

**Active-ating Parents on School Travel:
Reducing Car Dependency
for Youth in Metro Vancouver**

**by
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Ethics Statement

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Abstract

As the number of children being driven to and from school continues to increase, transportation-related emissions are among the fastest growing greenhouse gas emissions in both Canada and Metro Vancouver while childhood obesity is reaching epidemic levels. In Metro Vancouver, upwards of 40% of morning congestion is due to parents driving children to school – a habit that influences future behaviours and instils a perception of car dependency. While 60% of parents are interested in finding alternatives to driving their children to school, many are concerned for their child’s safety. Metro Vancouver’s governance structure between school communities, school districts, municipal governments, regional transit authorities and the provincial government does not give jurisdiction over school transportation to any one body, creating an opportunity to better support modal shift to active modes of transportation. The capstone recommends parent concerns be addressed through a transportation certification program similar in scale and scope to the Babysitting Course, training youth how to safely navigate walking, biking and public transportation to and from school.

Keywords: Car dependency; school travel; active transportation; parent engagement

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List of Acronyms

BC	British Columbia
BCCPAC	British Columbia Confederation of Parent Advisory Councils
GHGs	Greenhouse gas emissions
TOD	Transit-oriented development
VKT	Vehicle kilometres traveled

Glossary

Active Transportation	A method of transportation of people and sometimes goods, that only uses the physical activity of the human being for locomotion. Active Transportation can include modes such as walking, cycling, public transportation and micromobility.
Metro Vancouver	Both a political and geo-demographic body referring to the metropolitan area with its major urban centre being the city of Vancouver, British Columbia and includes 21 municipalities, one electoral area and one treaty First Nation.
TransLink	The statutory authority responsible for the regional transportation network of Metro Vancouver in British Columbia, including public transport, major roads and bridges.
Youth	The time of life when one is between 10 and 18.

Executive Summary

In Canada, the number of children being driven to and from school every day is steadily rising. The car presents many dangers: one of the fastest growing greenhouse gas (GHG) emitters, one of the biggest killers of youth, creates congestion, and a large contributor to a range of growing health concerns around obesity and physical inactivity. Yet, despite our awareness of the dangers and risks cars pose, many planners and policymakers are at a loss as to why this dramatic shift has happened and persists despite best attempts to promote walking, cycling and public transportation to and from schools. Understanding parents' perceptions and fears of active transportation, a method of transportation of people and sometimes goods, that only uses the physical activity of the human being for locomotion, is essential to implementing solutions that will create meaningful behaviour change.

By focusing in on the Metro Vancouver context, it is clear there are regional characteristics that make the policy problem unique. In 2019, British Columbia (BC) saw the announcement of an active transportation strategy that set targets for half of all trips taken in the province be by active transportation (walking and cycling) by 2030. While some municipalities in Metro Vancouver are on track to reach this target, many are not due to decades of auto-oriented land-use planning, perceptions of car dependency and differing worldviews.

Dissecting car dependency in the region begins with youth. Upwards of 40% of morning congestion in the Metro Vancouver region is due to parents driving their children to school. The capstone utilizes a literature review, jurisdictional scan and case study analysis to uncover potential avenues to bridge the gap between desired policy goals and current behaviour of parents. To further understand the Metro Vancouver context, key informant interviews with experts and stakeholders in the region glean insights into their feasibility and expected outcomes.

The capstone's research finds that most existing active transportation initiatives do not engage or sufficiently address the valid concerns of parents. As a result, a transportation certification program similar in scale and scope to the Babysitting Course is recommended as the best approach to educate and train youth in Metro Vancouver to use active modes of transportation, while also alleviating the concerns parents have over their child's safety. Next steps include the development of a transportation certification

program through a government-led working group, overseen by BC Confederation of Parent Advisory Councils (BCCPAC), in collaboration with stakeholders at the school district and local municipality.

Chapter 1.

Introduction

In BC, like many regions in North America, car dependency continues to challenge governments around a variety of issues surrounding public health and safety concerns, managing the increasing levels of transportation-related GHGs, and the impacts on the economy and population from worsening congestion. Since the end of the second world war, North American cities have been built around the car, offering new distances and freedoms to us. However, most benefits of the automobile are felt only by the user and only in the short-term whereas many of the costs are borne by society as a whole and over the longer term (Canadian Centre for Policy Alternatives, 2015). Many governments, including BC's current provincial government, now recognize the negative externalities vehicles create but are faced with a challenging transition. In Metro Vancouver specifically, there is a combined lack of sustainable modes of transportation, infrastructure to support active modes and persisting norms maintain car dependency mindsets. In addition, in Metro Vancouver, where public transit infrastructure has been ranked as some of the best in North America, trips by private vehicle still dominate the mode share of the region, and the number of children being driven to school has increased significantly (TransLink, 2019b, 2019a).

In recent years, both BC as a whole and Metro Vancouver have seen a shift in sentiment towards the private vehicle due to their negative externalities such as worsening congestion and increasing obesity. As a result, government priorities are increasingly trending towards promoting more sustainable and active modes of transportation. However, policies surrounding the reduction of personal vehicle use or the promotion of sustainable and active modes have largely relied on local governments to lead their implementation, enforcement and evaluation. For example, the City of Vancouver has seen success in their commitment to promoting the use of active transportation modes, reporting 52.8% of all trips taken in 2018 were by walking, cycling or public transit (City of Vancouver, 2019a). However, across suburban neighbourhoods in Metro Vancouver, few municipalities have implemented policies to address the use of personal vehicles or promote sustainable and active modes.

Personal vehicle use in Metro Vancouver is multifaceted, used for a variety of trips and therefore challenging to reduce its use with blanket policies. However, school travel is responsible for upwards of 40% of peak hour (8am-9am) congestion in Metro Vancouver, revealing an opportunity to promote the use of more efficient, sustainable and active modes to travel to and from school (TransLink, 2019a). Seemingly a low hanging fruit, school travel presents its own set of unique challenges: a jurisdictional grey area, a 'choice' school system that encourages out of catchment enrollment, parental concerns around safety and convenience, and equity issues amid a housing and affordability crisis in the region. As transportation is not within the Ministry of Education's scope of responsibilities under the *School Act*, the onus of school travel falls solely on parents, leaving individual families to make daily school travel decisions which result in serious inefficiencies and increase traffic accident risks for all on route. In addition, there is no formal mechanism to engage stakeholders, such as parents, on transportation policy changes, which leaves school boards, governments and other stakeholders exposed to parental alienation.

Due to the lack of formal engagement, parent concerns are often left out of the conversation when addressing school travel issues or setting goals. Despite understanding that active or sustainable transportation is better for student academic outcomes and health, parents continue to drive their children to school (Hagel et al., 2019). Surveys suggest parents feel as though they have to give up safety and convenience when their children are not being driven to school (Parachute, 2015). In Metro Vancouver, various parent surveys have found similar responses, but little has been done to understand the underlying fears and what solutions could potentially address the problem. This exploration is essential to move the needle on reducing car dependency in school children as children learn many of their behaviours from their parents at a young age – mobility patterns included.

In Metro Vancouver, school travel policies are generally reactive in nature and a range of jurisdictions such as school administration, school district and municipal governments have the authority to alter and deliver policies and programs. However, the result has often been a gap in accountability that ultimately leaves school travel decisions with parents. In June 2019 the BC Government unveiled *Move. Commute. Connect.* – an active transportation strategy that aims to double the percentage of trips taken via active transportation in the province by the year 2030 (BC Government, 2019).

This strategy sets the stage to better understand the motivators, barriers and opportunities that face both parents and students when considering sustainable and active modes of transportation for school travel.

This capstone offers insights and solutions to the problem that a high rate of youth in Metro Vancouver are driven to and from school, creating both traffic issues and car dependency and has a specific focus on the role of parents and their concerns about safety and security of their children.

Chapter 2.

Background

This chapter introduces the problem of car dependency in Metro Vancouver, exploring data on the levels of car dependency in Metro Vancouver over time and the consequences on the region. The chapter includes data on school travel, how youth move in the region, and how youth mobility is intrinsically connected to their parent's transportation patterns, and the perceived and actual barriers their parents face.

2.1. Car dependency in Metro Vancouver

While efforts have been made to promote the use of sustainable and active transportation in Metro Vancouver, the region is still largely car dependent in both travel pattern behaviour and built environment. Car dependency is defined as, “high levels of per capita automobile travel, automobile-oriented land use patterns, and reduced transport alternatives” (Litman, 2002). Metro Vancouver fits the definition of a car dependent region.

In Metro Vancouver, vehicle kilometres traveled (VKT), the total kilometers traveled by motor vehicles calculated by multiplying the number of vehicles on the road by the average length of their trips measured, has remained constant from 17.8 kms per day in 2011 to 18.1 kms per day in 2017 (TransLink, 2019a). Metro Vancouver's *2040 Vision* states that “decreased travel distances by car indicate improved travel options and possibly a decrease in fossil fuel use, while shorter commutes indicate improved employment distribution” (Metro Vancouver, 2011).

Travel pattern behaviours show that the car is used for a variety of trip purposes. Approximately one third of all trips are to and from work, while the remainder involve shopping, family and recreation (Mobility Pricing Independent Commission, 2018). Despite significant transit ridership increases in the region between 2011-2017, the overall number of trips has increased, showing that people are using their cars more often for short trips such as errands, shopping, transporting children and more. With population growth expected to be approximately an additional million people by 2050, all

opportunities to reduce the use of household vehicles is warranted (Metro Vancouver, 2018).

Metro Vancouver’s built environment is largely automobile-oriented. A recent study evaluated Metro Vancouver neighbourhoods based on their walkability or car dependency, and then investigated the relationship between health care costs and residency in a walkable neighbourhood, finding that walkability can reduce health care costs up to 47% (Frank et al., 2019). Figure 1 shows neighbourhood walkability in Metro Vancouver, of which most is not considered walkable.

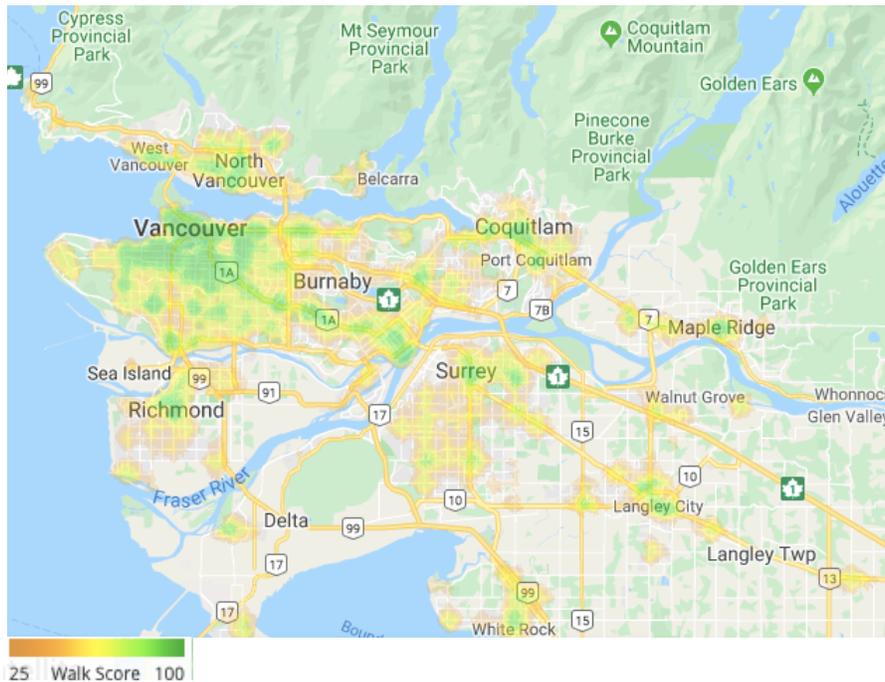


Figure 1: Neighbourhood walkability in Metro Vancouver, 2019

Source: Data provided by Redfin Real Estate in Vancouver, Walk Score ©, 2019

Despite having a top ranked public transportation system in North America, less than half the population has access to 15-minutes or better transit service¹, leaving 55% of all trips taken by personal car, most of which are occupied by a single person (TransLink, 2008, 2019a). Transit-oriented development (TOD) in the region has led to inflated prices for those residences that are in close proximity to public transit, especially SkyTrain, putting those residences out of reach for low-income individuals (Jones & Ley,

¹ In transportation planning transit service frequencies that are 15-minutes or less are considered frequent. Longer than 15-minute increments are considered infrequent service. In other words, under 15-minutes frequencies allows for users to arrive to the stop without consulting a schedule beforehand, and this is where the biggest spikes in ridership are seen.

2016). In addition, alternatives to a personal vehicle through programs such as bike share, car share or micromobility (electric bicycles, electric scooters, etc.) are limited in the region due to regulatory barriers combined with weather, geography, and a lack of demand where consumers already have access to a personal vehicle.

In addition to the conventional definition of car dependency, Metro Vancouver faces many negative externalities from widespread personal car use. For example, 43% of all Metro Vancouver's GHGs emitted are transportation-related, making transportation the largest single emitter in the region (Metro Vancouver, 2018). The public health impacts from a car's air pollutants are vast, and the prevalence of automobiles significantly increases the risk of accident injury and death. The current cost of congestion in the region is estimated at \$500 million with an additional \$500 to \$1.2 billion in hidden costs of congestion (Dachis, 2015). This figure is likely to increase year after year.

The negative effects of car dependency impact populations unevenly. Because higher incomes can typically afford to live in more walkable neighborhoods in close proximity to public transportation, low-income populations typically inhabit neighbourhoods that are close to highways and in poorly planned neighbourhoods. As a result, car dependency often operates on a curve where those who can afford a personal vehicle but not to live in a walkable neighbourhood are the most car dependent. For example, while 45.7% of those household incomes under \$50k use a personal vehicle, it increases only slightly to 55.2% for those incomes between \$50k and \$100k, and again to 53.2% when over \$100k (TransLink, 2019a). The same curve is true for cycling, as the majority of household incomes that cycled had incomes of over \$100k at 3.4% (TransLink, 2019a).

