Active Transportation to Childcare in Vancouver

Exploring best practices for supporting families travelling to childcare facilities by walking, biking, rolling, and taking transit

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Executive Summary

Active transportation to childcare is when a parent or caregiver walks, bikes, rolls, and/or takes public transit to childcare with a child. Cities can encourage or discourage active modes for family travel to childcare through the design of the city and the transportation options. Families have complex travel patterns that are best supported by child-friendly design and transportation initiatives.

Policy Context

Vancouver's transportation and childcare strategies are guided by several local and regional policies. The *Vancouver Plan, Transportation 2040, A Healthy City for All, Making Strides, Climate Emergency Action Plan, TDM Action Plan 2021-2025*, and *TravelSmart4Kids* provide context and direction for family transportation to childcare in Vancouver.

Purpose and Methodology

This report explores the best practices to support active transportation as a convenient and safe option for families travelling to childcare facilities in Vancouver with children aged 0-5.

Four methods are used to explore active travel to childcare in its current form and iterations around the world. The first section is a Policy Scan that highlights relevant local policies shaping childcare and active transportation strategies. The Literature Review summarizes the relevant research and studies on factors that influence family mobility and travel to childcare. Third, the Global Case Study explores how ten cities prioritize children and family's mobility. Finally, the results from an online survey and interviews explore challenges and opportunities for active travel within the local context. The report findings are synthesized into best practices, recommendations for Vancouver, and potential challenges.

Best Practices

1. Make Active Travel the Most Convenient Option
2. Embed Child-friendly Design in the City
3. Introduce Active Travel at a Young Age
4. Mobilize Women to Mobilize Families

Recommendations

1. Expand the Walk Bike Roll Mini Grant Program to include childcare facilities
2. Advocate to TransLink to pilot child-friendly transit initiatives
3. Advocate to Mobi to include child-friendly bike share options
4. Develop a retrofit program that incentivizes childcare facilities to add stroller/bike parking
5. Expand Universal Cycling Education to childcare facilities
6. Prioritize child-friendly street design interventions near childcare centres
7. Make childcare available in every Vancouver neighbourhood

Table of Contents

Acknowledgements 2
Executive Summary 3
1. Introduction 6
1.1 Purpose of Study 6
1.2 Methodology 6
1.3 Limitations 8
1.4 Author's Statement of Positionality 8
1.5 Glossary 9
2 Background 10
2.1 Childcare Context in Vancouver 10
2.2 Active Transportation Context in Vancouver 11
2.3 Local Policy Scan 12
2.3.1 Vancouver Plan 12
2.3.2 Transportation 2040 13
2.3.3 A Healthy City For All 13
2.3.4 Making Strides Childcare Strategy 14
2.3.5 Climate Emergency Action Plan 14
2.3.6 TDM Action Plan 2021-2025 15
2.3.7 TransLink's TravelSmart4Kids Strategy 15
3 Literature Review 17
3.1 Children's Active Transportation 17
3.2 Urban Development Patterns and Family Travel Behaviour 20
3.3 Gendered Transportation and Transportation Justice 24
4 Global Case Studies 28
4.1 Tokyo, Japan: Safe Streets for Children 29
4.2 Yokohama, Japan: Childcare at the Train Station 30
4.3 Oslo, Norway: A City Made for Play 31
4.4 Copenhagen, Denmark: Child-friendly Design Across the Board 32
4.5 Odense, Denmark: When Cycle Paths Rival Streets 34
4.6 Berlin, Germany: Cargo Bikes without Barriers 35

4.7 Fortaleza, Brazil: Children's Bike Share as an Investment in the Future 36
4.8 Bogotá, Columbia: Tactical Urbanism for Child-first Streets 37
4.9 Mexico City and Istanbul: Empowering Mothers through Bike Education 38
5 Survey Findings 40
6 Interview Findings 44
7 Best Practices 49
7.1 Make Active Travel the Most Convenient Option 49
7.2 Embed Child-friendly Design in the City 51
7.3 Introduce Active Travel at a Young Age 53
7.4 Mobilize Women to Mobilize Families 53
8 Recommendations 54
9 Challenges 56
10 Conclusion 58
Appendix A: Parent/Caregiver Survey Questions 59
Appendix B – General Interview Question Guide 63
References 64

1. Introduction

1.1 Purpose of Study

Childcare is a critical service that helps families thrive and is part of their regular transportation routine. After passing Making Strides: Vancouver's Childcare Strategy in 2022, Vancouver is committed to supporting senior levels of government to develop a universal system of quality, affordable childcare. Meanwhile, the City is actively planning a future where most people use active travel to get around the city. The purpose of this report is to explore how families meet their childcare needs, make travel and location decisions, and navigate key trade-offs in order to inform the City in how best to support family active travel to childcare. Drawing on the literature, global city initiatives, and original research, these finding will inform the City of Vancouver's childcare and transportation strategies to best support the physical and mental health of families and their connection to community.

1.2 Methodology

This report was created through a review of literature and local policies as well as the collection of original qualitative and quantitative research through a survey and interviews. The combination of these methods was selected to contextualize existing global and local research on children's mobility while building an understanding of Vancouver's childcare transportation context.

Literature Review

The literature review aims to provide an overview of relevant published works on the topic of transportation to childcare. Since there are very few works that address both childcare and transportation, the review includes research on children's transportation, women's transportation, mobilities of care, land use and urban development, and transportation through life transitions. Collectively, these topics provide a foundation for understanding the complexities of family travel routines for all escorted journeys with children, including to childcare.

The literature review is broken into three key themes: (1) Children's Active Transportation, (2) Urban Development Patterns and Family Travel Behaviour, and (3) Gendered Transportation and Transportation Justice.

Global Case Studies

This report includes several case studies from cities around the globe that have prioritized family travel with young children through infrastructure, initiatives, and/or cultural norms. An initial list of cities was identified by cross-referencing cities with highly developed and supported childcare programs and cities with a high active travel modal share. The ensuing list was narrowed down to highlight those with specific initiatives and programs that namely prioritized care trips with children. Since trip-chaining is so common amongst parents, travel to childcare is often grouped into a complex chain of trips including work, care trips, errands, personal trips, and leisure. While travel to childcare may not be explicitly mentioned by some cities in this case study, these journeys are included under the umbrella of care trips.

Ten cities from three continents are included under nine sections (two similar initiatives in Mexico City and Istanbul share a section). Each city's modal share is compared in *Figure 11*, including Vancouver as a point of reference.

Online Survey Methodology

An online survey was designed by the author and distributed across parent communication channels by childcare operators. The survey consisted of 10 questions and took 5 minutes to complete. It was available for a 3-week period from June 15 to July 5, 2023. Accommodations for internet access and paper survey versions were also available by request, however, all completed surveys were conducted online. Respondents had the option of completing 8 demographic questions at the end of the survey. The goal of the online survey was to gain a broad, quantitative understanding of how parents and caregivers are travelling to childcare facilities and why they choose that mode.

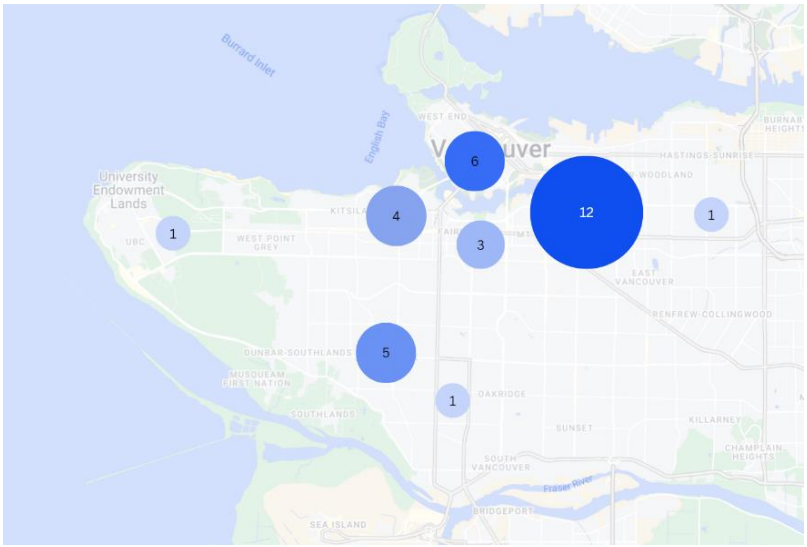

Figure 1: Visualization of survey responses submitted in relation to the respondent's childcare location

In total, 34 surveys were successfully completed by parents who travelled to childcare facilities with their children in Vancouver, representing 20 childcare facilities. Two additional responses referenced childcare centres outside of Vancouver, which were not included in the analysis. *Figure 1* highlights how many survey responses were submitted in relation to the childcare centres' geographic location (not the home location of the parent submitting the survey, as this data was not collected). The highest proportion of survey responses (12) was concentrated in the Mount Pleasant and Strathcona neighbourhoods. The survey questions are available in Appendix A.

Interview Methodology

Seven parents of children who attend childcare in Vancouver volunteered to participate in 25-minute interviews. The interviewees shared details about their travel behaviours through a semi-structured interview format. Each parent relied on childcare facilities in Kitsilano, which was near rapid transit (the 99-B bus), a connected bike lane network, sidewalks, and roads, making all transportation options feasible. The general interview question guide is available in Appendix B.

The interviews took place over Google Meet or a phone call. Three of the interviewees participated in a group discussion (1-hour) and four interviewees participated in 1-on-1 discussions (25-minutes). The interviews took place between June 26 and July 6, 2023.

Families have complex travel patterns; the interview format sought to unravel the intricacies behind the behaviours to identify patterns, as most families do not have one set routine every day, but multiple routes that change depending on weather, the day of the week, appointments, work, and the child's temperament. Names have been removed to keep interviewees anonymous.

1.3 Limitations

The scope and methods used in this report present a few limitations. The short period of study that this researched spanned led to a relatively limited sample of caregivers that could participate in the survey and interviews. Further research should be conducted with a wider range of parents and caregivers, along with representation from the different communities in Vancouver. While 20 childcare centres were represented by survey respondents, there was a clear gap of facilities in the South and East Vancouver. South Vancouver was recently emphasized as one of the most challenging areas to navigate by transit for people with accessibility needs in Vancouver's Accessibility Strategy engagement process. Additional research could also include consultation with childcare facility operators and educators, who were unable to participate in this study.

While surveys were distributed at locations across the city, each caregiver who participated in the interviews travelled to a Kitsilano-based childcare facility. With additional time and resources, it would be beneficial to gain qualitative insights on travel behaviour to childcare facilities in more varied and diverse neighbourhoods in Vancouver.

Travel to childcare has not gained the same recognition in the literature as travel to school, and research on the broader transportation behaviour of parents with children ages 0-5 is limited. To build a comprehensive picture of children's transportation, research on school-age children's transportation was included, although it is important to acknowledge that childcare travel and school travel can vary significantly. Further, the research that is available on childcare travel is difficult to locate due to the many variations of names for care trips, caregivers, childcare, and active transportation. Since childcare is not standardized between countries and even within countries, researcher often uses inconsistent terminology when referring to the escorted journeys parents take with their children to childcare. The set of terms and definitions used in this report are listed in the Glossary.

The studies supporting this report primarily include heterosexual male-female parents of children and their travel behaviours, particularly the sex-disaggregated studies on the male-female responsibilities of childcare. These studies are not representative of the diverse parental structures that can make up a family unit and unique complexities of single parenthood. The author acknowledges this data gap and recognizes the need for additional research into the transportation habits among diverse family structures.

1.4 Author's Statement of Positionality

Molly Barkowsky is a 2nd year master's student of Community and Regional Planning at the University of British Columbia. Molly grew up in Metro Vancouver as a fourth-generation Canadian and had the privilege of attending Toronto Metropolitan University for her undergraduate degree in Creative Industries. Her heritage is Northwestern European, and she acknowledges her deep gratitude to the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) Nations on whose unceded traditional territories she lives, works, and plays and on which this report was written. As a white settler and woman without children, Molly recognizes the limitations of her personal knowledge and experience when exploring transportation and childcare responsibilities for families of all ages, incomes, cultures, races, abilities, and orientations.

1.5 Glossary

Active Transportation / Active Travel (AT): Any form of human-powered transportation, such as walking, cycling, rolling, and taking transit (public transit almost always includes walking at some point). Can also include scooters, e-scooters, e-bicycles, cargo bikes, skateboards, and in-line skates. Active Transportation goes by many names, including Active Travel, Green Transportation, or Sustainable Transportation.

Trip-chaining: Visiting two or more destinations during one single trip, such as work, childcare, shopping (groceries, care-related shopping, personal shopping), appointments, and social engagements. Trip-chaining is a common practice amongst parents and caregivers.

Care: Work completed by people that supports children, seniors, people with disabilities or illness, and/or general upkeep and maintenance of tasks and spaces in the community or family unit. Care work can be paid, although it is often unpaid, contributing a critical, yet often invisible, role to the economy and functioning of society.

Mobility of care: A framework authored by Inés Sánchez de Madariaga that acknowledges the time-intensive and diverse trips that caregivers must take to fulfill care duties.[1] Childcare drop-off/pick-up, shopping for food and house items, and escort trips for children's activities are a few examples (also referred to as "care journeys").

Caregiver: A person who provides care and support for another individual on an ongoing or daily basis. Parents are often the caregivers for their children, but grandparents, family friends, and paid workers also provide care. Caregiver is used in this report to encompass all individuals who take care of children, particularly those who help with transportation-related responsibilities.

Childcare facilities: Spaces that provide day care for children, usually in a formalized and regular capacity so parents/caregivers can work. Early Childhood Educators carry out the responsibilities of childcare and facilitate opportunities for children to grow and learn.

Time poverty: "The inequitable, gender-based allocation of unpaid domestic work, representation an extra burden for women to enter the workforce, often leaving them with little or no discretionary time."[2]

Early Childhood Educators (ECE's): Professional caregivers who are trained in early childhood education (age 0-5) to support children's intellectual, physical, social, and emotional growth.[3]

Transportation inequity: When certain groups are disadvantaged by lack of access to opportunities due to inadequate transportation options.

Transportation justice: "A normative condition in which no person or group is disadvantaged by a lack of access to the opportunities they need to lead a meaningful and dignified life."[4] Transportation services, resources, benefits, and costs are equitably distributed to better serve society.

Transportation disadvantaged groups: Populations that are more likely to be underserviced by transportation systems due to systemic barriers. Transportation disadvantaged groups include people of colour, women, indigenous peoples, people with accessibility needs, children, seniors, and low-income populations.

2 Background

2.1 Childcare Context in Vancouver

Approximately 6.3%[i] of Vancouver's population in the 2021 census were parents to children aged 0-4, with 3.6% of the city's population falling between 0-4 years of age.[5] This means that about 1 in every 10 Vancouver residents is a direct participant in escorted journeys with young children and may be impacted by the city's childcare strategy. Quality, affordable childcare is important to a thriving city, not only because of the significant portion of the population it impacts, but because of the broader multidimensional short and long-term benefits for society.

When parents can access childcare services, they are able to fully participate in the workforce and reach their professional potential while earning income to support their families. Families with two working parents are becoming increasingly common in Vancouver and around Canada, as inflation significantly impacts the cost of living. Childcare is a key determinant of women's participation in the workforce, with research showing that when childcare is available, communities are empowered and elevated out of poverty, regardless of race, household income, ethnicity, or neighbourhood. Quality childcare not only benefits parents and the economy, but provides young children with critical developmental learning opportunities, yielding long-term health, wellness, and school-readiness outcomes that set children up for success.

Figure 2: Child playing with wooden blocks and toys. Photo by Pexels.

The Vancouver Plan states that while childcare was declared an essential service in Canada in 2020, as of 2021, licensed, full-time childcare is available for only less than half of children whose parents need it.[6] Considering the lack of availability at many childcare centres, families may be forced to select a facility far away from home, further complicating their transportation patterns and introducing additional time requirements into their daily schedule. Drawing on the public school model, families need quality, accessible childcare in their neighbourhood that they can depend on.

[i] The percentage of parents to children aged 0-4 (6.3%) was calculated by identifying the percentage of children living in 1-parent and 2-parent homes and applying these percentages to the number of children aged 0-4. This figure is approximate based on available data.

Affordable, local, quality childcare would limit excessive transportation and reduce complexity in families' already-busy lives. When parents limit the amount of time spent escorting children, they gain hours for work, play, and community involvement.

