the community is designed, which includes topography, connectivity, transit, sidewalks and walkability. All these amenities, or lack thereof, contribute to, or inhibit, women's ease of movement within their other daily responsibilities (Loukaitou-Sideris, 2016). The online survey did not specifically ask students about infrastructure barriers in their commute; however, there were many comments in the photovoice interviews by people of both genders about improvements needed in active transportation infrastructure, the barrier created by the escarpment, the sprawling community design, worrisome roadways and intersections and challenges with the current transit systems. Therefore, this did not appear to be a significant barrier to women alone.

Lastly, psychological, or perceptual, barriers inhibit women's mobility. Often from early childhood on, girls are given less latitude than boys for roaming freely across space. Girls are encouraged to play close to home due to fears of strangers. This social attitude remains into adulthood. Additionally, women have a greater fear of violence and victimization, which not only limits their mobility by time of the day and space, but also influences their transportation mode choices (Loukaitou-Sideris, 2016; Valentine, 1989).

In this study, there was concern for personal safety identified by women. Women (32%) were much less confident than men (63%) when it came to feeling that personal safety while traveling was "very easy" or "easy". Many women felt neutral about safety (37%) with 23% being much more concerned. Only 8% of men fell into this last category. It was also found that in all of the following areas women's travel experiences were more difficult than men's: relying on others for transportation, getting to where they wanted to go, navigation, the bus operating frequency, ability to take the bus on the weekend, making bus connections and taking evening

buses. When analysed against concerns for safety, women who felt less safe also found these aspects of travel much more difficult (see Appendix A).

These fear for safety sentiments were also expressed in the photovoice interviews through experiences of isolation when walking alone, especially in the early morning and evening when the streets are devoid of people and it is dark out. Women expressed feelings about nobody seeing them, but perhaps being seen by the wrong person. If they got into a violent situation there would be no one to witness and no one to help.

By the same token, one woman used the darkness as a way to hide. As she walked home, one side of the road was lit, but the homes on that side were unkempt and rough looking. She felt it was safer to walk hidden in the darkness on the other side of the road so that strangers with any bad intentions could not see her. Another woman tried to plan her day so that she would be home before dark. She noted that walking alone in the dark was very stressful and that she carried her cell phone in her hand. She had an emergency plan such that, if she got into trouble, she could push the buttons on her phone a certain way to alert the police. She also questioned why it was the case that women had to be so concerned for their safety – and that this was not fair or just. Yet, two women shared stories of their partner or family member meeting them at the bus stop, or waiting with them at the bus stop for fears of safety. One male photovoice participant walked his girlfriend home from the bus stop because he felt as a woman, she was more vulnerable. Additionally, he was concerned for her safety because she is Indigenous.

At the extreme end, the concern for women's safety was so great that one woman's co-workers would not allow her to bicycle home at night, so much so that she stopped riding her bike to work altogether. She enjoyed riding her bike tremendously and lamented the loss of freedom and enjoyment that it gave to her. It was also her only mode of transportation, aside

from walking, especially when she worked the late shift when buses had stopped. This forced her to become dependent on others' charity to give her a car ride home or cost her more because she had to pay for an Uber or taxi. This example ties ontologically to feminist geography, which looks at differences in access to spatial resources between men and women (Sharp, 2011). In feminist geography, public spaces are often viewed to have traditionally been the domain of men and masculinity. Men are associated with strength, rationality, academia, political spaces, cities, industry, breadwinning and greater geographic space (Scheiner, 2014; Schmucki, 2012; Sharp 2011). Private spaces of the home have been the domain of women. Women have been associated with nurturing, emotion, feeling, suburbs, childrearing and domesticity (Scheiner, 2014; Schmucki, 2012; Sharp 2011). This socially constructed gender structure is often concerned with relations of power and control that restrict women's mobility (Scheiner, 2014; Sharp, 2011).

As can be seen by these examples women's mobility has been restricted by their own fears of the violent "other", likely a male, created through societal beliefs. As such, women needed to be protected by another, usually a male. And, lastly, the public space, especially at night, is a restricted space for women because it is not safe for them to be out alone. Despite the many gains in women's mobility, women still have less mobility than men (Hanson, 2010).

Mobility inequities between domestic and international students

Brock University's international student population makes up about 14% of its total enrollment. In contrast, Niagara College's international student population comprises around 40% of its total. This study found many differences between domestic and international students in terms of both mobility and differences among international students based on the campus they attended. International students (88%) who attended Brock University were much more likely

than domestic students (74%) to live in the same municipality as the campus, and far more likely than international students attending the two Niagara College campuses (Table 5.3). In fact, Niagara College international students are more likely to live in Niagara Falls (36% Niagara-on-the-Lake campus & 55% Welland campus).

Table 5.3
Percentage of Domestic and International Students
Who Live in the Same Municipality as their Campus

Student Status	Campus		
	Brock main	Niagara-on-the-Lake	Welland
Domestic	74%	17%	36%
International	88%	18%	4%

International students attending the two Niagara College locations, especially at the Welland campus, were more likely than domestic students to have paid employment. Conversely, international students at Brock University were much *less* likely to have paid work than domestic students and were about one-third to one-half less likely to be employed compared to international students at Niagara College (Table 4.13). Between domestic and international students, the international students also tended to work a greater number of part-time hours per week than domestic students. In comparing the municipalities in which most domestic or international students work, the survey data showed that domestic students were more likely to be employed in St. Catharines, while international students were more likely to work in Niagara Falls. While just under one-half of domestic students live in the same municipality as where they work, 66% of international students do. Similarly, the percentage of domestic students that live, work and go to school in the same municipality is higher than that for international students, which correlates to the large number of international students living in Niagara Falls.

When considering transportation modal options, 85% of working international students indicated that they did not have a car. This reliance on forms of transportation other than personal car ownership helps to explain why so many international students live where they work, and many of them are working in Niagara Falls. Of domestic and international students who identified that transportation negatively impacted their access to employment, 32% and 45% respectively, felt that transportation was often or always a hindrance. As noted by photovoice participant 15, being without a car meant having to miss out on job opportunities related to her field of study.

Unfortunately, living close to work, especially for international students, also equated to long commutes by bus to get to school, which also taxed the Niagara Region Transit and Niagara Falls Transit systems (as noted by the project steering committee). This, in part, may explain why fewer international students (38%) rated their daily commute as satisfying or very satisfying compared to domestic students (47%). It may also be the reason why international students were more likely to indicate that transportation often or always impacted their ability to participate in on- (41%) and off-campus (41%) activities, compared to domestic students (32% and 27%, respectively). Similar results were also shown for social and leisure activities.

From an equities and exclusions perspective, transportation had a disproportionately negative effect on international students. Although this study did not ask questions about academic performance, Turley & Wodtke (2010) note how segregation impacts school success. Other studies have identified similar findings between international and domestic students. “Cross-cultural friendships are associated with psychological, social and academic benefits” (Williams & Johnson, 2011, 41). International students who have a social network within their host country experience less acculturative stress, depression, anxiety and alienation, have higher

grades, are more likely to remain in school and have a greater sense of satisfaction with the institution (Williams & Johnson, 2011). Interestingly, many international students have social lives that run in parallel to domestic students and tend to socialize with people of their own ethnicity, or with other international students (Glass & Westmont, 2014; Williams & Johnson, 2011). Domestic students with a larger number of international friends showed more open-mindedness, attended more multi-cultural events, and spent more time abroad (Quinton, 2018; Williams & Johnson, 2011). Cross-cultural relationships promote a sense of belonging and community and provide a secure foundation from which to engage with cross-cultural relationships for domestic and international students alike (Glass & Westmont, 2014; Grayson, 2007). Living close to the campus, or living in residence, can provide the opportunity to bridge cultural differences (Glass & Westmont, 2014), especially residences and campuses that have communal areas that encourage and build a sense of community (Sickler & Roskos, 2013).

There is an opportunity to better support the health and wellbeing of international students in Niagara, especially those attending Niagara College, through improved transportation and consideration for employment needs, as well as dwelling location. This will enable international students to participate more actively in the social experiences of attending post-secondary education abroad while gaining their education.

Chapter 6: Conclusion

“Physical mobility – the ability to move from one place to another smoothly, quickly and without impediment – has been the epitome of modernity. Mobility has been greatly valued in a modern society constantly on the move (Urry, 2000); it has been often associated with privilege, power and freedom. Mobility often enhances accessibility – the ability to access and take advantage of physical amenities (e.g. parks, supermarkets, schools) and economic opportunities (e.g. jobs). For this reason, physical mobility is often linked to opportunities for achievement and enjoyment of a better life and more material resources (Wachs, 2009). At the same time, the way that transport is designed and delivered impacts mobility patterns” (Loukaitou-Sideris, 2016, p. 547).

There are approximately 30,000 post-secondary students moving around Niagara to attend school, engage in social activities, contribute to the local economy through employment in many sectors, shop at local businesses, and contribute to the housing rental market. Students share their talents and the knowledge they have gained from Niagara’s post-secondary institutions when they take part in co-op placements and internships and, if they remain in Niagara after they graduate, they contribute to future Niagara community and economy. And yet, for the many benefits students bring to the region, not all students can participate in various opportunities due to transportation barriers.

In the context of the Niagara region, this study aimed to understand: 1) what influence the availability of transportation and modal options had on post-secondary students’ access to school, employment, recreational activities and other necessities; 2) what effect transportation availability, modal options and mobility experiences played in Niagara region post-secondary students’ subjective wellbeing; and 3) what social inequities and exclusions were exposed by students’ differential mobilities.

As Cresswell (2006) noted, “mobility is central to what it is to be human. It is a fundamental geographical facet of existence and, as such, provides a rich terrain from which narratives—and, indeed, ideologies—can be, and have been, constructed” (p.1). This study has looked at mobility’s three relational moments (Cresswell, 2006). First, this study looked at the

movement of people, specifically Niagara region post-secondary students, from one location to another, by a variety of modal options. This sense of movement is often counted by traffic engineers, studied by closed circuit cameras, and counted by the number of people who board the bus, all of which are important for the development of roadways, parking, and public transit services. These are the pragmatic aspects of people moving.

Secondly, this study looked at the meanings given to movement, and what these movements represent from an ideological perspective (i.e., movement as freedom, or as a sense of being valued by society). Thirdly, it considered the embodied experiences of students “on the move” – for example, their experiences of fear, frustration, burden, or relaxation. These relational moments are imbued or implemented in power relationships. Post-secondary students, while growing into contributing members of the middle-class society, are still not privileged with the same sense of equity and access rights as those considered to be full contributing members of the community. Their mobility, or lack thereof, reflects this power relationship.