While Metro Vancouver fits within the definition of car dependent, it also shows signs of "peak car" – a phenomenon that car use per capita begins to plateau due to a variety of factors including maximum congestion levels ("hitting the Marchetti Wall"), the rise in fuel prices and the exploding growth of public transportation ridership (Newman & Kenworthy, 2011). However, with the fluctuating price of oil, lack of public transportation infrastructure, previous uncertainty around ridehailing and variability in walkability in the region, it may take some years before we see a substantial decline in car use.

2.2. Youth in Metro Vancouver

Youth between the ages of 10-18 in Metro Vancouver are a relatively small proportion of the population when compared with seniors (65+). Table 1 shows the proportion of youth in Metro Vancouver from 2011 and 2016. Because BC is projected to be a “super-aged” society where the number of seniors outnumbers the total youth population (0-19) by 2029, there is a significant amount of policy research and development on how to reduce senior burden on the health care system and support their transition and mobility into old age (Population Projections, British Columbia and Sub-Provincial, n.d.). As a result, there is less emphasis on proactively promoting healthy, sustainable travel behaviours at a young age, despite research pointing to the need for children to establish these behavioural patterns at an early age (Casey E. Gray et al., 2013; Malina, 1996).

Table 1: Proportion of youth in Metro Vancouver, 2011-2016

Source: Statistics Canada, 2016

	2011	2016
Total population	2,313,325	2,463,430
Youth (10-18)	240,180 (10.38%)	234,020 (9.50%)
Seniors (65+)	312,900 (13.53%)	387,310 (15.72%)

Like most jurisdictions in the world, youth have relatively little influence over policymaking in the Metro Vancouver region and are not involved in the development or transportation or school travel policy. As 18 is currently the legal voting age and 16 is the age at which youth can obtain a learner’s driver licence in BC, there are no formal mechanisms in which youth voices are incorporated into the decision-making process. In recent years, non-profit organizations such as CityHive, a youth engagement organization, have pressed various levels of government to consider youth voices in their policy development conversations and have seen substantial success such as the establishment of the TransLink Youth Advisory Council (TransLink, 2019c).

Youth-targeted infrastructure and transportation policy is limited in Metro Vancouver. This is not unique to Metro Vancouver alone, as many jurisdictions focus transportation systems towards peak working ages and able-bodied individuals (Canadian Urban Transit Association, 2018). However, investments in youth

transportation programs and infrastructure are beginning to have traction in regions across North America, Europe and South America, including Metro Vancouver (Chan, 2017, 2019; Godfrey, 2019). Youth transportation programs can free up spending power and time for parents and youth, especially for lower income families, thereby increasing the autonomy of youth of the region (McDonald, Librera, & Deakin, 2004). As a result, there has been a growing discourse in Metro Vancouver surrounding the need for more targeted policy and programming to support youth and families such as subsidized public transportation measures, traffic calming schemes in neighbourhoods and around schools, and linking public health interventions with transportation initiatives to increase physical activity.

2.3. Youth transportation patterns in Metro Vancouver

Data on the way youth travel is limited. In order to gather information on the way youth in Metro Vancouver travel, due to age restrictions, much of the data comes from qualitative information from parents and schools, identifying the destinations parents are travelling to, and in some instances, counting students as they arrive at schools. As a rule of thumb, youth typically mimic the way in which their parents travel (Susilo & Liu, 2016). In Metro Vancouver, most adults commute to work in a private vehicle (Statistics Canada, 2016). The commuting to work patterns of adults in Metro Vancouver is displayed in Figure 1 (Statistics Canada, 2016; TransLink, 2019a).

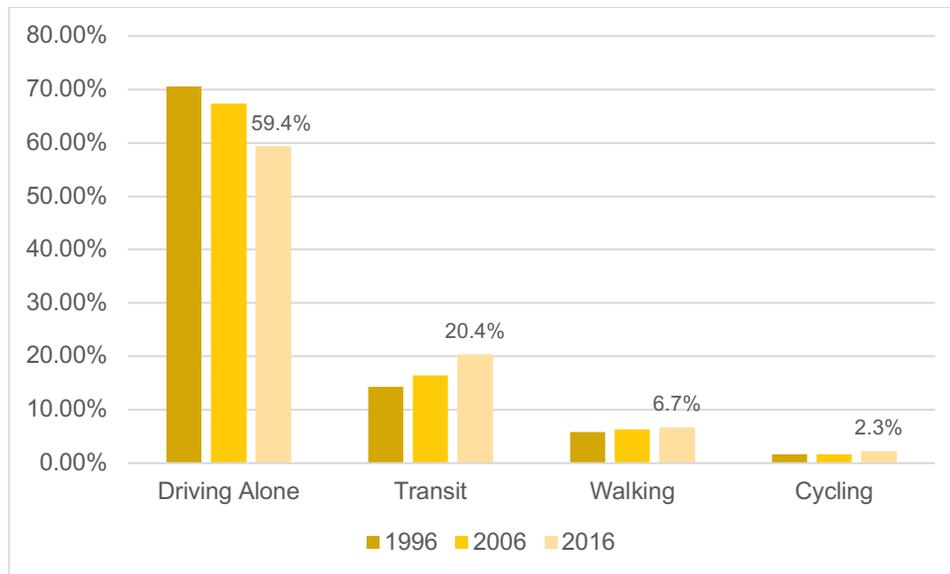


Figure 2: Method of commuting to work in Metro Vancouver, 2016

Source: Statistics Canada, 2016

A by-product of a population that commutes to work in a private vehicle is that children are dropped off at school on the way (K. Wilson, Clark, & Gilliland, 2018). This behaviour contributes to a significant amount of peak hour congestion. Across North America, school traffic is responsible for approximately 30% of all congestion (Safe Routes to School National Partnership, n.d.). In Metro Vancouver, upwards of 39% of morning traffic and congestion between peak hours (7am-9am) is caused by private vehicles driving to grade school (TransLink, 2019a). TransLink’s 2017 Trip Diary captured that an average of 336,000 trips are taken to grade school every weekday morning between 6:00am and 9:00am, and 171,500 or 51% are by private vehicle (TransLink, 2019a). The number of trips to school has increased from 300,000 in 2011 to 336,000 in 2017, but the largest increase was seen in children being driven to school as passengers from 141,000 to 168,000, despite the total number of youths in the region dropping (Statistics Canada, 2016; TransLink, 2019a). The total number of trips to grade school by mode is displayed in Figure 3.

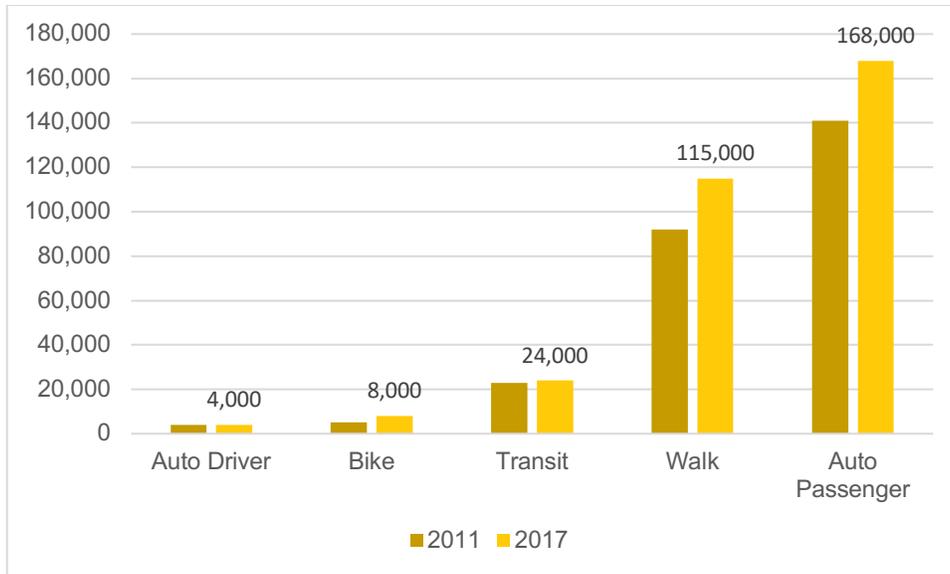


Figure 3: Total trips to school by mode in Metro Vancouver, 2017

Source: TransLink, 2019a

Metro Vancouver has seen significant increases in transit ridership and walking in recent years, reaching record ridership numbers and significant increases in walking mode share where 14% of all trips taken are by walking (TransLink, 2019a). However, these increases have not necessarily been seen in parents and youth on their journey to school. Currently, of all trips to grade school, 34.6% are by walking, 11% are by transit, 2.6% are by bike and 51.8% are by private vehicle (TransLink, 2019a).

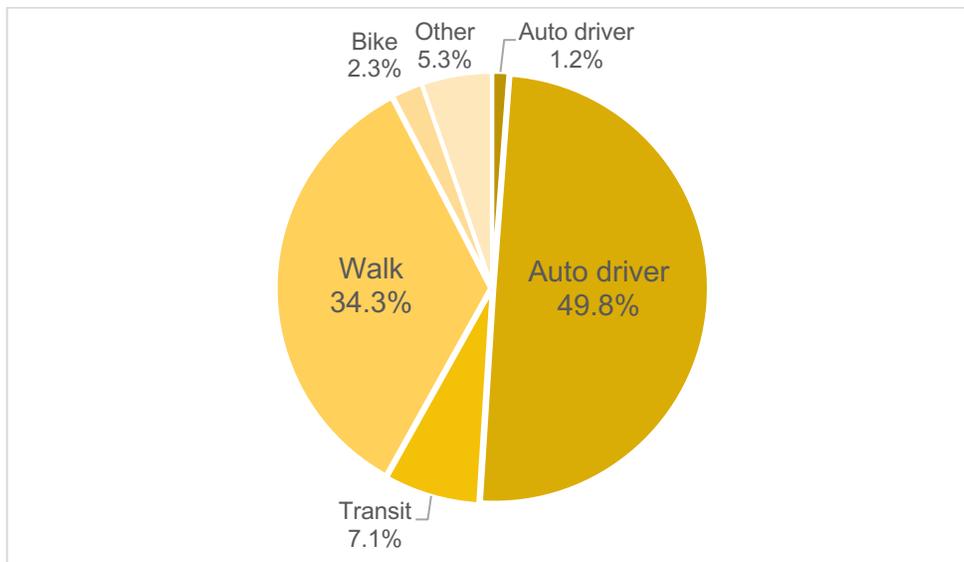


Figure 4: Trips to grade school by mode share in Metro Vancouver, 2017

Source: TransLink, 2019a

School buses and programs could be included within other (5.3%), however with the rise of suburban neighbourhoods, many school bus programs in the Metro Vancouver program have been discontinued due to a lack of demand and increasing costs to school districts to supply the programs. In 2016, the BC Ministry of Education created a \$14.7 million Student Transportation Fund to subsidize and help alleviate some of these costs on school districts and parents (BC Government, 2016). While these investments have continued to 2019, some school districts have completely eliminated their school bus programs due to a lack of demand, making the programs financially infeasible, while others still charge a per child fee that can be upwards of \$500 per year. The Metro Vancouver school districts that receive the Student Transportation Fund can be found in Appendix C.

The numbers of youth being driven to school raises concerns around levels of daily physical activity and the increased risk of injury and death with the numbers of cars around schools. Currently, across British Columbia more than 26% of youth aged 12-17 are overweight or obese, and at least 80 per cent of this group will become obese adults (Child Health BC, n.d.). The number one cause of death in children is car accidents (Raising Canada, 2018), and deaths caused by motor vehicles in Canada are significantly higher than all other modes (Parachute, 2015).

Table 2: Motor vehicle traffic fatalities and injuries in Canada, 2015

Source: Transport Canada, 2015

Age	Fatalities	Serious Injuries	Total Injuries
5-14	30	320	6,463
15-19	139	959	14,836

Additionally, with dangerous behaviours during school drop-offs, children are put at a 45% increased risk of having a pedestrian collision (SickKids, 2019). Unsafe parking and dropping a child off across the street from the school is common practice found in 88% of schools in an observational study, leaving children at a higher risk of traffic injuries (Rothman, Howard, Buliung, Macarthur, & Macpherson, 2016). These dangerous practices around schools increases the risk of serious injuries, fatalities and injuries, and in the case of Metro Vancouver, the increasing number of trips to grade school raise the risk of traffic injuries significantly. Table 2 displays Canadian motor vehicle traffic fatalities and injuries by age group.

2.4. Barriers perceived by parents to non-car transportation

In a survey by Parachute Canada, 75% of Canadian parents said they prevent their kids from walking or cycling to school due to fears over speeding cars and traffic (Parachute, 2015). In addition, parents also expressed concerns over fear of abduction (38%), maturity level of their children (36%), social concerns such as bullying (31%), and lack of sidewalks and bike lanes (27%). They said they would be more comfortable if their child walked with a friend (44%), with an adult (39%) and with modifications to the street such as speed bumps (20%). Parents believe that they are able to mitigate the dangers mentioned by driving their child to school, and the dangers would have to be significantly lessened in order to change their behaviour. These findings have been echoed in Metro Vancouver parent surveys such as the North Vancouver's School Travel Survey, Vancouver's School Active Travel Planning reports and HASTe BC's School Travel Planning reports from various schools and districts around Metro Vancouver (City of Vancouver, 2018; HASTe BC, 2016; North Vancouver School District, 2013).

While parent concerns are the main barrier to having more youth use active modes of transportation, there are limited policies or programs in Metro Vancouver that aim to overcome the barriers that parents face when considering school travel mode. In addition, many parents cite that currently available modes such as public transportation are not always physically or financially accessible to their families. For example, cost is a significant barrier when considering public transportation. A monthly concession pass for youth from TransLink costs \$56 which is unaffordable for many parents with one child let alone multiple children. This is compounded when they also need to own a car to get to work. This has widespread equity implications for the region as for low-income families with no alternative transport modes, children may face the inability to partake in extracurricular or recreational activities, which will ultimately impact a child's development (McCarthy, Delbosc, Currie, & Molloy, 2017).

