



STUDENTS ON THE MOVE

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This study was reviewed and received ethics clearance through the Research Ethics Board at Brock University [18-041], Niagara College Ethics Board [CEC-NC2018-12], and Niagara Region Public Health Ethics Committee.

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CHAPTER 1:

Introduction

Background: Why Niagara's Post-secondary Students?

There are approximately 30,000 students attending post-secondary school in the Niagara region between Niagara College and Brock University. Niagara College has two campuses, one in Welland and the other in Niagara-on-the-Lake. Brock University has two campuses, the main campus at the southern edge of St. Catharines, bordering the City of Thorold, and the Marilyn I. Walker School of Fine and Performing Arts in downtown St. Catharines.

Numerous anecdotal reports have argued that transportation is a challenge for post-secondary students in Niagara. Part of this challenge stems from the large proportion of students who reside off-campus, oftentimes in a different municipality from the one in which their school's campus is located. Many of these students also do not have access to an automobile and, therefore, must rely on multiple public transportation systems, active transportation (such as walking, bicycling, using a wheelchair, or skateboarding), or car rides from others to get to school, employment, co-op placements, social activities, and other day-to-day destinations.

Because of Niagara's widely dispersed urban centres, urban and rural land-use mixes and primarily auto-centric infrastructure design, many students' dependence on non-automobile modes of transportation causes them to experience lengthy commutes. In many cases, for example, post-secondary students' unique transportation behaviour involves travelling beyond public transit agencies' heavily weekday-oriented hours of operation. Weekends pose a particular challenge, as bus service to many areas is significantly reduced on those days or is not provided at all. This further limits students' ease of travel and potentially hinders opportunities for them to meet their day-to-day needs. Cumulatively, these constraints have the potential to affect students' wellbeing and health.

What makes this study unique

Aside from understanding post-secondary students' daily travel experiences throughout Niagara – where and when they go, how they get there, and how easily they can do so - this research addresses the significance of transportation to Niagara students' health and wellbeing, a first in Niagara. In order to achieve Regional Council's strategic priorities, we must create a supportive, welcoming, and accessible community. Transportation plays a significant role in this achieving this mandate.

Ideally, the results and recommendations from this study will be used to:

- Improve transportation conditions for the health and wellbeing of Niagara's post-secondary students
- Improve accessibility and the quality of travel in Niagara
- Inform infrastructure needs that support walking, cycling, public transit, and other sustainable transportation options
- Implement various regional and local municipal policies, such as the Transportation Master Plan and Municipal Growth Plan
- Further inform transportation concerns identified through Shape Niagara



Supporting Council's Strategic Priorities

In 2018 the Niagara Region conducted the [Shape Niagara](#) survey and community engagement strategy in order to understand the needs and concerns of Niagara's residents. Seventeen top themes were identified by Niagara's residents, businesses, organizations and local area municipalities and were summarized and presented in order of priority. This project aligns with these Shape Niagara priorities:

- **Priority #2: Transportation Connecting People to Jobs & Services**
 - Recognize and promote secondary benefits that come with a unified transit system; improved access to health care, improved access to job opportunities across municipalities, reduction in greenhouse gas emissions, improved social engagement and reduction in congestion on major arteries
 - Continue with the creation of a comprehensive inter-municipal transit system, integrated with the future GO route
 - Ensure current and future transit is accessible, frequent and affordable, routes and schedules matched to the needs of the users
- **Priority #3: Supporting Populations in Need through Affordable Housing and Transit**
 - Support populations in need by ensuring necessary services are provided including affordable housing and transportation options, that services such as health care are accessible and that affordable housing needs of the community are met
 - Populations in need as identified by respondents include seniors, homeless, new residents, immigrants, those experiencing addictions, and vulnerable/marginalized
- **Priority #6: Active Transportation**
 - Promote utilization of active transportation through the creation of a transit supportive community with bike lanes, pathways, and trail networks integrated with public transportation
 - Support connectivity between neighbourhoods, schools and workplaces to ensure residents can safely travel to daily destinations using active transportation
 - Design future developments with a community planning lens; ensure new developments have sidewalks and community space
- **Priority #10: Quality of Life and Public Safety**
 - Quality of life is defined by respondents as being connected to their community, having access to housing, and feeling safe
 - Respondents feel strongly about creating a sense of belonging for all residents and highlighted the need for inclusivity and empowering diverse populations
 - Modifications such as lighting, increasing walkability and transit options will make people feel safer and more connected to their community

- **Priority #15: Youth and Young Family Retention**

- Support a comprehensive youth retention strategy to retain a qualified labour force, meeting future needs of industries and economic growth.
- Retain youth and young families by fostering strong partnerships between post-secondary institutions and business sector to match local graduates with employment opportunities; ensure education programs fill gaps in the workforce; foster creation of new, quality jobs in emerging sectors such as technology; create an entrepreneur and technology friendly region

The results of Shape Niagara were then used by Regional Council to inform their priorities in the [2019-2022 Council Strategic Plan](#). The Students on the Move project aligns with two of the four Council strategic priorities: “Healthy & Vibrant Community” and “Responsible Growth & Infrastructure Planning”.

How Transportation is Linked to Health and Wellbeing

Greater Education = Greater Health: Research shows that greater educational attainment is associated with better health outcomes¹ (Ross & Wu, 1995; Eide & Showalter, 2011; Goldman & Smith, 2011). However, in order for students to acquire that education, they must be able to get to school. Lack of transportation, or even poor-quality transportation options, could result in the loss of education for some, with consequential implications for future health.

What Makes People Healthy: In 1948, the World Health Organization defined human health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” (WHO, 1948) moving the idea of health to being more than just the physical body.

Global health leaders have recognized that disparities between social, political and economic factors, understood to be 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 recognizes the following as the determinants of health: income and social status, employment and working conditions, education and literacy, childhood experiences, physical environments, **social support** and coping skills, **healthy behaviours**, access to health services, biology and genetic endowment, **gender**, **culture**, and race/racism. (Government of Canada, 2019). These 12 determinants are interrelated and have an impact on one another. The determinants that are italicized are applied in this study.

Being Connected to the Community: As noted in the Shape Niagara report, part of someone’s state of wellbeing is the feeling of being connected to their friends, family, and community. In order to feel connected to their community, people need get where they need or want to go (Delbosc & Currie, 2011). Getting from one place to another can involve using a variety of transportation modes, both active and motorized. These different forms of transportation enable people to be mobile and to interact with their environment; however, not everyone has the same number of transportation choices available to them.

Community Design Impacts Health: Community design has an important influence on a person’s ability to use certain means of transportation (Manaugh et al., 2015). By designing land uses, such as schools, retail centres, or other related commercial shops, to accommodate the car, we have inversely discouraged the use of active transportation, whether due to perceived safety concerns, lack of access to alternative modes of transportation, or a lack of comfortable pedestrian/cycling experiences.

¹Goldman & Smith (2011), considered the long-term implications of education on health as it pertained to five self-reported chronic diseases. They found that educational attainment was a strong predictor in disease onset prevention, and that for those with chronic illness, the health outcomes were better. For people with less education, the disease impacts were more severe with more rapid progression. Although people with higher education have greater income potential, education was a stronger predictor of disease onset in comparison.



North American cities, including those in Niagara, have been built in such a way that the automobile is typically considered the most desirable and most convenient form of transportation. However, in most Canadian communities between 20 and 40% of the population do not drive or have access to an automobile (Litman, 2018) and the percentage is even higher for Niagara's post-secondary students at 55%. That means that approximately 16,500 post-secondary students must rely on public transit or modes of active transportation.

For people who rely 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 convenient and linked to the final destinations. If any of these variables are missing mobility is negatively affected (Delbosc & Currie, 2011). From a health equity perspective, people's access to necessities and the pleasures of life should not be limited by their available modes of transportation, which is often determined by income and social status, social and physical environments, gender, and culture (National Collaborating Centre for Determinants of Health, 2013). Through individual site development the use of alternative modes of transportation (i.e. provision of bicycle parking or storage, water/shelter stations, etc.) could be facilitated.

Long Commutes = Poorer Health: When it comes to the length of time spent commuting to work, longer journeys have adverse effects on people's sense of wellbeing (Chatterjee et al., 2017). It can have an impact on cognitive wellbeing, which includes satisfaction with work, income, health, family life, and leisure time (Lorenz, 2018). In the case of post-secondary students, studies have found that additional commuting: negatively affects academic performance; causes increased feelings of tiredness; decreases the amount of time available to see friends and family;

leads to decreased participation in extracurricular activities; reduces time to study; and impacts ease of access to childcare for students who have children (McCool et al., 2017; Kenyon, 2011). Commuting students are also more likely to drop out of post-secondary education prior to completing a degree (Kirk & Lewis, 2015; Kenyon, 2011) which then has implications for their future health status.

Improving the Quality of Transportation in Niagara for Students is a Win for Everyone

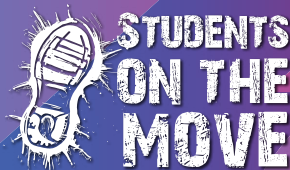
The transportation systems in Niagara are for everyone. However, 52% of employed people in Niagara work in precarious employment², 17% of people work in tourism³ (Niagara Region Economic Development, 2018), 21% are 19 or younger⁴; and 21% are 65 or older⁵ when health conditions can change people's travel modes. Many Niagara residents, due to age, income or other life circumstances may not have a vehicle and therefore must rely on other means to get to work, school, childcare, grocery stores and other life necessities. Providing easy to use, reliable, convenient and affordable transportation options benefits post-secondary students and all of Niagara's residents!

² Precarious employment is work that is typically part-time, temporary, or contract, and often without longer-term job security and employment based benefits (PEPiN, 2018).

³ Tourism is actually comprised of many sectors, the main ones being arts, entertainment, and recreation; and, accommodation and food services. There are essentially 36,900 jobs in those sectors (including employed and self-employed), which represents about 17% of total jobs in Niagara (Blake Landry, personal correspondence, April 23, 2020).

⁴ Niagara Region Public Health, Village of 100, n.d., <https://www.niagararegion.ca/health/statistics/demographics/default.aspx>

⁵ Niagara Region Public Health, Village of 100, n.d., <https://www.niagararegion.ca/health/statistics/demographics/default.aspx>



CHAPTER 2 :

Research Methodology

Research Design and Data Collection

A mixed-methods research approach that included an online survey and a series of photovoice interviews was used to collect both quantitative and qualitative data. These two methods were carried out independently of one another.