Vancouver recognizes the importance of childcare, which is why the City has facilitated the creation of ~60% of Vancouver's licenced childcare centres for children aged 0-3 and ~40% of licenced childcare centres for all ages. The number of childcare facilities is only set to increase as both Federal and Provincial governments commit to building a universal system of childcare in Canada. In 2021, the Government of Canada announced they would invest $3.2 billion over the following 5 years to improve childcare for children aged 0-5 in British Columbia.[7] A Universal Childcare System would mean more spaces for children, more affordability for families, and reliable support for caregivers who participate in the workforce.

However, a large dollar amount along will not make childcare accessible to every family who needs it. Even as the increased budget funds more childcare centres, Vancouver is experiencing a childcare staffing crisis that limits the capacity to care for children, no matter how many physical spaces are available. Childcare is in high demand by families, but the profession itself is not acquiring licensed staff members at the same rate. This is partly due to the high quantity of staff required to care for young children. The appropriate ratio of licensed childcare staff to children aged 0-3 is 1 staff to 4 children, and for ages 3-5 the ratio increases to 1 staff to 8 children. Comparatively, the ratio for school age children is 1 staff to 30 children.

As more childcare centres are built, more caregivers will be travelling through the city with their child for drop-off and pick-up responsibilities. Childcare and caregiver transportation are intimately connected. In order to achieve the sustainability goals set out by the Climate Emergency Action Plan, Vancouver must ensure that families have affordable, convenient, sustainable, and safe transportation options to access childcare.

2.2 Active Transportation Context in Vancouver

The City of Vancouver is committed to making walking, rolling, cycling, and public transit more accessible and convenient for residents, a mission that continues to unfurl each year through dedicated projects and initiatives supporting active modes. Walking, biking, and rolling are communicated by the City as the "Vancouver Way", a term that effectively conveys the city's goal of boosting people's health, supporting environmental health, and alleviating congestion. The city currently boasts a 54% modal share of active modes (including, walking, rolling, cycling, and transit), with a goal of having two-thirds of all trips by active modes by 2030.[74]

Vancouver has continually increased the appeal of active modes by prioritizing high-quality walking, cycling, and transit network through the city. The transit network, served by TransLink, connects the city and the surrounding Metro Vancouver area and provides an affordable and convenient transportation option. Family-friendly features on transit include bus ramps, SkyTrain elevators, and priority seating. The cycling and walking networks are also continually evolving with new connections and routes that are safe and comfortable for all travellers. Countless initiatives take place each year. A few examples of recent large projects that support safe walking and cycling for families with young

children include the 2021 redesign of Beach Avenue and the 2022 opening of the Richards Street bike lane, both with separated, bidirectional bike lanes.

Vancouver is well-placed to make active modes the leading way to get around. Vancouver is one of the few cities in North America without highways carving through the downtown and its geographic location confines development, encouraging compact and walkable communities. Communities with a variety of transportation options are particularly important for families with children, who often rely on multiple modes to accommodate their complex travel patterns. Active travel supports physical and psychological health in children and adults, creating opportunities for connection and learning while instilling healthy, lifelong habits.

Local policies, such as the Vancouver Plan, Transportation 2040, and the TravelSmart4Kids strategy, provide clear direction and concrete steps to support the City's move towards a robust low-carbon and active transportation network.

2.3 Local Policy Scan

The City of Vancouver boasts a wide collection of policies guiding decisions about active transportation and childcare services. Although active transportation and childcare are not often addressed in tandem, this policy scan collects seven relevant policies that support and inform each respective area: *Vancouver Plan, Transportation 2040, A Healthy City for All, Making Strides, The Climate Emergency Action Plan* the *Transportation Demand Management Action Plan 2021-2025* and *TravelSmart4Kids*. These policies often reference one another and encourage similar themes of healthy environments and systems for people and communities to thrive. Additional policy guidance for active transportation best practices and childcare include: *Women's Equity Strategy, Accessibility Strategy, Community Centre Strategy, Childcare Design Guidelines, Childcare Technical Guidelines,* and the *Equity Reference Guide*.

2.3.1 Vancouver Plan

The Vancouver Plan, approved by City Council in 2022, is a guide for the intentional growth of the city towards a livable, affordable, sustainable future over the next 30 years.[8] The Plan was created through an extensive public engagement process that lasted four phases over three years and over 52, 480 engagement touchpoints. Building on the foundation principles of reconciliation, equity, and resilience, the Plan details an intentional Land Use Strategy that is supported by eleven policy area sections.

Transportation and Childcare are identified as two of the eleven policy priorities for Vancouver, recognizing that universal access to quality childcare helps families and the economy thrive and a connected, equitable transportation system activates each policy area in reaching its potential.

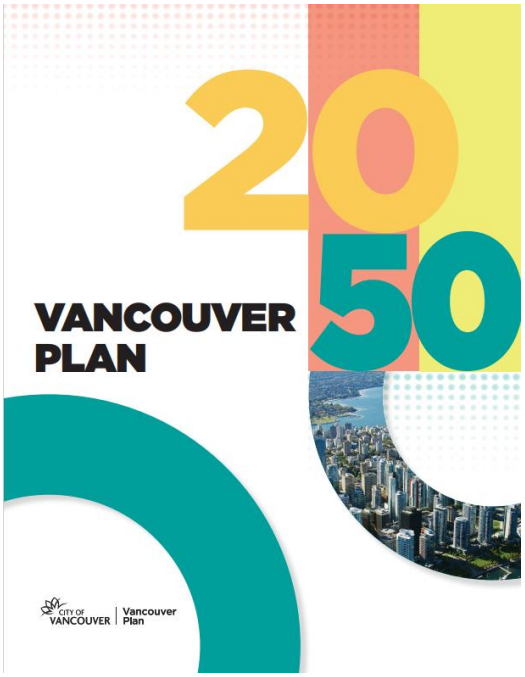

Figure 3: The Vancouver Plan

Policy Area 5: Transportation introduces 18 policy items that will improve active transportation and transit access as well as overall efficiency of people and goods through the City.

Policy Area 6: Childcare introduces 5 policies that help expand, support, and retain childcare spaces at a pace that meets the demands of the City's growth.

2.3.2 Transportation 2040

Transportation 2040 is Vancouver's long-term plan to guide investments, land use, and transportation decisions.[9] The strategy prioritizes people, the environment, and the economy through comprehensive, data-driven targets that broadly encourage more walking, cycling, and transit access through safe and equitable networks.

Figure 4: Transportation 2040

Although childcare is not explicitly addressed, the strategy emphasizes the need for comfortable networks for all ages and abilities. Recommendations include quality end-of-trip facilities (including bike parking, storage, change rooms, and showers) as well as goals for multi-modal integration and safe, accessible pedestrian networks. Collectively, these features increase access and equity for the most vulnerable street users, including children and families travelling to childcare facilities.

2.3.3 A Healthy City For All

Vancouver is a rapidly growing city, which comes with a range of opportunities and challenges. The Healthy City For All Strategy was launched in 2014 to prioritize the health and wellbeing of the City's growing numbers of people through 13 long-term goals.[10] Falling under the broad categories of healthy people, healthy communities, and healthy environments, the plan encompasses all aspects of daily life, including childcare and active transportation.

Figure 5: A Healthy City For All

There are four goals laid out in the plan that directly address active transportation to childcare.

- The Strategy's first goal is "**A Good Start**", which seeks to measure school readiness, child poverty, and access to appropriate childcare to help children thrive. Research indicates that quality care during the early years can improve school readiness and has a strong positive impact on children in poverty.
- Active transportation is address in Goal 8 "**Active Living and Getting Outside**" and Goal 11 "**Getting Around**", which collectively set guidelines for increasing the number of active travel trips as well as access to daily, enjoyable movement outdoors.
- Finally, connected communities are explored in Goal 12 "**Environments to Thrive in**", which sets a target of every Vancouver neighbourhood's

walk score meeting or exceeding 70, meaning most errands and local trips can be completed by active travel.

The Healthy City Strategy recognizes that a city's health must be seen as holistic and interconnected. Active transportation to childcare touches most goals laid out in the plan in some capacity. The combination of all 13 goals is the best way to ensure a healthy future for the people that live, work, and play in Vancouver.

2.3.4 Making Strides Childcare Strategy

Making Strides is Vancouver's Childcare Strategy that will guide the City in supporting accessible, affordable, quality childcare in alignment with local and senior government leadership.[11] Building on 6 values over 10-year and 30-year visions, the Childcare Strategy Policy Framework addresses current and anticipated needs within the childcare sector.

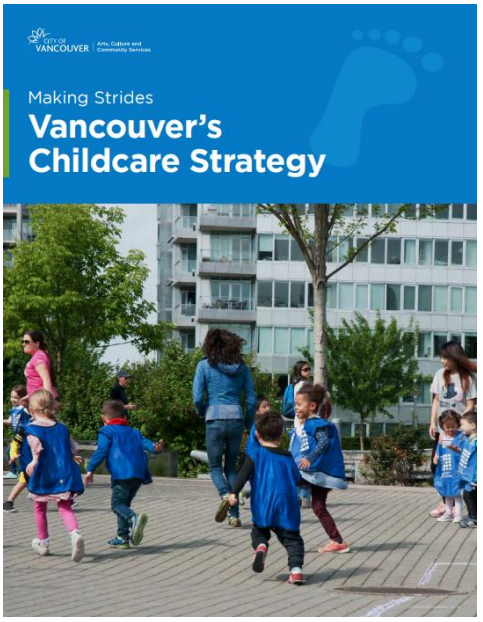

Figure 6: Making Strides: Vancouver's Childcare Strategy

The first Policy Direction – Plan for Expanded Childcare in Complete Neighbourhoods – states that childcare services optimally perform when they are connected to nearby networks of housing, schools, and jobs. As the City expands the number of childcare facilities, it is critical to engage in comprehensive planning that places childcare within existing communities, reducing travel times for families and opening possibilities for active travel modes.

The fifth Policy Direction – Support Renewal and Resilience of Essential Childcare Infrastructure – supports City investments in existing childcare infrastructure, improving their physical design and space to meet the needs of families. Improving civic-led childcare infrastructure could mean adding end-of-trip facilities, stroller and bicycle storage and parking, and other amenities that improve the access and appeal of active travel modes for both childcare workers and families.

2.3.5 Climate Emergency Action Plan

Vancouver's Climate Emergency Action Plan (CEAP) was passed by council in 2020 to reduce the impacts of climate change and set targets to secure a healthy, safe, resilient future.[12] The scientific community clearly states that warming must not exceed 1.5° Celsius, however the Earth's temperature has risen an average of 0.18° Celsius per decade since 1981, with the 10 warmest years in recorded history taking place since 2010.[13]

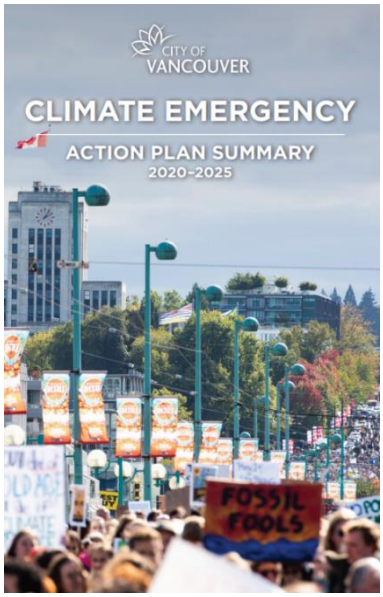

Figure 7: Climate Emergency Action Plan

Transportation makes up a large percentage of the city's emissions – 39% of emissions in 2019 came from gas and diesel in vehicles. Specific targets within transportation to reduce carbon pollution by 2030 include:

- Two-thirds of all trips completed by active travel modes and transit
- 50% of all vehicle kilometres driven by zero-emissions vehicles

Transitioning families towards more sustainable transportation modes to their childcare facilities supports the CEAP in reducing overall emissions and supporting the move towards active modes for daily travel.

2.3.6 TDM Action Plan 2021-2025

The Transportation Demand Management Plan acts as a guide for Vancouver's transportation encouragement programming to reduce private vehicle trips and increase active transportation and transit trips.[14] The Plan explores non-infrastructure opportunities to encourage more active travel, working towards the Climate Emergency Action Plan's goal of two-thirds of all trips being taken by active modes or transit by 2030. Ten strategies fall below five key goals: sustainable modes, building a culture, collaboration, monitor and evaluate, and equity.

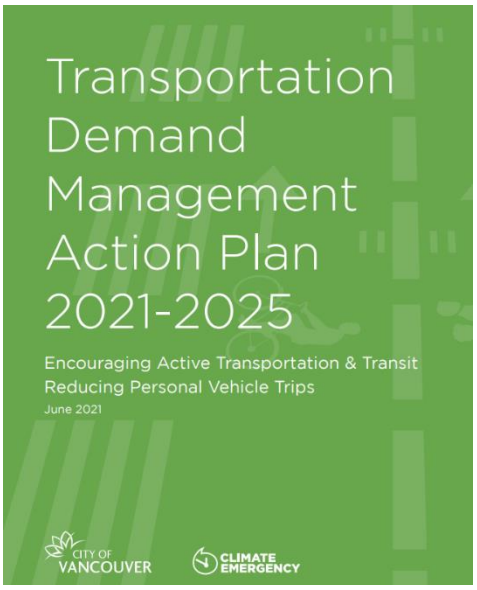

Figure 8: Transportation Demand Management Action Plan 2021-2025

Almost all ten strategies support the programs and systems that would facilitate active travel and transit to childcare facilities in Vancouver. The strategy recognizes that a holistic and multi-pronged approach must be taken to effectively change behaviours, reduce barriers, coordinate programs and campaigns, and support organizations and individuals who choose active modes of transportation. A few notable strategies are outlined below:

- **Strategies 2 and 3** seek to launch and support programs that encourage active travel, including initiatives for cargo bikes and e-bikes (which families often use to bike with children), encouraging active travel with events and incentives, and collaborating with partners who promote active travel (such as Mobi by Shaw Go and TransLink).
- **Strategy 4** aims to help employees use active modes to work and have remote working options, which can help families balance childcare transportation responsibilities.
- **Strategy 7** encourages collecting research on active travel to inform decisions and share with the public, which is the basis for this report and its research.
- **Strategy 9** explores expanding the School Active Travel Program in order to build and sustain a culture of active travel at the school level. Although childcare facilities are not specifically mentioned, many of the actions could be extended to families travelling with children aged 0-5, such as 9N: Encourage development of a "Bike + Roll Playground".

2.3.7 TransLink's TravelSmart4Kids Strategy

TransLink's TravelSmart4Kids is a Regional Travel Strategy for children aged 0-12 that seeks to enable and encourage active transportation habits across Metro Vancouver.[15] Active travel benefits the region on a short and long-term basis through a systems-level approach, setting children up for success by developing healthy, active habits, improving safety and connection within communities, reducing traffic emissions and noise, and promoting clean air. The Strategy recognizes that children face unique transportation challenges and opportunities, and that the foundations for travel habits and perceptions around travel are set early on in childhood. Age-targeted initiatives, education, and infrastructure plans outlined in this Strategy will reduce barriers for children and families, promote

equity and accessibility across the region, and facilitate healthy early habits that lead to healthy lives and a thriving region.

Children ages 0-5 are specifically mentioned under the theme of Culture and Behaviour in **Action 1.2F: Build the Foundations for Active Travel and Children's Independent Mobility in the Early Years.** This action seeks to include active travel education and resources in kindergarten and childcare facilities, enabling parents, caregivers, and Early Childhood Educators to support children in building skills for active travel and independent mobility from a young age.

Strategy 2.2: Develop, monitor, and enhance programs focused on encouraging children's active travel explains that collecting data to analyze the effectiveness of initiatives and pilots will help organizers better understand the outcomes and create the best programs for the region. The research in this report will support the region in reaching this goal, setting a baseline understanding of how children under the age of 0-5 are travelling to childcare and where the opportunities lie for increasing active transportation.

Figure 9: TravelSmart4Kids: A Regional Travel Strategy for Kids 12 & Under

3 Literature Review

There is a critical gap in research on transportation modes to childcare facilities around the world and, more broadly, on families' active travel patterns with children aged 0-5. Existing literature about families and active transportation generally focuses on school-age children, which can provide insights on family travel but doesn't speak to the specific demands and opportunities of active travel with younger children. This Literature Review analyzes existing studies on factors that increase or decrease active travel by families with children, unique considerations of travelling with children aged 0-5, childcare, the impact of life course events on modality, gendered travel behaviours, and best practices for active travel by families in cities around the world.