The financial constraints aside, in Metro Vancouver parents are also limited by available options for their children. If children are not driven, the choices are walking, cycling or taking public transit unattended, with a friend or with supervision. As suggested earlier, the number one concern for parents when considering sustainable modes of transportation is level of safety. Parents also feel they are forced to have a car

for appointments, activities and errands, (Mackett, Lucas, Paskins, & Turbin, 2002). Many neighbourhoods across Metro Vancouver are not planned for pedestrians and cyclists and may not be safe for walking or cycling, especially for children at younger ages. The continued fear and concern over safety that encourages parents to drive their children to school is self-reinforcing – it causes more traffic, congestion and risk as it magnifies the perceived unsafety of active modes of getting children to school.

2.5. Current Policies

2.5.1. Provincial policies

Current policies are primarily focused around road safety and active transportation. In 2015, the BC Government announced the *BC Road Safety Strategy: Vision Zero* which aims to provide a framework and structure for action to create the safest roads in North America with zero traffic fatalities and zero serious injuries. However, this does not promote the reduction in the use of vehicles. In June 2019, the BC Government announced *Move. Commute. Connect.*, a provincial active transportation strategy that aims to double the percentage of trips taken via active transportation in the province by the year 2030. While this signals the government's commitment to promoting active modes in the province, it is new and will take time to shape, scale and deliver on the higher-level goals they have outlined within the strategy and design standards, and will require significant work with partners and stakeholders. The province has set the stage for policies to shift mode share, however there is no direct mandate that requires municipalities or schools to deliver on these goals.

Indirectly, British Columbia's 2008 carbon tax has reduced the use of gasoline, showing a 7.3% decline from 2008-2012 (Sustainable Prosperity, 2012). As of April 2020, the carbon tax rate is \$45 per tonne of carbon dioxide, which adds a total of approximately 9.9 cents per litre of gasoline, and will increase to \$50 per tonne in 2021.

2.5.2. Regional policies

Metro Vancouver's regional transit authority, TransLink, does have some programs targeted towards active school travel, such as TravelSmart for Schools. This program works with schools on a by-request basis to promote the use of public

transportation. Currently, TransLink has postponed facilitating workshops until it determines the best approach (TransLink TravelSmart, n.d.). In addition, TransLink hosts the annual I Love Transit Week in October where youth are granted free transit fares to increase awareness and familiarity with the system in hopes it will increase youth ridership. In the past, TransLink had a policy wherein children could ride for free with a fare-paying adult, but this was discontinued when ridership began to increase substantially and there were fears of insufficient capacity on the transit network.

To investigate possible strategies to reduce congestion in the region, TransLink commissioned the Mobility Pricing Independent Commission in 2017 who issued their final report in 2018. As of 2018, the Mayors' Council and the TransLink Board have requested that further research be done, and the topic of congestion pricing remains contested in the region with many citing it would place an inequitable burden on those who have already been forced out of the urban core (Mobility Pricing Independent Commission, 2018).

2.5.3. Non-profit organizations and advocacy

Prior to the province's active transportation strategy *Move. Commute Connect.*, most policy has been driven at the municipal level or through non-profit organizations such as cycling education and advocacy organizations HUB Cycling, HASTe BC, Cycling BC, British Columbia Cycling Coalition and Pedal. Understanding the complicated landscape between land-use planning, parent pushback and lack of government buy-in, non-profit organizations have advocated for programs that encourage the use of active transportation. For example, HASTe BC's "Drive to Five" initiative implores parents to end their trip five minutes away from the school so their child can walk or bike the last five minutes. Drive to Five is intended to keep school drop-off areas safe and offers an opportunity for children to get fresh air and physical exercise before starting the school day. HASTe BC also promotes "ABC days" where children are encouraged to get to school in "Anything But a Car" and are rewarded with in-class celebrations such as parties, lunches and recognition for doing so. HASTe BC also works in partnership with schools and school districts to engage with parents and the community to develop school travel plans that encourage active school travel in a safe and inclusive way.

2.5.4. Municipal policies

Municipalities such as the City of Vancouver and City of New Westminster have committed significant efforts to active transportation. All programs at the City of Vancouver fall under their Transportation 2040 plan, which sets a target that at least two-thirds of all trips will be made by foot, bike and transit. In 2018, the City of Vancouver saw the highest number of cycling trips on record and 53% of all trips involved walking, cycling or transit – surpassing the target for 2020 (City of Vancouver, 2019b). The City’s Walk + Bike + Roll: School Active Travel program is a partnership with the Vancouver School Board that creates action plans and route maps for youth and parents and has invested significant infrastructure into making these routes safe.

In addition to years of programming around active school travel, the City of Vancouver’s city council recently passed a motion to improve transportation safety around Vancouver schools. City staff will now collaborate with the Vancouver School Board to establish recommendations to promote “walking or rolling” to schools including traffic calming, additional infrastructure and policies. This motion is complementary to “Safe Slower Streets,” a pilot program where street traffic limits are being reduced from 50 to 30 km/h. In addition, the City of Vancouver city council approved a motion for free public transit for youth in January 2019. The City of New Westminster council similarly supported a motion for free transit for youth in December 2018.²

The City of New Westminster has set similar targets, implementing the Neighbourhood Traffic Calming Policy in 2010. Since 2009, the City has endorsed school travel planning to make the journey safer for all, implementing such programs as Let’s Walk!, an effort to reduce traffic congestion around schools and increase the profile of the walkability in New Westminster. In 2019 the City signalled a commitment to completing coordinated plans for all schools in the city.

² These motions carry no means of implementation as TransLink and its Mayors’ Council determine fare structure for public transportation in the region.

2.6. Key findings

- Metro Vancouver is a car dependent region despite having one of the top ranked public transportation systems in the world. The health impacts of car dependency are vast and intergenerational.
- Youth in Metro Vancouver receive little transportation-related policy and programming and, as a result, travel in the same fashion as their parents.
- Many parents state they would be interested in allowing their children to use active transportation to school but that they are concerned for their safety.
- Attempts to increase levels of active transportation have largely been led at the municipal level, by non-profit organizations and recently at the provincial level. As a result, there is no formal mechanism to engage parents in transportation related policy development.

Chapter 3.

Literature Review: Understanding parent and youth mode choice

3.1. Youth form transportation habits at a young age

It is widely accepted that children and youth inherit many of the patterns exhibited by those of their parents. Research has also found that the way in which we travel as a child may influence the way we perceive and use travel modes as adults (Lanzendorf, 2003; Mackett et al., 2002). Additionally, lack of exposure and familiarity to travel modes can negatively influence the usage of that mode for an entire lifespan (Gärling & Axhausen, 2003; Mackett et al., 2002). With that, youth lay the foundations for active transportation at an early age, and the patterns they inherit at this age are intricately linked to their health outcomes and physical activity levels as adults (Malina, 1996). Research shows that children's' active travel to school is associated with parental active transportation to work and other locations (Henne, Tandon, Frank, & Saelens, 2014), and as individuals, the likelihood of walking and cycling as a form of transportation peaks at age 10, and decreases thereafter (Pabayo, Gauvin, & Barnett, 2011). In addition, mode of choice galvanizes in a person's early 30s and it is recommended to establish habits early on through exposure to public transit systems and age-targeted policy (Grimsrud & El-Geneidy, 2014).

The way children are transported to leisure activities also impacts their future mode choice of children (Hjorthol & Fyhri, 2009). However, travel to leisure activities is an area that is difficult to target due to inconsistent travel patterns. This shows that while promoting active modes for school travel can help to shape the mode choice of children in the future, it is only part of the picture. The car is the main mode of transport for leisure activities due in part to the time of day they take place, their infrequency, their location, and "time pressure" if a parent has more than one child. This results in families with access to cars to use the car as the default option in these instances. By removing the car as a natural option in both school travel and leisure activities, there is a higher probability of positively influencing mode choice in the future.

In addition, there is much research and attention devoted to children's active transportation and active school travel, however, there is limited attention paid to the impacts of taking public transportation. Research has shown that compared with youth who actively commute, use the school bus or public transit, youth who travel to school by car were not only less active during commuting hours, but also throughout the rest of the school day (Voss et al., 2012). School buses and public transit use can be encouraged as a means to promote healthy lifestyles, and lay foundations for sustainable and active transportation that maintain into adulthood.

3.2. Parent perceptions and impacts on children

The way parents perceive risks to their children while travelling to school are paramount to informing policies (Hagel et al., 2019). Safety is the most important factor determining the way parents transport their children (Henne et al., 2014; Mammen, Faulkner, Buliung, & Lay, 2012; Parachute, 2015). Vehicle use is unlikely to decrease without direct action to improve safety conditions and decrease potential injury-causing risks (Hagel et al., 2019). As a result, the neighbourhood in which a child lives and their distance to school and activities are key determining factors in the modes their parents allow them to use.

Researchers find that many parents who drive their children to school would allow them to use active transportation if traffic danger were reduced but their fear of traffic danger inhibits making different mode choices. Therefore risk from traffic or neighbourhood anxieties have the most influence on mode choice (Buliung, Faulkner, Beesley, & Kennedy, 2011; Rothman et al., 2015; Valentine & McKendrick, 1997). This becomes a vicious circle. The more children that are taken by car, the worse the traffic environment is for those who walk or cycle resulting in fewer children to travel with and more being driven to school (Fyhri & Hjorthol, 2009).

In addition to safety, there is a perception that having children in general, and the activities of transporting children, requires a car (Mattioli, Anable, & Vrotsou, 2016). As a result, having children is seen as the most difficult reason to stop using a personal vehicle and will not shift without policy that accommodates these perceived needs, such as integrating transport policies with cargo needs of families. Parents generally perceive more barriers to active school travel than their children and will often default to driving

children to school in order to coordinate with work schedules and as a result of the perceived danger of active school travel (K. Wilson et al., 2018).

Perceptions of the modes being promoted are important to consider. In regions where driving is the norm, policies that continue to promote active modes as a “matter of utility” as they are faster or easier, and the general population does not agree, leads to a relegation of the mode altogether (Aldred, 2014). For example, if cycling is to be promoted as a faster or easier mode of transportation in a car dominated region, populations are less likely to make use of cycling because it does not fit within their perception of the mode. This has implications for policy options in Metro Vancouver, where driving is the norm.

It is also important to consider any changes to access of cars in car dependent regions. While attitudes towards modes of transportation largely cut across personal characteristics (Anable, 2005), in a community that is car dependent, having limited access to a car has implications to a child’s health and well-being as there is less opportunity to partake in recreational activities, as well as healthcare and social services (McCarthy et al., 2017). This lack of auto-availability may be detrimental to a child’s long-term development, requiring availability of government provided or subsidized modes. Vulnerable populations (e.g. women, low-income persons, seniors, new immigrants, persons with disabilities) are most reliant on public transportation, and adds to the perception that those who use the services are needy (Aldred & Jungnickel, 2014; Miller et al., 2018)

3.3. Policies need to target youth and adults differently

As learned from the literature, interventions should engage the entire family and mitigate safety concerns. Policies to encourage modal shift should consider the frequency and attitudes towards car use in a household, and target efforts towards children to see a reduction in car use as an adult (Mackett et al., 2002).

Best practices of promoting active transportation initiatives, an area of research that garners widespread attention, have established the need for interventions (both policies and programs that are age targeted and age appropriate, utilize feedback loops and mechanisms to sustain long-term interest (Larouche, Mammen, Rowe, & Faulkner, 2018; O. Wilson et al., 2018)

Strategies and policies that promote active modes of transportation cannot be the same for the adults and children as children differ from adults in both behaviour and traffic injury risk (Hagel et al., 2019). For example, Canada’s national injury prevention organization maintains, “children under age 10 are not physically and cognitively ready to bicycle on the road with motor vehicle traffic, and research supports this recommendation” (Parachute, 2015). Child and youth pedestrians face similar challenges. However, there is a substantial gap in child-specific knowledge on transportation.

In addition, there is limited understanding of the barriers and facilitators to active modes of transportation for youth aside from parents’ perceptions of the mode in question. In a particularly unique study, urban and suburban children in Metro Vancouver were asked about their perceived and experienced barriers and facilitators to active school transportation (Race et al., 2017). Themes identified included proximity, neighborhood safety, traffic safety, parental support and peer relationships. To overcome the perceived and experienced barriers, children in the study developed personal strategies, such as walking with a friend or being cautious in potentially dangerous areas. The researchers found that involving children in school travel planning discussions and taking the neighborhood setting into account may better inform the development of travel planning programs and enhance their effectiveness.

3.4. Key Findings

- The transportation habits that youth form have long-lasting impacts on their travel behaviour and it is therefore important to familiarize youth with a range of transportation options early in life.
- Parents have the final say in when and how their children travel which reinforces the importance of understanding the perceptions parents have towards active transportation.
- Active transportation policies that only target youth may not be the most effective way to create long-lasting behaviour change and policies that have been successful for adults will not necessarily be successful with youth.

Chapter 4.

Methodology

This capstone employs mixed methodology that includes a jurisdictional scan to identify preliminary policy options, case studies to dive into the key tenets of successful policies, and key informant interviews with experts in the field of transportation, active transportation and school travel, as well as relevant stakeholders in the region.

The capstone faced limitations in terms of both time and resources and recognizes that there is an opportunity to better engage parent groups and stakeholders. For example, the capstone's findings could be validated, and policy options strengthened through the development and collection of parent surveys.

4.1. Jurisdictional Scan

The jurisdictional scan investigates publicly available documents and reports of programs, policies and initiatives relevant to school travel, reducing the use of the private vehicle in a given area and incentivizing parents or youth to make use of active modes of transportation on the journey to and from school. The scope of the jurisdictional scan involves multiple levels of government (municipal, provincial and federal); school and school districts; and non-profit and advocacy organizations. The jurisdictional scan focused primarily on North America but also considered jurisdictions in Europe and South America that have established strong sustainable transportation cultures to draw on key elements that were integral to their mode and cultural shift.

The data from the jurisdictional scan was compiled into a table and a threshold elimination process was applied to each entity, whereby jurisdictions that did not seem relevant to the capstone's purposes were rejected. The jurisdictions similar in nature to the Metro Vancouver region whether culturally, geographically or politically, or successful in implementing significant mode shift for youth were included in the case study analysis. In addition, the jurisdictional scan informed the development of policy options and helped to identify key players and roles for the development of a key informant interview list.