Online Survey

An online quantitative survey, made up of mostly closed-ended questions, was implemented in order to gather information on students' demographics, modes of transportation, sense of wellbeing, feelings of connection to the community, and access to resources. The online survey link was sent to Niagara College and Brock University students through their student email accounts. It was sent to a portion of students in the fall term of 2018 (mid-November to mid-December) and another portion of students in the winter term of 2019 (mid-February to mid-March). A total of 2,077 students entered into the survey, which resulted in 1,826 usable responses, of which 1821 students identified which institution they attended (Table 2.1). The fall and winter data were first analysed separately and, if there were no significant differences, analysed together. Most of the results in this report are reflective of the combined data.

Table 2.1
Number of Survey Responses⁶, Brock University and Niagara College, Fall and Winter Terms, 2018-2019

Term	Niagara College		Brock University	
	Responded	After Cleaning	Responded	After Cleaning
Fall 2018	311	262	658	589
Winter 2019	531	453	577	517
Total	842	715	1235	1106

Many of the transportation survey questions were derived from two existing survey tools: 1) the Niagara College Student Transportation Survey; and 2) the StudentMoveTO survey, conducted by Ryerson University, University of Toronto, York University and OCAD University. Additional transportation-related questions were generated to address issues or concerns identified by the project steering committee (described later in this chapter) or to address specific needs identified by community partners. Questions about student wellness were adapted from the "Be Well" Survey, Phase II, Extended Version (The Association of Ontario Health Centres, 2016) and Delbosc & Currie's (2011) research.

⁶ To achieve statistical significance we aimed for the participation of 372 students from Niagara College and 377 students from Brock University in each term, in order to achieve a confidence level of 95% and a confidence interval of 0.05.



Photovoice Interviews

Photovoice is a qualitative data collection method that actively engages participants in the creation of visual data. It provides a way for researchers to learn about the life experiences of the people through images and stories created by the participants themselves (Glesne, 2016). Twenty participants engaged in the photovoice component, nine in the fall term and eleven in the winter term, with equal numbers of Brock University and Niagara College students (Table 2.2).

Table 2.2
Student Participation in Photovoice by Campus, Students on the Move Project, 2018-2019

Campus	Number of Participants	Number of 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 participants were asked to capture and share their positive and negative travel experiences by taking pictures along their day-to-day journeys and then writing short narratives to go along with the photos. These were then used to spur in-depth discussions in recorded interviews held individually with each student. The photos, narratives and interview transcripts were then used in the analysis to gain a more in-depth understanding of:

- Student travel behaviours and modes of travel
- Students' modal preferences
- Types of transportation challenges experienced by the students, including their ability or inability to reach certain destinations
- Students' perceptions of mobility or immobility impacts on their health and wellbeing
- Social inequities and experiences of exclusion

The online survey data were analysed separately from the photovoice data. Findings were used together to generate a holistic picture of students' transportation experiences and their subsequent impact on student wellbeing.

Role of Steering Committee

Because this study's intention is to inform municipal policy and projects in Niagara region, the steering committee ensured that this research and the results are realistic and actionable. The steering committee is comprised of municipal staff representatives from each Niagara municipality that hosts a post-secondary campus, as well as representatives from staff, faculty and student unions at Niagara College and Brock University, and the four major local and regional public transit agencies (St. Catharines Transit, Welland Transit, Niagara Falls Transit, and Niagara Region Transit). The committee also had representation from various Niagara Region departments, including Public Health, Planning and Development Services, and Public Works.



CHAPTER 3:

Who are our Students?

The following chapter outlines some of the characteristics and living situations of Niagara's post-secondary students.

General Demographics

Overall, more females than males responded to this survey (Table 3.1), which is common with surveys (Smith, 2008). As could be expected, there were also more domestic than international students responding to the survey⁷ (Table 3.2), which is reflective of the student population attending Brock University and Niagara College. And, the majority of respondents were between 20-24 years of age, the typical age of most university and college students (Table 3.3). Unfortunately, the response rate was low for people in other gender categories and are therefore not reportable which did not allow for further data analysis within those gender categories.

Table 3.1
Response Rate by Gender, *Students on the Move* Survey, 2018-2019

Gender	%
Female	62.9
Male	26.6
Other gender identities	0.9
Did not identify gender	9.6
Total	100.0

Source: *Students on the Move* Survey, 2018-2019 (n =1826)

Table 3.2
**Proportion of Domestic and International Student Participants⁸,
Students on the Move Survey, 2018-2019**

Student Status	Percentage (%)
Domestic	78
International	22

Source: *Students on the Move* Survey, 2018-2019 (n =1809)

⁷International students make up about 10-12% of students at Brock University and over 40% at Niagara College.

⁸Does not include students who did not identify their student status as domestic or international



Table 3.3
Percentage of Respondents by Age Cohort, *Students on the Move* Survey

Age Cohort	%
19 and under	30
20 - 24	48
25 -29	12
30 and over	10
Total	100

Source: *Students on the Move* Survey, 2018-2019 (n = 1822)

Where did Niagara's Post-Secondary Students Live in 2018-2019?

Niagara's post-secondary students lived throughout the Region, and beyond, during the 2018-2019 academic year. With St. Catharines being the largest urban centre, and Brock having its campuses there, it is not surprising that most students lived in St. Catharines (39%) followed by Thorold (17%). However, far fewer students were living in Welland (11%) and Niagara-on-the-Lake (5%) where the two college campuses are located. Interestingly, there were a large population of students living in Niagara Falls (17%), where there are no campuses.

Student Municipality of Dwelling by Campus Attended

Upon closer examination, the municipal share of student dwelling locations is different between campuses. While it could be assumed that most students live fairly close to their campus, this was not always the situation. Most students who primarily attend the Brock University main campus lived in St. Catharines (50%) and Thorold (26%) resulting in three quarters of students living in what is essentially the same municipality as the campus. Most students primarily attending the Marilyn I. Walker campus lived in St. Catharines (59%) or Thorold (24%).

Fewer Niagara College students lived in the same municipality as their campus. Thirty-six percent of students attending the Welland campus lived in Welland, with a similar number in Niagara Falls (32%). Students attending the Niagara-on-the-Lake campus were split between St. Catharines (30%), Niagara Falls (24%), and then Niagara-on-the-Lake (18%). Thus, for both Niagara College campuses, many students made an extensive inter-municipal journey in their daily commute to and from school (Figure 3.1 and Table 3.4).



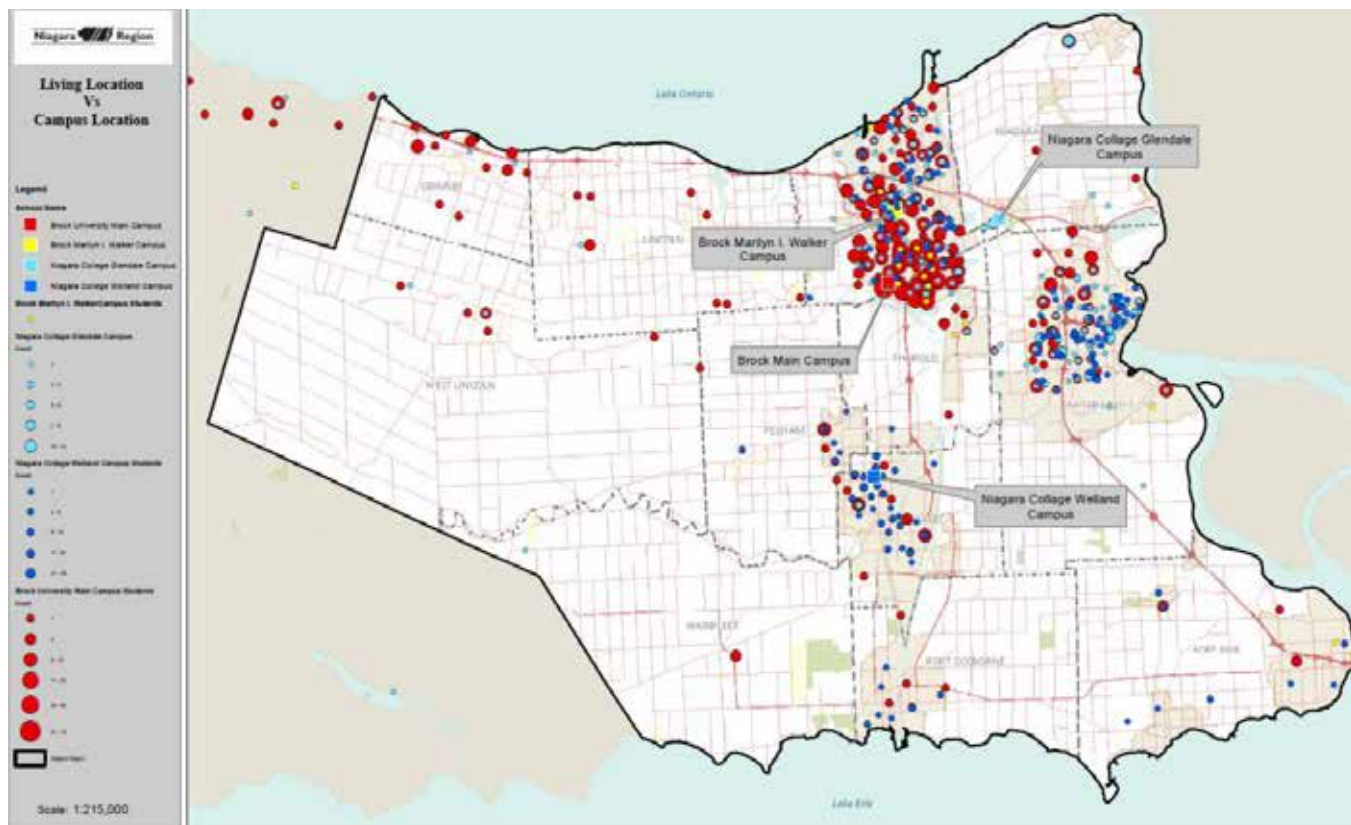


Figure 3.1 Students' Residential Location while in school in Relation to the Campus they Attend

Table 3.4
Student Municipality of Residence While at School, By Campus, 2018-2019

Municipality of Residence	Total %	Brock University %	Niagara College %
Fort Erie	1.5	0.9	2.4
Grimsby	1.3	1.8	0.4
Lincoln	1.2	1.4	1.0
Niagara Falls	16.5	8.5	28.9
Niagara-on-the-Lake	3.7	1.2	7.7
Pelham	1.3	1.1	1.6
Port Colborne	0.9	NR	1.8
St. Catharines	39.4	50.2	22.6
Thorold	16.8	25.5	3.3
Wainfleet	0.4	NR	NR
Welland	11.2	2.7	24.3
West Lincoln	0.4	0.4	NR
Outside Niagara	5.3	5.5	5.1

Source: *Students on the Move* Survey, 2018-2019 (n = 1,343)

NR = Not reportable due to low response rate



Domestic and International Students, Campus and Municipality of Dwelling

The majority of domestic (74%) and international (88%) Brock University students lived in St. Catharines or Thorold. Domestic students attending Niagara College's Welland campus were more likely to live in Welland (36%), while 55% of international students lived in Niagara Falls. Similarly, international students attending Niagara College's Niagara-on-the-Lake campus were also likely to live in Niagara Falls (36%) (Table 3.5). Anecdotal evidence suggests that there is an established network of connections to housing and employment through the international community there. This results in easier access to employment, but in more challenging commutes to campus since 86% of international students do not have an automobile.