3.1 Children's Active Transportation

Child-friendly Cities and Design

Cities have long been designed without consideration for the unique needs of minorities, women, children, and the elderly.[16] While these exclusionary designs are visible in all aspects of urban life, transportation is a particularly important component of an individual's autonomy in the city, acting as a direct link to accessing daily needs, work, and their community. Within transportation, children aged 0-5 are a unique demographic; they travel accompanied by an older caretaker and require high levels of accessibility and security to accommodate their limited mobility.[17] Since children's mobilities are not directly linked to traditional markers of productivity and the economy, their needs are often consciously or subconsciously viewed as "subordinate to those of adult travellers", failing to recognize the rights and inherent value of the child's mobility outside of their role as an incidental traveller alongside an adult.[17] When transportation is not specifically planned for children, they will be left behind. The lack of child-friendly infrastructure and supportive policies around the globe led to the United Nations Convention on the Rights of the Child in 1989 and the movements for child-friendly cities that followed.[18]

Child-friendly cities prioritize safety, health, and opportunities for play and connection throughout formal and informal spaces. Examples of child-friendly policies include pedestrianized streets outside of schools and daycares, benches and seating along routes, and safe and connected active travel networks that facilitate a child's accompanied and independent mobility. The costs of cities designed without consideration for children are wide-reaching and devastating: fatalities due to road traffic injuries are the leading cause of death in Canada for children and youth.[19] Further, child

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obesity and the risk of life-threatening disease is rapidly rising around the world as families forgo active modes in favour of 'safer' vehicular travel, ironically worsening the very traffic danger that drove them to the car in the first place. Air pollution, noise pollution, and poor mental health are all additional risks of limited access to green space and a sedentary lifestyle during the formative years of childhood.[18] Further, these outcomes are not equally distributed: ethnic minorities and low-income communities are less likely to have access to public parks and recreation spaces, perpetuating systemic inequalities and placing vulnerable families and children at a higher risk of chronic disease and injury.[20]

The Influence of Caregiver's Mobility on a Child's Mobility

Travel modes are particularly influential in a child's early years, as they set the family's travel habits and rhythms throughout childhood and beyond. The parent or caregiver's travel mode decision is crucial in the case of children 0-5, as young children fully rely on an adult's mobility to facilitate their own mobility.[21] Therefore, a caregiver's transportation decisions "play significant roles in shaping children's daily travel mode shares" and their life-long travel habits into adulthood.[22]

Healthy habits adopted at a young age have a key impact on the health of an individual throughout their life.[22] If a parent engages in active travel with their child while the child is still dependent, these rhythms span into active travel behaviours when children are able to make their own travel decisions. The influence of parent's mobility cannot be understated when exploring children's travel aged 0-5. Policymakers must consider how to encourage caregivers to use active modes, especially with young children, to best facilitate life-long active transportation, healthy cities, and accessible mobility for all ages.

Decreases in Children's Active Travel

The declining numbers of children using active travel modes to daily destinations, especially school, are well documented.[21] Although literature offers less insight into families' specific travel behaviours to daycare and childcare for children aged 0-5, research suggests that travel routines established by a family early on in childhood set the foundation for travel behaviours once children reach school-age.[21] The decline of active travel for children aged 6 and older to school is a potential indication that these children were also driven to childcare when they were younger. Several reasons lead parents to use a car for daily trips with children, including convenience, safety, and long travel distances.

Convenience is a common reason behind driving a child, particularly when the caregiver is travelling to another destination, like work, after dropping off their children. Making multiple trips ("trip-chaining") is especially frequent for women with children, who typically take on greater family and household responsibilities. Further distances between destinations may leave families tied to their car.[23] Following decades of increases in women's full-time employment in Canada, the speed and convenience of a vehicle in auto-oriented cities might help a family with two working parents combine multiple geographically spread trips into a single, complex trip-chain.[24] A Montreal study found that the presence of young children in a family was directly correlated with higher propensity of multiple car ownership, presumably tied to the increasingly complex travel patterns that accompany parenthood and the auto-oriented infrastructure and systems that accommodate efficient movement through cities by vehicle.[25]

Safety is another concern that 'drives' caregivers away from active travel options. All people who travel actively need safe environments, but children's small size and developing coordination place them at a distinct disadvantage. Children's safety is negatively impacted when cities are not inherently designed for vulnerable users. Unfortunately, this is the reality in Canada: traffic collisions are the leading cause of death for children and youth in Canada, with transportation incidents costing Canadians $4.2 billion dollars annually.[19]

Fortunately, these deaths are preventable. Vision Zero is a global movement that started in the 1990s to eliminate traffic fatalities and severe injuries. The movement recognizes that these deaths are not inevitable, and that change requires multidisciplinary problem-solving and building human error into street designs. Vancouver adopted their own Vision Zero plan in 2016, committing to protecting the street's most vulnerable users, like children. Recent initiatives within this plan include the School Zone Speed Limit Reduction Pilot, the installation of 33 flashing pedestrian beacons and 24 pedestrian controlled signals since 2016, and the creation of a Traffic Safety Advisory Group to develop strategies and advocate for safety from a variety of disciplines.[26]

The irony regarding safety concerns amongst parents is that the fear of traffic may lead parents to create more traffic by driving their cars, therefore making streets less safe. Streets and cities are not inherently dangerous places; policies and transportation designs that elevate high-speed vehicles above pedestrians and street users are the source of danger on the streets.

Finally, another common reason for driving is that the destination is too far to comfortably travel by bike or foot. This is a fair concern: caregivers may be travelling further than expected due to the difficulty to find suitable childcare with availability in Vancouver. Vancouver's childcare centres are in high demand leading to waitlists that can last from weeks to years. Consequently, families are willing to travel further than ever. If a caregiver's work or other destinations are not geographically aligned with the daycare, a car may be the only option to reach each place in adequate time. Designing the city for easy, local access to daily necessities is the best way to combat auto-oriented sprawl (see more in *Section 3.2: Urban Development Patterns Shape Families' Travel Behaviour*).

Streets and cities are not inherently dangerous places; policies and transportation designs that elevate high-speed vehicles above pedestrians and street users are the source of danger on the streets.

Active Travel Increases a Child's Health and Wellbeing

Active travel provides consistent opportunities for children's physical activity that align with the Canadian Physical Activity Guidelines for the Early Years (0-4 years) and Children and Youth (5-17 years). Children aged 1-4 are recommended at least 180 minutes of physical activity a day, while children 5 and above should accumulate at least 60 minutes of physical activity per day.[27] Cycling, walking, and transit all help achieve these goals, while increasing the likelihood that a child will use active modes when they reach adulthood.[28] Beyond the physical impacts, active travel is also positively associated with psychological and emotional wellbeing in children. When travelling as a

family, children and caregivers describe the kinesthetic and sensory experience of cycling as exciting and fun.[29] Moving on foot or by bike immerses travellers in their environment rather than sequestering them away, increasing opportunities for children's engagement and learning.[29] In a study on women's mobilities in Amsterdam, mothers travelling by bicycle with children report their commute to and from daycare as "highly gratifying" and an opportunity to strengthen their emotional connection with their child.[30]

Walking or biking can emotionally prepare children for the day and act as a de-stressor on their journey home, increasing the child's sense of control and self-esteem.[31] In a Canadian study, caregivers and children who either biked or walked were much more likely to experience emotions of happiness, excitement, and relaxation during their journey as opposed to significantly higher proportions of caregivers and children feeling hurried or tired when driving in a vehicle.[32] Negative sentiments were exacerbated by traffic congestion. Importantly, the positive experiences when walking or biking were accompanied by perceived safety in the neighbourhood and quality active travel infrastructure. A lack of safe, accessible options for active travel can have the opposite emotional effect for children and families using active modes.

Finally, active travel builds psychological resilience in children. Active travel equips children to manage social and cognitive stressors by reducing cardiovascular reactivity; daily stresses, such as managing a conflict with a peer or speaking in front of a group, elicit a less intensive stress response in the body following daily movement, allowing a child to thoughtfully navigate problems to the best of their ability.[16]

3.2 Urban Development Patterns and Family Travel Behaviour

The literature reveals that active transportation is an excellent way to build life-long healthy habits, but cities need the infrastructure to facilitate these modes for all users. Active travel should be safe, accessible, and efficient; the availability of quality infrastructure and the extent to which it meets these objectives shapes families' travel behaviour.[33] [34] Unfortunately, urban development in many cities has moved away from walkability and towards sprawling car-centric design, predictably bending families' behaviour toward car-centric lives.

The Impact of Distance on Active Travel

In an Ontario study, the likelihood of middle-school children using active modes was positively correlated with shorter trips, safe walking routes, and street trees, a direct connection between urban development and travel mode.[35] Distance between home and school was the most predictable indicator of the travel mode: 94% of children living within 400 metres of the school used active modes to travel home and 72% of children within 1.6 kilometres travelled home actively.[36]

In a study with Dutch elementary school children, the average distance of active commuting trips was 422 meters. The study found that as the distant increased, the portion of trips by passive travel increased as well: more than 50% of all trips longer than 900 meters were completed by car.[37] A separate study of young Dutch children found that children were most likely to bicycle between 1-5 kilometres, walk under 1 kilometre, and travel in a vehicle if the distance exceeded 5 kilometres.[38] A study across four European countries found that children are travelling further to schools than in past years; larger schools and more private schools contribute to this trend, as well as sprawling urban

development that forces families to rely on at least one car and organize their routines around that mode.[39]

Another study based in Adelaide, Australia on women's cycling behaviours found that having children was a specific transition where women stopped cycling due to lack of proximity to retail and groceries.[40] Distance aside, many women in the study tried cycling with children but felt unsafe because of the lack of supportive bike infrastructure and unpredictable motorist behaviour.

It is no surprise that vehicles offer the most convenience and efficiency when the transportation system has specifically been designed to prioritize vehicle movement. Most cities in North America prioritize auto-centric features like large parking lots close to destinations, fast and direct motor vehicle routes through the city, and a lack of public realm that supports necessary activities for caregivers and children, such as sitting, getting children ready, and eating. Consequently, these activities instead take place in the private realm of vehicles. When infrastructure and a supportive public realm are not available for caregivers, the most reasonable transportation alternative becomes driving.[41] As vehicle volumes increase with women and caregivers choosing cars, safety on the street and the need for the public realm are left behind. This becomes a vicious cycle, where caregivers choose vehicles because they are 'safe' and efficient, therefore worsening the traffic that is making streets less safe and less efficient for all other mode users.[42]

The Impact of Infrastructure and Vehicles on Active Travel Safety

Safe, protected cycling and walking facilities are critical for child-friendly cities. While impactful campaigns against substance abuse at the wheel and increased safety features in vehicles have prevented deaths of auto drivers, pedestrian and cyclist traffic fatalities remain the highest contributor to child mortality in every category.[43] Speed is a significant factor that determines life or death in traffic incidents. A comprehensive literature review found that for every 1.6km/h reduction in vehicle speed, Pedestrian-Motor Vehicle crash frequency decreased by 5%.[44] If a pedestrian is struck by a vehicle moving 50km/h, the chance of survival is 20%; the survival rate increases to 50% at 40-45km/h and to 90% at 30km/h.[45] Most streets have posted speed limits, which legally regulate speed, as well as a 'design speed', the speed at which drivers feel comfortable or even compelled to travel. Posted speeds and design speeds must be coordinated to prioritize active traveller safety. Traffic calming measures reduce the design speed and induce discomfort when driving above that speed. Measures such as speed humps, tight corners, traffic circles, and narrow streets could increase the appeal of active travel by effectively decreasing vehicle speed if implemented near childcare centres in Vancouver.

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88% of the cycling collisions that claimed children's lives (aged 0-18) in British Columbia between 2005 and 2014 occurred on roads without cycling infrastructure and 12% occurred on streets with painted lanes but no physical separation.[46] Zero incidents occurred on streets with protected cycling facilities.

One of the most comprehensive US studies on bicycle and road safety found that increasing safe bicycle infrastructure is directly correlated to decreasing fatalities. Between 1990 and 2015, Portland, Oregon saw bike mode share increase from 1.6% to 7%, and despite higher ridership, cyclist crash fatalities decreased by 64%, which is linked to significant investments in protected cycling lanes.[47] In other cities that incorporated safe bike lanes, cyclist road fatalities dropped by 61% (Seattle), 49% (San Francisco), 40% (Denver), and 38% (Chicago).[47] The study concluded that the number and severity of cyclist crashes is negatively correlated to the density of quality bike facilities. As separated bike lanes increase, life-threatening collisions decrease accordingly.

Figure 10: Visualization of a young child in the blind spot of a 2020 Ram 1500. Photo by ConsumerResports.org

The increasing size of vehicles around the world is another significant danger to children and family active travel. Over half of the traffic fatalities of children aged 1-4 between 2005 and 2014 involved a driveway and a vehicle's blind spots.[46] As the size of vehicles increase around the world, larger blind spots can have deadly consequences for smaller travellers.[48] At the same time, these larger vehicles are often marketed as 'family-friendly' and are becoming an increasingly popular choice for families (SUVs and pickup trucks made up 78% of light vehicle sales in Canada in February 2021).[49] This alarming trend exposes the heightened physical disadvantage of children pedestrians and cyclists, as vehicle collisions with children are eight times deadlier when struck by an SUV than a passenger car.[50]

Active Travel Infrastructure Interventions

The literature reveals a pattern of urban development trends that decrease the likelihood of caregivers travelling with young children: long distances between daily destinations, lack of amenities along the route (i.e. shade, benches), and the lack of physical infrastructure to support safe active travel. On the flip side, communities with high percentages of active mode share by caregivers and children are more likely to have a variety of features, including:

- Mixed use development, allowing caregivers to accomplish multiple tasks within convenient proximity.[51]
- Pleasant and interesting surroundings, including street trees and green space.[35]
- End-of-trip facilities, including secure stroller/bike parking.[52]
- Safe routes to walk and roll, including separated bike lanes, accessible sidewalks and pathways, and good lighting.[53]
- Good public transit, including high frequency and accessible transit stops.[54]

Active Travel Non-Infrastructure Interventions

Parents' perception of safety for active transportation with their children can also be influenced by non-infrastructure interventions. Pilot programs for active travel can be a fast and low-barrier way to reduce traffic danger and increase feelings of safety for caregivers and children. Pilots also allow cities to try out new transportation strategies for a temporary period to learn what could work best for the community. Successes in such programs may lead to larger changes that build on proven increases in safety, active travel, and comfort. One key goal in these interventions is facilitating social environments surrounding active travel: social safety and cohesion are positively correlated with higher levels of walking and cycling.[55]

Examples of non-infrastructure interventions include:

- The City of Vancouver's School Streets Program works alongside schools to restrict vehicle traffic in front of schools, increasing safety and space for children to walk, bike, roll, and play before and after school.
- Walking School Buses are a popular program run by communities around the world, including in the City of Vancouver. An adult leader chaperones a group of children on their walk to school, picking up children (like a school bus) along the route.
- Active Travel encouragement events are undertaken by numerous schools and municipalities in a variety of capacities around the world. This typically involves organized events that celebrate walking, biking, or rolling, and may include challenges, prizes, events, education, and more. HUB Cycling's Bike to School Week in Metro Vancouver is an annual celebration that encourages children to use active modes to school, with free events and prizes for participants. The Walk30 Challenge is another local initiative that incentivizes walking across Metro Vancouver municipalities through prizes and community support.
- Hiring an Active Travel Educator can help inform children and caregivers about safe, enjoyable routes, advocate for interventions, and organize challenges and programs that encourage active modes.

Both physical and non-infrastructure changes to the environment are important for encouraging active travel for families. It is important to view these interventions holistically. In their research on surveillance and children's mobility, Fotel and Thomsen pose a critical question that explores the basis of child-friendly street design: "Whether children should continue to be withdrawn from the threats of traffic or whether the threats of traffic should be withdrawn from children by taming it?".[56] Rather than removing children from dangerous spaces by driving them, a multi-pronged approach to traffic regulation challenges auto-logic in all capacities of the city, making spaces physically and systematically safer for children (and, therefore, everyone).

It is important to note that convenient, safe active travel and private vehicle movement are not mutually exclusive. There is a place for all versions of mobility in an equitable, accessible city. The purpose of child-friendly design is to include child and family mobility as an essential component of the transportation system, inherently designing streets for all users at their inception.

3.3 Gendered Transportation and Transportation Justice

Women often take on a disproportionate percentage of childcare responsibilities, intertwining research on women's mobilities and children's mobilities. Children aged 0-5 are particularly dependent on caregivers for transportation; understanding caregiver's travel decisions, and the life changes that impact these choices opens opportunities for supporting and increasing active travel with young children.