4.2. Case Studies

To build on the findings from the literature review and the jurisdictional scan, jurisdictions that had key learnings for Metro Vancouver were analyzed in a case study format. The intention of the case study process was to further investigate each jurisdiction's approach to shifting sustainable mode share to gain a deeper understanding of the motivations, outcomes and response to such programs.

I undertook case study analysis of Kingston, Ontario, Seattle, Washington, the Netherlands, London, United Kingdom and North Vancouver, British Columbia. Kingston, Seattle and London have geographic and political characteristics similar in nature to Metro Vancouver and have each implemented a unique approach to increasing mode share of youth on active transportation. The Netherlands was selected as it is a world leader in terms of an active transportation culture but more importantly has a renowned cycling education program that is being implemented in different formats around the world. North Vancouver was further investigated in order to understand why the school travel programs began, in addition to the successes and failures of their programs and to identify key players that could be potentially interviewed. Telephone interviews were conducted with representatives in Kingston and Seattle.

The overall key learnings from the case study process were compiled to establish a best practices list to consider when developing and evaluating policy options. In addition, case study findings informed the development of the key informant interview list and key informant interview guide.

4.3. Key Informant Interviews

The key informant interviews delve into the Metro Vancouver context and illuminate the opportunities and challenges that policymakers face when implementing school travel programs, restrictions on the use of the car and parent engagement. All interviews were semi-structured to maintain an element of flexibility for the interviewees to provide information or perspectives that were not accounted for at the outset of the interview, but also keeping the interview relevant for the purposes of the capstone. When possible, I took the opportunity to test and discuss potential policy options that arose in the literature review, jurisdictional scan and case studies.

Each interview lasted 45-60 minutes. The interview guide is in Appendix A. The interviews were recorded, transcribed and coded for key themes.

Chapter 5.

Jurisdictional Scan & Case Studies

5.1. Jurisdictional Scan

The jurisdictional scan uses publicly available data and reports, and media sources to identify possible policy options. Those jurisdictions who have had successful programs and policies to reduce the number of children being driven or enable youth mobility opportunities were considered. Table 2 outlines those jurisdictions that were considered.

I use a threshold process to narrow down those jurisdictions to be analyzed as a case study. The case study jurisdictions were selected through inclusion criteria, as well as characteristics that show promise in the Metro Vancouver region. The inclusion criteria involved those jurisdictions that were similar in nature to Metro Vancouver either geographically, culturally or politically. In addition, I was particularly interested in looking at cases that have shifted their culture towards more active modes of transportation without necessarily having the ideal built environment and have incorporated parents and education into their programming. The jurisdictions in Table 2 that are highlighted will be explored in more depth as case studies.

Table 3: Case study jurisdictions considered

Jurisdiction	Initiative
London, United Kingdom	Restrict school drop offs
Kingston, Ontario	Free Transit for students under 21
Seattle, Washington	ORCA Opportunity
Netherlands	School travel, cycling education
North Vancouver, British Columbia	Freedom Friday
Finland	School travel
European Union	Sustainable Travel Recognition and Accreditation for Schools
Oakland, California	Bike Lending Library
Auckland, New Zealand	Free public transit under 16
Winnipeg, Manitoba	Paratransit
Copenhagen, Denmark	School travel, cycling education
Paris, France	P'tit Vélib
Fortaleza, Brazil	Mini Bicicletar
Brazil	Cycling Schools
Vienna, Austria	Ban cars at start of school day pilot project
Bolzano, Italy	Bolzano Initiative

5.2. Case Studies

The case studies were selected and broken into key themes that were found in the literature review: restricting car use, free/reduced fare transit and education/training. I pulled out high-level characteristics of the policies, the results and the opportunities that these case studies may present for the Metro Vancouver region. Key findings are summarized at the end of the chapter.

5.2.1. Free/reduced fare public transit for youth

Kingston, Ontario

A partnership between the City of Kingston, Kingston Transit, and the Limestone District School Board established the Kingston Transit High School Bus Pass Program which provides high school students under the age of 21 fully subsidized (free) transit passes. At its core, the program is an attempt to increase ridership and has been wildly successful in doing so. Kingston Transit is the fastest growing public transportation system in Canada, with an increased ridership of 73% since 2011 with over six million rides per year and counting. However, despite being an attempt to increase ridership, the key tenets of the program offer strong insights into how education and exposure shift culture more so than alleviating financial barriers.

Kingston established a pilot program in 2012 where students in grade nine would receive a fully subsidized transit pass. However, Kingston Transit staff found that many students did not feel confident in taking the transit system, did not know where or how to acquire the pass and had no experience riding the bus. As a result, transit orientation sessions were developed to teach students how to acquire their pass, ride the bus and feel confident should any issues arise. The transit orientation aims to empower and encourage youth to be confident and independent individuals, helping the “next generation of commuters to make more efficient and sustainable choices in transportation.”

Seattle, Washington

The Seattle Department of Transportation established a free transit for youth program named Seattle ORCA Opportunity in 2018, that centers around affordability and equity to improve travel options for students. Income-qualified middle school students,

high school students at Seattle Public Schools, Seattle Promise Scholars and low-income tenants in pre-selected Seattle Housing Authority properties are eligible for the program, receiving a free, unlimited 12-month ORCA card. Of the 15,000 eligible students, approximately 11,900 enroll in the program, taking over 2.4 million trips and saving around \$356 per user per year. The program was born out of a youth-led march, voicing concern that many low-income students in Seattle face an unfair burden of transportation costs, limiting their education, employment and future prospects. The ORCA Opportunity program is funded with Proposition 1 funding, and the lost fares are considered part of the program cost.

While the program has not yet had the capacity to implement an educational component, program leads note there has been a significant shift in interest in public transportation at all ages. Of note, program leads note that the logistic elements of the program have presented unexpected capacity strains that have required the hiring of a School District Liaison. However, program leads stressed that this has been one of the only learnings in hindsight, with transportation system capacity strains an easy fix due to the nature of school sites not being in the downtown core, avoiding morning and afternoon rushes.

5.2.2. Education, exposure and training

The Netherlands

The Dutch are world renowned for their cycling culture which owes its success to early education and inclusion of cyclists in all planning processes. The Dutch begin to train children to ride their bikes as early as age three at home, but formal education in schools requires all students aged 10-12 to pass a traffic exam. The traffic exam is integral to raising the profile and importance of cycling and ensuring all Dutch citizens are cognizant of cyclists and the rules of the road that relate to them. If the students pass the two components of the traffic exam – first is an obligatory theoretical test of road safety rules and second is an optional practical section – they are awarded a traffic certificate called Verkeersdiploma. Drivers are also trained for interaction with cyclists as part of their driving training and license.

The required cycling education establishes a rite of passage and signals to parents, students and the community that students between the ages of 10-12 are

formally equipped to follow the rules of the road, giving those around them a sense of security that they are capable and cognizant of the dangers that may exist. Additionally, by making the traffic exam a required educational component with an optional practical exam shows that cycling can be used by everyone but is not mandatory for everyone. It simply adds another mode of active transportation to the inventory of youth.

5.2.3. Restricting school drop offs and pick-ups

London, United Kingdom

Schools around London and across the United Kingdom are implementing restrictions on the use of the private vehicle to drop students off to school in the morning and pick them up in the afternoon. Areas such as Croydon, West Midlands, Hackney, Camden, Edinburgh and Sheffield have implemented pilot programs that limit the use of roadways surrounding schools. While the restrictions are largely centred around decreasing the amount of pollution and increasing road safety around schools, the initiatives inherently encourage the use of active modes of transportation. Other local authorities are considering “no-idling” zones where parents who are caught idling their engines outside of a school may be fined.

A deeper dive into a specific school district will highlight the key characteristics of the policy. In November 2016, the London school district of Havering made morning and afternoon school drop offs or pick-ups by car a criminal offence, punishable by fines of £100. If not paid within a two-week timeframe, the fine increases tenfold and risks a potential criminal record. Enforcement is carried out by camera surveillance and a police officer, similar to other enforcement measures in the United Kingdom. The law was made possible by an ordinance passed in 2014 named Public Space Protection Orders (PSPOs) which allows a ban on certain behaviours from specific places despite the behaviours not being illegal. The policy was instituted as there had been a number of serious incidents involving dangerous driving by parents.

The drop-off and pick up ban applies to specific areas and zones around schools for an hour and a half in the morning and once again in the afternoon. While the actual zones vary school by school, most parents are now required to have their child walk the remaining five-minute walk. Despite pushback from parents, the law was born from frustrated parents who had attempted years of unsuccessful campaigns to encourage

safer driving and parking practices in and around school zones. Parents and schools saw these behaviours during the before and after school rush as dangerous to the lives of the students. Critics have said that the restrictions have been “a quick fix” that does not necessarily solve the problem but moves it elsewhere.

North Vancouver, British Columbia

Canyon Heights Elementary school in North Vancouver implemented ‘Freedom Friday’ in December 2015, a weekly celebration that encourages “walking, cycling, or any other people-powered means to get to and from class” (“How ‘Freedom Friday’ changed the travel habits of one North Vancouver school,” 2017). The impetus for Freedom Friday arose as around 57% of the students traveled to school by car despite the majority of the student population residing within a 15-minute walk to the school. This resulted in dangerous behaviours by drivers and serious congestion around the school’s perimeter.

Freedom Friday was initiated by concerned members of the parent community and was an overwhelming success. Parents, some of whom were community advocates, worked with the Parent Advisory Council and school administration to make the weekly event fun and exciting for all participants. Parent volunteers would greet morning commuters with food and drink, or promises to play a student’s playlist all morning (“How ‘Freedom Friday’ changed the travel habits of one North Vancouver school,” 2017). After one year of the initiative, mode share in the school community on Freedom Fridays changed significantly. Students being driven to school dropped from 57% to 18%, and the remaining 82% of students used active modes.

However, long-term sustainability is a challenge with parent-led initiatives. Once the engaged parents leave the schools, the programs lose champions who have regularly put in dedicated volunteer hours or possess expertise that the school administration may lack.

5.3. Key findings

- Education is a key component of successful policies and programs. Ideally, a policy would deliver both an in-class component and an experiential component. While youth do experience disproportionate burdens of

transportation costs, without education and training for them and their parents, they will not make use of a program regardless of the cost.

- Establishing a rite of passage offers an opportunity to facilitate the learning and training of both parents and youths. In doing so, both parents and youths are excited, encouraged and accept the process as given and integral to their development.
- Having parent buy-in is an indicator of long-term success and meaningful behaviour change. Without parent buy-in, when a policy is removed, the behaviour will persist. In addition, the policy risks failure from vocal opposition.

Chapter 6.

Interviews

I conducted 14 semi-structured interviews with key informants and stakeholders in the Metro Vancouver region from November 8-26, 2019. The interview guide can be found in Appendix A. Interviewees were identified through publicly available websites and referrals. Interviewees were selected based on their geographic location (primarily focussing on the City of Vancouver, City of New Westminister and the City of Surrey to collect a sample for the region), in addition to their work and expertise related to the promotion of active modes of transportation particularly as it relates to school travel planning and youth engagement. Interviewees were from a range of organizations such as non-profit organizations, private consulting firms, school districts, parent groups, municipal and provincial governments in order to gain a range of perspectives.

Table 4: Key informant interviews conducted

	Title	Organization
1	Transportation Planner	Consulting Firm
2	Manager, Transportation Programs	BC Ministry of Transportation and Infrastructure
3	Transportation Demand Management Officer	TransLink
4	Special Projects Coordinator	HASTe BC
5	Manager, Transportation	City of New Westminister
6	Sustainable Initiatives Coordinator & Director, Transit Services	Limestone District School Board Kingston Transit
7	Transportation Planner	City of Surrey
8	Former School Trustee	Vancouver School Board
9	Anonymous	City of Vancouver
10	Transportation Planning Manager	City of Surrey
11	ORCA Opportunity Program Coordinator & Program Manager, Seattle Transportation Benefit District	Seattle Department of Transportation
12	Anonymous	Vancouver School Board
13	Elementary School Principal	Vancouver School Board
14	Anonymous	SD40 District Parent Advisory Council

6.1.1. Limitations

In addition to the limitations that qualitative research presents, due to ethics constraints, youth were not consulted on the issue which is a clear gap when conducting research on youth. In order to validate this research, youth should be consulted in the

future. Additionally, while the range of interviewees was diverse and included a number of organizations and levels of government, it was challenging to identify and gain the participation of parents. By and large, the topic of transportation is not a topic many parents are formally engaged in, despite being most impacted by it. I did reach out to BCCPAC who declined an interview as is not currently part of their portfolio. Most interviewees suggested that unless parents are personally engaged on the topic of active transportation or have firsthand experience with the negative impacts of dangerous driving around schools, they will not take an interest in the topic.

6.2. Themes

Upon completion of the interviews, I first analyzed the qualitative data by question and then looked for major themes. Some interviewees offered insight into the feasibility of policy options for their relevant jurisdiction.

6.2.1. Parents are often not engaged, and their concerns not addressed

Despite being most impacted by having to deliver and pick up their children at school, there is no formal mechanism (outside of the school Parent Advisory Council) that engages or incorporates parents and their concerns around school travel. Interviewees felt that most schools that have implemented some form of school travel planning or a range of initiatives that encourage the use of active modes of transportation have done so because of the personal conviction of the school administration or as a response to a negative event or series of events such as dangerous driving or parking in school pick up and drop off zones. This may result in latent demand – parents are not engaged enough in the topic to see the opportunity.

A by-product of parents not being engaged in the school travel planning process means that their core concerns with allowing their children to use active modes of transportation are likely not addressed. A Transportation Planner for a consulting firm in the region believes that 60% of parents are interested in using active modes of transportation but have concerns. Most interviewees agreed the concerns that parents have about their children are real and nuanced, however some interviewees felt that despite their work to address parent concerns, there was no real change – only a shifting

of concerns. As municipalities and school districts work from a top-down approach, some teachers and schools implement road safety education initiatives. However, most children do not receive formal training, leaving parents to make a judgment call. Additionally, the Transportation Planner feels more parent engagement would identify a multi-modal approach to active transportation because “cycling isn’t for everyone.”

