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CITY OF VANCOUVER

Summary Report

2019 Vancouver Panel Survey

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Executive Summary

This report summarizes the process and results of the City of Vancouver's seventh annual Panel Survey conducted in 2019. The Panel Survey helps to track progress towards transportation mode share targets and will be a means of assessing the vehicle-kilometres travelled (VKT) by the City's residents on an ongoing basis. These are the two principal metrics for gauging trends in sustainable transportation, as outlined in the City of Vancouver's Transportation 2040 Plan and associated policies. As this survey tracks the travel characteristics of the same group of people[1] from year to year, it will also be helpful in determining which transportation investments and policies have been the most effective in helping to provide walk/bike/transit travel options for Vancouver residents.

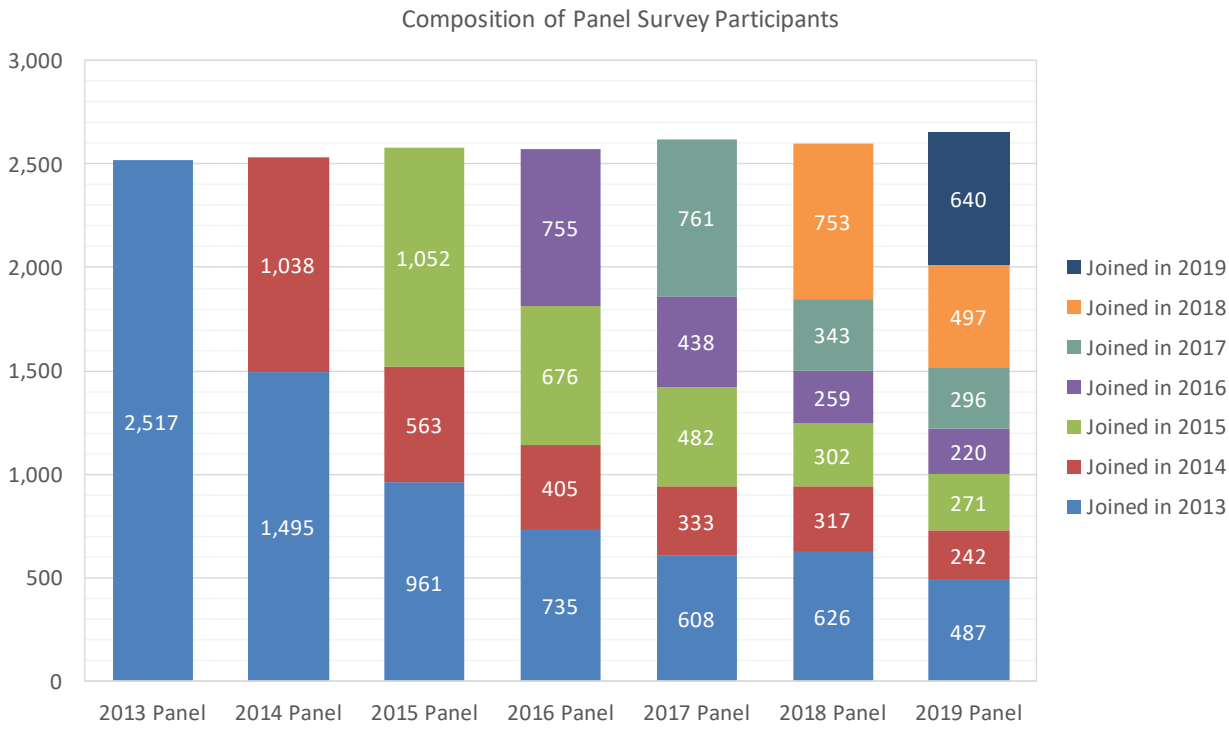
The primary component of this survey is a travel diary where individuals record the trips that they make on an assigned weekday. This trip data was then compared to previous panel surveys conducted from 2013 to 2018 annually which followed similar design, sampling, recruitment, and analysis methodologies, allowing for analysis of transportation trends. As was the case in 2018, and as part of the evolution of the Panel Survey, there were some changes to the demographic and trip diary components, in addition to recruiting efforts, to better reflect the City's priorities. These are explained in more detail within the report but are summarized as follows:

1) The 2019 survey introduces a set of questions regarding neighbourhood walking environment.
2) In previous years, the survey provided set time periods for the participants to identify their trip start times. This question has been modified to include hourly time slots to better understand trip-making behaviour throughout the day.
3) The 2019 survey has also added a new question asking participants to describe aspects of their trip experience, such as social interaction, safety, surrounding infrastructure, and travel comfort.

Along with the new referral process, a more effective cash-based incentive program was used in 2019 which resulted in 1,849 of 2,653 panel members returning from 2018 for the 2019 Panel. This equates to an attrition rate of 29%, with 19% of the original panel from 2013 still intact. It is important to retain as many of the previous years' panel members to effectively track changes in travel behaviour and patterns year-over-year. The complete composition of the 2013 to 2019 panelists, grouped by when they first joined, is shown in *Figure 0-1*.

[1] As opposed to the regional travel survey which randomly recruits households every three to five years.

Figure 0-1: Composition of Panel Survey Participants



Even with the minor changes to the survey instrument and composition of panel members, survey results in 2019 are similar to previous years. Some of the key highlights from the 2019 Panel Survey results include:

1) The sustainable mode share for all trips in 2019 is 54.1%[2], up from 52.8% last year and above the 50% target envisioned for 2020.
2) Since the initial 2013 Panel Survey, there has been a 6.6% decrease in auto trips which has been captured by increases in walking, cycling, and transit trips. Total trips and mode share are presented in *Figure 0-2*. Trips and mode share to/from work are consistent with this trend, with an increase in transit and bike trips for commuting, as illustrated in *Figure 0-3*.
3) Benchmarking VKT per capita using odometer readings from panel participants' vehicles indicates an 18% decrease in VKT per capita over the last six years.
4) Car sharing has increased further in 2019 with 37% of all residents, aged 18+, having a car share membership, up from 34% in 2018 and 31% in 2017. Access to private vehicles across the City has remained steady from last year at 86%.

[2] Note that the sustainable mode share values represent the midpoint of the walk/ bike/ transit mode shares based on the 95% confidence interval ranges. These are discussed in more detail in Section 4.2.

Figure 0-2: Total Trips by Mode and Mode Share (2013-2019 Panel Surveys)

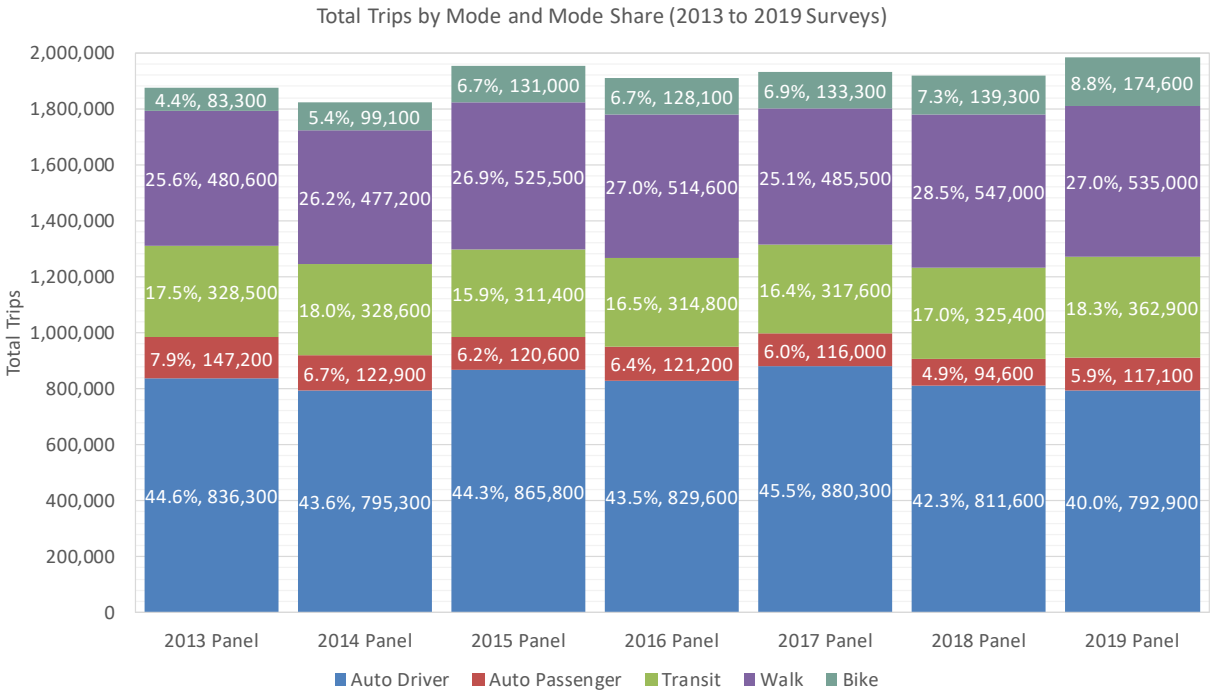


Figure 0-3: Comparison of Panel Survey Trips to Work (2013-2019 Panel Surveys)

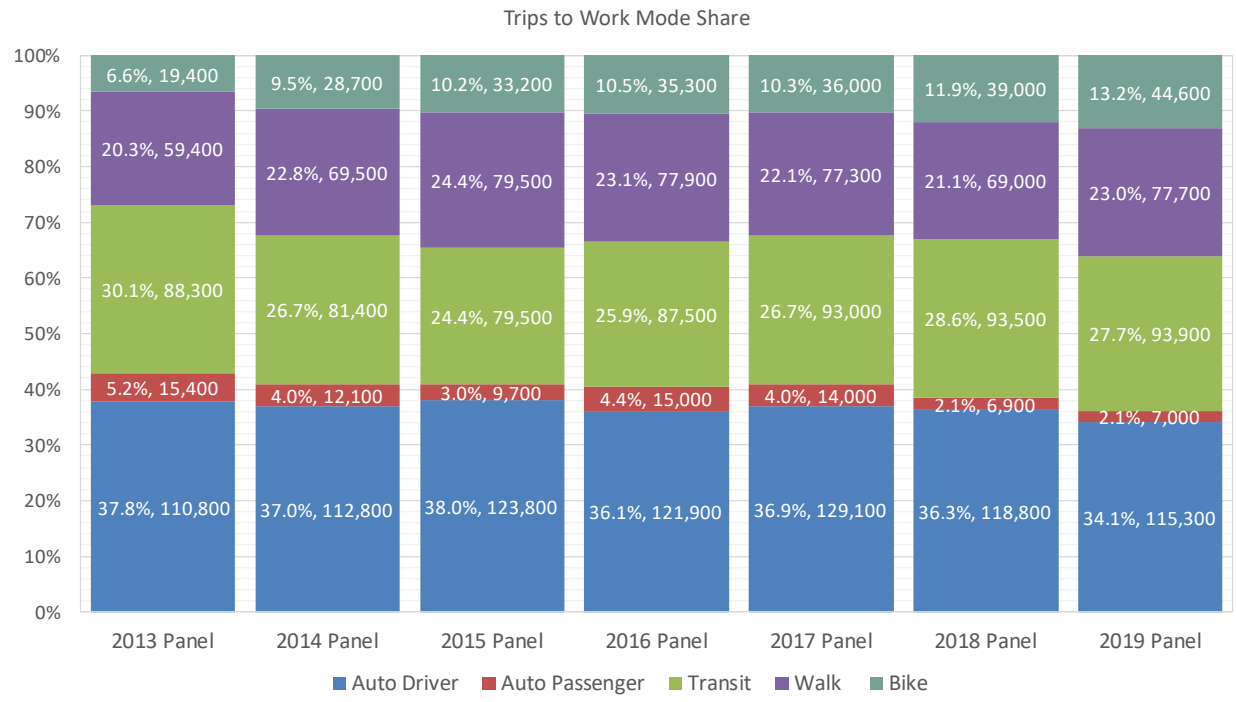


Table of Contents

List of Figures

List of Tables

1. Introduction

Vancouver is recognized as one of the most livable cities in the world, due in no small part to the way in which the built environment respects and magnifies its natural surroundings. This delicate balance is put under pressure as the City continues to grow and accommodate new residents and businesses. The Greenest City Action Plan, Transportation 2040 and Climate Emergency Response Plan offer appealing goals of how the City of Vancouver's (the City's) transportation network plays a key role in shaping the future growth of the City.

The City's role in transportation includes building and maintaining infrastructure; shaping land use through guidelines and policies; managing demand through regulations and pricing; collaborating with TransLink, adjacent communities, and senior levels of government; and educating residents.

In many respects, that goal is already taking shape, with the shifting live-work balance on the downtown peninsula supporting a greater number of short distance trips by walking, cycling, and transit. The launch of the Canada Line and the 2010 Winter Olympic Games were a proving ground for demonstrating the latent demand for walk/bike/transit modes of transportation. The City's ongoing commitment to provide bike facilities for all ages and abilities (AAA bike facilities) and transit-oriented development has also gone a long way to support more walk, bike, and transit modes of transport.

In late 2015, the City approved plans to expand the cycling network over five years (2016 to 2020) and to initiate a pilot project to allow those on roller blades, skateboarders, and push scooters to use AAA bike facilities.[3] Further, the City of Vancouver launched the Mobi bike-share system on July 20, 2016 providing a transportation alternative for people who might not own a bicycle. The City has also continued to invest in and improve the Arbutus Greenway which was purchased from Canadian Pacific Railway in 2016. At a regional level, transit service continues to be improved. Recent notable improvements include the new RapidBus routes, fleet expansion and increased service hours.

To build off of these successes and to plan infrastructure that can get the largest gains in the percentage of people walking, cycling, and taking transit and reductions in vehicle-kilometres travelled (VKT), it is critical to track the effectiveness of different initiatives as well as market conditions on changing travel behaviour. Beyond the City's current data sources including screenline traffic counts, permanent bike counters, TransLink's Regional Trip Diary Survey, and the Census Journey to Work, a Panel Survey is an effective tool to capture and track transportation trends on an annual basis.

This is the seventh year of the City of Vancouver's annual Panel Survey. This survey is intended to be used to benchmark progress towards the City's mode share and VKT targets. Each year, the survey is refined to include metrics related to health, propensity of travel by active transportation modes, and reasons for shifting travel patterns, while at its core, still being a travel survey.

[3] Details are included in the Council report "Active Transportation Update and Pilot for Skateboarding in Protected Bike Lanes" http://council.vancouver.ca/20151210/documents/ptec7.pdf

1.1. Study Objectives

A panel of Vancouver residents has been recruited and is maintained to serve in the ongoing annual Vancouver Panel Survey. The Panel Survey is a one-day personal travel diary covering weekday trips by any mode or purpose that also captures household and personal demographic information. This excludes commercial driver trips, such as those driving trucks, buses, and taxis, and non-Vancouver residents and tourists.

The primary objectives of the Panel Survey are to:

1) Assess the travel mode share and number of trips for the nine transportation zones in the City;
2) Assess the average VKT by City residents; and
3) Determine factors that have contributed to changes in travel behaviour and travel patterns.

The inaugural 2013 Panel Survey established a benchmark of travel behaviour in the City, against which the following panel surveys are compared, allowing the City to capture trends in the key parameters of total trips, mode share, and VKT. Over time, the City can then be better positioned to determine which of its policies and projects have resulted in the desired changes in travel behaviour. This survey approach is unique to other regional travel surveys in that this survey aims to examine trends in travel behaviour amongst a group of panel members (i.e. a longitudinal survey) rather than comparing results of a new random sample of households every three to five years such as TransLink's Regional Trip Diary Survey. In this seventh year of the Panel Survey, trends can be drawn from the information gathered in the travel diary component of the survey and reasons for changes in mode share and VKT can be postulated. The Panel Survey will also be benchmarked against regional trip diary surveys and the Census Journey to Work survey that occurs approximately every 5 years, the latest of which was conducted in 2016.

1.2. Complementary Data Sources

The Vancouver Panel Survey is not the only survey or data collected on a regular basis. There are several other complementary data sources which add value to the Panel Survey through result comparison and supporting evidence. These complementary sources include the following:

Census & Journey to Work

Statistics Canada conducts a national census regularly every five years, with the latest survey occurring in 2016. Journey to Work is one of the topics in the long-form census and collects data specific to the commuting behaviour of Canadians. The census, including Journey to Work, collects a large volume of data, requiring significant time and effort to record, analyze, validate, and present outputs. In 2016, the census day was May 10, however data was not released to the public until 2017. Journey to Work was part of the last data release at the end of November 2017, over 1.5 years after census day.

The Census and Journey to Work have several benefits and advantages over the Panel Survey which allow them to be important complementary data sources. Having been collected regularly every 5 years since the 1990's, Journey to Work allows for trend analysis on attributes and transportation behaviours dating back well beyond the start of the Panel Survey. The Census is a mandatory survey administered by Statistics Canada with the Journey to Work having a high sample rate of 20 to 25%. This results in high-quality data that has already undergone data cleaning, review, and analysis. While the raw data is not made publicly available, information at the desired level of granularity is usually either readily available online or available by custom request.

TransLink's Regional Trip Diary

The Regional Trip Diary survey administered by TransLink is a household-level travel survey representing approximately two percent of households in the Lower Mainland. This survey is performed every five to six years with the previous surveys occurring in 2008, 2011, and 2017. This survey focuses on regional issues which have some overlap with the City's interests. However, it may not capture information on emerging trends of particular interest to Vancouver such as car-share and bike-share membership, traveller satisfaction, or use of specific infrastructure within the City. Given the considerable amount of data collected for the Regional Trip Diary, release of the survey results can take over a year as seen with the release of the 2017 Regional Trip Diary in Fall 2019.

In 2017, there was an overlap of the TransLink Regional Trip Diary with the Vancouver Panel Survey; both conducted in the fall. With the release the Trip Diary now, there was an opportunity to complete a comparative analysis of the two surveys. This comparative analysis is summarized in *Section 6*.

Similar to the Census, the first Regional Trip Diary was conducted years before the inception of the Vancouver Panel Survey in the 1980's, allowing for trends to be observed over the last four decades. Additionally, the Trip Diary has a 2.5% sampling rate of households in the Lower Mainland and is conducted in the fall when commute patterns are stable with students back to school and commuters back to work from summer holidays.

Talk Vancouver

The Talk Vancouver panel of residents interested in providing feedback to the City is a self-selected sample based on willingness to participate in surveys. This self selection makes it difficult to expand the data reliably due to the non-random nature of those choosing to participate and can lead to biases in estimated behaviour from other more statistically sound estimates.

Direct Travel Volume Measurement

Direct measurements of travel volume by mode are conducted by various agencies in the region including the City of Vancouver and TransLink. This includes auto volume counts, bike counts, and transit ridership. These measurements provide useful trends on how travel is changing in the City and can be used to back-check the results from other data sources. However, these observations do not produce an overall picture as they are measuring travel not trips and can not account for the total size of the travel market. Additionally, no information on the traveller or purpose is collected.

Advantages and Disadvantages of the City of Vancouver Panel Survey

The Vancouver Panel Survey provides an annual check-in on transportation mode shares moving towards the targets developed in the City's long-range plans. This provides short term feedback on how well the initiatives are performing in encouraging active mode share travel and decreasing vehicle-kilometres travelled. While the complementary surveys and data sources could provide similar insights into travel behaviour as the Panel Survey, there are trade-offs that should be considered. These trade-offs reflect the advantages and disadvantages of the Vancouver Panel Survey, and generally involve the following key considerations:

Frequency of Measurement

The frequencies of the Census Journey to Work and the Regional Trip Diary are sufficient and reasonable given the purpose, size, and complexity of those surveys. The Vancouver Panel Survey allows for an annual measure of local and regional initiatives. There are significant changes anticipated

for the City of Vancouver in the coming years which may have impacts to travel for the City's residents, including:

- Arbutus Greenway,
- Expansion of the City's cycling and walking networks,
- Removal of the Georgia and Dunsmuir Viaducts,
- Broadway Subway Project,
- Expansion of the Mobi bike share program,
- Changes of car-sharing services, and
- Adoption of ride-sharing services.

In the future, other significant changes could include the adoption of autonomous vehicles, TransLink's zone system switching to a distance-based fare system, mobility pricing, an economic downturn, and other technological and socio-economic factors. As the Panel Survey is conducted annually, this provides the City of Vancouver the opportunity to perform a detailed analysis to determine the correlation and possible causation of changes to travel behaviour and patterns.

