MOTT MACDONALD

Stanley Park Mobility Study

Mobility Context Report

March 2023

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Executive summary

The location and natural beauty of Stanley Park (the 'Park') makes it a highly valued destination for recreation and urban respite, not only by Vancouverites but also by visitors from the rest of the region and around the world. The value of Stanley Park to residents and visitors alike was brought into sharp focus at the onset of the COVID-19 pandemic when temporary changes were made to the Park's transportation system. Inspired by these changes, the Vancouver Board of Parks and Recreation passed a motion in June 2020 to *"explore the long-term feasibility of reducing motor vehicle traffic in Stanley Park, including but not restricted to, reducing roadways to single lanes while maintaining access to the park, while increasing accessibility for those with disabilities".* This motion, and the ongoing Stanley Park Comprehensive Master Plan process, prompted the need for a Stanley Park Mobility Study. This Mobility Context Report presents the findings of the first two phases of the study. This executive summary provides the primary findings of the work.

Mobility Context Key Takeaways

Based on impacts to the Park experience documented at various times, including congestion, safety, noise, and pollution concerns, studies since the 1980's have explored options to reduce private vehicle traffic in the Park, while maintaining access for all park users. This study builds on previous work and assesses the existing mobility context of Stanley Park based on stakeholder and public input, and the analysis of a variety of mobility data sources. Further, it aligns with policy direction that comes from multiple levels of government and partner agencies.

A review of landmark urban parks in cities around the world revealed that many have taken measures to reduce private vehicle trips to the park in recent years. In some parks, car-reduction measures, including closure of roads to vehicles, sometimes coupled with the expansion of transit or shuttles, were implemented in response to the COVID-19 pandemic. Other parks started on a journey of low-car approaches prior to the pandemic.

The interim bike lane currently located on the inner lane of Park Drive is one of multiple options that will be evaluated as a possible longer-term option during later stages of this study. Due to it being installed at this time there is considerable evaluative data already available, some of which is captured in this report. However, 2019 and the conditions at that time form the "baseline year" as part of the options development and evaluation phase.

Prior to the onset of the COVID-19 pandemic, in 2019 approximately 17.1 million trips were made to Stanley Park, which is a 70% increase from frequently quoted estimates of 10 million visits per year from earlier years. The number of annual visitors fell in 2020, but 2021 surpassed 2019 levels with an estimated 18.0 million annual visitors. Analysis has shown that in 2021, about 48% of trips to Stanley Park were made by locals that live within 10 km of the Park and approximately 9.5 million different people visited Stanley Park.

Results of a 2022 public survey indicated that approximately half of respondents have some level of interest or enthusiasm for cycling but concern over safety. In addition, survey respondents indicated that multiple transfers and limited route coverage and frequency were barriers to using public transit to access the park. Park users with disabilities affecting their mobility use motorized modes to visit the park more than those without mobility issues.

In seeking respondent's views on the potential for reducing vehicle travel to the park, 85% of survey respondents identified a resulting challenge, of which access for those with mobility

issues and those travelling with large families were the most frequently cited. However, over 70% of respondents perceived there to be opportunities associated with reducing vehicles, namely reducing noise and pollution, and providing space for other modes of transportation.

Other key findings in this Mobility Context Report include:

- 80% of park users with a disability that impacts their mobility visit the park by private vehicle as a group (i.e., of 2 or more people), demonstrating a need to provide access, given barriers to using active transportation. However, 20%residents with an ambulatory disability accessed the Park without using motorized modes, highlighting the varied needs and preferences of persons with disabilities.
- Senior citizens have a greater reliance on vehicle travel to access Stanley Park but using vehicles as passengers than the general population. This may indicate a greater need to provide motorized transportation options for seniors that do not require them to operate the vehicle.
- The share of visits made by active transportation has increased significantly over the last 40 years, with cycling doubling, and walking increasing about three-fold from 1980 to 2019. The pandemic has bolstered that trend.
- International visitors tend to frequent attractions in the eastern and northern areas of the Park such as the aquarium and the totem poles at Brockton Point, whereas local visitors tend to frequent destinations in the western and southwestern areas of the Park.
- The average group size for visits to the park is 2.3 in general, and the average occupancy for trips by private vehicle to the park is 2.7, considerably higher than the average private vehicle occupancy rate in the city and region (the occupancy rate in the region is 1.24[1]).
- Visitors using vehicles tend to have a specific destination in mind, whereas those that cycle are less likely to have a specific destination in mind, suggesting trip purpose and destination is of lower priority and recreation is of higher priority for cyclists.
- People who walk to access the Park are the most frequent visitors, while public transit users are the least frequent visitors.
- Based on existing mode share and visit frequency, as a whole, people who access the park by vehicles and in larger groups spend the most money in Stanley Park over the course of a year. They are followed by active transportation and micromobility users. People who access the Park by vehicles alone spend about half the amount that active transportation users do.
- Overall, parking occupancy did not exceed capacity throughout the busiest months suggesting that current parking capacity is sufficient for the Park overall. Parking demand does approach available capacity at some lots at the busiest times, which may lead to localized congestion during peak periods.
- A comparatively large amount of paved space (about two-thirds) is designed for vehicular access, although large vehicle volumes typically occur during a short peak time on weekends in the peak summer season. The park's road network operates with no vehicle congestion at nearly all times. This is also the condition for North Lagoon Drive.
- The majority of revenue generated in Stanley Park is made from vehicle parking at $5.22 million (60%), followed by restaurants at $0.95 million (11%), tourist attractions and gifts at $0.82 million (9%), Park Board run concessions at $0.81 million (9%), film and events revenue at $0.64 million (7%), tour operations at $0.12 million (1%), and other recreational opportunities within the park at $0.11 million (1%).

[1] TransLink 2011 Trip Diary

The first version of this Mobility Context report was completed in July 2022 as a preliminary document. It was updated in January, and February 2023 to refine previous work, and to incorporate additional analyses and the outcomes of a staff report to the Board in July 18, 2022[2]. As such, this update includes the following additional key information and findings:

Equity of Access

Some residents have an increased opportunity to access Stanley Park compared to others. This may depend on socioeconomic characteristics, such as race, age, or income, location of residence, and the mode of transportation they choose or have access to. To identify potential equity concerns, a bespoke access model was developed to provide further insight into the level of access into Stanley Park that different community groups currently have. The key findings include:

- Children and youth have disproportionately lower access to Stanley Park than other age groups, followed by those 65 years and older.
- Car access into Stanley Park is up to 32 times greater than access by transit. Residents that do not have (or choose not to have) access to a vehicle, have a profoundly lower opportunity to access Stanley Park than those residents that do have vehicle access – this includes many youth, lower-income residents, and seniors no longer able to drive. In Vancouver, this applies to at least 25% of residents.
- To better balance access across modes, access by active travel and transit options would need to be substantially improved; possibly to a degree that it impacts access levels by private vehicle.

Economic Impact

An economic analysis was undertaken to better understand Stanley Park's economic contributions to the Vancouver Board of Parks and Recreation and to the broader tourist and regional economy. This analysis found that:

- The annual visitor spend associated with Stanley Park is approximately $302 million. This represents over 3% of the entire Vancouver Coastal and Mountains tourism region visitor economy.
- Stanley Park supports about 1,300 direct and indirect public and private sector jobs, which contribute about $148 million to the local economy.
- Stanley Park generates $8.7 million in direct revenue and has an annual operations and maintenance requirement of $7.3 million, providing it an 84% cost to revenue ratio. This means that for every $84 invested into the Park's upkeep, $100 dollars in direct revenue is generated.

Study Guiding Values and Principles

The July 2022 preliminary Mobility Context Report also contributed to the development two foundational values and seven guiding principles that were endorsed by the Park Board on July 18, 2022. These two foundational values and seven principles will inform the development and evaluation of potential options to improve the mobility outcomes of Stanley Park. The are listed as follows:

[2] Vancouver Board of Parks and Recreation, Report - Stanley Park Mobility Study – Initial Findings & Directions: 2022 Jul 18 (vancouver.ca)

Foundational Values

1. Reconciliation - Stanley Park is a significant place to the Musqueam, Squamish and Tsleil-Waututh people. Through ongoing work with the Nations at the Stanley Park Intergovernmental Committee and Working Group, understanding the history of how the Park's transportation infrastructure has impacted the Nations and their ongoing access and cultural practices in the Park, is an underpinning consideration in all options that will be explored as part of the Mobility Study.

2. Equity - Experiences are shaped by intersecting identities, favoured social systems, and often inequitable means, and so we must recognize that everyone has different needs and experiences in the Park. We also recognize that not everyone can easily access the park, particularly those who live further away and cannot or choose not to drive and struggle to experience the Park in any form. This work seeks to advance equity in process and outcome, such that those with limited ability to currently access the Park are centered.

Guiding Principles

1. Safety - To create a safer mobility environment, we will aim to reduce potential conflicts between diverse users, enhance user comfort through all times of the day, and maintain a network that supports access for emergency response.

2. Accessibility - We will prioritize the needs of users who face increased barriers accessing locations in the park and increase universal accessibility by design. We must recognize the diverse accessibility needs for persons with disabilities, with an awareness that multiple approaches will be required/need to be considered.

3. Economic Vitality - We will maintain economic vitality by recognizing the contributions of existing and future opportunities enabled by Stanley Park. We will also center the natural value of Stanley Park as a key contributor to the regional economy and explicitly consider the financial implications of proposed options on Park Board budgets and services.

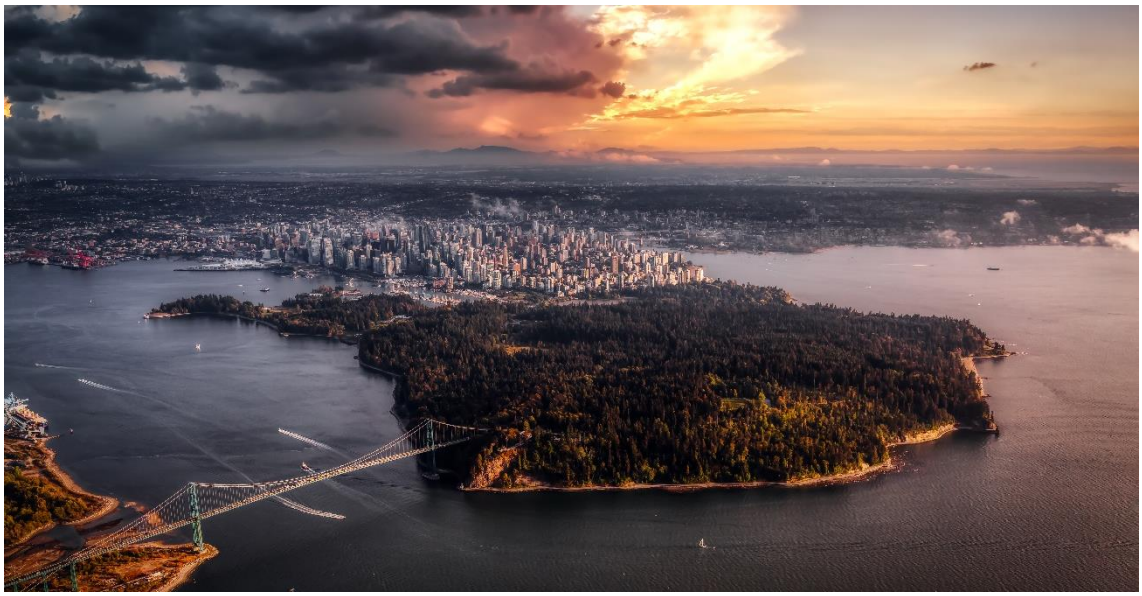
4. Climate Action & Environmental Protection - By reducing private vehicle traffic, we can contribute to bold climate action and decrease carbon emissions, air and noise pollution, and water contamination. Lower demand for paved surface area can unlock potential to increase natural areas, sequester carbon, and safeguard Stanley Park's core natural value.

5. A Flexible & Resilient System - To accommodate different levels of user activity over the course of a day, a week, a year, and into the future, the transportation network will be planned and designed for different uses and demand. With increased flexibility, the transportation network can better respond to changes in the Park as well as negative impacts such as storm surges and sea level rise into the future.

6. A Connected Transportation Network - We will evolve the existing transportation network into one that provides more direct routes, is more intuitive for users, and enables improved connection to the City's transportation system. In particular, this will consider the need to support public transit operations. This future network - one that provides access for all - will require innovative ways to manage access.

7. Enhance Park Experience – The options will consider what people love and appreciate about Stanley Park, and how to enhance experiences leading up to the pandemic and today.

At this point in the study process, the foundational values and guiding principles, and the associated numbering are not intended to indicate a level of priority or greater value. However, to balance these principles and facilitate a structured approach to evaluating potential options, and to reflect ongoing input more directly from stakeholders and the public, there will be a need to further prioritize the seven guiding principles. As their description implies, the foundational values underpin the study and provide additional direction for the guiding principles, where they may conflict. They cannot be further prioritized.



1 Introduction

Mott MacDonald has been engaged by the Vancouver Board of Parks and Recreation (the 'Park Board') to undertake the Stanley Park Mobility Study. Inspired by the temporary changes made to the Park's transportation system in response to the COVID-19 pandemic, the Park Board passed a motion in June 2020 to "*explore the long-term feasibility of reducing motor vehicle traffic in Stanley Park, including but not restricted to, reducing roadways to single lanes while maintaining access to the park, while increasing accessibility for those with disabilities*". The need to study the use, function, and the potential future of the transportation network in the Park was also identified through the Stanley Park Comprehensive Plan process. In response to the June 2020 motion, the need for the Mobility Study was established.

1.1 Background

Stanley Park (the 'Park') is situated immediately northwest of downtown Vancouver, next to the vibrant and densely populated urban neighbourhoods of the West End and Coal Harbour. While it acts as a backyard for these residents, it is valued by visitors across Metro Vancouver and beyond. Visitors from further afar quickly uncover a natural beauty that lives on in photos and minds. These memories and experiences add to the long and storied presence and histories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh (Squamish), and səlilwətaɬ (Tsleil-Waututh) peoples, on whose traditional and unceded territory Stanley Park is located. Shaping these histories is its unique geographical location, a peninsula reaching out toward the Salish Sea and North Shore mountains. Its location contrastingly offers urban respite, while being bisected by the Stanley Park Causeway connecting downtown Vancouver to the North Shore.



The Park's internal transportation system is largely characterised by the Seawall, which comprises an 8km uninterrupted walkway and a counter-clockwise cycling path circling the Park adjacent to the sea, and the counter-clockwise two-lane Park Drive also circling the Park periphery. There are also numerous trails that criss-cross the interior of the Park, and several additional two-lane roadways that run through the eastern portion of the Park. These facilities

support access for numerous modes of transportation, including for people walking or rolling, on bikes, scooters and other micromobility modes, tour buses, taxis and ride-hailing vehicles, and private vehicles. Public transit access is currently limited to the eastern section of the Park.

Access to, through, and into Stanley Park has been the subject of ongoing study and community discourse since (and as part of) its colonial inception. In 1888, First Nations villages were forcefully removed to make way for the Park's dedication[3], and evictions of additional "undesirable settlers" and "squatters" occurred thereafter[4]. The Park was opened by Lord Stanley, who proclaimed it for "*the use and enjoyment of people of all colours, creeds and customs for all time*."[5] These juxtaposing events suggest complex and profound implications as to what is meant by access: for who, for what, when, and to what extent.

Mobility—the ability to move— is a key component of access. As such, questions around access and mobility are closely linked. A transportation system, and the infrastructure and services it consists of, plays a large role in shaping mobility and access outcomes. Given the Park's unique geographical location, and its variety of amenities, attractions, and spaces, mobility and access outcomes may vary across current and future visitors, whether local of from afar.

Ultimately, a typical goal when developing transportation systems is to provide access for all people. However, given geographic, spatial, and resource limitations, achieving such a goal requires trade-offs, a thoughtful review of existing access and mobility patterns and infrastructure, and a recognition that many transportation systems have historically favoured the needs of some modes—and thus the people that use them—over others. Access to Stanley Park has historically focused on vehicular travel; however, not all visitors can drive or have access to private vehicle mobility. As well, to increase access by vehicle, additional roads and parking lots would be required in the Park. This context contributes to formulating the purpose of this study.

1.2 Study Purpose

Based on the June 2020 Park Board motion and context noted above, prior stakeholder and public engagement, and known challenges, the purpose of the Stanley Park Mobility Study is to:

- Understand potential opportunities and challenges of reducing private vehicle traffic in Stanley Park
- Explore ways to improve access into Stanley Park
- Enhance the experience of visiting Stanley Park

As the study and analysis progresses, and through further public and stakeholder engagement, it is anticipated that these aspects of the study purpose will be formulated into a more defined goal of the study.

[3] Park Board *VanPlay Strategic Bold Moves Report* October 2019, Pg 21

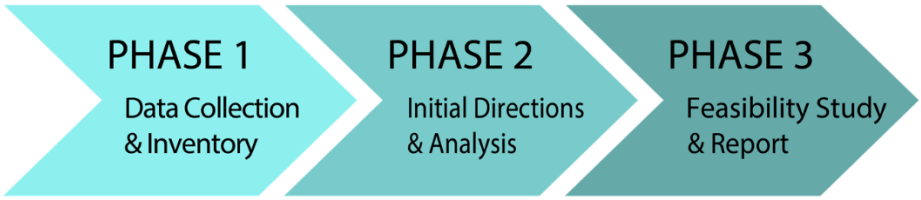
[4] Kheraj 2013, *Inventing Stanley Park*, UBC Press, Pg 82-91

[5] Canadian Encyclopedia 2008, *Lord Stanley*, www.thecanadianencyclopedia.ca

1.3 Study Scope and Process

The Stanley Park Mobility Study consists of three main phases, as shown in **Figure 1-1** below.

Figure 1-1: Study Processes Phases



The Mobility Context Report (this report) documents technical analysis undertaken in Phase 1 and 2, covering scope items as identified in the following table.

Table 1-1: Stanley Park Mobility Study Scope

Phase / Report	Scope Item	Key Questions
Mobility Context Report (Section 2)	**Policy and Planning Context**	- What prior transportation planning work and data collection has been done for the Park? - What policy context, specific to Stanley Park and more broadly, is this study building one?
Mobility Context Report (Section 3)	**Case Study and Best Practice Review**	- How do other urban parks improve access within the context of reducing vehicular travel? What are some key challenges, impacts, and outcomes?
Mobility Context Report (Section 4)	**Existing Mobility and Access Conditions**	- What were the transportation volumes in 2019, which is generally considered the baseline year and precedes the significant data? collection undertaken as part of the pandemic response? - How many visitors are there and what is their estimated make-up? - What is the existing visitor profile and trip-making pattern based on public survey feedback?
Mobility Context Report (Section 4)	**Access Analysis**	- What level of access do people using different modes currently have to Stanley Park? - How are specific areas and uses in the Park accessed?
Mobility Context Report (Section 4)	**Economic Analysis**	- What is Stanley Park's contribution to the region's tourism economy? - How does the Stanley Park economy relate to the existing transportation system? - What are the cost and revenue flows?
To be completed as part of Phase 3	**Options Development & Evaluation**	- What options can contribute to the principles and goals of the study, and what additional objectives should the options aim to meet?

1.4 Stakeholder and Public Engagement

The Mobility Study is being informed by an extensive stakeholder and public engagement process. Many of the findings in this report and the data analysis discussed in **Section 4** below contain direct outputs from the public survey administered in May 2022. This report is augmented by the Phase 1 and 2 Engagement Update delivered under separate cover, which provides a summary of activities undertaken so far.

2 Planning and Policy Context

Over the years, several studies and planning processes have reviewed mobility and access considerations for the Park. The work being undertaken in the Stanley Park Mobility Study intends to build on this past work. This section provides a condensed review of these past initiatives and highlights key findings or recommendations that remain relevant in today's context. These studies also provide historical mobility data, which is used within this report to provide historical comparatives and to indicate potential trends.

Chapter Key Findings

- **There is considerable policy at multiple levels of government to reduce and shift vehicular travel to sustainable modes of transportation, while retaining equity and universal accessibility.**
- **The Stanley Park Mobility Study is being undertaken under the broader framework of the Stanley Park Comprehensive Plan process.**
- **VanPlay, the overall framework and decision-making guide for the Park Board, provides key directions including to deliver services equitably, welcome everyone, and weave the city together. It further notes the need to continue implementing the Stanley Park Cycling Plan, and to examine reallocating vehicle parking in and adjacent to Parks.**
- **The City of Vancouver's Climate Emergency Action Plan notes that the opportunity to improve (transportation) affordability for all, centres around providing a means of access to modes that are less prohibitive than vehicle access and ownership.**
- **TransLink's 10 Year Priorities plan identifies Stanley Park as a new service area. Further work will be required to determine what kind and the level of transit service may adequately address transit needs.**
- **Metro Vancouver's Clean Air Plan makes clear that municipal action is fundamental to achieving regional and provincial climate objectives**
- **Provincial policy targets outlined in the CleanBC – Roadmap to 2030 plan signal a need to significantly reduce vehicle travel, acknowledging that a shift to technological solutions (e.g. electric vehicles) alone will not be adequate to meet objectives.**
- **Past study and planning efforts have explored ways to improve access into Stanley Park for sustainable modes while reducing private vehicle travel. Most of the study direction has not advanced beyond the planning stage, indicating a need to provide a thoughtful approach that builds on past work.**
- **Support for a low-car or car-free Stanley Park has grown from the early 1990s until now. Over that time, there have been several low-car pilot projects and events, with consensus typically finding these to be successful.**

2.1 Planning in Stanley Park – Past Policy Review

2.1.1 Stanley Park Transportation Update (1989)

This study responded to a directive from the Park Board to staff to "*devise methods of restriction of [vehicular] access in combination with an improved level of public transit service to the park and such experiments be reported to the [Parks] Board."* The study also built upon the 1985 Stanley Park Master Plan's transportation recommendations and identified new issues and opportunities[6]. The study had two key objectives:

- **Primary Objective:** to increase the enjoyment of park users by decreasing the level of dissatisfaction with the current transportation circulation and parking situation.
- **Secondary Objective:** to identify new modes of transportation that are considered to be compatible with the existing park operation.

One of the experiments responding to the directive, was the 1988 Stanley Park Centennial celebration, which involved restricting vehicular access to much of the Park during peak periods. The study reported that the consensus among park users was that this was successful. Further, it reported that much of Park Drive could be closed to private automobiles, while retaining access to the Park given commensurate alternatives. As a result, the study also explored several access improvement options, and new modes of transportation, such as:

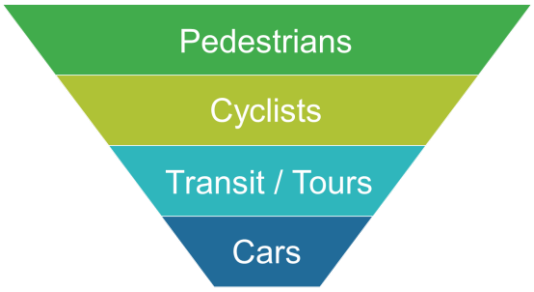
- **Marine transportation**, noting that at the time both False Creek and Coal Harbour were starting to see significant development, ferries were deemed a potentially attractive opportunity. Yet it was also recognized that more suitable vessels than those operating on False Creek would be required for routes to Stanley Park.
- **The use of "jitneys",** varying in form from horse-drawn carriages, pedicabs (pedal-powered), or golf carts. All of these were noted to come with unique challenges, including the one-way nature of Park Drive, capacity issues, impacts to other users, and the ability to provide the required service levels efficiently (economically speaking).
- **Increased promotion and customer information** for the *Around the Park (#52)* public bus service operated by BC Transit. At the time, ridership on a typical Saturday or Sunday was around 230 people – the study noted the low service headways as a challenge to providing necessary capacity and attractiveness.
- **The use of higher capacity trackless trolleys or people movers**, which the study deemed as potentially able to meet the necessary mobility criteria (at the time), with the required level of attractiveness, flexibility, capacity and reliability.
- **The use of parking lots outside of or on the perimeter of Stanley Park** (also known as external or intercept parking lots) to accommodate those who wish to get to the Park by vehicle.
- **The use of a police traffic control officer to direct traffic and manage traffic issues at the North Lagoon Drive connection to George Street.**

Additional recommendations such as the further rollout of pay parking, extension of Route 19 into the Park (from the former Chilco Street Loop), and some localized roadway improvements have since been implemented.

[6] The 1985 Stanley Park Master Plan is not reviewed here in detail, as transportation was one of many areas of focus with high-level recommendations only. The Stanley Park Transportation Update (1989) provides a more detailed account of past policy direction and ideas regarding access and transportation to and in Stanley Park.

2.1.2 Stanley Park Transportation and Recreation Report (1996)

This report was the culmination of a series of recommendations developed by a Stanley Park Task Force, a Staff Advisory Group, and Board resolutions starting in 1993. **This process established a transportation mode hierarchy**, building from a 1991 Board resolution that recommended transportation decisions "favour walking, cycling, public transit, goods movement, and then the automobile."



The final report noted that two themes galvanized public input:

- Conflicts between visitors travelling at different speeds on the Seawall.
- The presence of large numbers of cars and buses on Park Drive, and the resulting noise and pollution.

These two issues underpinned the report's development and ultimate recommendations, further noting that:

- Recreational uses have priority over transportation uses.
- Private car traffic in the park will be discouraged.

As such, the study investigated steps that would be taken to start reducing the number of private vehicles in the park. While this work was more explicit than previous planning endeavours in the need to reduce private vehicle traffic, it also recognized the need to provide alternative access and mobility means. It also noted that only a minority of people were willing to restrict private vehicles from the park. The study provided 16 key proposals, some of which expanded on previous recommendations:

1. Reduce roadside parking along Park Drive and North Lagoon Drive.
2. Reduce road capacity by limiting cars to one lane only on Park Drive and North Lagoon Drive.
3. Experiment with car-free days.
4. Raise parking fees.
5. Develop new uses for the old service yard on Pipeline Road.
6. Designate bus-only lane on Park Drive and North Lagoon Drive.
7. Introduce a park jitney system.
8. Request BC Transit to further improve service.
9. Improve tour bus facilities.
10. Increase pedestrian safety and convenience on the Seawall by providing better separation from cyclists and in-line skaters.
11. Improve the connections between English Bay and Coal Harbour for pedestrians, cyclists and in-line skaters.
12. Improve accessibility of pedestrian trails.
13. Improve cycling facilities.
14. Request the City of Vancouver to give priority to construction of bike routes leading to the park.
15. Promote walking, cycling and in-line skating in and on the way to Stanley Park
16. Promote taking public transit to the park

Many of the proposals in the study were subsequently implemented, particularly those that provided infrastructure or service improvements, including a Stanley Park Shuttle (jitney) and further Seawall separation. Several of the other proposals in the study specifically recommended reducing space allocated for private vehicle travel. There has been limited progress in their implementation[7]. It was recognized that in the short-term reducing road space may cause some new challenges including localized congestion; however, travel patterns would shift and the overall efficiency and capacity of the network would increase, leading to improved access and enjoyment outcomes. Given these outcomes, the study went on to note that in the longer-term there would "*probably be no alternative to a park substantially free of car traffic*".

> "the endless circulation of cars on Park Drive is an unnecessary intrusion into the peaceful park atmosphere. Steps will be taken to start reducing the number of private cars in the park, including efforts to get people to leave their cars outside the park. Roadside parking along Park Drive and North Lagoon Drive will be reduced by 70%. Road capacity will be reduced by limiting private cars to one lane only during the busy season. Car-free days will be introduced to give visitors the experience of a more quiet park."

2.1.3 Stanley Park Cycling Plan (2012)

While its focus was on cycling issues and opportunities, this plan was undertaken with the needs of all user groups in mind. The plan also recognized the need to address several ongoing transportation issues in Stanley Park, reiterating some of the key issues raised in prior work and highlighting newer challenges including:

- Capacity constraints on the Seawall, and a tension between different speeds and user types
- One-way travel, which creates long travel times for destination-oriented cycling trips
- The need to improve cycling as a means of transportation in the absence of transit
- Wayfinding and connectivity to parts of the West End and Coal Harbour



The plan also reaffirmed the transportation mode hierarchy for the park, putting walking as the priority, and noted that vehicle traffic would continue to be a means of access, particularly for those with families and mobility challenges. Within the context of balancing the needs of a variety of park users at a system-wide level, the study recommended that:

- Stanley Park Drive be reduced to one vehicle lane where needed to accommodate through-cyclists

[7] The COVID-19 pandemic ultimately tested Proposals 2 & 3, and public feedback was collected as a result.

- Stanley Park Drive be made safer for training and exercise cyclists, to reduce Seawall congestion and conflicts
- That a transportation study be conducted to examine the possibility of having two-way cycle paths on vehicular roads or converting one-way roads to two-way where they may then better facilitate cycling in the Park.

The study provided an implementation plan for capital improvements, including additional paths and localized Seawall widening. Some progress has been made, but many of the larger improvements and new paths have not been implemented. It is unclear to what extent these new pathway recommendations continue to align with the need to be ecologically sensitive. The system-wide improvements have also not been implemented (as permanent facilities).

2.1.4 Stanley Park Comprehensive Master Plan (in progress)

In 2014 the Park Board and Musqueam, Squamish, and Tsleil-Waututh First Nations formalized the Stanley Park Intergovernmental Committee and Working Group to steer and develop the Stanley Park Comprehensive Master Plan, a 100-year vision for the Park. The intent of this work is to create a unified and comprehensive vision for the Park, acknowledging its significance to the three First Nations as well as their untold stories and history. In April 2018, the Intergovernmental Committee and Working Group terms of reference were approved in a project update to the Park Board. The report also outlined numerous additional challenges for the Park, ranging from sea level rise, wildlife loss, decline in water quality, climate change stressors, increasing drought conditions, and invasive species. It went on to note that these outcomes can be partially attributed to colonial settlement.

The Stanley Park Mobility Study is being undertaken under the broader framework of the Comprehensive Plan process. As such, it is imperative that this policy context is embedded in the Mobility Study, and that reconciliation is a foundational tenet of the work.

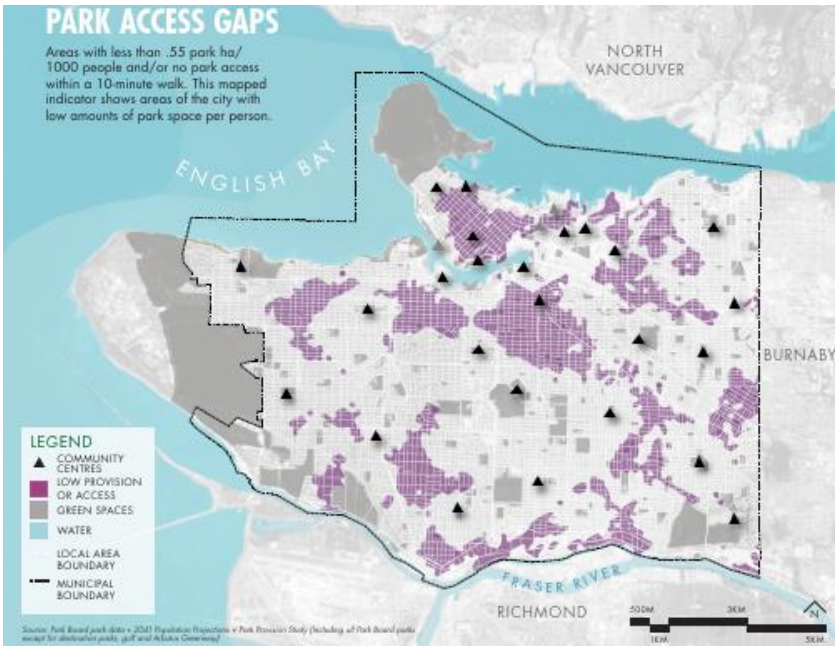
2.1.5 VanPlay (2020)

VanPlay is the overall framework and decision-making guide for the Park Board. The framework contains three key directions:

- **Deliver Services Equitably –** a fair and effective parks and recreation system
- **Welcome Everyone –** parks and recreation experiences that improve quality of life
- **Weave the City Together –** parks, nature, recreation and culture integrated into everyday life

These key directions are directly relevant to the purpose of the Stanley Park Mobility Study Multiple supportive actions are provided under each of these three key directions that provide further guidance. The plan also identifies areas in Vancouver that have a low provision or lack of access to parks (within walking distance). Despite its relative proximity to Stanley Park, much of downtown Vancouver continues to experience a gap in park access as shown in **Figure 2-1** below.

Figure 2-1: VanPlay Park Access Gaps Inventory



VanPlay's implementation plan also identifies the need to improve flow and access throughout Stanley Park by separating pedestrians and cyclists for safety by implementing the Stanley Park Cycling Plan. Additionally, VanPlay's Parking Policy calls for an "*approach to appropriate vehicle parking in and adjacent to parks"*.

2.1.6 Park Board COVID-19 Pandemic Response (2020-2021)

In response to the COVID-19 pandemic the Park Board restricted vehicular mobility on Park Drive in April 2020 to facilitate physical distancing for pedestrians on the Seawall and cyclists on Park Drive. A couple months later, this evolved into the placement of a temporary separated bike facility in one lane of Park Drive. The separation was removed and then in 2021, enhanced based on public, stakeholder and staff feedback, and an enhanced temporary facility remained in place until late 2022. Throughout these changes, the Park Board undertook significant data collection and administered two public surveys. The surveys provided insight into higher-level values and public opinion, including:

- A majority of respondents stating the experience was better with the restriction to vehicles, than it was prior to COVID-19.
- A general agreement that a change in the existing transportation system is required.
- A general desire to see some space reallocated to other modes of transportation, subject to further engagement.
- An evenly split opinion on the idea of Stanley Park being car-free in the future.
- Recognition of access difficulties for persons with disabilities.

2.2 Related Local and Regional Plans

The following recent plans and policy documents will also contribute toward shaping the direction of the Stanley Park Mobility Study. While this is a non-exhaustive review of local and regional strategic efforts, these plans are considered most closely related to this work.