Table 3.5
Municipality of Dwelling and Campus, Domestic & International Students⁹

Municipality	Campus					
	Brock Main Domestic	NC NOTL Domestic	NC Welland Domestic	Brock Main International	NC NOTL International	NC Welland International
Niagara Falls	9%	14%	19%	9%	36%	55%
Niagara-on-the-Lake	1%	17%	2%	NR	18%	NR
St. Catharines	47%	27%	23%	72%	34%	9%
Thorold	27%	9%	NR	16%	NR	NR
Welland	3%	7%	36%	NR	7%	34%
Other Niagara	7%	13%	15%	3%	5%	2%
Outside of Niagara	6%	13%	5%	NR	NR	NR

NR = Not reportable due to low response rate

Source: *Students on the Move* Survey, 2018-2019 (n =1766)

Housing and Number of People per Household

Students lived in an assortment of housing types, the most common type being detached homes (47%) (Table 3.6). Most students indicated that they live with four people (23%). The data showed notable differences between international and domestic students when it came to how many people live in one household. International students, more often than domestic students, indicated that they live with five, six, or more than six people in one dwelling. This finding parallels a 2019 news story that showed international students living in motels in Niagara Falls with multiple students sharing one motel room.

Students were also asked to share how many dependent children they had, if any. Most students (86%) did not have any dependent children, followed by one child (5%) and two children (4%). Of students who had dependents, most had a car (62%); however, this means that about one-third of students who have children rely on public transit or other non-automobile modes. This demonstrates the need for a supportive transit system for students, especially given the challenges of travelling with small children.

⁹ Does not include students at the Marilyn I. Walker campus due to low response rate

Table 3.6
Student Housing Types, Fall and Winter 2018-2019

Housing Type	Percentage (%)
Detached house	47.1
Apartment/Condominium	14.5
Semi-detached house	13.4
Row house/townhouse	9.7
On-campus residence	8.8
Off-campus residence	5.8
Motel/hotel	0.7 ¹⁰
Total	100

Source: *Students on the Move Survey, 2018-2019, (n=1811)*

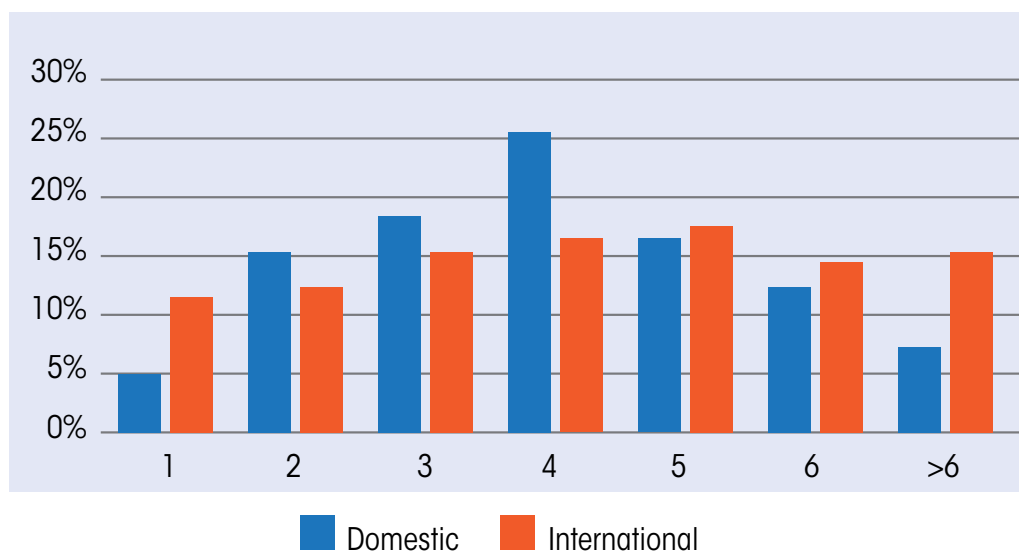


Figure 3.2 Number of People in Household, Domestic vs. International Students

Source: *Students on the Move Survey, 2018-2019*



¹⁰ Although 0.7% is a small number, that would equate to 210 students living in motel/hotel rooms



Student Living Situation is Related to Transportation

Students' living circumstances have an influence on the modal options available to them. Niagara's post-secondary students indicated that they have various living arrangements, whereby:

- 50% of students live with roommates
- 31% live with their parents
- 10% live with a partner
- 7% live alone

Students living in St. Catharines (44%), Thorold (26%), Niagara Falls (13%), Welland (11%) and Niagara-on-the-Lake (4%) were more likely to live with roommates. Of students reporting they lived with roommates, most students identified having a bus pass (87%), with car ownership a distant second (27%).

Students residing in the other eight Niagara municipalities were most likely to report that they lived with their parents and/or other family members, followed by living with a partner. Of those living with parents and/or family, 68% reported owning a car. This percentage increased among students living in municipalities located further from the campuses; e.g. 100% of Fort Erie⁹ students and 82% of students living in Grimsby reported having a car. These demonstrate that students living in more distant municipalities are more likely to rely on automobiles to commute to school and to reach other destinations.

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 3.3). 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. Moreover, 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).

¹¹ Although 0.7% is a small number, that would equate to 210 students living in motel/hotel rooms

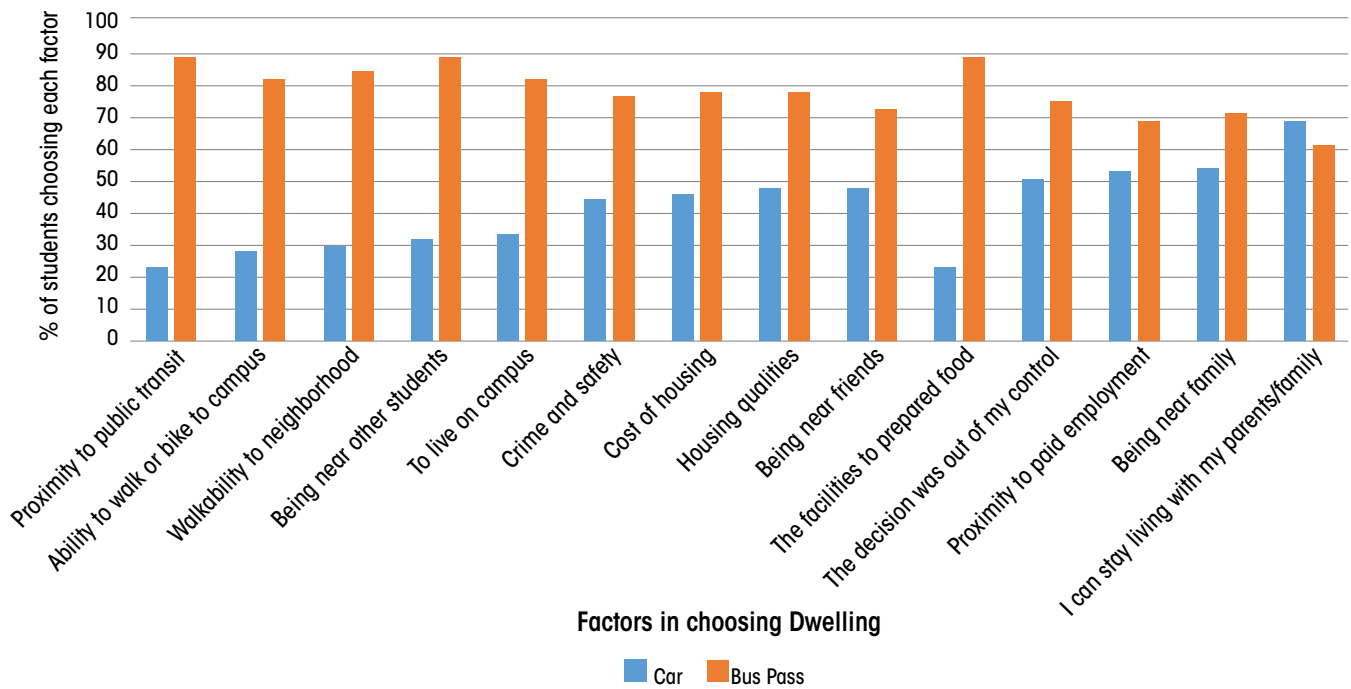


Figure 3.3 Factors Influencing Residential Location based on Bus Use and Car Ownership