Dimensions of Gender in Children's Transportation

Women around the world consistently take on a higher percentage of house and childcare responsibilities. This imbalance is not just a reflection of occupational inequality; even in dual-earner families with similar work hours and commuting times, women's escorting trips with children far exceed those of their male partner.[57] Gender-disaggregated studies on child escorting reveal similar trends around the world: 38% of child escorting trips were completed by men in Ultrecht, Netherlands, 32% of men escort children across France, and 30% of men travelled with children to school in Atlanta, USA but only 23% performed pick-up duties.[57] A participatory study in Lille, France found that nearly 75% of mothers escort their child as part of their daily routine, contributing to a significant time commitment every day.[58] Even throughout the pandemic in families with male and female caregivers working from home, women still completed most of the travel trips with the child.[59] Ultimately, women are completing the majority of trips with children and their transportation experiences must be highlighted in the conversation of children's mobility.

Women also travel differently than men. Women's daily lives are noted in literature as often more complex than men because of a higher variety of duties, including employment, childcare, housework, and other caregiving responsibilities.[60] Each additional task adds complexity to the daily routine, incentivizing women to maximize their time with efficient and convenient travel options. Women are significantly impacted by their built environment: if walking or transit is the best option, women will likely choose those modes, but in sprawling suburban areas, driving a vehicle meets the convenience criterion.[61] Consequently, women's travel behaviours are deeply context-dependent in addition to being inherently complex and varied. Women are also more likely to be aware of the environmental impact of their mode choice.[61]

Acknowledging the role of gender in children's transportation helps cities understand how to encourage more women to use active modes for trips to childcare with children. There are proven interventions that increase women's participation in active travel: separated bike lanes, well-lit streets, tree cover, and mixed land-use.[62] [63] [58] Applying these design strategies to streets not only increases women and children's participation in active travel but benefits all street users by increasing safety and accessibility.

Childbirth as a Life Transition

Major life transitions are an opportunity to create new transportation habits that accommodate new needs or environments.[64] Childbirth and the following years are a key transition period: the size of the household increases, caregivers' work and routines are impacted, and the family might alter their housing situation, all of which influence transportation decisions.[23] Research shows that having a child directly impacts a family's transportation routine, usually increasing the likelihood of switching to car commuting.[41] [65] Parents with a new child are usually interested in identifying the most convenient transportation options that feels safe[ii] and comfortable. When cities are exclusively designed for efficient vehicle movement, driving best suits these criteria. When cities prioritize walking, biking, and transit networks as part of their transportation strategy, then active modes will also be attractive for many parents. Beyond the external transitions, the physical experience of carrying and bearing a child add further complexity to a woman's transportation routine during this transition period, as their physical capabilities when moving around are directly impacted.

Life transitions are a significant opportunity for increasing active travel if supportive infrastructure and systems make active modes **convenient and safe.**

Life transitions are a significant opportunity for increasing active travel if supportive infrastructure and systems make active modes convenient and safe. Active travel modes already have the benefit of being less expensive than the costs associated with car ownership and commuting, but only when convenience and safety meet or exceed the level that cars provide will active travel become popular surrounding the childbirth transition.

Temporary Mode Shifts Following Childbirth

Travelling with an infant is different than travelling with a child aged 1-5.[66] A family may incorporate short-term changes, like using public transit or a vehicle, to accommodate infant travel, although these changes may not be permanent. The temporary mode shift that caregivers choose is closely tied to the most convenient transportation option available, which varies over spatial contexts.

A German study on travel behaviours in the city of Leipzig post-childbirth demonstrates caregivers' behaviour when they benefit from an extensive cycling network and a city-wide cycling mode-share of 19%.[67] Caregivers who used active modes (walking and biking) before childbirth each had a period where they relied on public transit or a vehicle, but returned to walking or bicycling once their child was around 9 months.[66] 50% of caregivers returned to using primarily active modes following childbirth, 40% became multi-modal, and only 10% switched to primarily car usage.[66] Caregivers who primarily used a car or public transit before childbirth were more likely to become car-dependent following the childbirth, if they could afford it, and none of these participants became

[ii] A parent's perception of 'safety' is subjectively influenced by their spatial context and travel mode. A high-speed road with minimal stops may feel safe for a driver and unsafe for a cyclist or pedestrian, while a narrow street with high pedestrian activity may have the opposite effect. There is an imbalance of physical vulnerability in a collision when driving and when using active modes that may nuance an individual's definition of safety.

active travellers.[66] The study discovered that active modes of transportation may be symbolic to some caregivers' lifestyles, leading then to quickly return to walking or biking once they are able.

In a study about women's cycling in Adelaide, Australia (a city with a low cycling mode share of 1%), the mode shift surrounding childbirth lasted much longer than 9 months.[40] [68] All mothers participating in the study who cycled before having a child described a decline in their cycling following childbirth, commenting on aggressive motorist behaviour and the difficulty in transporting children and shopping bags simultaneously, which was exacerbated by living in sprawling areas. The most significant factor, however, was the mother's "extent of childcare responsibilities"; mothers who shared the caregiving responsibilities with a partner were much more likely to use active modes than those without support networks, regardless of their location (i.e. suburb, inner-city).[40] Cycling with children became a recreational activity for these women when a child was old enough to independently ride a bike but wasn't practical as a transportation solution for most mothers. Once a child had grown and was independent or moved away from home, women picked up cycling again for fitness and transportation, thus lengthening this 'transition period' away from active modes to 16 years or longer.[40]

The most effective predictors of using active travel modes following the birth of a child are **pre-existing active transportation habits**, **safe active travel infrastructure**, and having **support in childcare responsibilities**.

Both studies reveal that none of the participants who were not active mode users before parenthood became active mode users after having a child. The caregivers with environments conducive to active travel who primarily used active modes before childbirth were the most likely to return to active modes following short period of vehicle or public transit usage while the child was less than 1 year old. Caregivers have a larger set of responsibilities following the birth of a child and are seemingly less likely to adopt a new active transportation routine. Establishing active transportation habits early in an individuals' life before they have children, having safe, accessible infrastructure to support these modes, and having support in childcare responsibilities seem the best predictors of choosing active travel in the transition period surrounding childbirth.

Transportation Disadvantaged Groups and Intersectionality

People of colour, indigenous peoples, people with accessibility needs, seniors, and low-income populations are more likely to be negatively impacted by auto-oriented policies, restricting social, educational, and economic opportunities.[69] The high cost of vehicle ownership, housing unaffordability in urban centres with active travel options, low-investment in neighbourhoods of colour, and exposure to environmental toxins are a few of the barriers that these groups disproportionately face. Transportation inequity is when certain groups are disadvantaged by lack of access to opportunities due to inadequate transportation options.[4] In North America, transportation

inequity may mean that policies only support private vehicle transportation and neglect public transit and active travel investments. Or that a certain neighbourhood with vulnerable populations does not receive investments in active travel infrastructure and programs while other neighbourhoods in the same city benefit.

Considering the framework of intersectionality coined by Kimberlé Crenshaw, individuals will encounter a unique transportation experience at the intersection of their cultural, structural, social, economic, and political contexts.[70] A white mother with a child will not have the same transportation experience as a Black mother with a child, as their race fundamentally alters the experience of being a woman with a child moving through the city. Therefore, it is critical to acknowledge that the mobilities of care across parenthood are varied and context driven.

Transportation inequity and the impacts on marginalized populations are explored in detail throughout the literature, consistently emphasizing the importance of using a transportation justice lens when planning transportation access and active travel investments.[71] [72] [73]

4 Global Case Studies

Child-friendly design is real and already in practice. This case study explores creative, family-forward transportation strategies from ten cities around the world: Tokyo, Yokohama, Oslo, Copenhagen, Odense, Berlin, Fortaleza, Bogotá, Mexico City, and Istanbul. *Figure 11* compares the modal share breakdown of each city[iii], along with Vancouver's modal share as a point of reference. [74]

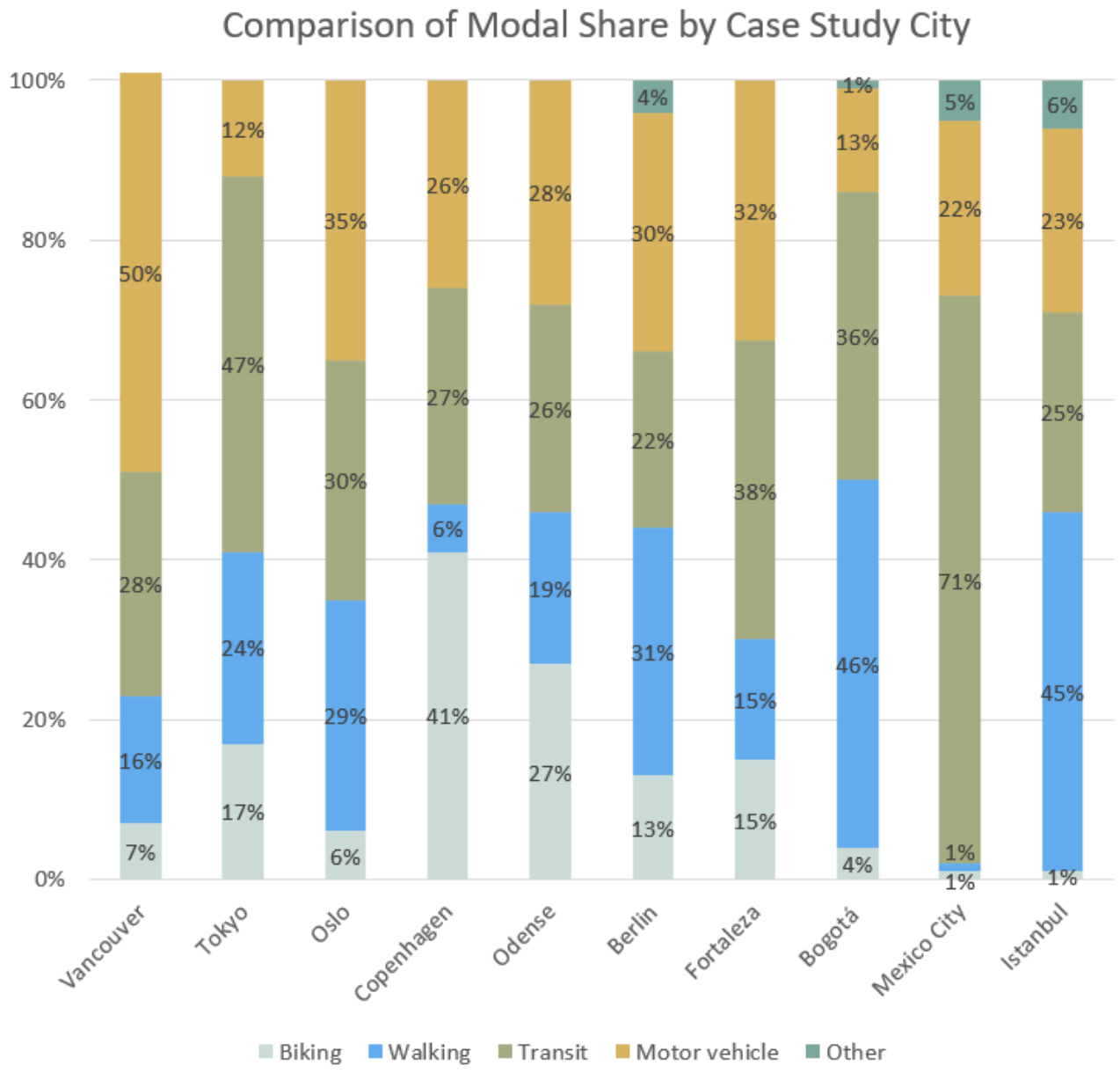


Figure 11: Comparison of Modal Share by Case Study City

[iii] Yokohama's modal share was not available.

4.1 Tokyo, Japan: Safe Streets for Children

Tokyo's modal share is distributed across public transport, walking, and bicycling, with a total of all 88% of trips taken by active transportation and transit. Tokyo offers free transportation for children aged 5 and under.[75] In 2019, Tokyo launched a trial of train car spaces on their Toei Oedo Line specifically designed to increase the appeal of travelling with young children.[76] These "Childcare Support Spaces" include accessible handrails that consider a child's limited reach and remind passengers that using public transit with young children is fun and encouraged. Both the interior and exterior of the train car are covered in bright colours and recognizable characters from "Thomas and Friends".

Figure 12: Childcare Support Stations on a train in Tokyo. Photo by Toei Transportation

Tokyo also boasts a high cycling mode share - 17% of all trips.[77] Several cycling schools in Tokyo teach families and children how to ride their bike in the city. The Suginami Children's Traffic Park, a controlled network of 'roads', stop signs, and traffic lights, offers a practice environment for children to test their skills and knowledge of riding in urban environments before riding in the city.[78] Renting a bike in the traffic parks is free for children. A variety of cycling tracks and child-friendly practice zones are available throughout the city and connected through active travel corridors.

Although streets in Tokyo typically do not have separate bike routes or specific cycling infrastructure, their bike commuting numbers remain high while bike injuries and deaths remain low. For reference, Amsterdam (generally seen as one of the top cycling cities in the world) saw 207 cycling fatalities from their 1,774,000-person population in 2021, compared to 359 cycling fatalities amongst Tokyo's 35,800,000-person population. [79] [80] After adjusting for population, Tokyo has 91.3% less cycling fatalities than Amsterdam.

Figure 13: Suginami Children's Traffic Park in Tokyo. Photo by Wikimedia User N1229

Tokyo's spatial structure may be a significant contributor to a safer riding environment for people on bicycles. A network of one-way streets, narrow alleys, restrictive speeding limits (40km/h on many major roads) facilitates a calm and connected environment for many people on bikes.[81] Tokyo residents are also legally allowed to ride on the sidewalks, creating an especially safe environment for children using bikes. Paid and free bicycle parking is ubiquitous throughout the city and often near train stations.[82] Due to the city's physical predisposition to calm, mixed-user street environments, the city has invested very little into separated bike infrastructure. Although Tokyo is not a leader in specialty

bike infrastructure, the city exemplifies how equitable street use by all users and low vehicle speed saves lives.

Figure 14: Children and adults cycling in Tokyo. Photo by Kosuke Miyata

4.2 Yokohama, Japan: Childcare at the Train Station

In 2010, the city of Yokohama, Japan had the longest waitlist for childcare in the country, consisting of 1,522 children waiting for a spot. Mayor Fumiko Hayashi set a goal to eliminate the waitlist within 3 years, which was successfully accomplished by building 144 additional facilities by 2013, and another 31 facilities by 2014, as well as doubling their annual budget on childcare costs.[83] The childcare locations were strategically selected through private partnerships and not-for-profit organizations to make them accessible and convenient for families: the most popular childcare centres are directly connected to train station and rapid transit stops, allowing caregivers to drop off their children seamlessly when using transit. This strategy specifically increases the appeal of using public transportation as a family by reducing traffic or parking-related friction and minimizing complexity when trip-chaining. The most recent Person Trip Survey from 2008 identified 40% of the population using public transit, which will only increase through Yokohama's consistent investment in high quality rail and bus networks (90% of the 3.7 million residents are within 15 minutes of the railway network).[84]

4.3 Oslo, Norway: A City Made for Play

Norway is a global leader in supportive and accessible childcare services, helping families work and maintain balance while raising their family. The robust childcare landscape is supported by fast, reliable, and extensive public transit service, along with high-quality pedestrian and cycling amenities.

Figure 15: A father and children playing in the family carriage. Photo by Vy.no

The Bergen line train connects the country's capital city Oslo with Bergen through a 7-hour journey. This train exceptionally caters to families with young children, offering a full playground, stroller parking, and floor-to-ceiling windows so caregivers can keep an eye on their kids while they enjoy the Norwegian scenery passing by. Each train has a "Family carriage" with a two-storey play area, along with two mascots- Bædi and Børdi- with whom children can interact through games and activities on the train's digital app.[85] Children also have access to books, films, and child-friendly menu items at the on-board café. The train even encourages bringing your own baby food and bottles, which the café will happily warm up, so that children can eat familiar food as they travel. Finally, changing tables and breast-feeding rooms complete the setup. The Family Carriage meets children where they are at, creating a developmentally appropriate space for learning and playing, rather than forcing children to suppress their curiosities (especially on long journeys!) and then frowning upon children's behaviour when they inevitably become irritated.