2.2.1 City of Vancouver - Climate Emergency Action Plan (2020)

In 2019, the City of Vancouver approved the Climate Emergency response in the face of the worsening climate crisis. It included several transportation "Big Moves" aiming for:

- 90% of people living within an easy walk or roll of their daily needs
- Two-thirds of trips in Vancouver to be by active transportation and transit.
- 50% of the km driven on Vancouver's roads to be by zero emissions vehicles

> "In terms of affordability, the individual (internal) costs of driving are already beyond the means of many. This trend will increase. There is no technological, economic, geopolitical, or spatial land use trend that will reverse this trend while reducing environmental impact. The opportunity to improve affordability for all lies in providing a means of access to opportunities through other less-prohibitive modes of transportation and the provision of walkable, complete communities."

Building on the Climate Emergency Response, the City of Vancouver approved its Climate Emergency Action Plan (CEAP) in late 2020. Among a comprehensive set of actions, the CEAP included transportation-related "game-changer" actions intended to measurably shift away from vehicle travel.

The report states that to mitigate worsening climate change effects, ongoing transportation planning initiatives of all scope and size must endeavour to contribute positively toward theses ambitious yet necessary targets.

2.2.2 TransLink Transport 2050: 10-Year Priorities (2022)

Transport 2050 was adopted in early 2022 as the new Regional Transportation Strategy with the overarching theme of ***Access for Everyone.*** The strategy establishes five headline goals ,and key among them is the continued need to shift more regional and longer-distances trips from private vehicles to sustainable modes of transportation.



Since the adoption of Transport 2050, TransLink has been developing the new 10-Year Priorities plan. This plan builds on Transport 2050, and provides more detail on potential capital projects, strategies, and new service areas. Through ongoing engagement between TransLink and municipal partners over the last few years, **Stanley Park has been identified as a new service area. Further work is required to determine what kind and the level of transit service required.** This presents an opportunity for the Stanley Park Mobility Study to more directly shape transit servicing concepts for Stanley Park in the shorter-term.

2.2.3 Metro Vancouver - Clean Air Plan (2021)

Metro Vancouver finalized the regional Clean Air Plan in 2021 with transportation as one of six specific issue areas. It establishes several goals and targets that are intended to ensure we breathe clean air including:

- a 65% reduction in passenger vehicle GHG emissions from 2010 levels
- a 25% reduction in diesel particulate matter and 40% reduction in nitrogen oxide emissions from all surface transportation

To work toward these goals, the plan identifies a number of specific strategies and actions for the region, with member jurisdictions identified to be a partner among most of these. Several of the actions are also noted as big moves that explicitly consider municipalities as the lead agency or lead partner, including:

- The use of pricing to reduce driving and emissions
- The expansion of active transportation networks
- The regulation of existing medium and heavy trucks

The Clean Air Plan makes clear that municipal action is fundamental to achieving regional and provincial climate objectives.

2.2.4 Metro Vancouver – Access to Regional Parks Report (2022)

In June 2022, Metro Vancouver endorsed the two-part Access to Regional Parks Report. These reports found:

- strong public support for improving access to parks by bicycling and transit.
- that improving access by transit and bicycling will promote equitable access to the health benefits of regional parks.

The report went on to identify specific implementation actions to improve multimodal access, including planning for shuttle bus or ferry connections.

While Stanley Park is not a regional park from a jurisdictional perspective, it has a large regional draw. Many of the findings and options recommended in the Access to Regional Parks Report contain data and research that can be useful for the Stanley Park Mobility Study.

2.2.5 CleanBC – Roadmap to 2030 (2022)

As part of the CleanBC program, British Columbia (the “Province”) recently released its Roadmap to 2030. The Roadmap provides specific transportation objectives, several of which align with the Stanley Park Mobility Study’s purpose to explore a reduction in private vehicle traffic including:

- accelerating the transition to zero-emissions vehicles to 90% of all light-duty vehicles sold in the Province, and targets for medium and heavy-duty vehicles
- reducing the energy intensity of goods movement by 10%
- reducing vehicle distances travelled by 25%, and encouraging a mode shift to 30% of trips by sustainable transportation modes by 2030

These actions combined are intended to contribute toward the Provincial, and therefore local, transportation and emissions reduction targets. Importantly, **these policy targets signal a need to significantly reduce vehicle travel, acknowledging that a shift to technological solutions (e.g. electric vehicles) alone will not be adequate to meet objectives.**

2.2.6 Additional Initiatives

The City of Vancouver has launched several key social policy initiatives that inform the Stanley Park Mobility Study, including the Reconciliation Framework, the Equity Framework, and the Accessibility Strategy. These complement initiatives being spearheaded by the Park Board.

2.3 Summary

There is considerable supporting policy at multiple levels of government to reduce and shift vehicular travel to sustainable modes of transportation. While not all trips can easily be shifted, particularly for persons with disabilities, there is an opportunity for Stanley Park's transportation system to contribute toward these policies and the Park Board's own strategic goals.

Given its importance to residents and tourist visitors alike, considerable effort has gone into planning and developing Stanley Park's transportation system. Past work has established that walking and cycling are to be prioritized over vehicle travel, and studies have explored ways to improve access into the Park via new or alternative modes of transportation, and to enhance the user experience while reducing private vehicle use. Progress implementing past recommendations has been limited, which speaks to the need to provide a thoughtful approach building on past work.

Additional key takeaways include:

- The Stanley Park Mobility Study is being undertaken under the broader framework of the Stanley Park Comprehensive Plan process.
- VanPlay, the overall framework and decision-making guide for the Park Board, provides key directions including to deliver services equitably, welcome everyone, and weave the city together. It further notes the need to continue implementing the Stanley Park Cycling Plan, and to examine reallocating vehicle parking in and adjacent to Parks.
- Support for a low-car or car-free Stanley Park has grown from the early 1990s until now. Over that time, there have been several low-car pilot projects and events, with consensus typically finding these to be successful.
- The City of Vancouver's Climate Emergency Action Plan notes that the opportunity to improve (transportation) affordability for all lies in providing a means of access to opportunities that are less prohibitive than vehicle access and ownership.
- TransLink's Transport 2050: 10 Year Priorities plan identifies Stanley Park as a new service area. Further work will be required to determine what kind and the level of transit service may adequately address transit needs.
- Metro Vancouver's Clean Air Plan makes clear that municipal action is fundamental to achieving regional and provincial climate objectives
- Provincial policy targets outlined in the CleanBC – Roadmap to 2030 plan signal a need to significantly reduce vehicle travel, acknowledging that a shift to technological solutions (e.g. electric vehicles) along will not be adequate to meet objectives.

3 Case Study and Best Practice Review

The COVID-19 pandemic has spurred many cities to reflect on the underlying value of parks and needs of residents in terms of how park space is used. Many cities sought to reallocate existing road and parking space toward other uses and modes of travel. The review in this section focuses on several iconic parks located in North America and Europe of a similar size to Stanley Park. The information was gathered mainly through a desktop review, as well as notes received from Park Board staff capturing prior discussions with officials at two of the reviewed parks (Golden Gate Park and Central Park). The review outlines the "low car" approaches taken, challenges, and outcomes. Each of these parks have their own unique community contexts, geographical conditions, and access needs. This review provides the study process information to draw from, yet Stanley Park also has its own unique context and needs.

Chapter Key Findings

- **Car-free implementation lead to an increase in visitation numbers for the majority of city parks. For example, a car-free conversion of JFK Drive in Golden Gate Park in San Francisco led to a 36% increase in visits.**
- **Low-car and car-free approaches can be supportive of improving universal accessibility. For example, Djurgården in Stockholm considers the goals of reducing car-travel and increasing sustainability, aligned with making the park more accessible.**
- **Low-car approaches are used to increase the number of people able to visit during key events or peak visitation periods.**
- **Longer-term and more permanent options must be carefully approached and studied: moving too quickly may diminish public support[8].**
- **In some parks where road space has been reallocated as part of a low-car approach, the legacy design of the streets for automobiles may need to be improved to provide a safer environment that creates fewer conflicts for active transportation users now using the reallocated roadway space.**

Table 3-1 directly below provides a descriptive overview of the case studies, and **Section 3.8** provides an expanded summary of key lessons learned for each park. They are organized from largest to smallest urban park in terms of area.

[8] Rapid change has often been found to follow the "political valley" path. This is where concern raises sharply after initial excitement about stated project intentions, after potential trade-offs and implications become more apparent. Support typically increases again as users experience the benefit. See also TransLink's Rapid Implementation Guide for Bikeways in Metro Vancouver

Table 3-1: Best Practise Scan Descriptive Summary

Park	Area (km^2)	Annual Visitors	Cultural Institutions	Sporting Facilities	Food and Retail Services	Transit Servicing	Key Low Car Approach Elements
Phoenix Park, Dublin	7.07	10 million (2019)	◒	◒	○	○	• Introduced during covid-19 to provide safe space for public • Public were in favour of the road closures
Golden Gate Park, San Francisco	4.10	15 million (2019)	●	●	◒	●	• Extension of the City's Slow Streets program into the park • Strong local group support that encouraged more bike lanes in the park
Stanley Park, Vancouver	4.05	18 million (2019)	◒	◒	◒	○	• Temporarily increased dedicated space for cycling in response to Covid-19 • Under further exploration within this study
Central Park, New York	3.41	42 million (2020)	●	●	◒	◒	• Implemented closures in phases • Backed by strong political support
Royal Djurgården StockholmStockholm	2.79	15 million (2021)	●	○	●	◒	• Public opinion and general cultural and policy direction as part of a broader sustainability initiative (including a car-free vision)
Prospect Park, Brooklyn	2.10	8-10 million (2018)	◒	●	◒	◒	• Implemented closures in phases • Backed by strong political support • Support from local park group advocacy
Washington Park, Denver	0.67	Unknown	○	●	○	◒	• Introduced during Covid-19. • Public were in favour of the closure • Support from local community groups

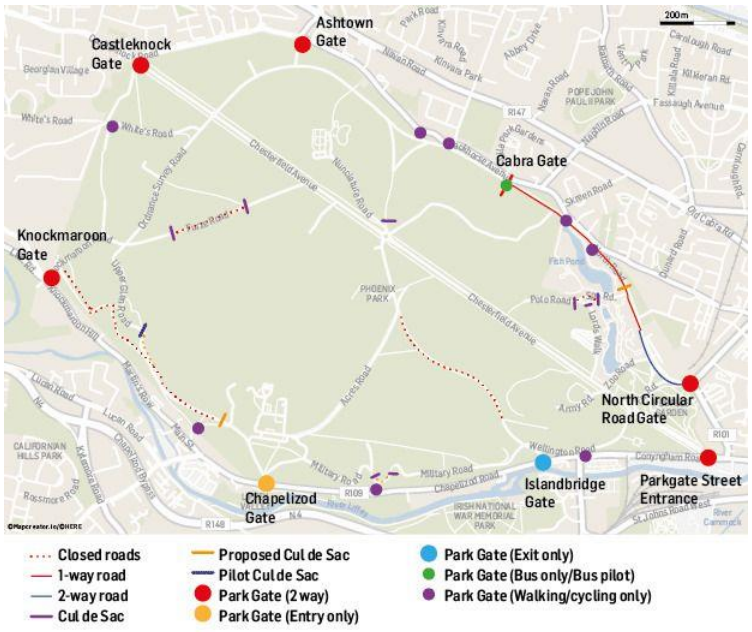
Qualitative assessment, indicative of amount of use provided relative to size of park and the extent uses are within park as opposed to on the periphery:
○ - None or minimal ◒ - Moderate to Medium ● - Medium to Large

3.1 Phoenix Park, Dublin

Background

One of the largest urban parks in the world, Phoenix Park is located at the western edge of the Dublin City Centre, north of River Liffey. The Park is spread over 7.07km^2 and is enclosed by a 11 km perimeter wall. While the park serves as a prime destination for tourists and visitors seeking a wide range of biodiversity, recreational spaces, and institutions, it also consists of heavily trafficked vehicle routes that flow through the park connecting the city center with the suburbs. Chesterfield Avenue serves as the major road that starts from the northwest point and runs to the southeast end of the Park. With ever-growing visitors transiting through the park, the streets have experienced significant increases in vehicular traffic volumes which have led city officials to take measures to curb this issue in order to restore the value of the Park.

Low Car Approach



In early 2020, thousands of petitioners called for ending the use of Dublin Park as a throughway for vehicles [9]. The Park restricted some of its routes to vehicular traffic to prevent through traffic on a number of roads. This approach was termed 'cul-de-sac' and was introduced initially during the pandemic. By the middle of 2020, six of the peripheral routes/gates restricted access to vehicular traffic. This provided cyclists and pedestrians access to 7 km of roadway and increased space allocated to those modes by 33%.

However, in 2021, concerns arose that congestion would likely occur on the north side of the park due to the 'cul-de-sac' approach. In response to further public opinion, the Office of Public Works (OPW) published a plan to scale back the 'cul-de-sac' closures. Instead, the OPW decreased speed limits to 30 km/h and added bus services. They also dedicated certain gates that had previously been used for two-way traffic for only one of either the entry or exit for vehicle and bus services[10]. In addition, one of the bidirectional painted bike lanes that had replace a lane of vehicle traffic through the park was made permanent. The main concerns prompting the scaling back of the closures were how congestion on parallel routes would be affected. The conditions are being closely monitored.

[9] Thousands seek end of through-traffic in Dublin's Phoenix Park (irishtimes.com)

[10] Phoenix Park traffic restrictions to be scaled back (irishtimes.com)

Outcomes and Lessons Learned

A Transport and Mobility study was published later in 2021, in parallel and in response to the 2020 initiatives. Listed below are key aspects of that strategy[11]:

- *Reducing the impact of vehicles on Phoenix Park and surrounding areas while contributing to improving the amenity of the Park.*
- *Prioritizing sustainable transport modes in accessing Phoenix Park.*
- *Providing improved alternatives to the private car access to Phoenix Park from a wider metropolitan regional and national catchment while acknowledging that private cars have a role in accessing the Park.*

The Transport and Mobility study also developed several options. At this time, aside from the direction discussed above, it is not yet clear which options are being implemented. Nevertheless, **a key lesson learned in this review is that longer-term options must be carefully approached and studied, and that moving too quickly may diminish public support.**

3.2 Golden Gate Park, San Francisco

Background

Spread over 4.1km^2, Golden Gate Park in San Francisco stands as one of North America's largest urban parks. With one of the edges located right next to the sea, the park provides hundreds of beautiful places for visitors to explore. It also includes sporting fields, gardens, small lakes, and several museums. The park contains a number of mostly two-lane bidirectional streets that facilitate visitor access, and a north-south arterial that bisects the park.

Low Car Approach

John F Kennedy (JFK) Drive is one of the main east-west streets in the Park. Prior to the pandemic, the street would occasionally restrict vehicle travel. In April of 2020, San Francisco Municipal Transportation Agency (SFMTA) introduced their Slow Street Program to temper vehicle access and prioritize walking and biking and other activities on select streets in response to the pandemic[12]. This included JFK Drive. This program was widely supported by San Franciscans and the city intends to convert the temporary traffic calming measures, including barricades and signage, to permanent solutions on many streets. An evaluation report on the program suggested that 100% of the slow streets experienced below maximum traffic levels for low-stress shared streets. Moreover, the designated lanes showed an average decrease of 35% in daily traffic and 14% decrease in vehicle speed[13]. Following this initiative and to create safer space for people, Golden Gate Park also implemented a program to promote car free streets within the park under the collaboration of SFMTA and the SF Recreation and Parks Department (RPD).

[11] gov.ie - Phoenix Park Transport and Mobility Options Study (www.gov.ie)
[12] Slow Streets Program | SFMTA

[13] slow_street_eval_summary_final_10202021_update.pdf (sfmta.com)

Figure 3-3: Golden Gate Park Before and After Slow Streets Implementation



John F Kennedy Drive—converted to a car-free route—is shown in dark green

A significant portion of the JFK Drive has now become part of a car-free route from one end of the park to the other (from Stanyan Street at the east of the park to Ocean Beach and the Great Highway at the west end)[14].

The Park also has free shuttle services running regularly on weekdays and weekends through JFK Drive. Golden Gate Park Stakeholder Working Group, a local advocacy group, was established to promote equity and mobility within the Park and some of their core values were to support parking spaces for people with disabilities, improve the park shuttle services and install more bike stations[15].

Outcomes and Lessons Learned

The conversion of John F Kennedy Drive to a car-free route resulted in a 36% increase in daily park visits to the portions of the street with the closure. Moreover, 75% of the westbound trips on John F Kennedy Dr were used for getting elsewhere and not the park. Since implementation, there has been no traffic collisions resulting in reported injury.[14]

When asked about the impact on business after the closure of John F Kennedy Drive, staff from San Francisco Recreation and Parks Department noted in an informal interview that their extensive studies found no material change in business activity. **Table 3-2** below shows the change in road usage before and after the closure of John F Kennedy Drive[16]. **The results show significant increase in pedestrian and cyclist volumes and a decease in vehicle traffic.**

Table 3-2: Change in John F Kennedy Drive Usage Patterns

Dates	Pedestrians	Bicycles	Autos/Trucks/Bus
5/7/2019 - 5/13/2019	32,537	8,571	85,892
5/5/2020 - 5/11/2020	69,000	44,842	2,751
% Change	***112.1%***	***423.2%***	***-96.8%***
5/14/2019 - 5/20/2019	43,375	7,820	80,522
5/12/2020 - 5/18/2020	69,995	51,606	2,841
% Change	***61.4%***	***559.9%***	***-96.5%***

[14] San Francisco Recreation & Parks, Golden Gate Park Access & Safety Program GGP-Access-Fact-Sheet (sfrecpark.org)

[15] Golden Gate Park's JFK Drive Likely to Go Car-Free Permanently (funcheap.com)

[16] Information comes from Park Board staff notes based on informal interview with San Francisco Recreation and Parks Department staff.

3.3 Central Park, New York

Background

Central Park is located between the upper west and upper east side of Manhattan, spanning an area of 3.41km^2 and with an estimated total of 42 million visitors annually in 2020. The park consists of various tourist destinations such as a zoo, rinks, a theatre, and hundreds of species of flora and fauna. Moreover, the park is covered by a system of streets and walkways and is also served by public transportation. Recreational activities include carriage-horses, bicycle tours, sports facilities, and concerts. New York City has relatively low car ownership and most people access the park by walking or transit.

Low Car Approach

In 2015, the Mayor of New York announced that vehicular access to streets north of 72nd Street would be restricted permanently[17] (following a summer trial of road closure[18]) and that the streets below 72nd Street would have scheduled closures, as per **Figure 3-4**. By 2018, the streets below 72nd Street were also converted to full-time car-free facilities except for emergency vehicles. These closures were scheduled in phases.

Figure 3-4: Central Park Low Car Implementation Map



Outcomes and Lessons Learned

During a casual interview, a former NYC staff noted that there was significant political backing for reducing vehicle traffic in Central Park and the changes implemented were slow but incremental. Enhancing the network around the park and analyzing the factors like circulation to the park and impacts to access facilitated eventual private vehicle restrictions in the Central Park[19].

Given the incremental process, and significant community support, limited information on quantified outcomes is available: qualitative review suggests large-scale support and positive outcomes.[20] **However, one key lesson learned is that the legacy design of the streets—to accommodate automobiles—need to be improved to provide a safer environment that creates fewer conflicts for active transportation users**[21]:

> *"But popularity has brought conflicts among different user groups. Runners and walkers use a bi-directional lane that is adjacent to a cycling lane shared by cyclists of all skill levels, from tourists on rented bikes to competitive racers in training."*

3.4 Royal Djurgården, Stockholm

Background

Figure 3-5: Geographical Context of Djurgården



The Royal Djurgården Park (Djurgården) is an island in central Stockholm, Sweden spread over an area of 2.79km^2. It is part of a larger park area that includes the peninsular Ladugårdsgärdet Park. Djurgården is known for its recreational spaces and tourist destinations. Annually, Djurgården attracts close to 15 million visitors of which 50% come to visit the museum and amusement parks within it[22,23]. Alongside vehicular travel, access to the Park is currently supported by a tram line, bus route, and several ferry routes, alongside walking and cycling.

The western parts of the park, which are the nearest to the city centre of Stockholm, contain most of the businesses and ticketed tourist attractions and provide both private vehicle and public transit access. While vehicle trips to the more forested areas further from the city centre are possible, access is limited by a system of cul-de-sacs and one-way directional limitations. In addition, many of the internal roads in the park prohibit motorized vehicle use.

Low Car Approach

With Djurgården being the most popular destination in Stockholm for various art exhibitions and other events during summer, the park experiences over 1 million visits during the month of July[24]. On such occasions, Djurgarden is completely closed to cars to make the park more convenient for the pedestrians, cyclists, and people who take public transit. Moreover, park authorities convert parking spaces into small temporary exhibits where people can showcase their art or provide cycling schools[25]. During festive seasons, visitors are strongly encouraged to access the park by foot, bike, or public transport.

The festival initiatives are part of a larger drive toward a “car-free, fossil-free Djurgården”, which is one of four focus areas to improve park sustainability. Stockholmers are generally supportive of the vision for a car-free Djurgården, and additional initiatives have been implemented or are planned[26]:

- In 2019, seven park attractions came together to offer a free ferry service to compliment existing services.
- In 2021, a self-driving, electric minibus was debuted.
- The park has been working with Zero Zone, an organization that promotes electric taxi transportation.

[22] Electric taxis have priority at Djurgården - Sustainable Stockholm (royaldjurgarden.se)

[23] Visitor numbers as of 2007. Djurgården - Wikipedia

[24] Djurgården's attractions come together for a car-free Djurgården - Sustainable Stockholm (royaldjurgarden.se)

[25] An eventful week - Royal Djurgarden

[26] A car-free, fossil-free Djurgården, A car-free, fossil-free Djurgården - Sustainable Stockholm (royaldjurgarden.se)

- A hop-on, hop-off internal sight-seeing train visits all attractions in the park.
- A new active transportation bridge was constructed in 2019.
- Partnerships with new mobility providers including a shared three-wheeled pods, and cargo-bike deliveries.
- A statement of intent to plan to go environment friendly by working with partners to switch to electric ferries[27].

Outcomes and Lessons Learned

As noted, Djurgården is working comprehensively toward a car-free vision as part of a more overarching sustainability and climate change goal. In 2019, the park began collecting wide-ranging data to better understand access and trip-making as part of their improvement initiatives. Unfortunately, the pandemic shifted focus, and there is no readily available quantified information at this time.

Of note, is one of the other four focus areas to improve sustainability – an "open, accessible and welcoming" park. It is clear that Djurgården sees the goals of reducing car-travel and increasing sustainability as aligning with those of making the park more accessible:

> *"With a car-free Djurgården, we are also testing converting parking spaces into places for art, cycling schools and people. So on 2-7 June, the Djurgården Bridge will be closed to car traffic, for a more accessible and delightful Djurgården.[28]"*

Equally clear is also that this will require sufficient transportation alternatives and a concerted effort toward implementation.

3.5 Prospect Park, Brooklyn

Background

Located between bustling neighborhoods, Prospect Park is spread over 2.1km^2, making it the second largest park in the Borough of Brooklyn. It provides a variety of tourist spots like museums, historic buildings, lush gardens, viewpoints, and a Zoo. The park is enclosed by major roads on all sides and a four-lane connector road (Flatbush Avenue) bisects the northeast section of the park.

Low Car Approach

Prior to a low car approach, Prospect Park consisted of West Drive and East Drive that went all the way from the northwest side to the southeast side of the park to form a loop on the outside of the park. West Drive permanently restricted vehicle traffic in 2015. East Drive remained open to traffic during the weekday morning peak between 7am and 9am[29]. However, during the summer of 2017, the park introduced a car-free trial. As the summer trials on East Drive became popular among citizens, the City received petitions with more than 1000 signatures urging for permanent car-free hours for the entire park. As a result, in October 2018, the Mayor of New York announced a permanent car-free condition for East Drive. At the time, the number of people who accessed the park on East Drive using active transportation outnumbered the cars that went through those drives on a regular day.

[27] Open Letter: Give Djurgården all-electric public transport - Royal Djurgarden

[28] Royal Djargarden 2022, An eventful week - Royal Djurgarden

[29] Prospect Park Is Now Officially Car-Free - Bklyner

Figure 3-7: Prospect Park Before and After Car-Free East Drive

Before



After



Outcomes and Lessons Learned

The Department of Transport found that traffic on alternate routes was only marginally effected during the car-free trials: after West Drive converted to car-free, the travel time of alternate southbound routes increased by less than a minute[30].

Like Central Park, Prospect Park also implemented an iterative and incremental approach to reducing vehicle travel in the park. Over the course of many years, changes included the removal of parking and closing street entrances at designated hours in the day, restricting directionality and lanes, leading to the eventual closure of the drive through streets. Political backing and the support of local non-profit organizations also played a large role in the low car approach for Prospect Park.

Similar to Central Park above, there is limited information on quantified outcomes of the car-free initiatives. However, it is worth noting that both the Central Park and Prospect Park initiatives were undertaken as part a combined program spearheaded by the Mayor, which may have provided the public a better understanding of the rationale and broader strategic goals.

3.6 Washington Park, Denver

Background

Washington Park is a public urban park in Denver, Colorado covering an area of 0.67km^2. It consists of several soccer fields, playgrounds, recreational spaces, and lakes and is covered by roads on the perimeter. The park also hosts concerts during the summer.

While this park is significantly smaller than others in this best practise scan, it is included here given its focus on universal accessibility and parking.

[30] Mayor de Blasio Announces Prospect Park is Now Completely Car-Free Starting Today | City of New York (nyc.gov)

Low Car Approach

Figure 3-8: Washington Park Road Closure



When the first wave of COVID-19 hit the city in 2020, residents started using the parks of the city to escape the cabin fever resulting from stay-at-home orders. This resulted in overcrowding of parks with a large number of vehicles and pedestrians using the facilities all at once. The crowding lead the Denver Parks and Recreation (DPR) to opt for car restrictions in 11 of its major parks as a way to resolve the congestion issue.[31] The approach was received favourably by residents as more space was available for them to walk and enjoy the parks[32]. Denver Streets Partnership, a community-led group advocating for 'people-friendly' streets sent out a survey to the residents after the vehicle restrictions were imposed.

Outcomes and Lessons Learned

Survey results found that 82% of the 4200 respondents supported the permanent ban of vehicles throughout various parks where the restrictions where put in place.[33] However, not all residents were supportive. A few of the residents who did not live near the park expressed concern that they would no longer be able to drive to their favourite spots. People who lived near the parks were concerned with park visitors parking on residential streets and reducing on-street parking spot availability. Issues around parking had a large impact in how survey respondents felt about the Denver Parks and Recreation's program.

The survey report published by DPR summarized the major concerns that were observed during the closure on all the parks. The common concerns among all the parks are listed below[34]:

- *Accessibility – for people with disabilities and older adults with mobility needs, general access to Denver's regional parks for those who do not live nearby, and the implication that the closures send a message of exclusion*
- *Parking Lots – a desire for some parking lots to remain open, to address the need for access*
- *Other Park uses -- a need for flexibility during COVID-19 was appreciated but access needs for future events and other park activities was also noted.*
- *Barricades – there were many issues with the temporary barricades used in 2020, and improvements are needed for easier bike access and prevention of movement.*

[31] Some of Denver's car-banning COVID-19 experiments could become permanent in city parks and roads | Coronavirus | denvergazette.com

[32] Petition · Make Denver Park Roads Permanently Car Free · Change.org

[33] Denver's major parks won't be car free this spring, but most will be car-lite - Denverite, the Denver site!

[34] Roads-Survey-Analysis-SUMMARY-2021.pdf (wp-denverite.s3.amazonaws.com)

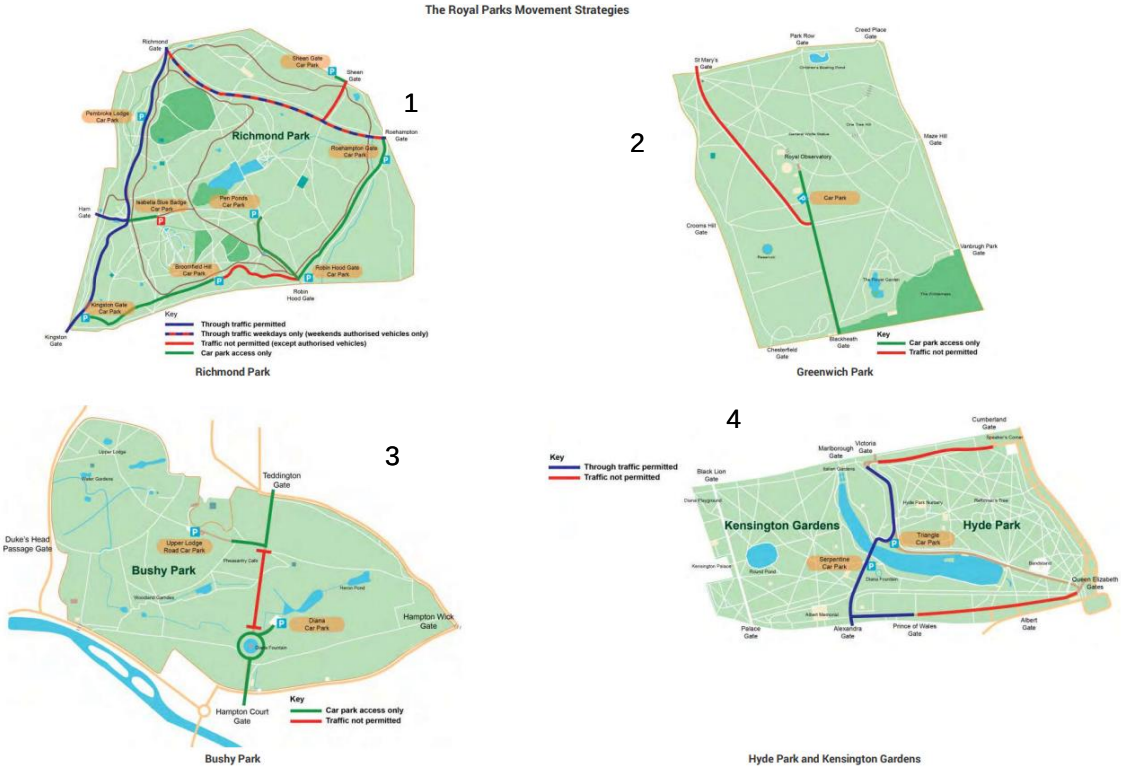
A key lesson learned in this review is the role that parking has in influencing perceptions around low-car approaches, potentially being key drivers of support or opposition.

3.7 Additional Parks and Low Car Initiatives

3.7.1 Programmatic Approach

Many parks across the world have been implementing low car approaches over the past few years. With the onset of COVID-19, such movements have often been widely supported by the public to make those changes permanent. Many parks in London (images below) have experimented with this approach, where they have introduced periodic closures to control the through traffic within the parks from August 2020 to February 2021 on a trial basis. Full time closures were also implemented on some of the roads[35].

Figure 3-10: Low Car Approaches in the Royal Parks, London



Richmond Park (**Figure 3-10** Image 1) restricted all-through traffic on the southern end during weekends and a full-time closure on the northwest side of the park. Additionally, the park also experimented with cutting vehicle traffic at the northeast lane to create a quite zone. Greenwich Park introduced a full-time closure on the north east avenue (Image 2). Bushy Park (Image 3) closed a central road and Hyde Park (Image 4) closed the northeast and sound west roads during the trial period[36].

[35] Royal Parks to close some roads to motor vehicles in bid to combat through-traffic | road.cc

[36] The Royal Parks creates car-free spaces for visitors - Hyde Park; Richmond Park; The Regent's Park; Kensington Gardens; Greenwich Park; Greenwich Park Revealed; St James's Park; Bushy Park; Green Park - The Royal Parks

3.7.2 Addressing Environmental Goals

Figure 3-11: Metro Park, Washington



Apart from road closures to prevent traffic, some parks have implemented closures due to environmental threats to the park. Metro Park, Washington has closed its 5-mile Drive loop to motorized vehicle to prevent slope damage and resultant threat to public safety. A recent press release assessed the geotechnical slope stability and confirmed that due to ongoing erosion it could be a possible threat to the public and the environment. In response, authorities took closed the loop for vehicles but maintained access by bikes or foot[37].

To address climate change issues, political parties in San Diego have raised vehicle congestion concerns in Balboa Park. The Park serves some of the major bus routes and is a popular destination spot for tourists as well as locals. The Park features bike lanes, bus lanes and vehicle lanes. With an ongoing proposal to replace the water mains under one of the streets in the park, officials are seeking to redesign the whole street by testing various streetscape and modal improvements (extending/adding bike lanes, curbs, etc)[38] [39].

Parking management is an additional challenge in Balboa Park. Drivers circulate around for free lots on busy days, impeding pedestrians and cyclist movement. A city-based transportation planner and economist quoted that the current parking problem is not a supply problem but a lack of a proper management issue[40].

3.7.3 Innovative Access Management

Some parks around the world require paid entry or exit for cars/taxis, while not charging admission for people who access the park by foot or bike. For example, Sentosa Park, Singapore charges a specified entry fee (between $2-$6, payable upon exiting) for taxis or private vehicles on weekends and public holidays, but no admission fee is required if the park is accessed by transit, walking, or biking[41]. Similarly, Pebble beach in California has a scenic mile that is open to vehicles with an admission fee[42]. In response to the need to protect the environment, Parks Canada will be restricting private vehicle access to Moraine Lake, one Canada's premier tourist destinations, and will facilitate access through a combination of public and commercial transit options[43].

[37] Outer Loop of Five Mile Drive closing to vehicles permanently for safety (g13fox.com)

[38] PowerPoint Presentation (sandiego.gov)

[39] Balboa Park street project tests San Diego's commitment to biking, transit goals | KPBS Public Media

[40] Experts: Paid Parking at Balboa Park Could End Parking Woes | Voice of San Diego

[41] How to get to Sentosa

[42] Scenic 17-Mile Drive in Picturesque Pebble Beach (pebblebeach.com)

[43] Lake Louise and Moraine Lake - Banff National Park (canada.ca)

Locally, the Buntzen Lake Recreation Area north of Port Moody is piloting a parking reservation system that requires that visitors arriving by vehicle prebook specified timeslots (AM, PM or All-day). No charge is associated with pre-booking. This was done to better manage demand on both the local access road, and the existing on-site parking lot, and to better manage crowding overall[44].