Representation of Sample

Random sampling to reduce selection bias in the sample is key to reliable statistical estimates. As the Talk Vancouver survey participants are self-selected, the bike share estimates were drastically different compared to the Census Journey to Work, Regional Trip Diary, and City of Vancouver Panel Survey.

Compared to the TransLink Regional Trip Diary and the Census Journey to Work, the Panel Survey has a significantly lower sampling size of 0.5%. As mentioned earlier, the TransLink Regional Trip Diary has a 2.5% sample size, while the Census Journey to Work has between 20% to 25% sample size. Additionally, there is a potential bias in the returning panelists, as they may be more likely to use active modes.

Regarding sampling boundaries, the Vancouver Panel Survey conforms to the City of Vancouver's nine transportation zones which reflect unique areas within the City. Other surveys do not necessarily conform to these boundaries and therefore limit their application within Vancouver.

Seasonal Effects

To best reflect stable commute patterns, the Vancouver Panel Survey is conducted in the fall months when people are back to work from summer holidays and schools are in session. Similarly, the Regional Trip Diary is generally carried out in the fall period. However, it has been completed in late spring in the past after post-secondary classes have ended. On the other hand, the Census Journey to Work is a representation of summer travel and does not necessarily represent the fall commute patterns.

Responsive to Vancouver's Emerging Priorities (Health, Parking, Friendly Interaction, etc.)

The Panel Survey allows the City full control of the survey design to target specific questions relevant to the City. As the Census Journey to Work and the Regional Trip Diary are developed by external agencies, there is limited or no ability for the City to influence the survey instrument. As a result, these surveys may not align with the City's priorities or needs.

Measure of Vancouver Resident Travel and Mode Share

Since the Vancouver Panel Survey collects transportation-related information from City of Vancouver residents only, this allows the City to better understand residents' trip-making behaviour and allows for

better informed decision-making. Additionally, as the survey has been conducted annually, this data set allows for insights into how Vancouver residents' mode choice is changing on a year-to-year basis. Because other surveys are held less frequently, they do not capture the yearly changes in mode share.

Ownership of Data

As the Vancouver Panel Survey is collected for the City of Vancouver, the City has ownership of the data. This allows the City to conduct additional analysis to answer specific questions that may arise after the completion of the analysis. With the Census and Regional Trip Diary, the data is owned and held by the respective agencies.

1.3. Sustainability

Shifting mode share to active forms of transportation, including walking, cycling, and access to transit services, yields not only environmental, but also socio-economic benefits including the following:

- Climate change mitigation through reductions in fossil fuel usage and associated greenhouse gas (GHG) emissions;
- Avoided vehicle operating costs, collision costs, etc.
- Health benefits associated with:
    - Incorporating physical activity into daily routines;
    - Localized reductions in Criteria Air Contaminants.
- Enhanced community livability when considering:
    - Social connectedness – residents more engaged within their own neighbourhoods
    - Improved security – following Crime Prevention Through Environmental Design principles – due to greater use of the public realm;
    - Reduced transportation costs when factored into the housing affordability equation.
- Postponement of investments in infrastructure expansion or renewal due to lesser demand which can be redirected to more pressing City and regional needs.

Collecting trend data on these key areas provides evidence to support ongoing policy refinement and adjust the level of capital investment for walk/bike/transit modes as the City works towards its Transport 2040 targets.

1.4. Structure of the Report

This report is organized into seven main sections as follows:

1) **Introduction** – This section provides the context and outlines the purpose and goals of the study.
2) **Survey Methodology** – This section describes the survey instrument and the process used to recruit the panel. It also explains the weighting and expansion of the panel to be statistically representative.
3) **Panel Characteristics** – This section corresponds to the 'Person File' in the survey data, and includes general demographic information on age, gender, and household income of the participants. This section also provides a summary of vehicle ownership, car-sharing, transit, walking, and cycling tendencies.
4) **Trip Characteristics** – This section corresponds to the 'Trip File' in the survey data and features the bulk of the analytical work in the report which compares the results of the 2019 Transportation Panel Survey with the findings from previous surveys.
5) **Comparison of Returning Panelists** – This section provides a comparative analysis of the characteristics and travel behaviour of returning panelists who participated in the survey every year since 2013.
6) **2017 TransLink Trip Diary Comparative Analysis** – This section provides a comparison between the 2017 Vancouver Panel Survey and the 2017 TransLink Trip Diary; two surveys that were completed at the same time during fall 2017. The comparison includes mode share and VKT per capita.
7) **Factors Affecting Growth** – This section provides high-level commentary on external and likely contributing factors that have affected mode share and VKT and other travel patterns.
8) **Lessons Learned and Next Steps** – This section highlights themes and lessons learned from the previous Panel Surveys and lays out the work program over the coming months leading up to the fall 2020 Panel Survey.

2. Survey Methodology

2.1. Survey Instrument

The survey instrument utilized in the 2013 Panel Survey was developed to focus on the City's objectives of tracking mode share, VKT, and other key parameters. The survey was designed in collaboration with City staff and market research experts. The resulting survey instrument sought general structural alignment with TransLink's Regional Trip Diary Survey and was designed to be robust so that minimal changes would be required in future years.

In 2014, modifications were made to the survey instrument to clarify elements that were previously found to be vague. Most changes reflect a desire on the part of the City to gain a better understanding of the emerging car sharing sector, preferences by people cycling, and bicycle/vehicle parking trends. It also introduced a question that delves into social interactions during trip making and health related metrics.

Since 2015, the year by year changes include:

2015:

- Added Evo car share as an option
- Separated the question regarding usual mode of transportation into work and school purposes to eliminate confusion
- Refined the cycling questions based on weather
- Sought more in-depth understanding of the walking/cycling portion of trips. This question sheds light on health (i.e., integrating physical activity into commuting) as well as tolerance for transferring between modes
- Clarified the social interaction question

2016:

- Added a question to determine membership in Mobi, the City's new bike sharing program
- Modified / expanded response options within questions to determine most used mode of travel for trips to / from work and / or school (as well for each trip recorded within the diary component), as follows:
  - "Car, truck or van" response option changed to "Private car, truck or van" (either as driver or passenger) and added "Car share" (either as driver or passenger)
  - "Bicycle" changed to "Private bicycle", and added "Bike Share (Mobi)"
- Options for method of payment used by those travelling by transit were modified to reflect TransLink's newly introduced Compass Card Program
- Modified "Single detached dwelling home" response option to include laneway houses and added "Other" as a response option
- A new question to measure incidence of Aboriginal population in the panel

2017:

- Revised gender question to include transgender/ other identity/ prefer not to say response options
- Added two questions to determine awareness and level of support for the Millennium Line Broadway Extension

- For clarity, revised “East Indian” response code in ethnic demographic question to “South Asian”

2018:

- The two questions added in 2017 to determine awareness and level of support for the Millennium Line Broadway Extension were removed.
- Added two new questions concerning trips made during work hours and access to employee programs that support or provide car pooling/ car sharing, subsidized transit passes, and subsidized bike share.
- Options for method of payment used by those travelling by transit expanded to include Cash/ Debit.
- Added youth referral questions as one of several measures taken to boost youth representation in the panel sample.

2019:

- Use of personal electric bicycle and ride-hailing services (e.g. Kater, Lyft, Uber) were added as response options for questions inquiring about the mode of transportation chosen for their travel.
- Questions concerning participants’ willingness to travel by bicycle in non-ideal weather conditions and preferred cycling environments have been removed.
- A new question has been introduced regarding participants’ level of agreement with the walking environment of their neighbourhood.
- Modified and expanded the question regarding social interactions experienced on the trip to also include response options related to infrastructure, personal safety, and travel comfort.
- Expanded response options for the question asking participants to describe the start time of their trip by including hourly time slots to better understand residents’ trip-making behaviour throughout the day.

In 2017, a cash prize draw with awards ranging in amounts from $50 to $1,000 replaced the City facility/ attraction and $100 Visa Gift Card incentives awarded in 2016. Maintained in 2018, the draw was implemented to increase participation levels among the newly recruited, to reduce the attrition rate among returning panelists, and to streamline the administration of prizes. This incentive scheme continued in 2019 but with the addition of twenty Mobi monthly passes, each valued at approximately $25.

In addition to the above prize draw, and as an attempt to boost participation amongst those between 18 to 34 years of age, a $20 direct incentive was provided in 2018 to each person who registered for and completed their trip diary. In 2019, a slight change was applied whereby each were given the choice to either receive the $20 direct incentive or enter the draw. Note that the change did result in reducing the need to issue the direct incentive by 46%, thus representing savings on the cost.

Residents were recruited by Mustel Group who conducted random probability sampling to best reflect the population demographics in the nine transportation zones.

As in past study waves, residents who completed the required 2018 study components were invited via email to participate in the 2019 survey. To reduce recruiting costs, invitations were also delivered to panelists that had completed all but the diary component in 2018.

Further, as in previous waves of the research, to address the attrition levels in the 2018 random sample and boost participation of the younger age cohort (18 to 34 years), Mustel Group conducted telephone

(including cell phone and landline) recruitment by continuing random selection of gender, but initially focusing on residents 18 to 34 years of age and in specific transportation zones (demographics that were below target in the previous waves).

Lastly, as in 2018 and in an effort to increase representation of the younger age cohort within the panel sample, Mustel Group implemented a referral process whereby a returning panelist or new recruit could refer a 18 to 34-year-old living in the same household to participate in the survey. This resulted in 26 of the 308 total diaries completed among this age cohort (8%). Adding in the youth that were referred in 2018 that returned and completed in 2019 (38) results in a total of 62 (20%) returning participants.

The survey had two main components: a “person component” and a “trip component”.

In the person component of the questionnaire, the participants were asked to provide the following information to assist in the expansion of the data and obtain general transportation characteristics:

- Demographic information (age, gender, employment, household income, ethnicity)
- Home and work addresses
- Degree of access to different modes of transportation (private vehicle, car share, private bicycle, bike share, transit)
- Usual travel habits

In the trip component, participants were required to provide the following details for all trips made during their assigned travel day which are used to estimate trip characteristics for the City including:

- Start/end location
- Time of day
- Purpose of trip
- Mode of transportation
- Odometer readings (for those who reported driving trips)

The complete survey instrument, for both returning panelists and new recruits, is attached as *Appendix B* to this report.

2.2. Data Collection and Sampling

The sampling strategy was designed to recruit a longitudinal panel representative of residents across Vancouver’s nine transportation zones that have also been used in TransLink’s Regional Trip Diary Survey. Note that new panel survey members were recruited to replace previous panel members that dropped out. *Figure 2-1* shows how Vancouver’s nine transportation zones relate to the 22 neighbourhood areas within the city.

Figure 2-1: Transportation Zones and Neighbourhood Zones in Vancouver

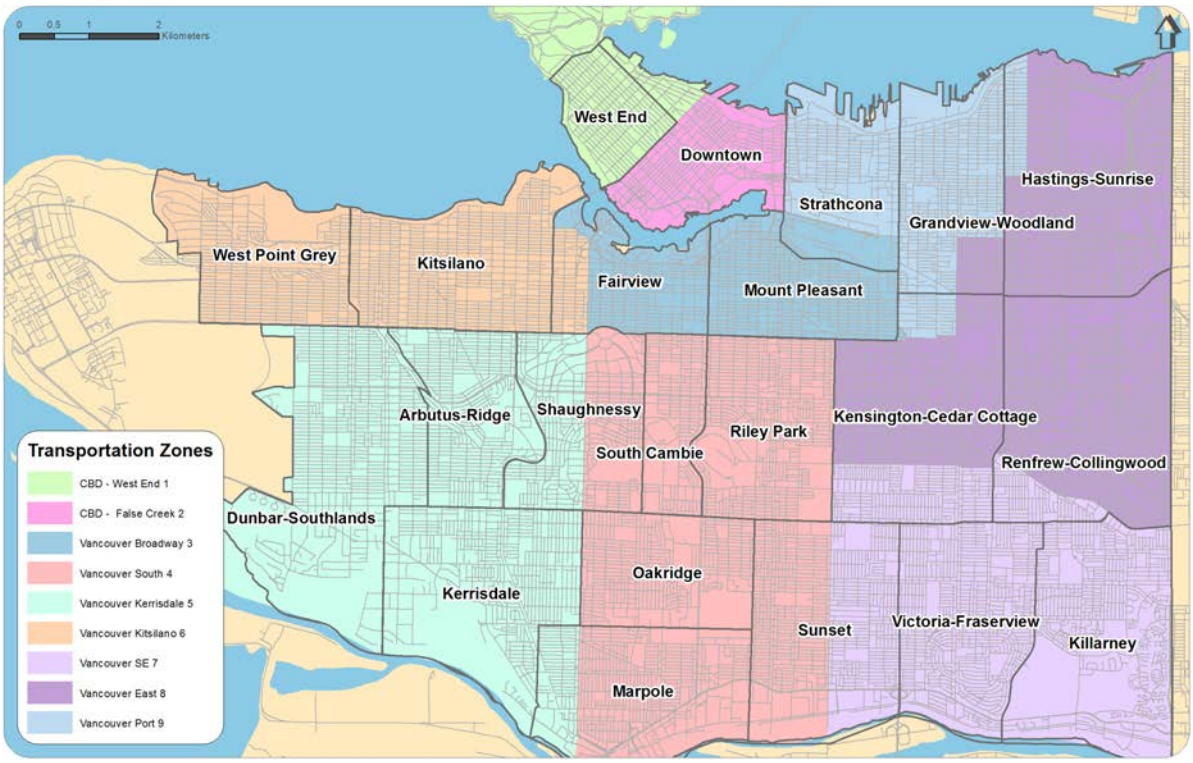


Table 2-1 shows proportionate sampling targets for the estimated 2019 population (based on a projection of 2016 Census data) required to achieve a representative total of at least 2,500 residents. Unlike previous surveys, this year's panel does not include participants below 18 years old. The total estimated population aged 18 years and older from the 2016 Census is approximately 549,948. Of the 18+ population, a 0.5% random sample of residents was achieved, similar to the previous Vancouver Panel Surveys.

Table 2-1: Trip Diary Targets by Transportation Zone (Population 18 years and older)

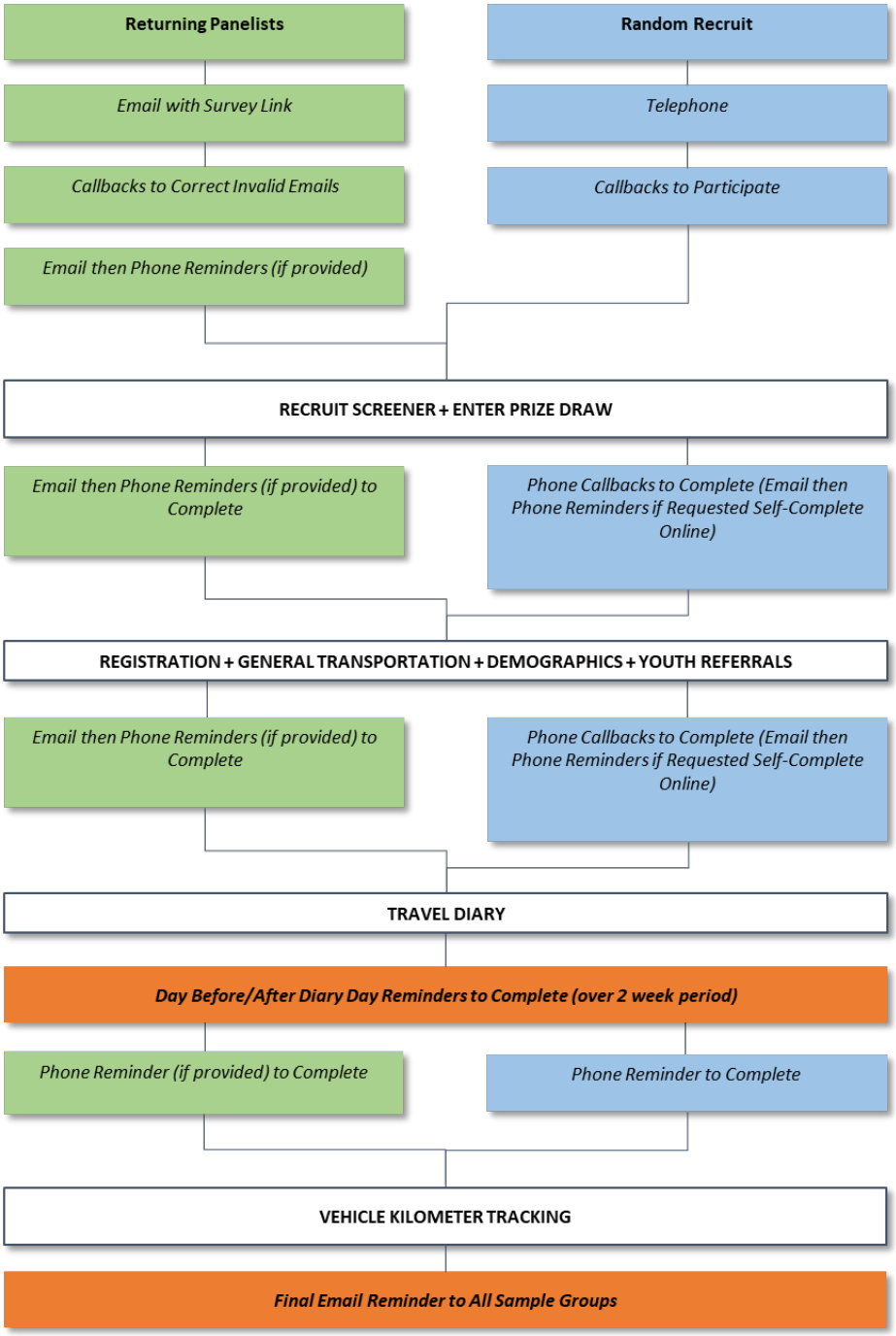
		2019 Projection Based on 2016 Census Data			
Transportation Zone		Total Population	Population 18+	Proportion 18+	Proportionate Sample
1	CBD – West End	62,112	58,560	10.65%	266
2	CBD – False Creek	62,257	57,808	10.51%	263
3	Vancouver Broadway	62,892	56,756	10.32%	258
4	Vancouver South	87,831	73,233	13.32%	333
5	Vancouver Kerrisdale	62,728	50,255	9.14%	229
6	Vancouver Kitsilano	63,386	55,345	10.06%	251
7	Vancouver Southeast	83,656	69,057	12.56%	314
8	Vancouver East	102,732	86,017	15.64%	390
9	Vancouver Port	48,858	42,917	7.80%	196
	Total	**636,452**	**549,948**		**2,500**

The panel recruitment process, illustrated in the flow chart in *Figure 2-2,* began in the second week of September, two weeks earlier than in 2018. Returning panelists were sent email invitations starting September 9th and new recruitment started on September 13th and ran until November 12th.

The window to enter trip diaries was from September 9th to November 30th. The first trip diary completions were made within a week with a substantial portion of completions amongst returning panelists completed by mid-October (81%). The bulk of new recruit completions was entered by the last week of November to maintain 2,500 sample for statistical significance.

Telephone recruitment to replenish randomly recruited panelists lost to attrition began October 2nd. To offset attrition in the returning panelist sample and to encourage new recruits to follow up with their commitment, reminder calls and emails to all groups were conducted throughout the survey period.

Figure 2-2: Panel Survey Flow Chart



Although additional effort was applied to address participation rates below target in the 18 to 34 age cohort and in some of the transportation zones, continued challenges necessitated randomly recruiting all age groups in all zones to achieve the city-wide target. As indicated earlier, Mustel Group recruited panel participants using a random probability sampling method to capture a random distribution of residents from all zones that reflects the demographic profile of the city. The panel characteristics (e.g.,

age, gender) were closely monitored during recruitment. For the random probability sampling, the sample frame consisted of: i) published landlines stratified by the City's nine transportation zone designations and ii) random-digit generated cell phone numbers within City of Vancouver rate centres.

In an effort to boost the underrepresented youth cohort (18 to 34 years of age) and to ensure targets by transportation zones were met, Mustel Group employed the following measures:

Cell Phone Sample

The random-digit cell phone sample enables expanded coverage to include residents without landlines. While the published landline sample was pre-tagged by zone, the cell phone sample can only be tagged by zone during the interview. City residency and the geographic zone were confirmed for all respondents during the interview process. Within selected households, respondents were chosen at random (e.g., next birthday) or targeted by age/gender as required.