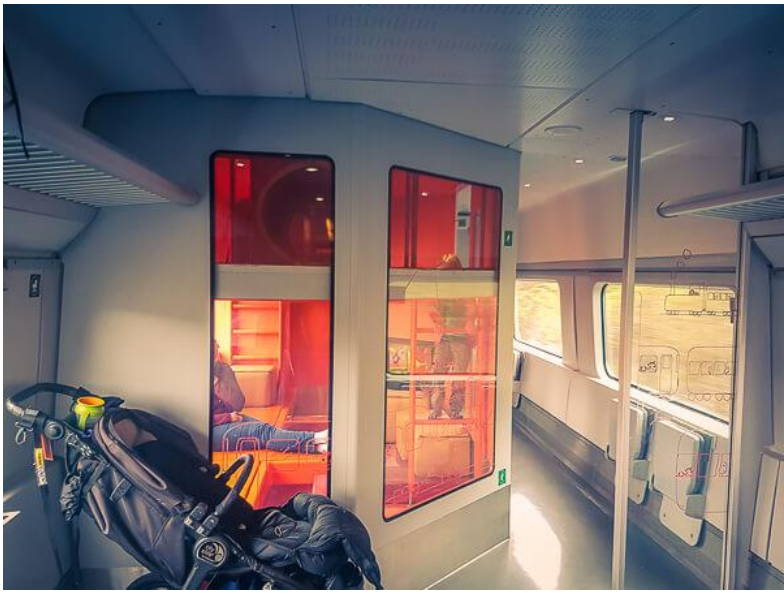


Figure 16: Family Carriage on the train between Oslo and Bergen. Photo by Maarje

Although the Bergen line is a long-distance rail journey, the principles of child-friendly design can absolutely be applied to local train and bus journeys to increase comfort and appeal for families travelling with young children.

Oslo has also leveraged technology to gather children's insights on the city through a smartphone app called "Secret Agent". The app gamifies safety; children are encouraged to report areas that feel unsafe, and the city consequently prioritizes improvements to those areas.[86] The intervention can be as simple as trimming bushes that reduce visibility at an intersection, or more complex, such as changing the design of a street to increase comfort and safety for children. Secret Agent is a unique solution to traffic safety that gives a voice to children, crowdsourcing their underutilized input to make the city more accessible.

Oslo's goal of making their downtown car-free led to major restrictions on vehicle parking in the city's centre. More than 700 parking spaces in Oslo's central district have become people-centred amenities, including bike lanes, parks, and street furniture.[87] These changes didn't take place overnight: the city launched several pilot projects in 2017 and 2018, gently expanding people's

imagination of what a street could look like. The designs are inherently child-friendly: fully pedestrianized streets and plazas are plentiful, complete with amenities like water fountains, benches, and playgrounds, to bring life and safety to the public realm. These investments wouldn't be complete without the lighting that facilitates play no matter the time or weather.

Figure 17: Bjørvika playground in downtown Olso. Photo by Visit Oslo

In 2019, Oslo proved that Vision Zero wasn't just their aspiration, but their reality: not a single life was lost in traffic-related accidents.[88] Oslo's success in eliminating traffic fatalities and drastically increasing active transportation was made possible by a strong vision that centred the city around people, community, and vibrant urban life. Pilot projects gently, but confidently, proved to Oslo's residents that streets can be safe, exciting places of curiosity, connection, and play.

4.4 Copenhagen, Denmark: Child-friendly Design Across the Board

Denmark is consistently touted as one of the best countries in the world to raise children, a ranking that is backed up by robust government support that positions childcare as an essential component of the economy. The government's support for families operates with a short and long-term lens: free public healthcare, generous maternity and paternity leave, reliable and highly subsidized childcare, quality schooling, and free university tuition. Caregivers can expect institutional support for their growing family from the child-planning phase all the way to that child's adulthood, reducing stress and creating more opportunities for families to focus on what matters to them.

Figure 18: Princess Mary of Denmark cycles with her children through Copenhagen in the winter. Photo by Press Association Images

A 2022 empirical study pointed to another critical contributor to Denmark's high quality of life: the transportation system. The study found that the quality of the public transit system is integrally linked to residents' quality of life (QOL), leading to higher QOL measures in urban centres with more public transport options.[89] Copenhagen's public transport system facilitates seamless travel for families: elevators are accessible at every metro station, children aged 0-11 travel free, and the train service is frequent and runs 24/7.[90] Many of the stations have been built or renovated in the past 20 years, leading

to stations that meet modern accessibility guidelines, benefitting caregivers along with people of all ages and abilities.

Copenhagen's bicycle infrastructure is world-renowned: 41% of all trips in the city are completed by bike, even higher than Amsterdam's 30% of trips by bike.[91] Children can safely learn how to ride a bicycle on their own due to connected, quality bicycle infrastructure that separates people on bikes from vehicular traffic. 75% of the already high cycling modal share continue to use a bike as their primary mode of transportation throughout the cold, dark Danish winters.[92] The street designs elevate two key ideas: simplicity and function. On local streets where bicycles share the road with vehicles, drivers aren't expected to simply slow down to the reduced speed limit, but they are forced to slow down due to narrow lane widths, textured street paving, tight corners, and planter boxes in and along the street. To physically communicate the hierarchy of people over cars on the street, crosswalks and bicycle lanes remain at the same physical grade across many intersections, while vehicles are a treated as a "guest" as they mount and then descend the elevated crosswalk or bike lane. At busy intersections, bicycle signal lights often give cyclists a few seconds of a head start before vehicles as they cross the street, and right-turn lanes feature a stop line for bicycles that is fully five metres ahead of vehicles in order to keep bicycles out of blind spots.

The impressive level of bicycle ridership leads to a high storage demand, but the Danes have solutions for that, too. Although bicycle parking is still recognized as a growing need, solutions like cargo-bike friendly racks and secure public bicycle parking lots reduce storage barriers. The Maersk Tower at the University of Copenhagen offers 950 covered, dedicated bicycle spots, and the available lockers and showers make cycling possible in all weather and terrain.[93] Not only do these designs help families confidently cycle from home to childcare, but they make streets safe for all users, encouraging culture collectively towards active travel.

Figure 19: Copenhagen's Fælledparken Traffic Playground. Photo by WeLoveCycling

Similar to Tokyo, Copenhagen also has 10 car-free Bicycle Playgrounds, where children can learn the rules of the road on a controlled course with traffic signals and street markings.[94]

Copenhagen's robust support for public transit, biking, and walking is supported by an excellent public realm that brings fun and excitement into the journey. An official municipal policy requires all citizens to be within a 15-minute walk of a green space or beach.[95] In addition to the plentiful parks throughout the city that satisfy this policy, families benefit from 125 public playgrounds that invoke exciting and creative themes, like animals, the ocean, or treehouses. Public sport courts encourage both spontaneous and organized play, and features like in-ground trampolines along Havnegade, the street following one of the city's central canals, bring playfulness

into daily family outings. Copenhagen is a city designed for play, and residents of all ages are happier for it; when children's development is incorporated into urban design, everybody wins.

Danes realize that walking or biking with a child is a significantly improved experience when there are things to look at, talk about, and explore along the way. Caregivers enjoy seeing their child engage their curiosity and creativity as they move through the city, benefitting both parties while strengthening their relationship with one another at the same time. After experiencing active travel habits from a young age, children can autonomously move through the city by foot, transit, or bike as they grow, broadening their freedom and opportunities as they age while lessening the chaperoning burden on caregivers (as opposed to car-centric spatial organizations that limit children's mobility until they receive their driver's permit). When children and caregivers aren't limited by the other's mobility and destinations, they both have the freedom to pursue work, school, and play.

4.5 Odense, Denmark: When Cycle Paths Rival Streets

Odense, Denmark has so successfully prioritized children's safety in the city that 80% of all children's trips are completed by active modes.[96] Beginning at age 5, children are instructed how to ride bikes around the playground, and many children travel independently to kindergarten by bike, skateboard, or on foot. The Cycle Happy School program partners with schools to teach cycling safety when riding on real streets, although many streets are already child-friendly by design. The city of 200,000 people has 545 kilometres of separated cycle paths; for reference, the city has 1,000 kilometers of streets accessible by car. Of these cycle paths, major intersections are not considered part of a safe network, even if separated pathways are available on either side. Odense's standard of safety is whether a young child could navigate that route by themselves; consequently, most major intersections near schools feature a tunnel or bridge that completely removes the risk of any bicycle or pedestrian interaction with vehicle traffic. Connie Juel Claussen, a traffic planner for the city, explains, "*We don't regard an intersection with a light as safe for children*".[96]

Figure 20: A tunnel beneath a major road leading to the Hunderupskolen public school in Odense. Photo by Google Maps

Further, cars are not welcome on campus at several schools around Odense, as the school restricts the mixing of vehicles with children biking or walking on their way to school due to safety concerns.[97]

The city also has a program called CycleScore that, similar to Oslo's Secret Agent app, gamifies children's experience of active travel in the city. When children ride their bike past one of CycleScore's electronic checkpoints, they gain tickets that can be used to win bicycle-related prizes.

Since the introduction of CycleScore, bike trips in the city have increased by 28%, with 7% of those children changing their habits from being a vehicle passenger to cycling.[96]

4.6 Berlin, Germany: Cargo Bikes without Barriers

Cargo bikes - adapted bicycles with increased carrying capacity - are an active travel solution that can help families travel with large loads and children. Cargo bikes are especially popular in many European cities where their relatively small size can navigate cities efficiently. Two barriers to using a cargo bike, however, are the upfront cost of purchase and the considerable storage requirements. Several innovative organizations in Berlin have introduced a solution: shared cargo bikes. The shared bikes don't require any storage, as they are publicly available and stored by the organization, and users only pay for the time they ride, which is affordable or completely free (fLotte is a government-funded program that offers free shared cargo bikes).[98] The cargo bike sharing programs have successfully created a low-barrier opportunity for families to experience travelling by bike and

Figure 21: A family travels by shared cargo bike in Berlin. Photo by Cargoroo

reap its benefits: they are simple to navigate, do not require a license, are zero-emissions, and are sustainably powered by pedalling. Many of the shared cargo bikes even have small seatbelts, specifically catering to families travelling with young children.

There is a cultural expectation that accompanies the shared cargo bike programs in Berlin: users are expected to treat the cargo bikes as if they were their own and return the bikes at the appropriate time. The programs aren't regulated in the same standardized way as large city-bike programs; users carry some responsibility for the program running smoothly. A cultural expectation in Germany is to be rule-abiding, which enables shared cargo bike programs.

4.7 Fortaleza, Brazil: Children's Bike Share as an Investment in the Future

Shared cargo bike programs close a gap in the general shared bike program model: caregivers travelling with children. Additionally, smaller bikes outfitted with training wheels or attachments to larger bikes can also affordably serve families. Fortaleza, Brazil rolled out the Mini Bicicletar program in 2017: 50 children's bikes with retractable training wheels were added to five of the bike share stations[99]. During the first 6 months of the program, the children's bikes were used 6,531 times. The training wheels can easily be retracted for children that have more experience on a bike, expanding the ages of children that can use the bikes. One of the stations was placed in a low-income neighbourhood and the bikes are free for residents with a transit card. Gustavo Pinheiro, who helped roll out the program as staff for the city's Cycling Department says,

"Children are one of the most vulnerable road users, so it's important to make them safer by ***giving them visibility and encouraging a peaceful coexistence in traffic****. In addition, the children can be considered a* ***hope for a change in behavior in the future.*** *They're going to be future young people and adults who will better respect vulnerable cyclists, because they had the chance to be a cyclist and experience the city by bike as kids."*[iv]

Figure 23: A child using a Mini Bicicletar shared bike in Fortaleza. Photo by Alexandre Gauquelin

The city additionally built 200 kilometres of cycling paths since 2012, increasing the bike network by 503% between 2012 and 2022.[100] In 2018, the city introduced a free bicycle insurance policy, covering injuries, hospitalizations, and fatalities, further easing anxieties and making cycling a cost-

[iv] Emphasis added by author.

effective option for families.[101] Between 2014 and 2022, Fortaleza has managed to reduce the number of traffic deaths by 50%.[102]

A similar child-friendly bike share program was launched in Bogotá, Columbia in 2022.[103] When cities invest in children's mobility, they invest in a future of conscious citizens who are mobilized to reach their potential and transform their community.

4.8 Bogotá, Columbia: Tactical Urbanism for Child-first Streets

Former Mayor Enrique Peñalosa of Bogotá said that "*children are a kind of indicator species; if we can build a successful city for children, we will have a successful city for everyone*". This philosophy is embedded in Bogotá's approach to child-friendly cities and transportation. With an 86% active transportation mode share, Bogotá's residents often to travel by foot or on public transit.[104] Approximately 70% of Columbian of children travel to school using active modes, although these high numbers do not necessarily indicate ubiquitous safety across the city, but the high cost of car ownership and the comparative affordability of active modes.[105]

The city has taken a context-driven approach to child-friendly design and traffic safety: Bogotá is focussed on affordably improving the experience for citizens already using active modes, recognizing that this is the most accessible way to travel. Low-cost interventions through tactical urbanism and child safety programming support this mission, making streets safer for families and children on the go.

Figure 24: Children in Bogotá cycling in a street closed to vehicle traffic. Photo by Secretaria Distrital de Integracion Social de Bogota

Bogotá was the first city in South America to adopt Vision Zero, aiming to eliminate youth traffic-related serious injuries and fatalities.[106] The Kids First program has supported this mission by offering walking school bus programs (ciempiés) and biking school bus programs to improve safety for over 9,000 children from 100 schools between 2019 and 2020.[106] In 2017, Bogotá introduced Children's Priority Zones in partnership with Urban 95, a Bernard van Leer Foundation initiative.[107] Urban 95's mission centres around the question *"If you could experience the city from the elevation of 95cm – the height of a 3-year old – what would you change?"* The program integrates early childhood development into city designing, planning, and managing. Following a neighbourhood walk with the community, program leaders identified danger areas and used street paint and planters to physically mark a safe route between typical child locations, like daycare, kindergarten, schools, and parks.[108] The first Children's Priority Zone was in a neighbourhood with a high number of disadvantaged families and limited green space, turning 7 car spaces into a playground and safe route for 130 children. The combination of

physical street closures, traffic calming around schools, and children's mobility programming has had tangible impacts on Bogotá's efforts towards Vision Zero: in 2020, for every 10 kilometres of road with speed reductions and traffic management, 37 lives were saved.[109] Bogotá's Secretary of Mobility predicts that traffic calming measures across the city will save 268 lives between 2020-2023, accomplished primarily by reducing speed and separating vehicles from people, especially in areas with children.

Bogotá's displays of child-first design are practical and ingrained into the city's history. Since 1974, the city has run the "Ciclovía", a city-wide street closure to cars on 121 kilometres of roads on public holidays and weekends.[110] People are encouraging on a weekly basis to enjoy the streets by foot or on wheels, confirming the belief that streets are for everyone. The Ciclovía is a low-cost initiative that powerfully elevates people to the top of the street hierarchy. Bogotá proves that child-first design doesn't need to be flashy or expensive: a few cones, signs, and paint on the roads are all it takes to save lives and bring joy to the community.

Figure 25: Ciclovia in Bogotá. Photo by Felipe Restrepo Acosta

4.9 Mexico City and Istanbul: Empowering Mothers through Bike Education

Two organizations in Mexico City and Istanbul recognize the value of mobilizing women in order to mobilize families, leading to programs specifically designed to teach mothers to bike with children and goods. Both programs aimed to increase women's autonomy in low-income neighbourhoods and reduce time-poverty by offering bicycle training and equipment.

Figure 26: Women teaching women how to cycle with children and goods through the Wings of Freedom program in Mexico City. Photo by BYCS

Bicitekas, an NGO from Mexico City, created the Wings of Freedom program, which teaches low-income mothers how to cycle with goods and young children.[111] Bicycles with child-carrying capacity are given to each mother, and the mothers learn how to cycle for daily trips, such as childcare or grocery shopping, through a series of workshops. After a few months, the women reported individual transport savings of 50-70 pesos per day, as well as weight loss, an increased sense of community through cycling, higher energy, and happiness.[111] Having access to adequate equipment (i.e. a bike fit to transport children and loads) was an important component of the program, as well as building

confidence and a community of mothers on bicycles who could motivate and encourage one another.

Another organization in Istanbul, Turkey called Chain Breaking Women developed a program for mothers that trained them how to ride and repair a bike, transport children and goods, and even design bicycle tours through their city.[111] Women were assigned "missions" that helped build their cycling skills and have fun completing daily trips. After the 2-month program, the mothers reported feeling empowering and enjoying the time with their children on their rides. They also received a bicycle, lights, a helmet, and a bike basket for transporting goods.

5 Survey Findings

An online survey was distributed by childcare operators to the parents and caregivers of children enrolled in Vancouver childcare. The survey explored the parents' travel behaviour and the influences behind their travel patterns through 10 questions, gaining quantitative insight on travel modes and motivators of 34 Vancouver parents.

How Are Caregivers Travelling to Childcare?