3.8 Summary

The case studies above show that many urban parks have opted for low car approaches over the last several years. While the pandemic prompted these projects in many cases, parks like Central Park, Prospect Park, and Royal Djurgården had begun implementing low car initiatives pre-COVID to mitigate the impacts of congestion and overcrowding, to become more sustainable, and to retain park value. The following lists some of the key lessons learned from the review, which is summarized below.

- Experience shows that low-car initiatives in parks typically increase visitor numbers, and particularly the amount of people using active and low-impact modes of transportation.
- Where substantive low-car approaches are undertaken and considerable space is reallocated from facilities designed primarily for vehicles, further and thoughtful design interventions are required to provide a safer experience for active transportation users.
- Low-car approaches for parks may benefit from a programmatic approach, whereby the initiatives are introduced to several parks at the same time.
- The goals of a low-car approach can align or bolster goals of creating more universally accessible parks, including for those with disabilities.
- Longer-term low-car options must be carefully approached and studied; moving too quickly may diminish public support. They are typically implemented in phases, and often provide alternative ways to facilitate access while also maintaining universal accessibility (for persons with disabilities).
- Other contributive factors to implementing low car approaches included a strong political backing and/or initial community advocacy, the desire to enhance park culture significance, and to increase safety.
- Public opinion was generally favourable once changes were made, with positive outcomes including less noise and pollution, roadway and parking space reallocated for events, and continued business vitality.
- Some parks are managing vehicle access through fees, prebooked timeslots, the provision of public and commercial transit alternatives, and other innovative measures.

[44] Parking reservation system pilot project planned for Buntzen Lake (bchydro.com)

4 Existing Mobility and Access Conditions

In order to generate effective and appropriate options for the future of mobility in Stanley Park, it is important to understand how park visitors are currently travelling to and within the park. In this section of the report, the existing conditions of mobility in Stanley Park are described using a variety of data sources.

Because visitation patterns in Stanley Park have changed significantly since the onset of the COVID-19 pandemic, travel patterns from 2019 and earlier were investigated to give an understanding of the baseline conditions in the park without the impacts of the pandemic. For most of the analyses documented in this section of the report, 2019 is considered as the "base year". However, this section also provides information on COVID-19 related impacts into 2021.

Chapter Key Findings

- **Stanley Park receives approximately 18 million visits annually, with just over half of visits (9.2 million) coming from unique visitors.**
- **48% of trips to Stanley Park were made by locals that live within 10 km of Stanley Park.**
- **Over the last 40 years, the number of annual visits has more than doubled, while the number of vehicles entering the park daily has reduced to about one half.**
- **Limited transit service, low frequency on existing routes, and too many connections/transfers, were the most commonly stated barriers for using public transit to travel to Stanley Park.**
- **Approximately 80% of park users with ambulatory disabilities visit the Park by high-occupancy vehicle (i.e., as a group). In contrast, park users with non-ambulatory disabilities report making greater use of active transportation than the average population. There are differing needs among persons with disabilities, and motorized vehicle access is one of many considerations.**
- **Senior citizens have a greater reliance on vehicle travel to access Stanley Park but using vehicles as passengers than the general population. This may indicate a greater need to provide motorized transportation options for seniors that do not require them to operate the vehicle.**
- **Pre-pandemic, the road network in Stanley Park was operating with no congestion at nearly all times. This is also the condition for North Lagoon Drive.**
- **There is a sufficient amount of parking provided in the Park overall. Some individual parking lots experience high demand that may make finding available parking a challenge for vehicle drivers who would like to park directly adjacent the destinations those lots support.**
- **About two-thirds of the paved area used for transportation in Stanley Park is designed for vehicular modes of travel.**
- **Most survey respondents (70%) stated that there would be opportunities associated with reducing private vehicle traffic in Stanley Park, including reducing noise and pollution, providing more space for other modes of transportation, and achieving a safer network**

4.1 Mobility Data Sources

Existing conditions for travel to and within Stanley Park were assessed using multiple data sources to reflect the variety of modes and routes visitors to Stanley Park use. In addition, because travel behaviour in the park and the Park Board's data collection program have both changed significantly since the onset of the COVID-19 pandemic, vehicular traffic volume estimation methodologies relying on several data sources were utilized, including the use of "big data" technologies. Typical permanent counter data (hose or camera vehicle counts) was unavailable for the base year (2019), requiring the use of these big data sources.

StreetLight Location-Based Data

StreetLight is a data source that utilizes location-based data from smartphones and navigational data from vehicle GPS units to measure trip patterns and volumes. Based on the movements of those smartphones and GPS units into and around Stanley Park, this calibrated data source can measure the volume of trips for all modes of travel at any area of the park.

StreetLight data was used for this study to obtain historical travel behaviour in Stanley Park from before the spring of 2020 when the Vancouver Park Board began its current multi-modal data collection program. In addition, the location-based data was valuable for observing access to the park at its interface with the West End of Vancouver, because of the high density of access points for which traditional counting hardware is not well suited.

Parking Meter Data

Transactions from each of the parking meters in the park were recorded between 2016 and 2022 and summarized on an hourly basis. This data source allowed for the observation and analysis of where visitors are parking, and how the rate of parking entries in different lots relate to the number of available stalls.

Arrivalist Location-Based Data

The data platform Arrivalist collected location-based data from the smartphones of international visitors to Stanley Park between August 2018 and May 2019 on the spatial distribution of visitation within the park. For this study, the Arrivalist data was used to understand which areas of the park are visited most by international tourists.



Shape Your City Survey

An online public survey about travel patterns, barriers, and opportunities for visitors to Stanley park was conducted from May 21 to June 9, 2022 using the City of Vancouver Shape Your City platform and received 4046 responses. The survey respondents primarily reported residing within the City of Vancouver (74%), with one-quarter (22%) residing outside of the City of Vancouver but inside the Greater Vancouver Region, and the remaining respondents residing elsewhere.



In addition, data from a public survey from August and September 2020, which focused on the impacts of the COVID-19 pandemic, closure of the park to vehicles in spring 2020, and the interim bike lane on park visitation was also used to supplement the 2022 survey for some analyses documented in this section of the report.

4.2 Park Total Visitation

While the data analyzed in the report up to this point in this document and in most previous studies on Stanley Park was limited to survey samples and counts of vehicles or people entering the park, investigation of the total number of visits to the park have previously been limited by the complexity of collecting data about multiple accesses to the park, its large and porous boundary with the rest of the city, and the variety of modes used to access the park. The following subsection of this report documents the analysis of total park visitation trends using smartphone location (StreetLight data), which allows for a level of detailed analysis that was not previously feasible.

4.2.1 Local and Tourist Trips

StreetLight was used to determine the general location of residence of visitors to Stanley Park in order to understand the proportion of trips into the park made by locals. For this analysis, a local was defined as a person living within 10 kilometres of the park, which includes residents of the City of Vancouver, UBC, and the urbanized parts of North Vancouver and West Vancouver. This distinction is important because locals have the opportunity to visit the park at any time with minimal prior pre-planning required. Conversely, people living further than 10km from the park are likely to visit the park on a planned, structured outing and visit the tourist attractions and restaurants in the park.

It is noted that tourists from further afield may stay within 10 km of the park, but their visitation behaviour while in Stanley Park is likely to be more similar to those travelling over 10 km to reach the park. For this reason, the distance from approximate home location to Stanley Park was used to establish a general distinction between a local visit or that by a tourist, domestic or overseas.

Based on the analysis of StreetLight data, 48% of trips to Stanley Park were made by locals that live within 10 km of the Park.

4.2.2 Total Visitation and Mode of Travel

In order to measure the significance of Stanley Park's role in the city and region for recreation and economic impact, the total number of annual visitors was assessed. Because of the permeability of the southeastern boundary of the park with downtown Vancouver and the high variety of routes and modes with which people access the park, the total number of visitors is complex to measure. Previous transportation studies have only estimated the quantity of visitors based on a short survey time window, focusing on the main entry points, and extrapolating to an annual basis. Estimates undertaken prior to this study have typically assumed about 10 million visitors per year.

StreetLight was used to estimate the total visitors to Stanley Park using location-based smartphone data and GPS devices in vehicles. In addition, the total number of visitors was broken down by mode to understand the different ways in which park users are travelling to Stanley Park.

The StreetLight methodology for estimating pedestrian, bike, and bus trips into the park required calibration data in order to calculate the total number of annual trips. Pedestrian calibration data came from permanent counters operated by the West End, Downtown, and South Granville Business Improvements Associations, in addition to a number of short-term counts performed on the Seawall by the Park Board in 2020 and 2021. Bike calibration data came from City of Vancouver permanent count stations. Finally, bus calibration data came from the TransLink Transit Service Performance Review.

The number of vehicle trips were measured using StreetLight, and an average auto occupancy of 2.7 was measured using the public engagement survey for this study. The number of observed trips was multiplied by the average auto occupancy to estimate the total number of visitors by car.

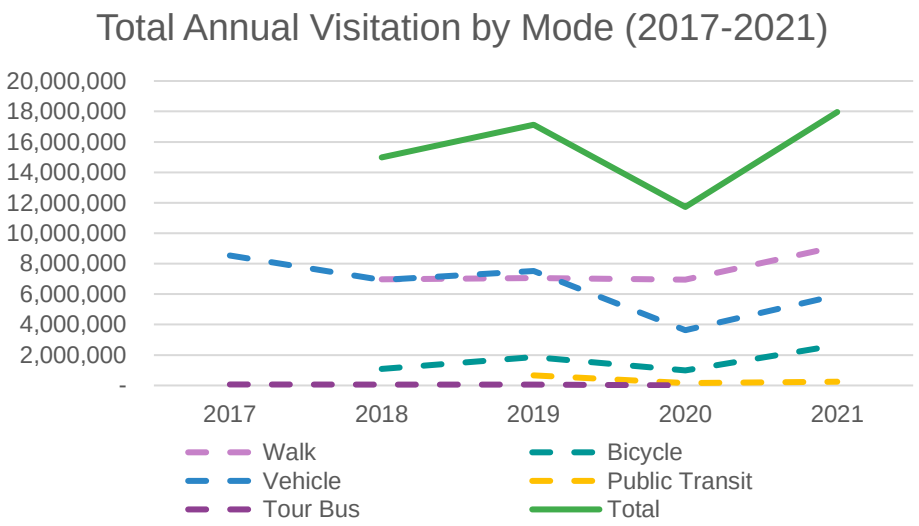
The number of park visitors using tour bus was estimated using a variety of data sources. Data from parking meters around the park was used to measure the number of buses entering the park each year from 2018-2020, and the average number of visitors alighting from each bus was calculated based on a study from fall 2019 that observed tour buses at Prospect Point for a period of two weeks. The number of tour buses each year was multiplied by the average number of alightings to calculate the number of visitors using your buses each year.

Total visitation numbers between 2017 and 2021 are shown in **Table 4-1** and depicted graphically in **Figure 4-6** below**.**

Table 4-1: Historic Patterns in Annual Visitation by Mode

	Annual Visitors by Mode					
Year	**Walk**	**Bicycle**	**Vehicle**	**Public Transit**	**Tour Bus**	**Total**
2017	-[45]	-[45]	8,500,000	-[45]	60,000	**-**
2018	7,000,000	1,100,000	6,900,000	-[45]	60,000	**15,000,000**
2019	7,100,000	1,900,000	7,500,000	600,000	60,000	**17,100,000**
2020	7,000,000	1,000,000	3,600,000	100,000	4,000	**11,700,000**
2021	9,100,000	2,600,000	5,900,000	200,000	-[46]	**18,000,000**

Figure 4-1: Historic Patterns in Annual Visitation by Mode



Approximately 17.1 million trips to Stanley Park were made in 2019, before the onset of the COVID-19 pandemic. The number of annual visitors fell in 2020, but surpassed 2019 levels in 2021 with an estimated 18.0 million annual visitors. Since 2017, the total trips annual trip to Stanley Park by all motorized modes has decreased, while the total annual trips by active modes has increased. The mode split information documented in this section of the report will be used to generate and evaluate appropriate and effective options for mobility in Stanley Park in future phases of this study.

18 million yearly visits

[45] Location-based smartphone data (StreetLight data) was not available for this mode and year

[46] Parking meter data with tour bus information was not available for this year

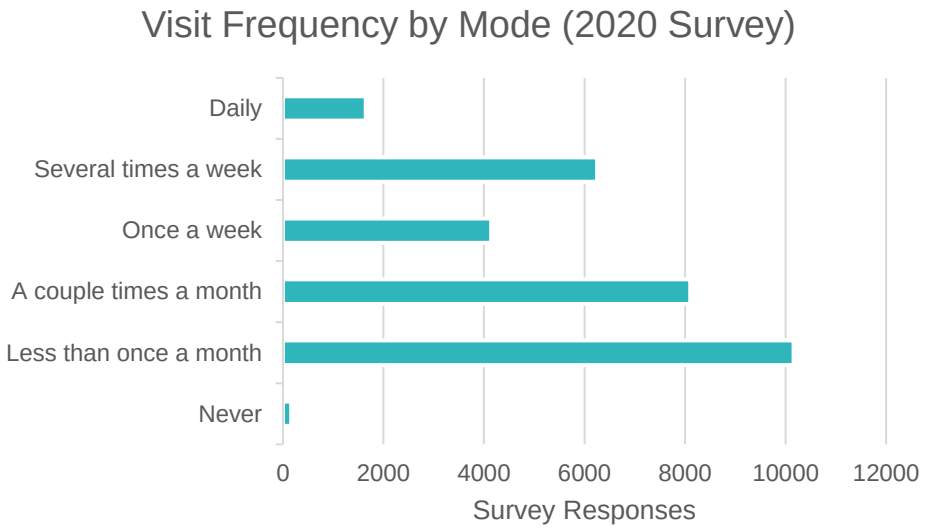
4.2.3 Unique Park Visitors

The analysis documented in **Section 4.2.2** was further developed to determine how the total number of trips to the park were distributed between unique and repeat park visitors.

For the 52% of trips classified as being by tourists using the StreetLight methodology described in **Section 4.2.1** above, it was assumed that each tourist would only make one trip to the Park per year, based on the distance between the park and their home.

Of the 48% of annual trips to the park made by locals, visitation frequency was estimated based on responses to a question in the fall 2020 public survey, with results shown in **Figure 4-2.** By making assumptions about the average number of visits per year associated with each of the categories shown in **Figure 4-2**, it was estimated that the average visitor to Stanley Park living in Vancouver visits the park 55 times per year. While most Vancouverites will visit Stanley Park fewer times than the average, the significant number of locals (for example, residents in the West End) who visit every day or multiple times per week skew the average number of visits relatively high.

Figure 4-2: Visit Frequency by Mode by 2020 Public Survey Respondents[47]



The number of visits was divided by the average annual visits per person to estimate the number of unique visitors separately for locals and tourists, as demonstrated in **Figure 4-2** below**.**

[47] The table captures visit frequency by transportation mode used, meaning that many respondents may indicate the use of more than one mode and associated frequency as part of their travel patterns to the park. As such, the total responses in this table are larger than the total number of survey respondents.

Table 4-2: Total Trips and Unique Park Visitors[48]

	Total Visits	18,000,000
Tourists (Live greater than 10 km from Park)	**Number of Trips**	9,300,000
	Average Annual Visits per Person	1
	Unique Visitors	9,300,000
Locals (within 10 km of Park)	**Number of Trips**	8,600,000
	Average Annual Visits per Person	55
	Unique Visitors	160,000
	Total Unique Visitors	9,500,000

Approximately 9.5 million different people visited Stanley Park in 2021. The majority of those people were tourists who visited the park only once per year, while approximately 160,000 local residents who live within 10 km of Stanley Park and who repeatedly visited make up the rest of the annual visits.

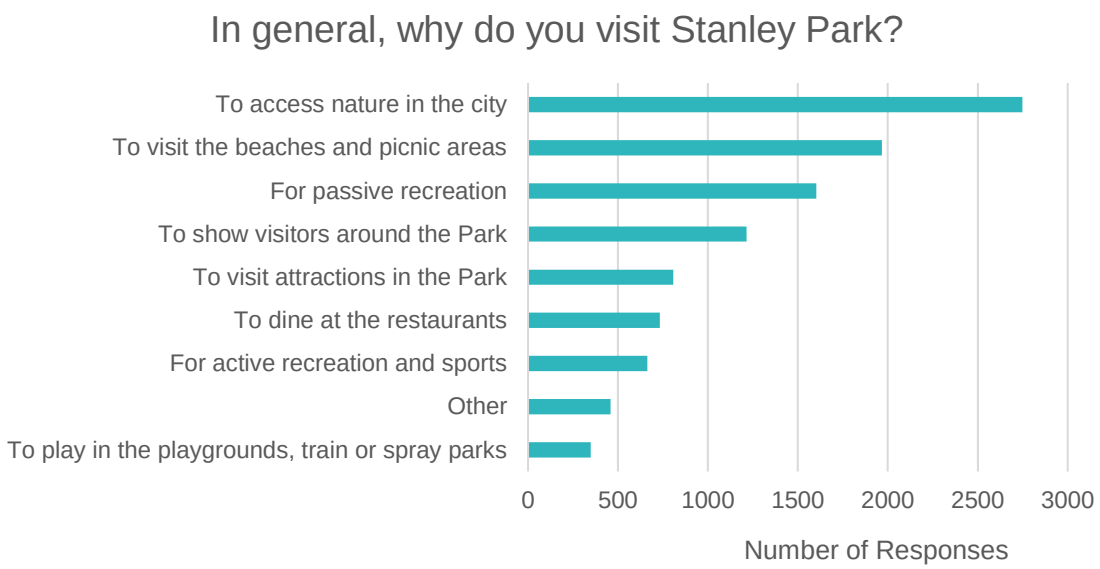
4.3 Reasons for Visiting Stanley Park

Park users visit Stanley Park for a variety of reasons that reflect the range of attractions in both forested and developed spaces in the park. **Figure 4-3** shows the typical reasons for visiting Stanley Park identified by the respondents of the 2022 public survey. Respondents most frequently identified the natural resources of the park, including the beaches and picnic areas, as their main draw. While a significant number of respondents identified the attractions, restaurants, and developed play areas as their main reason for visiting, they were relatively few compared to those that travelled to Stanley Park to experience the natural spaces. “Other” reasons identified by respondents include for events, travel (i.e., commuting through the Park), employment/volunteer work, and to retreat (i.e., meditation, relaxation).

The public survey drew a distinction between “passive” recreation – which included walking, birdwatching, and similarly unstructured activities – and “active” recreation – which included rugby, lawn bowling, and similarly organized sports and activities. **Respondents of the survey were over twice as likely to identify passive recreation as their reason for visiting relative to active recreation.**

[48] This table “blends” information over the last couple years. The total visits are from 2021, as this is indicative of the currently understood trend, whereas unique visitor numbers are more indicative of 2019 conditions. As well, the estimate for unique visits among locals relies on a weighted average across the visit frequency distribution obtained from the survey sample. In reality this distribution likely takes a less-constrained form, meaning that the unique local visitors estimate is likely an underestimate.

Figure 4-3: Reasons for Visiting Stanley Park



4.4 Mobility and Access Patterns Trends

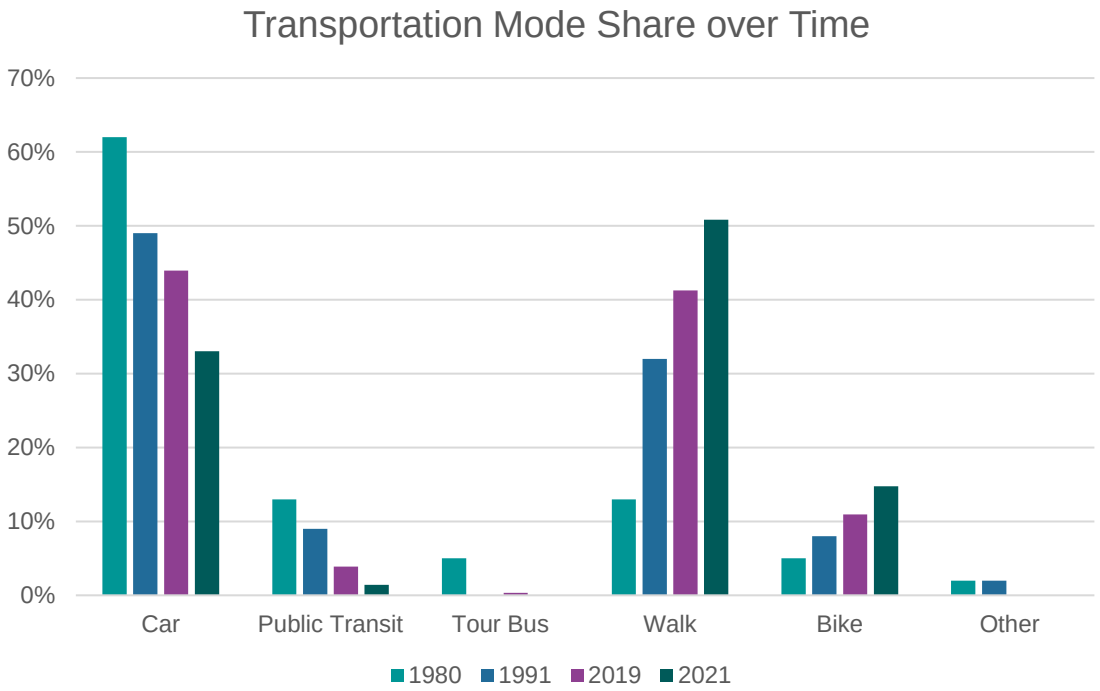
This section assesses historical mobility and access patterns, going back about 40 years. Data for this assessment comes from prior planning initiatives and reports discussed in Section 2, and combines it with StreetLight data and other recent screenline data.

4.4.1 Historical Transportation Mode Share

StreetLight data from 2019 and 2021 was compared to mode split data from historic studies on Stanley Park from 1980 and 1991 to illustrate the shift in mode split over time, as shown in **Figure 4-4.** **A clear trend from the data is the relative reduction in mode share by all motorized modes of travel, while active modes have occupied an increasing share of the mode split at each year they have been measured.**

A portion of this shift can be attributed to the differences in data collection technology as discussed earlier. The shift towards active modes can also be attributed to an increase in supportive infrastructure and culture for travel by both walking and cycling throughout the city of Vancouver, an increase in population in downtown Vancouver, and increased tourism activity. By 2019, the share of walking and vehicle trips to access the Park was approximately even. The shift toward active modes was especially pronounced during the COVID-19 pandemic.

Figure 4-4: Historic Patterns in Mode Share



4.4.2 Active Transportation Volumes Trends

Historical reports and studies contain cyclist volume data at several locations along the Seawall. Over the years, this data was tabulated across different time periods (daily or hourly volumes) and not always in the same location. These were compared to more recent data for comparable locations. As such, not every year or location has complete data. However, where data was comparable, the trend shown in **Table 4-3** is clear. **Cycling volumes at all locations along the Seawall have increased over the years, approximately doubling in the last 15 years at several key locations**. Similar historical data for walking trips was not found to be available. Given the large overall increase in people accessing the Park on foot, it can be safely assumed that a similar—if not greater—trend exists along the Seawall for walking.

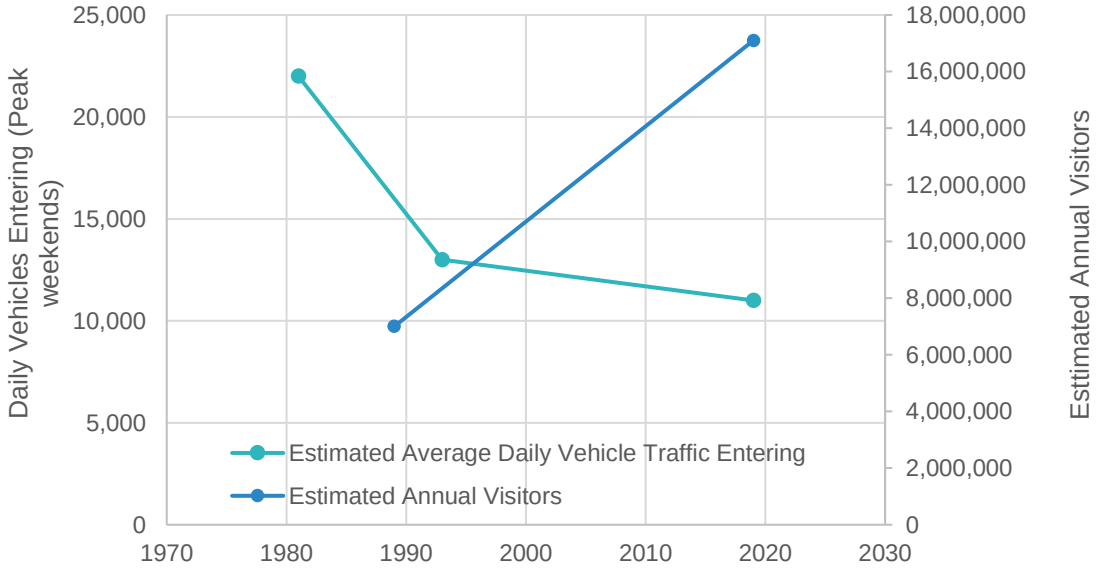
Table 4-3: Historical Cycling Volumes along the Seawall

Location	1980	1992	1996	2005	2011	2019	Type of volume
Hallelujah Point	400	-	300	-	-	700	Peak (per hour)
Prospect Point	-	2250	-	-	3050	-	Daily (per day)
Lumberman's Arch	-	-	-	2500	-	5700	Daily (per day)
Second Beach	-	-	-	3000	3900	5800	Daily (per day)
Third Beach	-	1100	-	1700	-	-	Daily (per day)

4.4.3 Park Visitation Trends

Using the readily available historical data, it was possible to reconstruct overall visitation and that by vehicle travel extending back almost 40 years as shown in **Figure 4-5** below. From the historical data, it is not possible to fully review the methodologies used, meaning that some of the changing patterns may be a result of different data collection techniques, however the overall trends shown in the figure are clear[49].

Figure 4-5: Total Visitors vs Park Vehicle Entries



The total amount of visitors entering Stanley Park has increased almost 2.5 times while the number of people entering the park by vehicles has decreased by about one-third over the same time period.

4.5 Transportation Supply and Spatial Context

While the majority of Stanley Park's area is forested, the existing behaviour of park visitors is mostly determined by the layout of the transportation network and developed areas in the park. Features of the transportation network, in addition to the points of interest that attract trips on that network, are described below to provide context to the information on existing mobility behaviour that is shown later in this section of the document.

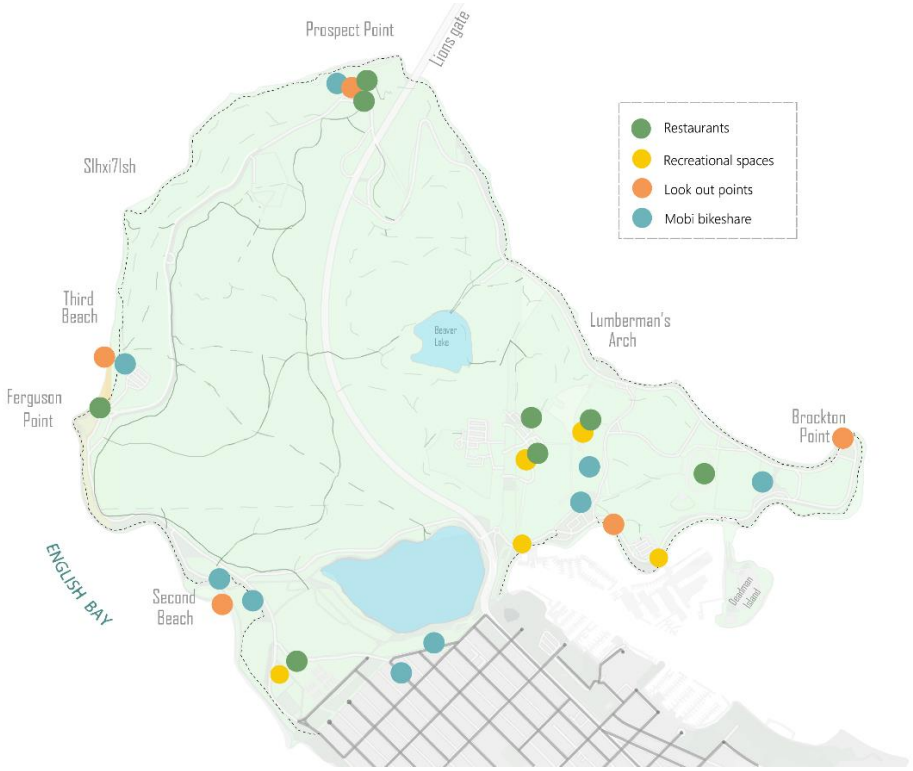
4.5.1 Park Layout

Figure 4-6 shows a set of the common destinations in the developed areas around Stanley Park. While many of the trip attractors are within the southern and eastern parts of the park, both fairly easily accessible from downtown Vancouver, some of the most popular destinations at Prospect Point and Third Beach are in the more relatively remote areas of the park. Trips to both Prospect Point and Third beach require longer trips on Stanley Park Drive or the Seawall.

[49] For example, the vehicle entry estimate for 1980/81 was noted in the 1989 Stanley Park Transportation Update. That report noted an estimate between 17,000 and 26,000 vehicles entering on a summer weekend day. The average is shown here. The more recent (2019) vehicle volume shown also use a typical summer weekend estimate.

The labelled points shown on **Figure 4-6** indicate the main developed areas of the park. These areas are typically the most notable attractors for visits to Stanley Park. The map also indicates how Vancouver's bikeshare system serves many of the popular areas of the park.

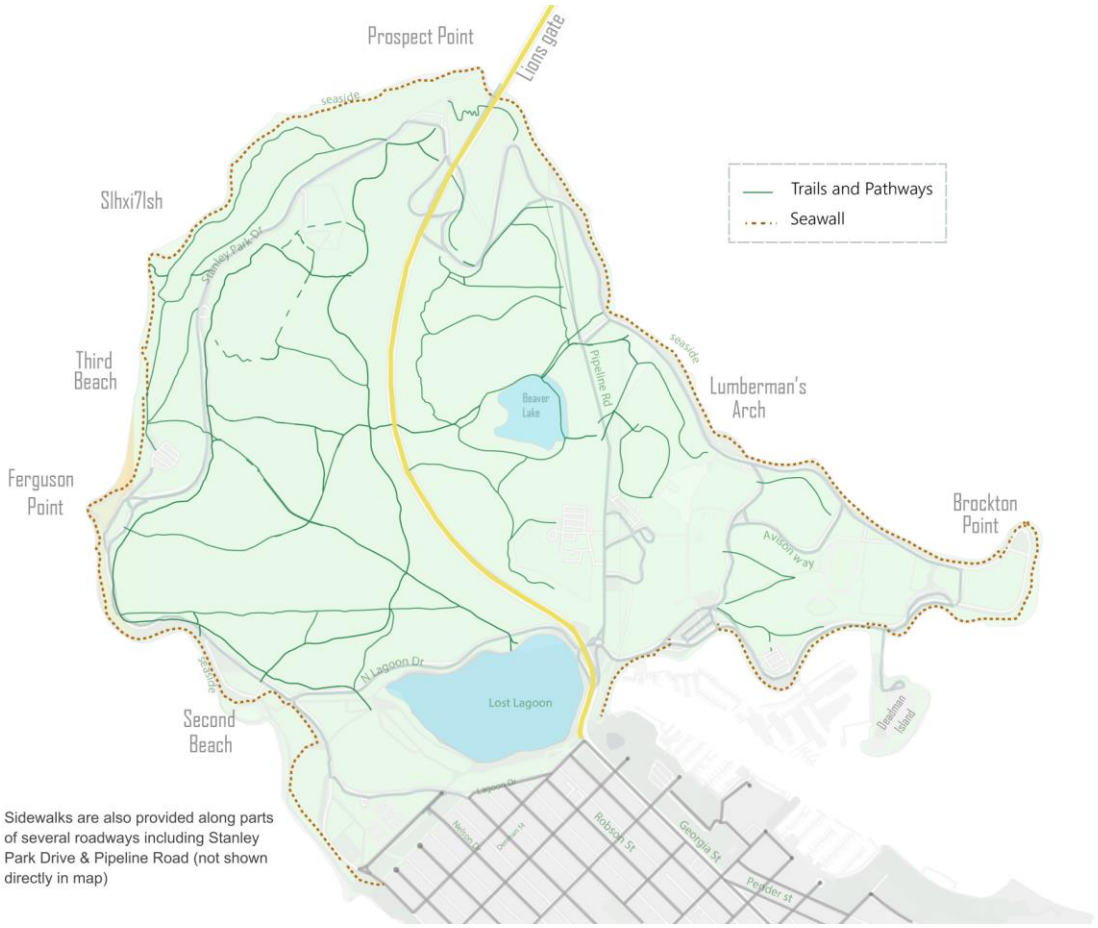
Figure 4-6: Typical Destinations in Stanley Park



4.5.2 Park Transportation Network

Figure 4-7 below shows the walking and trail through Stanley Park. Although the pedestrian network is not labelled in detail on the map, those visiting the park on foot can travel along any of the roads, trails, or paths, including the Seawall, in any direction. All areas of the Park are generally accessible for pedestrians because of the dense network of trail and paths, but some people visiting the park on foot may find the relatively large distance to and from downtown Vancouver to the far north and eastern parts of the park to be challenging to access. As well, these trails consist of varied surfacing, and some users may experience localized accessibility challenges.