In addition to being unsure about the ability of their children, parents face scrutiny and judgment from other parents. As the Transportation Planner states, “you may think that your 8-year-old is competent and able to actually get to school on their own, but you’re worried about how other parents will see you for letting them...I think that is a genuine fear.” Given the BC Ministry of Child and Family Development investigation on Vancouver single father Adrian Crook in April 2017 for letting his 7, 8, 9, and 11-year-old take the bus to school unsupervised, parents are hesitant to be labeled as neglectful. Most interviews cited this situation as impactful on parents’ perception of school active travel, galvanizing their views that it is risky and not worth the potential scrutiny.

This results in parents being the biggest barrier to allowing youth to make use of active modes of transportation. The Transportation Planner said, “if a parent makes it seem like its ok not to walk or bike or take transit, then they’re going to grow up thinking that it’s not ok to do it and this is inconvenient and I’m not going to do it.”

6.2.2. “It just makes sense”

Most interviewees agreed that parents who drive their children to school are strapped for time more than ever, often have very valid reasons for dropping their kids off at school and, as a result, feel “it just makes sense” to drive their children to school within the context of their busy lives. Despite best efforts to create school travel plans and encourage the use of active modes of transportation, the convenience factor of driving to school ultimately trumps the “you should” values that parents face on a daily basis.

Underlying the convenience mindset of parents is a lack of confidence in the ability of their children to safely get to school independently, whether that be due to the danger the general public poses, the prevalence of cars, the lack of safe infrastructure along the route or the cognitive capacity of their child to navigate the obstacles they may face along the way. However, a Manager, Transportation at the City of New Westminster

feels that some municipalities have made significant improvements to their built environment and feel that this concern has been adequately addressed to a meaningful degree in many places, and yet parents still drive their children to schools. This means that a culture shift needs to occur to support and encourage parents to allow their children to use active modes of transportation independently, or to shift their own mode of transportation to walk/transit/bike their kids to school rather than driving them.

At the same time, many parents in the Metro Vancouver region already own a car, contributing a significant portion of their income to insurance, gas and car payments. This leaves many parents unable or unwilling to invest in other modes of transportation, despite their awareness that these modes may be better for their children in the long-term. The impacts seem to be distributed along a curve wherein those in low-income or single parent households have no choice but to have their children walk to school at one end, and at the other end, parents who can afford the flexibility at work or have a stay at home parent can accompany their child on the walk to and from school.

On the flipside of “it just makes sense” is the perception that active modes will take too long or the distance is too far. A Transportation Planner at the City of Surrey and a Transportation Planning Manager at the City of Surrey felt these beliefs – real and perceived – were rampant in places like Surrey, a municipality so large there are “cities within cities.” However, the City of Surrey has more cycling infrastructure than Vancouver, but the bridge to shifting to these active modes has not yet permeated the culture of Surrey. Additionally, culture, status and stigma were brought up in several interviews, as some cultures that are prevalent in Metro Vancouver see a car as a symbol of status.

6.2.3. Encouragement fosters a culture shift more so than restrictions

There was a mixed response to questions that probed into the effectiveness of carrots, sticks and positive reinforcement. Generally, planners felt that restrictions on car use are the only effective tool, whereas those at the school level felt that restrictions do not shift mindsets but create negative atmospheres. Interviewees stressed that reducing car dependency is not about “killing the car” but equipping youth with the ability to confidently use a range of healthy, active and sustainable transportation options.

Of significance, those at the school level felt that restrictions would be least effective as those impacted would become resentful and likely continue that behaviour “when no one else is looking,” citing that there is a high likelihood that restrictions would also have unintended consequences, unequally impacting families, classrooms and schools. Further, once the restriction is removed, the behaviour is likely to continue. On the other hand, municipal planning staff largely felt that enforcement mechanisms needed to be paired with encouragement in order to see meaningful results.

However, when interviewees spoke of the key tenets of successful programs, empowerment and education were key themes. By using elements of exposure and in-class education, youth were prepared to use their learned skills in the real world. The result of using these skills in the real world is using them with friends, building a culture, and building autonomous adolescents who are excited to use active modes of transportation. The students then become change agents within their own families and communities. A Director, Transit Services at Kingston Transit and Sustainable Initiatives Coordinator at Limestone District School Board stressed the building of a “rite of passage” into policies and programs where students look forward to the year they are allowed to start using a certain mode of transportation such as public transit. In some jurisdictions, alleviating financial barriers was key to facilitating the use and therefore familiarity with active modes of transportation; however, the key outcomes are also an increased shift in interest among youth and a building of a culture, autonomy and familiarity with the system.

6.2.4. Consistency is key – and starting young

Interviewees all agreed that consistency is essential for creating behaviour change and culture shift towards sustainable modes of transportation. Interviewees agreed that most youth aged ten and up are cognitively equipped to learn how to safely use active transportation but that this training cannot just happen once when the student turns ten, validating the capstone’s focus age range of ten to eighteen.

Unfortunately, due to the nature of our school system, capacity and limited resources mean the implementation of programs and policies that drive cultural changes are limited. In addition, those schools that did receive school travel planning or had a committed school administration inevitably experienced turnover within two to three

years. This leaves municipal governments and school districts to focus reactively on problem areas rather than a coordinated approach for the entire jurisdiction. A Special Projects Coordinator for HASTe BC says this means that 90% of the efforts are focused on elementary schools and 9% on middle schools as they are “low hanging fruits,” and only 1% of secondary schools receive attention.

While non-profit advocacy groups such as HUB Cycling have been successful in leveraging provincial and regional funding to support Bike to School Week in the spring, students typically change their travel behaviour for that week alone. By weaving active transportation into everyday life, there is a much higher chance that students – and parents – will remain comfortable with the range of transportation options available to them. A Manager, Transportation at the City of New Westminster spoke to the success that mandatory cycling education in grades four and five can have. However, not much is done at the secondary school level across the region to sustain learning that may have happened in early years. A Transportation Demand Management Officer at TransLink noted that over the past 10 years, youth engagement in Metro Vancouver has largely focused on students in grades five to eight through in-class workshops and leadership programs promoting safe and active travel to school. After completing a recent assessment of school travel initiatives both regionally and nationally, a Youth Travel Strategy is now being developed in partnership with local municipalities to create positive and lasting change in travel behaviours of youth and families. Classroom autonomy grants teachers the right to use these resources at their discretion. Currently, there is a need for more support and promotion of active and sustainable travel behaviour at both the school district level and in the B.C. teaching curriculum.

Interviewees recommended starting with pilot projects as a way to establish buy-in with communities and groups that are apprehensive. By intentionally tracking data and showcasing successes of the pilot, change can be implemented at a more comfortable pace, ensuring long-term success. A Transportation Planning Manager at the City of Surrey recommends all projects should focus on “evolution, not revolution.”

6.3. Key Findings

- Overall, the responses from the interviews confirmed that there is a jurisdictional grey area in terms of responsibility for reducing car dependency

among youth and there is a lack of formal engagement by and with parents. The interviews validated the research from the literature review and offered valuable insight into the barriers and opportunities that exist in Metro Vancouver.

- Interviewees did agree that parents need to be better incorporated into the conversation around using sustainable modes of transportation to school, but there was a mixed response as to how this should be approached. While there was agreement that parents are likely aware of the benefits of active transportation, there are underlying fears and concerns that need to be addressed in order to support them in letting their children make use of them. All interviewees agreed the fears and concerns of parents need to be addressed in some capacity in order to increase active mode share, which means policies need to instil a sense of confidence in parents and support the autonomy of youth.
- Interviewees supported the age range of youth (10-18) explored by the capstone. The interviewees stressed the importance of starting young, involving friends and families in policy frameworks and building a culture through a rite of passage. In addition, it was recommended that incremental changes or pilot programs be an approach in order to establish buy-in and broad support from all stakeholders.

Chapter 7.

Policy Options

This chapter presents the four policy options derived from the literature review, jurisdictional scan, case studies and key informant interviews. Policy options that were considered but did not meet the threshold for analysis can be found in Appendix B.

7.1. Policy Option 1: Experiential transit for youth

The first policy option evaluated is an experiential transit for youth program that provides subsidized transit passes to students at a given age over a 12-month period. As it is recognized that schools are structured around differing grade ranges in Metro Vancouver, I recommend that the experiential transit for youth would grant students between grades six and nine access to subsidized transit fares for the 12 months beginning in September of that school year as these ages were supported by interviewees from across the region, as well as Kingston Transit and the Seattle Department of Transportation. While more consultation would be required to determine the specific grade for which the program would benefit, interviewees supported the proposal that students in grade seven would be a suitable age to participate. As learned from the literature review, it is important to lay the foundations of active transportation travel behaviour at a young age and starting as early as possible is ideal.

While the immediate benefit of the experiential transit for youth program is the reduction of youth being driven to school at a given age, the program has a clear opportunity to use the foundations of the program to build a culture around active transportation. The learnings from Kingston Transit, Seattle Department of Transportation and the Netherlands have shown that making a system a rite of passage at a certain age enshrine values in youth and their families, especially when paired with a proactive education program. The rite of passage is essential to establishing a year that parents can look forward to preparing their children for, trust that it is socially acceptable among parents and peers, and have their children go through a standardized orientation to the system. While a shift in parent confidence and trust may take some

time, the program can be designed to address immediate parent concerns, with a culture shift taking place over the long-term.

It is recommended that the experiential transit for youth program last for 12 months instead of the 8-month school year to encourage public transit use by youth in the summer months and to normalize use outside of school travel. Kingston Transit found this to be an important part of their programming for shifting the mindset of parents to seeing their children as capable of travelling independently. As done by Kingston Transit, should the program be successful and garner support for growth, it is easy to open it up to additional grades.

Essential to the delivery of a 12-month subsidized transit pass and inextricable in building a culture of active transportation is education. In partnership with TransLink and school districts, students would have access to a system orientation that allows students to experience using the bus and rail system in Metro Vancouver. The orientation would ideally take place in the first month of the decided upon school year. Elements would include in-class components, but mainly focus on exposure and navigation including tapping a Compass Card, trip planning, navigating potential issues and understanding how to fit public transportation into their daily lives beyond the commute to and from school. The delivery can fit into the curriculum, however, due to teacher autonomy, it is recommended the system orientation is delivered at the school level.

Learnings from the Seattle Department of Transportation and Kingston Transit have offered ways in which to fund the program, which involve shifting school district funds for student transportation to the experiential transit for youth program and the remainder is considered an investment into future transit users.

Key to the Seattle Department of Transportation and Kingston Transit was the ability to evaluate the success of the program in an incremental fashion. Both authorities cited the one grade model allowed them to monitor changes in travel behaviour, impacts on the system and identify programming areas that needed improvement. It is recommended that TransLink work in collaboration with school districts, District Parent Advisory Councils and municipalities with a working group to evaluate the successes and challenges faced.

7.2. Policy Option 2: Transportation certification program

The second policy option evaluated is a transportation certification program. Modelled on the principles of the Canadian Red Cross' Babysitting Course, youth ages ten and up would be eligible to participate in an optional course that would teach them the do's and don'ts of walking, cycling and using public transportation. This option would alleviate the concerns that parents have around the age and capacity of their children to safely get to and from school and mitigate potential judgment from parents who are uncomfortable with active modes of transportation. At the same time, youth gain a sense of confidence and excitement to exercise their independence with friends and family.

Currently, the Babysitting Course is an optional course that spans seven to eight hours with flexible scheduling options, offering peace of mind to parents with young children should they ever need to be responsible for the care of another child. The course seeks to instil a sense of leadership and professional conduct as a babysitter in youth, in addition to gaining critical skills for emergency or challenging situations such as first aid and conflict resolution. The course is delivered by certified Red Cross instructors that are certified to teach first aid and CPR courses. All classes are adapted to meet the needs of the participants, and meant to be fun, enjoyable and build confidence in each of the participants.

The course would place emphasis on managing difficult situations to essential skills for active modes of transportation. Like the Babysitting Course, outcomes would focus on enhancing the responsibility of commuting to and from school, building on the development of independence and autonomy in youth. Like the Babysitting Course, the transportation certification program can incorporate take home elements to promote themselves as active travelers to their parents.

Like the Babysitting Course, the transportation certification program would be optional in nature and would have a range of delivery options. For example, through a certification process, private consultants, non-profit organizations, teachers, school districts, municipal and provincial governments and TransLink could be potential certifiers. The Babysitting Course ranges from \$55-65+GST, which could appropriately be applied to the transportation certification program to cover operating costs. To avoid disproportionate impacts, sliding scales could be offered.

Due to teacher autonomy and differing school district priorities around active transportation, the program could potentially lose elements of consistency if incorporated into the school curriculum or its development is led by individual school districts. Therefore it is recommended the program be delivered at the school or district level where possible and its design would be best determined through a government-led working group overseen by BCCPAC that includes school district representatives, TransLink and District Parent Advisory Council representatives with specific feedback from the appropriate municipalities.

While liability could be a concern of those delivering the course, current Babysitting Course protocol is to ensure it is the responsibility of the organization to follow ratio guidelines between the instructor and the students. There is potential for bodies of government to supply liability coverage for the transportation certification program to agencies that demonstrate they have met all the criteria to soundly deliver the content.

The creation of the transportation certification program will likely require significant overhead capital and collaboration between the working group. The programmatic design is flexible and leaves room for creativity. It is recommended the funding be allocated in a 30-30-30-10 model where TransLink with the provincial and municipal governments contribute 30%, and BCCPAC contributes 10%.

7.3. Policy Option 3: Subsidized school bus program

The third policy option evaluated subsidizes the cost for existing and former school bus transportation in school districts across Metro Vancouver. As many school districts across the region have ended their school bus programs due to a lack of demand and high costs of supply, a subsidy to promote the initial financial feasibility will help to increase demand and build a culture of collective transportation. Additionally, many families already need to own a car and many of those families already drive to work. When they are required to pay an expensive annual fee to access the school bus system, parents will likely make the rational decision to drop their children off on the way to school.

There is opportunity to link the subsidized school bus program with the TransLink system so as to better promote familiarity with the public transportation system, whether

that be through Compass Cards or the actual busses used. Pairing this initiative with education for both parents and students as to why active transportation is an important part of daily physical activity offers an opportunity to lay foundations for future travel behaviour.