The majority of survey respondants travel to childcare by bike (44%), however this sample is not representative of the average mode breakdown of childcare travel across Vancouver (See *Figure 11* for Vancouver's modal share). The caregivers with an existing interest in transportation would have been more likely to complete the survey, and caregivers who choose active modes may be more likely to have a postive, emotional connection to that mode than people who primarily drive (*Figure 29*). Considering the relatively small sample size and timeline for data collection, the survey did not aim to accurately portray Vancouver's care trip modal share, but rather to explore which factors contribute to a caregiver's mode choice and how that understanding can support the city in encouraging more active modes.

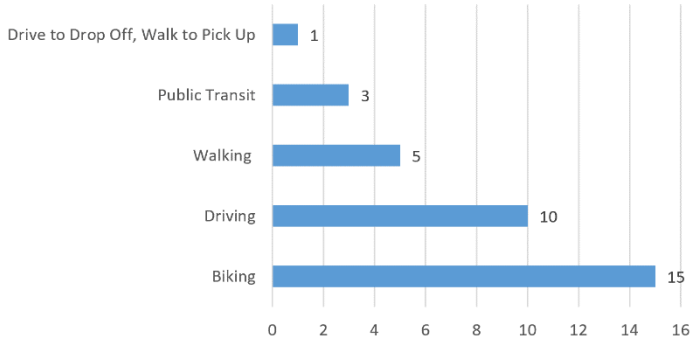


Figure 27: Survey respondent modal share breakdown

How often do Caregiver's Trip-Chain?

Most parents (73%) regularly combine at least one other destination with their journey to childcare. These findings were consistent across all modes of transportation. An additional 15% will sometimes combine their trip to childcare with other destinations, depending on a variety of factors (weather, schedule, nature of destinations, etc.). 12% of survey respondents cited childcare as their only destination.

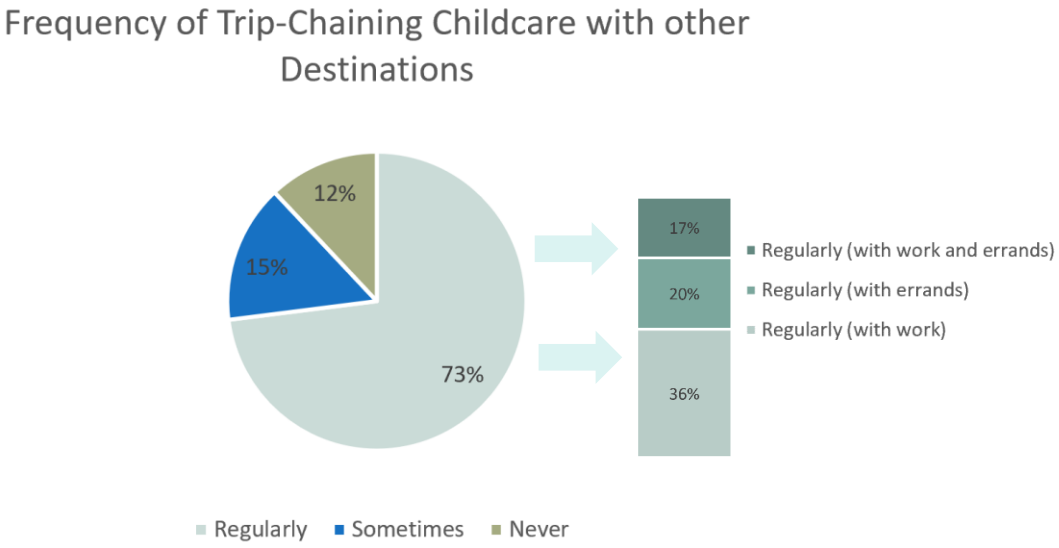


Figure 28: Frequency of Trip-Chaining Childcare with other Destinations

What Factors Influence Caregiver's Modal Choice?

Survey respondents had the option of choosing multiple reasons that contributed to why they chose that mode with an option for open-ended answers. Four key factors influenced why people chose their travel mode:

- Convenience
- Ease of combining with other trips (trip-chaining)
- Enjoyment
- Affordability

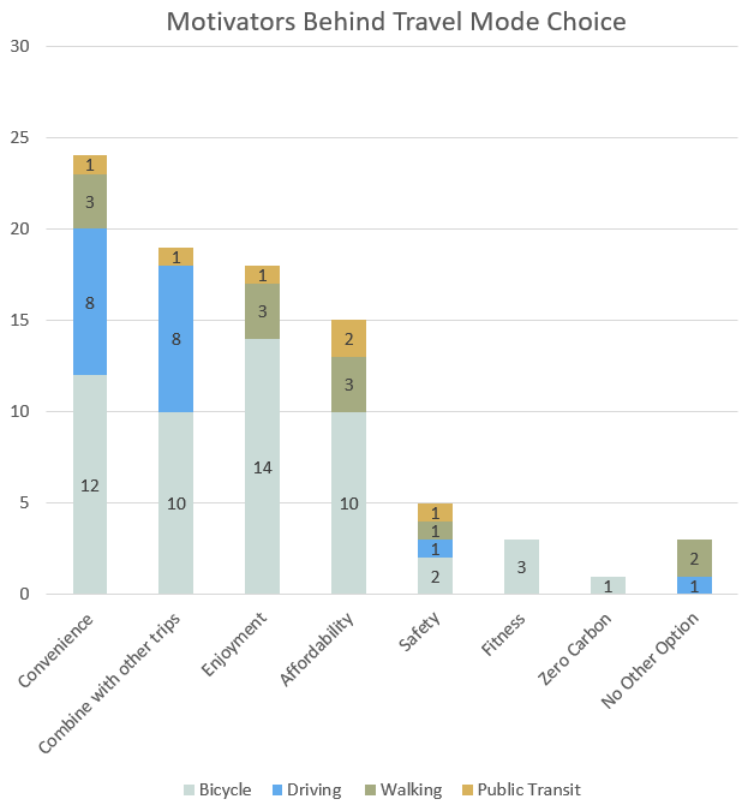


Figure 29: Motivators Behind Travel Mode Choice

Convenience: The dominance of convenience aligns with the literature and was mentioned across every mode. Beyond convenience, there was no other motivator mentioned across all modes. 80% of caregivers who drove and 80% of caregivers who rode a bicycle listed convenience as a primary motivator.

Ease of combining with other trips (trip-chaining): How easy the mode allowed caregivers to trip-chain (combining childcare journey with work, errands, or other destinations) was mentioned by all modes except walkers. 67% of cyclists and 80% of drivers listed this as a significant motivator. 1 public transit user listed ease of trip-chaining and 0% of walkers mentioned this factor.

Enjoyment: Enjoyment was mentioned exclusively by caregivers who rode a bicycle, used public transit, or walked; 0% of respondent who drove listed enjoyment as a motivator. Enjoyment was the most significant motivator for caregivers who rode a bicycle, at 93% of respondents. 60% of caregivers who walked mentioned enjoyment as a motivator, and 1 out of 2 public transit users listed enjoyment as a motivator.

Affordability: Similar to enjoyment, affordability was exclusively mentioned by caregivers who used active modes. 67% of caregivers who cycled were motivated by affordability, 2 out of 2 public transit users considered affordability a significant motivator, and 60% of walkers mentioned this factor.

Convenience, Trip-chaining, Enjoyment, and Affordability are the strongest motivators behind travel behaviour, although **enjoyment and affordability are only mentioned by active travellers**.

How Does Distance Impact Caregiver's Mode Choice?

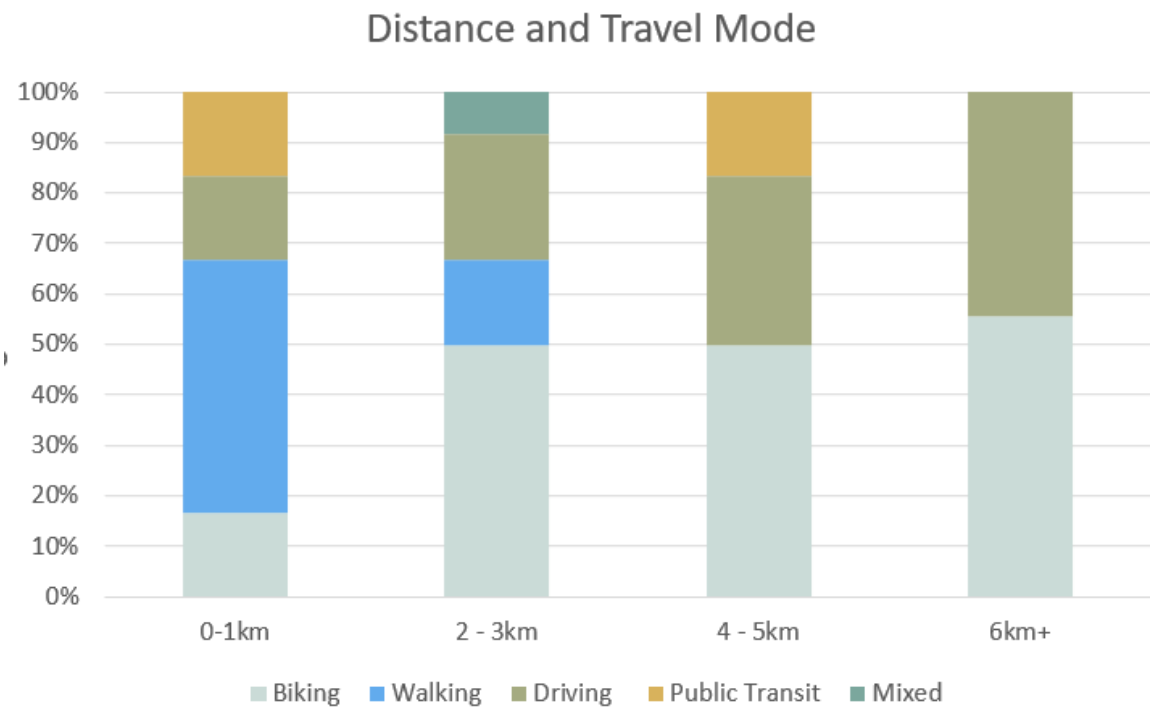


Figure 30: Distance and Travel Mode

Biking has a positive relationship with distance up to a threshold of 15 kilometers in the survey, although biking was most popular between distances of 2 to 6 kilometers. Walking has a negative relationship with distance: there is a significant drop after 1 kilometer and caregivers would not walk with a child to childcare if the distance exceeds 3 kilometers. Driving has a positive relationship with distance, although the impact of distance on driving is less noticeable than on walking and cycling. Public transit was only noted twice as a primary travel mode, so the correlation between distance is inconclusive. The average distance travelled was 4 kilometers across all responses.

How Does the Built Environment Impact Caregiver's Mode Choice?

The questions considering the built environment in the survey included sidewalks, bike lanes, transit stops, groceries and community amenities near the caregiver's home. 64% of caregivers lived within a short walk or roll of all their daily needs; 33% of caregivers lived within a short walk or roll of some of their daily needs; and 3% of caregivers did not live within a short walk or roll of any daily needs.

30% of sidewalks near childcare facilities were rated as excellent and 70% were rated as good with some issues. Transit stops received a similar ranking as the sidewalks, with less responses due to low transit ridership across survey respondents. Bike lanes, however, had a mixed response. 31% of bike lanes near childcare facilities were rated as excellent, 41% were rated as good with some issues, and 28% were rated as poor. Interestingly, 5 out of 9 responses for "excellent" bike lanes were submitted by caregivers who drove (50% of total drivers), with only 3 "excellent" responses from caregivers who biked (20% of total bikers). Most caregivers who cycled ranked the bike lanes as either good with

issues (40%) or poor (27%). This may demonstrate that caregivers who ride a bike to childcare perceive are more sensitive to safety and have higher standards for an excellent bike lane. This finding also confirms that the caregivers who cycle are not motivated to bike because of safety, but rather by other factors like convenience and enjoyment.

2 of 10 caregivers who drove expressed that they would choose to bike instead of drive if there was a safe route available. Safety along bike routes and at intersections was a theme from caregivers across all modes, with all mentions of safety being related to proximity to vehicular traffic and vehicle speed. Intersections or streets without separation from cars were an issue for many parents who travelled by active modes, and they were consistently seeking safe, separated routes from traffic. Although caregivers rarely self-identified safety as a motivator for choosing their mode, safety was top of mind across survey responses.

Almost all survey respondents mentioned they have some form of bike/stroller parking at home, and most had storage at work, but elaborated in the comment section that the *quality* of the storage was the issue. Bike/stroller parking often meant a separate space in a caregiver's home, as many "bike storage" rooms at home were overcrowded or weren't designed to fit cargo bikes or adapted bikes with child-carrying capacity.

6 Interview Findings

Seven caregivers with children enrolled in Vancouver childcare volunteered to participate in a 25-minute interview about their travel behaviour. The interviews were conducted online by video or phone call and offer qualitative insight into what factors influence the travel patterns of Vancouver families.

Travel Mode Split

The travel modes to childcare among the 7 interviewees were evenly split: 2 caregivers biked, 2 caregivers drove, 2 caregivers walked, and 1 caregiver used public transit to arrive at childcare with their child. Although I will be referring to the caregivers by their primary modes, all caregivers indicated that their mode was subject to change on certain days, which I will explore. All caregivers travelled to childcare in the Kitsilano neighbourhood of Vancouver, an area with accessible roads and sidewalks, quality cycling infrastructure, and rapid transit (the 99-B line).

Car Ownership and Life Stage Changes

5 of 7 caregivers owned a vehicle, although only 2 caregivers used the vehicle as a part of their daily routine, with the remaining 3 caregivers who owned a car only using the vehicle for travel or family visits. The 3 caregivers who owned a car but did not regularly drive it to childcare chose an alternative mode because it was more convenient for their family (either they lived a close distance and could easily walk, or it was convenient for the partner to drive to work and the other parent to use an active mode). Both caregivers who travelled to childcare by bike did not own a vehicle and had sold their vehicle following the birth of their first child. Selling the family vehicle after their child's birth is opposite to the behaviour of caregivers who owned a car, who all either acquired a car or upgraded their car upon the birth of their first child.

An interesting divide emerged between the caregivers who biked and did not own a car and those who did own a car: for car-owners, vehicles were practical and, although expensive, they provided freedom and security in knowing they could easily get around for vacations, emergencies, or in poor weather. On the other hand, the caregivers who biked found that they didn't tend to need a vehicle following the birth of their first child and it eliminated a large cost, making the costs associated with parenthood more affordable. Both caregivers who biked participated in car-share programs, although they did not use them consistently. Travelling by bike seemed to have an emotional component for caregivers, as biking was associated with an opportunity to connect with their child, enjoy commuting time, and as part of their identity. Walking or taking transit did not evoke the same level of emotional connection, although the caregivers who used these modes reported enjoyment during the journey.

Having **experience using public transit, walking, and biking** before having children seemed to reduce barriers and increase the appeal of active modes with children.

6 out of 7 caregivers primarily used active transportation before having children. 1 caregiver primarily drove before having children

and continues to drive to work and childcare. Having experience using public transit, walking, and biking before having children seemed to reduce barriers and increase the appeal of active modes with children.

Around the time of the child's birth and for the first year, all interviewees used either public transportation or a car as their primary travel mode with their child. Within families with one car between two partners, the caregiver preferred to ride in the car (either as a driver or passenger) if it was available. Caregivers preferred to travel with infants inside a closed, controlled environment to avoid inclement weather and because it felt more convenient and reliable.

Safety

Although several caregivers mentioned safety, it was never the primary driver for why they chose their mode. All caregivers viewed the speed of and proximity to vehicles as the primary source of danger to children when on the street or sidewalk, even the caregivers who used a vehicle as their main mode of transport. Intersections felt the most unsafe for caregivers, who would intentionally alter their route to avoid street environments with fast-moving vehicles. Flashing lights (RRFB – Rectangular Rapid Flashing Beacon) made crosswalks feel safer, but any kind of street crossing was a source of concern.

Intersections felt the most unsafe for caregivers, who would intentionally alter their route to avoid street environments with fast-moving vehicles.

The term "safety" seemed to be synonymous with physical separation from vehicles. Safety was never mentioned in terms of how a sidewalk or bike lane felt outside of its potential or real interactions with vehicles. One caregiver who drove said they felt driving was a safer alternative to active travel because it made them less vulnerable to other vehicles who might make a mistake.

Paths that were separated from vehicle traffic were considered inherently safe and idealized by all caregivers as a perfect travel environment with children. The "Arbutus Walk", a fully pedestrianized street along 11th Ave between Connaught Park and Arbutus Street, was mentioned several times by caregivers as a space that "made a world of difference" when travelling with children, as kids could move at their own pace and explore without traffic-induced stress on the caregiver.