In addition to student mobility, this study considered the impact of mobility on student wellbeing and where the person is empowered to make an impact on their own determinants of health. There are many findings within the literature that illustrate the impact of transportation, or lack thereof, on wellbeing. Students in this study noted the stresses caused by long bus commutes, lost opportunities for employment and social engagement because of transportation deficiencies, and transportation challenges resulting in missed education, which one could argue, is one of the primary purposes of being a post-secondary student.

Lucas (2004), as referenced in Kenyon (2011), identifies three causes of mobility-related exclusion: “person-type, transport system, and spatial factors” (p. 764). Person-type mobility exclusion is caused by structural societal inequities. Cresswell (2006) would argue mobility is

“fundamental to modern Western citizenship, which is expressed in legal and government documents” (p. 19) and yet the community design of Niagara, noted for its sprawling development, precludes those who do not have access to an automobile. For post-secondary students, that is over half of the population. The government controls and funds public transportation in the region and yet its weekday-oriented service provision precludes ease of use for students who often work evenings or weekends. And, like many others, students also need to attend to the daily necessities of life, which also require transportation.

Although over one-half of Niagara’s post-secondary students do not drive or have access to an automobile and face challenges in getting where they need to go, there are others amongst them who struggle even more. While there have been many gains in gender equity (Hanson, 2010), as can be seen by the modal similarities between male and female post-secondary students, female students still experienced greater mobility-related exclusion. This constraint has been thrust upon women through society-based gendered expectations (Scheiner, 2014; Sharp, 2011) and fears of violence (Loukaitou-Sideris, 2016; Valentine, 1989). This study showed that women were much less confident than men when it came to feeling travel was (very) easy when considering personal safety and much more likely to identify that it was (very) difficult. This concern for personal safety carried over into other aspects of travel, such as: relying on others for transportation, getting to where they wanted to go, navigation, the bus operating frequency, ability to take the bus on weekends, making bus connections, and taking evening buses. The greater concern a woman had for her personal safety, the more difficult these aspects of travel were.

Women who participated in photovoice interviews articulated aspects of fear in their daily travels. Night-time seemed to be worse, as the ill-intentioned “other” may be lurking, waiting to

prey upon an unaccompanied female. Women noted partners waiting for them at bus stops or walking them home. Others noted a sense of isolation and the feeling of vulnerability in their aloneness, surveying their surroundings to find safe places to disguise themselves, as one woman did by choosing to walk home on the darker side of the road hoping to not be noticed. Another woman noted limitations being placed on her mobility by well-meaning others, who forbid her from riding her bike home at night from work. This imposition forced her to rely on the generosity of others or cost her a little more than an hour's worth of wages to take an Uber or taxi home. This was quite an expense for a student making minimum wage working part-time hours. Her suite of mobility options, or access rights portfolio (Flamm & Kaufmann, 2006), was reduced by societal pressures placed upon her. This friction (Cresswell, 2006) slows down and hampers women's mobility. From the perspective of feminist geography, public spaces have been the domain of men and masculinity. This socially constructed gender structure is often concerned with relations of power and control that restrict women's mobility (Scheiner, 2014; Sharp, 2011).

Women were not alone in restricted mobility. People who identified as having a disability spoke of transportation system exclusion (Kenyon, 2011), especially if they did not have, or were unable to use, an automobile. None of the photovoice participants in this study presented with obvious physical disabilities or mobility-supportive equipment. However, their disabilities had profound impacts on their ability to use certain modes of transportation with ease. Their disability made visible the "social relations that involve the production and distribution of power" (Cresswell, 2010, p.21). Public transit services, by appealing to the 'general' public, do not have flexible scheduling to allow for bodily functions that have untimely presentation.

Heavily-crowded buses created painful barriers to a person recovering from car-crash related injuries. Nor do they provide the space to help a person with an anxiety disorder to remain calm.

These bodily challenges warrant more personalized mobility to accommodate them and yet these bodies are stuck in the slow lane in a politic that favours automobility and the cookie-cutter model of the standard transit user. This public system marginalizes people further by limiting access to public washrooms at the transit station or closing the washrooms before the last bus arrives at the station. Their disabilities become disabling and remove the idea of moment as freedom. As Cresswell (2010) states, “[m]obility as liberty, mobility as progress. Everyday language reveals some of the meanings that accompany the idea of movement. We are always trying to get somewhere. No one wants to be stuck or bogged down” (p.21). Nor do people with disabilities.

International students, Niagara’s recruited guests and of whom 86% did not have a car, experienced many transportation inequities and exclusions. By the nature of their life circumstances, and a level of mobility that does not include a personal automobile in an automobile-dependent region, international students made the economic choice of living near employment, often in Niagara Falls instead of near the campus, resulting in long and arduous bus travel to and from school. Even among international students there were inequities between the college and university students, whereby 31% of Brock University international students worked but 63% of Niagara College international students worked. For the university international students, many lived near the campus, likely a result of fewer of the students having to work.

Motility is the capacity for a being to be mobile (Flamm & Kaufman, 2006). It is not merely the ability to access resources, socially, economically and materialistically, it is the ability one has to be mobile in the way that one wants and to get where one wants to go when

one wants to. International students were also more inhibited from participating in on- and off-campus events and activities, which this study showed was related to a poorer sense of belonging. While international students were much more likely than domestic students to ‘hitch a ride’ with others, such type of mobility is limited by the other (i.e. the automobile driver’s schedule, the available seats in her/his vehicle, the compensation the driver would like for their services, and so forth). In other words, international students’ motility was impacted. The politics of auto-centric community design, and the public financing of auto-favoring infrastructure at the expense of public transit services that promote equity has resulted in the disadvantage of those who are unable, or who choose not, to have an automobile. Beyond just the individual level, favouring the automobile also comes at a cost to the environment.

Other post-secondary students were disadvantaged geographically. As noted in Table 4.2 some municipalities did not have any transit service available. Given the community design, that leaves people with very few realistic transportation options, other than the automobile. But for those who are not of driving age, who do not have a full G driver’s licence, or who have medical, cognitive or physical limitations that prevent them from driving, living in an auto-centric community reduces their mobility choices as well as their motility. People interested in remaining as residents of those municipalities, but who do not have access to an automobile, are severely limited in their ability to receive a post-secondary education. In those municipalities there were very few students who replied to the survey. While a limitation of this study, as dwelling location prior to entering post-secondary school was not collected, it could be fathomed that students from those municipalities had to move closer to the campus, or they were not able to benefit from attendance at a post-secondary school.

Some municipalities had public transportation, but to varying degrees of frequency and number of days of service. Many transit providers had weekday hours that were better suited for people traveling during traditional office hours as opposed to the evening and weekend hours often required by students. To compound the challenges, there are numerous public transit agencies, differing hours and fare schedules, and poor connectivity between the municipalities, thus creating disjointed and convoluted travel patterns. This favouring of automobility has disadvantaged all those who do not have an automobile as though they are the other, as though not having a car makes them less favourable as people. It casts them as being less valued members of society and, as such, hampers their motility and the benefits of social resources that should be equally available to all. As this student so eloquently stated:

“So, I used to live in a place that there was no public transportation or offering little public transport. In comparison to that, Niagara is amazing. But then, I have also lived in places where public transport was first class, and in comparison to that, Niagara is inconvenient... I think that a healthy community has a good transit service. If you want a healthy community, you have to have a good transit service. I really do think it is key.”
(Photovoice Participant 6, female, Niagara College Welland Campus, December 19, 2018)

Contribution to the Literature

This work contributes to the scholarly body of knowledge on the impact of transportation to wellbeing, especially within the demographic of post-secondary students. This is of particular importance as higher education is strongly and positively associated with better population health outcomes (Eide & Showalter, 2011). The Five Ways to Wellbeing, which was based on an extensive literature review, has been used as a campaign in numerous countries; however, this was the first time the ‘ways to wellbeing’ have been used to frame wellbeing in the context of mobility. This tool’s categories were broad enough to envelop many aspects of the students’ wellbeing experiences; however, additional mobility related categories were needed (such as

limitations/benefits of various modal option) as the Five Way to Wellbeing categories were not malleable enough to encapsulate these transportation aspects, nor had that been their intention.

This study also contributed to the work of Lucas (2004) and Kenyon (2011) and the causes of transportation-related exclusion. Niagara's post-secondary students experienced person-type, transportation system and spatial mobility exclusion. Additionally, these exclusions bring to the forefront particular politics of mobility (Cresswell, 2010) that have remained poorly addressed for Niagara's post-secondary students. Mobility inequities are pervasive in particular populations of students (e.g., international students), and yet adequate support for their integration onto our communities has been poorly executed. This study brings to light these inequities and provides the opportunity to create policies, allocate resources, and improve people's "access rights portfolio" (Flamm & Kaufmann, 2006), while at the same time improving their wellbeing.

Limitations

Some limitations to conducting a survey with fixed answers are the assumption that all of the potential answers have been provided for the survey participants to choose from and the inability to fully understand the underlying feelings or perspectives students had when choosing their answers. Often, analysis led to more questions to which the current tool was not able to provide answers; however, the survey itself was quite long, which may have resulted in students dropping out of the survey part way. It was part of the risks and benefits that had to be balanced when considering the research design.

Data were collected in the fall term of 2018 and the winter term of 2019. Part of the reasoning for collecting data at two different points was to see if there were perhaps differences between students' earlier travel practices in the school year, assuming some newness and then seeing if there were differences later in the school year when some may be becoming familiar

with the area and their transportation options. In retrospect there were many flaws in this thinking. First off, the students who responded to the survey in the first term were not the students who answered the survey in the second term. Therefore, there could be no comparison between the two groups to see if they had made changes to their travel behaviours, had different experiences or felt differently about their wellbeing. Secondly, students were in different years of their programs so some students may have well established behavioural practices from prior years' experience. It also assumed that students started school in the fall term, but some may have actually begun in the winter term. Thirdly, even if the two cohorts were comparable, the weather conditions and number of daylight hours were very similar, making observations of seasonality impossible. Finally, the fall college responses were far less robust than the winter responses, therefore calling into question the comparability of the two data sets, at least between the college students.

Students of other gender identities, different than the binary of male or female, were poorly represented in the results. The gender categories available in the survey were: male, female, intersex, two spirit, transgender, gender queer, prefer not to answer, and do not know. These gender identities were based on the categories that Niagara Region Public Health (NRPH) uses, which are based on the NRPH epidemiologist team's research and consultations with the community. As this research is being used for both a master's thesis and for the Niagara Region Public Health's active transportation initiatives, the alignment made sense. However, it is recognized that there are many other gender identities that may have been excluded, or not represented as a result.