Source: *Students on the Move Survey, 2018-2019*

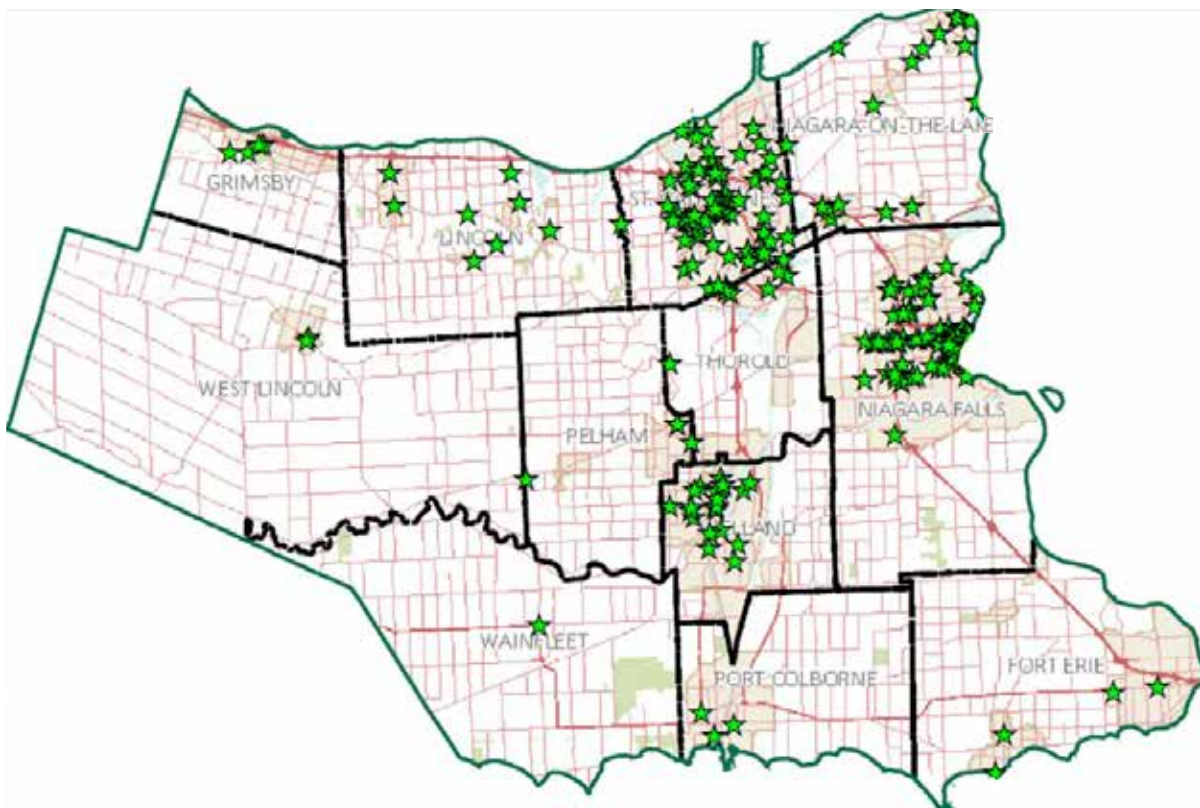


Figure 3.4 Post-secondary Student Employment Locations



Post-Secondary Student Employment

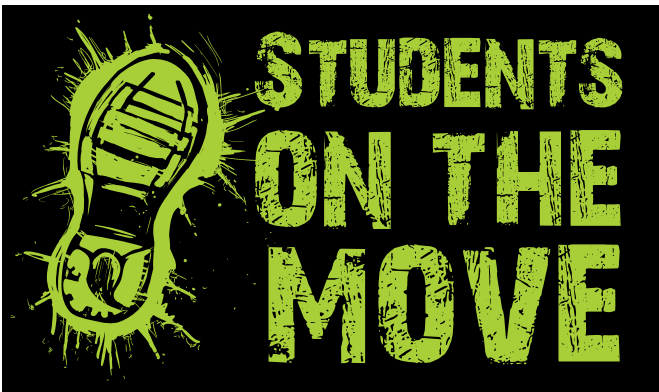
Over one-half of the survey participants (53%) identified that they had employment, with St. Catharines and Niagara Falls being the major employment locations, followed by Niagara-on-the-Lake and Welland (Figure 3.4). Just over one-half of employed students (51%) worked between 11 and 20 hours per week, followed by one-third (33%) working 10 hours or less. More females (35%) than males (30%) reported working 10 hours or less and more males (55%) than females (49%) reported working 11 to 20 hours per week. Far fewer students worked more than 20 hours per week, with no notable gender differences in this regard.

The locations of students’ workplaces relative to their campuses of study indicate that many students are traveling across municipalities for employment and school. Welland campus students are more likely to work in Niagara Falls (43%), St. Catharines (19%) and Welland (16%). Like the Welland campus, Niagara College students attending the NOTL campus are likely to work in Niagara Falls (30%), then Niagara-on-the-Lake (27%) and St. Catharines (21%). Brock Main campus students tend to work in St. Catharines (55%) and then Niagara Falls (12%) (Table 3.7).

Table 3.7
Employment by Municipality of Employer and Student’s Campus

Place of Work	Primary Campus Attended			
	Brock University		Niagara College	
	Main Campus	MIW Campus	NOTL Campus	Welland Campus
St. Catharines	55%	55.6%	20.7%	19.4%
Niagara Falls	12.2%	27.8%	30.5%	42.6%
Niagara-on-the-Lake	8.1%	NR	26.8%	7.9%
Welland	2.8%	NR	3.7%	15.7%
Other	21.9%	NR	18.3%	14.4%

Source: *Students on the Move* Survey, 2018-2019, (n = 957)
NR = Not reportable due to low response rate



Employment and Domestic and International Students

Nearly 53% of domestic and 54% of international students have paid employment.¹⁰ 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.¹¹ Domestic students were more likely than international students to work 10 hours or less per week, at 37% and 18%, respectively. Conversely, international students are more likely than domestic students to work 11-20 hours per week, at 78% and 44%, respectively. These findings make sense given that student visas permit international students to work up to 20 hours per week during the school year, or up to 40 hours per week if they are working on campus.

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 working within them. However, it is noteworthy that 44% of domestic students work in St. Catharines and 17% in Niagara Falls, whereas it is the converse for international students, with 47% working in Niagara Falls and 27% working in St. Catharines.

An interesting finding is that just under one-half of domestic students (48%) live near their place of employment and that this increases even further among international students (66%). Only 31 to 34% of international students live, work, and attend school in the same municipality, compared to some 35 to 55% of domestic students. This indicates that many students are more likely to live nearer to where they work than to where they attend school, thus requiring them to travel inter-municipally to go to school. This is even more prevalent among international students.



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

¹² Canadian regulations for working international students <https://www.canada.ca/en/immigration-refugees-citizenship/services/study-canada/work/work-off-campus.html#hours>

¹³Very few international students reported working more than 20 hours per week.



CHAPTER 4:

How Niagara's Post-Secondary Students Get Around

Introduction

The *Students on the Move* survey generated a considerable amount of information about Brock University and Niagara College students' travel behaviour. At both schools, public transit and private automobiles were the most common means of transportation used by students to get to and from school. This chapter will consider the various modes of transportation that students indicated using, along with how they get to school, to co-op or internship placements, and to their places of employment.

Transportation Options

Post-secondary students travel by many different means to get to where they are going in Niagara, and often have more than one transportation option to get there (Table 4.1). The survey data show that the majority of students (75%) have a bus pass, while much smaller proportions have access to their "own" car (45%). Over one-fifth of students have access to a bicycle throughout the school year; however, the survey data showed that these were not widely used in day-to-day trip-making. Students 19 to 29 years of age showed similar modal availability especially as it related to bus, car and bicycle and people 30 and older were less likely to use the bus, and were more likely to own a car and a bike. It should be noted that only 62% of students over the age of 30 had their own car, thus indicating that many rely on other forms of transportation (Table 4.2).

Public Transit

The Niagara College and Brock University student unions both participate in U-Pass programs with Niagara's local and regional transit agencies. Upon payment of an additional ancillary fee along with their tuition, eligible full-time students are able to swipe their student cards in the farebox in order to use the services of the participating transit agencies without having to pay a fare. Although not all students take the bus, all full-time students at both schools are required to pay for the bus pass in their student fees. Student union representatives have noted that some students who do not use public transit have protested having to pay the U-Pass fee; however, to make the U-Pass programs financially viable, the schools need the collective contributions and the criteria for opting out of the program are quite strict. Additionally, students who would otherwise drive to school, but instead take the bus to reduce their travel expenses since they have already paid the mandatory U-Pass fee, also reduce the number of people using the schools' parking lots. This is notable because many students participating in this study have commented that parking at the various Brock University and Niagara College campuses is both expensive and hard to come by, as lots are said to be routinely filled over capacity.

There were some variations in the survey results when it comes to U-Pass usage. For example, while 70% of 19-and-under students, 74% of 20-24 year olds, and 70% of 25-29 year olds indicated they had bus passes, only 57% of students aged 30 or over have one. This suggests that mature students are more dependent on driving themselves by car rather than using public transit, likely due to juggling work and family responsibilities and therefore being more sensitive to the time cost of travel (Table 4.2).

Table 4.1
Modes of Transportation Available to Post-secondary 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%

Source: *Students on the Move* Survey, 2018-2019, (n =1826)

Table 4.2
Student Age and Transport Mode Availability

Mode	Age			
	19 and under	20-24	25-29	30 and over
Public Transit	70%	74%	70%	57%
"Own" car	55%	53%	54%	62%
Bicycle	24%	29%	21%	43%

Source: *Students on the Move* Survey, 2018-2019

The survey also showed U-Pass uptake to be much higher among Brock University students than among those at Niagara College. About four-fifths (79%) of those attending Brock's main campus and 84% of those primarily attending the Marilyn I. Walker campus have activated their U-Passes. At Niagara College, on the other hand, 71% of Niagara-on-the-Lake campus students and only 69% of Welland Campus students have done so. It is also notable that 71% of domestic students have a U-Pass, while 88% of international students have one.

It should be noted that the Niagara region has different 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 4.3)



Table 4.3
Transit Service Availability in Niagara (During the Study Period)

Municipality	Local Transit Service	Niagara Region Transit Service
Grimsby	None	No
West Lincoln	None	No
Lincoln	uLinc	No
Wainfleet	None	No
Port Colborne	Port Colborne Transit (served 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 (served by St. Catharines Transit)	Yes
Niagara-on-the-Lake	Niagara-on-the-Lake Transit	Yes (Glendale District only)
Niagara Falls	Niagara Falls Transit, WEGO	Yes

There were almost 200 comments related to public transit in the photovoice data. 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.

Frequency of Buses. 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 [at night]. 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.

Timeliness or Tardiness of Buses. Bus operators, like automobile drivers, are subject to the same traffic and road conditions that impact the speed at which they reach their destination. 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 Secord 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. 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 its 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 4.1)



Figure 4.1. Late at night after work; having a car is almost the only choice to get home.
Photo credit: 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 4.2)



Figure 4.2. The bus stop at the Niagara Outlet Collection Mall in Niagara-on-the-Lake on a Sunday afternoon. No buses.

Photo credit: 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 being 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

For this woman the bus services are inefficient and do not connect well. 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 inter-municipal 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. Because of this, students have longer and slower mobility experiences than what this student sees as acceptable.

Connections to other modes of transportation. 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 go 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. 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 4.3)



Figure 4.3. Jeff’s Bowl-a-Rama parking lot in Welland, where post-secondary students park their cars to catch the bus into school.

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



Private Automobiles

Given the geographic spacing between urban centres, the lower density development and the urban, rural and semi-rural mix, Niagara's road network has primarily favoured the automobile. However, 55% of post-secondary students do not have access to an automobile. In real numbers, that is about 16,500 students - the size of a small municipality. This incongruence between infrastructure and modal availability creates lengthy and sometimes arduous commutes for students who rely on other modes. Of students who have an automobile only 63% of them have a campus parking pass. This could indicate that students are either paying for parking on an as-needed basis, are using the bus which is already included in their student fees, or are parking their vehicles elsewhere and then either walking or taking public transportation for the remainder of their trip. It was noted in the photovoice interviews that many students park at the Pen Centre and take the bus for the remainder of the trip. As previously noted, students coming from Port Colborne, or Welland are parking their vehicles at Jeff's Bowl-o-rama and then completing their journey (see figure 4.3).