The term "safety" seemed to be synonymous with **physical separation from vehicles.**

Convenience and Flexibility: The Impact of Working From Home

Convenience was the primary motivator for travel behaviour, similar to survey respondents. Participants appreciated modes of transportation that were easy, quick, and could accommodate their unique schedules. When active travel options were available and convenient, caregivers would choose to walk, cycle, or take transit (such as to the grocery store down the street or the nearby

park), but the caregiver's work schedule had the highest impact on travel mode behaviour within the umbrella of convenience. Caregivers that worked outside their neighbourhood (or city) shared that they did not have the option of using active modes or public transit, as the hour when the childcare facility opened was too close to when they had to begin work. Therefore, the lack of flexibility in work start-times and childcare start-times left them with a tight timeline that was most suitable for vehicle travel. All caregivers who used active modes for childcare travel mentioned some flexibility in either their work schedule or their partner's work schedule. When caregivers could start their work later (to avoid schedule conflict with the childcare drop-off time) and/or work from home, they were much more likely to use active modes. Flexibility at work was a key component of convenience, and convenience was consistently the most important indicator behind travel behaviour across all survey and interview participants. The childcare centres mentioned in the interviews prioritized families that lived locally, further incentivizing active modes for caregivers living in close proximity who had flexibility in work start times and location.

Partner Support and Multimodal Routines

Each of the caregivers who participated in the interviews had a partner who shared caregiving responsibilities, often breaking up drop-off and pick-up roles each day. Sharing drop-off and pick-up duties gave parents the freedom to balance work and childcare responsibilities, increasing flexibility in their transportation routine. When parents have more time in the morning, the interviewees shared that dropping their child off became an opportunity for connection, conversation, and learning, rather than time-induced stress. Because of this, active modes were more appealing and possible when parents had support.

Sharing drop-off and pick-up duties gave parents more **balance** between work and childcare responsibilities, **increasing flexibility in their transportation routine**.

Since the operating hours of childcare facilities closely match the hours of a typical workday, interviewees shared that, regardless of travel mode, it would be very difficult to manage work and childcare responsibilities without the support of their partner. An interviewee wished that childcare hours should be lengthened to eliminate conflict between work hours, although they acknowledged that childcare was already difficult to find, and they would take whatever was available.

Bike and Stroller Storage at Childcare Facilities

A storage room for bikes and strollers was available at one of the childcare facilities attended by interviewees but not the second facility, which offers insight into how the difference impacted caregivers' routines. The facility with storage saw high demand; despite often being overcrowded, the amenity was deeply appreciated by caregivers. An interviewee who used the storage room explained that he often left his chariot bike attachment after drop-off so his partner could bike the children home after her workday. The storage room enabled parents to maintain flexibility in their schedules and maximize their workdays by sharing responsibility; without the storage room, the

parents would either need two chariots or one parent may be required to complete both pick-up and drop-off. The same appreciation was mentioned by caregivers who walked. By leaving the stroller at childcare, they could easily continue to their next destination on transit or on foot without lugging around a large stroller. Their partner could also easily pick up the child without acquiring the stroller from a separate location, minimizing friction and making active travel a convenient option.

Interviewees who walked and used transit with a stroller saw the stroller as a space of independence and safety for the child when in the public realm. Children were free to eat snacks, play with toys, and observe their surroundings while buckled into a controlled environment, which brought caregivers peace, particularly in crowded environments like a bus. Caregivers described the unpredictability of "bus etiquette" when using transit: when travelling with a stroller, children automatically had a seat, even if people were unwilling to give up their bus seat for the child (rush hour was particularly a struggle in this regard, as most interviewees worked 9-5 jobs and childcare facilities accommodate the same schedule). The stroller, therefore, was a symbol of safety and order, increasing the appeal of using public transit with a child.

The storage room enabled parents to **maintain flexibility** in their schedules and **maximize their workdays** by sharing responsibility.

Considering how common it is for caregivers to trip-chain (according to the survey, 73% of caregivers trip-chain as part of their regular childcare drop-off routine), bike and stroller storage is an important enabler of active travel routines. Travelling to destinations after childcare drop-off with an empty stroller or locking up a large chariot is cumbersome, inconvenient. Reducing the friction of using active travel modes to childcare is the most promising strategy for encouraging more caregivers to bike, walk, and take public transit.

Reducing the friction of using active travel modes to childcare **through bike/stroller storage** is a promising strategy for encouraging more caregivers to bike, walk, and take public transit.

Enjoying the Journey

When prompted, several interviewees shared feelings of enjoyment when travelling by active modes with their child, a sentiment that was missing from caregivers who drove. One caregiver enjoyed the walk with her child to childcare because it was a chance to "connect", be present, and "catch up on his day", especially on quiet, traffic-calmed streets. She found that driving didn't offer the same opportunity, as she would often talk with her partner in the car while her son sat in the backseat.

Feelings of enjoyment during the walk disappeared, however, when they walked near intersections, high-speed streets, or construction, which induced stress for the caregiver. Walking long distances (usually longer than 500 metres) was another stress-inducer for several interviewees, who described how children's unpredictable travel patterns and slow pace made it difficult to arrive at childcare in a timely manner. An interviewee who drove to childcare explained how walking and scootering around their neighbourhood in the evenings was a fun activity and chance to connect with their child, even if it wasn't a practical transportation mode for their family. Especially since there is limited space and no backyard in an apartment, local streets, gardens, plazas, and parks were an important learning environment for their child, as long as the traffic was completely separated and controlled.

An interviewee noticed that **biking sparked joy and curiosity** in her children as they travelled to childcare and school.

An interviewee described biking as "a way of life" and as her child's favourite mode, even in inclement weather. She noticed that biking sparked joy and curiosity in her children as they travelled to childcare and school. When her children travelled with their siblings or friends, she also noticed a social component of their commute, which increased the children's positive associations with the mode. Another interviewee who biked shared that being active and getting fresh air was particularly rewarding, especially since they were accomplishing a task (i.e. childcare drop-off) at the same time. He enjoyed hearing his children tell stories to each other and playing as he biked, elevating his satisfaction in his mode choice.

While driving to childcare, interviewees experienced their journey as practical and necessary, rather than an experience. Travelling between Point A and Point B was the singular goal when driving to childcare, and although the destination was still the main goal for active mode users, they recognized that enjoyment and relationship building were additional outcomes.

While driving to childcare, interviewees experienced their journey as **practical and necessary, rather than an experience**.

7 Best Practices

7.1 Make Active Travel the Most Convenient Option

The most powerful motivator for parents who drove to childcare was convenience and how easily they could combine childcare with other destinations. Amongst parents who are already using active modes to arrive at childcare, motivators broaden to include enjoyment, affordability, safety, fitness and more. If the City makes active modes the most convenient option, caregivers who are driving will be much more likely to switch to active modes. Several caregivers who drove expressed a desire to bike or walk; although they recognized the benefits of active travel, they felt their route was undesirable and would introduce complications (like purchasing child seats, bikes, locks, figuring out storage at work and childcare, etc.), ultimately settling for driving.

A few current factors contribute to *driving* being the most convenient option:

- Accessible/convenient car parking at home, childcare, work, and commercial areas
- Street designs that streamline vehicle movement
- The ability to easily keep car-seats and necessities secure in the vehicle
- Long distances between home, childcare, and work

When one or more of these factors are challenged to favour active mode convenience, caregivers are more likely to change their behaviour. For example, interviewees that worked downtown explained that they were always the one in their family to use active modes, even when their partner drove, since parking was so difficult to find/expensive at work and near shops. Two parents in the same family, despite similar beliefs, life situations, and finances, found that the convenience of using a certain mode would push them towards different travel behaviour.

Childcare facilities should also be available within a family's neighbourhood, making active travel the most convenient option. Distance is key determinant of travel modes – as the distance increases, families will opt to drive for convenience and control (distance is especially important in wet climates, where rain significantly impacts travel patterns). When families can conveniently access childcare within a short walk or roll, they have more options that complement their complex trip-chains and are more likely to choose active modes. Another way to make active modes the most convenient is by placing them along rapid transit and cycling routes. Yokohama, Japan saw an opportunity to make public transit the most convenient option by building childcare facilities at train stations, making childcare drop-off/pick-up and trip-chaining easiest by train.

When childcare facilities offer secure and suitable storage for bicycles and strollers, active modes become more convenient for caregivers, especially when two parents can share drop-off/pick-up responsibilities. Both the parking issue and the storage issue are resolved, as parents can leave helmets, rain gear, and necessities in a bike carriage or connected to their bike when secure storage is available. It was common amongst interviewees to share pick-up/drop-off responsibilities: the childcare facilities that offered storage made it easy and frictionless for parents to leave a stroller or bike attachment for their partner to use at the end of the day.

Streets that prioritize children and vulnerable travellers are also more convenient for families. Unsafe streets pose a hazard for active travellers, especially young children who may be walking or biking alongside a parent and have less awareness of their surroundings. Parents explained convenience

during the interviews as the reduction of complexity. When parents are constantly scanning their environment for danger and having to grip their child's hand, they are not reducing complexity, they are inducing stress. Not every street needs to be completely traffic calmed: having options, like the pedestrianized Arbutus Walk in Kitsilano, gives parents the comfort of knowing a safe route is always available, even if it isn't the most direct.

Recognizing what doesn't motivate caregivers is just as important as knowing what does. We've learned that while safety is important, safety alone won't get more caregivers out of their cars. Neither will fitness nor reducing carbon emissions. When encouraging the switch to active modes, convenience is king.

Table 1: How Streets and Childcare Facilities Can Make Travel Convenient or Inconvenient

	Caregivers Driving a Car		**Caregivers Using Active Modes**	
	Convenient	**Inconvenient**	**Convenient**	**Inconvenient**
Parking & Storage	Car parking is near the childcare facility's entrance, easy to navigate, free, and reliably available. Parents leave car seats, snacks, and toys in the car for convenience.	Car parking is not near the entrance and may require walking. Parking may cost money, have less available stalls, and be used by other businesses.	Bike and Stroller Storage is spacious, secure, and easy to navigate through with large bikes and strollers. Caregivers can leave helmets, rain gear, and paraphernalia attached to their bike/stroller or on designated racks/shelves.	Bike and Stroller Storage is not available, requiring caregivers to travel to work with a bike carriage or a stroller. Caregivers are unsure where to leave helmets, rain gear, and paraphernalia, so they often are misplaced.
Distance	The childcare facility is a 10-20 minute drive that is more easily travelled by car, which eliminates the need for bus transfers or long biking journeys. Weather does not impact travel.	The time it takes to buckle the child into the car seat, pack the bags in the car, drive the car to childcare, and find parking is longer than the 2-3 minute drive. The parent would rather walk since it reduces time and complexity of dropping the child off.	Childcare is within 1 kilometers for parents who walk, or within 5 kilometers for parents who bike. Active modes are quick and spending 10-20 minutes outside is enjoyable, even in cloudy or sprinkling weather. Public transit is efficient and reliable.	Childcare is further than 5 kilometers. Parents must schedule their day around the long trip and may need to shower because they are sweaty, which adds to the overall time. Parents are significantly impacted by any rain or cold weather.
Street Design	Streets are designed for efficient vehicle movement, with wide lanes, fast speed limits and direct routes that travel throughout the city. Stopping and	Streets are narrow and vehicles are often subjected to traffic calming measures, which reduce speed. Posted speed limits are 30 km/h or less on streets where children	Bike lanes are completely separated from vehicle traffic. Traffic calming measures ensure that any vehicles near active travellers are slow and do not cross paths. Car-free routes are available. Major intersections	Bike lanes are painted or not present on important routes. Vehicles travel in close proximity to active travellers, with limited/no buffer. Curb cuts are not present on all sidewalks or

	slowing down are minimized.	travel. Vehicles are unable to access certain streets near the childcare facility.	are redesigned to prioritize separation. Curb cuts are available along all sidewalks. Lights flash at crosswalks. Routes are well lit and prioritized for seasonal maintenance.	are poorly designed. Cyclists must roll onto the sidewalk to press the crosswalk button. Streets are poorly lit and not reliably cleared from snow/ice in winter.

7.2 Embed Child-friendly Design in the City

Child-friendly design in the city makes streets more appealing, safe, and convenient for families, leading to higher a higher share of active travel journeys. Child-friendly design can be embedded into public transit systems. For example, Tokyo and Oslo both offer separate, child-friendly spaces on trains: these spaces support families and validate transit as a friendly space for children. Yokohama recognized the prevalence of trip-chaining amongst families and located childcare facilities within train stations to maximize convenience. Yokohama shows that planning land-use and transit systems for families just makes sense, helping boost the economy, reduce traffic congestion, and minimize friction for working families.

Oslo and Copenhagen apply child-first planning principles at the street level. Both cities prioritize playfulness through placemaking: Oslo's commitment to transform 700 downtown parking spaces to play areas, benches, and plazas are proof. The Literature Review explored how streets designed to highlight enjoyment and curiosity were much more attractive for families, as they created opportunities for the child to explore and engage with their environment, ultimately promoting psychological and emotional wellbeing in children. Interviewees and the Literature Review confirmed that families are particularly sensitive to their environment. Pleasant, safe streets supported the child's development and made biking and walking more attractive for families. The journey to childcare was more than transportation, but an opportunity for children to learn and grow.

Safety and separation from traffic are core principles within child-friendly planning. Odense takes safety seriously: the city has built bridges or tunnels that separate vehicles from active modes at all major intersections where children travel. Traffic-related injuries are the leading cause of death amongst youth around the world and are fortunately completely preventable through intentional street design that separates children from danger.

Finally, Berlin and Fortaleza specifically include families and children in their bike-share models, making travel with children simple, low-cost, and fun. Cycling with children is an efficient way for families to navigate the city and travel to childcare, but the initial investment of child-specific seats and the storage requirements for larger bikes are significant barriers. Bike share systems are a powerful tool to help people efficiently get around a city at a low cost: including families and their unique needs in the bike share model promotes equity, accessibility, and opens the door for first-time cycling caregivers and long-time cycling caregivers alike.

The built environment is a powerful tool to increase families' mobility in the city. Simple interventions that are imagined through the lens of a child and caregiver can transform a city and make active modes the most convenient, appealing option.

Table 2: Child-friendly Design Interventions and Intended Outcomes

City Name	Child-Friendly Design Intervention	Intended Outcome
Tokyo, Japan	Specialized train cars have child-friendly features and branding	Public transit is more suitable to families
Oslo, Norway	700 downtown parking spaces were reclaimed as car-free pedestrian zones	The city is safer and more accessible for children and caregivers
Yokohama, Japan	Childcare facilities are connected to train stations	Trip-chain by transit is more convenient for caregivers travelling to childcare
Copenhagen, Denmark	The City built 125 public playgrounds with creative, unique themes	Children are encouraged to spend time outdoors, play, and engage with their city
Odense, Denmark	Major intersections offer bridges or tunnels for active travellers to eliminate conflict with vehicles	Active modes are safer and more suitable to travelling with children
Fortaleza, Brazil	Child-sized bikes are included in bike share system	Cycling is affordable, accessible option for families with young children
Berlin, Germany	Cargo bike-share system	Cycling is an affordable, accessible option for families with children (especially with school bags, diaper bags, and other baggage)

7.3 Introduce Active Travel at a Young Age

The most effective way to get more parents using active modes with their children is by introducing active travel to children from a young age. Children who are familiar with biking, walking, or public transit are more likely to maintain these habits throughout life transitions, including the transition to adulthood and then the transition to parenthood.

An effective way to introduce active modes is through education that teaches children skills and the rules of the road. Both Tokyo and Copenhagen have dedicated Children's Traffic Parks, which are closed to vehicle traffic and mimic real streets to help children familiarize themselves with traffic rules. Cycling proficiency lessons and education for school-age children are offered by many non-profits in Canada and part of the mandatory curriculum in several European countries (such as the Netherlands and England). The City of Vancouver currently funds universal cycling education for all Grade 6 and Grade 7 students, and it could be potentially expanded to include younger children, including those ages 0-5 attending childcare.

Active travel is also an effective tool for reducing child obesity and helping children set healthy routines for long-term physical and psychological wellness.

Introducing active travel to children cannot exist in a silo; when early education is paired with safe streets, children can practice the skills they learn daily and develop life-long active travel routines.