To engage parents, through BCCPAC, Parent Advisory Councils can offer their positive and negative feedback to the program, ensuring that it works for parents. Establishing bus routes and pick-up/drop-off locations will be done in collaboration with school districts, Parent Advisory Councils and municipalities to ensure there is little impact on surrounding communities.

While the BC Government currently offers subsidies to certain school districts, there is opportunity to charge a means-tested annual fee to users to recover some of the operating costs. The current subsidies of the Student Transportation Fund can be found in Appendix C.

7.4. Policy Option 4: Restrict school drop-offs and pick-ups

The fourth policy option evaluated restricts school drop-offs and pick-ups to a five-minute walking radius from a school. While the actual boundaries of the policy would have to be established on a school-by-school basis and in collaboration with parents, restrictions would establish a framework in line with the evidence-based “drive to five” concept. This policy was recommended universally by Metro Vancouver professional planners in the key informant interviews and would alleviate parent fears around safety as there would be a significant decrease in the number of vehicles around school boundaries.

As the parent community is integral to this policy’s successful implementation, BCCPAC can aid in formal parent engagement mechanisms.

Enforcement can be monitored in a variety of ways including local RCMP and police, school administration, parent volunteers, peer-to-peer accountability or honour system and should be decided upon by the school community to encourage buy-in to the policy.

Recognizing that there are valid reasons for requiring drop-off and pick-up children from school, a mechanism that grants exceptions would be available for those parents and students who require it.

Funding for this policy option would come explicitly from municipal and provincial government, with program delivery support provided through school administration and Parent Advisory Councils.

Chapter 8.

Policy Objectives, Criteria and Measures

In order to evaluate the policy options, the intended objectives of the policy are provided, as well as criteria and how to measure their expected success. The main objective of the policy is to reduce the number of youths being driven to school and increase the capacity and agency of youth to make use of sustainable modes of transportation. Table 5 summarizes the criteria and measures used.

8.1. Evaluation Criteria

A range of criteria were established from the literature review and key informant interviews in order to assess the proposed policy options. The criteria are development, security and protection, feasibility, equity and cost. Each criterion has been assigned a measure in order to evaluate a policy's projected ability to address the problem. A summary of the policy objectives, criteria and measures is in Table 5.

While the criteria have been ranked in order of importance, they all hold the same weight. Some may feel that weighting the first and/or second objective more heavily than the rest is required for if the policy option does not meet the key objectives, it should not be the preferred option. However, as there is a degree of uncertainty with the outcomes of each policy option, the criteria are best evaluated qualitatively and visually.

Each criterion was evaluated based on the policy's projected ability to meet the objective. The criterion is given a ranking of green if assessed likely to be effective/good, orange (semi-effective/average) and red (ineffective/unlikely to meet the objective).

As each objective has the same weight, this allows for a visual sense of the effectiveness of the policy option, especially in comparison to one another. At the end of the policy analysis, a summary evaluation demonstrates the strengths and weaknesses of the policies considered.

8.1.1. Development

The first objective of the capstone is to support the development of youth. The criteria to achieve this objective are fewer youth being driven to school, and increased confidence using active modes of transportation to school. Together, these criteria focus on the policy's ability to shift mode share to active modes of transportation for school travel. As a result, the by-products of the shift in mode share to active modes, we hope to see a decrease in congestion caused by school travel, an increase in the capacity and agency of youth to travel to school via active modes of transportation, improved health, and a reduction in overall GHG emissions associated with school travel.

The first criterion seeks to have fewer youth being driven to school and is defined as the potential of the policy to shift mode share to active modes of transportation to school. The effectiveness of the policy will be measured by the percentage of youth shifting to active modes of transportation to school. By having fewer youth being driven to school, there is the opportunity for youth to be exposed to active modes of transportation, feel more comfortable using a range of modes for their mobility needs and building habits at a young age. The information for the evaluation was gleaned from the literature review, key informant interviews and media pieces.

The second criterion which seeks to increase youths' confidence using active modes of transportation to school is defined as the potential of the policy to increase knowledge and confidence in active modes of transportation to school, therefore increasing independence. The effectiveness of the policy will be measured through a qualitative approach, surveying and soliciting youth for their perception of confidence using active modes of transportation. The number of youths reporting increased confidence using active modes of transportation will be benchmarked and measured over future years. A successful policy will have youths build upon and grow transferrable skills that allow them to make use of a range of active and sustainable modes of transportation throughout the duration of their life. The information for the evaluation was gleaned from key informant interviews.

8.1.2. Security and protection

The second objective of the capstone is security and protection of youth. The criterion for this objective is that parents experience a sense of security with their

children using active modes of transportation to school as this is the main barrier that is holding parents back. The criterion is defined as the policy's ability to alleviate parental concerns over safety of children while using active modes of transportation to school.

This criterion is measured quantitatively by an uptake in programs and increased levels of active modes of transportation to school; however, the qualitative aspect of parent perceptions around their child's security or risk of injury is also fundamental to measuring the policy's success. In order to achieve long-term success and significant modal shift to active modes of transportation, parents need to feel supported and secure in their decision that their child will be prepared to manage any significant risks. Addressing parental concerns about their children's safety increases the likelihood of seeing long-term and meaningful behaviour change. The information for the evaluation was gleaned from key informant interviews.

8.1.3. Feasibility

The third objective of the capstone is feasibility which consists of two criteria: stakeholder acceptance and administrative complexity of the proposed policy. The criteria are measured separately in order to capture the perception of the policy by relevant stakeholders, as well as ease of implementation.

Stakeholder acceptance criterion covers the perception of policy effectiveness by community, TransLink, municipal governments and school districts. The criterion is measured by the number of complaints received and/or the number of negative media pieces that are published. A survey could further explore perceptions of the policy. The information for the evaluation was gleaned from key informant interviews and media pieces.

Administrative complexity is measured by the required changes to existing policies and the burden of work placed on any group, organization or jurisdiction, as well as the number of people or departments that are involved in its implementation. The information for the evaluation was gleaned from key informant interviews.

8.1.4. Equity

The fourth objective of the capstone is equity which considers differential impacts on families by characteristics such as income, family structure, family needs and location (e.g., proximity to school that reflects time costs, availability of infrastructure that enables active transportation). The criterion will be measured through the policy's cost to families in time and dollars. The information for the evaluation was gleaned from the literature review, key informant interviews and media pieces.

8.1.5. Cost

The fifth and final objective of the capstone is cost to government which is defined as the impact on government budget. The criterion will be measured through the policy's capital and yearly operating costs, less the incremental revenue. The information for the evaluation was gleaned from the key informant interviews and media pieces.

Table 5: Summary of policy objectives, criteria and measures

Objective	Criteria	Definition	Measure	Data Source
Development	Fewer youth being driven to school	Potential of policy to shift mode share to active modes of transportation to school	% of youth shifting to active modes of transportation to school	Literature review; interviews; media
	Increased confidence using active modes of transportation to school	Potential of policy to increase knowledge and confidence in active modes of transportation to school, therefore increasing independence	Number of youth reporting increased confidence	Interviews
Security & Protection	Parents' experience sense of security with children using active modes of transportation to school	Projected impact of policy to alleviate parental concerns over safety of children while using active modes of transportation to school	Number of youth enrolled in programs; perceived and actual reduced risk of injury	Interviews
Feasibility	Stakeholder acceptance	Perception of policy effectiveness by community, TransLink and school districts	Degree to which stakeholders approve of the policy; number of complaints received; number of negative media pieces	Interviews; media
	Administrative complexity	Ease of implementation	Required changes to existing policies; Number of people/departments involved	Interviews
Equity	Fair share of policy impact	Potential of policy to disproportionately impact families socially and financially	Cost to parents in time; Cost to parents in \$	Literature review; interviews; media
Cost	Cost to government	Impact on budget	Capital and yearly operating costs, less incremental revenue	Interviews; media

Chapter 9.

Evaluation of Policy Options

This chapter evaluates the four policy options utilizing the policy objectives, criteria and measures laid out in Chapter 8. As noted in Chapter 8, all criteria and measures were established as a result of in-depth primary qualitative research and secondary research through a literature review, jurisdictional scan and case study analysis.

Each criterion was scored based on the policy's projected ability to meet the objective. The scores used are denoted through colour coding in red (ineffective/bad), orange (semi-effective/average) and green (effective/good). As each criterion has the same weight, this allows the reader to gain a visual sense of the effectiveness of the policy option, especially when compared to one another. A summary evaluation is provided for each policy option (Table 6, 7, 8 and 9) with its written analysis following and a summary of the evaluation can be found at the end of the chapter in Table 10.

9.1. Policy Option 1: Experiential transit for youth

Table 6: Summary evaluation for experiential transit for youth

Objective & Criteria	Option 1: Experiential transit for youth
Development	
Fewer youth being driven to school	Orange
Youths increased confidence using active modes of transportation to school	Green
Security & Protection	
Parents experience sense of security with children using active modes of transportation to school	Orange
Feasibility	
Stakeholder acceptance	Orange
Administrative complexity	Orange
Equity	
Fair share of policy impact	Green
Cost	
Cost to government	Red

Policy option 1 which offers youth in a given grade school year an opportunity to experience taking transit at a subsidized cost scores one red (ineffective/bad), four orange (semi-effective/average) and two green (effective/good). Overall, as learned from interviews with Kingston Transit and the Seattle Department of Transportation, experiential transit for youth will over time be an effective way to create a culture of active transportation to school; however, in the interim, there will mainly be a reduction in the number of youth being driven to school in the specific grade that receives the subsidized transit passes. As a result, the policy is scored orange for fewer youth being driven to school but does not receive a red due to its ability to impact the perception of safety around active transportation on older grades and long-term impacts.

The experiential and educational elements of the program support youths feeling increased confidence using active modes of transportation to school as there is in-class instruction paired with practical experience, which is likely to lead to independent and autonomous youths, receiving a green score. In addition, as noted by HASTe BC, peer support is key to building a culture of active transportation where friends can use the system and travel to school together. The educational component of an experiential transit program was cited as essential by Kingston Transit.

When considering security and protection, the experiential transit for youth does not completely mitigate parent concerns at the outset; however, with the complementary education and parent engagement components, there is opportunity for the program to normalize youth using active transportation to school over time as a culture builds as learned from the case studies in the Netherlands and Kingston, Ontario. As a result, the policy receives an orange score. In-class education and involving parents at the beginning stages of the school year are factors that make this criterion avoid a red score.

Due to unforeseen increases in transit ridership in recent years and the subsequent capacity issues facing the transit system in Metro Vancouver, this option scores an orange in stakeholder acceptance given that TransLink may face operational challenges following its implementation. Interviews with TransLink raised concerns around current capacity of the system to accommodate additional users at peak hours. All other stakeholders in the community and school districts are likely to accept experiential transit for youth, as confirmed by interviews with parent stakeholders in the

region and recent motions put forward by councillors in the City of Vancouver and the City of New Westminster.

Kingston Transit and the Seattle Department of Transportation recommended beginning with one year of students would allow for TransLink to manage the increases in use and identify ways to improve the program in an incremental fashion, which mitigates the option being given a red score. From an interview with TransLink, this was deemed as complicated due to TransLink's mandate that does not allow for ad hoc changes to bus or rail services. Despite this, as learned from Seattle, implementation can be approached in two ways: a quick rollout with improvements along the way or work with stakeholders to try build a program that works for everyone from the outset. Either option requires significant administrative work to implement on behalf of school districts and TransLink and results in an orange score.

When considering the policy's impact on parents in terms of time and finances, the policy scores green. The policy immediately alleviates a financial burden and turns it into a time incentive. By giving parents a one-year trial of their children transporting themselves to school and elsewhere, there is an opportunity for parents to see the overall benefits and be willing to make the investment in future years. This was expressed as a key barrier by parent interviewees but was seen as secondary by planners.

Finally, the cost to government is relatively high with this option and scores red. Programmatic implementation, distribution, education/training, evaluation, administration and fare revenue losses amount to a significant impact on the budget. There is opportunity to shift school districts funds that were previously allocated to student transportation, however, much of the cost will have to be seen as investments into future transit users.

9.2. Policy Option 2: Transportation certification program

Table 7: Summary evaluation for transportation certification program

Objective & Criteria	Option 2: Transportation certification program
Development	
Fewer youth being driven to school	
Youths increased confidence using active modes of transportation to school	
Security & Protection	
Parents experience sense of security with children using active modes of transportation to school	
Feasibility	
Stakeholder acceptance	
Administrative complexity	
Equity	
Fair share of policy impact	
Cost	
Cost to government	

Policy option 2 which offers youth a certification program for active transportation scores no red (ineffective/bad), three orange (semi-effective/average) and four green (effective/good). Overall, the transportation certification program scores well as it focuses on the development of youth and the concerns that are currently preventing parents from allowing their children to use active modes of transportation to school. In addition, this option provides a way to build a culture over the long-term while also giving short-term wins. The policy scores orange for fewer youth being driven to school as youth of all ages can become certified in a relatively short timeframe and equips both youth and parents to do so safely, fairly and collaboratively; however, there will likely be a gradual uptick in the enrollment and actual use of active transportation to school. As a result of the training aspect of the policy, a green score is received for the criterion of youths experiencing increased confidence using active modes of transportation to school.

The policy scores green for its ability to support parents in experiencing a sense of security with their children using active modes of transportation to school, as supported by parent and school district stakeholder interviews. Interviewees felt the policy option removed the 'grey area' when youth are between the ages of 10-13,

allowing parents who were interested but concerned to feel as though their children have the proper training, tools and institutional support to get to school on their own. Key informant interviews confirmed that this policy option appropriately links active transportation to a parallel situation (babysitting) that would be deemed age-appropriate, laying the foundation to address parent fears around active transportation. In addition, by engaging parents through BCCPAC, parents have an opportunity to feel heard and have their concerns addressed.

The transportation certification program receives a score of green for stakeholder acceptance as feasibility was confirmed throughout the key informant interviews. This option is nimble and can be delivered by a variety of stakeholders, lessening the burden of responsibility on any one stakeholder. In addition, the policy option was considered unique in that it links the act of transportation to another duty that requires significantly equal if not more ability or maturity – babysitting. This allows parents to feel confident in their child, the duty of care they have as a parent, and avoids the typical ineffectiveness that encourage/restrict policies have. However, the policy scores orange for administrative complexity for its relatively significant administration that would need to occur. While this burden can be spread among all stakeholders, the development, tracking, evaluation and any liability risks would require significant decision-making at the outset.