Cycling

Over one-fifth of students (22%) had immediate access to a bicycle and another one-fifth (21%) identifying that they had a bicycle, but that it was not available to them while they were at school. There was a notable difference between domestic and international students in this regard, whereby 26% of the former and only 7% of the latter stated that they have ready access to a bicycle during the school year.

While access to a bicycle was available to over one-fifth of students, cycling was not a common mode of transportation to school among students in either the fall or the winter term surveys. This may be related, in part, to the lack of connected cycling path systems and/or seasonal challenges. With this in mind, future research could explore the latent demand for cycling among Brock University and Niagara College students. As part of this it may be useful to investigate whether the multi-use pathways that have been constructed along Sir Isaac Brock Way, Merrittville Highway, and Decew Road have encouraged more students to cycle (and walk) to Brock from nearby residential areas.

Traveling to school

Average commute times and distances to school. Regardless of age, gender, international or domestic status, campus, or residential location within Niagara, most students commuted to campus four or five days a week.

Students were asked to identify what modes they had used over the past month to get to school. On average, students reported using 2.2 different modes of travel to get to school over the course of a typical month.

There were some interesting differences between the fall and winter data (Table 4.4). Bus usage increased significantly from the fall to the winter term at the Brock main campus and single automobile usage dropped. This may reflect the parking challenges students noted earlier. However, there was also an increase in the number of students arriving to school by Uber or taxi, possibly showing challenges in relying on public transit alone if private automobile is not an option.

Bus usage at both college campuses was lower than at the university campuses. The Niagara-on-the-Lake campus remained consistent with their bus usage in both terms with private car usage dropping slightly in the winter term. There was a jump in the number of students walking in the winter term to just over a quarter of students. Although not determinable from this data, it would be interesting to see if students moved closer to the campus in the winter term to decrease their commute time.

At the Welland campus, there was a marked decrease in the number of students using the bus in the winter term as well as a significant increase in private automobile usage. This likely reflects the long bus commutes that students reported experiencing. Far fewer students also indicated walking in the winter term. Uber and taxi usage remained consistent at both college campuses and college students were more likely to indicate that they rode their bike to school than university students and remained consistent in the fall and winter.

Table 4.4
Percentage (%) of Students who Reported Using the Following Modes to get to School over One Month

Campus	Bus		Car alone		Car as passenger		Walk		Bike		Uber/Taxi	
	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter
Brock Main	66	81	42	37	44	44	29	27	4	3	17	24
Brock MIW*	69	67	56	60	63	40	31	NR	0	0	NR	NR
Niagara NOTL	42	41	53	48	29	32	19	27	7	5	17	15
Niagara Welland	51	35	37	51	27	28	35	24	6	5	10	9

* Sample sizes were quite small for the Marilyn I. Walker campus. Interpret with caution.

Source: *Students on the Move Survey, 2018-2019, (n=1821)*

NR = Not reportable due to low response rate

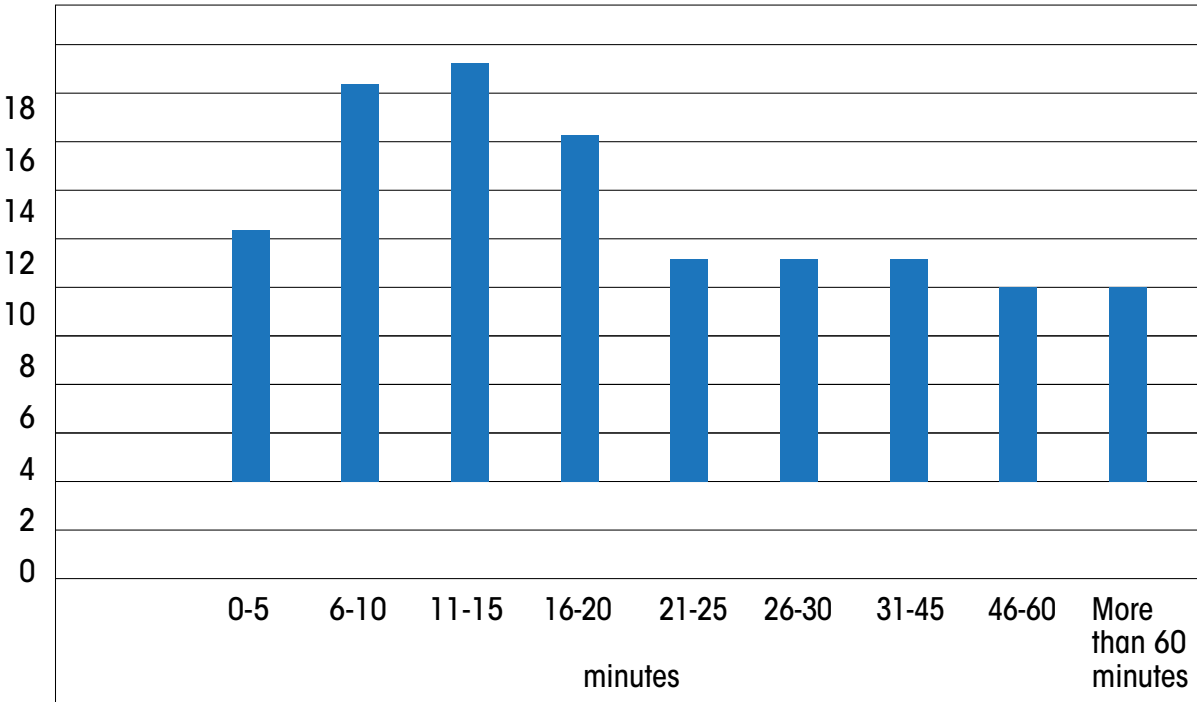
On average, 57% of students reported that their commute to school took 20 minutes or less; however, 16% reported one-way commute durations of more than 45 minutes (Figure 4.4). This adds a significant amount of time onto an already long day of studying, the consequences of which are typified by this woman's experience of traveling from her Welland campus 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. [...] There is a good chance you are waiting another hour before you can actually get out of the College. When your journey is 90 minutes, and hour sitting at the College, you're waiting at the College for an hour and then another 90 minutes [travelling] on top of that, it just, it makes your day long. You could sit and study, but I have been [at the] College all day..."

Photovoice participant 6, female, Niagara College Welland campus, December 19, 2018



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



Number of Minutes Student Commute to Campus Each Day

Figure 4.4: Average one-way post-secondary student commute times
Source: *Students on the Move Survey, 2018-2019*

Some 45% of students were nonetheless satisfied with their commute, but 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 the campuses. Brock showed the highest satisfaction rate with the daily commute, while Niagara-on-the-Lake campus students were least satisfied (Table 4.5).



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

Table 4.5
Student Satisfaction regarding Commute to School, by Campus, Brock University and Niagara College

Level of Satisfaction	Brock University Main	Brock University MIW	Niagara College NOTL	Niagara College Welland
Satisfied/ Very Satisfied	49%	42%	40%	40%
Neither Satisfied nor Dissatisfied	33%	39%	38%	39%
Unsatisfied/ Very Unsatisfied	19%	19%	24%	20%

Source: *Students on the Move* Survey, 2018-2019, (n =1783)

Traveling to Employment

There appears to be a correlation between the number of hours post-secondary students work and the mode of transportation they use to commute. People working fewer hours are more likely to have a bus pass, while those working more are more likely to own a car. At the same time, close to two-thirds (65%) of students who do not own a car also do not have employment and over one-half (54%) of students who have employment own a car. Having a car is related to working more hours; however, what is not known is whether students are working to afford their car, or if having a car is affording students more or better employment and co-op opportunities. Table 4.6 shows the percentage of students who have various modes of transportation available to them based on the number of hours they work per week. The post-secondary working student rideshare numbers seem in line with what might be expected, as the St. Catharines-Niagara census metropolitan area rideshare to work average is 12.7%¹² (Stats Canada, 2017).

Employment and Transportation for Domestic and International Students. There are significant differences in modal usage between domestic and international working students. Given seven modal options to choose from (motorcycle, moped/scooter, car share, carpooling, bus pass, car, bicycle) working students identified having an average of 1.7 modes of transportation available to them (1.8 domestic; 1.46 international). This excludes being able to walk to their destinations. Working international students rely heavily on public transportation, as 85% of working international students do not have a car (Table 4.7). They also are more likely to carpool than are domestic students. The following table shows the top four transportation modes used by domestic and international students.

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



Table 4.6
Modal Type by Number of Hours Worked

Transport Mode	Hours Worked/Week				
	<10	11-20	21-30	31-40	>40
Public Transit	76%	73%	59%	40%	30%
"Own" Car	53%	48%	71%	83%	90%
Bicycle	31%	24%	28%	38%	40%
Rideshare	13%	12%	5%	4%	0%
Car share	9%	8%	10%	20%	20%
Motorcycle	3%	2%	0%	6%	10%

Source: *Students on the Move Survey, 2018-2019, (n = 964)*

Table 4.7
Modal Usage, Domestic and International Students

Mode	Domestic Students	International Students
Public Transit	66%	86%
"Own" Car	66%	15%
Bicycle	33%	10%
Rideshare	8%	21%

Source: *Students on the Move Survey, 2018-2019, (n = 964)*

Of domestic students who live in the municipality where they also work, 56% do not own a car. This is significantly lower than international students, among whom 70% of students who do not have a car live in the same municipality where they work. Anecdotal evidence suggests that international students choose to live in Niagara Falls because there is an existing community of other international students there who share the same ethnicity, one that does not exist in Welland, Niagara-on-the-Lake, or St. Catharines (where the two post-secondary institutions are located). As most working international students do not have a car, this means that they must rely on public transit to travel inter-municipally to school. Anecdotal evidence illustrates those international students who do own a car during the winter months still do not drive them due to fears about their lack of winter driving experience and the uncertainty of weather conditions.

Commuting to 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 that 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. As this student shared, she relied on a peer from her class to get to her co-op placement.

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 4.5)



Figure 4.5: 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.



CHAPTER 5:

The Wellbeing of Our Students

Students on the Move participants were asked to consider their wellbeing in both the on-line survey and photovoice components. The questions asked students about their holistic sense of health, which included items such as sense of belonging, ability to participate in physical and social leisure, and having the means to purchase food. These questions drill down to the underlying issues that often result in positive or negative mental, physical, social and spiritual wellness.

The Determinants of Health recognize the disparities between social, political and economic factors, which can result in health inequities (WHO, 2007). Using the Determinants of Health as a framework, this chapter considers the wellbeing of post-secondary students in relation to transportation. The determinant, Employment and Working Conditions, was addressed in the last chapter and will not be covered below.

Education and transportation

Considering the importance of transportation to get to school, students were asked if their transportation circumstances ever discouraged them from coming to campus. While many students said that transportation was not a deterrent for attending school, nearly as many said that it was. Furthermore, there were differences between student populations, where international students and Brock campus students struggled more with transportation. (Table 5.1)

Table 5.1
Do your available means of transportation discourage you from coming to campus?