Figure 4-7: Walking and Trail Network



The primary network of pathways facilitating bicycle travel separated from vehicles is shown in **Figure 4-8** below. Cyclists are also able to utilize the roads in the park. In response to the pandemic, an interim separated bicycle facility was also implemented along Stanley Park Drive (not shown in the figure). Along these peripheral facilities—the Seawall and Stanley Park Drive—cyclists are generally required to travel in a counter-clockwise direction. Bidirectional travel on Pipeline Road gives cyclists an option for shortened loops around the park. The figure also includes an alternate cycling option to the Seawall between Second Beach and the West End (bottom of figure). This option was implemented in response to the pandemic to connect the interim bike lane on Park Drive within Stanley Park to network changes made just beyond Stanley Park on Beach Drive.

Figure 4-8: Primary Cycling Network



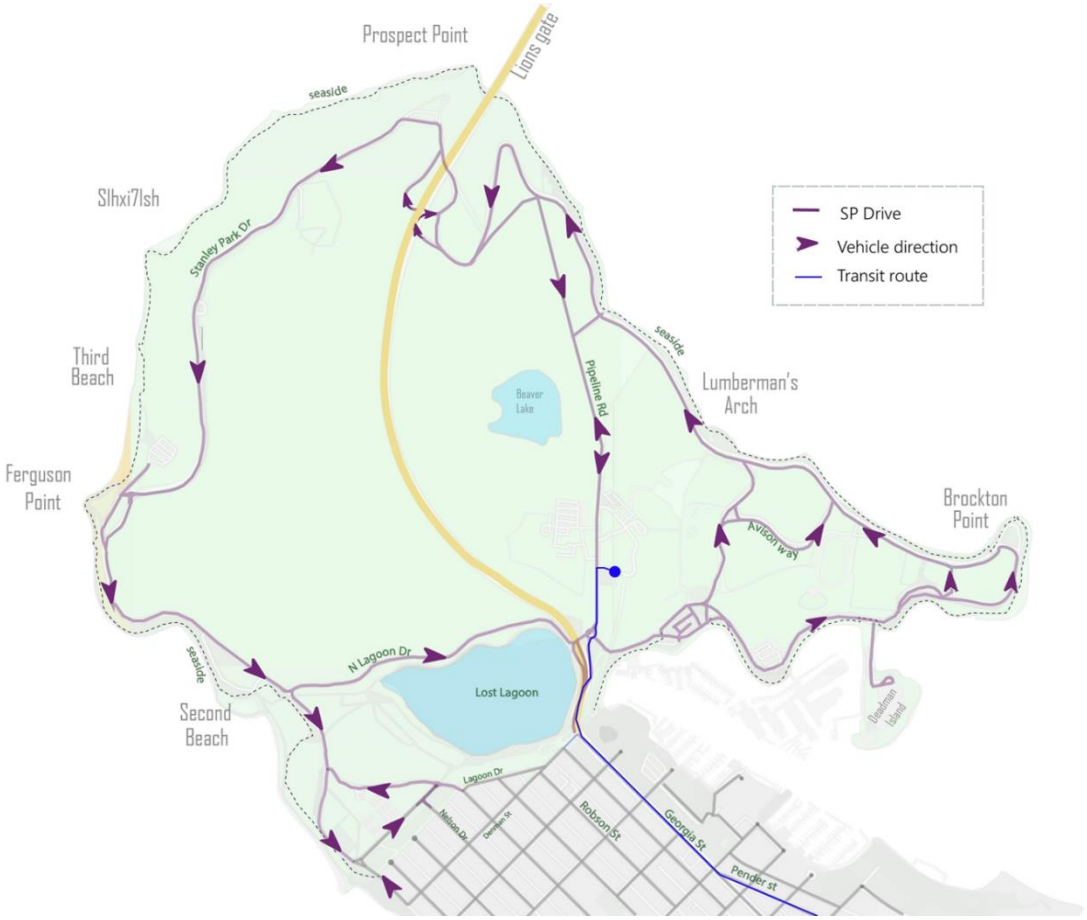
The vehicular network in Stanley Park is shown in **Figure 4-9** below. Similar to the cycling network, a key feature of the vehicular network is the need to travel mostly in a counter-clockwise direction around Stanley Park Drive. Currently, vehicles can access the Park from either Georgia Street, or the Stanley Park Causeway / Lions Gate Bridge. Vehicles can also access the eastern edge of the Park from the West End via Beach Avenue, Nelson Street, Barclay Street, and Robson Street; however, this is limited to areas east of North Lagoon Drive. Pipeline Road facilitates bi-directional travel, allowing drivers an option to exit the Park without travelling around the Stanley Park Drive loop, either back to Georgia Street in the south part of

the park, or onto the Stanley Park Causeway. Avison Way facilitates vehicular access to several amenities and uses in the eastern portion of the Park.

Once vehicles driving on Stanley Park Drive go past the Stanley Park Causeway off-ramps, they must exit the Park via North Lagoon Drive or continue circulating the Park. In response to the pandemic, the vehicular exit into the West End was closed, given the Beach Avenue network modifications.

Public transit (Route 19) accesses the eastern portion of Park. Access to other parts of Stanley Park by public transit is limited, although a number of routes travel along the Stanley Park Causeway / Lions Gate Bridge. Tour buses also use Stanley Park's vehicular network.

Figure 4-9: Vehicular and Transit Network



4.5.3 Transportation Network Topography

A significant characteristic of Stanley Park's transportation network is the loop formed by both Park Drive and the Seawall. Many visitors to Stanley Park enjoy travelling around the loop. For active mode users, there is an option to use either or portions of these two facilities. However, the Seawall remains relatively flat, whereas Park Drive has significant elevation changes that may pose challenges for some users.

The elevation contours in Stanley Park are shown in **Figure 4-10** below. The relatively high elevation around Prospect Point has a significant effect on behaviour and trip planning around the park. The elevation gain required to access Prospect Point can be a barrier for some people

visiting the park by bike or on foot because of the effort involved to reach the top, potentially interrupting the loop experience. However, the elevation gain is also a trip attractor for a certain segment of park visitors, namely sports cyclists, who visit the park specifically for the opportunity to climb up to Prospect Point.

The steep cliffs indicated on **Figure 4-10** between the Seawall and the areas around Prospect Point also influence trip behaviour in the park. While most of the length of the Seawall around the park has frequent access points that allow for short walking loops and close access to the seawall by private vehicle, there is no direct access to the Seawall between the Lion's Gate Bridge and Third Beach due to the constraints impose by the elevation change in that area. As a result, any visitors accessing that part of the Seawall must walk or cycle a relatively long distance compared to other parts of the Seawall.

Figure 4-10: Elevation Changes in Stanley Park

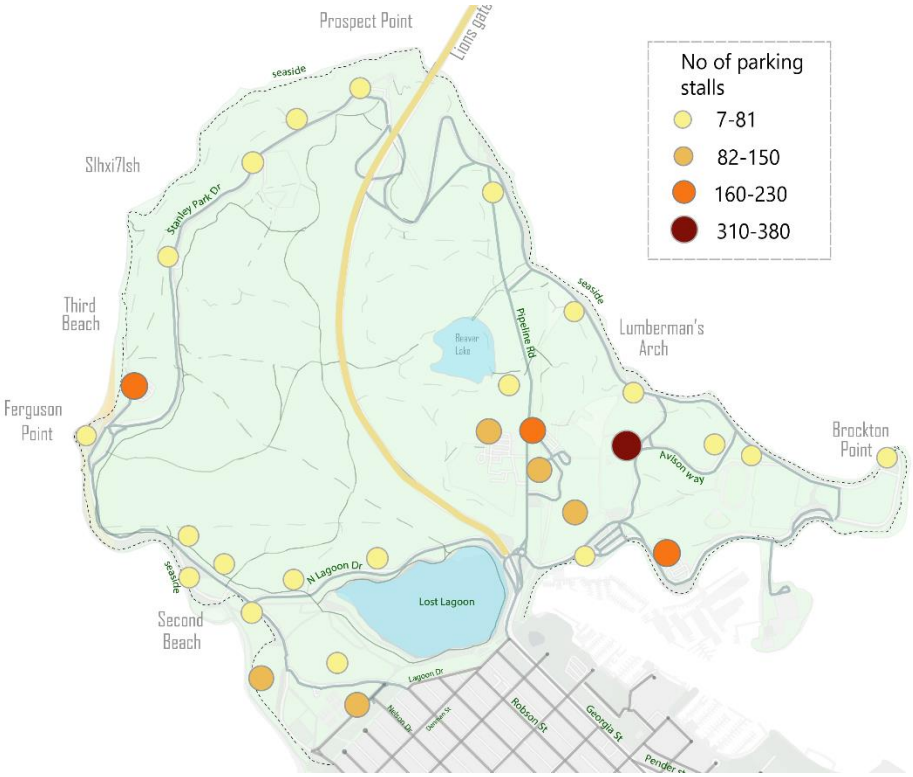




4.5.4 Vehicle Parking

For visitors to Stanley Park travelling by car, the availability of parking is an important factor in planning their trip, including where, when, and if to visit. There are many different parking lots and on-street parking areas throughout the park, with varying number of stalls to accommodate the variation in demand for parking in different areas. The parking areas and their capacities are shown graphically in **Figure 4-11**, with emphasis on the largest parking lot at the Aquarium, and other relatively large lots at Third Beach, the Stanley Park Train, and the Vancouver Yacht Club.

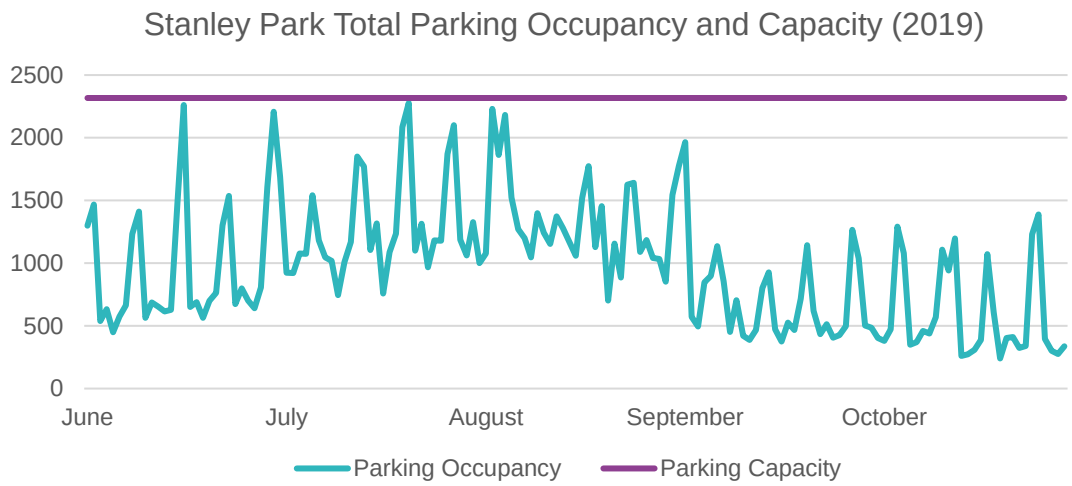
Figure 4-11: Parking Capacity around the Park



Parking data from meters around the park was analyzed to determine how usage relates to capacity in Stanley Park as a whole and in different areas.

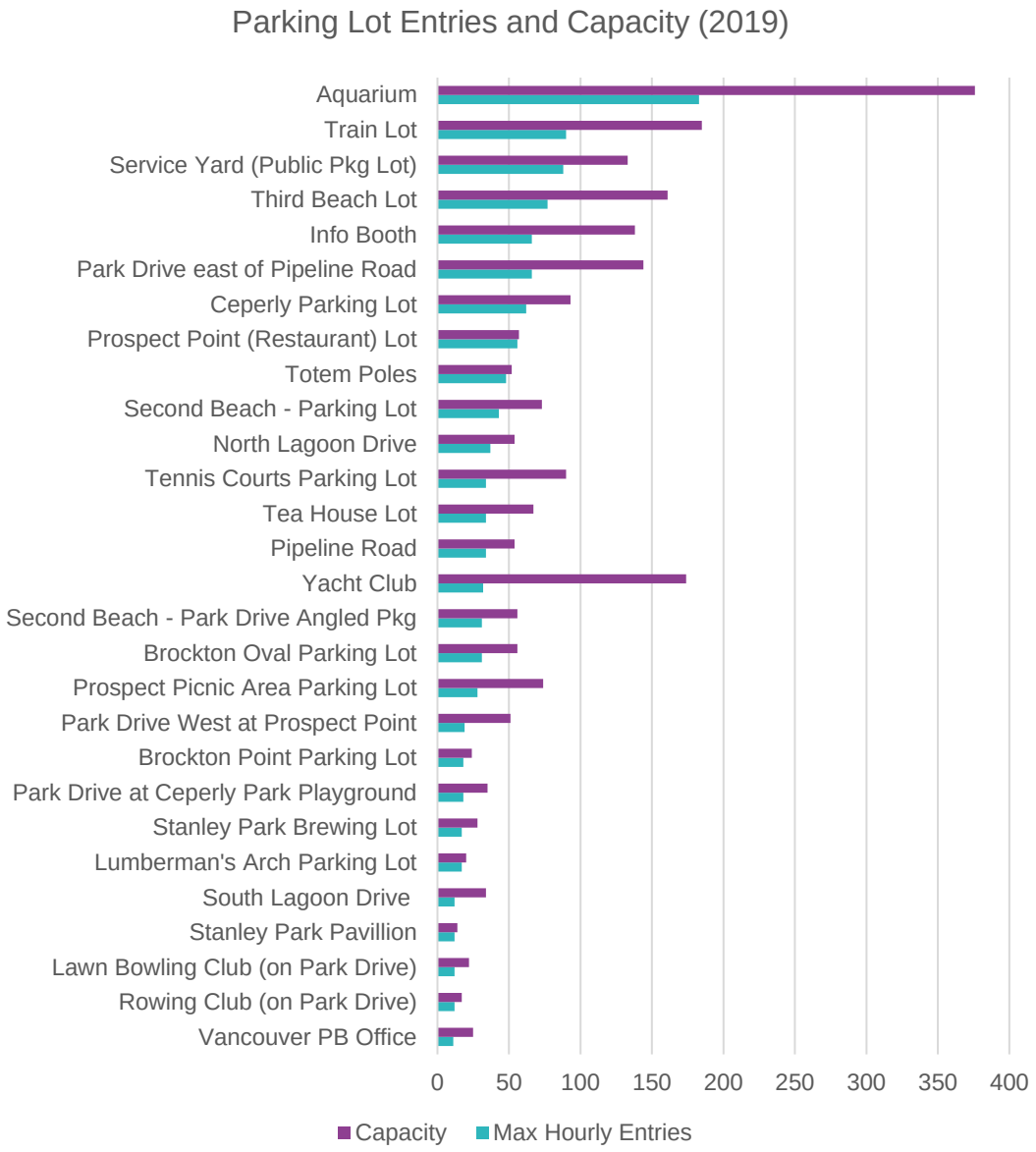
Peak daily parking occupancy for the park as a whole was measured for each day from June to October 2019 – typically the busiest months of the year, and is shown in **Figure 4-12** below relative to the total capacity for parking in Stanley Park, which was 2317 stalls in 2019. As shown, **parking occupancy did not exceed capacity through the busiest months of the year, and occupancy only exceeded 2000 vehicles seven times in 2019. It is clear from the data that total parking capacity is not an issue in the park.**

Figure 4-12: Parking Occupancy nd Capacity for all Lots in Stanley Park



Hourly parking entries at each of the parking lots in Stanley Park in 2019 were analyzed relative to the capacity of the lots. **Figure 4-13** shows the maximum hourly entries from the whole year and parking capacities at each of the lots in the park.

Figure 4-13: Parking Entries and Capacity for Each Lot in Stanley Park



The chart allows for the comparison of relative utilization between the different lots, indicating the following broad categorization:

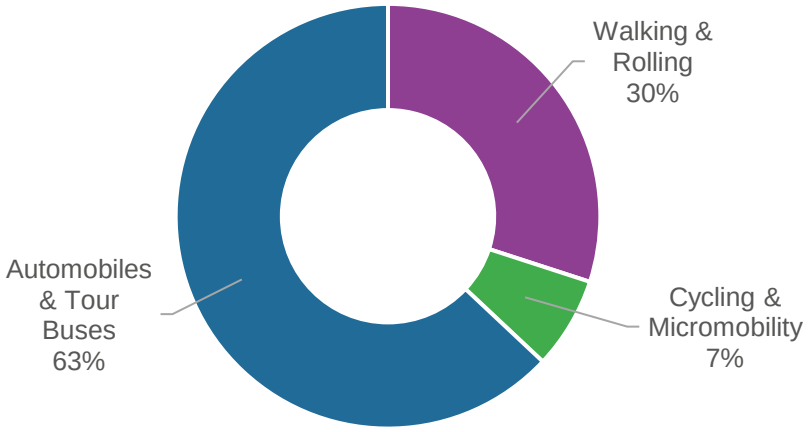
- The Prospect Point Restaurant, Totem Poles, Lumberman's Arch, Stanley Park Pavilion, and Rowing Club parking lots have maximum hourly entries from 2019 approaching the capacity of the lots, and as a result may experience congestion and visitors circling for parking during the peak periods of the year.
- The Vancouver Yacht Club, and to a lesser extent, the Prospect Point picnic area and tennis courts, have capacity far beyond the maximum hourly entries, and as a result have excess parking stalls even during the peak periods of the year.
- For areas where visitors are expected to park their vehicles for over an hour, such as the Aquarium, Third Beach, Second Beach, and Ceperly Meadows, the relationship between maximum hourly parking entries and capacity indicate that parking availability may be

constrained during the peak periods of the year, but this data source provides limited insight into the frequency and severity of those capacity issues.

4.5.5 Space Allocation

Figure 4-14 illustrates the approximate amount of paved space allocated to the main transportation modes using the Park's transportation system in the 2019 baseline condition. **Just under two-thirds of the paved area used for transportation in Stanley Park is designed for vehicular modes of travel.** This predominantly includes private vehicles, but also service and operational vehicles, tour buses, and cyclists or micromobility users that use mixed facilities. Sections further below discuss the share of trips made by these transportation modes and their volume profiles; it will be worth considering how space is allocated in that context.

Figure 4-14: Proportion of Paved Surface Allocated to Main Transportation Modes[50]



4.6 Mode of Travel and Mode Share

The transportation mode with which park users travel to and within Stanley Park has a significant effect on the way those visitors experience the park and the infrastructure that is required to facilitate their visit. This section explores both mobility data and public survey data about existing patterns of mode split for travel to and within the park, and also assesses the opportunities, challenges, and preferences for shifting that mode split in the future.

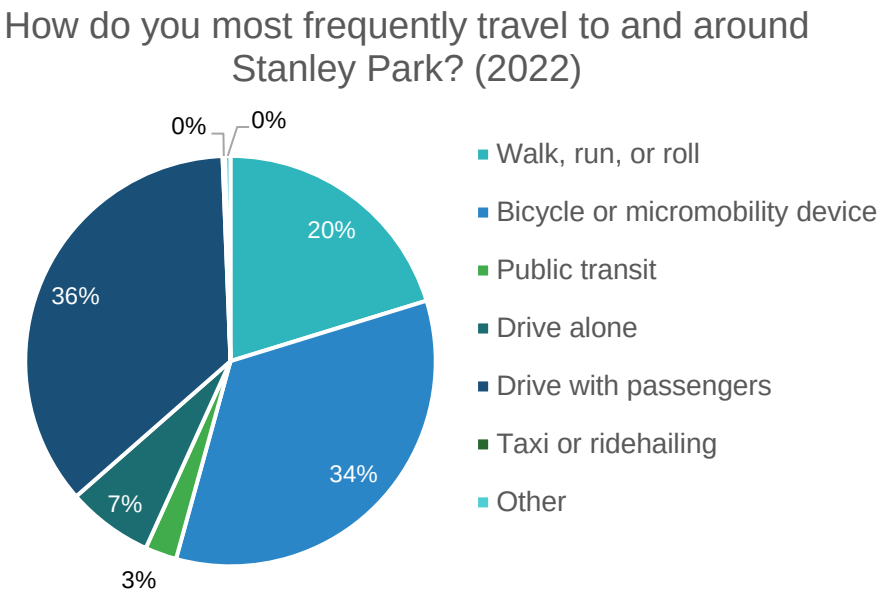
The mode of travel for trips into and around Stanley Park by respondents of the public survey are shown in **Figure 4-15.** Driving with passengers and riding a bicycle or micromobility device were the most frequently observed modes in the survey, representing 36% and 34% of respondents, respectively. Some respondents reported travelling to the park on foot (20%), and few by driving alone, transit, or taxi or ride hailing (combined 10%). The small number of respondents that selected "Other" as their travel mode typically travelled by boat, swimming, or a combination of modes.

It is noted that the mode split shown in **Figure 4-15** is a cross-section of survey respondents and their most frequent mode of travel into the park. Over the course of a week, month, or year, the distribution of trips between different modes will change given the relative frequency of trips

[50] Park Board, Regular Board Meeting Nov 23, 2020. Chart indicates 2019 space allocation, the baseline for this study

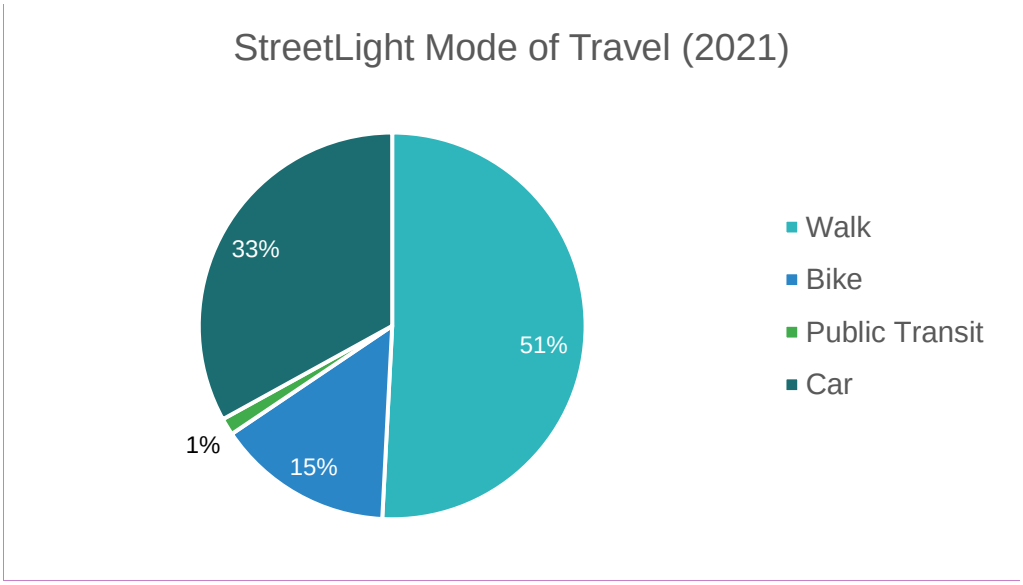
by different modes, and analyses of that trend will be explored in other subsections further below.

Figure 4-15: Travel Modes from the Public Survey



To compare with the mode split data from survey responses shown above, trips into the park observed using location-based smartphone data on the StreetLight platform were categorized by mode as shown in **Figure 4-16.**

Figure 4-16: Travel Modes from Location-Based Data

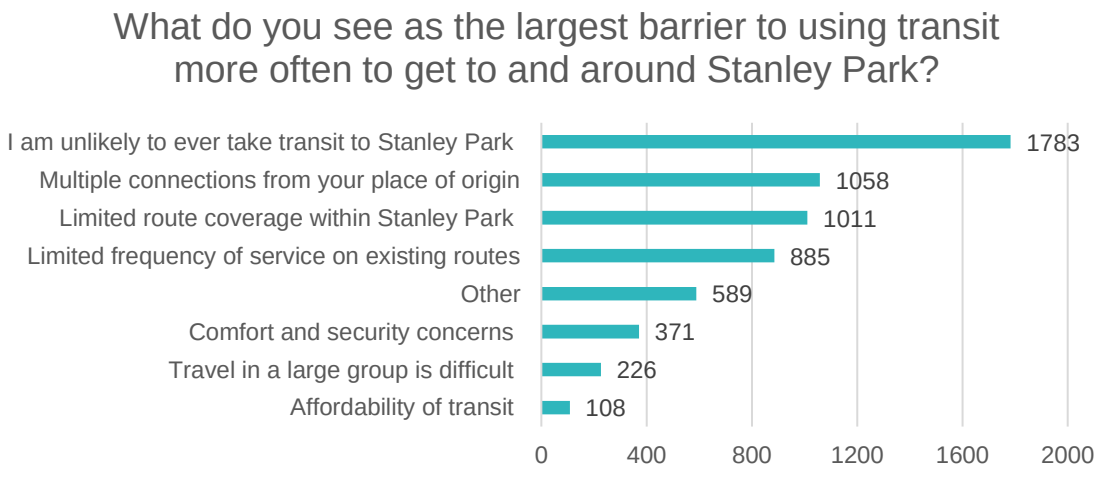


The main difference between the location-based data and the survey data is the relative size of the walking mode split, which is significantly higher in the location-based data, for two main reasons:

1) First, the StreetLight mode split shown in **Figure 4-16** is representative of all trips in 2021, whereas the survey mode split shown in **Figure 4-15** is only a cross-section of park visitors and their typical mode choice. As a result, the StreetLight mode split inherently considers the relative difference in trip frequency by different modes throughout the year for repeat visitors to the park. **The results indicate that park users that travel on foot visit the park more frequently than those that travel by other modes.**
2) Second, the passive nature of the location-based data collection allows for the observation of trips that are not captured in surveys of Stanley Park users, and that have often not been counted in studies of park visitation. Namely, the location-based StreetLight data observes short walking trips into the park made by people travelling from the West End and downtown Vancouver, some of which are short and enter the park by the multiple accesses where pedestrian count data collection has been limited in the past. **As a result, the StreetLight data observes a significantly larger walking mode share than other data sources that have relied on survey responses or counting pedestrians on the Seawall**.

Public transit provides additional opportunity for park visitors travelling from further away in the City and Region, or for those who are less able to rely on walking or bicycles due to disability or other mobility restrictions. . However, usage of public transit to access Stanley Park has historically been - and continues to be - low (see **Section 4.2.2** of this report). Respondents of the 2022 public survey were also asked what they see as the biggest barrier to taking transit more often to and around Stanley Park (**Figure 4-17**). **Having to make multiple connections or transfers, limited route coverage within Stanley Park, and limited frequency of service on existing routes were the most commonly stated barriers for using public transit to travel to Stanley Park.** Affordability of transit was least stated to be a barrier. “Other” barriers people face to using transit in Stanley Park include lack of comfort in seating or space (i.e., overcrowding), increased travel time, reliability and timing of services and connections, and limited bike accommodation on transit or through park and ride facilities.

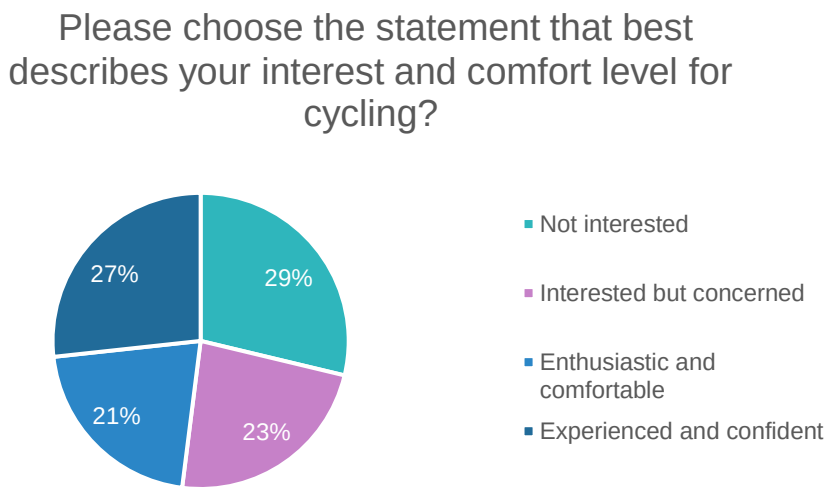
Figure 4-17: Barriers to Using Transit More Often



Although visits to Stanley Park by bicycle have increased historically, there remain barriers to cycling to and within the park for many visitors. **Figure 4-18** shows the comfort level for cycling of respondents from the 2022 public survey. The responses demonstrate that approximately

half of survey respondents are interested or enthusiastic about cycling but have varying levels of safety concerns related to infrastructure and driver behaviour. **Because of the safety concerns related to cycling held by approximately half of park visitors, policies and infrastructure that affect perceived and actual safety for cyclists are likely to have a significant effect on the number of people that choose to bike to or within Stanley Park.**

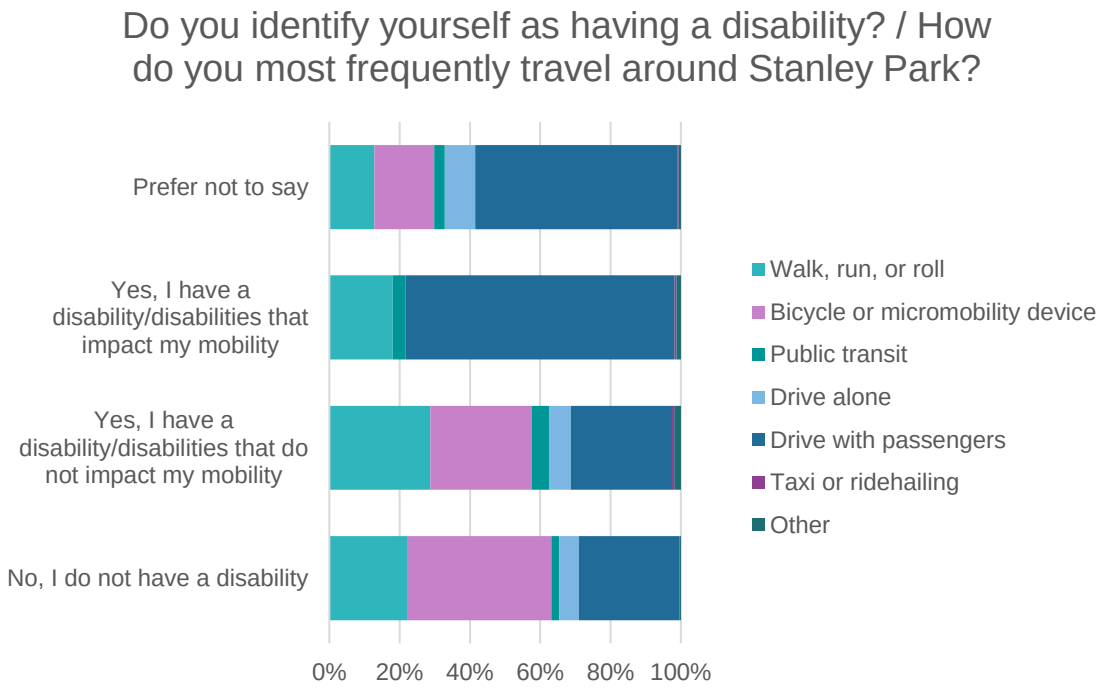
Figure 4-18: Cycling Comfort Level



Mode choice for travel to and within Stanley Park is constrained for some visitors by a disability or mobility issue. The charts in **Figure 4-19** shows the relationship between disabilities and impacted mobility with mode choice from the 2022 public survey data. **Approximately 80% of park users with disabilities that impact their mobility visit the Park by high-occupancy vehicle (i.e., as a group), demonstrating the importance of ensuring that access to the park is provided for the segment of the population that faces barriers to using active modes of travel.**

Contrastingly, park users with disabilities that do not affect their mobility reported walking, running, or rolling to the park more than those without any reported disability. It is worth noting that almost one out of five respondents that reported a disability that impacts their mobility accessed the park without motorized transportation. **These results suggest that there are differing needs among persons with disabilities, and that access by motorized transportation is one of many considerations.**

Figure 4-19: Relationship between Mode Choice and Disability Status



Respondents were asked which transportation mode should be focused on to improve access for themselves and for everyone else, more broadly (**Figure 4-20** and **Figure 4-21**)[51]. When asked how access into and around Stanley Park could be improved for themselves, respondents reported the need to focus on bicycles and e-bikes, walking and roll modes, and public transit. “Other” modes of transportation identified by respondents to improve access personally include electric vehicles, car share, motorcycles, bike taxis and bike tours, road/gravel bikes and e-bikes, free shuttles/trams/trains and Skytrain. When asked how access could be improved for everyone, respondents focused on public transit, vehicle access for people with disabilities or reduced mobility, and local shuttle buses. "Other” modes of transportation identified by respondents to improve access for everyone include electric vehicles, motorcycles, tour coaches, Skytrain, tram/shuttle, hop on/hop off bus, and ferry boats.

These results indicate that while improvements to park access for active modes would have significant benefits for park visitors, those same users are cognizant of the importance of some kind of motorized transportation mode of travel into and around Stanley Park to preserve access for all.