Incentives

As indicated earlier, a cash-based incentive design was implemented in 2017, in lieu of the combination of City based facility/ attraction and Visa gift cards awarded in 2016. This was maintained in the 2019 wave, and a chance to win one of twenty Mobi monthly bike passes valued at approximately $25 each was added. The $20 direct incentive added for youth in 2018 was revised in 2019 to a choice of either receiving the direct incentive or entering the draw. Note that while marginally improving the response rate among this group, 46% of the group opted to enter the draw, a substantial savings on direct incentive costs.

Pilot Social Media Campaign

At the outset of the 2019 fall survey, the City's Engagement and Communications team, with assistance from McElhanney and Mustel Group, piloted a social media survey awareness campaign targeting Vancouver residents between the ages of 18 – 34. The purpose was to make younger City residents aware of the importance of the City's annual transportation survey with the goal of increasing participation among this group. Starting in early September, the campaign ran for approximately three-weeks, during which time a total of 62 youth respondents were recruited. While the number of youth recruits was notably higher compared with the same time period in the 2018 wave (62 in 2019 versus 16 in 2018), this appears to be due to the level of recruiting effort during this period rather than any impact the campaign may have had on encouraging participation among this cohort. Looking exclusively at recruiting hours for each wave, Mustel Group managed to recruit 65 youth residents in the same number of hours it took to recruit 62 in 2019. Based on this comparison, the campaign was deemed to be ineffective and was cancelled at the end of September.

Additional measures:

In addition to inviting previous wave panelists, all participants from the 2018 wave who only completed the registration component were invited to participate in this year's panel survey.

Additionally, the 2019 survey includes the referral process that was introduced in the 2018 Panel Survey whereby returning or new panelists 35+ years of age could refer one person from their household between 18 to 34 years of age to participate in the survey.

Of the total trip diaries completed by those within the 18 to 34 age cohort, 39% were recruited via cell phone sample, 33% via landline and 20% were referred by a returning panelist living in the

same household. The referral process and continued cell phone sampling will be ongoing with increasing requirements, especially in contacting the 18 to 34 age cohort, and considering the incidence of landlines is expected to decrease over time.

In contrast, for the 35 to 54 age group, only 20% were recruited by cell phone. This figure drops to 4% for the 55+ age cohort.

The cumulative effect of the above measures resulted in an increase in the 18 to 34 age cohort from 283 panelists in 2018 to 308 in 2019 (from 10.9% to 11.6% of all panelists). Although it's not possible to attribute this rise in participation among this age group to a single measure, the added direct $20 incentive and referral recruitment channel had a considerable impact on Mustel Group's ability to reach and include more participants in this demographic.

The attrition rate in 2019 was 29% which represents a 9% decrease from 2018.

Travel days for the recording of trips were assigned at random with a goal to equalize the days of the week (Monday to Friday, as required).

Highlights from the 2019 survey sample include the following:

- A total of 2,653 respondents completed the trip diary. *Table 2-2* presents a breakdown of all respondents by geographic sub-area. The target figures show the number of samples required to match the proportions from the census.
    - **55.2%** of respondents were female, **44.4%** were male, and the remaining identified as transgender, other gender or refused to answer, a similar distribution as in previous years.
    - **2,115** respondents had access to a private vehicle in the random sample with the majority entering an odometer reading (**93%**).

Table 2-2 shows that some of the transportation zones were over sampled and some were under sampled. More samples provide a more statistically reliable dataset and a lower sample can compromise the confidence levels in the reported data. Improvements were made in 2019 to address under-sampling; however as in previous years, it was difficult to recruit panel members from a few transportation zones. CBD-False Creek results were combined with the CBD-West End to provide combined results for downtown to be consistent with previous measures.

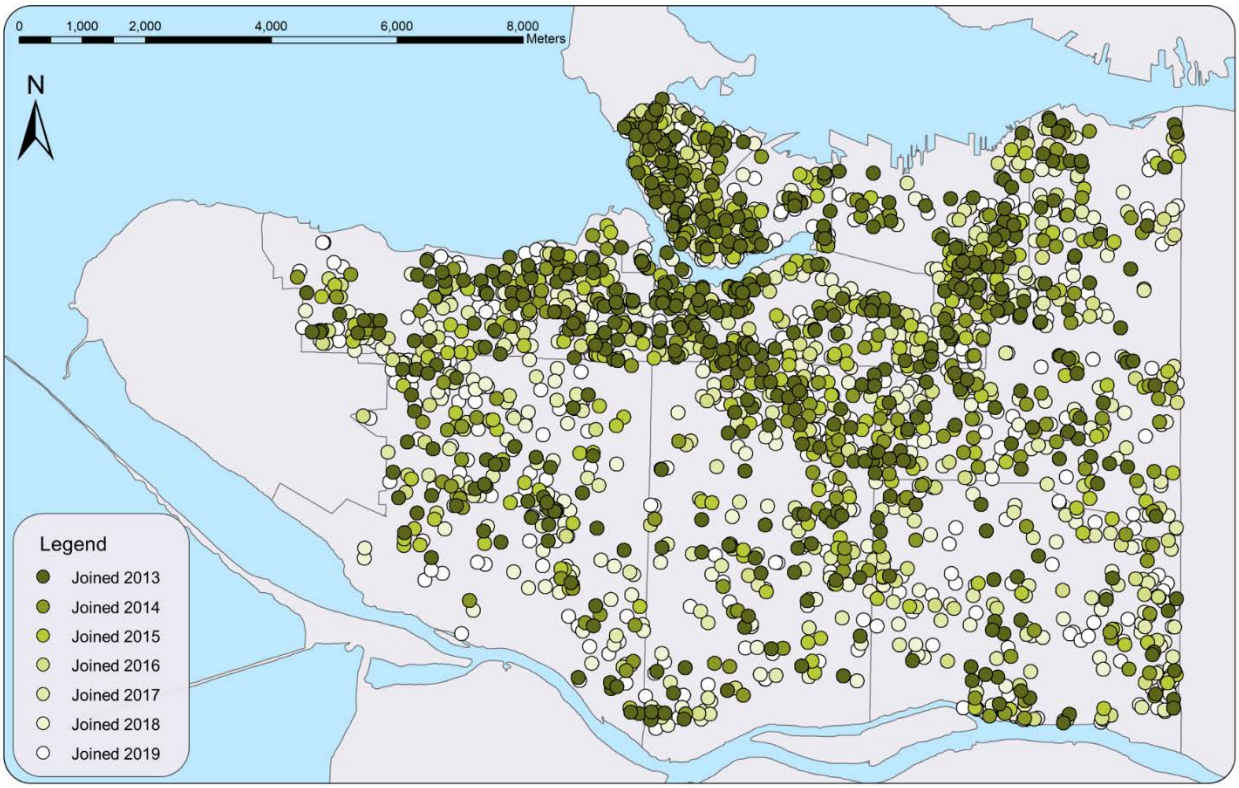
Section 4.1 provides a summary of the confidence levels of the reported mode shares by transportation zone which provides an assessment of the reliability of the data for tracking travel patterns.

Table 2-2: Completed Trip Diaries by Transportation Zone

	Transportation Zone	Mustel	Target	Δ Target	% Difference
1	CBD – West End	275	266	9	3%
2	CBD – False Creek	222	263	-41	-16%
3	Vancouver Broadway	326	258	68	26%
4	Vancouver South	345	333	12	4%
5	Vancouver Kerrisdale	287	229	58	25%
6	Vancouver Kitsilano	327	251	76	30%
7	Vancouver Southeast	259	314	-55	-18%
8	Vancouver East	389	390	-1	0%
9	Vancouver Port	223	196	27	14%
	Total	**2,653**	**2,500**	**153**	**6%**

Figure 2-3 illustrates the household locations of participating panel members, categorized by new and returning panelists. There is an even geographic distribution of new and returning panelists through each of the transportation zones. Travel patterns, as further discussed in *Section 4*, vary significantly depending on which neighbourhood is being sampled.

Figure 2-3: Distribution of Participating Panel Members



2.3. Survey Weighting and Expansion

The final survey data for the random sample was expanded to the population of City of Vancouver residents aged 18 years and older.

A firm specializing in sampling, mapping, and census information, Environics Analytics (EA), provided the sample for survey recruitment and developed demographic projections of the current year based on 2016 Census Data. Population forecasts were derived from the 2016 Census base population data by projecting change over the period of 2016 to the current year using Canada Post's dwelling counts at the postal code level to adjust the population of the City's transportation zones.

The travel survey represents 0.50 percent random sample of the estimated 2019 population residing within the study area (2,653 respondents out of 549,948 City of Vancouver residents 18 years of age and over). As the data collected from this study is intended for transportation planning and forecasting purposes, this information must be expanded to the survey universe, that is, the total number of City of Vancouver residents of the same age group (18 years and older).

To ensure a statistically representative sample, the weighting and expansion factors developed for the person and trip data collected in the City of Vancouver Panel Survey in 2019 matched known demographic characteristics for the City of Vancouver's transportation zones as well as age within gender groups.

2.3.1. Person Expansion

For the person data collected, the random survey sample was expanded based on age categories within gender as well as within the City of Vancouver's geographic transportation zones. Note that although there are nine such zones in the City, due to limited sampling in geographic zone 2 (CBD – False Creek), this zone was combined with zone 1 (CBD West End) and treated as one to represent Downtown Vancouver in the expansion process[4].

A total of 48 weighted expansion categories were required to cover the eight transportation zones, three age categories (18 to 34, 35 to 54, and 55 and over), and two genders. Additional expansion cells were included for respondents who identified themselves as transgender, other identity, or refused to identify their gender. These respondents were represented as their actual proportion within the corresponding zone and age category. As there were only 11 records where gender was not identified as male or female, the additional expansion process has no overall effect on gender distribution. *Table 2-3* shows the actual survey sample age and gender distribution prior to weighting. Compared to 2018, a higher proportion of 18 to 34-year-old residents participated, while a lower participation level is reported among those between the ages of 35 and 54. *Table 2-4* shows the City's 2019 population estimates based on 2016 Census Data.

Table 2-3: Panel Survey Age and Gender Distribution

Gender	18-24	25-34	35-44	45-54	55-64	65+	Total
Male	1.8%	3.9%	4.3%	8.0%	8.8%	17.5%	44.4%
Female	1.9%	3.9%	5.5%	9.1%	11.8%	22.9%	55.2%
Transgender	-	-	-	<1%	-	<1%	<1%
Other	-	-	-	<1%	-	-	<1%
Refused	<1%	<1%	-	-	<1%	<1%	<1%
Total	**3.7%**	**7.9%**	**9.9%**	**17.2%**	**20.7%**	**40.5%**	**100.0%**

Table 2-4: 2019 Demographic Projections (based on 2016 Census)

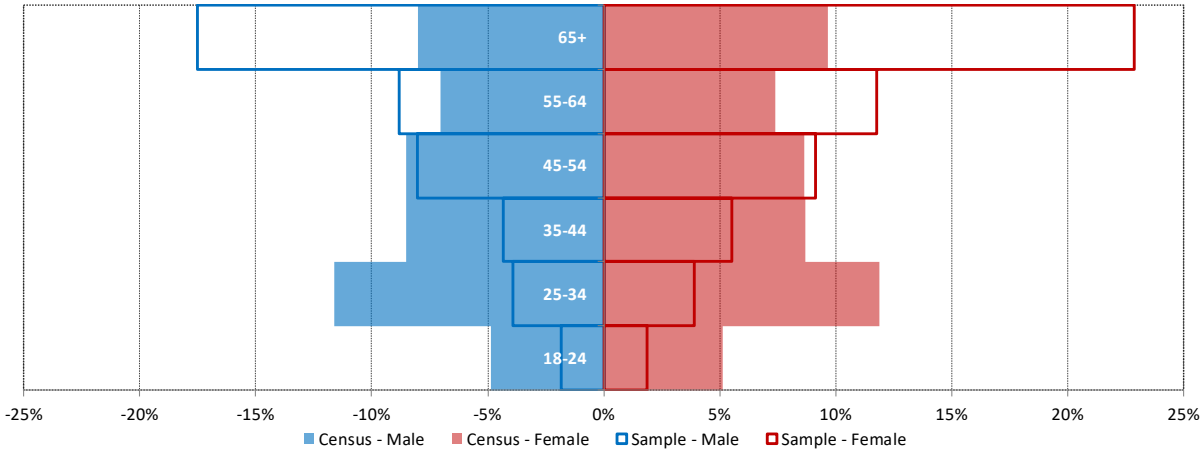
Gender	18-24	25-34	35-44	45-54	55-64	65+	Total
Male	4.9%	11.6%	8.5%	8.5%	7.0%	8.0%	48.5%
Female	5.1%	11.9%	8.7%	8.7%	7.4%	9.7%	51.5%
Total	**10.0%**	**23.5%**	**17.2%**	**17.2%**	**14.4%**	**17.7%**	**100.0%**

Figure 2-4 illustrates the age and gender distribution of the survey sample versus the study area universe. Although efforts to increase participation among 18 to 34-year-olds in 2019 has yielded positive results, under-sampling of this cohort and over-sampling of the 55+ age group continues. The 18 to 34-year age group represents 33.5% of the study area population based on 2016 Census. However, they represent only 11.6% of the survey sample. The 18 to 34-year age group is difficult to reach in any market research effort. This age group typically does not have a landline and cell phone lists do not contain the home location of cell owners, only the location where the cell phone was purchased. As such, it is expensive and difficult to target geographic transportation zones based on cell phone samples for younger age groups. This does present some challenges for tracking trends in travel behaviour, especially considering that this age group is most mobile, i.e., no children and not

[4] It was also decided to show the results of CBD-West End and False Creek in the report's analysis sections both individually and merged (Sections 3 to 5, wherever relevant) to account for the low sampling in CBD-False Creek and to be consistent with previous reporting.

married. On the other end, the 65 + age group represents 40.5% of the survey sample which is more than double the 17.7% share of the study area population.

Figure 2-4: Age and Gender Distribution: Survey Sample versus Study Area



In the end, for the total sample size of 2,653 to be reflective of the entire City of Vancouver population over 18 years of age for this survey (549,948), the overall average expansion factor applied to the dataset was 207.3 (that is, each person's record represents the travel characteristics of over 200 Vancouver residents). The expanded person factor by age cohorts demonstrates that a higher factor was applied to youth and a lower one for the over 55 age group, as follows:

- 18 to 34 years - 633.6
- 35 to 54 years – 255.0
- 55 years and over – 105.8

The expanded person weight above was then applied to the trip data, but also included a weekday equalizer weight to balance the trips over the week (Monday to Friday). Note that the expanded population also includes people who reported 'rather not say' for the age question.

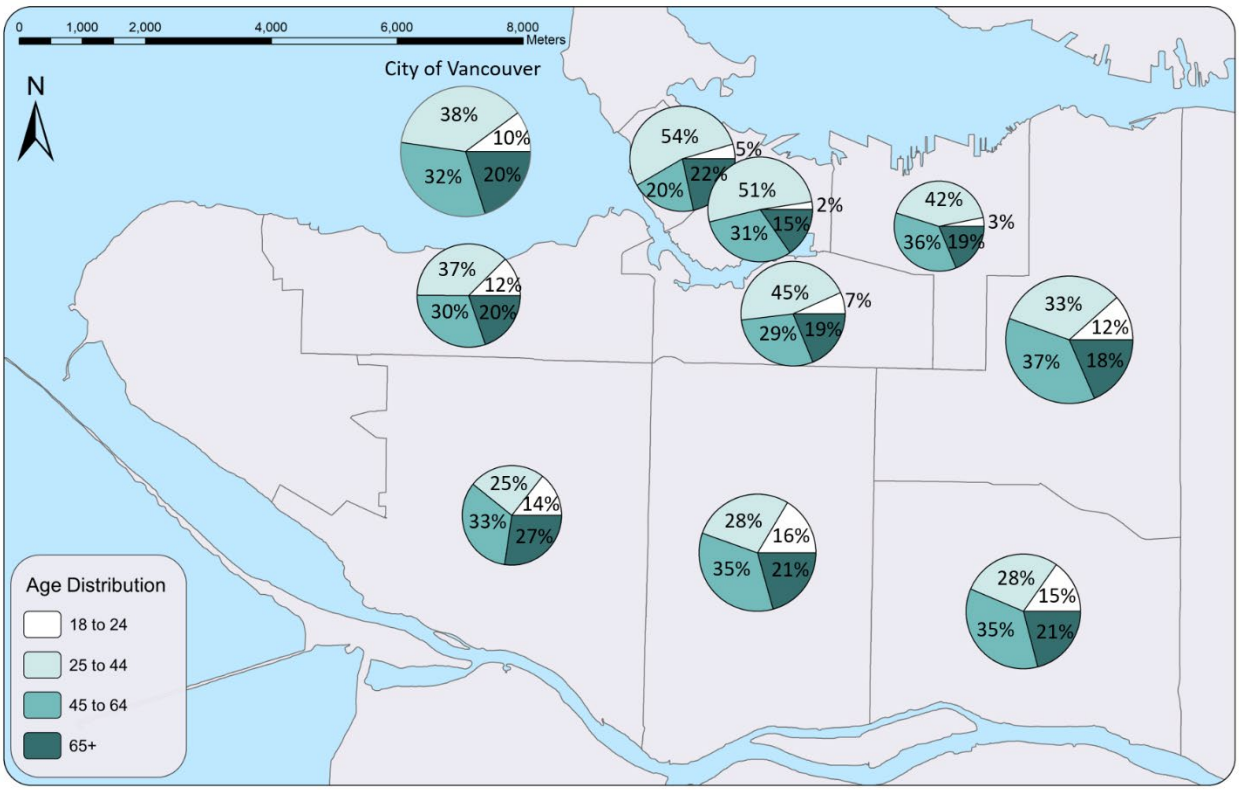
3. Panel Characteristics

Key characteristics of people within the transportation panel are presented in the following thematic maps which show the geographic distribution of these attributes.

3.1. Age Distribution

The age distribution for each zone is presented in *Figure 3-1*. Note that the breakdown shown represents the expansion of the sample to the census control population by age group. The size of the pie chart represents the population size for the respective transportation zone. As shown in the figure, more than half of the respondents residing in the CBD-West End, CBD-False Creek and Broadway zones are between the ages of 18 and 44. Compared to the 2018 Panel Survey, there is a greater representation of the younger age group (18 to 24 age cohort), especially in Kitsilano, Kerrisdale, and Vancouver South. However, residents in the 18 to 24 age group continue to be under-represented in all nine zones.

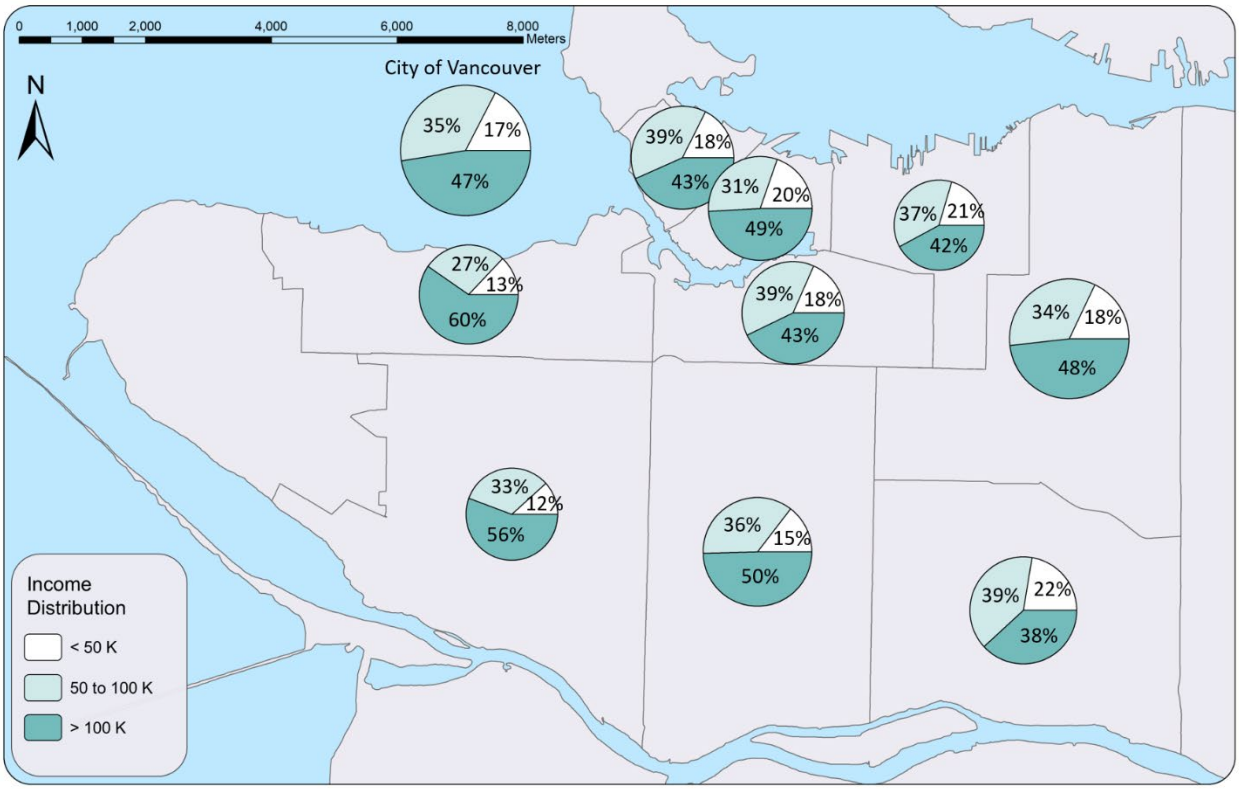
Figure 3-1: Age Distribution: Weighted Population



3.2. Income Distribution

Household income can serve as a proxy for the transportation choices available to a panel member. Panel members' reported annual household income distribution is presented in *Figure 3-2*. Again, the size of the pie chart represents the population size for the respective transportation zone. As illustrated, the distribution of household incomes in Vancouver indicates that 17% of households earn less than $50,000 per annum, while about 47% households earn more than $100,000. Compared to the 2018 Panel Survey, there are only minor differences in the income distribution.