In addition to the categories potentially not reflecting the respondent's identity, there were also very few people who chose genders other than male or female, therefore making it

impossible to conduct analysis on each of the gender categories. In an attempt to have some representation of the other gender categories, they were combined; however, ontologically, this presents different challenges as it is making an assumption that people who identify in categories other than male or female have the same gendered experiences. Therefore, any results captured within the “other” category need to be considered with great caution recognizing that they are not able to capture the collective experiences of those in the various gender identities.

A limitation of this study is that the survey did not ask students where they lived before coming to post-secondary school. It only asked the municipality that they are dwelling in while attending school. There was so little representation of students in seven of the twelve Niagara municipalities that it stands to reason that students in those municipalities have moved closer to the campus for the school year. However, within the data there is no way to confirm this other than through the steering committee’s anecdotal accounts of students who did move closer to campus. In future research a question of this nature could provide clarity to students’ dwelling choices and modal options.

This study was not able to determine the financial and social resources that students had available to them. For example, the survey questions did not ascertain the amount of income or financial support students had, or how much or what types of supports students had from family members. Having a suite of resources available, or an access rights portfolio, impacts many aspects of students’ wellbeing, including their mobility options. Therefore, the assumption was made that students, for the most part, were self-reliant and agents of their own resources.

I would have liked to have had more photovoice participants. Administratively, processing more students’ photovoice contributions would have also been time prohibitive. Students interested in participating in the study first contacted me. I then emailed them a series of

demographic questions, the project consent form and a description of the project. If they replied to confirm their continued interest, I then arranged a meeting time and location with the student, sometimes requiring numerous correspondences. I would then meet with the student, assuming they showed up at the first meeting, and went through the photovoice package and then asked for their signed consent form. I would also make arrangements that day for a future meeting time. Closer to our meeting date I would send a reminder e-mail and ask for their photos so that I could print them for our interview. I would then meet with the student for the recorded interview at a time and place that was convenient for the student.

These practices, while necessary, were tremendously time-consuming. There were also more students who agreed to participate than who ultimately completed the photovoice project, creating further administrative work without a productive outcome. All of this had to fit in around students' class work, exam work and day-to-day life schedules, and the limited number of weeks in a term where students are in school. A couple of weeks for data collection by the students was lost at the beginning of the semester for recruitment advertising and then another couple of weeks were lost at the end of the term because of exams, plus a week in the middle for reading week, overall shortening the amount of available time to recruit, meet, gather data and have the final interview. However, I am truly appreciative of the 20 students who participated in the photovoice component of the research. Their knowledges and experiences gave depth of understanding and richness to this work.

Although qualitative data is not considered representative due to the uniqueness of each participant's story, it should be recognized that there is potential for self-selection bias of participants who are passionate about the subject matter. The promotional materials stated that students could 'have their say' about issues they identified with their daily travels and that the

findings of this study would be used to foster change. Therefore, students who were experiencing transportation barriers may be more likely to enter the study.

Lastly, the descriptive statistics from the on-line survey were provided without statistical tests of significance, aside from having used the Pearson's Chi Square test to assess how likely the difference between the fall and winter data happened by chance. This could pose a limit with respect to rigour as the finer nuances of the data implications were not explored.

Next Steps

The lack of car ownership among students could prompt many opportunities for alternative and more sustainable transportation options, including rideshare, carshare, bikeshare, trail and sidewalk improvements, residences in employment areas with shuttles to the campuses and increased transit services and transit supportive options. Further consideration also needs to be given to women-friendly infrastructure and transit design, providing enhanced supports to international students and incentives to support students from municipalities that do not have transit.

Rideshare

Nearly one-fifth of international students already rely on rideshare arrangements, as do another one-tenth of domestic students. There could, therefore, be an opportunity to create a more formalized program to increase rideshare participation. Such a scheme could be created at each institution for the students at specific campuses, combined between campuses and/or institutions, or created *region-wide* to support more than just post-secondary students. True rideshare programs, where passengers who often do not have a car get a ride from drivers who are already making trips to particular destinations, can support transportation needs that may not be currently met by other modes. It also has the potential to shift the travel behavior of current

car drivers, whereby they themselves drive alone less often because they are getting rides from others. Also, car drivers have the potential to cost share some of their expenses by asking passengers for some compensation. Such a program could increase the number of modal options available to students.

Carshare

About 67% of students identified that they had a full Class G license, which is required to drive in Ontario; however, not all of the students who have a license also have a car. Full-time car ownership may be out of financial reach for students, but having access to a car for short periods of time could create ease of travel for some tasks that are harder to do on the bus, such as grocery shopping. Post-secondary institutions can work with already existing carshare programs to provide this service from the campus. Ideally, the carshare parking would be located near bus service so that once the vehicle is returned students can quickly board the bus to return home or to reach their next destination.

Cycling and Bikeshare

Bicycles were the third most available form of transportation which could allow people to go greater distances than walking alone and could shorten travel times for trips that had been previously made on foot. It could also be used to support the first and last mile of a transit trip. For students who already have a bicycle, improved cycling infrastructure could encourage modal shift and provide a natural opportunity for physical activity.

For those who do not have a bicycle, or do not have access to a bicycle while attending school, a bikeshare service could grow students' suite of mobility options, especially those who live within a five-kilometer radius of the campus. Post-secondary institutions could also consider bikeshare for on-campus trips to shorten students travel time or connect students from the

residence to the school. For example, there are many students who live in the Foundry Lofts, located less than one kilometer from Brock University's main campus. Many Foundry Lofts residents take the bus to and/or from the campus, resulting in short-term overcrowding on buses for a very short distance. Within the Brock District Plan, a multi-use path will be built from the Foundry Lofts through the Niagara Region headquarters property to the corner of Sir Isaac Brock Way and Merrittville Highway. Bikeshare could provide a means to lessen public transit demand for short trips. Similarly, such a program could help move students around the Welland campus. Factors to keep in mind, however, would be lighting for nighttime bicycling and priority snow clearing.

Walking

All people use pedestrian infrastructure, whether able bodies or with a disability. But, in order to walk, appropriate pedestrian facilities, such as sidewalks, preferential pedestrian crossing, lighting, benches, and protection from the elements, are needed. In the photovoice interviews students noted that a lack of pedestrian infrastructure negatively impacted their mobility and sense of wellbeing. With improved sidewalks and pedestrian access to campus, through neighbourhoods, and to destinations, more students would be able to walk short distances to their destinations more often, reaping health benefits and additional mobility options. It is also the most equitable mode of transportation as mostly everyone can do it.

Shuttles

The data showed that working students are more likely to live near their place of employment than near their campus. There is an opportunity for post-secondary institutions to consider building residences in areas of high employment and then offer shuttles at peak times to move students to and from the residence to the campus. Shuttles can also be provided for campus

events as it was seen in the data that participation in campus events increased students sense of belonging. The lack of transportation to campus events can have a negative impact on wellbeing.

Public Transit

There were many comments about public transit. This is no surprise given the number of students who rely on public transit to take them greater distances. Currently, the Linking Niagara Transit Committee is considering the means to improve the system(s). With multiple public transit agencies, varying route times and the disconnection between the systems it is no surprise that students were experiencing challenges. The results of this study can help inform the committee of potential improvements.

Women

Women experienced transportation differently than men. While women and men had similar modal options, their travel experiences were different. Women experienced greater fears from threats of violence and attack. Further research into what infrastructure amenities can provide more safety to women needs to be considered at multiple levels of government and at the post-secondary institutions. With women comprising half of the population, their comfort and wellbeing should be paramount.

International Students

International students also experienced inequities and exclusions given their tendency to live closer to where they work. International students are recruited to attend our institutions. Greater support for their integration into the community and their transportation needs must be provided. There is opportunity at the municipal, regional and institutional level to get a better understanding of the students' needs and then to provide adequate supports. Further study needs to be conducted.

Lastly, given the unequal representation from other Niagara municipalities, incentive programs could be provided to those Niagara students, such as grants or bursaries, to help defray some of their travel and living expense costs. Higher education is strongly associated with greater health outcomes. Improving access to post-secondary school has implications for the long-term wellbeing of Niagara.

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²³ Stats Canada <https://www150.statcan.gc.ca/n1/pub/12-591-x/2006001/step2-etape2/examples-exemples/4113828-eng.htm#5>

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Appendices

Appendix A: Online Survey

[NOTE: CONSENT FORM INCLUDED AHEAD OF THIS INFORMATION]

Introduction

There are approximately 30,000 post-secondary students in the Niagara region attending Brock University and Niagara College. *Students on the Move* is a research project that is looking at how post-secondary students are traveling around Niagara to get to school, work, social activities and necessities, and the impact their ability, or inability, to get from one place to another has on their wellbeing and connection to the community.

Decision makers will use the results of this study to help inform infrastructure needs that support walking, cycling, public transit, and other transportation options to improve access and quality of travel in Niagara. It will also help to inform the implementation of various Regional and Local Municipal policies.

Demographics

1. Your gender:
 - Male; Female; Intersex; Two Spirit; Transgender; Gender queer; Prefer not to answer; Do not know
2. What is your age?
 - 19 and under; 20-24; 25-29; 30+
3. Are you an international student?
 - Yes; No
4. How would you describe yourself?
 - Aboriginal; Arab; Black; Chinese; Filipino; Japanese; Korean; Latin American; South Asian; Southeast Asian; West Asian; White; Multiracial; Other
5. In what Niagara municipality do you live while attending school?
 - Fort Erie; Grimsby; Lincoln; Niagara Falls; Niagara-on-the-Lake; Pelham; Port Colborne; St. Catharines; Thorold; Wainfleet; Welland; West Lincoln; I do not live in Niagara. I live in (please specify)
6. While in school, do you also have paid employment?
 - Yes, I work < 10 hours per week; Yes, I work 11-20 hours per week; Yes, I work 21-30 hours; Yes, I work 31-40 hours per week; Yes I work > 40 hours per week;
 - No, I do not have paid employment SKIP to question # 10
7. In which Niagara municipality is your paid employment?
 - Fort Erie; Grimsby; Lincoln; Niagara Falls; Niagara-on-the-Lake; Pelham; Port Colborne; St. Catharines; Thorold; Wainfleet; Welland; West Lincoln; I do not work in Niagara. I work in (please specify)
8. Is your paid employment located...
 - In a shopping mall; in the downtown core; at a big box store (which is located in a large building – for example, Walmart, Best Buy, Home Depot, Toy’s R Us); elsewhere please specify
9. (Optional) Please indicate where you work and the name of the road on which your workplace is located. _____