[51] Note, in keeping with one of the main study purposes – to assess the opportunities of and challenges of reduced private vehicle travel – this option was omitted from the list of choices. The “Other” category was used by some respondents to express this desire

Figure 4-20: Transportation Modes Most Affecting Access for the Respondent[52]

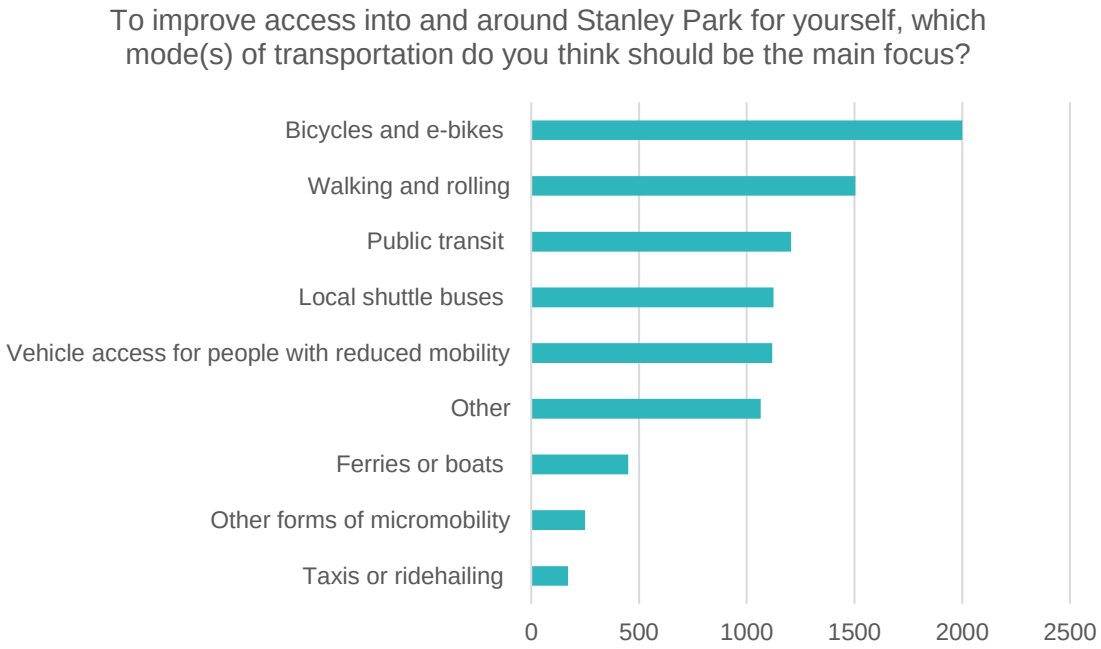
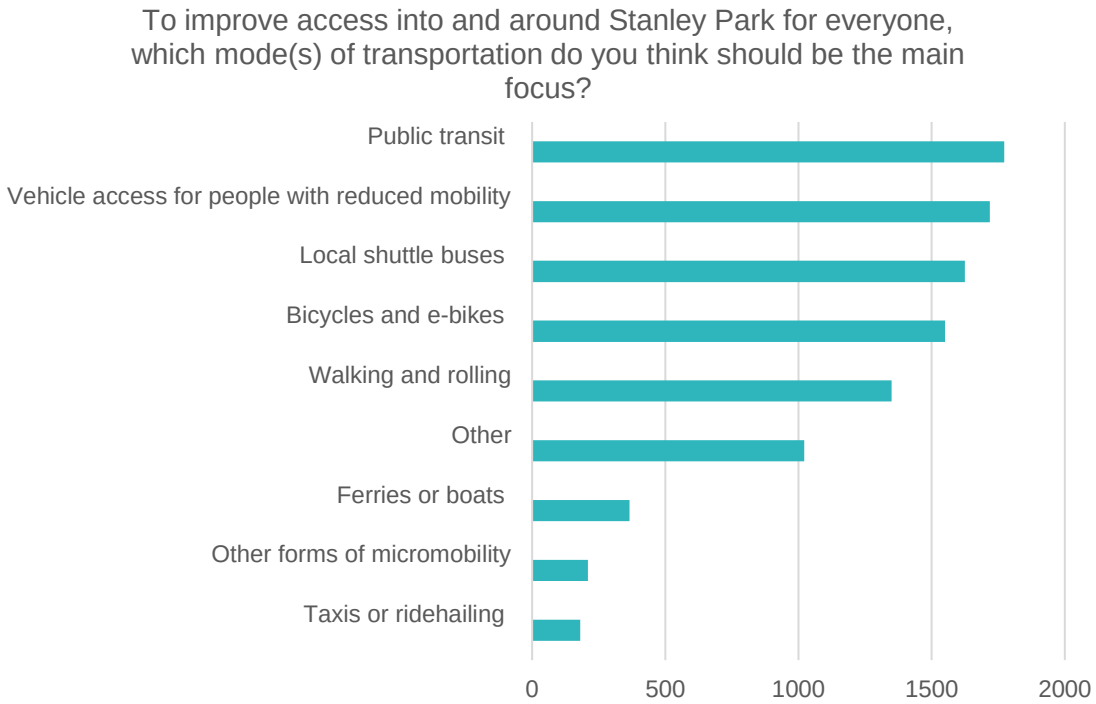


Figure 4-21: Transportation Modes Most Affecting Access for Everyone



[52] Many of the responses under "Other" in these figures included answers such as "car" or "automobile". To align with the purpose of the study, these were not explicitly provided as default options in the survey structure, such that information focusing on options aside from private vehicle travel could be better understood.

4.6.1 Seniors' Travel Patterns

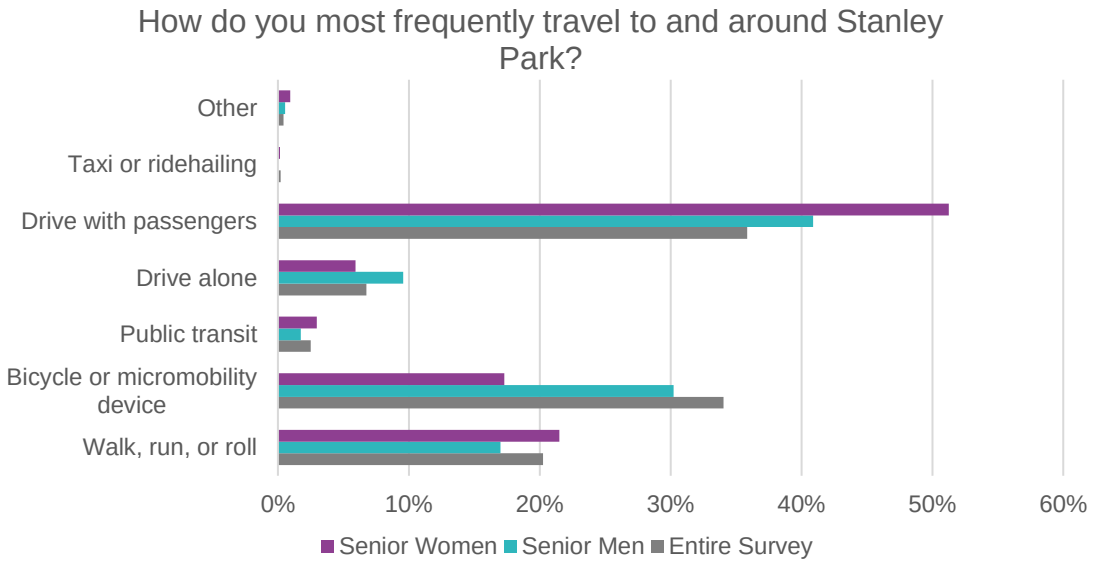
Transportation patterns for senior adults may differ from that of the general population, given unique needs and potentially constrained by physical mobility.

Figure 4-22 below compares mode choice for men and women over 60 years old with the mode choice of the entire survey sample. Key findings from this figure include:

1. **Driving**: Senior men and women reported driving with passengers (41 and 51%, respectively) more than average (36%). Senior men reported driving alone (10%) more than average (7%), meaning that overall, they utilize vehicular travel more than the general population. Senior women reported driving alone slightly less (6%) than the average population.
2. **Walk/Roll/Running and Transit:** Senior women reported walking, rolling, or running and using public transit at rates comparable or slightly higher then the survey average, while for senior men, these were reported at a slightly lower rate than average.
3. **Cycling:** Senior men also reported using a bicycle or other micro-mobility device at similar rates to the entire survey sample. In general, 50% of senior men and 43% of senior women reported using a mode other than a vehicle (driving alone or with passengers) to travel to and around Stanley Park.

Figure 4-22 indicates that vehicle access may currently be of heightened importance for senior adults compared to the general population. However, it is also clear that improvements made to other modes, such as walking, biking, and transit would also benefit nearly half or more of senior adults. **Further, the significant use of vehicle travel as passengers by seniors suggests a need to provide travel options that reduce the need for seniors to directly operate motorized vehicles.**

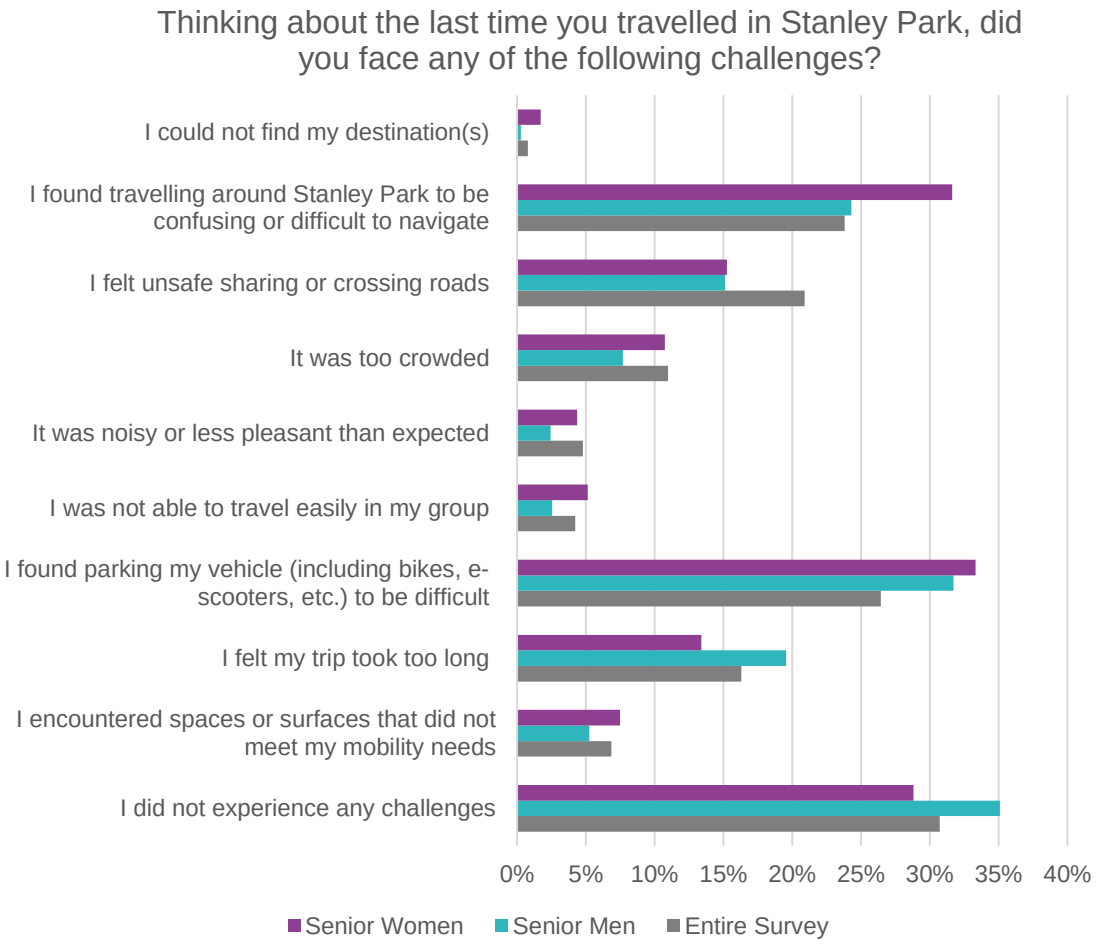
Figure 4-22: Mode Choice by Senior Adults



Senior adults may also have unique transportation experiences compared with the general population. Survey participants were asked to select all the challenges that they experienced

when traveling in Stanley Park. **Figure 4-23** below provides the percentage of respondents that selected each of the listed challenges.

Figure 4-23: Senior Adults' Challenges Traveling in Stanley Park



Senior men tended to report experiencing fewer challenges than the entire survey sample, albeit being more likely to report that their trips felt too long.

Senior women reported more challenges navigating around the park ("I found navigating around Stanley Park to be confusing or difficult to navigate") and finding their destination ("I could not find my destination(s)").

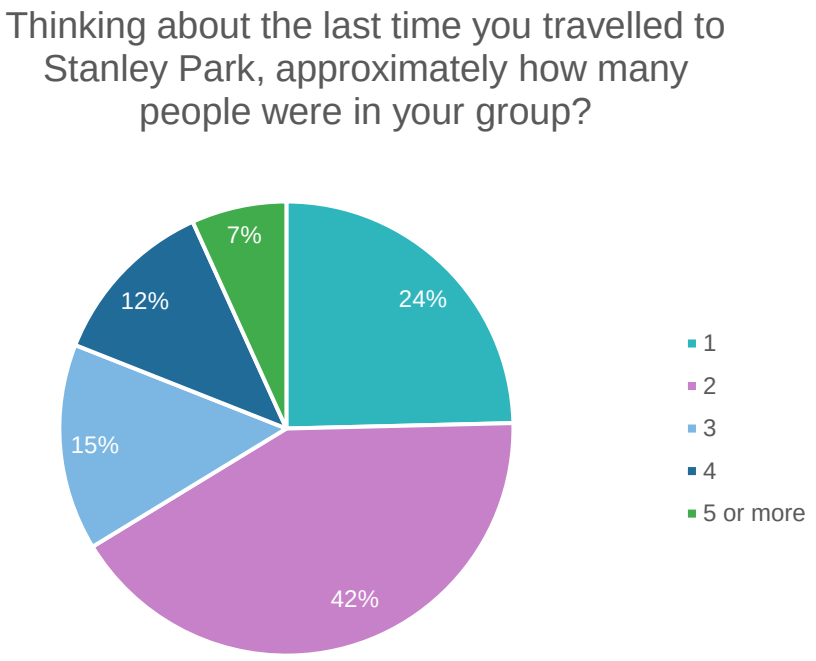
Both senior women and men reported lower safety concerns sharing or crossing the roads than the average sample participant, but increased difficulties with parking. These outcomes are likely related to on overall higher use of private vehicular modes within the Park for seniors.

The results of this question suggest that the (self-reported) challenges faced by seniors are generally similar to that of the general population; however, there may be a need to specifically focus on improving wayfinding or providing information (i.e. for parking opportunities) to reduce access barriers into the Park for seniors.

4.7 Group Size and Vehicle Occupancy

Many visitors to Stanley Park travel in groups, and group size can influence travel behaviour, and impact the amount of money spent at businesses. As shown in **Figure 4-24** below, a quarter of respondents from the 2022 public survey conducted trips unaccompanied, with 42% traveling in a pair, and the remaining 34% of respondents traveling in groups of 3 or more.

Figure 4-24: Travel Group Size in the 2022 Public Survey



Group size data form the public survey was cross tabulated with responses about most frequent travel mode to see how group size varied across the modes, and the results are given in **Table 4-4** below**.** The small number of respondents that selected “Other” as their travel mode typically travelled by boat, swimming, or a combination of modes. The resulting group size for the Drive Alone mode being greater than 1 indicates that some drivers meet others from their group for activities in the park after driving in alone.

Table 4-4: Group Size by Mode

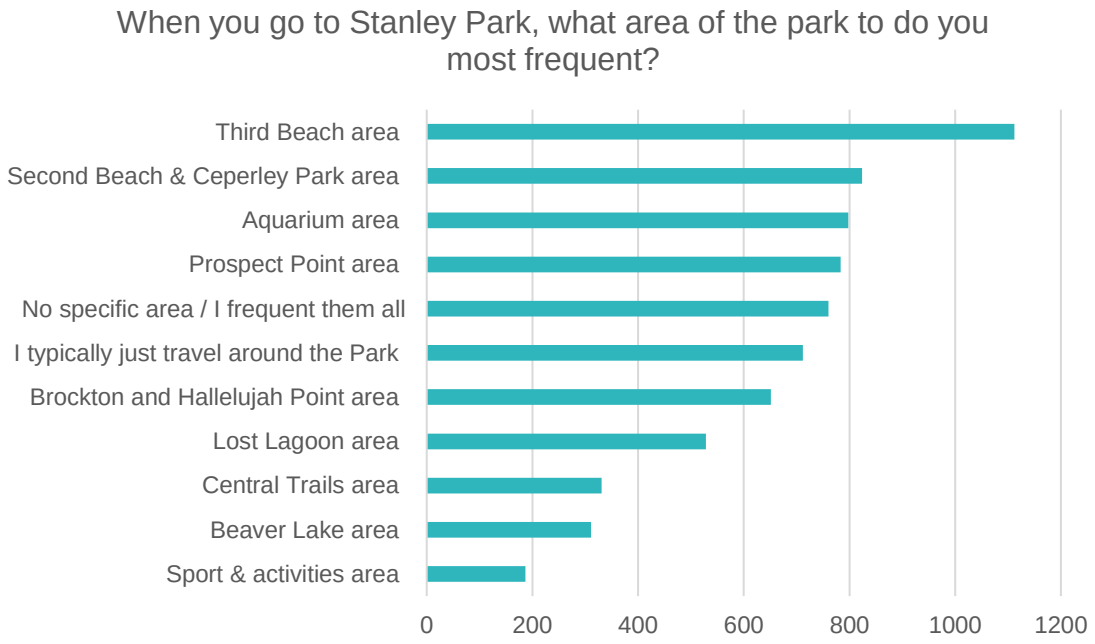
Mode	Average Group Size
Drive alone[53]	1.6
Walk, run, or roll	2.0
Bicycle or micromobility device	2.1
Public transit	2.5
Drive with passengers	2.9
Taxi or ride hailing	2.9
Other	3.2
All Modes	**2.3**

The average group size for visits to Stanley Park is 2.3, and the average auto occupancy (based on a weighed average of the drive alone and drive with passengers mode) is 2.7, which is considerably higher than the average auto occupancy for a typical vehicle trip in the city of Vancouver or the Metro Vancouver region.

4.8 Spatial Distribution of Park Visits

The most frequented destinations in Stanley Park, according to survey respondents, are shown in **Figure 4-25** below. The most visited destination is Third Beach, followed by Second Beach and Ceperley Park area, the Aquarium, and Prospect Point.

Figure 4-25: Most Frequented Destinations within Stanley Park

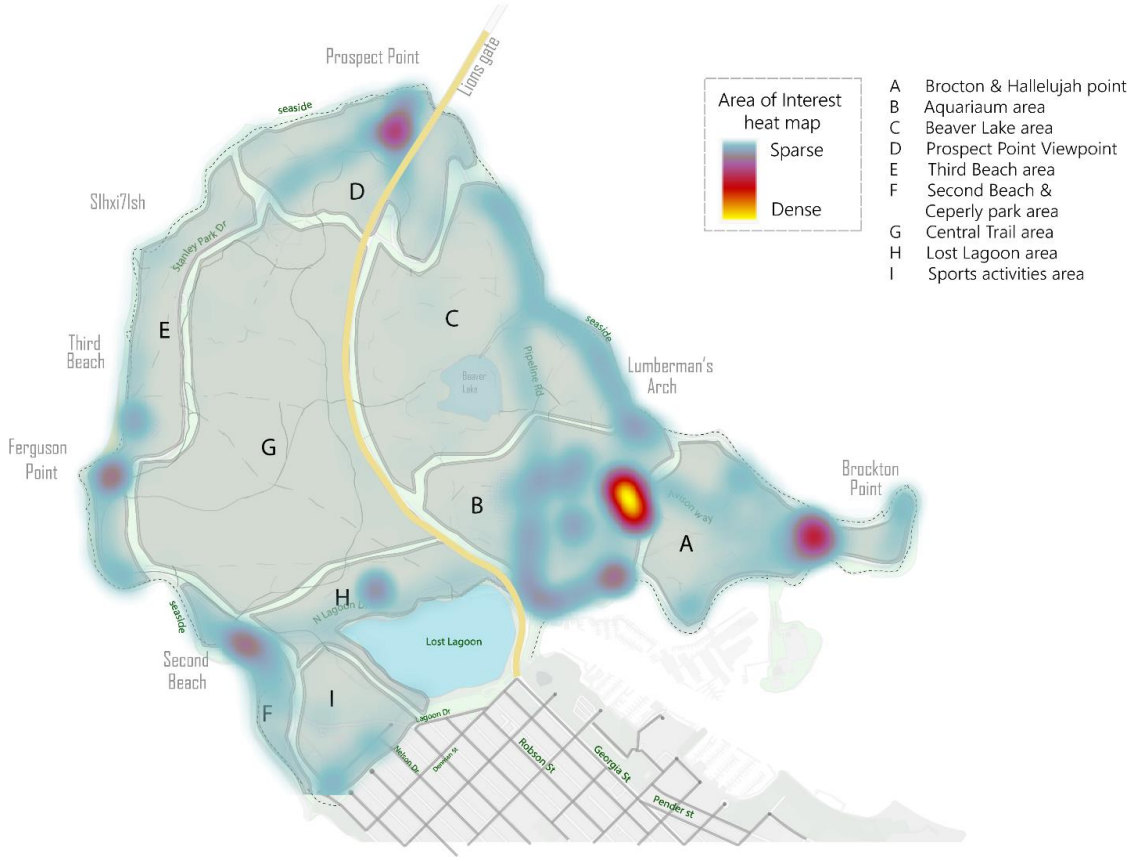


In contrast with the public survey capturing destination frequency by area residents, location-based data from Arrivalist was used to observe the spatial distribution of visitation patterns by

[53] That this value is greater than one is mainly a result of people driving into the Park to meet friends or family, as the survey did not explicitly ask about the size of the travelling group, but the size of the visitor group that they were a part of.

international tourists, and a heatmap of the density of visit locations is shown in **Figure 4-26.** The most visited location by international tourists is the Aquarium by a significant margin, followed by the totem poles and Prospect Point.

Figure 4-26: Visitation to Areas of Interest (International Tourists)



The differences in visitation patterns by locals and international tourists (observed by the differences between **Figure 4-25** and **Figure 4-26**) demonstrate the varying priorities and ways in which different types of park users choose to experience Stanley Park.

On average, international tourists visit attractions on the eastern and northern areas of the Park, namely the Aquarium, Totem Poles, and Prospect Point more than locals. Conversely, locals visit destinations in the western area of the park, namely Third Beach and Second Beach, more than international tourists. Similar to how travel mode and group size influence and constrain travel behaviour in the park and the resulting performance of transportation policies and infrastructure, the differing priorities of locals and tourists should be considered in this study when generating and evaluating options for the future of transportation in the park.

4.9 Mobility Behaviour of Different Modes

For respondents who cycle into Stanley Park (**Figure 4-27**), the majority (57%) cycle for recreational purposes, while approximately one-third (38%) cycle for high-intensity exercise. For either purpose, most respondents cycle without a key park destination in mind (67%). “Other” purposes that people have for cycling in the park include for exercise, cycling tours, and to access destinations. For respondents who drive into Stanley Park **(Figure 4-28**), the majority have one or more destination stops planned (71%). However, nearly a quarter (22%) of these

respondents do not have a particular destination in mind but may make one or more stops during their trip. Less than 10% of driving trips to and around Stanley Park are scenic drives with no destination in mind or stops intended.

Figure 4-27: Cycling Purpose

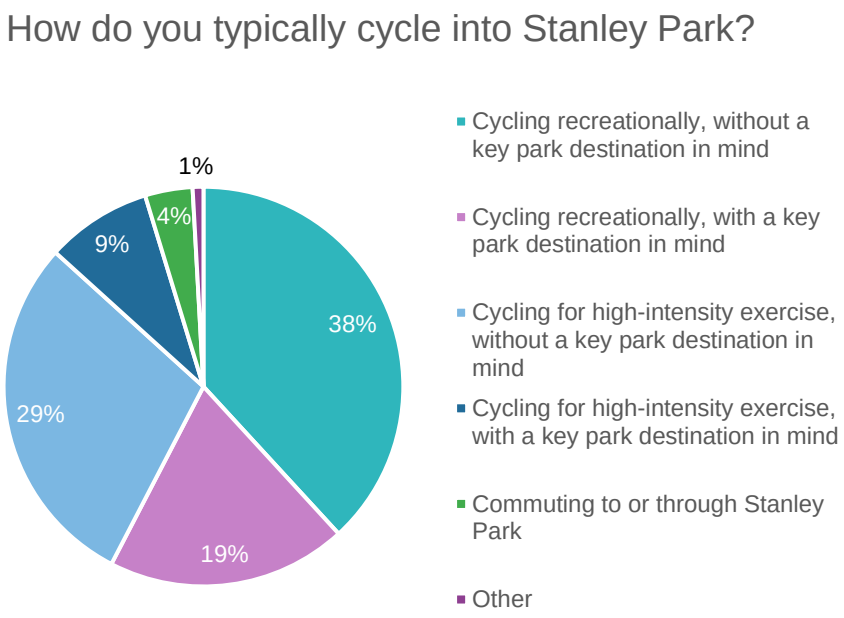
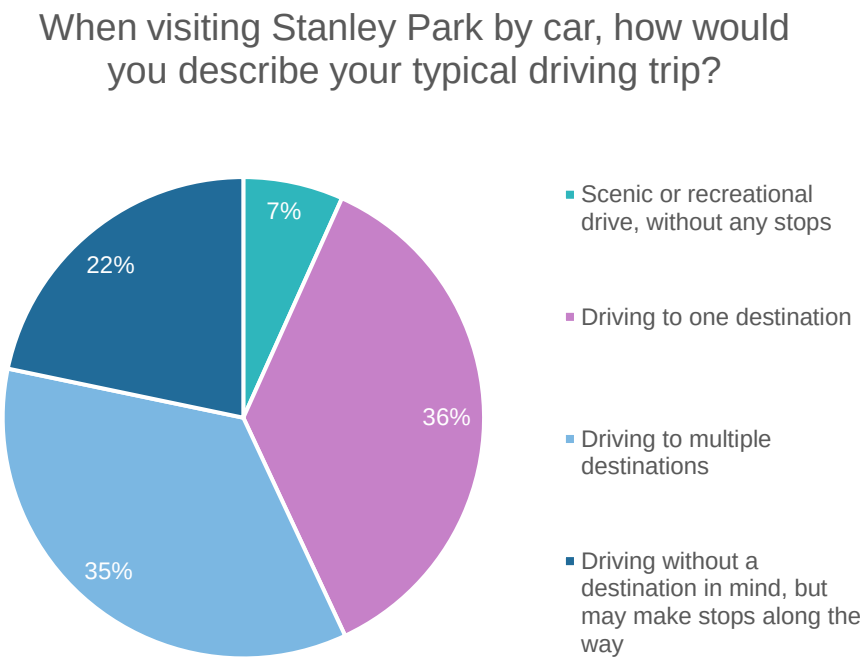


Figure 4-28: Driving Purpose



In summary, cyclists typically visit different areas of the park with different objectives for their destination than vehicle drivers. While the majority of cyclists would likely be content to go anywhere in the park as long as they can recreate in nature or get exercise, most drivers intend to visit at least one specific destination in the park. As such, cycling trips in the park are more likely to be for recreational purposes, whereas driving trips are more likely to be a means of transport.

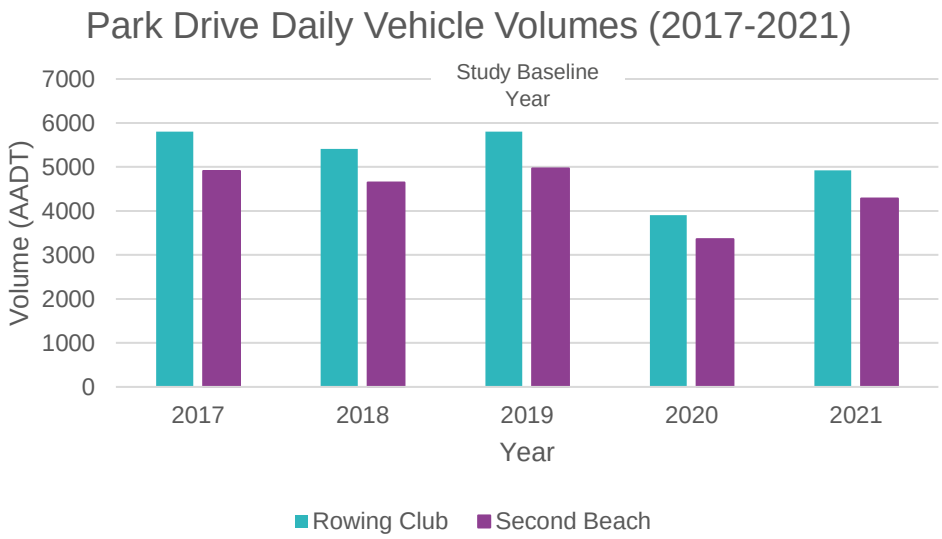
4.10 Park Drive Recent Historical Traffic Patterns

StreetLight was used to investigate the historical change in vehicle volumes on Stanley Park Drive, and the annual average daily traffic (AADT) from 2017 to 2021 is shown in **Figure 4-29** for screenlines in front of the Rowing Club and the Second Beach parking lot. Daily average vehicle volumes peaked in 2019 with approximately 5800 vehicles per day at the Rowing Club and 5000 vehicles per day at Second Beach.

Vehicle volumes were reduced significantly in 2020 due to the combined factors of overall reduced travel in the city and the temporary closure of the park to vehicles in the spring of that year. In 2021, volumes increased significantly relative to 2020, but remained below the 2019 peak.

Because the peak volumes were observed in 2019, that year will be used to examine seasonal and daily traffic patterns for the baseline peak conditions analyzed in this study.

Figure 4-29: Park Drive Historical Traffic Patterns

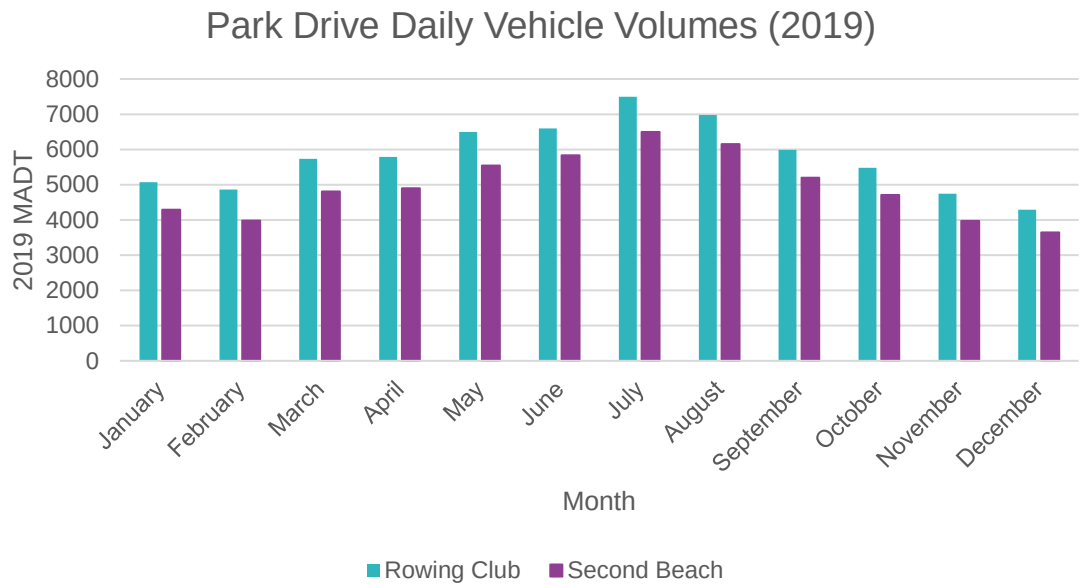


4.11 Park Drive Seasonal Traffic Patterns

StreetLight was used to investigate the seasonal patterns in vehicle volumes on Stanley Park Drive, and the monthly average daily traffic (MADT) in 2019 is shown in **Figure 4-30** below for locations in front of the Rowing Club and the Second Beach parking lot. The highest daily volumes were measured in July, with approximately 7,500 and 6,500 vehicles per day at the Rowing Club and Second Beach, respectively. In general, traffic volumes are increased during the warmest and sunniest seasons of the year.

Based on the patterns displayed in **Figure 4-30**, the peak summer months of June, July, and August are investigated in this study to understand how the volumes fluctuate throughout the day during the busiest season of the year.

Figure 4-30: Park Drive Seasonal Traffic Patterns



4.12 Park Drive Daily Traffic Profile

StreetLight was used to investigate the daily patterns in vehicle volumes on Stanley Park Drive in summer, when the average volumes are highest, and in winter, when the average volumes are lowest.

The volumes on Stanley Park Drive in June, July, and August of 2019 are shown in **Figure 4-31** and **Figure 4-32** for locations in front of the Rowing Club and the Second Beach parking lot, respectively.

At the Rowing Club, the location on Stanley Park Drive where volumes are highest, hourly vehicle volumes reached a peak of approximately 1010 vehicles per hour at 2 PM on weekends, while weekday volumes reached a peak of 540 vehicles per hour at 1PM. Overall, the daily profile exhibits a single daily peak in the early afternoon, unlike the two-peak commuter profile observed on most other roads in Vancouver.

At Second Beach, hourly volumes on Stanley Park Drive reached a peak of approximately 860 and 540 vehicles per hour at 4 PM on weekends and weekdays, respectively. Overall, the daily profile exhibits a single daily peak in the late afternoon, two to three hours later than the peak observed at the Rowing Club, where volumes are higher.