Figure 3-2: Income Distribution: Weighted Population

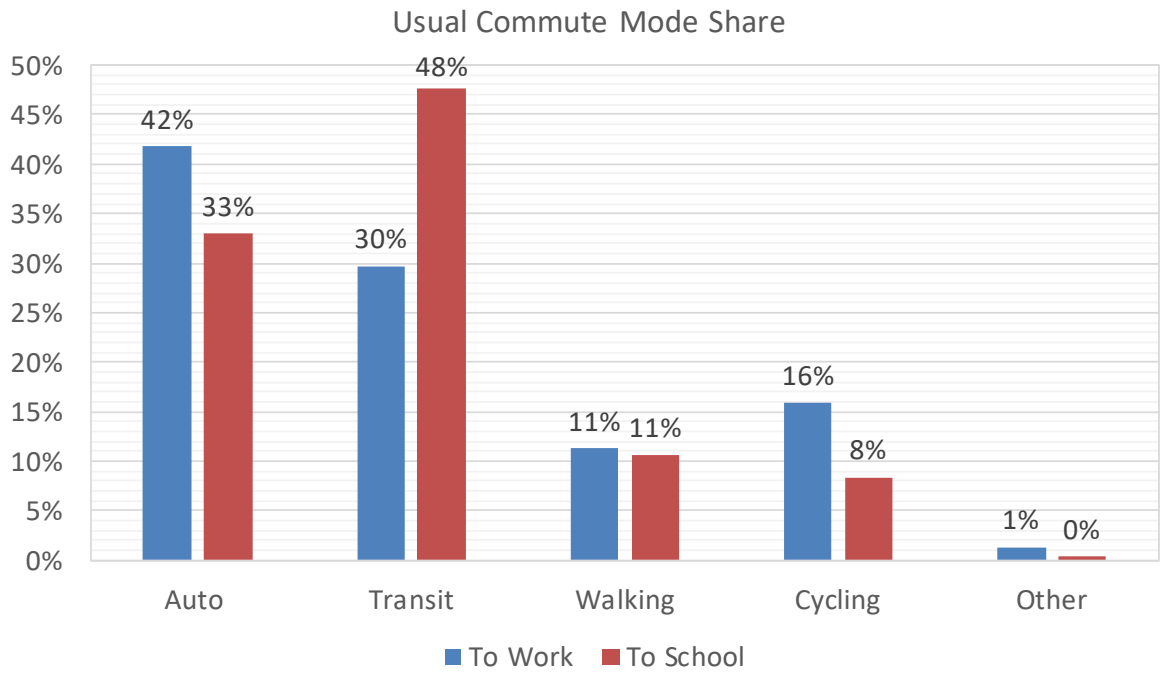


3.3. Usual Commute Mode

As discussed in *Section 2.3* of this report, demographic projections for 2019 were based on the 2016 census data. The Census Journey to Work is one of the main data sources upon which to compare travel by various modes on a consistent basis. Since this is only available every five years, a census-like question is included in the Panel Survey which asks respondents to indicate their usual mode of travel to work.

In 2019, 42% of respondents who work indicated that their usual mode of transport to commute to work is by car, either as a driver or passenger. In comparison to the work commute, higher proportions of students reported transit as their usual mode to school. Detailed mode splits for usual work commute and school commute are shown in *Figure 3-3* followed by a discussion of each mode in the rest of *Section 3*.

Figure 3-3: Usual Mode of Travel to Commute



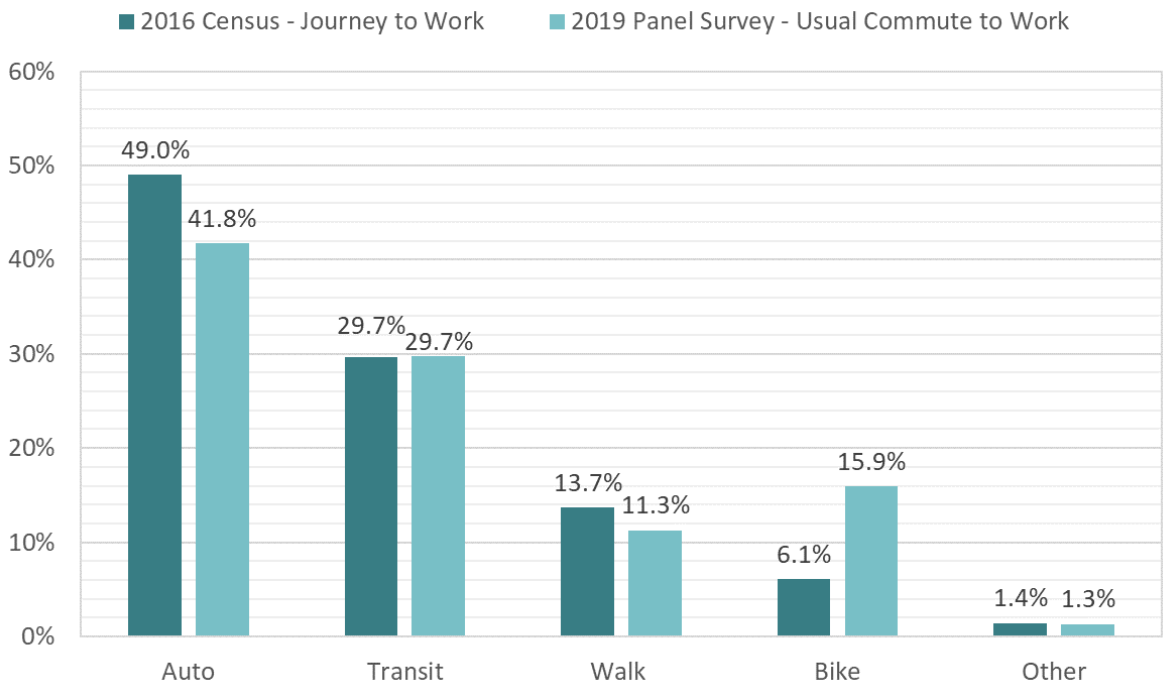
A comparison was also drawn between the 2019 Panel Survey and the Journey to Work survey conducted in 2016, as shown in *Figure 3-4*, to determine whether the two surveys showed similar results regarding people's usual mode of travel to work. Compared to the responses from the Journey to Work survey, the panel survey reported equal or lower proportions for all mode shares but bike trips to work. Dissimilarities in the mode share proportions may be explained by the differences in the survey methodologies and potential cycling bias.

The Journey to Work survey is a household-based survey and is generally filled by one individual who completes the survey questionnaire for the entire household. The Vancouver Panel Survey collects travel information from individual participants who are randomly selected. Differences in the data collection method could be a reason as to why the mode share proportions are slightly different. Furthermore, the Journey to Work is completed as part of the Census Long Form which is assigned randomly to 25% of the total population. The form is required by law to be completed. Conversely, the

Vancouver Panel Survey targets a 0.5% sample size and while the sampling is random, participation and completion is voluntary. This will introduce a level of selection bias in the sample.

The questions in the survey, although similar, are not the same. Different interpretations of the question inquiring about the participant's usual mode of travel to work could have also led to the differing results in mode shares. Other than cycling, there is consistency between the Census Journey to Work and the Panel Survey.

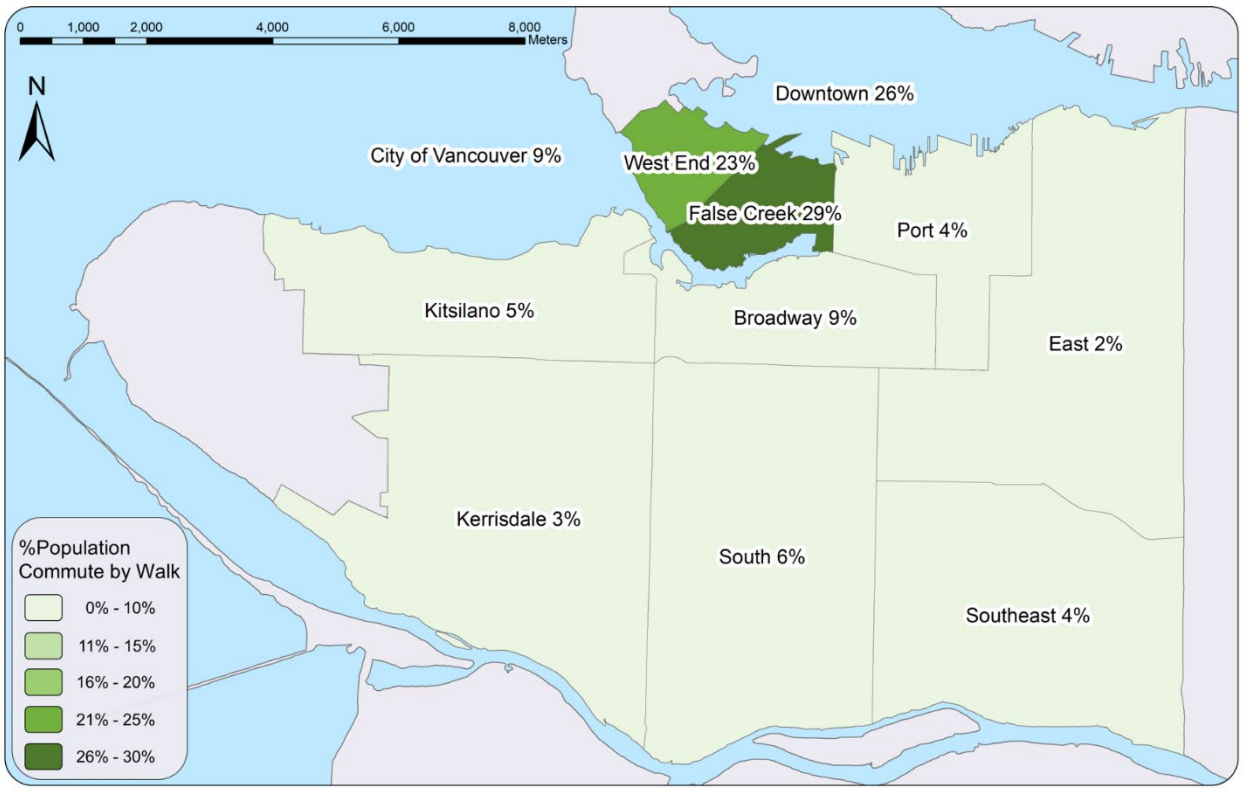
Figure 3-4: Comparison of 2016 Census Journey to Work with 2019 Panel Survey



3.4. Walking

Based on trip diary responses, there were approximately 535,000 walk trips made in 2019 which equates to a 27% walking mode share. As part of the survey questionnaire, all survey participants were asked which transportation mode they identify as their usual mode of travel to work/school. As shown in *Figure 3-5*, 9% of all respondents identified walking as their usual mode which is much lower than the actual recorded walking trips. Looking at the transportation zones, 26% of the population in living in the downtown area stated that they usually commute to work/school by foot, which reflects the high walkability score in the downtown core. It is also a function of land use density since there are a lot of people located closely to jobs making walking an attractive mode of commuting. Other outlying areas of Vancouver are not as dense and do not display high rates of walking.

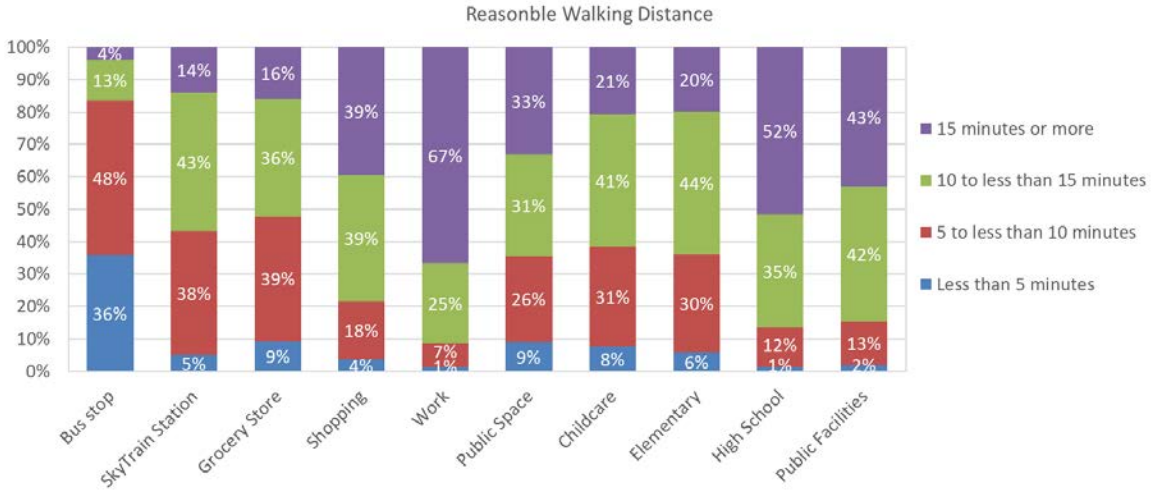
Figure 3-5: People who Identified Walking as Their Usual Mode of Travel to Work/School



As part of the survey, participants were also asked what they would consider to be a reasonable walking distance when travelling to nearby public amenities. For panelists that indicated they would walk to each of the amenities, the reasonable distance has been summarized in *Figure 3-6*. For public transit, respondents were accepting of longer walking distance for SkyTrain stations versus bus stops. Over 80% of respondents considered less than 15 minutes acceptable for SkyTrain stations but less than 10 minutes acceptable for bus stops. Work trips had the highest level of respondents willing to walk 15 minutes or more.

In general, except for bus stops, most panelists (> 90%) accept walking more than 5 minutes for public amenities as reasonable. In fact, roughly half of those willing to walk to these destinations indicate it would be reasonable to walk more than 10 minutes. This aligns well with the average walking trip distance reported by the panelists. For greater distance trips, the proximity of bus stops and SkyTrain stations provide an alternative to auto trips.

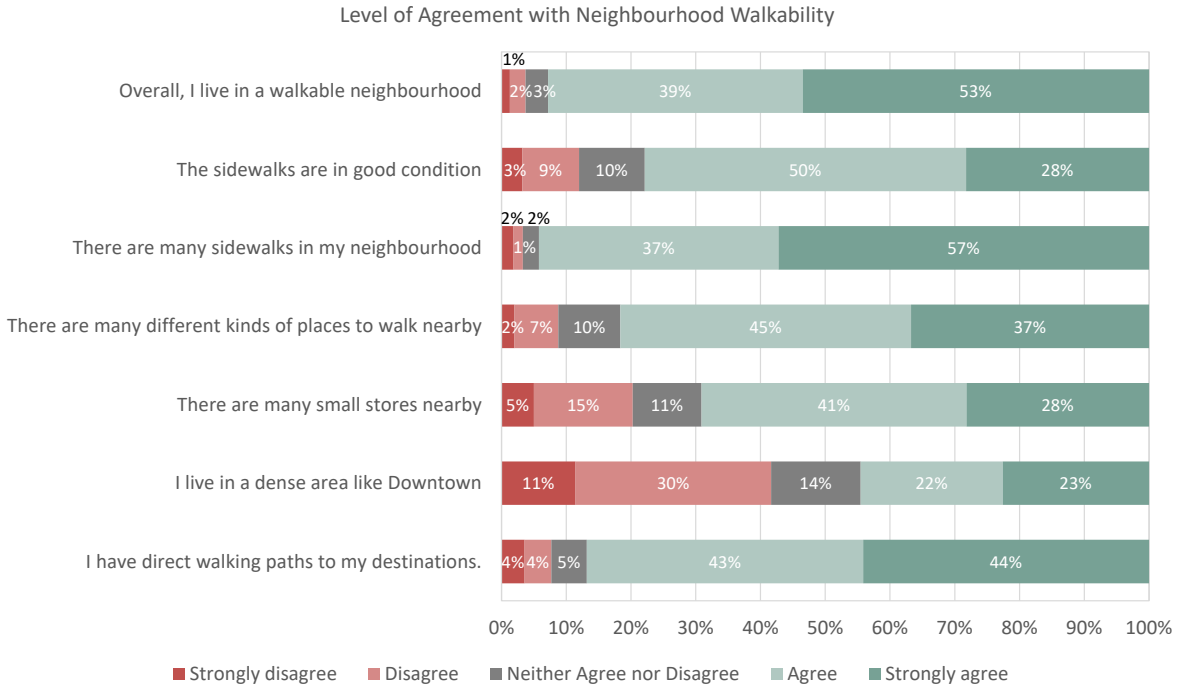
Figure 3-6: Reasonable Walking Distance to Public Amenities



Improved walkability has considerable health and economic benefits, such as encouraging physical activity, social interaction, and community cohesion. Factors influencing walkability include the presence and quality of sidewalks, pedestrian connections, nearby amenities, and land use density.

As illustrated in *Figure 3-7*, 92% of panelists agree that they live in a walkable neighbourhood. Regarding the conditions and presence of sidewalks in their neighbourhood, 78% of all participants indicated that the sidewalks are in good condition while 94% agreed that there are many sidewalks. When asked about nearby amenities, 69% of all participants indicated that there are many small local stores nearby and 82% agreed that there is adequate diversity in places nearby to walk to. With regards to living in a dense area, there was an almost even split with 41% stating they disagree or strongly disagree, and 45% stating they agree or strongly agree. Finally, the majority of participants (87%) stated they have direct walking paths to their destinations.