School Status

10. Where do you go to school?
- Niagara College; SKIP to question #12
 - Brock University
 - I no longer attend school SKIP to question # 14
11. Student status
- First year undergraduate; second year undergraduate; third year undergraduate; fourth year undergraduate; fifth year or more undergraduate; part-time undergraduate; graduate or professional; not seeking a degree or diploma; Go to question #13
 - online courses only; Go to question #16
12. Study Year: you are currently enrolled at Niagara College:
- in a program that is one year or less in duration; in the first year of a multi-year program; in the final year of a multi-year program; in another year of a multi-year program (i.e., second year, third year)
 - online courses only; Go to question #16
13. On which campus do you spend **the majority** of your time?
If Niagara College was chosen in #10, only show first and third bullet options. If Brock was chosen in #10, only show second and third bullet options.
- Welland; Niagara-on-the-Lake (Glendale); SKIP to question 18
 - Brock main campus; Marilyn I. Walker; SKIP to question 18
 - Not applicable as I am an online student SKIP to question 16
14. Where did you go to school?
- Niagara College; Brock University
15. On which campus did you spend **the majority** of your time?
If Niagara College was chosen in #14, only show first bullet options. If Brock was chosen in #14, only show second bullet options.
- Welland; Niagara-on-the-Lake (Glendale); SKIP to question #17
 - I only took online courses
 - Brock main campus; Marilyn I. Walker; SKIP to question #17
 - I only took online courses
16. Why have/had you chosen to do your courses online? Choose all that apply.
- Costs less; I can work at my own pace; It allows me to be flexible with my time; I do not live near a campus; Transportation is a challenge for me; I need to work and therefore find it hard to attend class; I have family commitments that make it hard for me to attend class; I prefer online learning; The courses I want are only available online; It saves gas; It saves time; Public transit from where I live to get to campus is a challenge; I have a physical disability that limits my participation on campus; I have a mental health matter that limits my participation on campus; I have a learning challenge that limits my participation on campus; Other, please share
- Skip to end of survey
17. For what reasons do you no longer attend Brock University or Niagara College? Choose all that apply.
- I have graduated; financial challenges; transportation costs; transportation access; health reasons; mental health reasons; I was not enjoying my program; I was not doing well in my program; family commitments; other, please share.

Take participant to final page

Health and Wellbeing

18. Niagara is made up of 12 municipalities (Fort Erie; Grimsby; Lincoln; Niagara Falls; Niagara-on-the-Lake; Pelham; Port Colborne; St. Catharines; Thorold; Wainfleet; Welland; West Lincoln). For the next few questions, the word Niagara is used to reflect any one of the listed municipalities.

How long have you lived in Niagara? (Example: If you only live in Niagara during the school months and then return to your hometown for the off months but now are back for your second year of school choose 1 year)

- Less than one year; 1 year; 2 years; 3 years; 4 years; 5-10 years; 11-15 years; 16-20 years; 21 or more years;
 - I do not live in Niagara SKIP to question 20
19. How do you describe your sense of belonging in Niagara? (sense of belonging is feeling like you are part of something, connected and accepted) Would you say:
- Very weak; somewhat weak; neutral; somewhat strong; very strong
20. To what extent do you participate in campus events and activities?
- Never; rarely; sometimes; often; always
21. To what extent do you participate in events and activities outside of the campus?
- Never; rarely; sometimes; often; always
22. Do your available means of travelling negatively impact your ability to participate in campus events?
- Never; rarely; sometimes; often; always
23. Do your available means of travelling negatively impact your ability to participate in events outside of the campus?
- Never; rarely; sometimes; often; always
24. To what extent do you feel accepted and valued in your community?
- Never; rarely; sometimes; often; always
25. How often do you feel uncomfortable, or out of place, in Niagara because of your:

	Never	Very Rarely	Rarely	Sometimes	Frequently	Very Frequently	Always	Not applicable
Religion								
Culture								
Ethnicity								
Skin colour								
Sexual orientation								
Physical appearance								
Disability								
Mental health								
Other health condition								

26. Approximately how much time do you spend in social leisure activities on a typical day (for example, visiting with a friend or talking on the phone)?
- Less than 1 hour; 1-5 hours; 6-10 hours; 10 or more hours

27. Do your available means of travelling negatively impact your ability to participate in social leisure activities?
 - Never; rarely; sometimes; often; always
28. Approximately how much time do you spend in physical leisure activities in a typical week (for example, going for a walk, taking an exercise class, playing a sport)?
 - Less than 1 hour; 1-5 hours; 6-10 hours; 10 or more hours
29. Do your available means of travelling negatively impact your ability to participate in physical leisure activities?
 - Never; rarely; sometimes; often; always
30. How often did you eat less because you did not have enough food or money for food?
 - At least once a week; at least once a month; at least every 3 months; at least every 6 months; once in the past year; Less than once a year; Never
31. During the past year, did your means of transportation negatively impact your ability to access food?
 - Never; rarely; sometimes; often; always
32. How often did you have difficulty making ends meet (for example, making a rent payment, paying bills, or having enough money for childcare or transportation)?
 - At least once a week; at least once a month; at least every 3 months; at least every 6 months; once in the past year; less than once a year; never
33. During the past year, did your means of transportation negatively impact your ability to access employment?
 - Never; rarely; sometimes; often; always; not applicable
34. In general, would you say your physical health is:
 - Poor; fair; good; very good; excellent
35. In general, would you say your mental health is:
 - Poor; fair; good; very good; excellent

Housing

36. Please provide information on your home location (during the school year) by either:
 - entering your street name, or; postal code
37. What type of living situation best describes the above?
 - Live alone; SKIP to question 40
 - Live with roommates; Live with partner; Live with family/parents; Other
38. Including yourself, how many people live in your household?
 - 2;3;4;5;6; more than 6
39. How many members of your household are your dependent children?
 - None,1,2,3,4,5 or more
40. In what type of home do you live?
 - Detached house; Semi-detached house; Row house/Townhome; Apartment or condo; On-campus residence; Off-campus residence; Motel/Hotel; Other (e.g., Mobile home, chalet...); I don't know
41. Choose the top three factors that influenced your most recent choice of residence, with 1 being most important and 3 being less important.
 - Housing qualities (space, yard...); To live on campus; Ability to walk or bike to campus; Walkability of neighbourhood (shops, parks, houses...); Cost of housing; Proximity to public transit; Proximity to paid employment; Being near friends; Being near family; Being near other students; Crime and safety; I can stay living with my parents/family; The facilities to prepare food at home; The decision was out of my control; Other, please share

Mode of Transportation Options

42. The following questions will ask you about your transportation options:

	Yes	No
Do you ride a motorbike?		
Do you ride a moped or scooter?		
Are you a car share member?		
Did you use a ride share (carpooling) service in the last year? <i>Example Niagara Rideshare</i>		
Do you have a monthly or annual bus pass?		
Do you have a full driver's licence? <i>That could be a G, G2, unrestricted licence issued outside of Ontario, but not including a G1</i>		
Do you own a car or have use of your "own" car?		

43. Can you borrow a car from friends or family when needed?
- Yes; No; Sometimes
44. Did you purchase a campus parking pass for 2018-2019?
- Yes; No; I don't have a car so this is not applicable
45. Do you own a bike?
- Yes; No; Yes, but it is not available to me while I am at school

Commute

46. On average, how many days a week do you travel to paid employment?
- 0;1;2;3;4;5;6;7;
 - not applicable as I do not have paid employment SKIP to question #48
47. Approximately how far is the location of your paid employment from where you live?
- Less than 3 kilometer; 4 to 6 kilometers; 7 to 10 kilometers; More than 10 kilometers
48. On average, how many days a week do you travel to campus?
- 0;1;2;3;4;5;6;7
49. How many days per week do you have to travel to a school-related co-op or internship placement?
- 0;1;2;3;4;5;6;7; not applicable
50. During the past year, did your means of transportation negatively impact your ability to participate in a co-op or internship placement?
- Yes, I could not take a co-op or internship opportunity;
 - Yes, it made getting to my co-op or internship difficult;
 - No, transportation issues did not impact my ability to participate in a co-op or internship;
 - Not applicable to me
51. In the past month, what transportation have you used when travelling **to** school? Check all that apply.
- Walk; Bicycle; Car, drive alone; Car, as driver with passenger(s); Car, as passenger; Public transit bus; GO bus; Megabus, Greyhound or other private bus company; Paratransit; Motorcycle; Moped or Scooter; Taxi; Uber/Lyft; Other please identify; I have not traveled to school
52. In the past month, what transportation have you used when travelling **from** school? Check all that apply.
- Walk; Bicycle; Car, drive alone; Car, as driver with passenger(s); Car, as passenger; Public transit bus; GO bus; Megabus, Greyhound or other private bus company; Paratransit; Motorcycle; Moped or Scooter; Taxi; Uber/Lyft; Other please identify; I have not traveled from school

53. How long does it typically take you to get **from home to school**?
- 0-5 mins; 6-10 mins; 11-15 mins; 15-20 mins; 21-25 mins; 26-30 mins; 31-45 mins; 46-60 mins; more than 60 mins.
54. How long does it typically take you to get **from school to home**?
- 0-5 mins; 6-10 mins; 11-15 mins; 15-20 mins; 21-25 mins; 26-30 mins; 31-45 mins; 46-60 mins; more than 60 mins.
55. How would you rate your satisfaction with your typical commute?
- 1-5 with “1” being very unsatisfactory to “5” being very satisfactory If “5” chosen SKIP to question 59
56. If not fully satisfied with your commute, which main means of transportation would you consider using instead? *Select up to three*
- I would not change; Walk; Bicycle; Car, drive alone; Car, as driver with passenger(s); Car, as passenger; Public transit bus; GO bus; Megabus, Greyhound or other private bus company; Paratransit; Motorcycle; Moped or Scooter; Taxi; Uber/Lyft; Other please identify; I do not travel to/from school
57. Do your available means of travelling sometimes discourage you from coming to campus?
- Yes; No; Sometimes If “No” SKIP to question 59
58. Has not attending school in order to avoid having to travel negatively impacted your grades?
- Yes; no; not sure
59. Do you pick your courses (e.g., time of day, day of week) based on your available means of travelling?
- Yes – always; Yes – sometimes; No

60. What is the level of difficulty you typically experience regarding the following aspects of daily travel:

Aspect of transportation	Very easy	Easy	Neutral	Difficult	Very difficult	Not applicable
Covering the cost of your transportation						
Getting to places quickly						
Finding transportation so you can travel						
Finding transportation to accommodate your disability						
Finding transportation to accommodate your mental health issues						
Being able to travel when you want to						
Having to rely on others for transportation						
Being able to get around reliably						
Being able to get to/from the bus stop						
Being able to physically get on/off the bus						
Buses being available to you on the weekends						
Buses being available in the evening						
Buses operating frequently						
Being able to get information about bus service						
Being able to get information about other transportation options						
Being able to make bus connections						
Feeling safe from theft/attack when travelling alone						
Being able to understand where to go						
Finding the time to travel when you need to						

61. Has lack of transportation prevented you from getting somewhere you have wanted or needed to go?
- Yes - frequently; Yes – sometimes; No

62. If transportation has prevented you from getting somewhere, where were you trying to go?

(Text box)

63. When you were in **elementary school** how did you usually travel to school?

- Walk; bike; school bus; public transit; by car; other, please share

64. When you were in **high school** how did you usually get to school?

- Walk; bike; school bus; public transit; by car; other, please share

Thank you for participating in the survey! If you have questions about transportation, or where you can find information about wellbeing, please visit Niagara 211 or your campus Health Services clinic. If you have questions about this survey please contact

- Principal Student Investigator: Jackie Gervais, Health Promoter, Niagara Region Public Health, 905-688-8248 x 7332
- Principal Investigator: Dr. Christopher Fullerton, Brock University, 905-688-5550 x 3423
- Niagara College Contact: Duncan MacDuff, Research Facilitator, Niagara College, 905-735-2211 x 7122

For a chance to win one of 100 \$10 Tim Hortons gift cards, please enter your name and e-mail address. (Names and e-mail addresses are held separate from your survey and cannot be correlated to the information you have provided.) Draws will take place November 9, 2018.