This option fairly spreads its share of impact to stakeholders and parents. In terms of financial costs, there could be a means-tested sliding scale for entrance into the transportation certification program. In terms of time costs, while only youth would have to take part in the transportation certification program, there can be creative ways to include parents in the conversation through Parent Advisory Council meetings, take home activities, school travel initiatives or information sessions. As a result, this may burden parents with relatively more time costs, with the hope that there will be long-term time savings from less chauffeuring. As a result of this, the option receives a green score.

Finally, cost to government receives an orange score for its relatively significant overhead capital costs in development and implementation; however, with the ability to charge a fee to enroll in the program, there is an opportunity to cover operating costs with incremental revenue.

9.3. Policy Option 3: Subsidized school bus program

Table 8: Summary evaluation for subsidized school bus program

Objective & Criteria	Option 3: Subsidized school bus program
Development	
Fewer youth being driven to school	Orange
Youths increased confidence using active modes of transportation to school	Red
Security & Protection	
Parents experience sense of security with children using active modes of transportation to school	Orange
Feasibility	
Stakeholder acceptance	Orange
Administrative complexity	Red
Equity	
Fair share of policy impact	Green
Cost	
Cost to government	Red

Policy option 3 which offers subsidized school bus program to Metro Vancouver schools scores three red (ineffective/bad), three orange (semi-effective/average) and one green (effective/good). Overall, the policy is equitable in its impact on parents and having fewer youth being driven to school; however, as learned through key informant interviews, unless the school buses are incorporated into the regional transit system, youth are not becoming more familiar with the workings of that system. Interviews with TransLink found this unfeasible due to a mandate that does not allow for busses to be created or removed to cater to certain segments of the population. As a result, the policy option receives an orange score for fewer youth being driven to school as this option offers an easy, “it just makes sense” opportunity for parents to get their children to school but does not address parent concerns or increase their confidence in the system. This may instil a sense of comfort with commuting in means other than a car, but as suggested, it does not necessarily increase familiarity or comfort with public transportation. The subsidized school bus program receives a red score for its ability to increase confidence using active modes of transportation to school. As youth are not being educated on active modes of transportation, there is no rationale other than their parents may have found this program to be an economic incentive.

The subsidized bus program receives an orange score for stakeholder acceptance as the community and parents would likely support the program's implementation, but government and TransLink would carry much of the cost burden.

The policy option receives a red score for administrative complexity as it will require significant decision-making and coordination between multiple levels of government, school districts, individual schools and TransLink. Interviews with TransLink found that this policy option would require a significant amount of coordination and multiple steps would need to be taken to change jurisdiction and existing policies, making the ease of implementation low. In addition, parents would need to be formally engaged through BCCPAC which would take significant effort.

This option most supports parents in the short-term, especially those that do not live within close proximity to their child's school. As a result of this policy's limited financial and time burden on parents, the policy receives a green score. As there are still subsidized bus programs remaining in some school districts, more research would be required to understand the willingness to pay of parents and the equilibrium that would increase demand for the service to see a significant reduction in the number of youths being driven to school.

Finally, the policy option receives a red score when considering the capital and yearly operating costs, less the incremental revenue. Despite charging a nominal annual fee to cover partial operating costs, the overhead capital required to re-establish the school bus programs in school districts is high and the annual operating costs are also high.

Policy Option 4: Restrict school drop-offs and pick-ups

Table 9: Summary evaluation for restrict school drop-offs and pick-ups

Objective & Criteria	Option 4: Restrict school drop-offs and pick-ups
Development	
Fewer youth being driven to school	Orange
Youths increased confidence using active modes of transportation to school	Orange
Security & Protection	
Parents experience sense of security with children using active modes of transportation to school	Red
Feasibility	
Stakeholder acceptance	Red
Administrative complexity	Orange
Equity	
Fair share of policy impact	Red
Cost	
Cost to government	Orange

Policy option 4 which restricts school drop-offs and pick-ups to a “drive to five” 5-minute walking radius around the school grounds scores three red (ineffective/bad), three orange (semi-effective/average) and one green (effective/good). Overall, the policy is effective in having fewer youth being driven to the school grounds and increases the use of active transportation within a 5-minute radius of the school; however, the policy is inequitable in its blanket approach to restricting families with different needs and does not encourage a positive shift in active transportation culture. While a preferred option by many transportation planning interviewees, this policy option does not sufficiently support parent concerns which is a key objective of the capstone. The policy option was not supported by those at the school or district level, and parents did not think this would adequately address the core issues of the policy problem.

As learned from case studies and key informant interviews, when restrictions are implemented without support from the parent community, dangerous drop-off and pick-up areas often spillover into the 5-minute radius limit. While more students may use active transportation for the final five-minute walk, there may be a limited shift in the number of youths being driven and limited impact on the level of confidence youth gain from using active transportation. As a result, the policy option receives an orange score for fewer youth being driven to school and youth experiencing an increase in confidence

using active modes of transportation to school. The policy option would require additional complementary programming that would support youth in their journey to and from school and how to navigate the built environment they utilize.

The policy option receives a red score for increasing parents' sense of security with children using active modes of transportation to school, as it only forces parents to send their children to school via active modes of transportation without instilling a sense of safety or capacity in their children. The five-minute radius surrounding the schools may become safer; however, there are still fears of strangers, injury and capability that are not adequately addressed. Without parent anxieties addressed, the problem will only persist making implementation of the policy problematic as well as its long-term sustainability.

The policy option receives a red score for stakeholder acceptance as the community and school districts are unlikely to accept restrictions to school drop-offs and pick-ups. As learned from the key informant interviews, school districts and schools do not want to dictate how parents must get their children to school as there are too many unique circumstances that may be disproportionately impacted. In addition, parents are likely unwilling to support this issue. As learned from the case studies and key informant interviews, parent buy-in is key for the long-term success of a policy. Finally, this policy option runs contrary to the way in which TransLink, municipal and provincial governments approach active transportation policy implementation as it is top-down and leaves little room for interpretation. The implementation of a policy option may alienate communities against future attempts to limit the use of the car in school zones or active modes of transportation more generally.

The policy option receives an orange score for administrative complexity as each school will have to be considered on a case-by-case basis, working with parent communities, school administration, school districts and municipal governments to determine the best routes. As learned from the key informant interviews, "drive to five" planning is already happening in some school districts but due to capacity issues, they are only shortlisting the top five problem schools to investigate per school year. In addition, enforcement could be challenging and an additional burden on RCMP, school administration or others.

The policy option receives a red score for its fair share of policy impact on parents, due to its inability to account for disproportionate impacts on families with different structures, incomes, locations, etc. The costs to parents in time and dollars may rise with this policy option.

The policy option receives an orange score for its cost to government. While the yearly operating costs are limited, the initial planning and development of the “drive to five” boundaries take significant engagement and collaboration with stakeholders and as learned with transportation planning interviews, the current backlog of schools undergoing school travel planning means only about five schools per year can undergo this process, meaning the rollout of a policy could take some years to finalize.

Table 10: Summary evaluation of policy options considered

Objective & Criteria	Option 1: Experiential transit for youth	Option 2: Transportation certification program	Option 3: Subsidized school bus program	Option 4: Restrict school drop-offs and pick- ups
Development				
Fewer youth being driven to school	Orange	Green	Green	Orange
Youths increased confidence using active modes of transportation to school	Green	Green	Red	Orange
Security & Protection				
Parents experience sense of security with children using active modes of transportation to school	Orange	Green	Orange	Red
Feasibility				
Stakeholder acceptance	Orange	Green	Orange	Red
Administrative complexity	Orange	Orange	Red	Orange
Equity				
Fair share of policy impact	Green	Green	Green	Red
Cost				
Cost to government	Red	Orange	Red	Orange

Chapter 10.

Recommendation

Following the analysis of proposed policy options, I recommend the development and implementation of a transportation certification program in the Metro Vancouver region. The development and rollout of such a program best addresses the objectives uncovered throughout the research of the capstone. In particular, the transportation certification program supports parents in feeling confident that their children are equipped to travel to school via active modes of transportation and mitigates concerns of being considered a negligent parent for doing so. This approach best addresses short- and long-term barriers to the use of active modes of transportation and lays the foundation of building a culture around active transportation.

As the key objective of the capstone was to support parents in their shift to active school travel, the transportation certification program allows parents to play a more direct role in their child's training than any of the other options. Parents can feel that they have reached a threshold of understanding, have a community to actively travel to school with, and feel supported by various levels of government and school administration to make this lifestyle change. There is a signal from government that this is a safe and encouraged approach to parenting and their children's educational experience.

In order to ensure consistency across the region, it is recommended the transportation certification program be developed by a provincial government-led working group that is overseen by BCCPAC that facilitates collaboration between school district representatives, TransLink, District Parent Advisory Council representatives and appropriate municipalities. Having the development of the program led by the provincial government is key to the success of the program. Without leadership from the province, the program may not be sufficiently comprehensive and could potentially run contrary to the goals as laid out by the province and represented in the capstone. As we have seen, every municipality and school district have a unique perspective on how to approach car use, school travel, and active modes of transportation. Thus, a common set of principles and policies that can be applied in designing the course is warranted.

Upon its completion, the transportation certification program can be delivered by agencies who meet certain criteria laid out by the working group. I recommend a non-profit model that continues to uphold the same principles of the Canadian Red Cross' Babysitting Course that instils both a sense of pride and the fundamental knowledge to be set up for success.

In order to incentivize the uptake of an optional program, there is an opportunity to allow for credits in physical activity or community experience courses. However, credits of this nature would need to be determined through the working group and ensure they align with government priorities around active transportation. In addition, while interviews with stakeholders in the region felt that there would be initial uptake, there may need to be long-term strategies that target those communities who are less likely to want to enroll in the optional program. Dissemination of data from communities where student participation in the program is high can help show its value to all communities where active modes are viable.

While the transportation certification program is the recommended option for the Metro Vancouver region, it does not discount the effectiveness of the other policy options for specific cases. The strength of the transportation certification program is its ability to work in all schools and districts, its flexibility and ability to incorporate creative ways to engage parents and their children, with minimal standards.

In addition to the recommendation, the capstone found a clear jurisdictional gap that does not support the inclusion of parents on the topic of active transportation to schools. There is an opportunity to better include parents on the topic, be it formally included to BCCPAC's mandate or through a regional approach, such as TransLink. This provides a platform for parent education and peer-to-peer discussion, as well as a formal mechanism to engage parents on policy directions in the future.

Chapter 11.

Conclusion

This capstone sought to support parents to feel comfortable allowing their children to use active modes of transportation to and from school and build a culture of active transportation in the long-term. Through a literature review, jurisdictional scan, case studies and key informant interviews, it is clear there are trials and tribulations associated with school travel across North America and Europe and policy contexts are not a one-size-fits-all. The Metro Vancouver region is diverse, with each municipality taking a different approach to transportation strategies, land-use planning and general visions for the future. While difficult to pinpoint a policy that addresses the unique concerns of the region as a whole, parent concerns are relatively universal. As a result, it is recommended the region establish a government-led working group overseen by BCCPAC with TransLink, school districts, District Parent Advisory Council representatives and appropriate municipal representatives to develop a transportation certification program (similar in scope and scale to a Babysitting Course) to support parents in building trust for active modes of transportation and their children's abilities to use these modes on their journey to and from school. The transportation certification program will teach the do's and don'ts of walking, cycling and taking public transportation to and from school, instilling a sense of confidence in both youth and parents in their child's ability to travel as an independent and healthy youth.

References

- Aldred, R. (2014). A Matter of Utility? Rationalising Cycling, Cycling Rationalities. *Mobilities, 10*(5), 686–705. <https://doi.org/10.1080/17450101.2014.935149>
- Aldred, R., & Jungnickel, K. (2014). Why culture matters for transport policy: The case of cycling in the UK. *Journal of Transport Geography, 34*, 78–87. <https://doi.org/10.1016/j.jtrangeo.2013.11.004>
- Anable, J. (2005). “Complacent Car Addicts”; or “Aspiring Environmentalists”? Identifying travel behaviour segments using attitude theory. *Transport Policy, 12*(1), 65–78. <https://doi.org/10.1016/j.tranpol.2004.11.004>
- BC Government. (2016). *Province invests to improve student transportation services for Vancouver Island North families*. Retrieved from <https://news.gov.bc.ca/releases/2016EDUC0137-001917>
- BC Government. (2019). *Move Commute Connect: B.C.’s Active Transportation Strategy*.
- BC Statistics. (2015). Population Projections, British Columbia and Sub-Provincial. Retrieved October 28, 2019, from <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>
- Buliung, R., Faulkner, G., Beesley, T., & Kennedy, J. (2011). School travel planning: mobilizing school and community resources to encourage active school transportation. *The Journal of School Health, 81*(11), 704. <https://doi.org/10.1111/j.1746-1561.2011.00647.x>
- Casey E. Gray, Richard Larouche, Joel D. Barnes, Rachel C. Colley, Jennifer Cowie Bonne, Mike Arthur, ... Mark S. Tremblay. (2013). Are We Driving Our Kids to Unhealthy Habits? Results of the Active Healthy Kids Canada 2013 Report Card on Physical Activity for Children and Youth [Article]. *International Journal of Environmental Research and Public Health, 11*(6), 6009–6020. <https://doi.org/10.3390/ijerph110606009>
- Chan, K. (2017). A new proposal wants children and teenagers to ride transit for free | News. *DailyHive*. Retrieved from <https://dailyhive.com/vancouver/new-westminster-free-transit-children-teenagers>
- Chan, K. (2019). Motion for free public transit for youth approved by Vancouver City Council. Retrieved October 21, 2019, from DailyHive website: <https://dailyhive.com/vancouver/vancouver-city-council-free-public-transit-2019>
- Child Health BC. (n.d.). Healthy Weights. Retrieved October 28, 2019, from <https://www.childhealthbc.ca/initiatives/healthy-weights>