Figure 3-7: Level of Agreement with Neighbourhood Walkability

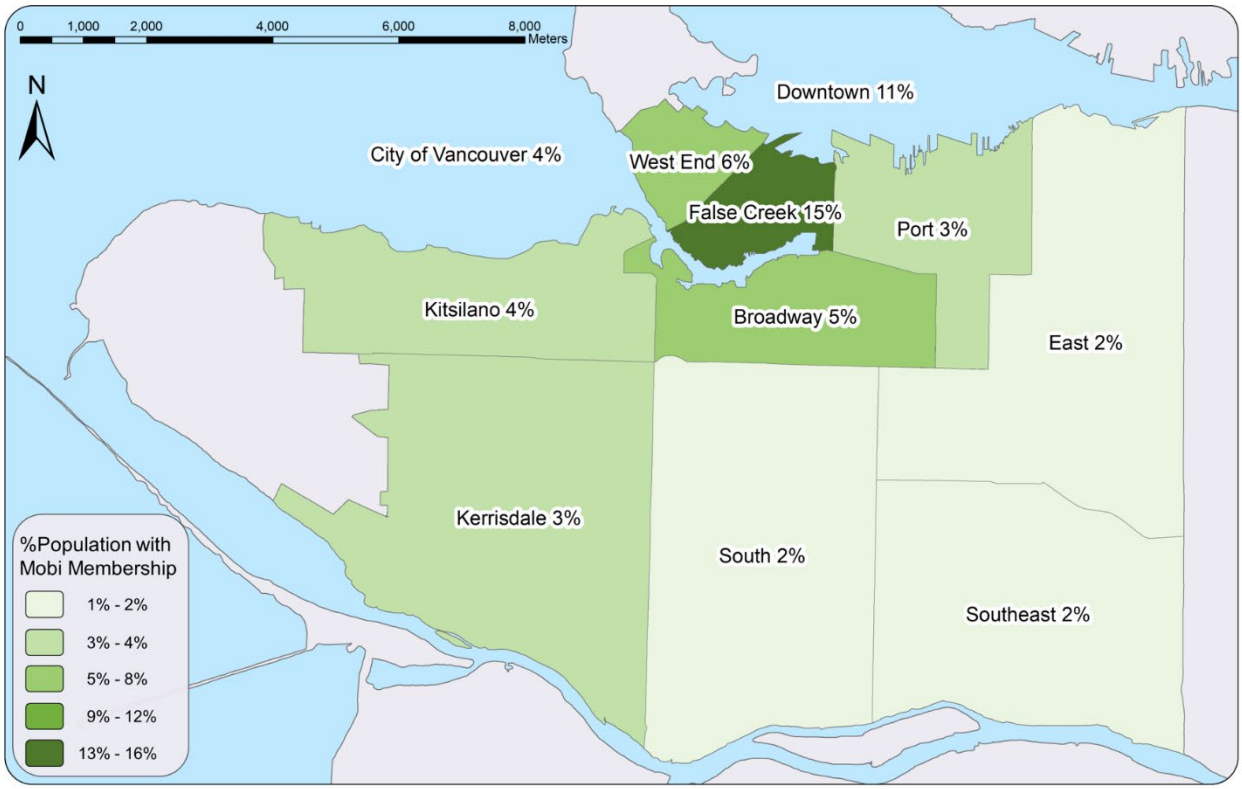


3.5. Cycling

The City has continued to take steps over the last few years to improve and expand its cycling network. Current projects include building more bike routes within False Creek and upgrading the bike facility on 10th Avenue[5]. Furthermore, in an effort to encourage more people to travel by bicycle, the City of Vancouver launched Mobi, a public bike share program in July 2016. In its inaugural year, Mobi bike share system included coverage in downtown Vancouver and as far east as Main St, as far south as 16th Ave and as far west as Arbutus St. In November 2017, the City announced a Phase II Expansion, extending the service area further east to Commercial Drive with an additional 50 stations and 500 bikes. *Figure 3-8* shows a breakdown of residents aged 18 and over with Mobi membership. Overall, approximately 4% of City of Vancouver residents are registered with Mobi as a member, with most transportation zones outside downtown reporting either similar to or less than the City average. In general, Mobi membership is reported the highest for transportation zones that are within the Mobi coverage area.

Trip diary responses received for this year's panel survey shows that there were approximately 174,600 bike trips, representing an 8.8% share of total trips. Based on a summary of Mobi trip information provided by the City, the share of bike trips using the Mobi bike share program was estimated to be 1.0% in 2019, a slight decrease from 1.1% in 2018.

Figure 3-8: Percentage of Population with Bike Share Membership

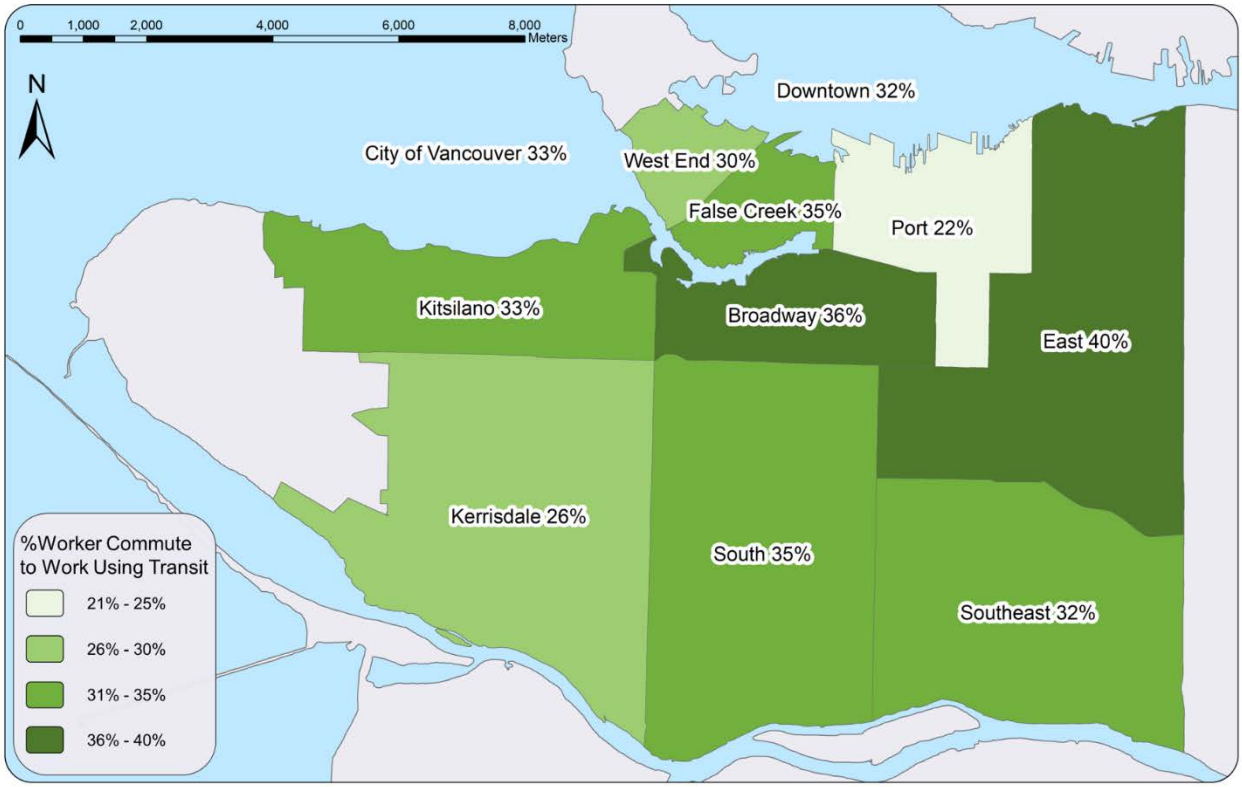


[5] Details of City of Vancouver's 5-year cycling network additions and upgrades plan for 2018 to 2022 are described on the City's website:https://vancouver.ca/files/cov/5-year-cycling-network-map-additions-and-upgrades-2018-to-2022.pdf.

3.6. Transit Usage

Figure 3-9 and *Figure 3-11* show the distribution of people who identified transit as their usual mode of travel to work and school, respectively. While TransLink and the Province have responsibility for transit provision, the City can also take an active role in supporting transit usage by improving walking and cycling connections to bus stops and SkyTrain/SeaBus stations, as well as amenities at these locations including shelters, information displays, and good lighting. The Vancouver East transportation zone has the highest self-reported level of transit use (40%) for people travelling to work. For all transportation zones except Vancouver South, more than 50% of students reported transit as their usual mode of travel to school.

Figure 3-9: People who Identified Transit as Their Usual Mode of Travel to Work



The reported use of transit as the habitual mode of travel to work was also compared to the findings from previous surveys to better understand changes associated with the transit improvements implemented over the last few years. As indicated in *Figure 3-10*, the proportion of residents in the City of Vancouver who say that they usually take transit to work has grown since 2015. Looking at the Vancouver subzones, there is a general positive trend for False Creek, Downtown, South Vancouver, and East Vancouver. The zones of West End and Southeast have a general negative trend.

Figure 3-10: Comparison of Transit Reported as Usual Mode of Travel to Work

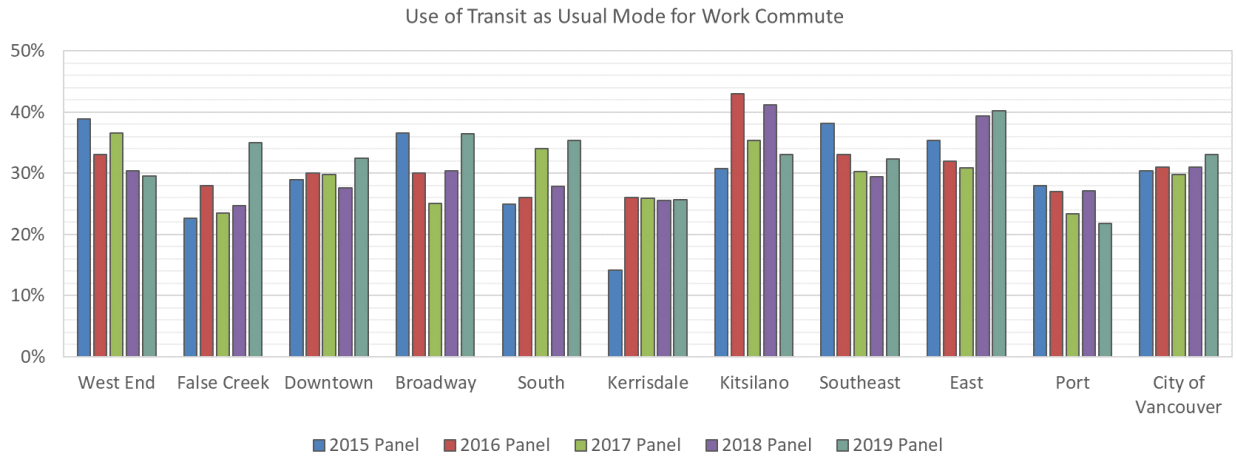
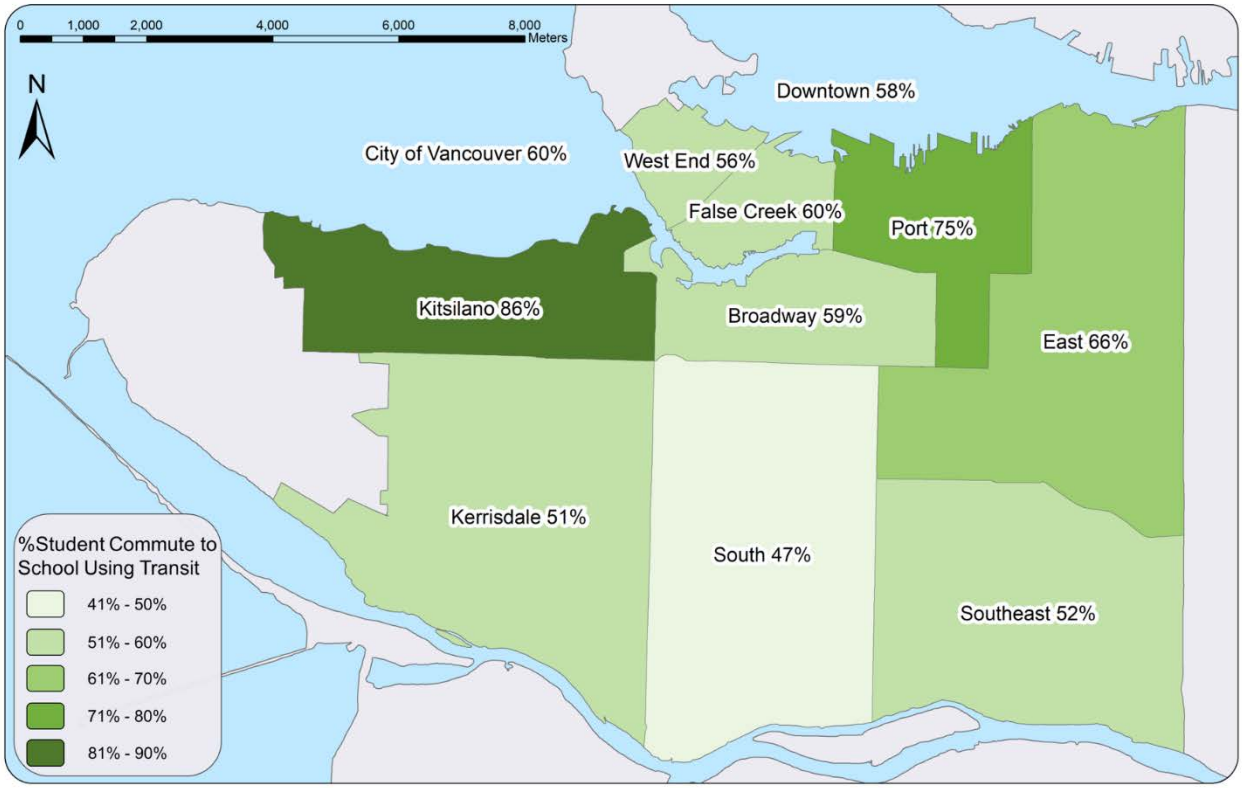
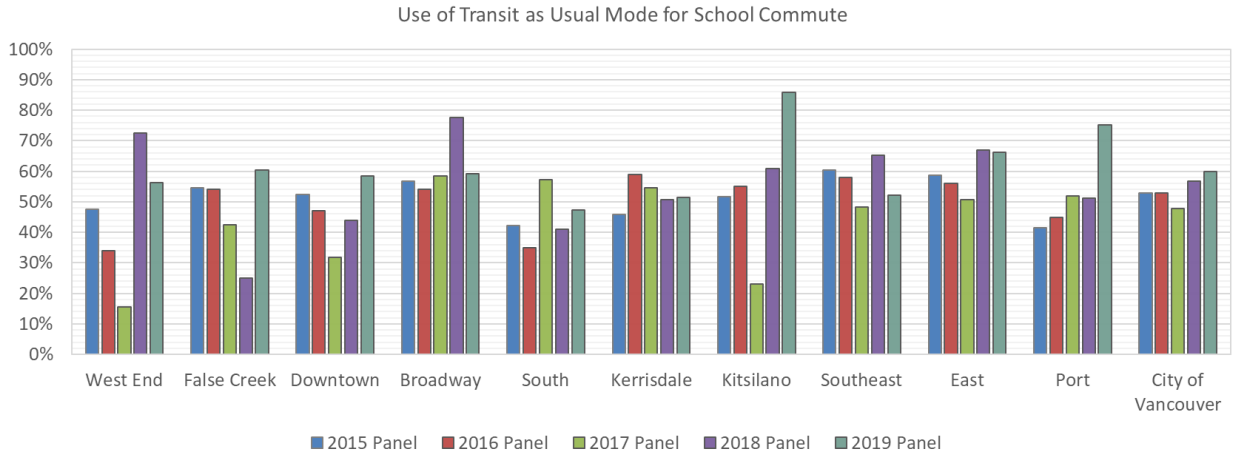


Figure 3-11: People who Identified Transit as Their Usual Mode of Travel to School



Compared to previous surveys, there is a greater percentage of students who indicated that they typically use transit to commute to school for most zones. As shown in *Figure 3-12*, the trend is positive for the City of Vancouver as a whole. When exploring further by the Vancouver subzones, there is some variability year to year due to the small sample size, particularly in the West End and Kitsilano. However, in general the trend is positive for most zones as well.

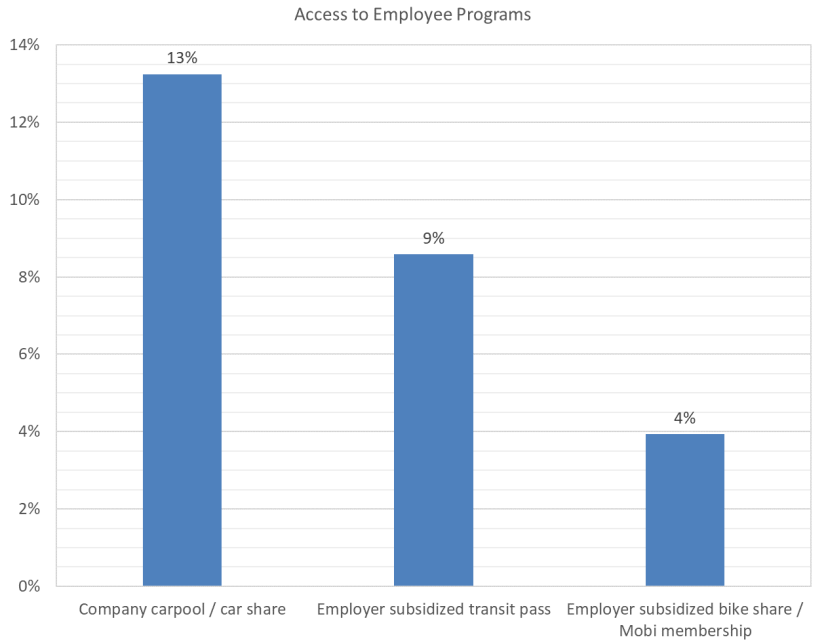
Figure 3-12: Comparison of Transit Reported as Usual Mode of Travel to School



3.7. Business Trips During Work

Of those who work (full-time, part-time, or self-employed), 45% reported that they make business-related trips during work hours. To better understand the types of transportation subsidies offered by employers to City residents, a question was asked to participants regarding access to employee travel programs that support or provide company car pooling/ shuttle/ car share, subsidized transit passes, and/or subsidized bike share. As shown in *Figure 3-13*, 13% of respondents who make business trips during work hours have access to company shuttles, carpools or car share. Similarly, 9% of the respondents have access to employer subsidized transit pass, but only 4% have access to a subsidized bike share membership.

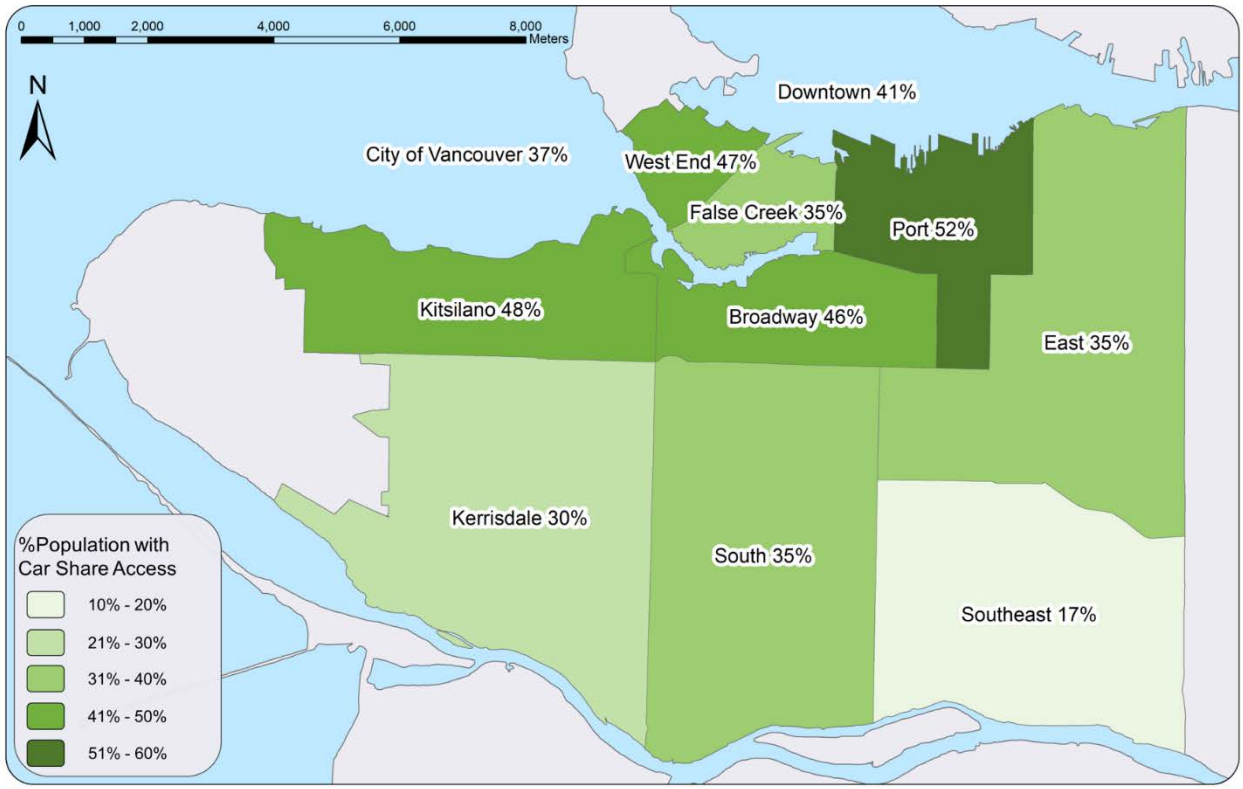
Figure 3-13: Access to Employee Programs



3.8. Car Share Access

In 2019, 0.7% of trips involved car share (0.6% driver, 0.1% passenger). This data should be used with caution since it represents a small fraction of total trips reported by panelists. Car sharing programs have continued to gain patronage in recent years. The distribution of those with regular access to a car-sharing program is shown in *Figure 3-14*. Among population aged 18+, subscription to car sharing programs is up to 37% from 34% in 2018. Vancouver Broadway, South, and East transportation zones have experienced the greatest percentage increases in car share patronage in the last year. Note that the survey was undertaken prior to ZipCar and Car2Go leaving the City of Vancouver and the province.