Go to draw page for \$10 Tim Hortons gift card page

If instead you would like the opportunity to win one of 50 \$20 Tim Hortons gift cards and would like to contribute further to this study, please click on the “Next” button. We would like to better understand exactly how you get from one place to another by having you complete a one-day travel log. We expect that this will take you five to ten minutes to complete.

65. Thinking about your day yesterday, please describe where you began each trip, where you travelled to, how long it took you, and by what means you got there. Please include **all** of the trips you made yesterday.

Where you started	Where you went	How you got there	How long it took	Ease of travel 1-5 1- being not at all stressful & 5 - being very stressful	Please add any comments you may have about your travel experience in this column
<i>Example: home (postal code) L2R 2N6</i>	<i>Childcare at Brock University</i>	<i>Walk, bus, walk</i>	<i>35 mins</i>	<i>4</i>	
<i>Brock Daycare</i>	<i>Brock main campus</i>	<i>walk</i>	<i>10 mins</i>	<i>1</i>	
<i>Brock main campus</i>	<i>Co-op interview: Raw Materials Company, Port Colborne</i>	<i>Bus, transfer, bus, walk</i>	<i>65 mins</i>	<i>5</i>	<i>Bus came late; arrived late for interview</i>

Thank you once again for your participation in this important study. If you would like the opportunity to win one of fifty \$20 gift cards, please provide your name and e-mail contact below. (Names and e-mail addresses are held separate from your survey and cannot be correlated to the information you have provided.) Draws will take place at the beginning of November.

We will be conducting this survey again in the winter to see if travel patterns and travel mode choices change. Would you be interested in participating in the winter survey? If so, please provide us with your email contact. Thank you so much!


Go to draw page for \$20 Tim Hortons gift card page

Appendix B: On-line Survey Questions related to Mobility Theory

Examples of online survey questions that consider Cresswell's (2006) three relational moments, and mobility elements (Cresswell, 2010) as well as the three components of motility (Flamm & Kaufmann, 2006).

Theoretical movement, element or component	Survey question example that touches on theoretical movement, element or component
Moment – movement (Cresswell 2006)	Approximately how far is the location of your paid employment from where you live?
Moment – representations (Cresswell, 2006)	Better captured in photovoice interviews
Moment – experiences (Cresswell, 2006)	Do your means of travelling discourage you from coming to campus?
Element – motive force (Cresswell, 2010)	Level of difficulty regarding aspects of daily travel: being able to travel when you want; finding time to travel when you need to,
Element – velocity (Cresswell, 2010)	Level of difficulty regarding aspects of daily travel: getting to places quickly.
Element – rhythm (Cresswell, 2010)	Level of difficulty regarding aspects of daily travel: buses being available in the evening.
Element – route (Cresswell, 2010)	Level of difficulty regarding aspects of daily travel: being able to make bus connections.
Element – experience (Cresswell, 2010)	Level of difficulty regarding aspects of daily travel: feeling safe from theft/attack when traveling alone.
Element – friction (Cresswell, 2010)	Level of difficulty regarding aspects of daily travel: finding transportation so you are able to travel.
Motility – access (Flamm & Kaufmann, 2006)	Do your available means of travelling negatively impact your ability to participate in campus events and activities? Access rights portfolio – questions on transportation options
Motility – aptitude (Flamm & Kaufmann, 2006)	Level of difficulty regarding aspects of daily travel: Being able to understand where to go.
Motility – cognitive appropriation (Flamm & Kaufmann, 2006)	Better captured in photovoice interviews

Appendix C: Recruitment PowerPoint Slides



**STUDENTS
ON THE
MOVE**

This study is in partnership with Niagara Region Public Health, Brock, Niagara College with support from BUSU and SAC.

Brock University

nc Niagara College Canada
APPLIED DREAMS.

BUSU
BUSINESS UNIVERSITY
SCHOOL OF BUSINESS
TECHNOLOGY SOCIETY

NIAGARA COLLEGE
UNIVERSITY OF APPLIED ARTS AND TECHNOLOGY

Niagara Region

What is Students on the Move?

Students on the Move is a research project that is looking at how post-secondary students are traveling around Niagara to get to school, work, social activities and necessities, and the impact their ability, or inability, to get from one place to another has on their wellbeing and connection to the community.

This study is part of a graduate thesis as well as a project led by Public Health.

How will this information be used?

Decision makers will use the results of this study to help inform infrastructure needs that support walking, cycling, public transit, and other transportation options to improve access and quality of travel in Niagara.

It will also help to inform the implementation of various Regional and Local Municipal policies.

Niagara College will use this information to inform decisions about student residences.

And the results from this work will be used for scholarly articles.

Participants Wanted



Take pictures of what you enjoy, or don't enjoy about your travel experience to school, work, or wherever you need to go.

Write a short narrative about the your experience and how it makes you feel or impacts you.

Training

- Participants will be required to attend a one hour training meeting and a debriefing meeting at the end
- A snack will be provided at each meeting
- A \$50 Tim Hortons gift card will be given to participants at the debriefing meeting

How will the photos be used?

Photos and narratives will be used:

- as part of the research study to better understand the impact of daily travel on wellbeing
- As displays at municipal and regional councils to inform decision makers about student transportation issues

Timelines

- January – March 2019
- We expect that this will take no more than 4 hours in total

We are looking for approximately 40 participants in total. We regret that we will not be able to accept more students. Please contact the project lead.

For more information or to show your interest

Visit:

niagararegion.ca/studentsonthemove

Or e-mail

Jackie.Gervais@niagararegion.ca

(Project Lead)

Appendix D: Introductory Email

Hello,

Thank you for your interest in the *Students on the Move* research study. *Students on the Move* is a research project that is looking at how post-secondary students are traveling around Niagara to get to school, work, social activities and necessities, and the impact their ability, or inability, to get from one place to another has on their wellbeing and connection to the community. It is being conducted as a partnership between Niagara Region Public Health, Brock University and Niagara College to help inform future transportation policy and infrastructure. It will also be used for a graduate level research thesis (MA in Geography) entitled, “Understanding Post-secondary Student Mobility and its Impact on Wellbeing”.

As you know from the PowerPoint shared in your lecture, we are asking students to participate in a research method called photovoice. The purpose of photovoice is to use pictures, along with narratives, as a way for people to tell and share their story. The photos and narratives provided by post-secondary students from this project will be used to inform decision-makers about the travel experiences of students in Niagara with the hope to influence policy change, programs and physical assets to help improve transportation.

We would like to get the best representation of students possible and as such are looking for a diverse mix of students from different genders, ethnic backgrounds, years in post-secondary education, and so forth. We are also only able to accept 40 students, (20 students in the fall term and 20 students in the winter term). As such, we are hoping that you can share with us some personal information. Please note that all information shared about yourself will be kept confidential and in a password protected file only accessible to myself, the Project Lead and Dr. Christopher Fullerton, the Principal Investigator from Brock University. Only participant information will be kept on students accepted into the study. All other information will be destroyed by the end of December 2018. Please feel free to not provide answers for any of the following.

1. Your gender
2. Your age
3. Are you an international student?
4. How would you describe yourself?
 - o Aboriginal; Arab; Black; Chinese; Filipino; Japanese; Korean; Latin American; South Asian; Southeast Asian; West Asian; White; Multiracial; Other
5. In what Niagara municipality do you live while attending school?
 - o Fort Erie; Grimsby; Lincoln; Niagara Falls; Niagara-on-the-Lake; Pelham; Port Colborne; St. Catharines; Thorold; Wainfleet; Welland; West Lincoln; I do not live in Niagara. I live in (please specify)

6. Where do you go to school?
- o Niagara College;
 - o Brock University
7. On which campus do you spend **the majority** of your time?
- o Welland; Niagara-on-the-Lake (Glendale);
 - o Brock main campus; Marilyn I. Walker;

What happens next?

After you, and others, reply back to this email, Dr. Christopher Fullerton and I will connect with students by email about participating in the study and then set up an initial meeting with participants to discuss the project in more detail and complete a consent form. All people who have responded will receive notice about their status for inclusion into the study within the week.

Thank you so much for expressing your interest. To learn more about the study please visit www.niagararegion.ca/studentsonthemove

This study has been reviewed and received ethics clearance through the Brock University Research ethics board (file # 18-041); Niagara College ethics board (file # NC2018-12); and, the Niagara Region Public Health ethics review committee.

For more information contact:

- ★ Jackie Gervais, Project Lead, Health Promoter, Niagara Region Public Health, (905) 688-8248 x 7332, Jackie.gervais@niagararegion.ca (Principal Student Investigator)
- ★ Dr. Christopher Fullerton, Principal Investigator, Faculty Supervisor, Associate Professor, Department of Geography & Tourism Studies, Brock University (905) 688-5550 x 3423, chris.fullerton@brocku.ca
- ★ [Duncan MacDuff](mailto:Duncan.MacDuff@niagararegion.ca), Research Facilitator, Niagara College, 905-735-2211 x 7122

Kind regards,

Jackie

Jackie Gervais, BA (Hons), CTTS-M

Health Promoter, Project Lead, Principal Student Investigator
Chronic Disease and Injury Prevention, Public Health

Niagara Region

1815 Sir Isaac Brock Way, Thorold L2V 4T7

Phone: 905-688-8248 ext. 7332 Toll-free: 1-888-505-6074

Fax: 905-688-7024

www.niagararegion.ca

Mailing address: 1815 Sir Isaac Brock Way, Thorold L2V 0A2

P.O. Box 1052, Station Main

Appendix E: Photovoice Package

Students on the Move Photovoice Factsheet

What is it?