Student Population	Yes	Sometimes	No
Domestic (n=1155)	36%	20%	44%
International (n=347)	40%	25%	35%
Brock main campus (n=881)	40%	22%	37%
Marilyn I. Walker campus (n=28)	36%	21%	43%
Niagara-on-the-Lake Campus (n=234)	36%	21%	43%
Welland campus (n=352)	30%	19%	51%
All students	37%	21%	41%

Source: *Students on the Move* Survey, 2018-2019

Among students who were discouraged from attending school due to transportation constraints, most reported having taken the bus in the past month to school (73%), followed by those who got a ride from others (as a distant second at 44%). Interestingly, over one-third (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 (e.g., due to weather conditions, fuel prices, parking, etc.) as one would assume that the private automobile is the most convenient transportation mode in Niagara.

Thirty-nine percent of students indicated that not attending school due to transportation constraints said that this, in turn, affected their grades, while 35% said that it did not have an impact and 26% were not sure. Fifty-eight percent of students always or sometimes chose their courses based on transportation availability – for example, avoiding classes that ran at times when public transit service was reduced or unavailable.

Along with the on-line survey data that showed that transportation can have an impact on one's academic success. The following photovoice interview excerpt speaks both to the challenges experienced by students using living off-campus who use public transit to get to school and to the need for a more post-secondary student-oriented public transit system. This student's perspective also exemplifies how transportation constraints can serve as a deterrent to attaining higher education. It can also be seen through this example how one's perception of transportation quality has a direct impact on subjective wellbeing:

“Brock has off-residence. I know Niagara College has an off-residence too. So, not just to have the busing system ... like city bus system only, [but] have ... a student bus. 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 7:00 o'clock in the morning for their 11:00 a.m. class. 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.”

Photovoice Participant 2, female, Niagara College Welland campus, December 17, 2018

This comment from an Indigenous female photovoice participant emphasised the strong desire to overcome transportation obstacles in order to keep learning. Although she was only one voice, she could easily be the voice of many other students who have enormous struggles to overcome. When asked if there were parts along this route that she really enjoyed, she responded:

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.”

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

Even though she was living in a lower-income neighbourhood, routinely 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 in order to better herself and her family.



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



Social Support and Transportation

Participation in on- and off-campus events. There was evidence in this study that students’ sense of belonging was related to their participation in on-campus events and off-campus community events. In both cases, students who participated in campus-based or community events often or always showed a stronger sense of belonging than students who rarely or never participated in these types of activities. Conversely, students who rarely or never participated in campus or community events had a weaker sense of belonging, compared to those who often or always participated (Figure 5.1).

Students who identified that transportation constraints **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 student’s stage of life, where their main sense of community is their campus and the length of time they have lived in their current municipality while attending school may be short. About a quarter of students always or often find transportation a barrier to participating in on and off-campus events.

Almost one-half (49%) of students participated in campus events and activities and about the same number (47%) participated in events and activities outside of their campus. However, about one-quarter of students found transportation often or always impacted their ability to participate in these activities. 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 events and activities on- and off-campus (Table 5.2), with the Niagara-on-the-Lake campus students experiencing the greatest challenge.

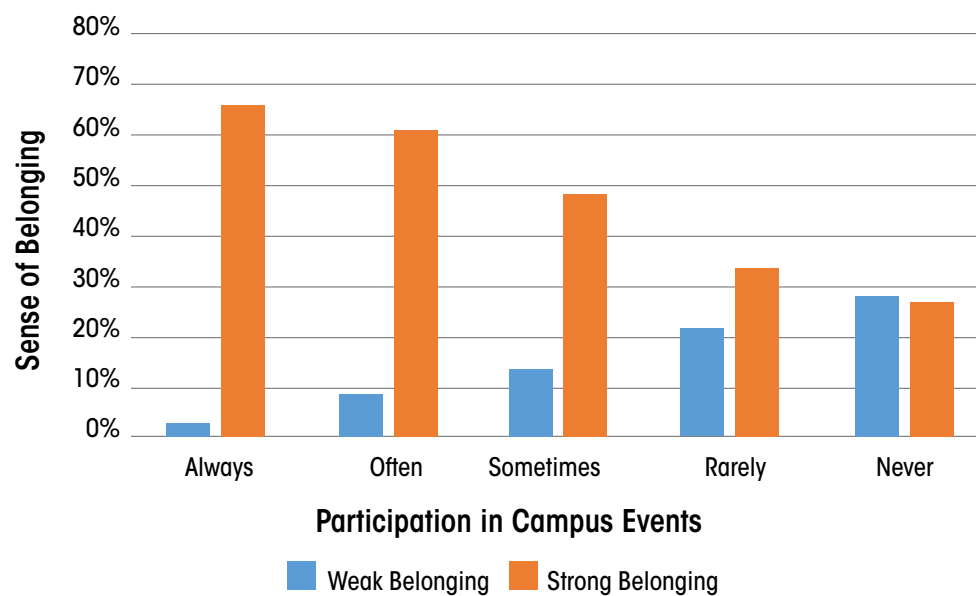


Figure 5.1. Relationship between Participation in On-campus Events and Students’ Sense of Belonging.

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.

Source: *Students on the Move* Survey, 2018-2019

Table 5.2
Proportion of Students Indicating that Transportation Often or Always Impacted Their Ability to Participate in Events and Activities, By Campus

Campus	On campus events & activities	Off campus events & activities
Brock Main	32%	37%
Brock MIW	30%	43%
Niagara NOTL	44%	45%
Niagara Welland	37%	37%

Source: *Students on the Move* Survey, 2018-2019

Of domestic students who reported that transportation impacted their ability to participate in on-campus events, 32% indicated *often* or *always*, compared to 41% of international students. In the case of participation in off-campus events and activities, this difference increased somewhat, with 27% of domestic students and 40% of international students reporting that transportation constraints always or often impacted their ability to participate.

Participation in social leisure activities. Of all post-secondary students who participated in the survey, 51% identified that transportation constraints rarely or never impacted their ability to participate in social leisure activities; however, about one-fifth (19%) of students often or always and a third (31%) sometimes experienced transportation constraints as a barrier to participating in social leisure activities. Students who spent less than an hour a 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 slight 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.

As was the case among students reporting transportation-related challenges to attending off-campus activities, students living in Thorold also made up the highest percentage by municipality of those reporting that transportation always or often impacted their ability to participate in social leisure activities (24%). This was 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 constraints for social leisure activities (32%), followed by those at the Brock main campus (24%) and Welland campus (23%). International students (32%) were more likely than domestic students (23%) to report that transportation constraints impact their ability to participate in social leisure activities.

Transportation not only provides a means of getting to social activities, it, too, can be social. Part of the travel journey that people identified with was socializing or connecting with other people. For some students, it was the casual acquaintances 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 students' travel journeys and the experience of those interactions had an influence on how students experience their day. 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:

"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.'"

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, she said:

“The bus drivers are enjoyable. Most of them are friendly, it depends on who it is, but they are mostly friendly.”

Participant 7, female, Niagara College Welland campus, December 20, 2018

According to this participant, the connection to the bus drivers was one of the most enjoyable parts of her travel – the connection to another friendly person, who essentially, 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. 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.”

Participant 7, female, Niagara College Welland campus, December 20, 2018

Another photovoice participant enjoyed ‘reconnecting’ with people he has never had a conversation with and yet these strangers enhance his journey.

“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 8 am 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 mirror and she's doing, like, her foundation or whatever. And I'm like, 'good on you'. [...] Even, whenever I take the Brock Bullet, there's always a guy [who] 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. 'Good for you for coming out!' It's kind of your way of catching up with everyone without talking to them.”

Participant 19, male, Brock University main campus, April 12, 2019)

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

The previous examples were about the enjoyment people experienced while using the bus. The next two examples are about where the journey takes the students and how their mode of transportation results in positive contributions to their wellbeing. This following Photovoice participant 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 [...] I would have next-to-no social life, and I wouldn’t be able to pursue certain volunteer [or] 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 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.”

Participant 14, Niagara College Niagara-on-the-Lake campus, March 14, 2019

This next 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 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. ... We are finishing [the basement]. 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 ... 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 ... my dog comes ... and he sees me, his tail starts going and it’s great. It’s lovely! ... He ... turns in a circle, jumps up on you and he just can’t contain himself because he is so excited that you are here. It’s great!”

Participant 10, female, Brock University main campus, February 28, 2019

Aside from personal experiences where students identified how their mode of transportation helped them to connect with 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. [...] 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 Megabus to get there, or I could get there [on the Niagara Region Transit bus] at 11:00 o’clock or 3:00 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.”

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 riding a bus might be more appealing to the older people and that is the kind of population that is becoming more and more predominant 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.”

Participant 1, male, Brock University main campus, December 14, 2018

In his last statement he clearly 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. [...] 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. [...] so she would have to take the bus from Port [Colborne] to the Welland Terminal, then the Welland terminal to Niagara College, then from there, the bus to Niagara-on-the-Lake campus [...] And, in the evening when she had late classes she would just be dependent on her parents to pick her up in Welland.”

Participant 1, male, Brock University main campus, December 14, 2018

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

“I do have friends that could, obviously, 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 used to relying on myself.”

Participant 8, female, Brock University main campus, December 21, 2018

The above example is notable for two reasons. First, the observation was about not wanting to be a burden to another person and, second, it 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, 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, picks up his son, then takes the bus home:

“And that one, I took to illustrate how he [his two-year-old son] 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 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, 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.”

Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019 (Figure 5.2)



Figure 5.2. A dad, who was also a post-secondary student, was taking his son home on the bus.
Photo credit: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.



Healthy Behaviours and Transportation

A notable finding in the *Students on the Move* survey was that 74% of students said their general sense of *physical* health was good to excellent. Half of students spent one to five hours per week engaging in physical leisure activities, followed by 32% who did so for less than one hour per week. Over one-half of students (58%) indicated that transportation was not a barrier to their participation in physical activities; however, 16% indicated that transportation was often or always a barrier. Similar to other questions about transportation being a constraint or outright barrier to engaging in activities outside the home, students who lived in Thorold were more likely to indicate they experience challenges getting to physical activities (24%), followed by those in Niagara-on-the-Lake, Niagara Falls (both 17%), and 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 constraints were 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%).

Physical activity through active transportation. Some students noted they were able to achieve physical activity through walking. The following photovoice participants, for example, 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.

“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.”

Participant 17, female, Niagara College Welland campus, April 10, 2019

“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 get to meet a lot of dogs.”

Participant 6, female, Niagara College Welland campus, December 19, 2018

“...Because the Dollar Store is just down the street and Tim Horton’s ... I go there ... 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.”