- Children First Canada. (2018). *Raising Canada: A report on children in Canada, their health and wellbeing*. Retrieved from www.childrenfirstcanada.com
- City of Vancouver. (2018). *School Active Travel Planning: Admiral Seymour Elementary*.
- City of Vancouver. (2019a). *2018 Vancouver Panel Survey*. Retrieved from <https://vancouver.ca/files/cov/2018-transportation-panel-survey.pdf>
- City of Vancouver. (2019b). *Walking + Cycling in Vancouver: 2018 Report Card*.
- Dachis, B. (2015). *Tackling Traffic: The Economic Cost of Congestion in Metro Vancouver*.
- Frank, L., Sandhu, J., Adhikari, A., Saini, A., Demlow, E., & Hu, Y. (2019). *Where Matters: Health & Economic Impacts of Where We Live*. <https://doi.org/10.1016/b978-0-08-100251-3.00012-3>
- Fyhri, A., & Hjorthol, R. (2009). Children's independent mobility to school, friends and leisure activities. *Journal of Transport Geography*, 17(5), 377–384.
- Gärling, T., & Axhausen, K. W. (2003). Introduction: Habitual travel choice. *Transportation*, 30(1), 1–11. <https://doi.org/10.1023/A:1021230223001>
- Godfrey, D. (2019). New West schools on board with campaign pushing free transit for youths. *New West Record*. Retrieved from <https://www.newwestrecord.ca/news/new-west-schools-on-board-with-campaign-pushing-free-transit-for-youths-1.23968339>
- Grimsrud, M., & El-Geneidy, A. (2014). Transit to eternal youth: lifecycle and generational trends in Greater Montreal public transport mode share. *Transportation*, 41(1), 1–19. <https://doi.org/10.1007/s11116-013-9454-9>
- Hagel, B. E., Macpherson, A., Howard, A., Fuselli, P., Cloutier, M.-S., Winters, M., ... Hubka, T. (2019). The built environment and active transportation safety in children and youth: a study protocol. *BMC Public Health*, 19(1), 728. <https://doi.org/10.1186/s12889-019-7024-6>
- HASTe BC. (2016). *School Travel Plan: École Maillard Middle School*.
- Henne, H. M., Tandon, P. S., Frank, L. D., & Saelens, B. E. (2014). Parental factors in children's active transport to school. *Public Health*, 128(7), 643–646. <https://doi.org/10.1016/j.puhe.2014.05.004>
- Hjorthol, R., & Fyhri, A. (2009). Do organized leisure activities for children encourage car-use? *Transportation Research Part A: Policy and Practice*, 43(2), 209–218. <https://doi.org/10.1016/j.tra.2008.11.005>

- How “Freedom Friday” changed the travel habits of one North Vancouver school. (2017). *DailyHive*. Retrieved from <https://dailyhive.com/vancouver/freedom-friday-biking-to-school>
- Jones, C. E., & Ley, D. (2016). Transit-oriented development and gentrification along Metro Vancouver’s low-income SkyTrain corridor. *The Canadian Geographer / Le Géographe Canadien*, 60(1), 9–22. <https://doi.org/10.1111/cag.12256>
- Lanzendorf, M. (2003). Mobility biographies: A new perspective for understanding travel behaviour. *Paper Presented at the 10th International Conference on Travel Behaviour Research, Lucerne, August 2003*.
- Larouche, R., Mammen, G., Rowe, D. A., & Faulkner, G. (2018). *Effectiveness of active school transport interventions: a systematic review and update*. <https://doi.org/10.14288/1.0363394>
- Litman, T. (2002). The Costs of Automobile Dependency and the Benefits of Balanced Transportation. In *Victoria Transport Policy*. Retrieved from www.vtpi.org/info@vtpi.orgPhone&Fax250-360-1560
- Mackett, R. L., Lucas, L., Paskins, J., & Turbin, J. (2002). *Understanding the car dependency impacts of children’s car use*. Retrieved from https://www.researchgate.net/publication/240618796_Understanding_the_car_dependency_impacts_of_children’s_car_use
- Malina, R. M. (1996). Tracking of physical activity and physical fitness across the lifespan. *Research Quarterly for Exercise and Sport*, 67(3 Suppl), S48-57. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8902908>
- Mammen, G., Faulkner, G., Buliung, R., & Lay, J. (2012). Understanding the drive to escort: a cross-sectional analysis examining parental attitudes towards children’s school travel and independent mobility. *BMC Public Health*, 12, 862. <https://doi.org/10.1186/1471-2458-12-862>
- Mattioli, G., Anable, J., & Vrotsou, K. (2016). Car dependent practices: Findings from a sequence pattern mining study of UK time use data. *Transportation Research Part A: Policy and Practice*, 89, 56–72. <https://doi.org/10.1016/j.tra.2016.04.010>
- McCarthy, L., Delbosc, A., Currie, G., & Molloy, A. (2017). Factors influencing travel mode choice among families with young children (aged 0–4): a review of the literature. *Transport Reviews*, 37(6), 767–781. <https://doi.org/10.1080/01441647.2017.1354942>
- Mcdonald, N., Librera, S., & Deakin, E. (2004). Free Transit for Low-Income Youth: Experience in San Francisco Bay Area, California. *Transportation Research Record: Journal of the Transportation Research Board*, 1887(1), 153–160. <https://doi.org/10.3141/1887-18>

- McLaren, A. T., & Canadian Centre for Policy Alternatives. (2015). *Moving Beyond the Car: Families and transportation in Vancouver, BC*.
- Metro Vancouver. (2011). *Metro Vancouver 2040: Shaping Our Future*. Retrieved from papers2://publication/uuid/CD987883-B9A7-40B1-AEFA-7DCA9A2A9C06
- Metro Vancouver. (2018). *Climate 2050 Strategic Framework: Energy*. (July), 1. Retrieved from [http://www.metrovancouver.org/services/air-quality/AirQualityPublications/C2050-IssueAreaSummary-Energy.pdf#search=generating energy from waste](http://www.metrovancouver.org/services/air-quality/AirQualityPublications/C2050-IssueAreaSummary-Energy.pdf#search=generating%20energy%20from%20waste)
- Metro Vancouver Growth Projections-A Backgrounder*. (2018).
- Miller, E., Shalaby, A., Diab, E., & Kasraian, D. (2018). Canadian Transit Ridership Trends Study. In *Canadian Urban Transit Assoc.*
- Mobility Pricing Independent Commission. (2018). *Metro Vancouver Mobility Pricing Study: Report on the Findings and Recommendations for an Effective, Farsighted, and Fair Mobility Pricing Policy*.
- Newman, P., & Kenworthy, J. (2011). 'Peak Car Use': Understanding the Demise of Automobile Dependence. *Journal of World Transport Policy and Practice*, 17(2), 31–42. Retrieved from <http://www.eco-logica.co.uk/pdf/wtpp17.2.pdf>
- North Vancouver School District. (2013). *School Travel Survey Summary Report*. Retrieved from www.cnv.org
- Pabayo, R., Gauvin, L., & Barnett, T. A. (2011). Longitudinal changes in active transportation to school in Canadian youth aged 6 through 16 years. *Pediatrics*, 128(2). <https://doi.org/10.1542/peds.2010-1612>
- Parachute. (2015). *Speeding cars and traffic top child pedestrian safety concerns for parents*. Retrieved from <https://parachute.ca/en/news-release/speeding-cars-and-traffic-top-child-pedestrian-safety-concerns-for-parents/>
- Race, D. L., Sims-Gould, J., Lee, N. C., Frazer, A. D., Voss, C., Naylor, P.-J., & McKay, H. A. (2017). Urban and suburban children's experiences with school travel – A case study. *Journal of Transport & Health*, 4, 305–315. <https://doi.org/10.1016/j.jth.2017.01.011>
- Rothman, L., Buliung, R., To, T., Macarthur, C., Macpherson, A., & Howard, A. (2015). Associations between parents perception of traffic danger, the built environment and walking to school. *Journal of Transport and Health*, 2(3), 327–335. <https://doi.org/10.1016/j.jth.2015.05.004>
- Rothman, L., Howard, A., Buliung, R., Macarthur, C., & Macpherson, A. (2016). Dangerous student car drop-off behaviors and child pedestrian–motor vehicle collisions: An observational study. *Traffic Injury Prevention*, 17(5), 454–459. <https://doi.org/10.1080/15389588.2015.1116041>

- Safe Routes to School National Partnership. (n.d.). Quick Facts. Retrieved from <https://sr2smoscow.com/sr2s-quick-facts/>
- SickKids. (2019). *Dangerous driving puts kids at higher risk of getting hit during school drop-offs*. Retrieved from <http://www.sickkids.ca/AboutSickKids/Newsroom/Past-News/2016/dangerous-driving-higher-risk-hit-school-drop-offs.html>
- Statistics Canada. (2016). 2016 Census of Population. Retrieved October 28, 2019, from <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/index-eng.cfm>
- Susilo, Y., & Liu, C. (2016). The influence of parents' travel patterns, perceptions and residential self-selectivity to their children travel mode shares. *Transportation*, 43(2), 357–378. <https://doi.org/10.1007/s11116-015-9579-0>
- Sustainable Prosperity. (2012). *British Columbia's Carbon Tax Shift: The First Four Years*.
- TransLink. (n.d.). Travel Smart. Retrieved October 28, 2019, from <https://www.translink.ca/Rider-Guide/TravelSmart.aspx>
- TransLink. (2008). *Transport 2040: A Transportation Strategy for Metro Vancouver, Now and in the Future*.
- TransLink. (2019a). *2017 Trip Diary*. Retrieved from https://public.tableau.com/profile/translink#!/vizhome/Trip_Diary_2017/TripDiary2017
- TransLink. (2019b). *TransLink awarded Transit System of the Year*. Retrieved from <https://www.translink.ca/About-Us/Media/2019/July/TransLink-awarded-Transit-System-of-the-Year.aspx>
- TransLink. (2019c). *Transport 2050: Phase 1 Report*. Retrieved from <https://view.publitas.com/translink/transport-2050-phase-1-report-stakeholders/page/1>
- Transport Canada. (2015). Canadian Motor Vehicle Traffic Collision Statistics. Retrieved December 29, 2019, from <https://www.tc.gc.ca/eng/motorvehiclesafety/tp-tp3322-2015-1487.html>
- Valentine, G., & McKendrick, J. (1997). Children's outdoor play: Exploring parental concerns about children's safety and the changing nature of childhood. *Geoforum*, 28(2), 219–235.
- Vancouver BC - Walk Score ®. (n.d.). Retrieved January 22, 2020, from https://www.walkscore.com/score/9059-confidential-vancouver-british-columbia-v0v0v0/lat=49.2606052/lng=-123.2459938/?utm_source=royalpage.ca&utm_medium=ws_api&utm_campaign=ws_api

- Voss, C., Race, D., Higgins, J. W., Naylor, P., Gibbons, S., Rhodes, R., ... McKay, H. (2012). Is the bus an overlooked source of active transport to school in Canadian youth? *Journal of Science and Medicine in Sport*, 15(1), S209. <https://doi.org/10.1016/j.jsams.2012.11.509>
- Wilson, K., Clark, A. F., & Gilliland, J. A. (2018). Understanding child and parent perceptions of barriers influencing children's active school travel. *BMC Public Health*, 18(1), 1053. <https://doi.org/10.1186/s12889-018-5874-y>
- Wilson, O., Vairo, N., Bopp, M., Sims, D., Dutt, K., & Pinkos, B. (2018). Best practices for promoting cycling amongst university students and employees. *Journal of Transport and Health*, 9, 234–243. <https://doi.org/10.1016/j.jth.2018.02.007>

Appendix A.

Interview Guide

Reducing Car Dependency for Youth in Metro Vancouver

Sarah Tremblay, SFU School of Public Policy Capstone 2020

Interview Guide

1. What is your current role/position?
2. Do you have any direct experience with promoting alternative modes of transportation for children and youth?
3. In recent years, have you seen a shift in the use of alternative modes of transportation by children and youth? If so, please describe this shift and why you think the shift has occurred?
4. In recent years, have you seen a shift in car use by parents? If so, please describe this shift and why you think the shift has occurred?
5. What do you see as a key barrier for children to use alternative modes of transportation?
6. What do you see as a key barrier for parents to allow their children to use alternative modes of transportation?
7. Do you feel there is a car culture or culture of car dependency in your region? If so, what do you think contributes to this?
8. Do you think car use and transport behaviours have an impact on children? Do you think this influences their future behaviour?
9. What modes of transportation do you think would be best suited to youth between the ages of 10-18?
10. Do you think there are restrictions that can be placed on the use of private vehicles for transporting children? Or would the problem be better suited to incentives? Why?
11. If you could give any advice to policymakers in the region regarding the reduction of car use among youth, what would it be?

Appendix B.

Other policies considered

Name	Description	Rationale for rejection
BC Green Card	A means-tested transit pass for youth 10-18	Does not build a culture of active transportation; potential socioeconomic segregation
Transit Fund	A means-tested pot of money for youth 10-18 to access transit passes	Does not build a culture of active transportation; potential socioeconomic segregation
Transit Card for travel during off-peak hours	Free transit travel outside of peak hours	Focuses on financial burden; does not address parent concerns
Reduced fare for school travel	Reduced fare for school travel (7:30am-8:45am and 3:00pm-4:15pm)	Focuses on financial burden; does not address parent concerns
Free transit for youth	All youth under the age of 18 would receive subsidized transit passes	Focuses on financial burden; does not address parent concerns
Tap in with compass at schools	Have youth tap into a compass reader located at the school entrance with their compass card logging the mode they used; reward sustainable modes	Does not engage parents or address parent concerns
Parent Advisory Council Transportation Committee	Create and facilitate a Parent Advisory Council Transportation Committee through BCCPAC	No clear outcomes; needs more strategic oversight
Active transportation education campaign	Regional or provincial education campaign on appropriate ages to use active transportation	Does not engage parents or address parent concerns

Appendix C.

Student Transportation Fund

School district		2019 Funds
35	Langley	\$260,000
36	Surrey	\$72,999
37	Delta	\$41,933
38	Richmond	\$21,608
39	Vancouver	\$53,423
40	New Westminster	\$6,073
41	Burnaby	\$24,841
42	Maple Ridge-Pitt Meadows	\$185,990
43	Coquitlam	\$81,641
44	North Vancouver	\$40,566
45	West Vancouver	\$84,722