Figure 3-14: Access to Car Sharing Program



3.9. Private Vehicle Access

In 2019, approximately 910,000 trips were made using a private vehicle, 792,900 of which were drivers and 117,100 were passengers. This equates to a roughly 46% auto mode share (40% drivers, 6% passengers).

Figure 3-15 and *Figure 3-16* both confirm that people in higher income households have more access to private vehicles. Compared to 2018, a slightly lower proportion of lower income households have access to a private vehicle, down from 75% to 72%. Additionally, there was a decrease in the proportion of auto trips among lower income households (37% compared to 40% in 2018). As shown in *Figure 3-16*, transit was the preferred mode choice in the last year for households earning less than $50,000.

Figure 3-17 clearly shows that access to a private vehicle has an impact on mode choice with 55% of people with access to a private vehicle travelling by auto and only 9% for people without private vehicle access. This is consistent with the findings from the 2017 and 2018 surveys.

Those who have invested significant upfront costs to lease or own a vehicle are more likely to drive, since the incremental travel costs are relatively low. The geographic distribution of those with access to a private vehicle is shown in *Figure 3-18*. City-wide, the proportion of participants with access to a private vehicle has held steady from 2016. Although vehicle ownership is shown to be lowest in the CBD – West End, more than 90% of residents have access to private cars in the Kerrisdale, Vancouver East, and Vancouver Southeast areas.

Figure 3-15: Access to Private Vehicle Proportion by Household Income

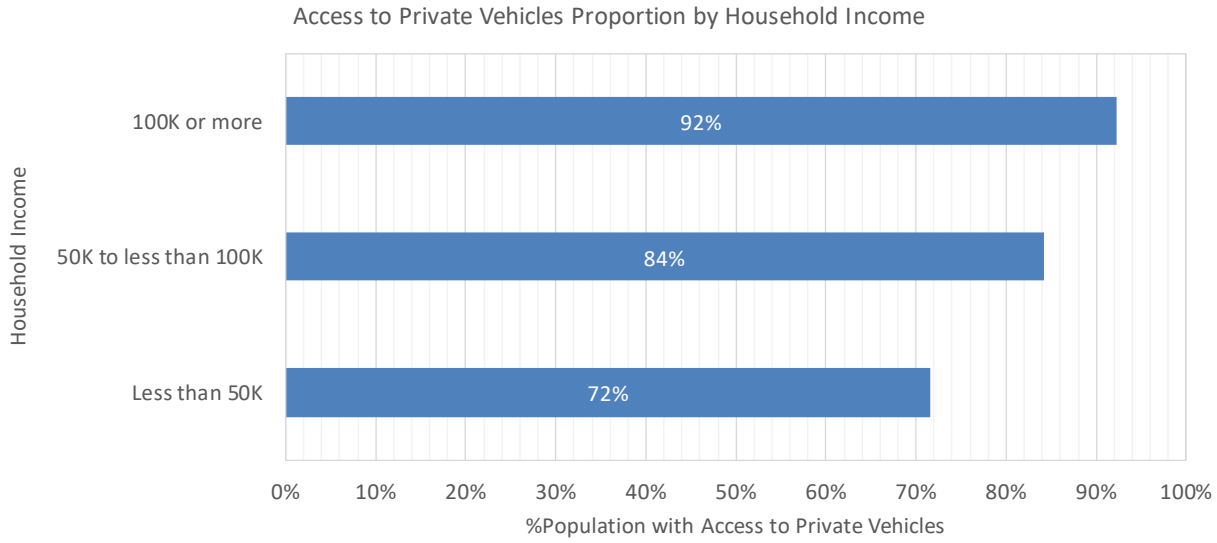


Figure 3-16: Mode Share Distribution by Household Income

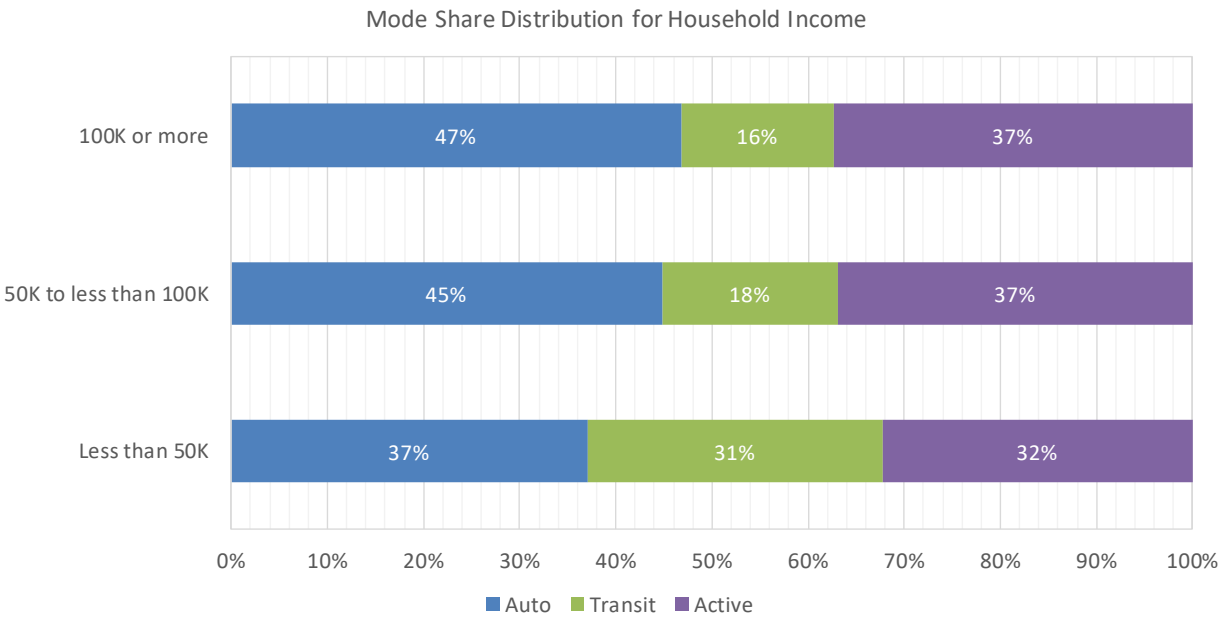


Figure 3-17: Vehicle Accessibility Distribution by Mode Choice

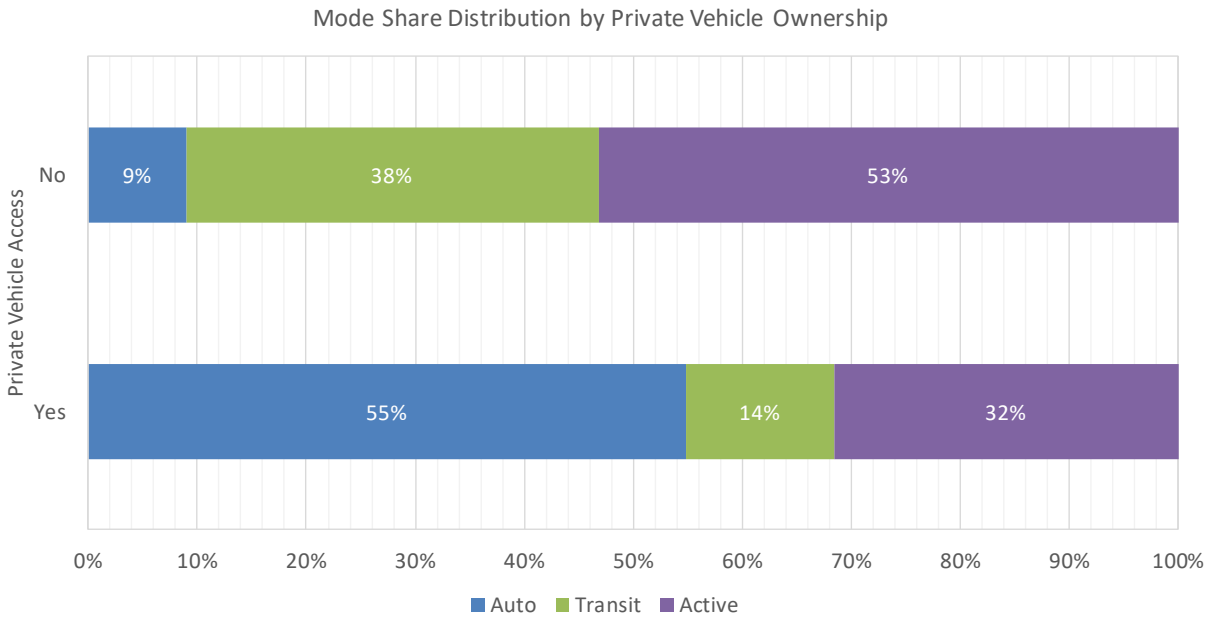
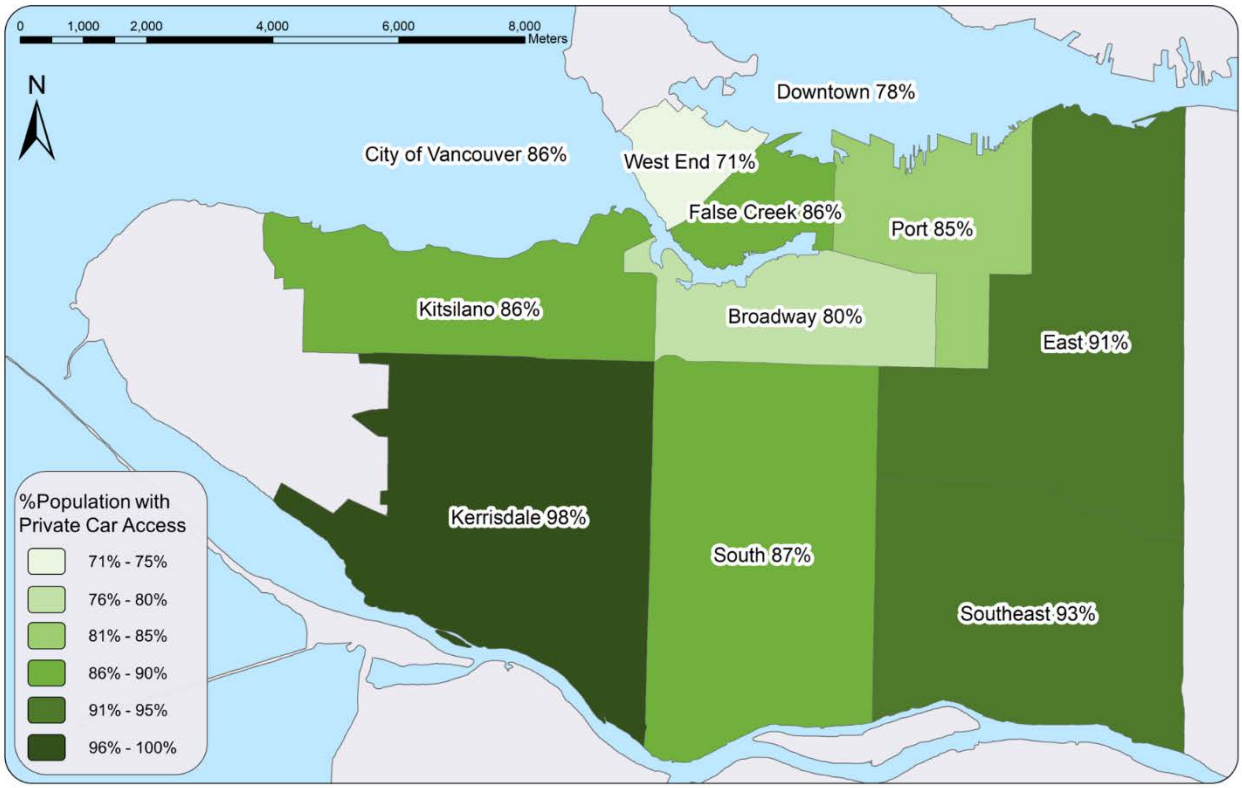


Figure 3-18: Private Vehicle Access



4. Trip Characteristics

One major aspect of the panel survey is to track trends in transportation choices, especially as they relate to specific City initiatives and infrastructure improvements. This section of the report is focused on current travel patterns including the mode of travel used, the purpose of trips being made, trip rates, average trip distances, VKT, and the origin-destination patterns of Vancouver residents. Furthermore, this analysis section will also examine trends in travel preferences and behaviours by comparing the results of the 2019 Panel Survey with the previous years. A comparison of trip characteristics amongst returning panelists is included in *Section 5* of this report.

4.1. Mode Share

The City is particularly interested in tracking how sustainable and active mode share grows over time. *Figure 4-1* compares the overall mode shares of the 2013-2019 Panel Surveys. On a typical fall weekday, Vancouver residents over the age of 18 make an average of 1,982,500 trips per day. Of these, 46% are made by automobile, 18% are made by transit, and 36% are made by active transportation modes. In this initial snapshot, it is evident that both the number of trips and mode share as an auto driver has reached an all-time low. As shown in the figure, this year's survey saw the highest share and number of trips made by cycle and transit mode with panel responses indicating an 8.8% bike share and a 18.3% transit share.

Figure 4-1: Total Trips by Mode and Mode Share (2013-2019 Panel Surveys)

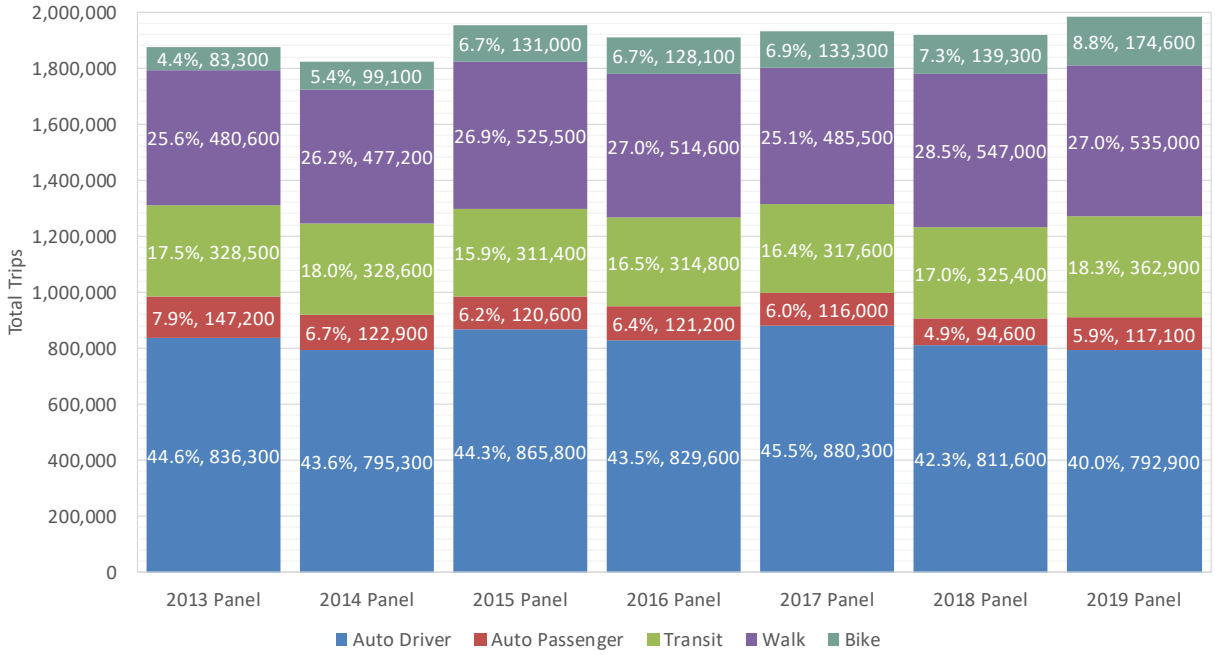
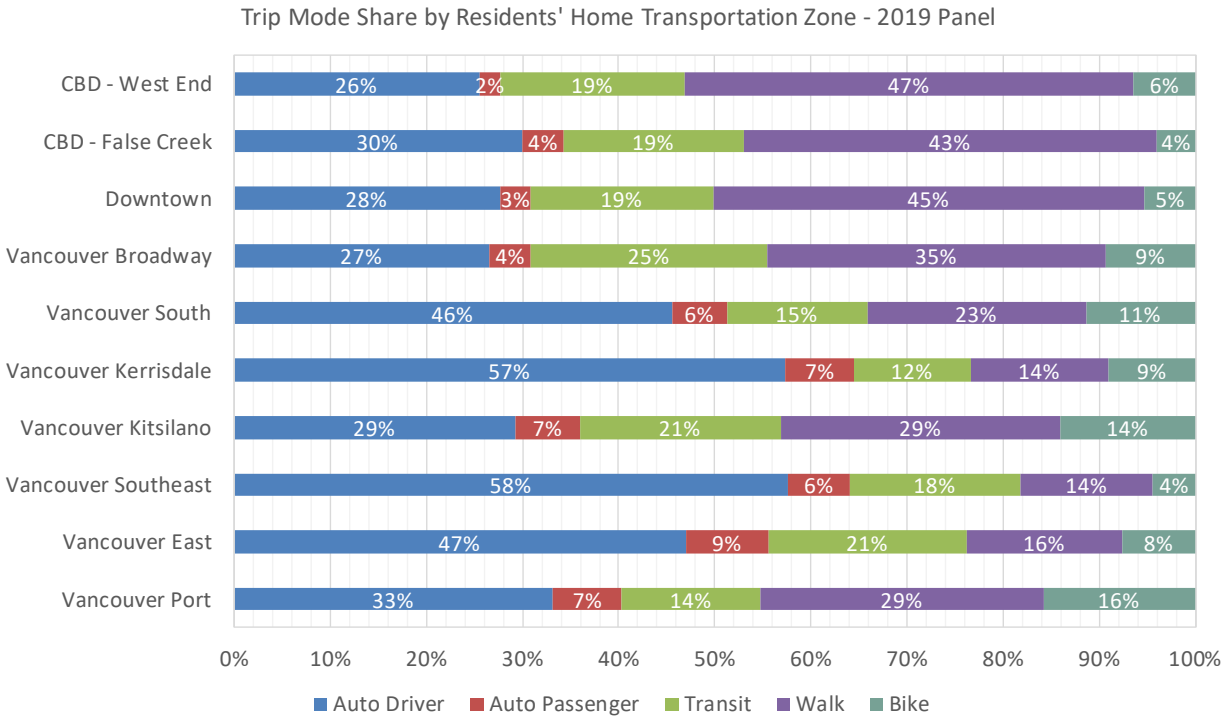


Figure 4-2 compares the mode share for reported trips, broken down by residents' home transportation zone, for the 2018 and 2019 Panel Surveys. The reported trip mode share distribution by zone in 2019 is consistent with the patterns observed in 2018. As illustrated in the figure, the share of walk trips is highest in the downtown peninsula (CBD - West End and CBD - False Creek) due to high density and its high walk score. Outlying areas of the City (Vancouver Kerrisdale and Vancouver Southeast) continue to show the highest proportion of auto usage. Compared to the 2018 survey, most zones have

seen an increase in the share of transit trips, as shown in the figure. It is possible to track trends in mode share at the zone level, however, some caution should be exercised as disaggregating the data to this level can produce results with wide confidence ranges, especially in cases where the mode shifts are within +/- 2%. It is generally more appropriate to compare results between panel surveys at more aggregate levels, for example, by using sustainable mode share or merged subareas.