Photovoice is a participatory action research methodology created by Caroline Wang and Mary Ann Burris in the early 1990's where "people can identify, represent, and enhance their community through a specific photographic technique" (Wang & Burris, 1997, p. 369). According to Wang and Burris (1997), photovoice provides the opportunity for community members to creatively document their concerns and simultaneously act as "catalysts for change" (p. 369). Additionally, it ignites interest about important topics that are relevant within a community and allows a community to express themselves through photography. Photovoice breaks past language and traditional communication barriers that often prevent members of a group from expressing their concerns.

Three Main Goals of this Photovoice Project:

1. To enable people to record and reflect on community strengths and concerns regarding daily travel.
2. To promote critical dialogue and knowledge about important issues through discussions of photographs that support narratives.
3. To reach policy makers and encourage the adoption of health promoting policies through Regional and Local Municipal governments; college and university administration; transportation related agencies; and other relevant agencies.

What is expected of me?

While participating in photovoice, you should always be respectful, honest, sincere, and focused on addressing the important transportation issues in your community. There are three expectations: 1) time commitment, 2) photographs to support a short written narrative, and 3) individual debrief meeting with the Project Lead, Jackie Gervais, Health Promoter, Niagara Region Public Health, and the Principal Investigator, Dr. Christopher Fullerton, Brock University, which will be audio-recorded and later transcribed with the support of a Public Health program assistant. There may be the opportunity to participate in gallery displays of the photos with the accompanying narratives however you are under no obligation to do so. If you did participate in the public display of your photos, your identity would be known, at least for the event and within any media garnered by the event.

How will this project work? What do I do with the photos and narratives?

There are three steps to this project.

- 1) The first step is to attend the one-hour introductory meeting with the researchers. At this introductory meeting you will be introduced to the project; learn a few photography tips; talk about narratives; find out where to submit narratives and photos; talk about ethical considerations and sign a consent form.
- 2) As you travel around Niagara by foot, bike, car, bus or other modes of transportation, take photos that reflect your travel experiences. Consider how the experience makes you feel and how you want to relay your message back to others. The photo will help support your narrative. Photos and narratives are powerful ways of expressing your life experiences. You will be asked to submit between one to five photos with narratives by March 31, 2019 to Jackie.gervais@niagararegion.ca where photos will be stored in a password protected electronic folder. Reminder emails will be sent to you two weeks in advance and then again one week before March 31, 2019.
- 3) In early December, we will invite you to meet for one-hour with the researchers in order for you to share your photo(s) and narrative(s). Your photo(s) and narrative(s) will be printed and

brought to the debrief meeting. You will have the opportunity to review these materials to ensure they reflect what you have experienced. You will also have the chance to discuss your photos and narratives with the researchers. If at any point, you choose to withdraw your photo and narrative you can do so with no consequence. With your permission, our discussions during this meeting will be recorded so that we may gather additional information that may not be captured directly in your photos or narratives. Please note that a Niagara Region program assistant will transcribe the recording so that we may use it later in our analysis.

What can I take a picture of?

When participating in photovoice, you as the photographer have the liberty to photograph whatever you desire to address a transportation related issue or theme. However, you are responsible for following the ethical considerations below to ensure that you are following measures that protect yourself and possible photographed subjects.

Some things to ask yourself

- Are there places along your route that make you feel unsafe, uncomfortable, or scared? Why? What is it about those places?
- Are you comfortable traveling alone? When are you not comfortable traveling alone? What mode of transportation are you using? What type of transportation makes you feel safe?
- Are there infrastructure pieces that would make your trip feel safer? Is there missing or broken infrastructure?
- What is/are your favourite mode(s) of transportation and why? What would make it better or easier for you to use this mode of transportation more often?
- Are you able to get to where you need to go? If not, why? Where are you not able to go?
- Are there parts of your trip that you really enjoy?
- Do the means you have of getting from one place to another work for you? Why or why not?
- Do you feel safe traveling at night? During rainy weather? In the daytime? Are their times of the day that are better for traveling than other times? Why or why not?
- What would you like to see/have to make your daily travels better?
- How are you traveling for different purposes; e.g. getting to school, work, going out, socializing, shopping, appointments, internships/co-op placements, childcare, leisure, going home, etc.

Be sure to take pictures that represent both the positive aspects of your daily travel and the things that are negative.

Is it ethical?

1. **Obtain Informed Consent** – Consent must be given for participation as photo subject (from adults and minors), to utilize photographs for exhibits and promotional purposes, to take pictures of people and/or private homes or businesses, and for consent of people identified in photographs.

Ask yourself? Is this invading someone's privacy?

Consent Needed

- Taking pictures of someone who is recognizable (faces, tattoos, or markings)
- Taking a picture of minors (people under 18 years of age)
- Taking a picture of personal belongings and/or personal property

Consent NOT Needed

- Taking a picture of public figures
- Taking a picture of the environment or public settings
- Taking a picture of people who cannot be specifically identified

2. Protect Participants – Participants must refrain from entering dangerous spaces/situations to complete the project. Think not only about danger in terms of physical harm, but also in emotional harm, harm to individual reputation, or potential financial harm, among others.

Ask yourself? Will it harm others or me? Is it dangerous?

3. Protect the community – it is important to protect others by abstaining from taking pictures that may harm the reputation, safety, or individual liberty of another.

Ask yourself? Will it put a person’s employment, status in the community, etc. in jeopardy?

4. False light – It is necessary to make sure that situations in the community are reflected accurately. Necessary steps must be taken to accurately portray the community and to avoid taking photographs of images that could be taken out of context.

Ask yourself? Is it truthful? Does it accurately represent the situation?

Please note that to ensure the integrity of this research, photos and narratives will not be used unless they uphold all ethical practices.

How do I approach subjects?

When taking pictures of a human subject or their personal property you must ask their permission first. Make sure that the images you take will accurately represent the situation.

- ✓ **Assess** – Assess the situation. Can you approach them safely or are they engaged in a dangerous activity (ex. Driving?)
- ✓ **Explain** – Explain the project and your involvement
- ✓ **Ask for Consent and have them complete a consent form**– Ask if it would be acceptable to use images from them to discuss the themes of your project in a group setting. Please ask them to complete a consent form. When you meet with the Project Lead at your debrief meeting, please provide the completed subject consent form.

Taken and adapted from:

- Facilitator’s Toolkit for a Photovoice Project by United for Prevention in Passaic County retrieved from www.wpunj.edu/uppc/...UPinPC+Photovoice+Facilitator+Tollkit+Final.pdf July 3, 2018
- Mackinnon, S., & Ryan, L., (2014) Photovoice Toolkit, City of Hamilton

Participant Consent Form Students on the Move October 2018-April 2019

You are being invited to participate in a research project.

What is Photovoice?

The purpose of photovoice is to use pictures, along with narratives, as a way for people to tell and share their story. The photos and narratives provided by post-secondary students from this project will be used to inform decision-makers about the travel experiences of students in Niagara with the hope to influence policy change, programs and physical assets to help improve transportation. This project is being conducted by Niagara Region Public Health in partnership with Brock University and Niagara College. It will also be used for a graduate level research thesis (MA in Geography) entitled, “Understanding Post-secondary Student Mobility and its Impact on Wellbeing”.

What’s Going to Happen with the Photos and Narratives?

Your pictures and narratives will be shown at Regional and Municipal town halls to help inform councillors and municipal staff about student transportation concerns and strengths. They may also be used in: public offices; in community displays; at galleries and presentations; published on the websites of the Niagara Region, or any of the municipalities within Niagara; displayed at Brock University and Niagara College or posted to their websites; used in brochures; pamphlets; flyers; reports; journal articles; at conferences and knowledge exchange venues; newsletters; newspapers; radio; television; or social media. They will be used to create awareness about assets and needs in the community regarding transportation. Please note that if we do use your photos and narratives for this purpose, your real name will not be used; instead, we will only include your gender, age, ethnicity, the municipality in which you live, and your status as a domestic or international student. In the event that your demographic information may make you an identifiable person, we will not publish that information.

What’s Involved?

1. First meeting (about one hour) - You will be asked to meet with the Project Lead and Principal Investigator in a quiet/private space at your campus, at a time that is convenient for you, to talk about the project and sign this consent form if you determine you would like to be part of this project
2. Take Photos! – As you travel around Niagara, take high-resolution photos of your travel experience with your own cell phone or camera. Try to capture different times of the day, good experiences, bad experiences, things that make you uncomfortable, gaps in transportation connectivity, etc. Choose between one to five photos that best describe how you feel about your experience and write a short narrative to go with the each of the photos or group of photos. Share your thoughts about what you are trying to convey in the photo and the feeling that travel experience left with you.
3. Email the photos and narratives to the Project Lead, Jackie.gervais@niagararegion.ca by March 31, 2019
4. Lastly (one hour) – Meet again with the Project Lead and the Principal Investigator to discuss your photos and narratives, at a time that is convenient for you. This discussion will be audio recorded to capture the conversation.
5. In appreciation for your time, a \$50 gift card will be given to you at the wrap up meeting (or through another mutually agreed upon arrangement). We expect that this will take approximately 4 hours. **Your time is valuable and we appreciate your participation!**

What Happens with the Photos, Narratives and Audio Recording?

You will not be contacted after the completion of this project. Your photos and narratives will be themed and used to inform the community about your travel experiences as mentioned above. They will also be

used to inform a Masters thesis project. A Public Health program assistant will transcribe the recording of your last meeting with the Project Lead and the Principal Investigator and then the audio recording will be destroyed after the Project Lead reviews the accuracy of the transcription. All of information that you provide will be considered confidential and grouped with other responses from other participants.

If you have additional thoughts you would like to share after our last meeting, or anywhere through the research process, or would like a copy of the study results, please contact the Project Lead, Jackie Gervais at the contact information below.

Potential Benefits and Risks

Possible benefits of participation include knowing that your contribution to developing a better understanding of post-secondary student travel will help fill a current knowledge gap and will be used to influence local policy and decision makers. There are no known risks to participation, as individual students will not be identified. The risks are no greater than your usual commute from various destinations around Niagara Region. You may withdraw at anytime, up until the point of publishing, and your data will be destroyed.

Confidentiality

Your contributions to this work will not be reported individually. To protect your anonymity, your photos and narratives will not have your real name; instead, we will only include your gender, age, ethnicity, the municipality in which you live, and your status as a domestic or international student. In the event that your demographic information may make you an identifiable person, we will not publish that information. A Public Health program assistant will transcribe the recording of your last meeting with the Project Lead and the Principal Investigator and then the audio recording will be destroyed after the Project Lead reviews the accuracy of the transcription. All of information that you provide will be considered confidential and grouped with other responses from other participants.