Figure 4-31: Park Drive Rowing Club Daily Summer Traffic Profile

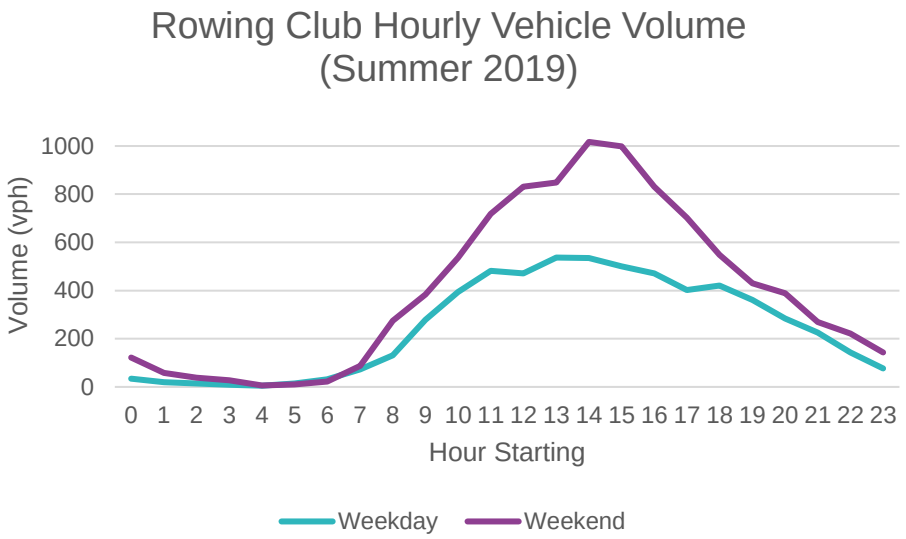
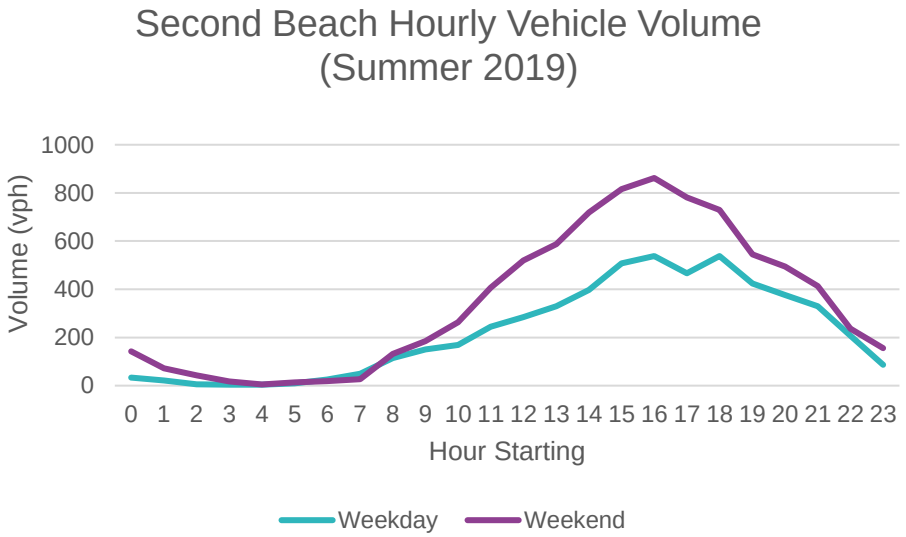


Figure 4-32: Park Drive Second Beach Daily Summer Traffic Profile



Daily traffic patterns on Stanley Park Drive during the winter months when average traffic volumes are lowest were also investigated, and patterns similar to those from the summer were found, although with less traffic overall. Traffic profiles for Stanley Park Drive in December 2018 and January and February 2019 are shown in **Figure 4-33** and **Figure 4-34** for screenlines in front of the Rowing Club and the Second Beach parking lot, respectively.

At the Rowing Club, hourly volumes on Stanley Park Drive reached a winter peak of approximately 850 vehicles per hour at 2 PM on weekends, while weekday volumes reached a peak of 400 vehicles per hour at 1PM.

At Second Beach, hourly volumes on Stanley Park Drive reached a peak of approximately 860 and 860 vehicles per hour at 4 PM on weekends and while weekday volumes reached a peak of 340 vehicles per hour at both 2 PM and 5 PM

Figure 4-33: Park Drive Rowing Club Daily Winter Traffic Profile

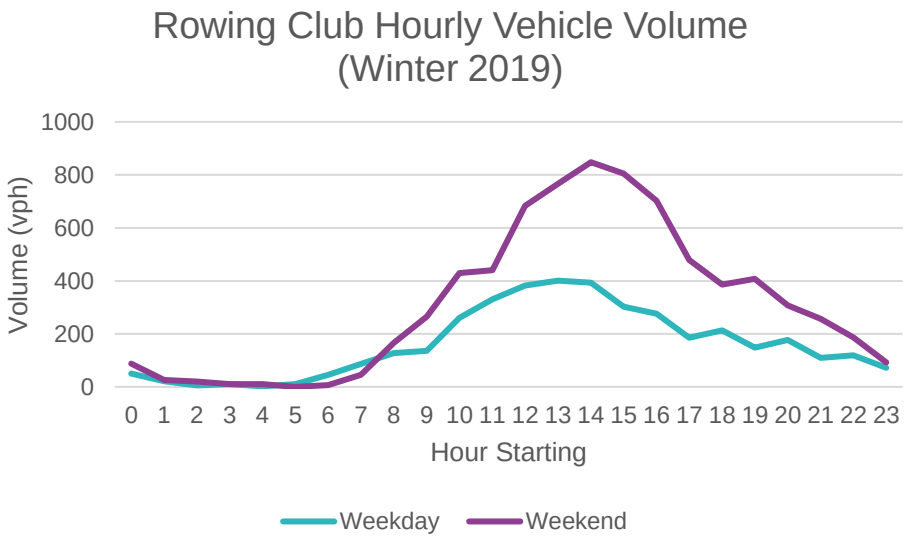


Figure 4-34: Park Drive Rowing Club Daily Summer Traffic Profile

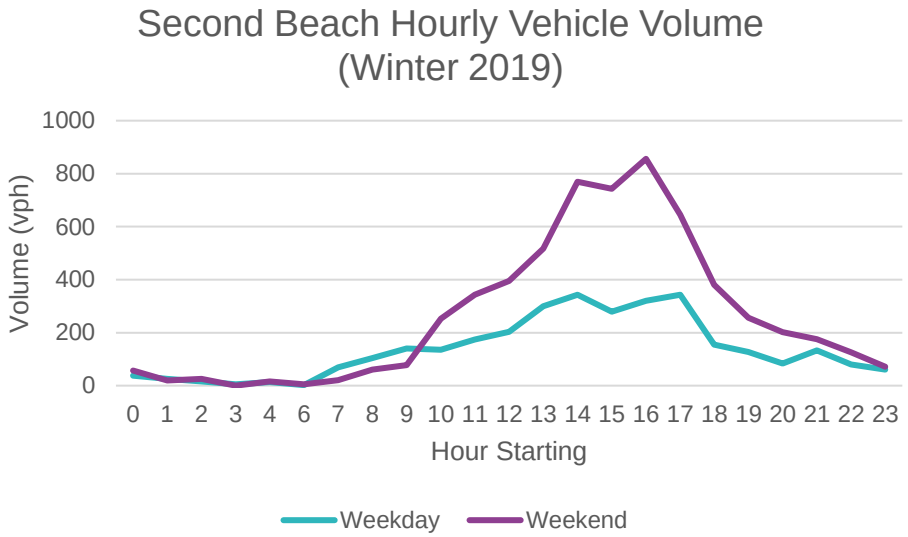


Figure 4-35: North Lagoon Drive at Most Times of the Day



Typical urban traffic conditions see two peaks per day—an am and a pm peak—five days a week throughout most of the year. This contrasts with the traffic patterns in Stanley Park, where there is one relatively short peak period occurring midday on weekends during a few summer months only.

Based on data for traffic volumes at Second Beach from 2019 noted above, a similar pattern can be determined for North Lagoon drive. **This means that for most of the time on most days throughout the year, North Lagoon Drive experiences low vehicle volumes and no congestion.**

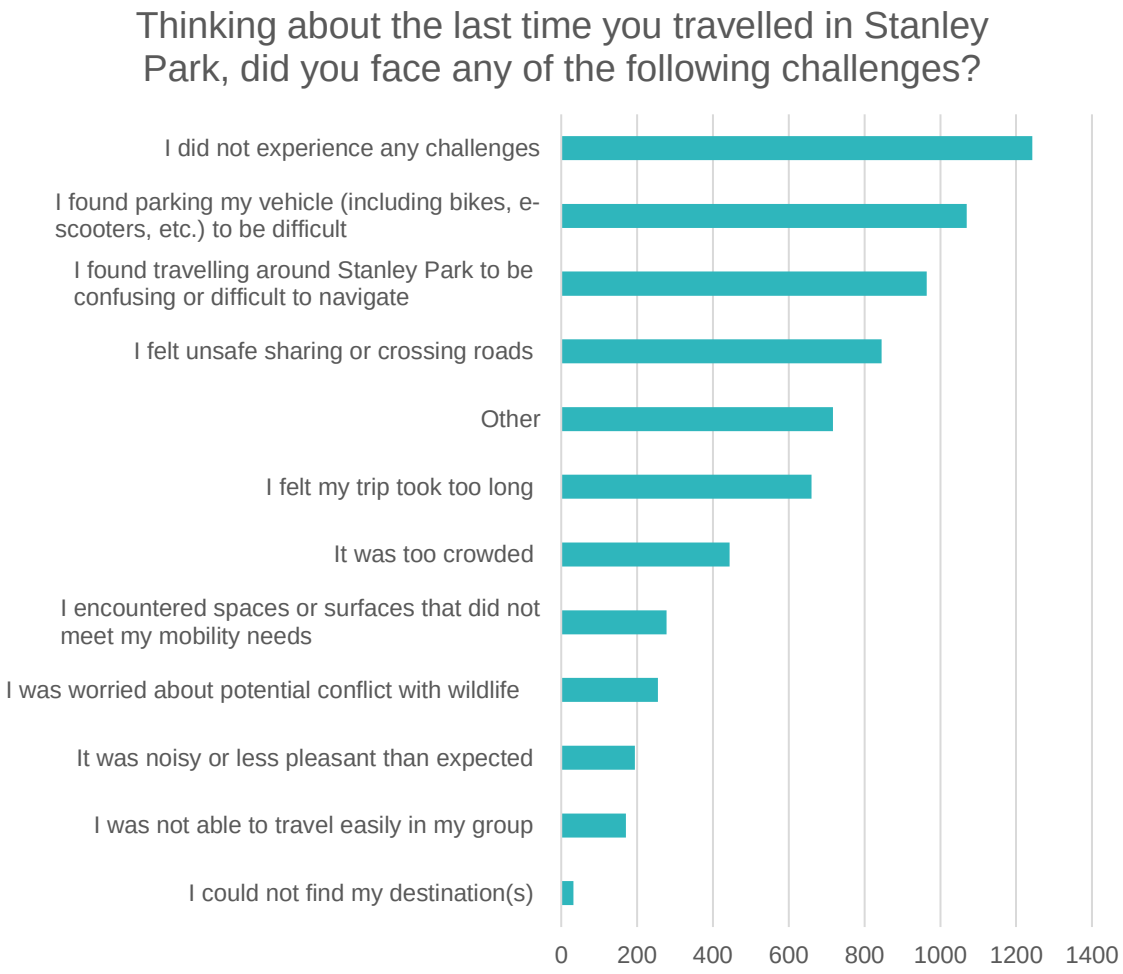
4.13 Challenges and Opportunities

In addition to insights into existing behaviour in Stanley Park by visitors, the 2022 public survey also gave respondents the opportunity to express their thoughts on challenges faced when travelling to the park, and on how a reduction in vehicle traffic to Stanley Park might benefit or impact them.

When asked about challenges experienced when traveling in Stanley Park, some respondents (18%) reported not experiencing any issues (**Figure 4-36**). **The most frequently reported challenges associated with travelling to Stanley Park were finding parking, including for bicycles and other micromobility, navigating around Stanley Park, feeling unsafe sharing or crossing roads, or feeling that their trip took too long.** “Other” challenges people face in travelling in Stanley Park include exit and lane closures, user conflicts, fast-traveling cars, difficulty finding parking, cycling clarity and wayfinding, signage, and lack of transit.

The perceived difficulty in finding parking observed in the survey contrasts with the findings of the analysis documented in **Section 4.5.4** that indicate that parking capacity was generally sufficient to meet demand around the park as a whole and in most of the lots most of the time. This finding suggests that the perceived difficulty in finding parking is likely the result of capacity constraints during the limited peak hours of the year identified at certain lots in **Section 4.5.4,** namely the Prospect Point Restaurant and Totem Poles. In addition, the parking entry data provides limited insight into the occupancy of lots where it is expected that visitors will park for over an hour, such as the Aquarium, where survey respondents may be having difficulty finding parking. It may also be a result of limited information available as to where and when spaces are more likely to be available.

Figure 4-36: Challenges Traveling in Stanley Park



Opinions on the challenges and opportunities of reducing private vehicle traffic in Stanley Park are shown in **Figure 4-37, Figure 4-38**, and **Figure 4-39.** Some respondents (30%) stated that reducing private vehicle traffic would not present any opportunities. **However, most respondents (70%) stated that there would be opportunities associated with reducing private vehicle traffic in Stanley Park, including reducing noise and pollution, providing more space for other modes of transportation, and achieving a safer network.** "Other" opportunities participants stated include reducing crowding in the Park with more people taking alternative modes of transportation and the attraction to the Park as a car-free space (emphasizing Vancouver as a "green city").

When asked about the challenges of reducing private vehicle traffic, few respondents (15%) stated that there would be no challenges, while most respondents identified challenges. **The most frequently identified challenges associated with reducing vehicle traffic in Stanley Park were challenges for those with mobility challenges and those that travel with families or in large groups, increased difficulties engaging in some park activities (e.g., picnics, sports, etc.), and potential impacts to businesses.** Mobility options generated as part of this study will consider their impact on the challenges identified in the survey in their development and evaluation. "Other" challenges participants stated in reducing vehicle traffic, include access for tourists and anyone in or outside of the Metro Vancouver area, lack of

alternative transportation, access for emergency vehicles, access to destinations that are too far to walk, accessibility for those with mobility challenges and equity concerns.

Figure 4-37: Perceptions on Reducing Private Vehicle Traffic

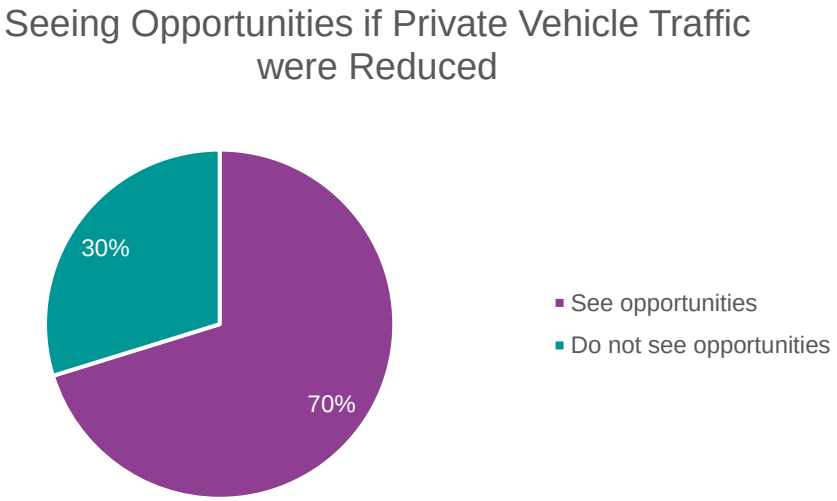


Figure 4-38: Biggest Opportunities from Reducing Private Vehicle Traffic

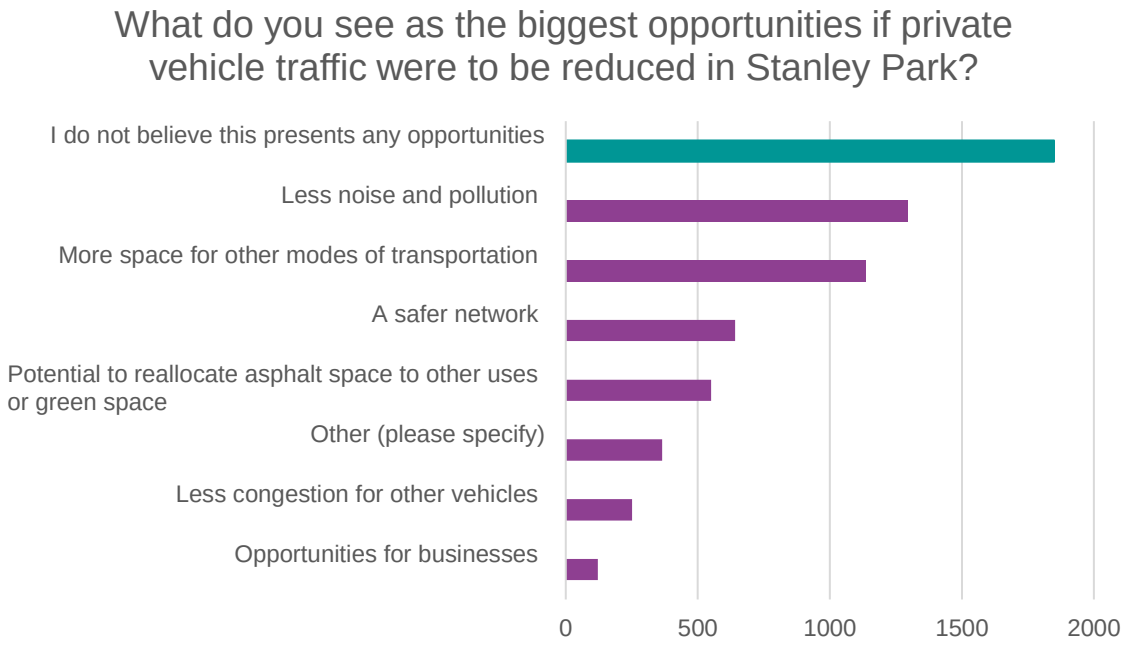
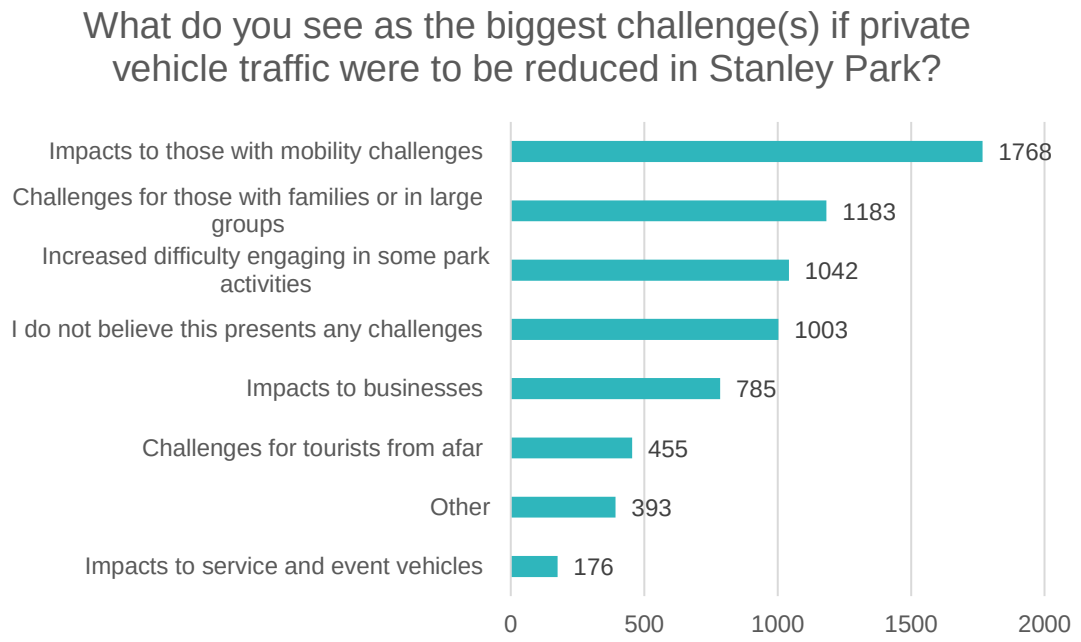


Figure 4-39: Biggest Challenges from Reducing Private Vehicle Traffic



4.14 Summary

The key findings contained in this section are summarized along several themes and are listed below:

Visitor and Park Access Trends

- Stanley Park receives approximately 18 million visits annually, with a bit over half of those visits coming from unique visitors.
- 48% of trips to Stanley Park were made by locals that live within 10 km of Stanley Park.
- Accessing nature and passive recreation are top reasons why residents visit Stanley Park. International visitors tend to frequent areas of the Park with that contain more active uses, including those on the eastern and northern areas of the Park, namely the Aquarium, Totem Poles, and Prospect Point. Locals tend to visit destinations in the western area of the park, such as the beaches, more so than international visitors.
- Visitor numbers dipped in the first year of the COVID-19 pandemic but recovered in 2021 to a level larger than pre-pandemic visitor numbers.
- Over the last 40 years, the number of annual visits to Stanley Park has more than doubled. During that same time, the number of vehicles entering the park daily has reduced by up about one half. As a share of trips accessing the park, private vehicle travel accounts for about one-third. This also means that active modes have increased significantly over this time, such that walking and cycling account for almost two-thirds of trips accessing the Park.
- Public transit and tour bus trips account for a relatively small portion of entries, with public transit exhibiting the largest decrease as a share of all trips over the last 40 years.
- Over the last 40 years, cycling volumes have increased by up to 100% on facilities located throughout Stanley Park.

Park Access Challenges

- There are notable perceived safety concerns associated with cycling in Stanley Park, such that addressing these may have a significant impact in reducing barriers to cycling and ultimately, the number of people that choose to do so.
- Having to make multiple connections or transfers, limited route coverage within Stanley Park, and limited frequency of service on existing routes were the most commonly stated barriers for using public transit to travel to Stanley Park. Transit affordability was not a large stated concern.
- Residents reported that improvements to individual active transportation modes would improve their access into the Park, but also noted that improved public transit and vehicle access for those with reduced mobility should be improved to support access for all into the Park.
- The most frequently reported challenges associated with travelling to Stanley Park were finding parking, including for bicycles and other micromobility, navigating around Stanley Park, feeling unsafe sharing or crossing roads, or feeling that their trip took too long
- Most respondents (70%) stated that there would be opportunities associated with reducing private vehicle traffic in Stanley Park, including reducing noise and pollution, providing more space for other modes of transportation, and achieving a safer network.
- The most frequently identified challenges associated with reducing vehicle traffic in Stanley Park were challenges for those with mobility challenges and those that travel with families or in large groups, increased difficulties engaging in some park activities (e.g., picnics, sports, etc.), and potential impacts to businesses.

Visitor and Trip Profiles

- Approximately 80% of park users with ambulatory disabilities visit the Park by high-occupancy vehicle (i.e., as a group). In contrast, park users with a disability that does not impact personal mobility report making greater use of active transportation than the average population. As such, there are differing needs among persons with disabilities, and motorized vehicle access is one of many considerations.
- Senior citizens have a greater reliance on vehicle travel to access Stanley Park by using vehicles as passengers than the general population. This may indicate a greater need to provide motorized transportation options for seniors that do not require them to operate the vehicle.
- Visitors that travel to the park on foot visit more frequently than those that travel by other transportation modes.
- The average group size for visits to the park is 2.3 in general, and the average occupancy for trips by private vehicle to the park is 2.7, considerably higher than the average private vehicle occupancy rate in the city and region (the occupancy rate in the region is 1.24[54]).
- Driving trips into Stanley Park are typically not made for the purpose of a recreational or scenic drive without making any stops, whereas the main purpose for cycling in the park is for recreation, with or with making stops along the way.

Network Demand and Supply

- The largest vehicle volumes at around 1000 vehicles per hour are experienced on Park Drive around the Rowing Club during a summer weekend peak period. On the western side of the Park around Second Beach, typical summer weekend peak volumes are closer to 850 vehicles per hours.

[54] TransLink 2011 Trip Diary

- Pre-pandemic peak period traffic volumes occurred during a few hours on several weekends during summer months only, meaning that the road network in Stanley Park was operating with no congestion at nearly all times. This is also the current situation on North Lagoon Drive, where no interim roadway design changes were made in response to the pandemic.
- Pre-pandemic parking occupancy did not exceed overall available capacity in Stanley Park. There is a sufficient amount of parking provided in the Park overall. Some individual parking lots experience high demand that may make finding available parking a challenge for vehicle drivers who would like to park directly adjacent the destinations those lots support.
- About two-thirds of the paved area used for transportation in Stanley Park is designed for vehicular modes of travel.



5 Access Analysis

Some residents have an increased opportunity to access Stanley Park compared to others. This may depend on socioeconomic characteristics, such as race, age, or income, location of residence, and the mode of transportation they choose or have access to. This section quantifies the level of access into Stanley Park that different community groups currently have, based on access modelling.

Key Chapter Takeaways

- **Children and youth have disproportionately lower access to Stanley Park than other age groups, followed by those 65 years and older.**
- **Despite cycling providing the second highest average levels of access, car access is up to 12 times greater than access by bike.**
- **Car access into Stanley Park is up to 32 times greater than access by transit, the alternative transportation mode most feasible for those living far from Stanley Park. As such, residents that do not have (or choose not to have) access to a vehicle, have a profoundly lower opportunity to access Stanley Park than those that do – this includes many youth, lower-income residents, and seniors no longer able to drive. In the city of Vancouver, this applies to at least 25% of residents.**
- **Based on the limited access by transit that is currently available, low-income residents are generally served better relative to other groups, with a notable exception of the Hastings neighbourhood in Vancouver. This is mainly due to a larger proportion of lower-income residents living in closer proximity to Stanley Park than others across the region.**
- **This modelling is undertaken from a regional perspective. As such, it does not focus on design-related barriers or that of individual transportation facilities; there is still a need to retain or enhance access to amenities within the park.**
- **Based on the results of the access modelling, improving access for youth and those that cannot or choose not to drive is the main concern in terms of improving access into the park for all.**
- **The level of access provided by each transportation mode is a characteristic of that mode itself and the geographic location of Stanley Park. However, it is also a consequence of how the existing transportation network is designed. To better balance access across modes, access by active travel and transit options would need to be substantially improved; possibly to a degree that it impacts access levels by private vehicle.**

5.1 Measuring Access

A bespoke ‘access model’ was developed to measure and quantify access into Stanley Park. This model uncovers the level of access different community groups and transportation mode users have into Stanley Park. As transportation functions as one interconnected system, this model captures conditions both to and within Stanley Park simultaneously. It also captures how much of the park, including specific locations within it, can be accessed by residents in a given amount of travel time.

For example, when considering the existing transit service, bus route #19 provides many residents that live close to the route access to the eastern part of Stanley Park around the aquarium. This is because route #19 terminates at the eastern edge of the Park. However, it does not provide direct access into northern and western areas. As well, most residents do not live near route #19 and are required to make a connection or walk long distances to access the service. The access model used throughout this chapter explicitly measures this for all residents (and groups of residents), and for each main transportation mode (walk, bicycle, transit, vehicle).

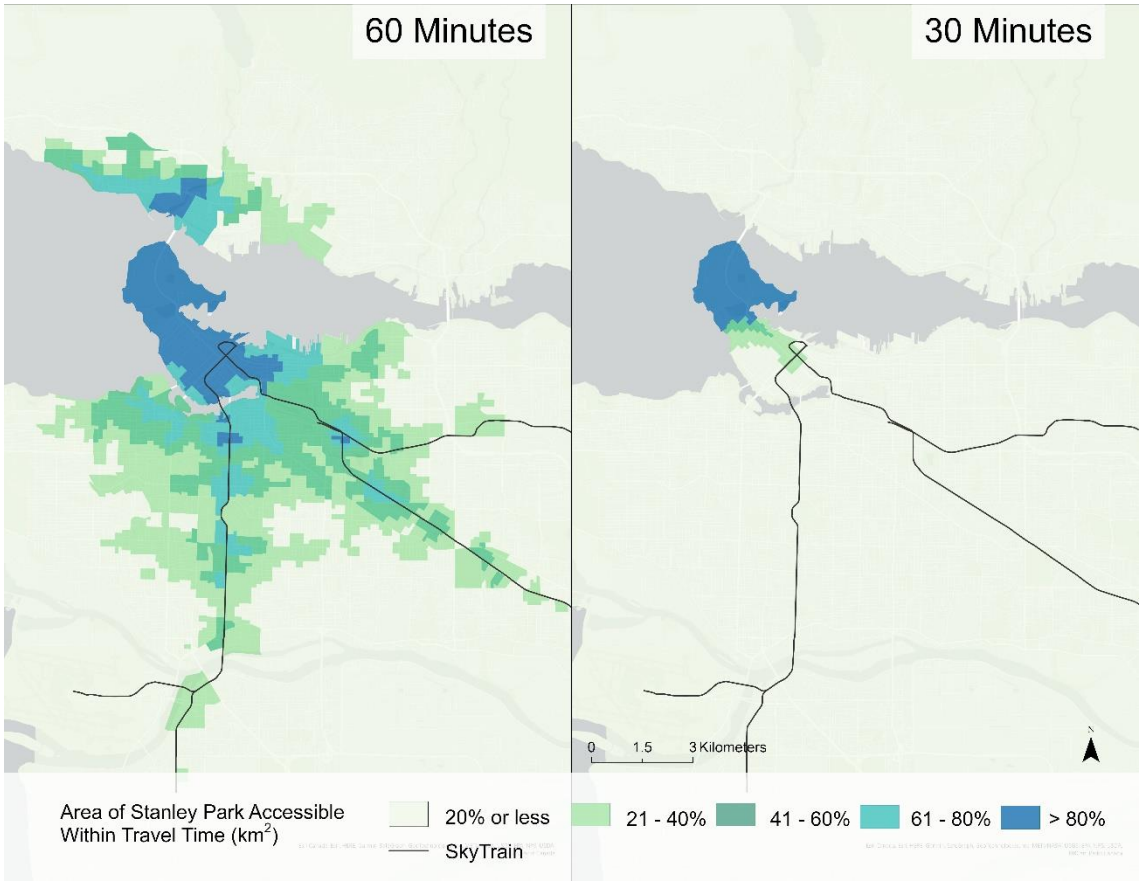
The access model is also intended to facilitate an analysis that can capture the access implications of potential transportation network changes within Stanley Park. As the network within the Park is interconnected with the network beyond the Park and all visitors to the Park reside outside of it, network changes within the Park will have a large impact in terms of how well they can access the Park overall. As such, this analysis necessarily includes the entire region, although the transportation focus remains within Stanley Park.

Further methodological details can be found in **Appendix A.**

5.2 Access By Transportation Mode

The access model was used to estimate how well (how much) of Stanley Park can be accessed by each main transportation mode. The model uses six travel times cut-offs, from 10 to 60 minutes. This means that the model estimates how much of the park a resident is able to access using one of the four main modes within a given travel time – 10, 20, 30, 40, 50, or 60 minutes. Typically, a larger travel time will allow an average resident to access more of the park. For example, if a resident is willing to travel 60 minutes instead of 30 minutes by transit from their home location, then they will be able to access more of the park. This is shown in **Figure 5-1** below, which demonstrates that most residents are unable to access any of the park within a 30 minute transit trip. This figure also clearly shows the impact that the existing transit network has on providing access, with those living along the SkyTrain (and then connecting to route #19) having the highest levels of access.

Figure 5-1: Access to Stanley Park by Transit (30 min and 60 min travel times)



The modelling process depicted in the previous figure is repeated for all the main transportation modes (walk, bike, car) and the results are summarized in **Figure 5-2** below.

Figure 5-2: Regional Population and percentage of Access to Park by Travel Time

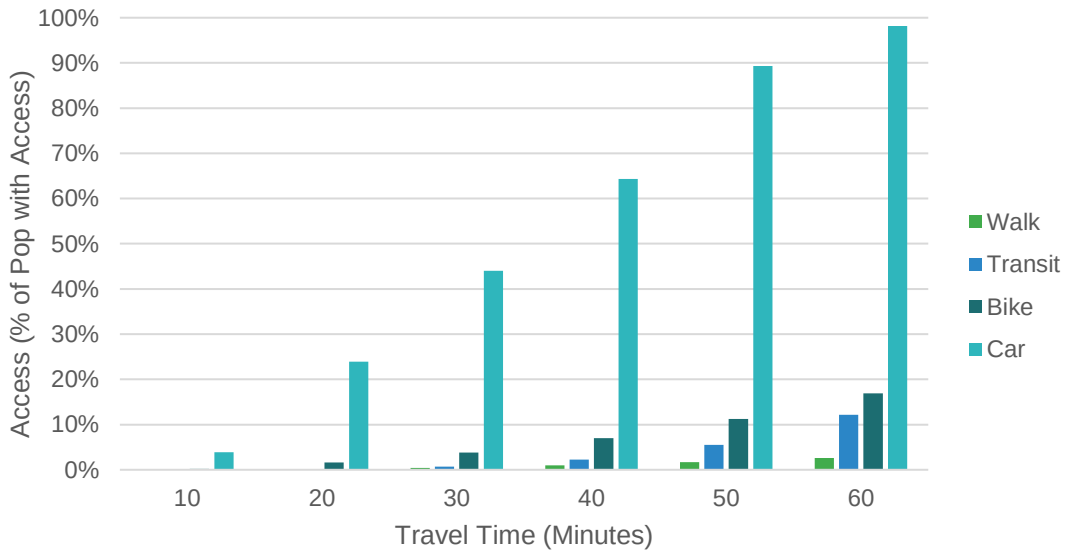


Figure 5-2 shows that a large majority of regional residents are unable to access the park with only a 10 minute travel time regardless of transportation mode used. This is to be expected, as only those residents living a short distance from the park are able to reach any part of it in that amount of travel time. However, as the travel time increases, more and more residents are able to access parts or all of the park. This pattern is true for all modes; however, it is the most apparent for the car mode. Within a 60 minute travel time, almost all residents in the region are able to access all of Stanley Park if they are driving. As can be expected, people who have access to a vehicle and choose to drive, have significantly higher levels of access into Stanley Park than do residents or visitors using other modes of transportation.

Table 5-1 below expands the analysis to compare access levels between the vehicle mode, and that for transit, bike, and walking.

Table 5-1: Average Access by Car and Non-Car Alternatives

Travel Time (Minutes)	Average Access by Car[55]	Average Access by Bike	Differential Between Car and Bike Access	Average Access by Walking	Differential Between Car and Walking Access	Average Access by Transit	Differential Between Car and Transit Access
10	4%	<1%	4x	<1%	4x	<1%	4x
20	24%	2%	12x	<1%	24x	<1%	24x
30	44%	4%	11x	<1%	44x	1%	44x
40	64%	7%	9x	1%	64x	2%	32x
50	89%	11%	8x	2%	45x	6%	15x
60	98%	17%	6x	3%	33x	12%	8x

Key takeaways from the table are listed here:

- Bicycling is the non-vehicle option that provides the greatest access for those that do not have vehicle availability, are able and willing to bicycle, and live within a relatively close distance to the park. Despite biking providing the second highest levels of access, average access by bike is still significantly lower than average access by car; access by car is up to12 times greater than access by bike.
- Compared to walking, access by car is up to 64 times greater. Naturally, most residents do not live in close proximity to Stanley Park, and walking distances become too large for most residents to be able to access the park within a reasonable travel time. This is a natural constrait of
- Compared to transit, access by car is up to 32 times greater. Transit is the transportation mode most feasible for those living further from Stanley Park who do not have access to a vehicle or choose not to drive.