7.4 Mobilize Women to Mobilize Families

Prioritizing transportation justice means that relevant strategies, policies, and investments include and advocate for women and transportation disadvantaged populations. Women are more likely o complete care journeys, making women a critical demographic to mobilize as the City seeks to increase active travel to childcare. When women are given the knowledge, tools, and confidence to use active modes, their entire families are more likely to incorporate walking, cycling, and public transit into their daily routines, including trips to childcare. Further, the impact of race and income alter the experience of womanhood and parenthood, necessitating an equity framework when undertaking this work. When transportation access and benefits are equitably distributed across the city, populations that are more vulnerable to mobility challenges are elevated and transformed. Women and marginalized groups can be mobilized in a variety of ways that are outlined in this report, specifically:

1. Active travel education specifically for women, mothers, and transportation disadvantaged populations
2. Safe, convenient, reliable street design and land-use planning *(i.e. traffic calming, lighting, separation from vehicles)*
3. Affordable and accessible active modes with children (*i.e. Cargo Bike Share, childcare centres at train stations)*
4. Equitably distributed transportation amenities and benefits (*i.e. Bike Share stations and rapid transit in low-income neighbourhoods)*

8 Recommendations

Drawing on the findings from the report, this section highlights specific recommendations for the City of Vancouver to increase the appeal for families of walking, biking, and taking public transit to childcare. The relevant Best Practices are referenced within recommendations by a colour-coded dot.

Make Active Transportation the Most Convenient Option

Embed Child-friendly Design in the City

Introduce Active Travel at a Young Age

Mobilize Women to Mobilize Families

1. **Expand the Walk Bike Roll Mini Grant Program to include childcare facilities**

   Eligible childcare centres with 30+ full time children could apply for $500 grants to encourage and promote active modes by families.

2. **Advocate to TransLink to pilot child-friendly transit initiatives**

   TransLink could designate child-friendly SkyTrain cars or bus areas with child-friendly branding and amenities, similar to the Reindeer bus in December. TransLink could also increase their family-targeting advertising of existing amenities for families (such as children under 12 travelling free). TransLink could partner with childcare centres to offer a new parent transit subsidy, helping parents try out transit during child's infant stage, developing early active travel routines. The City could encourage TransLink to prioritize childcare centres within their developments along transit lines. Finally, TransLink could collaborate with hospitals to include education for new mothers and parents on taking public transit with a stroller and infant.

3. **Advocate to Mobi to expand service area and include child-friendly bike share options**

   The City could encourage cargo bike, child-sized bikes, and child seats in addition to the regular Mobi bike share fleet, as well as expanding service area to include South and East Vancouver neighbourhoods that are typically transportation disadvantaged.

4. **Develop a Retrofit Program that incentivizes childcare facilities to add stroller/bike parking**

   The Bike/Stroller Storage Retrofit Program could make it affordable for facilities to designate storage spaces while offering a simple bypass through the complicated existing bylaw process. This program would align with the Making Strides fifth Policy Direction – *Support Renewal and Resilience of Essential Childcare Infrastructure*.

5. **Expand Universal Cycling Education to childcare facilities**

   Universal Cycling Education could be available for children enrolled in childcare and training for families, which can be organized through the childcare facility (these programs are already available through HUB Cycling and Kids on Wheels). Hospitals could also include information on how to travel with infants on public transportation alongside the information they already provide on car-seat safety and infant travel.

6. **Prioritize child-friendly design interventions near childcare centres**

   The City could include childcare facilities as a priority amenity for the Speed Hump program to reduce vehicle speeds. Bike and Roll Playgrounds could be available in local parks for children to practice traffic skills (Action 9N in the TDM Action Plan 2021-2025). The City could explore intersection-free routes to childcare facilities along

major active travel corridors to eliminate stress and safety concerns around intersections with children.

7. **Make childcare available in every neighbourhood in Vancouver within a 15-minute walk or roll of all families**

   New childcare facilities in Vancouver should be strategically placed to ensure that all families are able to use active modes to childcare with their children. The Making Strides Strategy outlines this goal in their first Policy Direction – *Plan for Expanded Childcare in Complete Neighbourhoods*.

9 Challenges

A few key challenges may hinder parents from choosing active modes and the City of Vancouver from implementing changes that help families use active modes to childcare.

Conflicting Land Use

Existing land uses present an acute challenge in many neighbourhoods: even if active modes would be more suitable to an area, ubiquitous vehicle access and lack of local childcare facilities can present barriers to families interested in active transportation. Existing traffic patterns might be incompatible with new designs that prioritize active travel and could be costly to change. High-speed intersections near childcare facilities are an example: changing the design of the street where two major roads intersect would be difficult, and building a tunnel or bridge for active travellers may be impossible or costly. Another example of conflicting land use is a disconnected bike network that doesn't reliably offer parents travelling with children a comfortable and convenient route to childcare. Parents may need to go out of their way to find safe routes or may give up on cycling altogether. These points of friction provide a barrier for parents using active modes. Physical changes to streets are a powerful tool to get more parents using active modes, but infrastructure changes are expensive, time-consuming, complicated, and require ongoing political support, which may be difficult to acquire through changing city council.

Cultural Resistance to Change

Beyond physical changes, the cultural expectation for vehicles to have unlimited access to all parts of the city is ingrained in many residents' thinking. Residents and business-owners may be reluctant to reduce vehicle access on roads for fear of losing customers or adding friction to their routine, which may complicate or halt active travel expansion projects. Cities thrive when street users compromise and find a balanced outcome of who is using street space and how; unfortunately, vehicles have historically consumed a much larger share of road space and access in cities than active users. By equitable reallocating street space (such as reclaiming parking stalls as patios, parklets, widened sidewalks, bike lanes, etc.), some people who are used to cities that prioritize vehicle movement will be reluctant to accept change.

Lack of Storage Space at Home

Vancouver's bike parking requirements (Section 6.2.1.2 of Parking By-law) require new buildings to include secure bicycle storage, but older buildings did not have the same regulations when they were built and often do not conform to current code. Even when buildings are willing to add bicycle parking options, navigating Vancouver's building code is complicated and time-consuming. When buildings do have storage for bicycles, cargo bikes or carriages used to transport children may not fit.

Lack of Storage Space at Childcare

Childcare facilities in Vancouver are already often pressed for space, offering as much outdoor space as possible so children can run around and play, and storage space for bicycles is not prioritized. Storing bicycles in the outdoor space is usually restricted, as parked bicycles and strollers can present a hazard for children running in the same space. There has never been any mandated requirement for childcare facilities to have stroller or bicycle parking (Section 6.2.2.5 of Parking By-

law), and there is already such a high demand for childcare that introducing an additional hurdle for potential facilities may impede families from accessing the childcare they need.

Lack of Local Childcare Availability

Finding an available childcare space at childcare facilities in Vancouver is already difficult for families, much less a space at a local facility. Families are often willing to travel significant distances outside of their neighbourhood to find quality care for their child during the day. Families are much less likely to use active modes when they are travelling long distances to childcare, as distance lengthens their trip-chain and increases their chance of encountering a delay at some point of the journey. Ideally, childcare should be available for families within their neighbourhood, making active modes the most convenient option.

10 Conclusion

This report explores how the City of Vancouver can best support active transportation as a safe and convenient option for families travelling to childcare facilities with children. Active transportation is an excellent way for children to integrate exercise and healthy habits into their routine from a young age, which helps them maintain physical and psychological wellness as they grow. Active transportation is affordable, low or zero carbon, and enjoyable – journeys with children become opportunities for parent-child connection and adventure, rather than just transportation. Ultimately, active travel promotes healthy cities and populations. Making these modes more accessible for families attending childcare reduces congestion, emissions, and traffic fatalities while returning a multitude of benefits back into family life.

The cities that best encourage family active travel around the world implement strategic child-friendly infrastructure interventions (separation from vehicles, playful public realms, childcare located on or near rapid transit/active travel networks) as well as programs that make active travel accessible and convenient for families (cargo bike-share, cycling education for mothers). The most powerful interventions are context-specific, facilitating change and increasing access where families need it most. As the case study cities demonstrate, transformative outcomes don't necessarily need to be expensive, but should rather respect children's mobility and identify creative, strategic solutions to family transportation issues.

In conclusion, the best practices to encourage families with children to use active travel to childcare are making active modes convenient and safe through separated routes, short distances, and child-friendly design while introducing cycling to children and women at the earliest opportunity. The Recommendations section poses seven recommendations for how the City of Vancouver can translate the Best Practices into the local context. The City of Vancouver is well-positioned to make active modes the best option for families travelling to childcare, particularly as British Columbia's childcare is evolving towards a universal system. Designing streets to protect the most vulnerable travellers empowers children and families by providing autonomy and safety at all ages, elevating communities and supporting equitable, healthy futures for families in Vancouver.

Appendix A: Parent/Caregiver Survey Questions

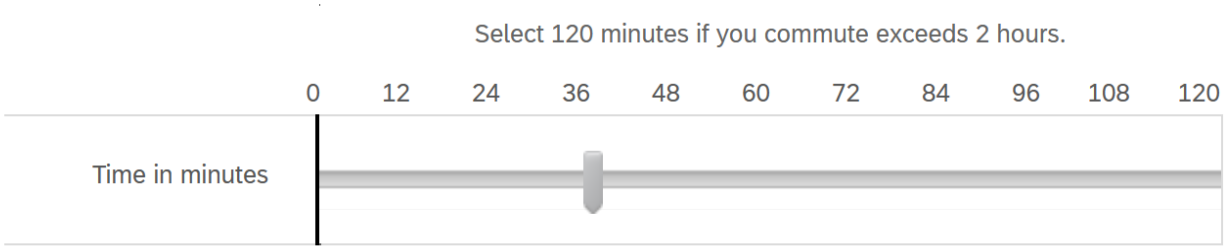
Introduction text: Thank you for your interest in participating in the Travel2Childcare research study! This research is being conducted on behalf of UBC and the City of Vancouver to gain a fuller understanding of how parents/caregivers are travelling to childcare facilities in Vancouver in order to better serve our community. All answers shared in the survey will be anonymous.

1. The name of your childcare facility: _____
2. How old is the child you are accompanying to this facility? Select all that apply if you are travelling with more than one child.
    a. Under 1
    b. 1 year old
    c. 2 years old
    d. 3 years old
    e. 4 years old
    f. 5 years old
    g. 6 years +
3. How do you usually arrive at this facility? Select the most appropriate.
    a. Walking
    b. Biking
    c. Public Transit
    d. Driving
    e. A combination of different modes in one trip
    f. Other: _____

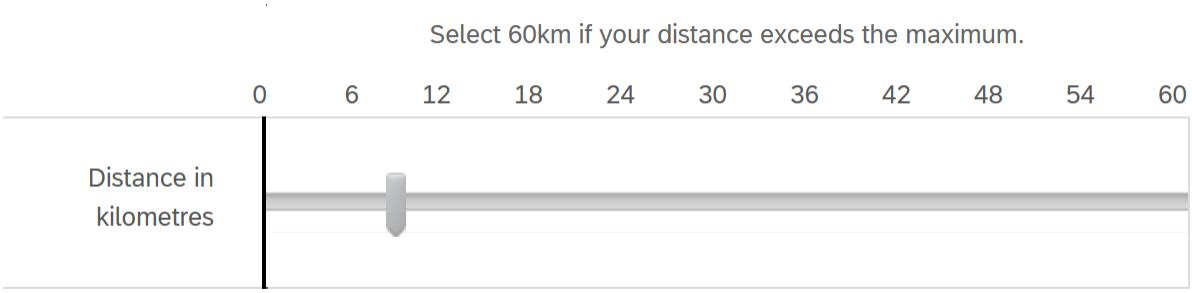
3.5.(Only displays if respondent selected E) What combination of modes do you use in a single trip? Select all that apply.

    a. Walking
    b. Biking
    c. Public Transit
    d. Driving
    e. Other: _____

4. I choose this mode because it is… (Select all that apply)
    f. Convenient
    g. Affordable
    h. Enjoyable
    i. Can easily combine with other trips (work, errands, etc.)
    j. Safe
    k. Other: _____
5. How many minutes does it take to travel from your home to this facility?



6. What distance do you travel from your home to this facility in kilometers?



7. How do you feel about the sidewalks, bike lanes, and transit stops near this facility? (e.g. presence, condition, continuity, safety, tree cover, benches)

	Excellent	Good - some issues	Poor- many issues	Not Applicable / Unsure
Sidewalks	○	○	○	○
Bike Lanes	○	○	○	○
Transit Stops	○	○	○	○

8. Do you regularly combine your trip to this facility with any other destination? Select all that apply.
    a. Yes, I usually combine with errands and personal trips
    b. No, childcare is usually my only destination
    c. Sometimes, depending on the day
9. Do you have secure bicycle/stroller parking **available** to you (whether you use it or not)?

	Yes	No	Not Applicable (i.e. work from home)
At home	○	○	○
At work	○	○	○

9.5.(Only displays if respondent selected YES at least once) Do you **use** the secure bicycle/stroller parking that is available to you?

	Yes	No	Sometimes, it depends	Not Applicable
At home	○	○	○	○
At work	○	○	○	○

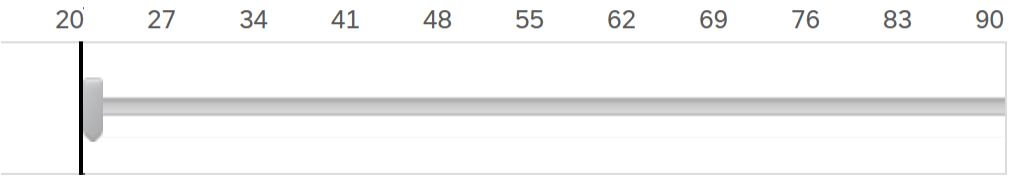
10. Are your daily needs (food, community, work) within a short distance of your home?
    a. Yes, I can access all my daily needs by a short walk or bike
    b. I can access some of my needs by a short walk or bike
    c. No, I am not close to most of my daily needs

Optional: Please share any additional thoughts or comments about your transportation habits with your child here.

Optional Demographic Questions

The following questions are optional. All answers are anonymous and used to advance justice, equity, diversity, and inclusion in Vancouver.

11. How many children do you have?
    a. 0 children
    b. 1 child
    c. 2 children
    d. 3 children
    e. 4 or more children
12. What is your age?



13. Are you an Indigenous person? For this survey's purpose, Indigenous people refer to those whose ancestors have lived on Turtle Island (also referred to as North America) since time immemorial.
    a. Yes
    b. No
    c. I prefer not to answer

13.5.(Only displays if respondent selected B or C to Q13) Which of the following best describes the community your identify with? Please select all that apply.

    a. Arab
    b. Black
    c. Filipino/a
    d. Japanese

e. Korean
f. Latin American
g. South Asian (i.g. Indian, Pakistani, Sri Lankan)
h. Southeast Asian (e.g. Vietnamese, Cambodian, Laotian, Thai)
i. West Asian (e.g. Iranian, Afghan)
j. White
k. I prefer not to say
l. If none of the above describes you, please specify: _____

14. What language do you usually speak at home? _____
15. Which of the following best describes your main activity each week?
    a. Self-employed
    b. Full-time employed
    c. Part-time employed
    d. Casual employment
    e. Retired
    f. Looking after home and/or family
    g. Unable to do work because of sickness or disability
    h. Doing unpaid or voluntary work outside of the home
    i. Full-time student
    j. Part-time student
    k. Other, please specify: _____
    l. Prefer not to answer
16. Do you have any disabilities that impact how you move around?
    a. Yes
    b. No
    c. Sometimes
    d. Prefer not to answer
17. What is your total household annual income?
    a. $0-30,000
    b. $31,000-$60,000
    c. $61,000-$90,000
    d. $91,000-$120,000
    e. $121,000-$150,000
    f. $151,000+

Appendix B – General Interview Question Guide

Childcare Facility: _____

1. How do you usually travel to childcare? Take me through the process of WHY you choose that mode.
    a. What emotion or feeling does this mode illicit?
    b. Do you own a car? Does this impact your decision-making process?
    c. Does your journey to childcare always look the same, or does it change? How do different locations impact your mode choice?
    d. How do travel modes differ when moving with 1 child, 2 children, etc.
2. How does the physical environment on your journey make you feel (traffic lights, bike lanes, lack of bike lanes, sidewalks, etc.)
    a. Does your understanding of safety change depending on who you are travelling with? (etc. a friend, a child)
    b. Define a safe transportation environment for you and your child.
3. Is your home near the bicycle network or a rapid transit station?
    a. How does this shape your decision making process?
4. Secure bicycle parking - quality and availability? At work, shops, daycare
5. Take me through your typical routine + destinations on a day when your child is attending daycare.
6. How have your travel patterns changed since having children?
    a. Travel before and after - was active travel your primary mode before having children?
    b. Travel post birth (0-12 months)
    c. Do you have a partner or support system to share childcare responsibilities? What does this partnership look like?
7. How do you access your daily needs and errands?
8. What does a child friendly city look like to you?
9. Final thoughts?

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