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 the health determinant of social support. The next students made note of the environment in which they are traveling.

Nourishing the body and transportation. Getting proper nutrition is another important health behaviour that plays an important role in shaping personal wellness. These next students identified that there were few options to find nutritious food along their travel route, or that grocery stores were not readily available given their means of transportation. Furthermore, although the students were able to access food, 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 rubbish food and then there used to be [a] coffee shop.”

Photovoice Participant 6, female, Niagara College Welland campus, December 19, 2018 (Figure 5.3)

As this woman experienced, there were no healthy food options for a meal or snack along her route. She 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 from Welland to St. Catharines took 90 minutes by bus, 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 the 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. [...] 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.”

Participant 6, female, Niagara College Welland campus, December 19, 2018



Figure 5.3. Looking through the dirty window at the (lack) of food options available at the bus terminal.

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



This next male student lived in downtown St. Catharines. When asked about being able to purchase groceries downtown he answered:

“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.”

Participant 19, male, Brock University main campus, April 12, 2019

It was interesting to note that over one-third (35%) of students indicated that transportation constraints sometimes, often or always impacted their ability to access food. Of the survey participants 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 campus attendees (32%) said they often or always found transportation to be a barrier to accessing food, followed by those attending the Brock Main campus (27%) and Welland campus (24%).

Physical Environments and Transportation

According to Lucas (2004), as referenced in Kenyon (2011), three different causes can prevent people from getting to where they want to go:

1. **Social inequities** that are experienced at the personal level (e.g., women travel less distance than men; lower income people use public and non-motorised transportation more than people with higher incomes)
2. **Transportation system inadequacies** that make the mode unacceptable, inaccessible, unaffordable and unavailable (e.g., poor public transit services for people who work outside of traditional “9-to-5” office hours)
3. **Community design**, which “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.

Commuting. Longer commute-to-work times have adverse effects on a person’s wellbeing (Chatterjee et al., 2017) which include satisfaction with work, income, health, family life and leisure time. Walking and cycling to work are associated with people having higher job satisfaction and an increase in leisure time satisfaction, especially for women. Conversely, “mental health decreases to a greater extent with every additional minute of commute time ... and suggests that long commutes involving bus travel create difficulties in coping with everyday life” (Chatterjee et al., 2017, p. 25).

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. (2017) found that commuting to school-related placements led to a “significantly greater impact on academic work, health and wellbeing and student finances”

(para. 1) to the detriment of the student. Students identified that the additional commute to their placement location 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 impacting students financially.

When considering wellbeing, a higher collegial sense of community is associated with "greater positive affect, satisfaction with life, and self-efficacy, with lower reported negative affect" (Kirk & Lewis, 2015, p. 57) for students and leads to greater satisfaction with the university. 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. However, Kirk and Lewis (2015) found that commuter university students (i.e., those who did not live on campus) reported a lower collegial sense of community and partook less in campus events. In their study, barriers to participation in campus events included 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.

Community design, which includes infrastructure such as lighting, paths, aesthetic enhancements, and so forth, can support and enrich a travel experience. This next student enjoyed walking because it allowed her to observe what was happening in her community.

"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."

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 her commuting route 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. "

Participant 11, female, Niagara College Niagara-on-the-Lake campus, March 1, 2019 (Figure 5.4)



Figure 5.4. Appreciating the Welland Canal Recreational Trail.

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



While these first examples represent positive experiences that contributed positively to student wellbeing, Cass et al. (2005) have noted that there are also barriers that limit access. Students on the Move participants were no exception. This next section considers some obstacles that students experience in their day-to-day travel. Although not all students explicitly mentioned using their particular mode of transportation for the benefit of physical activity, walking and cycling inherently add to a person's level of daily physical activity. Public transit usage was also included in this section because most transit trips begin and end with walking.

Numerous students noted their experiences of unhygienic conditions within their travel environment and how the lack of cleanliness affected them negatively. Two students, for example, 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 buildup on the outside created by the slushy winter roads (Figure 5.5).

Participant: “I took it when I [saw] 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 it’s 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.”



Figure 5.5. Dirty, salt-caked bus window with no view of the world beyond.

Photo credit: 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.”

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

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 *inside* of the bus (Figure 5.6).

“I just happen to notice all of the trash and whatnot. And I just know that always bugs me when I am on a bus. 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 5.6. Trash left on the bus.

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

In both situations, the lack of cleanliness of the bus – outside and inside – 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 were bothered by the mess others had left behind.

“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 [are] 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 (Figure 5.7)



Figure 5.7. Food and other items left behind at the bus stop.

Photo credit: 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 this burden. She also expressed concern about animals being attracted to the food debris.

The following male photovoice participant 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.”

Participant 19, male, Brock University main campus, April 12, 2019 (Figure 5.8)



Figure 5.8. Cigarette butts litter the sidewalk in downtown St. Catharines.

Photo credit: 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 waste receptacle for cigarette butts so that people can dispose of their butts appropriately.

A common word used in three of the four quotes above 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 and more private 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 couldn’t 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 shared a photo of his son sitting on his lap, but this wasn’t always the case.

“I have to hold him while I am standing on the bus...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 the feeling of being a burden to others are reflected in his statement, both of which reflect the access barriers described by Cass et al. (2005). This next student also expressed the burden of carrying his heavy bags while making a long walk to school.

“Halfway there, like, my hips, my hips were sore, my feet were 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. Students traveling by public transit between Welland and St. Catharines, which is about 23 kilometers from the downtown of one city to the downtown of the other, experienced this. Public transit users coming from Port Colborne to Welland or St. Catharines also experienced these lengthy journeys. As one female photovoice participant noted, “My journey to [the 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 just to attend school. Another student, who works for the student union administration, has to travel between the two Niagara College campuses. As he put it, “So some days, I might have to go to the Welland [campus], which is, which is not fun. It’s a long bus ride... It’s about an hour, I believe” (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 levels, nor are they contributing to the overall wellbeing of the students.

Another physical access limitation that students reported was crowded bus conditions. With 75% of Niagara’s post-secondary students having a bus pass, there is the potential for 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 spoke about 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



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



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 Garden City Skyway on the Queen Elizabeth Way between his campus and the St. Catharines bus terminal after he had already been left behind by the prior bus due to bus capacity issues. The Skyway 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 down into the Welland Canal below (Figure 5.9). 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: “[This photo] 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!”

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



Figure 5.9. Taking the city bus on the Queen Elizabeth Way highway over the Welland Canal.

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

The bus crowding issues cost this student both time and comfort. This next student made an observation about the buses going from Niagara College's 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 Niagara Region Transit had not done anything to address the overcrowding. She felt that action should be taken to improve access for students.

Commuting also offers the opportunity for people to engage in the world around them and reflect 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 5.10)



Figure 5.10. Quiet morning on the bus as the sun streams in.

Photo credit: 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 ‘gardeny’ items than other cities. And most of the routes go past by the creek, and what not, which is a very ‘forestry’ area, which is something I really enjoy because I grew up in the heart of Merriton. 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. [...] I love 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] 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 metres away ... it just stood [there]. It was just there hanging out. And then, when I came back, there were 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 5.11).



Figure 5.11. Early morning muskrat in the pond by the Niagara-on-the-Lake Niagara College campus.

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

For each of these students there was a sense of amazement at the beauty of nature in an urban or urban-rural fringe 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 muskrats.



The next two students spoke about experiencing the same infrastructure, the Burgoyne Bridge in St. Catharines, one from above and the other from below. This bridge 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 [pictures] I wanted to take. So, [...] 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 5.12).



Figure 5.12. Burgoyne Bridge, St. Catharines

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

However, 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 [Road], I'm like, 'Alright, now I have to prepare', because 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

In these two paragraphs it can be quickly seen how the mode of transportation, walking, and the surrounding community can significantly impact one's travel experience – from blissful at one moment to fearful and stressful just a few moments later.

This next student contemplates mental health along his walk:

“I took [this photograph] along the Twelve Mile creek, I think 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 5.13)



Figure 5.13. Walking along the 12 Mile Creek under the Burgoyne Bridge, St. Catharines
Photo credit: Photovoice Participant 12, male, Niagara College Niagara-on-the-Lake campus, March 7, 2019.



These last two examples provide an indication of the uneasy feelings that students sometimes experience along their journeys. 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 is safety 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 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. [...] 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 the "not visible". The "what if" someone did have harmful intentions and there was no one to bear witness, or to 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. [...] 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 still 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 (or, perhaps, a lack thereof), 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 that his girlfriend is female, it was also that she is an Indigenous person. 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?’”

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



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



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

"So, when we look at picture, 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 accustomed 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 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."

Participant 3, male, Brock University main campus, December 18, 2018 (Figure 5.14)



Figure 5.14. 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 credit: Photovoice Participant 3, male, Brock University main campus, December 18, 2018.

He also went on to say,

"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 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 10:45 p.m. on his way home from class. The stories and quotations provided in this section show that people’s modes of transportation and their experiences while travelling had both positive and negative impacts on their wellbeing, even when they were on the same route, but just at a different time of day.

Gender

An Australian study conducted by Delbosc and Currie (2011) on the “social and psychological links to transport disadvantage” (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 were more likely to feel unsafe, or were excluded from using transportation due to health limitations and thus had more difficulty accessing activities. In their study, retired women, women who had ill or disabled people to care for at home, or women who themselves had health issues, were more likely to fit within this group. Although the Students on the Move project addresses post-secondary student mobility and the impact of mobility on wellbeing, females were more likely to identify with access challenges associated with feeling unsafe, just like those in the Delbosc and Currie (2011) study. Similarly, within the photovoice data, people with health concerns also experienced accessibility challenges. This next section will first consider transportation and gender and then transportation and disability.

Transportation and gender. Similar to the Delbosc and Currie (2011) study, access to various modes of transportation was not a challenge for women or men. There were slight gender 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 unrestricted licence from outside the province were marginally more likely to own a car compared to males in the same category. However, the difference in automobile ownership could reflect the higher cost of car insurance in Ontario for young adult males. As for all other transportation modes, men and women were similar. An important finding in this project is that about one-quarter of post-secondary students, both female and male, expressed difficulty finding transportation when they needed it, and a little more than one-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 wanted to, and many more students said that transportation constraints prevented them from getting somewhere (Table 5.3). These points speak more to transportation challenges within Niagara for post-secondary students *in general* rather than to any gender-related concern.