It is important to note that the level of access provided by each transportation mode is a characteristic of that mode itself and the geographic location of Stanley Park. However, it is also a consequence of how the existing transportation network is designed.

As such, to better balance access by private vehicle and the active travel and transit modes, access by the non-vehicle options would need to be substantially improved; possibly to a degree that it impacts access levels by private vehicle.

[55] Metric is the percentage of Stanley Park area that the average Metro Vancouver DA can reach within the travel time cutoff.

5.3 Equity of Access Distribution

Certain demographic groups may be more reliant on transit compared to the general population. In order to better understand how current access to Stanley Park is distributed, access for older adults, youths, and low-income earners was investigated specifically as relates to transit[56].

To investigate the distribution of access and potential equity impacts, bivariate maps were produced and are provided in the following section. Bivariate maps show the geographic relationship between two variables. The maps are interpreted by reading the matrix legend, which shows different colors for low, medium, and high occurrences of each variable. These maps help to identify if access is equitably distributed across the region, given where these transit-reliant or transit-choosing populations are living.

5.3.1 Age

Figure 5-3 below quantifies the distribution of access by public transit across age groups. Populations of interest included persons under 20 years old, 20 – 24, and over 65. These are typically populations that are considered to have transportation needs that are different from the average working individual and representative household[57].

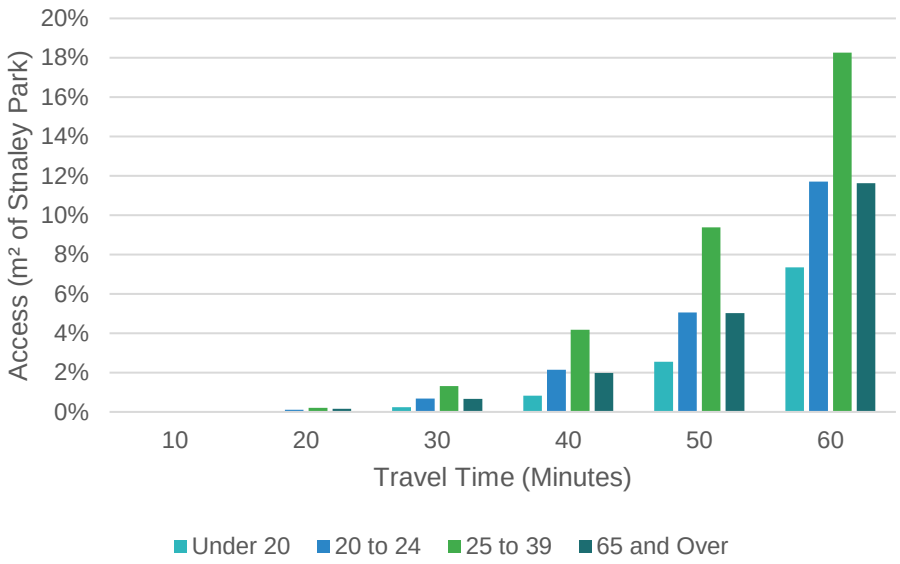
Persons 25 – 39 years old experience the greatest transit access to Stanley Park, such that the populations of interest are compared against this age group. The 25 – 39 year age group is able to access 18% of the park within a reasonable (60 min) transit trip on average. This is related to the fact that a larger proportion of younger adults live closer to downtown and the transit network, than do families consisting of older adults and younger children in areas with larger amounts of detached homes. As such, persons under 20 years old consistently have the lowest access to Stanley Park, being able to access 7% of Stanley Park within a 60-minute trip. Persons 20 to 24 years old experience similar access to persons 65 years and over. However,

[56] Due to a lack of large-scale data on persons with disabilities, this was not included in the analysis. As well, further demographic groupings, such as race, cultural background, sexuality, etc, was outside the scope of this analysis.

[57] The 20 – 24 age group represents a large portion of folks within the tertiary education, and a subsequent traveller and household profile that is diverse from typical “norms”.

persons aged 65 and older are at a greater risk of losing their ability to drive, increasing their need for adequate transit service[58].

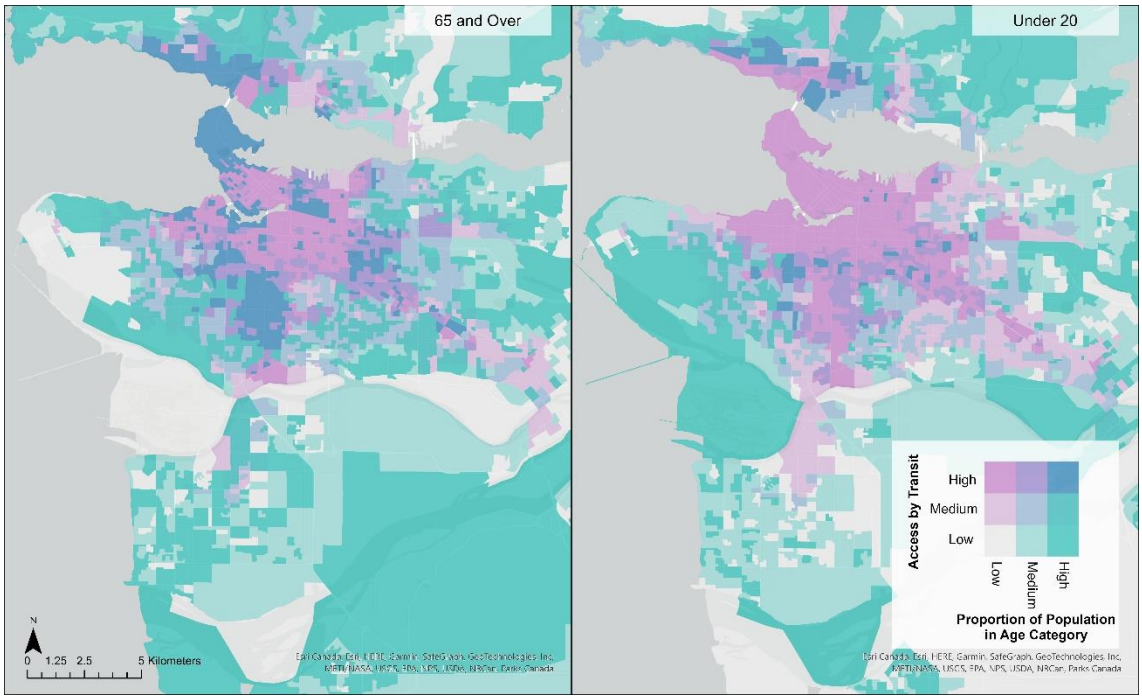
Figure 5-3: Access by Transit for Select Age Groups



The geographic relationship between access by transit and where populations of older adults and youths live is shown in **Figure 5-4** below using a bivariate map. Blue areas identify where both access to transit and the proportion of persons in the age category is high. Bright green areas, where access is low and the proportion of persons in the age group is high, are areas of most concern. The plot for persons 65 and over shows more blue areas than the plot for persons under 20 years old; only a few areas with many youths also have a high degree of access to Stanley Park by transit. **This means that children and youth have disproportionately lower access to Stanley Park than other age groups, followed by those 65 years and older.**

[58] Md Mahmudur Rahman, Lesley Strawderman, Carolyn Adams-Price, Joshua J. Turner, Transportation alternative preferences of the aging population, Travel Behaviour and Society, Volume 4, 2016, Pages 22-28, ISSN 2214-367X, https://doi.org/10.1016/j.tbs.2015.12.003.

Figure 5-4: Transit Access and Proportion of Population Over 65 and Under 20 Years Old



5.3.2 Income

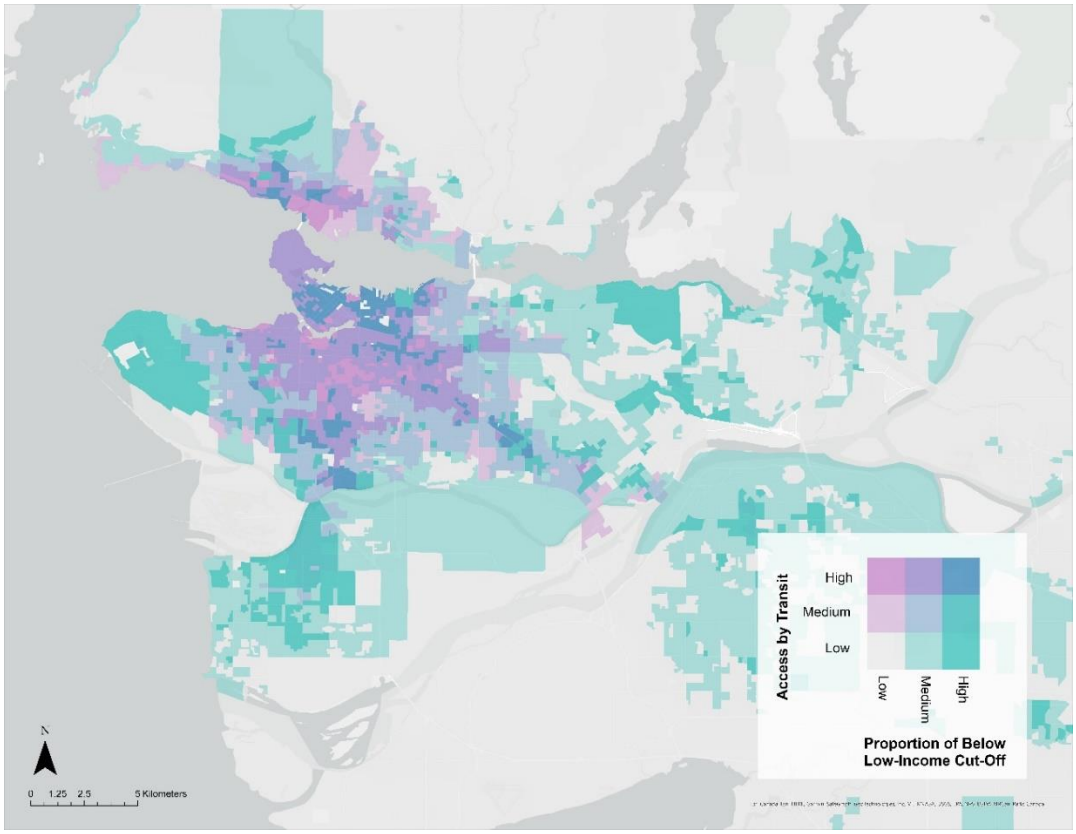
Figure 5-2 below maps the relationship between access by transit and the proportion of the population in low income areas. This is based on low-income cut-offs (after tax). The figures shows that there are a number of neighbourhoods where this is a high percentage of low-income earners and access by transit is also high. **This means that lower income residents have a higher relative access to Stanley Park by transit than those with higher incomes. As such, the level of transit access to Stanley Park for low-income earners is not of specific concern when comparing across income levels.**[59] As well, this is also a result of the high proportion of lower income residents living along busy arterials well-served by transit or in relative proximity to Stanley Park. Living closer to arterials is known to create other inequities that is not accounted for here.

A notable area of concern, based on its proximity to Stanley Park, is near the Hastings neighbourhood where access by transit is lower and the percentage of low-income earners is high.

Importantly, this analysis does not suggest that the existing level of access by transit to Stanley Park for low-income residents (or all residents) is necessarily sufficient. The previous section (**Section 5.2**) highlights the current large access disparity facing most transit users.

[59] This is consistent with academic study that evaluated access to jobs by transit (see Deboosere & El-Geneidy 2018 *Evaluating equity and accessibility to jobs by public transport across Canada,* Journal of Transport Geography 73, pg 54-63. This research found a higher level of access to jobs by transit for low-income residents as compared to the average population, mainly because of the large number of jobs in the Metro Core. Given Stanley Park is adjacent to downtown, the results in the analysis here are consistent with this academic work.

Figure 5-5: Transit Access and Proportion of Population Below Low-Income Cut-Offs



5.3.3 Vehicle Availability

Many residents do not have or choose not to have access to a vehicle. At the regional level, approximately 14% of households have no vehicle availability. Within the city of Vancouver, the number of households without vehicle availability increases to approximately 25%[60]. Vehicle availability is determined at the household level. Considering households often consist of several children, or they may contain several residents that are unable to drive, the number of individual residents in the city of Vancouver that do not have vehicle availability is greater than 25%. As well, the above estimates do not include international visitors to Stanley Park, who are also less likely to have vehicle availability. This requires them to use another mode of transportation, including public transit, cycling, or walking to access Stanley Park. When overlapping vehicle availability values with the level of access by different modes outlined in Section 5.2 above, **it can be concluded that at least 25% of the city of Vancouver's residents who cannot or choose not to drive, face a large disparity of access to Stanley Park—up to 32 times less access— as compared to those residents that drive.**

5.4 Summary

Access was investigated by calculating how well (how much) of Stanley Park could be reached for different travel modes across at different travel time cutoffs for all of Metro Vancouver. Current access into Stanley Park by vehicle was found to be significantly higher than access by bicycling, walking, or taking transit. Vehicle access into Stanley Park within a 20 minute travel

[60] Derived from the TransLink Regional Transportation Model. Vehicle availability or access to a vehicle are used here interchangeably. This accounts for car share opportunities. It is also important to note that some residents may have access to a vehicle, but do not have a driver's license.

time, exceeds access by transit, biking, or walking, even when trips using those modes reach 60 minutes in travel time. It is important to note that the level of access provided by each mode is partly a result of how, and for who, the existing transportation network is designed.

For residents living further away from Stanley Park, transit provide the most feasible alternative to vehicular travel. As such, the distribution of access by transit was investigated by calculating the weighted mean for populations more transit-reliant than the general population – namely, adults over 65, youth, and low-income earners. Current levels of vehicle availability and how this overlaps with access to Stanley Park was also assessed.

Findings related to the distribution of access included:

- Children and youth have disproportionately lower access to Stanley Park than other age groups.
- Low-income earners are generally well-served by transit to Stanley Park, albeit a notable exception of the Hastings neighbourhood in Vancouver.
- Despite biking providing the second highest average levels of access, car access is still 4-12x greater than access by bike.
- Car access is up to 32x greater than access by transit, the transportation mode most feasible for those living far from Stanley Park.

Based on the above findings, it can also be concluded that from a regional perspective, the main concerns with respect to improving access for all into Stanley Park, are related to improving access for youth and those that cannot or choose not to drive. To better balance access across the different transportation modes, substantial improvements to active travel and transit would be required; possibly to a degree that it impacts access levels by private vehicle. The access modelling undertaken in this work did not focus directly on barriers related to individual transportation facilities within Stanley Park. There remains a need to retain or enhance access to individual facilities or amenities within the Park, particularly for those with disabilities.

6 Economic Analysis

Stanley Park is an integral component of the local economy and tourism sector, drawing many local and international visitors. The tourism sector is a substantial contributor to the economy of Greater Vancouver, contributing $9bn to the provincial economy in 2017[61]. As such, it is important that the Park's significance as a visitor attraction — and the economic benefits this generates — is understood within the broader economy.

This chapter presents an overview of existing economic and commercial activity in the park and contains the following information:

- Establishing the economic contribution of Stanley Park. This will set out a baseline value for the economic activity generated at Stanley Park and its contribution to Vancouver's visitor economy.
- Setting out an overview of the costs of maintaining Stanley Park relative to the revenues it generates.
- Investigate how this activity relates to the transportation network and traffic conditions, including how dependent existing economic activity is on the current transportation network and traffic conditions, what the challenges are with the existing network and what threats and opportunities may arise as a result of reconfiguring the network.

Key Chapter Takeaways

- **When considering transportation mode user groups, residents who arrive in Stanley Park by vehicle in a group spend the most overall, followed by active transportation users.**
- **The total visitor spend in Stanley Park is estimated at about $302 million annually. This represents over 3% of the Vancouver Coastal Mountains regional visitor economy.**
- **The recreational benefits of Stanley Park to local residents is estimated to be about $25 million.**
- **Stanley Park supports a total of about 1,300 jobs, which is about 2% of the jobs within the Vancouver visitor economy. Of these, 500 are direct private sector jobs and 100 are public sector jobs, the remaing 700 jobs are indirectly supported or induced.**
- **The number of jobs supported by Stanley Park provides an annual gross value add to the economy about about $148 million.**
- **Stanley Park generates $8.7 million in direct revenue and has an annual operations and maintenance requirement of $7.3 million, providing it an 84% cost to revenue ratio. This means that for every $84 invested into the Park's upkeep, $100 dollars in direct revenue is generated.**

[61] City of Vancouver - Employment Lands & Economy Review Factsheet 2020 (in 2012 dollars)

6.1 Approach

The purpose of this study is to understand the economic impact of Stanley Park and estimate its contribution to economic activity in the Vancouver economy. It should be noted that this study is not a cost-benefit analysis (CBA), which would include all costs and benefits to society (including private, social, and environmental costs and benefits). Economic impact studies differ from CBA in that they do not assess whether society is improved from the asset in question. Rather, they measure the total economic activity arising from the asset, comprising:

- direct (impacts generated by activities directly from the asset),
- indirect (impacts generated by activities downstream and upstream of the asset); and
- induced impacts (additional consumption enabled by wages from direct/indirect activities).

It is not within the scope of this study to value all benefits to society of Stanley Park, which would be a multi-faceted study and include environmental benefits (e.g., carbon sequestration, air quality, biodiversity) and social benefits (e.g., health and wellbeing), possibly using an ecosystem services approach. Given readily available information and owing to its large value as a recreational amenity for residents, a monetary estimate of recreational benefits has been provided. This is complementary information that does not form a core part of the economic impact study.

Based on the above, this study has focused on valuing total economic activity arising from Stanley Park, and includes:

- visitor spend generated at Stanley Park;
- jobs and businesses supported by the park;
- revenue generated through parking, events and revenue-sharing arrangements with businesses; and
- costs of operating and maintaining Stanley Park.

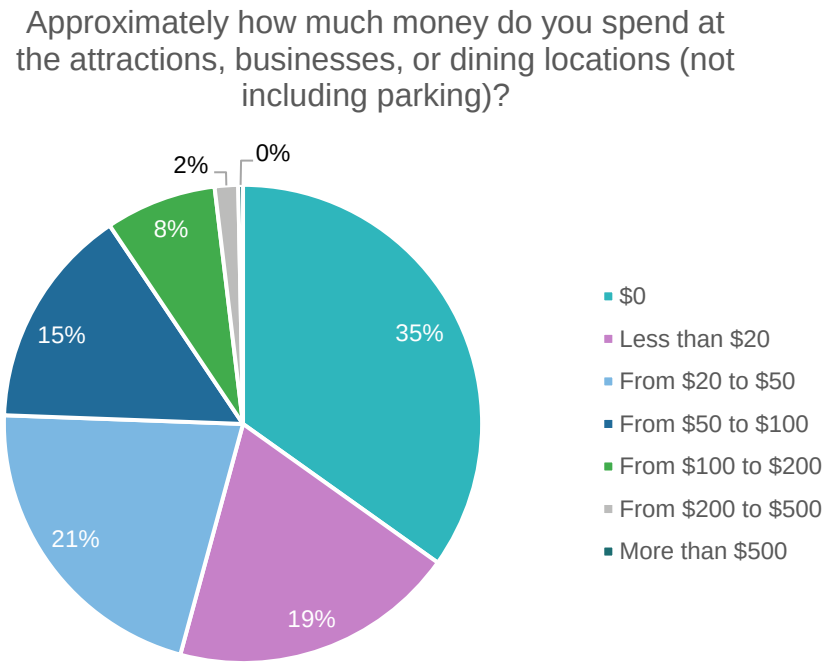
6.2 Stanley Park's Contribution to the Visitor Economy

6.2.1 Surveyed Spending Patterns

For some park users, visiting a restaurant or attraction is a core part of the experience to the Park and may be the main reason they were attracted to Stanley Park. For other park users, businesses in the park simply represent an opportunity to purchase food or refreshments while they continue their recreational activities. In addition, a significant number of park users rarely visit businesses in the park at all. Data from both the fall 2020 and spring 2022 public surveys were combined to quantify the spending behaviour of different park users.

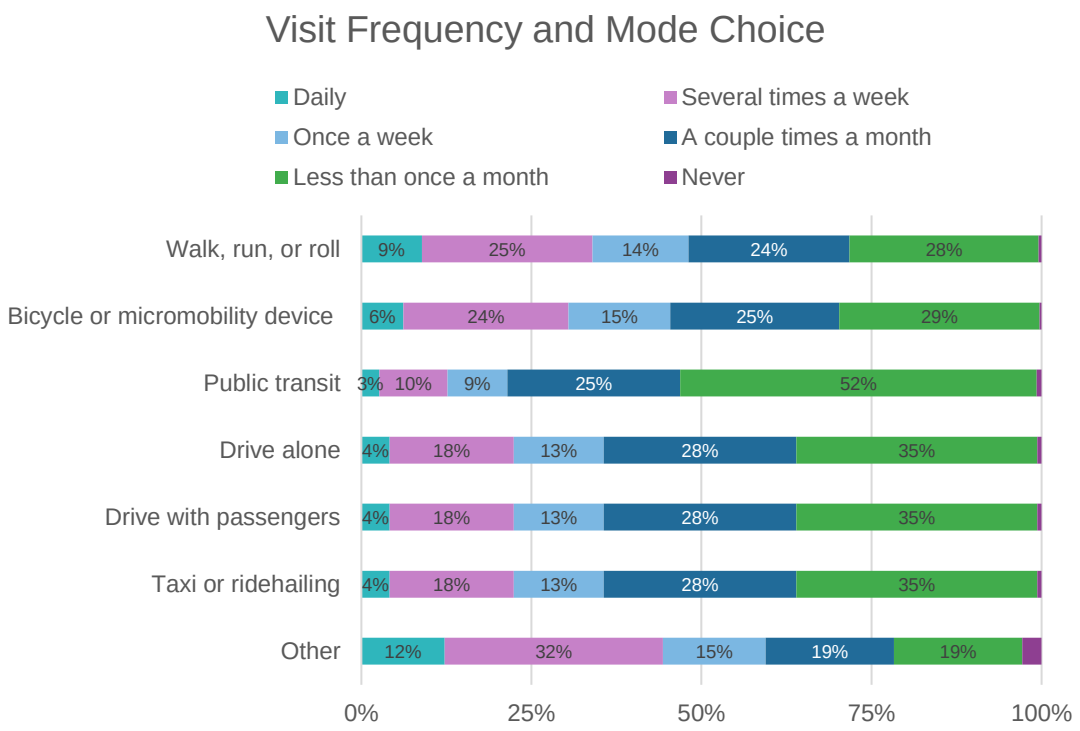
Figure 6-1 below reports how much money respondents from the 2022 survey typically spent at attractions, businesses, or dining locations within Stanley Park. Most respondents reported typically spending less than $20, with 20% of respondents spending between $20 and $50. Some respondents spent $50 - $100 (15%) and few spent $100 or more (10%).

Figure 6-1: Dollars Spent in Stanley Park from the 2022 Public Survey



In order to calculate the total amount of money spent in a year by park visitors based on the average amount of money spent on each trip measured in the 2022 public survey, data about frequency of visitation by each park user from the 2020 public survey was used, as shown in **Figure 6-2** below**.**

Figure 6-2: Visitation Frequency by Travel Mode



Visit frequency was cross tabulated with travel mode, and the results indicate that park users travelling by active modes visit the park more frequently than those travelling by motorized modes.

Responses from the 2022 public survey about money spent, in addition to responses from the 2020 public survey about visitation frequency were cross tabulated with responses about travel mode in order to estimate the relative difference in money spent in the park by those travelling by varying modes, and the results are shown in **Table 6-1** below**.**

A limitation of this methodology is the self-reported nature of the survey data for money spent and visitation frequency. While it is likely that respondents of the public survey overestimated their combined visitation frequency and money spent, as a relative comparison of spending across the varying modes, the trends shown, and conclusions drawn are considered valid.

Table 6-1: Money Spent in the Park by Mode

Mode	Average Spend per Visit	Average Annual Visit Frequency	Average Annual Spend	2022 Survey Respondents	Total Annual Spend by Survey Respondents
Walk, run, or roll	$20	72	$1,400	819	$1,200,000
Bicycle or micromobility device	$15	62	$900	1377	$1,300,000
Public transit	$25	31	$800	101	$80,000
Drive alone	$44	48	$2,100	273	$580,000
Drive with passengers	$73	48	$3,500	1450	$5,100,000
Taxi or ridehailing	$50	48	$2,400	8	$20,000

Those that travel to Stanley Park in high-occupancy vehicles (as a large group) spend more money in the Park than those visiting by other modes. Individual drivers also spend a comparatively high amount on an average visit. Those that walk or bike to the park spend a lower amount of money on each visit; however, they visit the park more frequently than those that use motorized modes of travel, and more local visitors reported using walk or bike modes. As such, taken together, Park users that drive alone spend approximately half of what pedestrians or cyclists as a group do over the course over the year, and those that travel by transit and taxi spend relatively little in total because of how few visitors to Stanley Park travel by those modes, overall.

As such, residents who arrive in Stanley Park by vehicle in a group spend the most overall, followed by active transportation users[62].

6.2.2 Visitor Spend Generated Through Tourism

Vancouver is a significant national and international visitor destination based on its natural beauty, Indigenous culture, diversity, health and wellness, commitment to sustainability, gateway to the Pacific Rim, and integrated tourist infrastructure. Accordingly, the sector contributes significantly to the local and provincial economies – tourism was the third largest industry in the province in 2017 after Real Estate and Construction and contributed $9bn to the provincial economy (GDP) with visitors directly spending $4.8bn in the Vancouver region[63]. In 2017, the sector supported 137,800 jobs in BC (which equates to roughly 1 per 16 people employed in the province) and there were over 70,000 full-time tourism jobs in the Vancouver region[64].

The Impact of COVID-19

Like many sectors, the tourism sector was significantly impacted by COVID-19. The aviation and cruise ship industries were severely impacted as travel bans and other restrictions came into force to slow the transmission of COVID-19 throughout 2020 and 2021. In a survey of Destination Vancouver member businesses in the autumn of 2020, nearly all (98%) indicated that they had experienced more than a 50% decline in business through the first half of 2020. Iconic tourism assets, such as the Vancouver Aquarium, Science World, and others were forced to close their doors. In Stanley Park, roads were closed to vehicles for the first few months of the pandemic and replaced with temporary bike lanes, to allow visitors to exercise and visit the park safely while maintaining social distancing.

There are early indications that 2022 will contribute towards recovery in the tourism sector – with fewer restrictions on national and international travel, and total of 310 cruise ship calls expected at Canada Place in 2022 — 8% more than in 2019 when an all-time record of more than one million cruise passengers arrived.

As tourism is generally anticipated to recover to pre-pandemic levels in time, this analysis has used data from 2019 to establish an economic baseline for the visitor economy in the park.

Sources: https://www.boardoftrade.com/files/advocacy/2021-tourism/gvbot-tourism-roadmap.pdf https://dailyhive.com/vancouver/vancouver-first-cruise-ship-visit-2022

Vancouver's parks are a core component of the city's tourism offer. Tourism websites (e.g., Destination Vancouver, Trip Advisor) and guidebooks (e.g., Lonely Planet, Rough Guides) highlight parks like Stanley Park and Queen Elizabeth Park, as well as the parks along the seawall, such as English Bay Beach Park and Sunset Beach Park, as destinations for national and international visitors.

[62] As discussed earlier and as a limitation of this approach, the public survey from which this data is drawn largely captures responses from residents in the region only. It is worth recognizing that respondents that report driving with passengers are estimating a spend across their entire group, particularly if these are families, whereas individual mode users (drivers, cyclists, pedestrians), are likely to be reporting their own spend, suggesting that on a per person basis, the estimate for people who access the Park as a group in a vehicle is a significantly lower value than that reported here (yet, still higher than those for active transportation modes).

[63] City of Vancouver - Employment Lands & Economy Review Factsheet 2020

[64] City of Vancouver - Employment Lands & Economy Review Factsheet 2020

The first stage in understanding the park's contribution to the visitor economy is to distinguish which visitors are tourists, rather than local residents making recreational trips. The table below highlights the key differences between tourism and recreation.

Table 6-2: Tourism and Recreation

Criteria	Tourism	Recreation
Regular everyday activities (dog walking, lingering, playground visit, etc)	No	Yes
Duration of trips	3 hrs or more	Less than 3 hours
Distance from place of usual residence	Further away more likely to be a tourist	Likely to be local residents

Source: Mott MacDonald

This differentiation between tourism use and recreation is important as it helps to identify the net economic addition of the park (as activities and spending patterns are different between these two groups) and thus determine economic impact. The 2022 public survey indicated that the majority of local (i.e., recreational) users to Stanley Park do not spend any money during their visit. Of the respondents who lived locally (in the West End or Downtown), 50% "rarely spend money on visiting the park" and 86% of local respondents spend either nothing, or under $50. Similarly, 78% of respondents living in Vancouver (but outside of the West End or Downtown) spend less than $50 on an average visit. By contrast, respondents from further afield were more likely to spend larger amounts, with only 13% of international visitors saying they did not spend any money at the park (the most popular amount for this group was $20-50, with 37% of respondents falling into this category). As such, to understand Stanley Park's contribution to the visitor economy, this part of the study focuses on tourists rather than recreational users.

To understand the breakdown of visitor numbers in terms of tourists and recreational users, this study used smartphone location-based data in the StreetLight platform. The total number of visitors to the park was observed and anonymized. Aggregated information about the home location of visitors was used to classify trips as either tourism or recreation. Visitors to Stanley Park with a home location of over 10km from the park were classified as tourists, while those with homes within 10km of Stanley Park were classified as making a recreation trip [65]. Using this method, 18m total visits were identified, comprising 9.3m tourists (who made unique visits, i.e. 9.3m individual visitors) and 160,000 recreational users, who on average make 55 trips per year (i.e. 8.6m recreational visits in total). For further detail on this method please see Section 4.2).

Although the StreetLight data used in this analysis does not provide the origin of tourists, it is possible to make a reasonable assumption by applying data from Destination BC, which states that 57% of visitors to Greater Vancouver are Canadian, and 43% from the US and other international destinations (in 2019)[66]. Applying these percentages to the 9.3m 'non-local' visitors to Stanley Park, this suggests that in 2019, approximately 5.3m visitors were from Canada, 4.0m were from the US and other international destinations.

To estimate the spend by tourists, this study used visitor data from Destination BC on the average spending per visitor for the Vancouver, Coast and Mountain region. This data indicates that both Canadian and international tourists spend approximately $135 per night during their visit (uplifted to 2020 prices)[67]. As this number is a per night figure, to estimate *daily* average

[65] It should be noted that this is not to suggest that visitors living within 10km do not spend money at Stanley Park, but their average spend is generally lower, so this analysis has focused on the average spend by visitors coming from further afield and tourists.

[66] https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/vancouverbc/ytd_visitor_volume_2019_97d6702f-3839-4ae3-8fd4-15ba3b3f8959.pdf

[67] Destination BC, Regional Tourism Profile (2017), Vancouver, Coast & Mountains

spend (i.e., minus the spend on accommodation, vehicle rental, vehicle operation and longer transportation costs) and understand what visitors might spend on a day trip, this information was compared with data gathered by Statistics Canada[68] which provides a breakdown of domestic and international tourist spend by type of expenditure in British Columbia. This data indicates that for domestic tourists, 41% of total spend is on 'daily' activities, including food and beverages (31%), recreation (5%), and entertainment (3%). Applying this proportion to the $135 figure means $55 per day is spent on 'daily' activities. For international tourists, $78 is spent on daily activities (2020 prices). The 2022 public survey indicates that the average length of a visit to Stanley Park is 2-3 hours, so to estimate the average spend per tourist in Stanley Park, these numbers have been halved to assume a half day visit (i.e., $27.60 per visit for domestic tourists and $39.13 for international tourists). These figures are in line with the results from the 2022 public survey.

The table below shows the estimated visitor spend that Stanley Park supports, using the number of visitors and the daily average spend per tourist.

Table 6-3: Tourism Spend at Stanley Park

	Value	Formula	Source/Notes
Total number of tourists to Stanley Park	9,300,000	(a)	StreetLight data, see section 4.2
Proportion of overnight Canadian visitors	57%	(b)	Destination BC – Market Origin of Overnight Visitors to Greater Vancouver 2019 year to date
Proportion of overnight international visitors	43%	(c)	Destination BC – Market Origin of Overnight Visitors to Greater Vancouver 2019 year to date
Number of tourists to Stanley Park from Canada	**5,340,397**	**(d)= (a)*(b)**	**Calculation**
Number of tourists to Stanley Park (US and international)	**3,959,603**	**(e)= (a)*(c)**	**Calculation**
Average spend per tourist per visit to Stanley Park (Canadian)	$27.60	(f)	Destination BC, uplifted to 2020 values. Minus average proportional spend on accommodation, vehicle rental, vehicle operation and longer transportation costs (=41% of total spend).
Average spend per tourist per visit to Stanley Park (US and international)	$39.13	(g)	Destination BC, uplifted to 2020 values. Minus average proportional spend on accommodation, vehicle rental, vehicle operation and longer transportation costs (=17% of total spend).
Average annual spend by Canadian tourists at Stanley Park	$147,372,510	(h)= (d)*(f)	Calculation
Average annual spend by international tourists at Stanley Park	$154,950,166	(i)= (e)*(g)	Calculation
Total tourist spend at Stanley Park[69]	**$302,322,676**	**(j)= (h)+(i)**	**Calculation**
Visitor spend in Vancouver Coastal and Mountains (2019)	$9,369,174,000	(k)	Destination Canada, Expenditures by Country of Residence, Tourism Region/Tourism Region Grouping and Type of Expenditures (2019)

[68] Statistics Canada. Table 24-10-0024-01 Type of expenditures made by Canadian residents, by province visited and visit duration, inactive (x 1,000); Statistics Canada. Table 24-10-0047-01 Spending by foreign residents travelling in Canada by country of residence, tourism region and spending category (x 1,000)

[69] It should be noted that this figure includes direct expenditure at the businesses located in Stanley Park, but also wider spending including costs getting to/from the park, as well as related businesses which are reliant on access to the park (bike hire firms, tour buses etc.).