Data collected during this study will be stored in password-protected files at Niagara Region Public Health and Brock University and Niagara College and destroyed within five years after the study completion. Only the Project Lead and Principal Investigator will have access to the data that are attached to the names of the participants. Names, with assigned code and data with the matching code will be held in separate password protected files.

Before participating in photovoice, please read the following statements to show your agreement.

- I understand that participation is voluntary and that I have the right to withdraw my permission at any time with no penalty or loss of benefits.
- I understand that up until the point of publishing, I can withdraw my consent and the data will be destroyed. I can do this by contacting the Project Lead (Principal Student Investigator) or the Principal Investigator either verbally, by phone or by email using the contact information below.
- The \$50 Tim Horton's Gift Card will be given at the debrief meeting, or at another mutually agreeable time for having participated in any part of the project
- I understand that during the meeting process I can decline to answer any questions with no penalty or loss of benefits
- I give my permission to use the photos I created and narratives I have written for the above named purposes
- I understand that not all of the work I have submitted will be used for public display
- I have read and understood the photovoice fact sheet and will follow the ethical practices outlined within it
- Results of this study may be published in professional journals, reports, presented at conferences and before Municipal or Regional council. Feedback about this study will be available at the

following weblink www.niagararegion.ca/studentsonthemove or by contacting the Project Lead, Jackie Gervais (Principal Student Investigator), Jackie.gervais@niagararegion.ca, (905) 688-8248 x 7332.

Consent

I agree to participate in this study described above. I have made this decision based on the information I have read in this document/ I have had an opportunity to receive any additional details I wanted about the study and understand that I may ask question in the future. I understand that I may withdraw this consent at any time up until the point of publishing.

Name (please print) _____

Signature _____ Date _____

Thank you for your assistance in this project. Please keep a copy of this form for your records.

This study has been reviewed and received ethics clearance through the Brock University Research ethics board (file # 18-041); Niagara College ethics board (file # NC2018-12); and, the Niagara Region Public Health ethics review committee.

For more information contact:

- ★ Jackie Gervais, Project Lead, Health Promoter, Niagara Region Public Health, (905) 688-8248 x 7332, Jackie.gervais@niagararegion.ca (Principal Student Investigator)
- ★ Dr. Christopher Fullerton, Principal Investigator, Faculty Supervisor, Associate Professor, Department of Geography & Tourism Studies, Brock University (905) 688-5550 x 3423, chris.fullerton@brocku.ca
- ★ Duncan MacDuff, Research Facilitator, Niagara College, 905-735-2211 x 7122

If you have any concerns or questions about your rights as a research participant, please contact the Brock Research Ethics Office reb@brocku.ca, (905) 688-5550 x 3035 or the Niagara College Research Ethics Office at researchethics@niagaracollege.ca, 905-735-2211 x 7180.

Photography Tips²⁴

What are you taking a picture of?

Do you have a clear idea of what you want your image to say? Before cell phones and digital cameras

one would have been limited to 24 images on a single roll of film. That means you would only have 24 opportunities to showcase what you are trying to say. How many times do you retake a picture before finding the right photo?

Does it stand out?



There is a lot to look at in this photo, but it is clear that

the main object of focus is the sticker on the pole. Some cameras allow for the background to remain out of focus while the main image, or foreground, is focused. This can also be achieved by zooming i

When taking a picture of a small object or a singular object among many it is important to focus on the main message. Is your photograph telling the same story that you are seeing?



PHOTO BY VANESA APAZA

Color makes a difference.

Color is a key player in taking a powerful photograph as colors often relate to one's emotions. Red can be interpreted as passion either in a loving or negative way, whereas the lack of color may also help express your message. Does a black and white photograph help promote your message?

In this office setting where many items are black, white, or gray, this red object really stands out. If this photo was taken in black and white, then it would not have the same effect on the viewer. Immediately, the viewer's eyes are drawn to the red cup.

²⁴ Taken from: Facilitator's Toolkit for a Photovoice Project by United for Prevention in Passaic County retrieved from www.wpunj.edu/uppc/...UPinPC+Photovoice+Facilitator+Tollkit+Final.pdf July 3, 2018

All about perspective.

Naturally we take a picture from the angle we are looking, but consider looking at the world from a different perspective. Children see the world from the ground up, and birds from the sky down, try holding your camera at different levels and angles to see the world a little differently.



PHOTO BY PHOEBE DESANTIS

In the first picture it is unclear what the photographer is intending, is the focus on the student, the walkway, or the construction? However, in the second picture the main emphasis is on the dump truck. The low angle at which this photograph was taken makes the construction vehicle appear larger than life, highlighting its power and importance.

Rule of thirds.



To get someone's attention through photography you must make sure that the photos are interesting out of context, meaning that it is visually pleasing even without knowing the story behind it. Try using the rule of thirds to make an image more appealing. Instead of lining up your main subject directly in the middle of the photograph, imagine that there are these lines over the top of your picture. Try placing your subject where the lines intersect.

PHOTO BY PHOEBE DESANTIS

The subject in this photo was intentionally placed off-centred in the frame. By placing the subject in one of the frame's "thirds", it becomes more aesthetically pleasing to the viewer.

Sharing your Story

Writing the Narrative

After you have selected the 1-5 photos that you want to share, use the following questions to identify and explore transportation in Niagara in your daily travels.

What do we see here?

How are you experiencing this? How does this impact the way you feel or your wellbeing?

What is really happening in this photo?

How does this relate to travel experiences in Niagara?

Why does this situation, concern, or strength exist?

What can be done about it? Does anything need to be done about it?

**SUBJECT CONSENT FORM FOR USE OF
PHOTOS, VIDEO RECORDINGS AND AUDIO RECORDINGS
FOR PRINT AND/OR INTERNET USE**

I grant permission to Niagara Region and persons acting for or through them, the right to use, reproduce and/or distribute images, sound recordings and video recordings of me/my child in the following manner: They will be used to create awareness about assets and needs in the community regarding transportation

Yes No

1. Niagara Region Website (www.niagararegion.ca)
2. Regional and Municipal council and public offices
3. In community displays
4. at galleries and presentations
5. Social networking outlets (Facebook, YouTube, Twitter, etc.)

Specify: _____

6. Other websites: Brock University

7. Other websites: Niagara College

8. Print publications

9. Video distribution outlets

10. Sound distribution outlets

11. Other, Specify: _____ named,
_____, and/or my child named _____ for the
purposes of promoting Niagara Region and activities, services or programs
offered by Niagara Region.

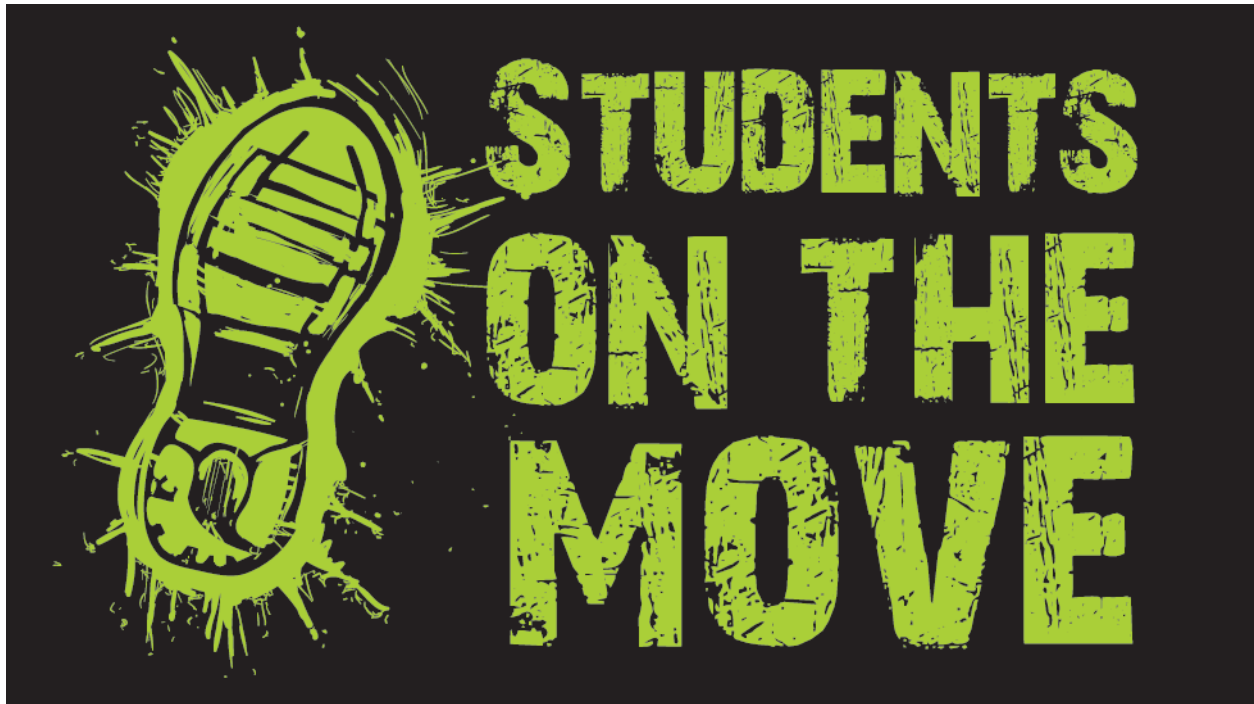
Signature Date

Witness Signature Date

Signature of Guardian Date

Witness Date

Appendix F: Students on the Move Logo



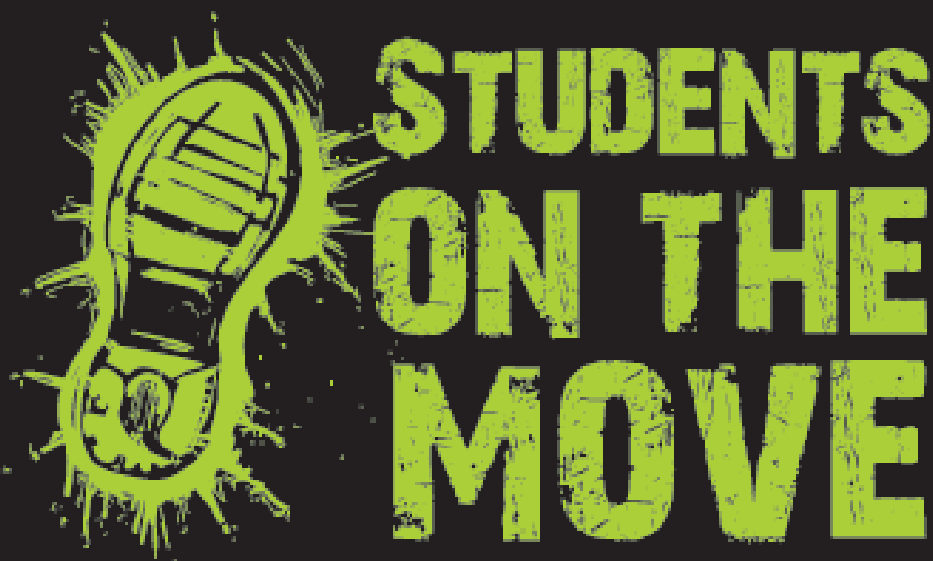
Appendix G: Tent Cards and Posters

Tent card



Poster

Help improve student transportation
and wellbeing in Niagara!