Table 5.3
Percentage of Students who Found that Transportation Constraints
Prevented them from Getting Somewhere

Gender	Yes, frequently	Yes, sometimes	Does not
Female (n = 1079)	21%	40%	39%
Male (n = 459)	22%	40%	38%

Source: *Students on the Move Survey, 2018-2019*

Given that both genders had similar availability of modal options and struggled in similar ways, the Students on the Move data were analysed to see if there were differences in being able to get to certain places. Again, there were few notable gender-based differences. Men and women were likely to commute to school the same number of days per week and were alike when considering if transportation considerations discouraged them from attending class. They were also similar in having the transportation needed to access employment, and had the same number of co-op days and distances to travel to their co-op placements. Men and women found transportation impacted them similarly for being able to participate in on- and off-campus activities and social leisure activities. In the general sense, more men and women found it easy or very easy to get to where they wanted to go similarly; however, men seemed to experience more challenges accessing physical leisure activities and food because of transportation, compared to females.

Interestingly, when male and female students were separated by 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 to be able to participate in physical leisure activities due to transportation.

There were also more subtle differences expressed around the actual *experience* of travelling by different modes. Men were more likely to have stronger feelings about their satisfaction or dissatisfaction with their typical daily commute than women, and more women were likely to indicate that they felt neutral compared to men (Table 5.4). Males also identified that finding time to travel was easier and women found that it was more difficult (Table 5.5). 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.



Table 5.4
Satisfaction with Typical Daily Commute, by Gender

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

Source: *Students on the Move* Survey, 2018-2019 (women, n = 1126; men, n = 475)

Table 5.5
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%

Source: *Students on the Move* Survey, 2018-2019, (women, n = 1075; men, n = 458)

Women (23%) were 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, of women who identified that it was very difficult for them to feel safe from theft or attack, 74% also found taking the bus in the evening to be difficult or very difficult. (See Appendix A relating aspects of transportation to feelings of safety.)

Another way in which women and men differed was regarding their sense of ease in navigation. Males found it easier than females to get information about transportation options, to understand where to go, and to get information about bus service. Again, when analysed against sense of safety, individuals who had greater concerns being safe from theft or attack also found it more challenging to navigate. 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 (Appendix A). 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 played a bigger factor.



Transportation and (hidden) disability. Students were asked questions about their level of difficulty in finding transportation to accommodate their mental health issues and/or their disability. How students defined their mental health issue or disability was left to the student. 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% for both genders). Even at the lowest percentage of students who found mental illness or disability impacted their travel (2%), this could equate to 900 students given that there are some 30,000 post-secondary students in Niagara.

Through the photovoice photos and stories, some of the students shared what we have called *hidden* disabilities, physical or mental challenges experienced by the individual that may not be immediately obvious to an observer. 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.

Interviewer: “So it drops you off [the bus] at the college and you have to walk with your groceries home?”

Participant: “Yeah, so...you have to get on the bus earlier, come to Niagara College to go there, then you get off later at Niagara College. So, there’s that. Also, 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 made 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 this student also had a nervous bladder caused by stress. In her words 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, making travel for someone with IBS, or bladder issues significantly challenging and exclusionary.

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

“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, it’s 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 Brock University’s Marilyn I. Walker campus, there are no public transit drop-off zones located directly at the building. All students who use the bus are dropped off on St. Paul Street or at the St. Catharines Bus Terminal on Carlisle Street, thus requiring students to walk to the school. As the school is located in a former creek bed, the bus stops are at a much higher elevation than the school entrance. The aforementioned photovoice participant not only identified his own spine-related mobility challenges as an impediment to navigating this slope, but also the short-term challenges experienced by other students. Looking at Figures 5.15, 5.16 & 5.17 with the interviewer, he said:

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

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



Figure 5.16. The steep metal staircase access to Marilyn I. Walker School of Fine and Performing Arts.
Photo credit: Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019



Figure 5.17. 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 credit: Photovoice Participant 20, male, Marilyn I. Walker School of Fine and Performing Arts, April 15, 2019

Participant #20 also made one last point about the ease of access to the building: that there were no public transit buses that dropped students off at the school door. 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 terminal to the school. As his health deteriorated, and with limited financial resources, his access to daily activities was dwindling.

Differences between domestic and international students. Moving beyond gender and (dis)ability, there were also notable differences between domestic and international students in almost every category of quantitative analysis. This most often came in the form of international students struggling more than domestic students due to transportation-related obstacles and barriers.

When considering transportation in general, international students were almost twice as likely as domestic students to note that finding transportation was difficult (Table 5.6). International students were much more likely to rely on public transit and far less likely to have an automobile than domestic students. International students were more likely to report that transportation impacted their ability to participate in on- and off-campus events and in physical and social leisure activities. International students were also more likely to report that transportation constraints discouraged them from physically travelling to school.

Table 5.6
Comparison of Difficulty Finding Transportation for Daily Travel, Domestic vs. 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%

Source: *Students on the Move* Survey, 2018-2019, (domestic, n = 1351; international, n = 369)

To some extent that last statement is not surprising. Many international students were employed (54% compared to 53% domestic). Employed international students worked a greater number of hours per week while attending school and reported that transportation impacted their access to employment more than domestic students. Of working students, international students were more likely to live where they work, which for many was Niagara Falls, putting them at a transportation disadvantage for getting to school, as there are no campuses in Niagara Falls. 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 much less satisfied with their daily commute.

Geographical and systemic mobility inequities between campuses. The location of certain campuses, urban or semi-rural, 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 5.7). 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. Likely 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 bus 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.

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 5.7
Modes of Transportation used by Students to get to School, by Campus

Transport Mode	Brock University Main	Brock University MIW	Niagara College NOTL	Niagara College Welland
Public Transit	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 (e.g., Megabus)	8%	0%	1%	2%
Bicycle	3%	0%	5%	5%

Source: *Students on the Move* Survey, 2018-2019, (n=1826)

CHAPTER 6:

Conclusion and Recommendations

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. Yet, for the many benefits students bring to the region, not all students can participate in various opportunities due to transportation barriers.

These transportation barriers not only prevent students from getting to where they need to go, they also impact students' wellbeing. This study illustrated how many of the determinants of health are affected by a person's ability to have easy to use, reliable, more direct transportation and active transportation supports that can empower students to make an impact on their own health. 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.

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 is a result of 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 were 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 the 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. Nighttime seemed to be worse. 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 go unnoticed. Another woman noted limitations being placed on her by well meaning coworkers, 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.



Women were not alone in restricted mobility. People who identified as having a disability spoke of transportation barriers (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. Public transit services, by appealing to the 'general' public, do not have lenient scheduling to allow for bodily functions that have untimely presentation and the jam-packed buses created painful barriers to the person recovering from car-crash related injuries. These bodily challenges need a more personalized transportation to accommodate them. The limited access to public washrooms at the transit stations, or closing the washrooms before the last bus arrives at the station also makes it even more difficult. The community design and political favouring of auto-mobility limits their freedom to be mobile.

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 to live near employment, often in Niagara Falls, instead of near the campus, resulting in long and arduous bus travel to and from school and tremendous strain on the transit system. Even among international students there were differences between the college and university students, whereby 31% of Brock University international students worked but 63% of Niagara College international students worked.

International students were also more inhibited from participating in on- and off-campus events and activities, which this study showed related to a poorer sense of belonging. While international students were much more likely than domestic students to 'hitch a ride' with others, this type of travel is limited by the driver (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). The auto-centric community design, and the public financing of auto-favoring infrastructure at the expense of public transit services and active transportation infrastructure 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. Would be students, who do not have an automobile and who remain in municipalities that do not have public transit, are severely limited in their ability to obtain a post-secondary education. In those municipalities, very few students replied to the survey. While dwelling location prior to entering post-secondary school was not collected in this study, it could be fathomed that students from those municipalities had to move closer to the campus.



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

What is clear from this study is that investment is needed in public and active transportation. Although some municipalities have public transportation, there are 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 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. Additionally, infrastructure that promotes walking and cycling were patchy and disjointed. The favouring of the automobile has disadvantaged people who do not have car of which 16,500 are post-secondary students. Improving public and active transportation not only benefits the students but also creates an equitable transportation system for all.

Future Directions

The lack of car ownership among students could prompt many opportunities for alternative and more sustainable transportation options, including trail and sidewalk improvements, increased transit services and transit supportive options, bikeshare, rideshare, carshare, and residences in employment areas with shuttles to the campuses. Further consideration also needs to be given to the notion of universal access in the design of infrastructure and transit services, providing enhanced supports to international students, and financial incentives (e.g. additional bursaries) to support students from municipalities that do not have transit.

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, many students live in the Foundry Lofts, located less than one kilometre 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, be they able bodied 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.



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.

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; however, 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 hop on the bus to return home or to reach their next destination.

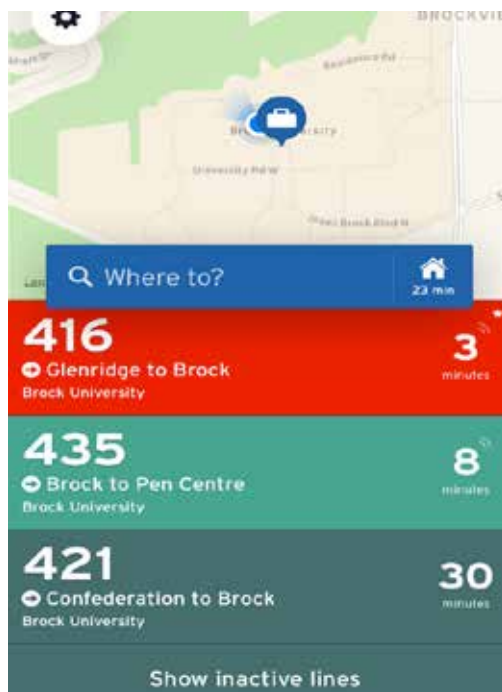


Photo credit: Participant 19, male, Brock University main campus, April 12, 2019



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

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.

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 experience challenges given their tendency to live closer to where they work than to where they attend school. 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.

Inclusion of all Niagara Municipalities

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.



Appendix

Appendix A¹³

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.

¹³ For each of the questions the student needed to have identified their gender, their sense of feeling safe from theft or attack and the third variable. Therefore the n value for females varied between 1073 and 1078 and the male n value varied between 454 and 456

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%

NR = Not reportable

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%

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

Red numbers and letters indicate the sample size is very small and likely not representative

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

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	Buses operating frequently			
	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>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	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

Red numbers and letters indicate the sample size is very small and likely not representative



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



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%

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	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



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



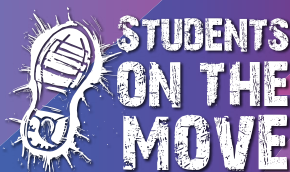
Limitations

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 from 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. However, it is recognized that there are many other gender identities that may have been excluded, or not represented as a result. Additionally, 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.

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 makes sense 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 affects many aspects of students' wellbeing including mobility options. Therefore, the assumption was made that students, for the most part, were self-reliant and agents of their own resources.



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