Figure 4-2: Trip Mode Share by Residents' Home Transportation Zone



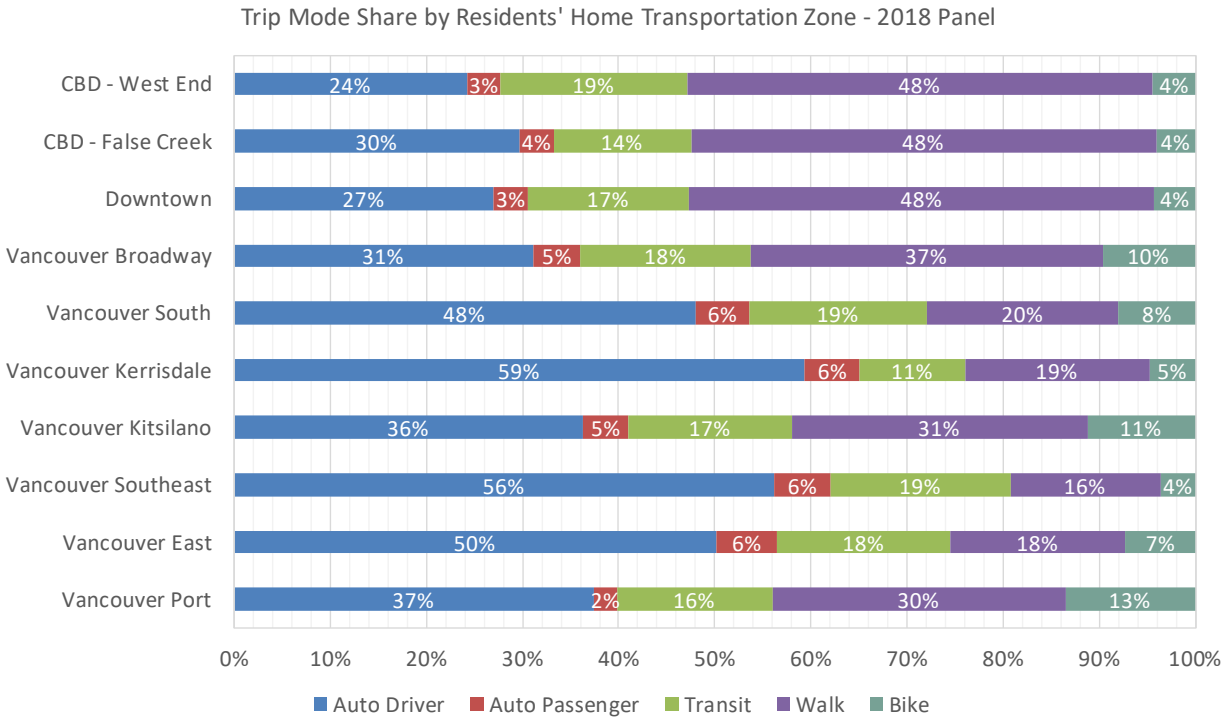


Table 4-1 compares the 2018 and 2019 Panel Survey sustainable mode share for reported trips (transit, walking, and cycling) by transportation zone, along with their corresponding 95% confidence intervals. As displayed in the table, the 2019 sustainable (walk/bike/transit) mode share falls within the 95% confidence intervals of the 2018 Panel for all transportation zones which supports overall confidence in the reliability of the results. For comparative analysis, it is best to use aggregate statistics such as Vancouver mode shares.

Table 4-1: Aggregate Walk/Bike/Transit by Transportation Zone and Sample Size

Transportation Zone	2019 Panel		2018 Panel	
	Sustainable Mode Share (%)	95% Confidence Interval	Sustainable Mode Share (%)	95% Confidence Interval
CBD - West End	72%	(67%-78%)	72%	(67%-78%)
CBD - False Creek	66%	(59%-72%)	67%	(60%-73%)
Downtown	69%	(65%-73%)	69%	(65%-74%)
Vancouver Broadway	69%	(64%-74%)	64%	(59%-69%)
Vancouver South	49%	(43%-54%)	46%	(41%-52%)
Vancouver Kerrisdale	36%	(30%-41%)	35%	(29%-41%)
Vancouver Kitsilano	64%	(59%-69%)	59%	(53%-65%)
Vancouver Southeast	36%	(30%-42%)	38%	(32%-44%)
Vancouver East	44%	(40%-49%)	43%	(38%-49%)
Vancouver Port	60%	(53%-66%)	60%	(53%-67%)
City of Vancouver	54%	(52%-56%)	53%	(51%-55%)

Figure 4-3 compares the mode share by age distribution for the 2019 Panel Survey. As observed in previous travel surveys, people in the 18-24 and 25-44 age cohorts tend to travel by transit, walk, and bike more than the 45+ cohort. Focusing on the 18-24 age cohort, *Figure 4-4* illustrates the changes in automobile, transit, and active mode shares across all survey years for this age category. The overall transit mode share has remained relatively steady over the years with the share of transit trips hovering around 48%. As illustrated in the figure, the mode share of this age group varies year to year due to low sampling. Increasing the sample size would provide greater confidence in the reliability of the results.

Figure 4-3: Mode Share by Age Distribution

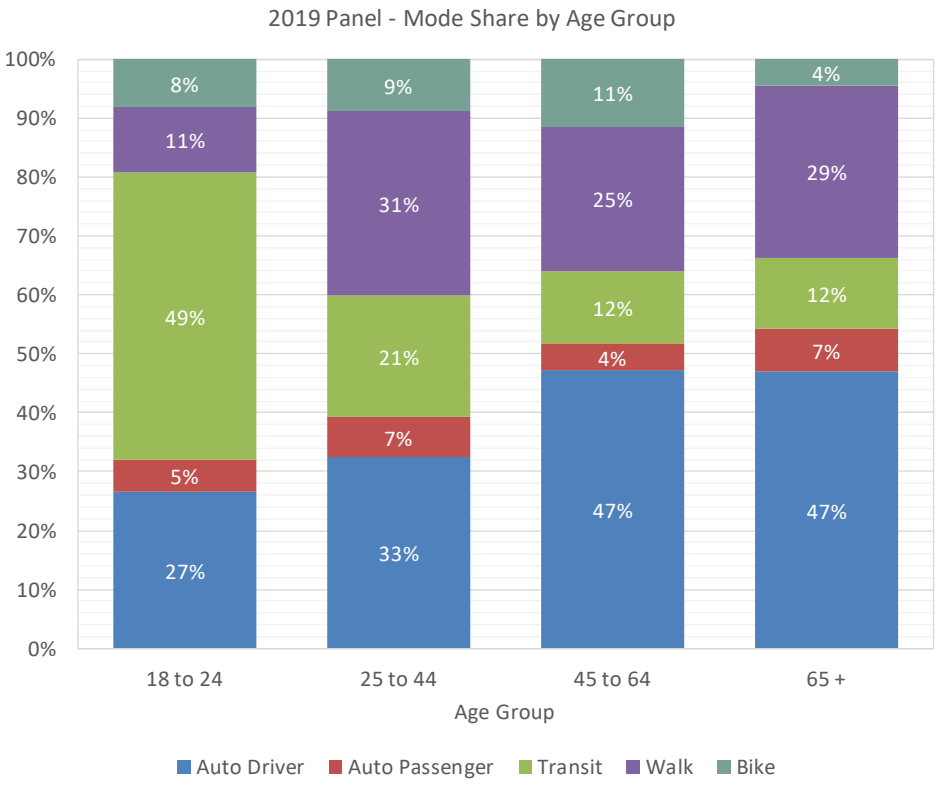
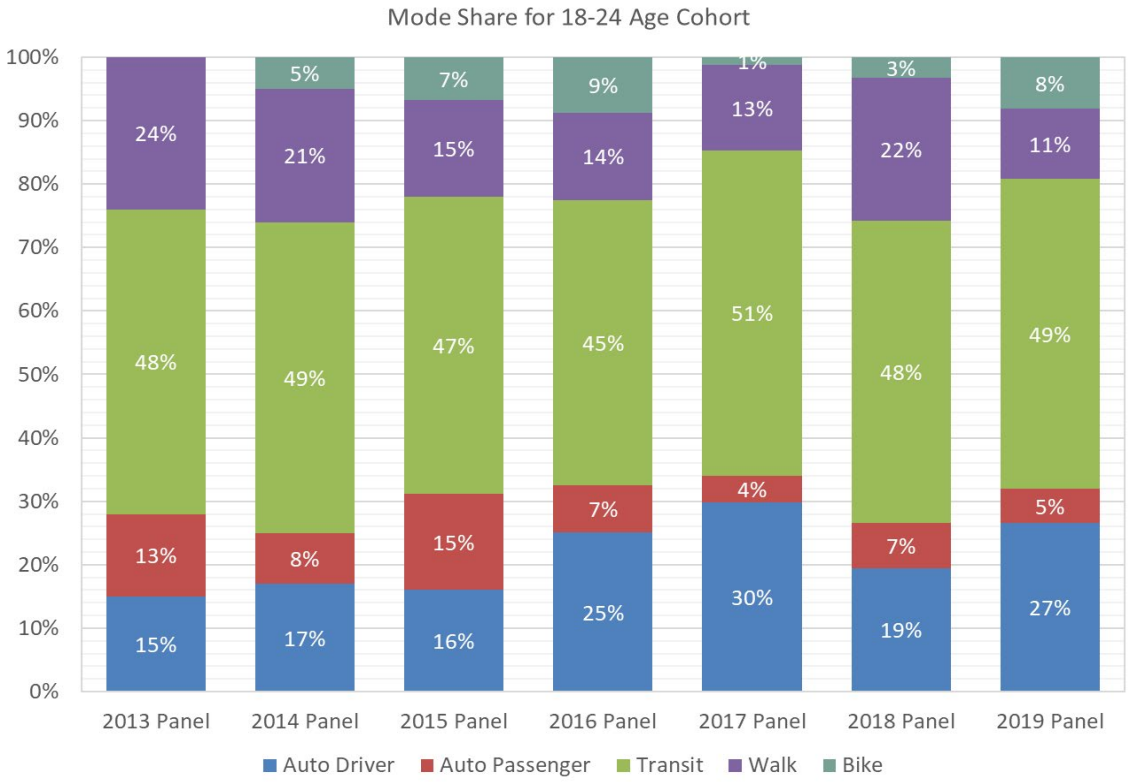
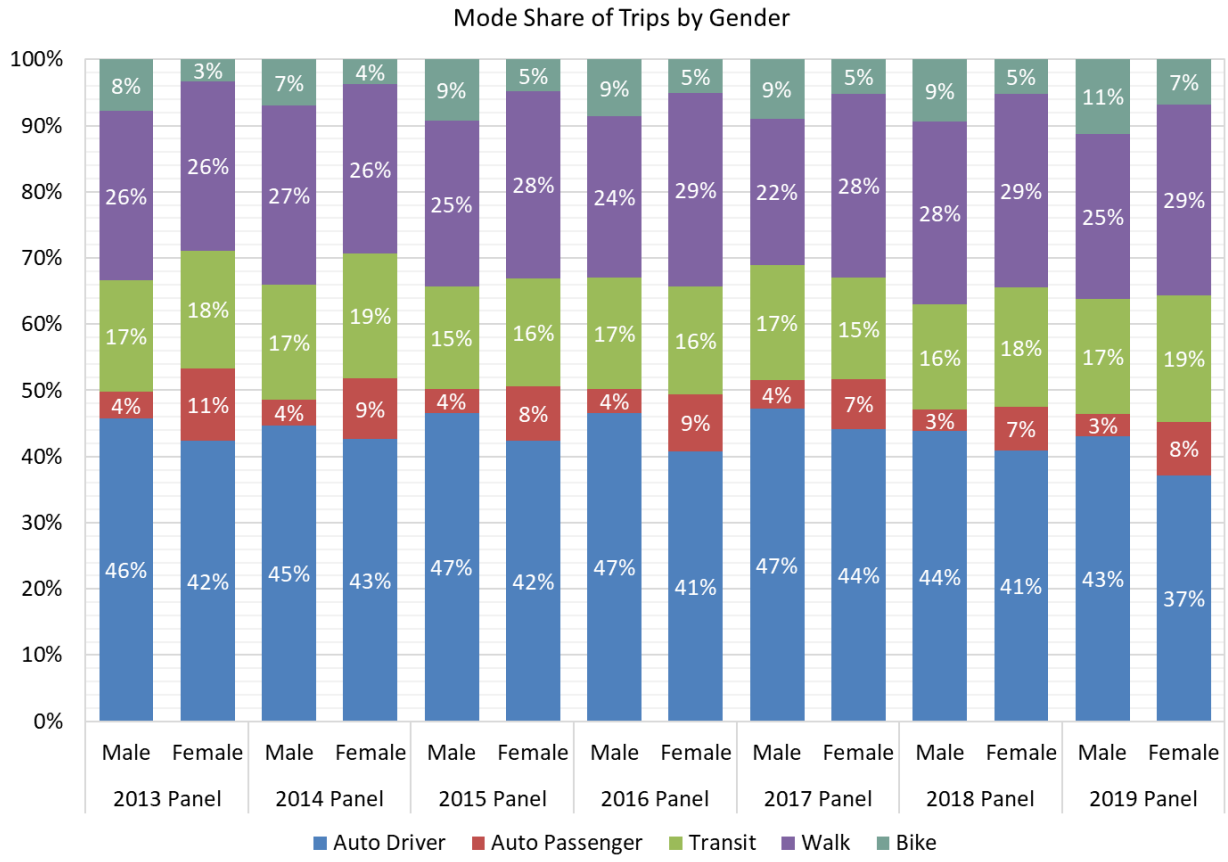


Figure 4-4: Mode Share for 18-24 Age Cohort Across Survey Years



When assessing gender related mode choices, there were only slight differences with regard to the mode shares of males and females, as shown in *Figure 4-5.* While private vehicle use as a driver remains as the dominant mode for both genders, responses from the panel survey indicate that men are more likely to be drivers while women are more likely to be passengers. Furthermore, female participants also indicated a higher share of walk trips overall, while males had a higher share of bike trips. With regards to travel by transit, both male and female participants have reported similar shares of transit trips. This general pattern has remained relatively consistent since the 2013 Panel, but with a gradual shift from auto use to a greater uptake of the active modes for both genders.

Figure 4-5: Mode Share of Trips Made by Male Participants



4.2. Trip Purpose

Figure 4-6 shows a comparison of trip purposes for the 2018 and 2019 surveys. The distribution by trip purpose is consistent between the two years, with all purposes within 1% of each other. The majority of trips are for going home and to work. Travel for shopping, recreation / social / entertainment, and personal business are the next largest group of trip purposes, with each representing approximately 10% of total daily trips. This is followed up by drop-off / pick-up trips (7%) and then dining / restaurant (6%). Finally, the lowest shares of trip purposes were during work / business trips (3%) and commute to school (3%).

Figure 4-6: Trip Purpose Distribution

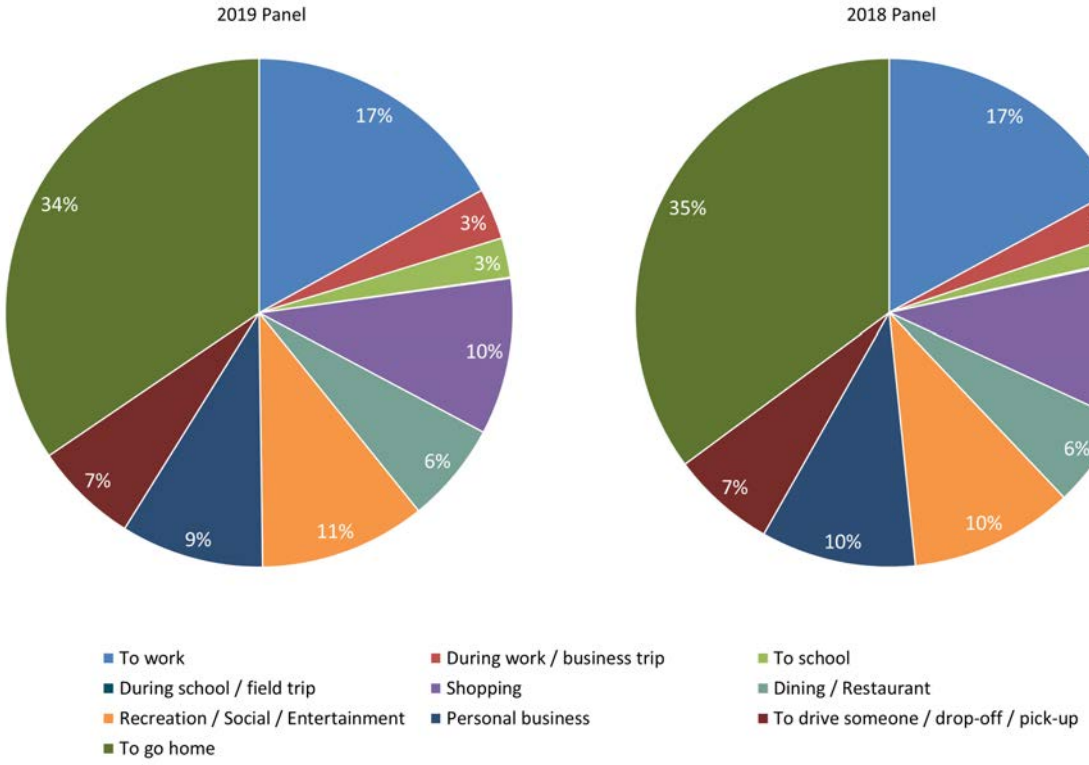


Figure 4-7 shows a detailed comparison of the mode share by trip purpose for the 2018 and 2019 Panel Surveys. As illustrated in the figure, the mode share trends are consistent between the two years. Auto driver continues to be the primary mode for drop-off / pick-up trips and during work / business trips. Transit continues to be the dominant mode for commute to school trips and hold a significant share of the commute to work trips. Discretionary purpose trips, including recreation / social / entertainment, dining / restaurant and shopping have the highest shares of walk mode.

With the commuting trips, sustainable and active modes continue to hold a significant share of the trips. Over 80% of commute to school trips and almost 65% of commute to work trips are by transit and active modes.

Figure 4-7: Mode Share by Trip Purpose

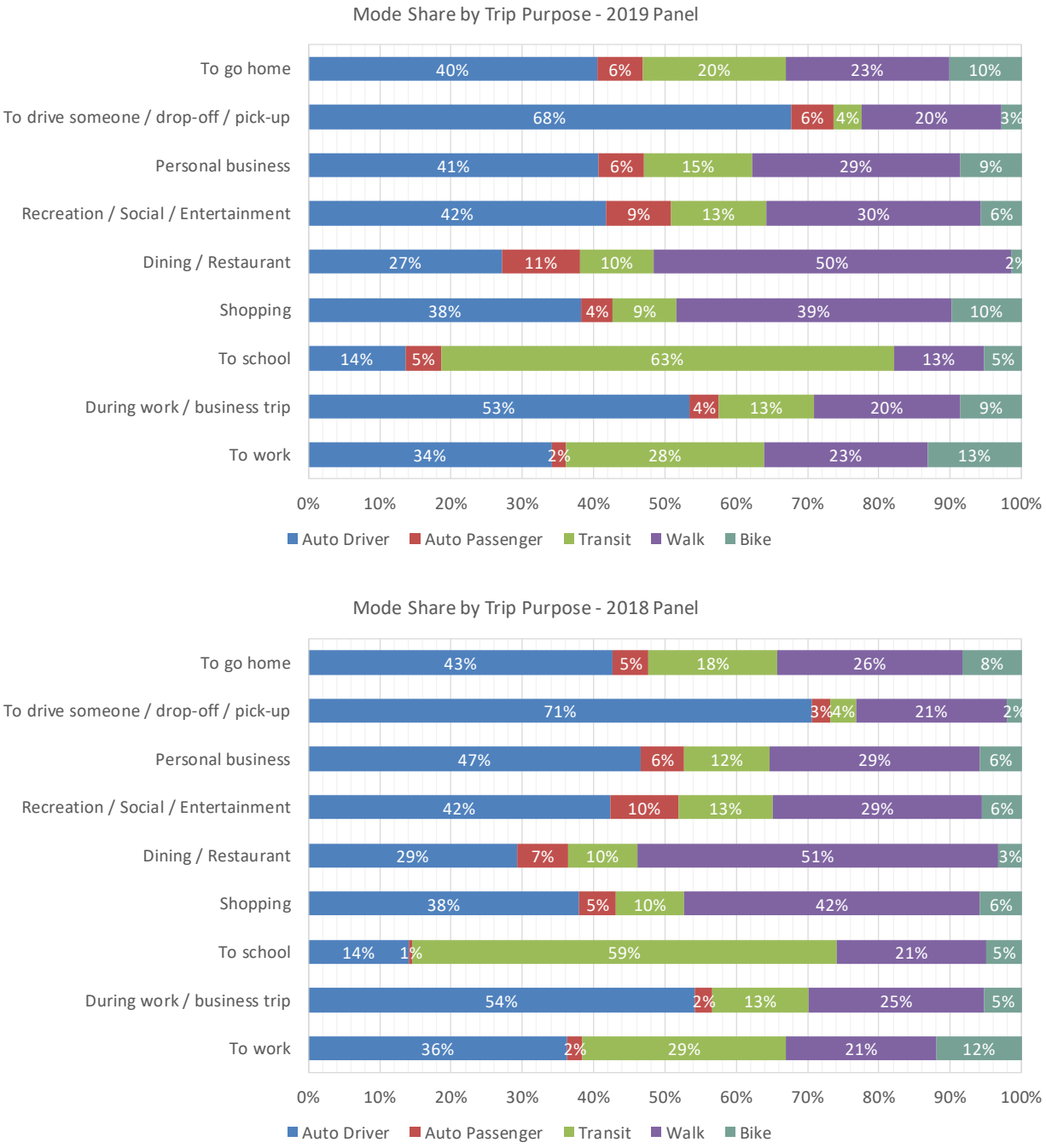


Figure 4-8 compares the mode shares of trips to work for the 2013 to 2019 Panel Surveys. Auto use for travel to work has seen an all-time low with 122,300 trips, representing roughly 36% of all work trips. Comparing the results of the 2019 survey with those of previous years indicate a huge uptake in cycling over the years with the use of bike accounting for 13.2% of all work trips.