	Value	Formula	Source/Notes
Proportion of spend at Stanley Park in the Vancouver Coastal and Mountains visitor economy	**3.2%**	**(l)= ((j)/(k))*100**	**Calculation**

Source: Mott MacDonald

The table indicates that the total spend by tourists at Stanley Park is estimated to be $302m annually, which represents 3.2% of the Vancouver Coastal and Mountains regional visitor economy.

Benefits of Recreation

Urban parks support different levels of recreational activity, from sitting and picnicking to high-intensity exercise, and for all group sizes from individuals to families to large gatherings or team sports. Stanley Park is a key recreational asset for Vancouver residents, particularly those living in the West End and Downtown.

While not a core economic impact of Stanley Park (recreational benefits are more intangible benefits to linked to wellbeing and quality of life, rather than directly related to cash-releasing benefits linked to visitor spend), recreational benefits for the park have been quantified for this study to give a sense of the scale of importance of Stanley Park to local residents' wellbeing.

A report prepared for the Vancouver Board of Parks & Recreation (Natural Capital Valuation of Vancouver's Parks (2020)), estimated that the average value of each recreational visit to Vancouver's parks is $2.80 for sedentary use (lying down, sitting, or standing), and $3.13 for active use (moderate activities (i.e. walking) and vigorous activities (e.g. brisk walking, running, team sports, weight-lifting and other activities typically classified as sports or exercise)). These activities can take place for "free" (i.e., the user does not pay an upfront fee) in park areas like open fields and running tracks, or with a small booking fee for facilities like tennis courts, baseball diamonds, volleyball courts, basketball courts, artificial turf and other sports facilities.

The table below sets out how recreational benefits have been quantified for this study. Using an average value of $2.97 per recreational visit and multiplying this by the number of visits by local users to the park for 2019 gives an annual recreational benefit for the park of $25.0m.

Table 6-4: Recreational benefits at Stanley Park - 2019

	Value	Calculation	Notes
Average value per recreational user	$2.97	(a)	Natural Capital Valuation of Vancouver's Parks (2020), (2020 values). As data of sedentary and active use is not available for Stanley Park specifically, an average figure for all parks has been used.
Number of recreational visits by local users 2019	8.6m	(b)	Street Light. It is estimated that each unique visitor visits Stanley Park 55 times per year, meaning 160,000 unique visitors and 8.6m trips overall. A benefit is derived for each trip, hence using this figure to rather than the number of unique visitors.
Recreational benefit	**$25,499,000**	**(c)= (a)*(b)**	**Calculation**

While much of the recreational activity in Stanley Park is relatively informal with no organized activities, there are a number of organizations located in Stanley Park which are key recreational assets for residents. These organizations employ permanent staff (the impact of which is captured in the section below), while others are led by volunteers.

Footnote: This table does not form part of the core economic analysis. It was included in this study due to the readily available nature of the information, and because public surveys over the past have consistently shown a high value placed on the recreational opportunities provided by Stanley Park.

6.2.3 Employment Supported in Stanley Park

Information gathered through stakeholder consultation and from the Board of Parks and Recreation indicates that just under 600 FTE jobs are directly supported by operations at Stanley Park (both in the public and private sector). It is likely that a significant number of indirect jobs are supported, both in the supply chain of the businesses located there, but also through the businesses which to a certain extent rely on use of the park (e.g., tourism operators, bike hire companies, events companies etc.). As such, is it is important to apply a multiplier rate to capture these jobs – a rate of 2.15[70] has been used which indicates that 684 indirect and induced jobs are supported in the wider economy. As such, ca.1,280 jobs are supported by activity at Stanley Park, representing 1.9% of the total tourism-related jobs in Vancouver's tourism industry. Assuming an annual average Gross Value Added (GVA)[71] per worker of $116,167 in British Columbia, the jobs at Stanley Park support $148m of GVA p.a..

Table 6-5: Employment and GVA supported by Stanley Park

	Value	Formula	Source
Number of direct FTEs at Stanley Park (businesses)	502	(a)	Stakeholder consultation data. Includes full time, part time and seasonal jobs, calibrated for FTE equivalent[72]
Number of direct FTEs at Stanley Park (public sector)	91	(b)	Park Operations
Total direct FTEs at Stanley Park	**593**	**(c) = (a) + (b)**	**Calculation**
Multiplier of 2.15 (total multiplier)	1.15	(d)	Statistics Canada. Table 36-10-0113-01 Input-output multipliers, provincial and territorial, summary level. Average total multiplier of the Arts, entertainment and recreation and Accommodation and food services sectors.
Indirect and induced jobs supported	684	(e) = (c)* (d)	Calculation
Total jobs supported by Stanley Park	**1,277**	**(f) = (e) + (c)**	**Calculation**
Number of visitor economy jobs in Vancouver	66,785	(g)	Dividing the number of visitor numbers to Metro Vancouver 2019 (11,020,193, Destination Vancouver's Visitor Volume Model, MNP) by 165 (the number of visitors required to support one job (Destination BC's 2020 Value of Tourism).
Percentage of jobs in Vancouver visitor economy at Stanley Park	**1.9%**	(h)= (f)/(g)	**Calculation**
Average GVA per worker p.a., British Columbia	$116,167	(i)	OECD. Stat. Regional Economy: Regional GVA per worker. Uplifted to 2020 prices. Converted to CAD from USD (conversion rate of 1.2957, Bank of Canada)
Total Gross Value Added (GVA) supported p.a.	**$148,382,934**	**(j)=(f)*(i)**	**Calculation**

Source: Mott MacDonald

[70] Statistics Canada. Table 36-10-0113-01 Input-output multipliers, provincial and territorial, summary level. As multipliers for the tourism industry are not stated, this analysis has used an average of the 'accommodation and food services' and 'arts, entertainment and recreation' sectors for British Columbia.

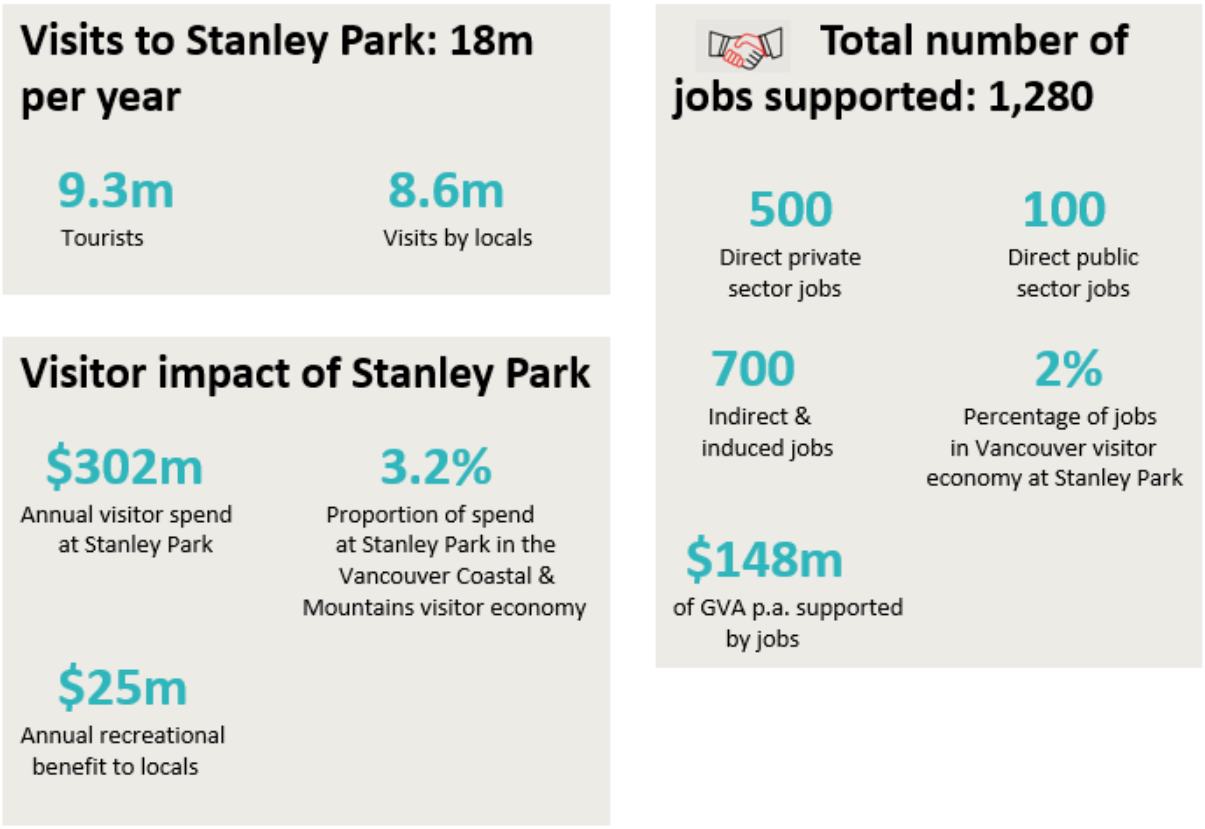
[71] Gross value added (GVA) is the measure of the total value of goods and services produced in an economy by one individual producer, industry, sector or region.

[72] Number of full-time jobs, dividing the number of part time jobs by 2 to get one FTE, and dividing the number of seasonal jobs by 3 to get one FTE (assuming these last for a third of each year).

6.2.4 Summary

The economic activity and benefits which Stanley Park supports is summarized on the image below.

Figure 6-3: Stanley Park – Wider Economic Benefits



Source: Mott MacDonald

6.3 Costs and Revenue Generation

While the previous section focuses on the economic activity arising from people visiting the park, the following section summarizes the costs of maintaining Stanley Park relative to the direct revenue it generates.

6.3.1 Costs

In 2019, the gross annual budget for the operation and maintenance of Stanley Park was $7.3m. This included staff salaries, supplies and materials across the following departments and work areas:

- horticulture;
- urban forestry;
- building service workers;
- park rangers;
- administration - special events, filming and concessions administration;
- Vancouver Police Department – Mounted Squad; and

- vehicle fleet used in Stanley Park for all above department/work areas.

While there are likely to be a number of additional low-level costs to the City of Vancouver and the Vancouver Board of Parks and Recreation related to Stanley Park (e.g. marketing, overhead costs etc.), these are spread around multiple initiatives and project budgets and relate to parks overall, not Stanley Park specifically. It is therefore difficult to extrapolate these costs for Stanley Park alone, given that these costs do not relate to the direct operation and maintenance of the park but are tied to other budgets. If the costs for Stanley Park were extrapolated, they would likely be marginal, hence they have not been included in this analysis.

6.3.2 Revenue Generation

Using data from 2019, the annual revenue generation for Stanley Park is $8.7m. This includes $5.2m (60%) in car parking revenues, $644,000 (7%) for filming and events permits, plus $2.8m (32%) from the park-board run concessions and private businesses located in the park. The businesses do not pay rent in the typical sense, but most have revenue-sharing agreements with the Board of Parks and Recreation.

Table 6-6: Stanley Park – Annual Average Revenue Generation

Input	Value	%	Source /notes
A) Car parking revenues 2019	$5,216,629	60%	Parking Data for Stanley Park & Beach Avenue - Board Briefing Memo (2021)
B) Filming and events revenues 2019	$643,839	7%	Vancouver Board of Parks and Recreation. Filming permits for Stanley Park range from $274 to $1,664 per day depending on the size of the production[73].
C) Average annual net revenue from businesses	$2,813,801	32%	Vancouver Board of Parks and Recreation
i. Park Board Concessions	$814,882	9%	Park Board run concessions
ii. Tour Operations	$115,337	1%	Tours within the park
iii. Tourist Attractions & Gifts	$816,015	9%	Including the aquarium and shops
iv. Restaurants	$952,830	11%	Privately owned restaurants
v. Recreation / Other	$114.736	1%	Including recreational clubs
Total	**$8,674,269**		**Calculation**

Source: Vancouver Board of Parks and Recreation

Figure 6-4 below visually shows the revenue generation for Stanley Park overall. **Figure 6-5**, provides the breakdown of revenue from the different types of businesses contained in the business revenue category and is presented as a proportion of business revenue only.

[73] https://vancouver.ca/doing-business/filming-fees.aspx

Figure 6-4: Stanley Park Revenue Generation

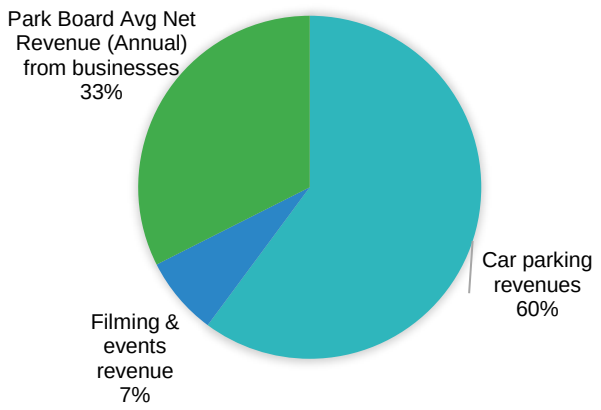
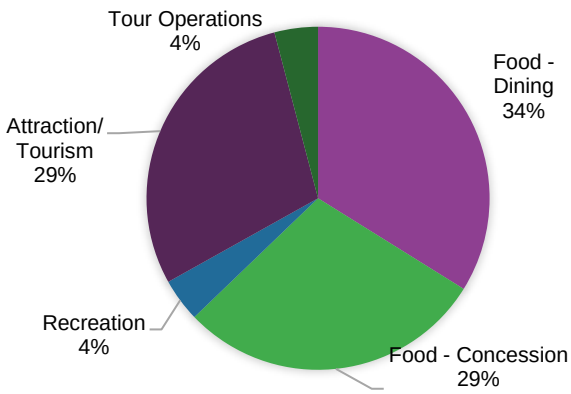


Figure 6-5: Revenue Generation from Businesses



6.3.3 Cost to Revenue Ratio

Knowing the annual operating and maintenance costs and revenue generation for Stanley Park, it is possible to establish the Cost to Revenue Ratio (CRR), which measures the ratio of operating expenses to revenues generated by an organization. The core goal of this metric is to identify if there is any overspending and ensure that an organization makes more money in revenue than it spends on operations. The CRR is calculated by cost divided by revenue, shown on the table below.

Table 6-7: Stanley Park CRR calculation

	Value	Formula	Source
Operation and maintenance costs	$7,315,431	(a)	Vancouver Board of Parks and Recreation
Revenue generated	$8,674,269	(b)	Vancouver Board of Parks and Recreation
Cost to Revenue Ratio	0.84	**(c)=(a)/(b)**	**Calculation**
Cost to Revenue Ratio %	84%	**(d)=(c)*100**	**Calculation**

Source: Mott MacDonald

The CRR for Stanley Park is 84%, meaning for every $84 invested in park upkeep, $100 is generated in direct revenue. This is a positive outcome, meaning that Stanley Park provides a net financial benefit to the Board of Parks and Recreation.

6.4 Economic Activity and the Transportation Network

To understand how economic activity at Stanley Park relates to the transportation network and existing traffic conditions, qualitative data has been gathered via a series of surveys, interviews and data collection. The purpose of this section is to indicate the degree to which economic activity is currently reliant on – or in some cases constrained by – the existing transportation network, the challenges with the existing network and what threats and opportunities may arise as a result of reconfiguring the network.

6.4.1 Stakeholder view

Business Activity - Staff Access and Operations

Businesses and organizations located in Stanley Park were asked a series of questions through interviews, around how the current transportation network affects their staff and operations and maintenance requirements. Businesses located furthest from the West End/ Downtown raised a number of concerns around the current network, including:

- Challenges with recruitment: many people working in the hospitality industry (especially on the frontline) are on minimum wage and more likely to use public transit, cycling or walking to get to work.
- Safety concerns: for those who walk and cycle, this is a challenge in the winter months when poor weather makes walking and cycling a less attractive option. Employees are less likely to walk or cycle when it is dark during the winter months (and in the summer months outside of daylight hours) raising safety concerns.
- Traffic concerns: for those staff who do travel by car, there are issues around traffic and congestion at busy times, particularly on sunny days during the summer months. Some employees car- or cab-pool to the West End, where there are more public transit options.

Several businesses located closer to the West End reported the following issues:

- Parking concerns: with staff getting to work, due to high pressure on parking lots in this part of the park during peak visitor periods.
- Need to rely on vehicle travel: with some staff working early or late shifts, it may not always be possible for them to use public transit to get to work, hence being reliant on using private vehicles.
- Safety concerns: the potential for walking and cycling is greater for businesses located closer to the West End, however issues around safety remain (particularly after dark).

Most businesses stated that the process for receiving supplies and deliveries works relatively well. This is largely done before/after peak visitor hours, so there is little overlap with the busiest visiting times. The majority of businesses (though not all) have dedicated space for suppliers to park. One business mentioned that before the pandemic there was a nearby lane which trucks could use to pull over and unload but reported that this is no longer the case due to the implementation of the temporary cycle lane, and the trucks now have to stop in the middle of the road.

Visitor Access

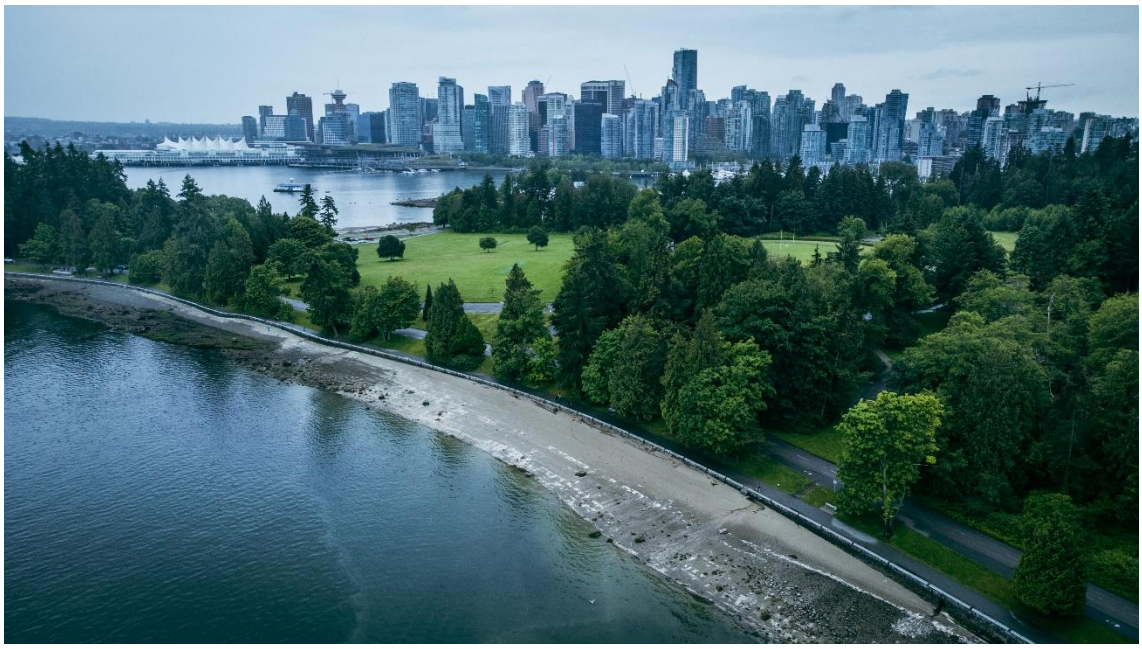
Similar to staff access, most businesses reported that unless they are well-served by public transit, most of their visitors are reliant on private vehicles. Indeed, for one business located furthest away from the West End/Downtown, reported an estimate that up to 95% of their patrons arrive by car. This was believed to have several implications, including:

- Getting in and out of park is a challenge – on days were there is lots of traffic, visitors can sometimes experience long delays to get out of the park.
- Barriers to efficient access dampen consumer demand for business services in the park.
- Customers calling to delay/ cancel reservations due to traffic.
- For similar reasons as above, limited numbers of visitors walk/cycle to the further businesses.

The businesses located closer to the West End, also reported a relatively high proportion of visitors to arrive by private vehicle, especially those businesses frequented more by families and seniors. As such, visitor parking was flagged by them as an issue in this area of the park (particularly around Vancouver Aquarium), where parking is frequently raised as an issue when customers provide feedback. Loss of parking and heavy traffic (and the media coverage this attracts) was mentioned as a deterrent for people visiting the park by businesses in this area. Several businesses noted the loss of parking spaces due to the implementation of temporary bike lanes during the pandemic – while not an issue during lockdown when the businesses were closed, the businesses mentioned the loss of even a few spaces is felt now since businesses have re-opened.

However, for other businesses in the park, visitor parking is generally considered to be sufficient, particularly in areas where there is less concentration of businesses (such as the western side of the park). Other businesses reported increases in active modes amongst local visitors, particularly in the aftermath of COVID-19, although these businesses tended to be those which appeal to young adults (rather than families or seniors).

The results of the public survey are in line with the information gathered from the interviews – driving (with passengers) was the most common mode type for respondents (36%), highlighting that many people drive to Stanley Park for outings with family and friends. Active modes were also very popular, with 35% using a bicycle (or micro mobility device) and 20% walking – this reflects the high use of the park by local residents who are unlikely to drive to the Park. Only 2% of respondents said they arrived by public transit (bus, SkyTrain etc.) and a high proportion of visitors said existing public transit provision prevents this from being an option (22% said limited frequency of service on existing routes (Route #19) is the largest barrier to using transit more often to get to and around Stanley Park, while 15% said there is limited route coverage within Stanley Park).



How Economic Activity may Relate to Transportation Interventions

Businesses located in the park were asked to make suggestions for how economic activity could be safeguarded or improved through changes in the existing transit network. Suggestions from the businesses included the following:

- A more frequent/ reliable bus service, in particular the #19 bus.
- The potential for buses to stop at key areas of the park benefiting tourists, locals and those who work in the park.
- A shuttle service, again benefitting tourists, locals and those who work in the park. This would also help distribute parking throughout the park, rather than the concentrated demand which currently occurs in a few car parks.
- More EV charging stations at car parks.
- The ability to book parking spaces ahead of time, to reduce pressure on existing car parks and regulate traffic in the park.
- Flexible use of space: for example, a bike lane which could be used for service / delivery vehicles after hours.
- A better approach to managing bicycle traffic: it was felt that the temporary bikes lanes implemented during the pandemic in areas of high pedestrian and vehicle traffic currently impact visitor vehicle access, operation and maintenance services, and reduce parking spaces. While cyclist access was stated as important, it was suggested that new, dedicated bike lanes would help solve these challenges.

6.4.2 Key Considerations

The results of the various engagement activities undertaken highlighted that the Mobility Study should consider the link between the transportation network and economic activity in two categories: 1) things which currently work well in the park, and which should therefore be protected, and 2) things which could be improved – current weaknesses, which if not addressed may threaten or constrain economic/ business activity in the future.

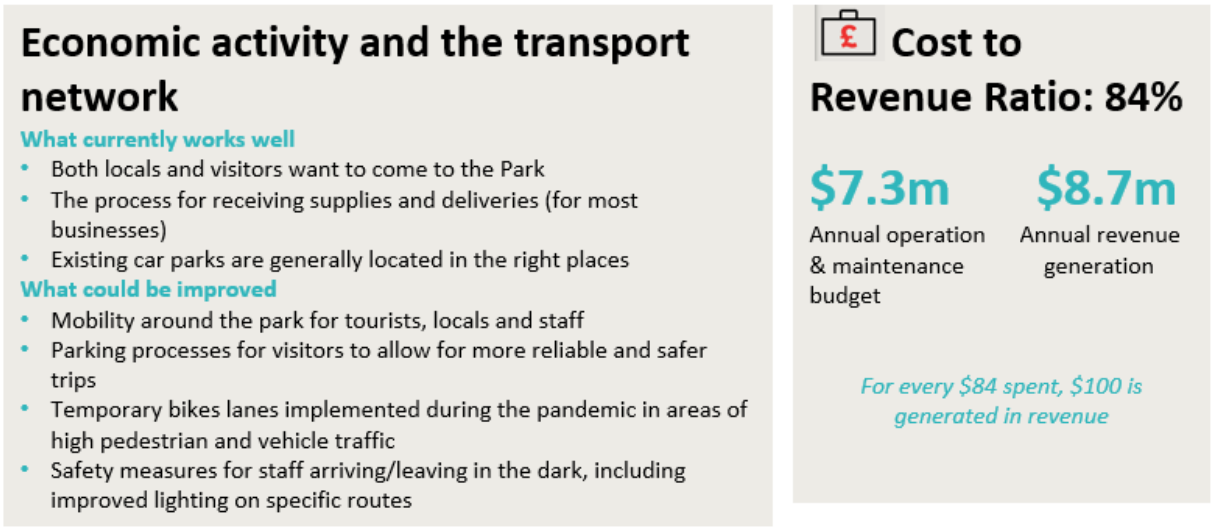
Table 6-8: The Transportation Network's Relation to Economic Activity

What currently works well	What could be improved
The biggest single income stream to the City of Vancouver/ Parks Board from Stanley Park is parking revenues (60%). This helps cover the Park's operations costs.	Mobility around the park for tourists, locals and those who work in the park.
The process for receiving supplies and deliveries (for most businesses).	Parking management for visitors to allow for more reliable and safer trips, including better distribution of parking around the park and less congestion at car parks (linked to the point above). As with any nature-based asset, careful consideration must be given to the amount of space allocated for transportation, while retaining the natural spaces. It is important to maximize the existing areas designated to transportation/parking effectively, reducing the need to cut down trees/ reduce natural assets.
Both locals and visitors want to come to the Park – most businesses are likely to reach pre-pandemic levels of visitation soon.	Temporary bikes lanes implemented during the pandemic in areas of high pedestrian and vehicle traffic – they currently impact visitor access, operation and maintenance services, reduce the number of parking spaces and dampen demand for business services in the park
Existing car parks are generally located in the right places to serve businesses. Families and seniors are most likely to drive to the Park and the businesses highly frequented by these groups mostly have parking lots nearby. Parking provision is adequate at many of the parking lots.	Safety measures for staff arriving/leaving in the dark, including improved lighting on specific routes.
	Better integration with the existing public transit network (e.g., bus connections).
	Traffic congestion around and through the Park.

Source: Mott MacDonald

6.5 Summary

Figure 6-6: Key Results of the Economic Analysis



7 Summary and Next Steps

7.1 Key Mobility Context Findings

Based on a review of past planning initiatives, existing policy direction, a best practise scan of other iconic urban parks, numerous park mobility and access data, results from the public survey, and the access and economic analysis, the following points summarize the key findings:

Policy and Planning Context

- There is considerable supporting policy direction at multiple levels of government to reduce and shift vehicle traffic to sustainable modes of transportation. Previous studies of Stanley Park's transportation system have explored ways to improve access into the Park while reducing vehicle use. They provide information from which this work should build on.
- Public opinion generally desires changes in the Park's transportation system, including reallocating space to other modes and/or reducing private vehicle traffic.
- The interim bike lane currently located on the inner lane of Park Drive is one of many options that will be evaluated as a possible longer-term option within this study. Due to it being installed during the development of this report, there is considerable evaluative data already available, some of which is captured in this report. However, 2019 and the conditions at that time form the report baseline year.

Visitor and Park Access Trends

- Despite a drop in the number of vehicle entries over the years, the overall number of visitors has increased significantly and is estimated to be about 18,000,000 per year. It is estimated that there are about 9.5 million unique visitors, representing over 50% of park visits.
- About 48% of these are made by residents that live within 10 km of the Park (locals), and the other half by tourists (domestic or international).
- The share of visits made by active transportation has increased significantly over the last 40 years, with cycling doubling, and walking increasing about three-fold from 1980 to 2019. The pandemic has bolstered that trend.
- International visitors tend to frequent attractions in the eastern and northern areas of the Park, whereas local visitors tend to frequent destinations in the western and southwestern areas of the Park such as Second and Third Beach.
- Visitors using vehicles tend to have a specific destination in mind, whereas those that cycle are less likely to have a specific destination in mind, suggesting trip purpose and destination is of lower priority and recreation is of higher priority for cyclists.
- Transit use to the Park continues to be low, with the need to make multiple transfers, limited coverage within the Park, and limited service frequency cited by residents as key challenges.

Visitor and Trip Profiles

- 80% of park users with a disability that impacts their mobility visit the park by private vehicle as a group (i.e., of 2 or more people), demonstrating a need to provide access, given barriers to using active transportation. However, 1 in 5 residents with an ambulatory disability accessed the Park without using motorized modes, highlighting the varied needs and preferences of persons with disabilities.
- Senior citizens have a greater reliance on vehicle travel to access Stanley Park but using vehicles as passengers than the general population. This may indicate a greater need to

provide motorized transportation options for seniors that do not require them to operate the vehicle.

- People who walk to access the Park are the most frequent visitors, with public transit users as the least frequent visitors.
- Based on existing mode share and visit frequency, as a whole, people who access the park by vehicles in larger groups spend the most money in Stanley Park over the course of a year. They are followed by active transportation and micromobility users. People who access the Park by vehicles on their own (not in a group) spend about half the amount that active transportation users do.

Network Demand and Supply

- A comparatively large amount of paved space (about two-thirds) is designed for vehicular access, although large vehicle volumes typically occur during a short peak time on weekends in the peak summer season. The park's road network operates with no vehicle congestion at nearly all times. This is also the condition for North Lagoon Drive.
- Some visitors arriving by vehicle express difficulties finding parking. Overall, parking occupancy did not exceed capacity throughout the busiest months of the year pre-pandemic, suggesting parking capacity is sufficient for the park overall. Parking demand does approach available capacity at some lots at the busiest times, which may lead to localized parking congestion during peak periods, potentially prompting these visitor concerns. This suggests the issue lies in how parking is managed or the level of information available to visitors (i.e. online real-time information).

Equity of Access

- Children and youth have disproportionately lower access to Stanley Park than other age groups, followed by those 65 years and older.
- Car access into Stanley Park is up to 32 times greater than access by transit. Residents that do not have (or choose not to have) access to a vehicle, have a profoundly lower opportunity to access Stanley Park than those residents that do have vehicle access – this includes many youth, lower-income residents, and seniors no longer able to drive. In Vancouver, this applies to at least 25% of residents.
- To better balance access across modes, access by active travel and transit options would need to be substantially improved; possibly to a degree that it impacts access levels by private vehicle.

Economic Impact

- The annual visitor spend associated with Stanley Park is approximately $302 million. This represents over 3% of the entire Vancouver Coastal and Mountains tourism region visitor economy.
- Stanley Park supports about 1,280 direct and indirect public and private sector jobs, which contribute about $148 million to the local economy.
- Stanley Park generates $8.7 million in direct revenue and has an annual operations and maintenance requirement of $7.3 million, providing it an 84% cost to revenue ratio. This means that for every $84 invested into the Park's upkeep, $100 dollars in direct revenue is generated.

A. Access Model Methodology

A.1 Measuring Access Philosophy

The concepts of mobility and access are closely linked. For the most part, mobility is a means to an end, and not an end in and of itself. Residents do not travel because they want to travel, but instead travel to reach the activity at the end of their trip. However, for those trips in Stanley Park that are considered leisurely or for sightseeing (sometimes termed passive recreation), their trip within the Park is the actual activity, meaning that within the Park, mobility is the end in and of itself. This suggests a lower importance on fast mobility in the Park, and a greater importance on access into the Park and its key areas. It is important that this is explicitly measured to work toward a Stanley Park that can be accessed by all.

> *"…many cities are doing the right thing, but they are still afraid of measuring the right thing. They keep collecting data about the same issues, which circle them back to the same problems, pointing at the same solutions, which are then assessed with the same evaluation tools, which turn out the same results justifying the same kind of investments.* ***If transport should serve everyone – and I think it is hard to suggest anything else – then let's measure if everybody is indeed being served well.*** *Once we start doing that, we can create a ranking of* ***who's being served well and who is poorly served; of who is at the top and who is at the bottom****. Once cities start doing this, they will know exactly where to start…"*
>
> *- Karel Martens (author of Transport Justice)*

A.2 Methodology

A network analysis was conducted to measure access to Stanley Park from every dissemination area (DA) in Metro Vancouver. Travel time matrices were calculated using the *r5r* package available with the 'R' statistical software program R. Data for the multi-modal network was obtained from Open Street Map, and transit schedule data was obtained from TransLink. The analysis was conducted for walking, driving, biking, and a combination of transit and walking representing a typical late summer weekend at 3:00 pm, which is a peak visitation period for the Park. Access was measured by calculating the amount of area within Stanley Park that could be reached within a specified travel time cut-off from any part of the Metro Vancouver region. The distribution of access was then investigated by calculating average access weighted by populations of interest.

Table A.1: Inputs to Travel Time Matrices

Argument	Walking	Transit and Walking	Biking	Driving
Departure Date and Time	08-Sept-2019 at 15:00:00 (Sunday)			
Time Window[74]	120 minutes			
Travel Time Cut-Offs	10, 20, 30, 40, 50, and 60 minutes			
Maximum Trip Duration	60 minutes			
Walk Speed	3.6 km/hr		–	–
Maximum Walk Distance	No restriction as long as max trip duration is respected		–	–
Maximum Rides	–	3	–	–
Bike Speed	–	–	12 km/hr[75]	–
Maximum Level of Service	–	–	LTS 2[76]	–

[74] The analysis is undertaken at every minute over a two hour period, to account for the influence of transit headways and scheduling.

[75] Default speed in *r5r* package. Represents average bike speed.

[76] Comfortable for most adults. These cycling facilities only require people riding bikes to interact with motor vehicle traffic at intersections.