Take the
"Students on the Move"
 survey coming to your student email in
 February and have a chance to win a
\$10 or \$20 Tim Hortons gift card!

Thank you to those of you who participated
 in the survey this past fall!

For more information about this project visit
niagararegion.ca/studentsonthemove



Niagara Region

This study has been reviewed and received ethics clearance through the Research Ethics Board of Brock University 18-031 and Niagara College MC2018-12.

Appendix H: Actionable items by Steering Committee from travel logs

Code	Quote	Person Responsible	Action Proposed
<i>No buses available</i>	“There are no buses where I live, the quickest way to travel is to drive. If I wanted to take the bus from Stoney Creek to Brock (border line Grimsby I would have to take a transfer cab and 3 buses almost- which would take too long)” (Car, Stoney Creek/Grimsby to Brock)		
<i>Need more buses</i>	“Only one issue I have is that the lack of buses that go to towpath-Thorold (bus number 328) because this bus is always packed to the brim, and sometimes it is too packed and the driver ignores people waiting for it” (Bus, St. Catharines)		
<i>Inconvenient time of bus</i>	“[By] the time I reach the terminal either there is a gap between the 301-401 schedule or the bus just left and I have to wait one whole hour till I get the next bus” (Public Transportation, St. Catharines)		
	“It can be difficult since the buses don't quite match the schedule listed. One comes earlier every time I've tried to catch it (so I plan for that), but then others come late. The most difficult is that the 316 is listed as 11 minutes from the Downtown Terminal to Brock but most often takes 20 minutes (sometimes a little more). That can be the difference between having a few minutes to get to class and being 10 minutes late. Since I have to make a connection, I can't just take the bus 15 minutes earlier but have to leave at least 30 minutes earlier.” (Bus, St. Catharines)		
	“Buses should be more frequent; as the Richmond/Tupper buses experience the most passengers, but buses run every 30-40 minutes.” (Bus, Thorold to St. Catharines)		
	“It would just take 10 mins to reach directly from NOTL outlet mall to home but by bus I need to go to downtown St. Catharines and wait for 30mins to get a bus home” (Bus, Niagara-on-the-Lake to Thorold)		
<i>Safety concerns when walking</i>	“The lights at the school can be stressful because of vehicles. I have almost been hit a few times when the cross walk said walk.” (Walk, Welland to Niagara College, Welland)		

<i>Fear</i>	The bus to go to Walmart is not available during the day only at night when it is dark. Being a small girl and carrying groceries in the dark makes me an easy target, I have to depend on my roommates to go with me because I am scared. (Bus, St. Catharines)		
<i>Inconvenient</i>	“Niagara College (Niagara-On-the-lake Campus) and Pen Centre both located on Glendale Avenue. However, if we want to go to Pen from Niagara College. We have to take a bus to the downtown terminal first then take another to go to the Pen Centre. It's 10 mins drive in between but takes 40 mins for buses. That makes no sense at all. If I have an option to take a bus there, I won't drive. And for most of the students who don't have a car. It is a pain point.” (Bus, Niagara-On-The-Lake to St. Catharines)		
<i>Concerned about being late</i>	“Richmond/confederation bus is always late. Have to get an earlier bus so I'm not late for class” (Bus, Winterberry to Brock)		
<i>Infrastructure Missing</i>	“There are no sidewalks along the road in front of Niagara College’s residence building, so walking through that muddy or snowy field everyday can be quite tasking and a stressful start to a school day.” (Walk, Welland)		
<i>Infrastructure Issues</i>	“The stop light at McDonalds on Niagara street stops me every time for no reason. There is never any traffic sitting on the sensor coming from McDonalds. Also, the intersection of Woodlawn’s and Niagara St. can be chaotic.” (Car, Welland)		
<i>Bus discomfort</i>	“418 takes super long, route has too much quick stops, make it really dizzy to go” (Bus, St. Catharines)		
<i>Out of town links</i>	“When I want to stay late and study at school, I have to drive to Welland because there are no late buses back to Port Colborne” (Car & Bus, Port Colborne to Welland to Brock)		
	“Availability and schedule they set doesn’t work with my schedule very infrequent servicing from Mississauga to St. Catharines” (Mega Bus, Mississauga to Thorold)		

Appendix I: Tables Comparing Safety to Other Travel Considerations

Feeling safe from theft or attack in relation to other travel issues based on male or female

genders

Female sense of safety and relying on others for transportation				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Having to rely on others for transportation			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	31%	15%	26%	29%
Easy	18%	22%	28%	31%
Neutral	10%	29%	31%	31%
Difficult	12%	17%	42%	30%
Very difficult	9%	20%	53%	19%

Male sense of safety and relying on others for transportation				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Having to rely on others for transportation			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	22%	15%	26%	38%
Easy	22%	31%	20%	26%
Neutral	16%	35%	29%	20%
Difficult	NR	27%	54%	9%
Very difficult	NR	NR	57%	38%

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and ease of being able to make bus connections				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Ease of being able to make bus connections			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	43%	13%	15%	28%
Easy	36%	22%	18%	24%
Neutral	14%	34%	24%	24%
Difficult	14%	30%	34%	21%
Very difficult	6%	15%	71%	9%

Male sense of safety and ease of being able to make bus connections				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Having to rely on others for transportation			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	44%	14%	21%	21%
Easy	38%	23%	20%	19%
Neutral	15%	40%	31%	14%
Difficult	NR	NR	59%	NR
Very difficult	NR	NR	59%	NR

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and buses being available on weekends				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Buses being available on the weekends			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	34%	7%	33%	26%
Easy	19%	18%	39%	24%
Neutral	11%	23%	41%	25%
Difficult	10%	14%	54%	24%
Very difficult	NR	8%	74%	15%

NR=Not reportable

Male sense of safety and buses being available on weekends				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Buses being available on the weekends			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	30%	12%	37%	21%
Easy	16%	21%	43%	21%
Neutral	14%	26%	45%	15%
Difficult	0%	NR	82%	NR
Very difficult	NR	NR	50%	36%

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and buses being available in the evening				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Buses being available in the evening			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	40%	11%	25%	25%
Easy	26%	19%	35%	20%
Neutral	13%	26%	38%	26%
Difficult	15%	14%	50%	21%
Very difficult	NR	11%	74%	10%

NR=Not reportable

Male sense of safety and buses being available in the evening				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Buses being available in the evening			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	33%	16%	32%	19%
Easy	30%	18%	31%	13%
Neutral	13%	36%	39%	12%
Difficult	0%	NR	87%	NR
Very difficult	NR	NR	57%	NR

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and being able to find the time to travel				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to find the time to travel			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	72%	12%	15%	NR
Easy	57%	21%	19%	NR
Neutral	32%	40%	25%	3%
Difficult	30%	31%	37%	3%
Very difficult	NR	23%	47%	NR

NR=Not reportable

Male sense of safety and being able to find the time to travel				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to find the time to travel			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	52%	17%	11%	NR
Easy	55%	23%	21%	NR
Neutral	31%	43%	25%	NR
Difficult	NR	NR	68%	0%
Very difficult	35%	NR	50%	0%

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and being able to travel when one wants to				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to travel when one wants to			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	58%	13%	28%	NR
Easy	49%	19%	31%	NR
Neutral	36%	24%	38%	NR
Difficult	44%	14%	43%	NR
Very difficult	21%	10%	68%	NR

NR=Not reportable

Male sense of safety and being able to travel when one wants to				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to travel when one wants to			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	56%	11%	31%	NR
Easy	50%	17%	32%	NR
Neutral	29%	9%	46%	NR
Difficult	NR	23%	64%	NR
Very difficult	NR	NR	64%	NR

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and bus operating frequency				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Buses operating frequently			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	39%	14%	29%	19%
Easy	32%	21%	28%	19%
Neutral	17%	30%	32%	21%
Difficult	18%	21%	41%	21%
Very difficult	12%	15%	64%	9%

Male sense of safety and bus operating frequency				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Bus operating frequency			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	28%	15%	32%	17%
Easy	38%	24%	28%	10%
Neutral	20%	31%	37%	12%
Difficult	NR	23%	68%	NR
Very difficult	NR	NR	50%	NR

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and being able to understand where to go				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to understand where to go			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	85%	7%	7%	NR
Easy	75%	15%	9%	NR
Neutral	38%	43%	18%	2%
Difficult	40%	30%	28%	3%
Very difficult	19%	20%	58%	NR

NR=Not reportable

Male sense of safety and being able to understand where to go				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Having to rely on others for transportation			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	88%	5%	6%	NR
Easy	53%	21%	5%	NR
Neutral	40%	41%	18%	NR
Difficult	NR	32%	50%	NR
Very difficult	NR	NR	57%	NR

NR=Not reportable

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Female sense of safety and being able to get information about transportation options				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to get information about transportation options			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	43%	15%	13%	29%
Easy	40%	27%	14%	19%
Neutral	19%	42%	20%	19%
Difficult	18%	30%	35%	10%
Very difficult	10%	15%	66%	29%

Male sense of safety and being able to get information about transportation options				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to get information about transportation options			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	49%	16%	18%	17%
Easy	36%	31%	24%	10%
Neutral	20%	43%	27%	10%
Difficult	23%	NR	50%	NR
Very difficult	NR	NR	50%	NR

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative

Female sense of safety and being able to get information about bus service				
Level of difficulty <i>females</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to get information about bus service			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	54%	9%	12%	26%
Easy	53%	18%	11%	19%
Neutral	30%	34%	16%	19%
Difficult	36%	19%	29%	15%
Very difficult	27%	15%	50%	9%

Male sense of safety and being able to get information about bus service				
Level of difficulty <i>males</i> typically experienced in feeling safe from theft or attack when traveling alone on their daily commute	Being able to get information about bus service			
	Very easy - easy	Neutral	Difficult – very difficult	Not applicable
Very easy	64%	10%	10%	15%
Easy	50%	26%	13%	11%
Neutral	36%	35%	19%	9%
Difficult	23%	NR	55%	NR
Very difficult	NR	NR	50%	NR

NR=Not reportable

Red numbers and letters indicate the sample size is very small and likely not representative