Figure 4-8: Comparison of Panel Survey Trips to Work

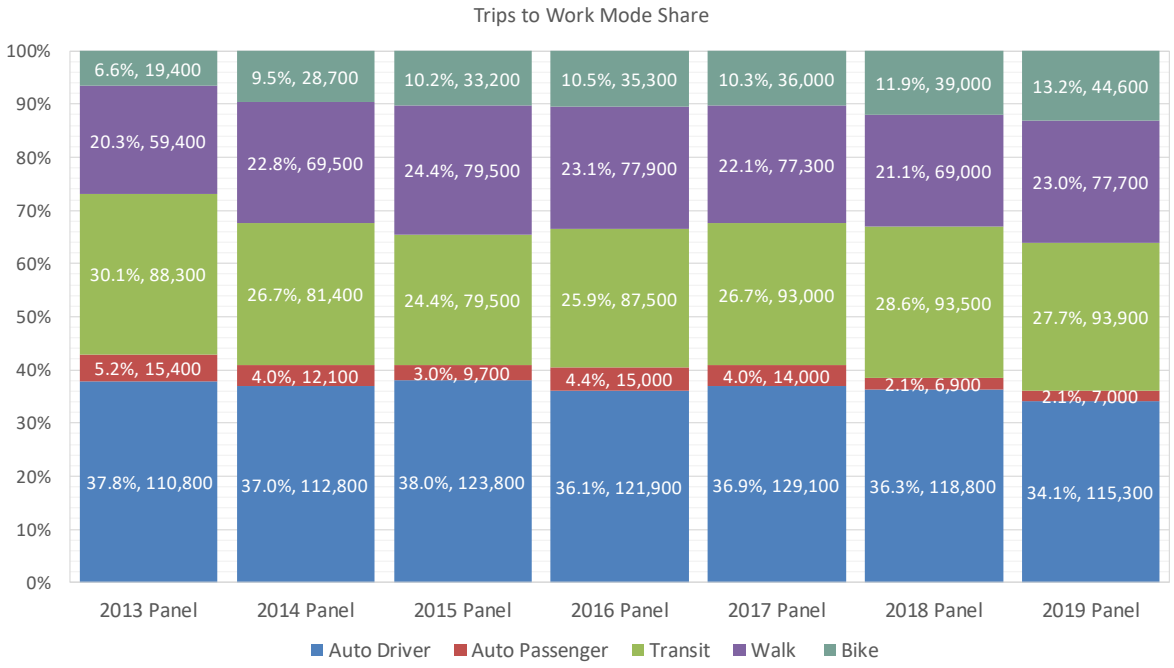
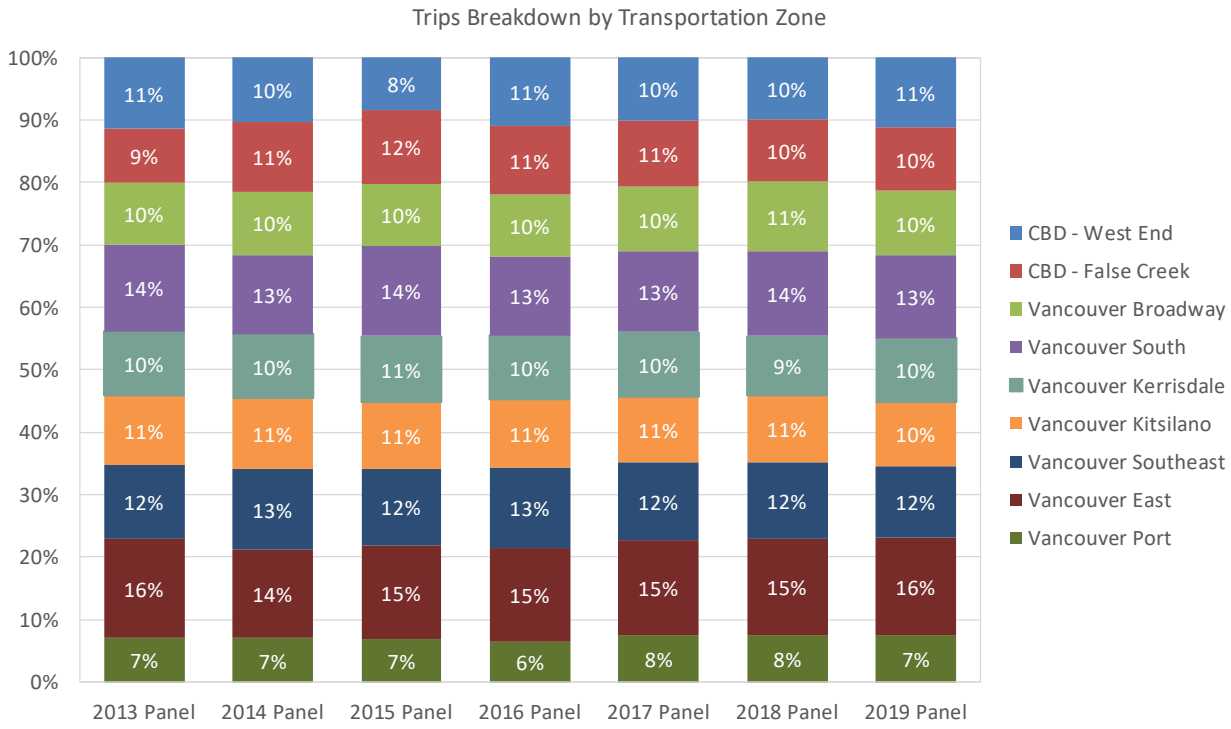


Figure 4-9 shows a breakdown of the total number of trips by transportation zone for panel surveys from 2013 to 2019. As shown in the figure, the share of trips for each transportation has been consistent over the course of the last seven surveys.

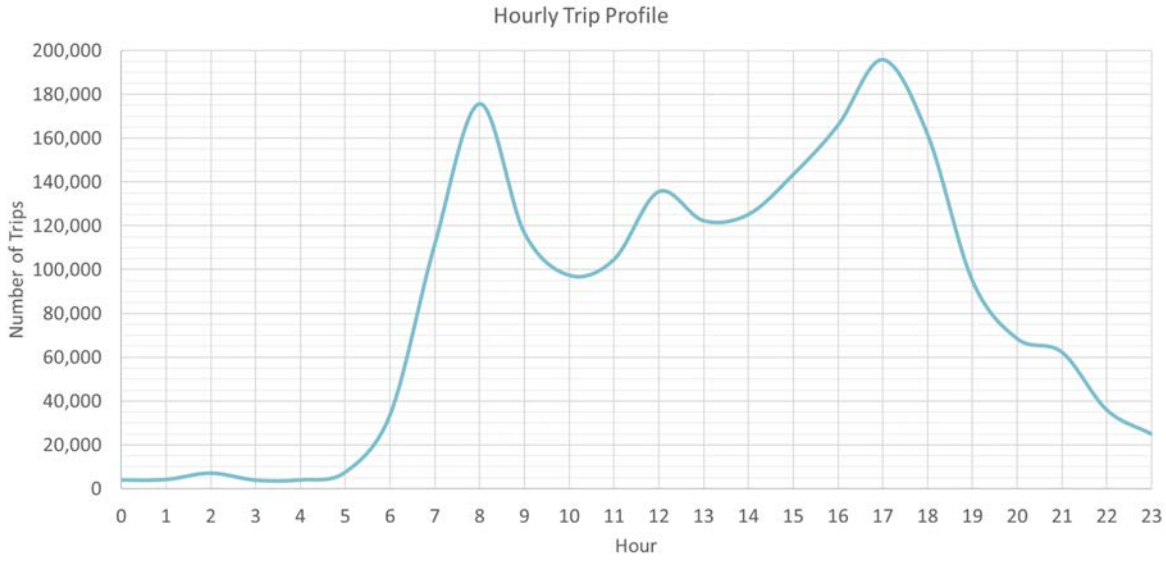
Figure 4-9: Total Trips Breakdown by Transportation Zone



4.3. Time of Day

As mentioned earlier, survey participants were asked to provide the start time of their trip to gain a better understanding of trip-making behaviour throughout the day. *Figure 4-10* graphically displays the number of trips taken hourly for a typical weekday. As indicated in the figure, the AM peak hour occurs at 8 o'clock in the morning while the PM peak hour is at 5 o'clock in the afternoon. Approximately 32% of the daily trips are made during the four hours representing the AM and PM peak periods (7:00 AM to 9:00 AM and 16:00 PM to 18:00 PM). There is also a minor peak during the midday period which represents approximately 70-75% of the peak period travel totals. This pattern is very similar to those observed from traffic and transit counts across the City.

Figure 4-10: Hourly Trip Profile



A comparison of time of day travel between the 2018 and 2019 Panel Surveys is shown in *Figure 4-11*. The proportions of trips being made during the day are generally the same as the 2018 proportions.

Figure 4-11: Trip Distribution by Time of Day Shift

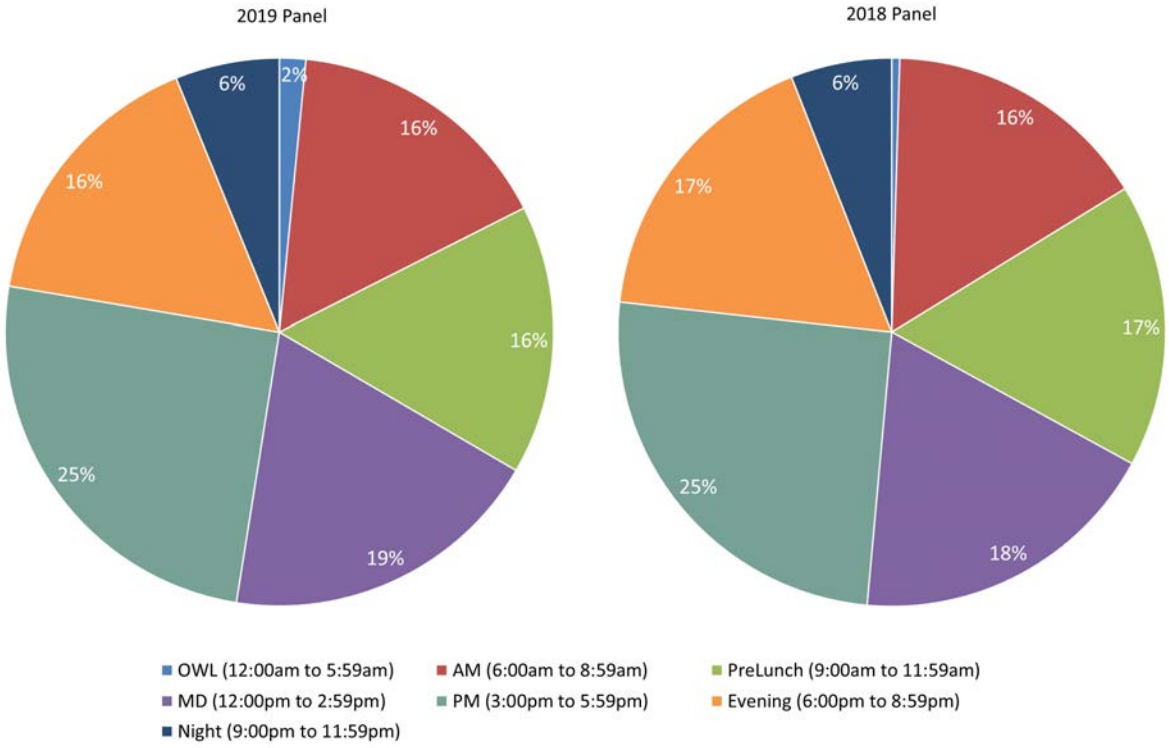
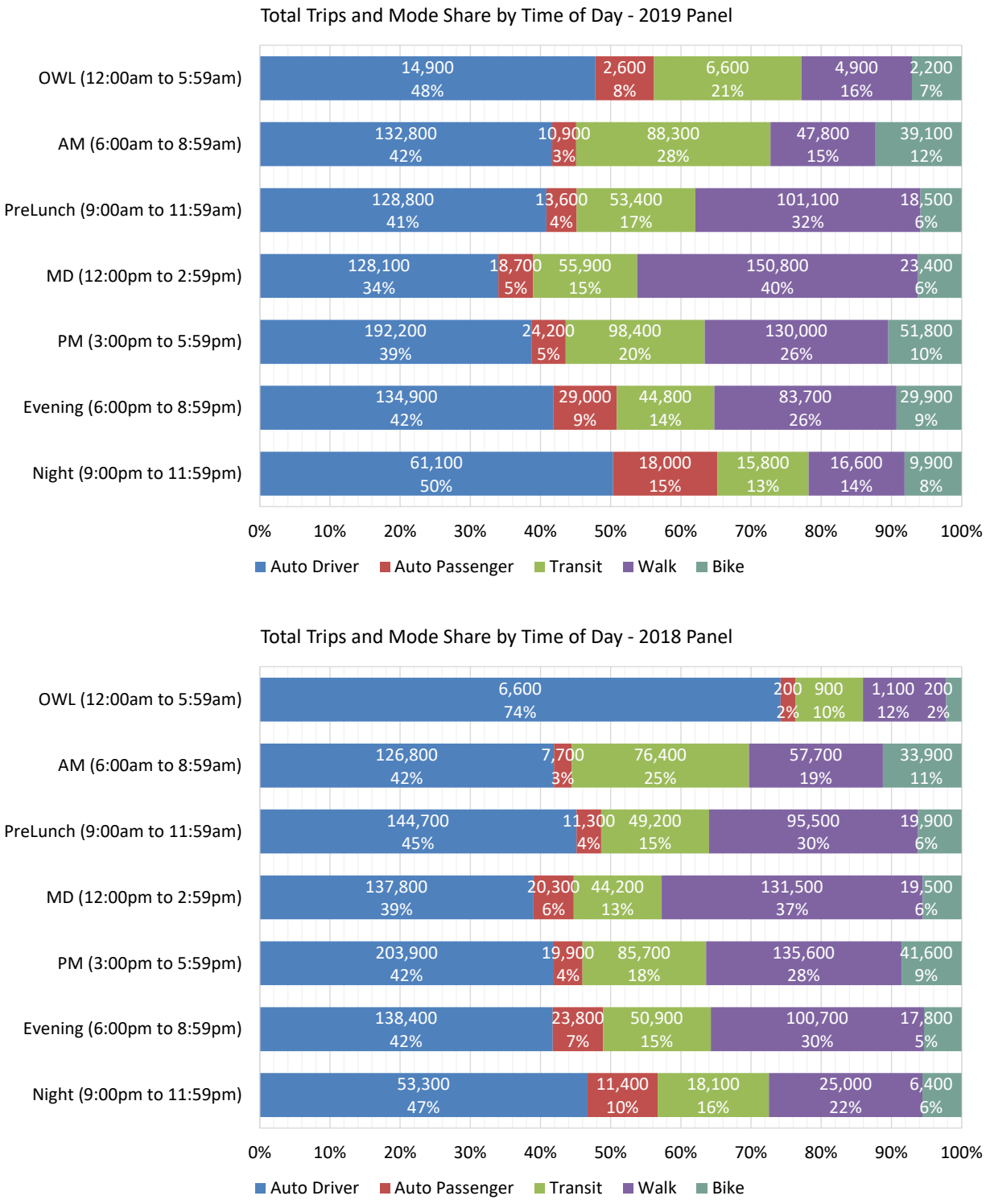


Figure 4-12 breaks down mode share by time of day for the 2018 and 2019 surveys. During the OWL and night period, trip-making is dominated by vehicle use, representing 56% and 65% of all trips for those time frames. During the AM peak period, use of transit is highest with transit trips accounting for 28% of all trips within that time period. Comparing the findings with those from the 2018 survey, participants reported a higher proportion of transit trips for all time periods except in the evening and at night.

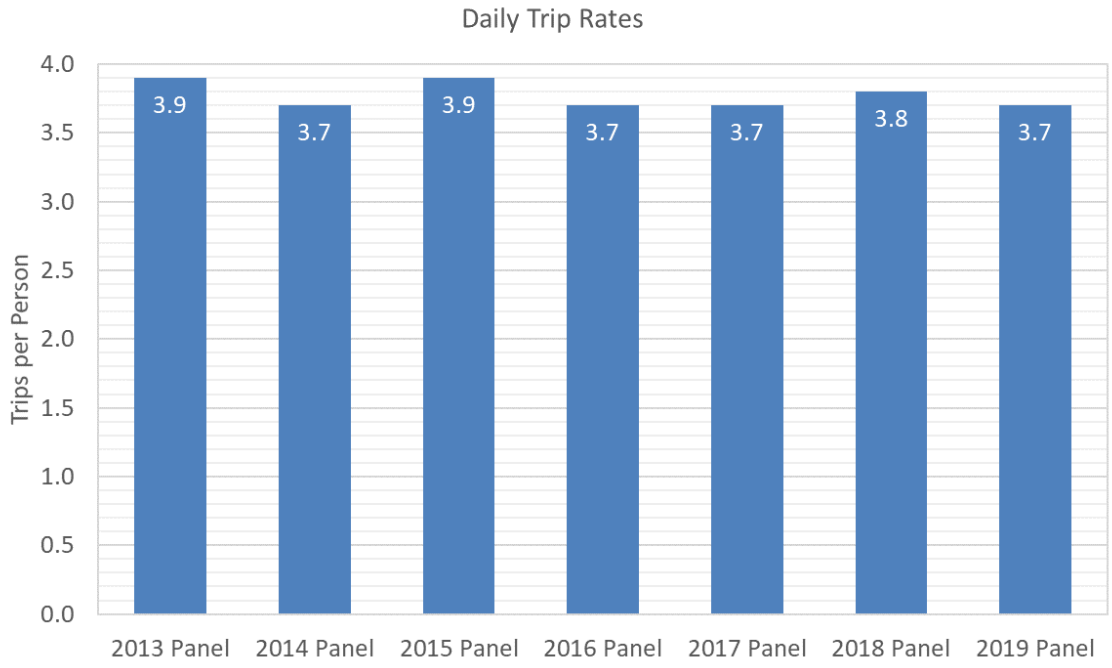
Figure 4-12: Mode Share Distribution by Time of Day



4.4. Trip Rates

Figure 4-13 compares overall trip rates[6] for the 2013 to 2019 Panel Surveys. As shown in the figure below, the trip rate for 2019 has remained consistent with previous years. Overall, the average trip rate has hovered around 3.8 trips per day +/- 0.1 trips.

Figure 4-13: Daily Trip Rates (18 years and older)



Similar to previous years, female participants made slightly more trips in 2019, as shown in *Figure 4-14*. These results reflect trip reporting by participants and can vary from year to year depending on the participant's travel patterns on their survey day which, again, can vary significantly.

[6] Trip rate is the number of trips that each person makes on a daily basis with a trip defined as travel from one origin to another destination by a certain primary mode for a particular purpose.

Figure 4-14: Trip Rates by Gender

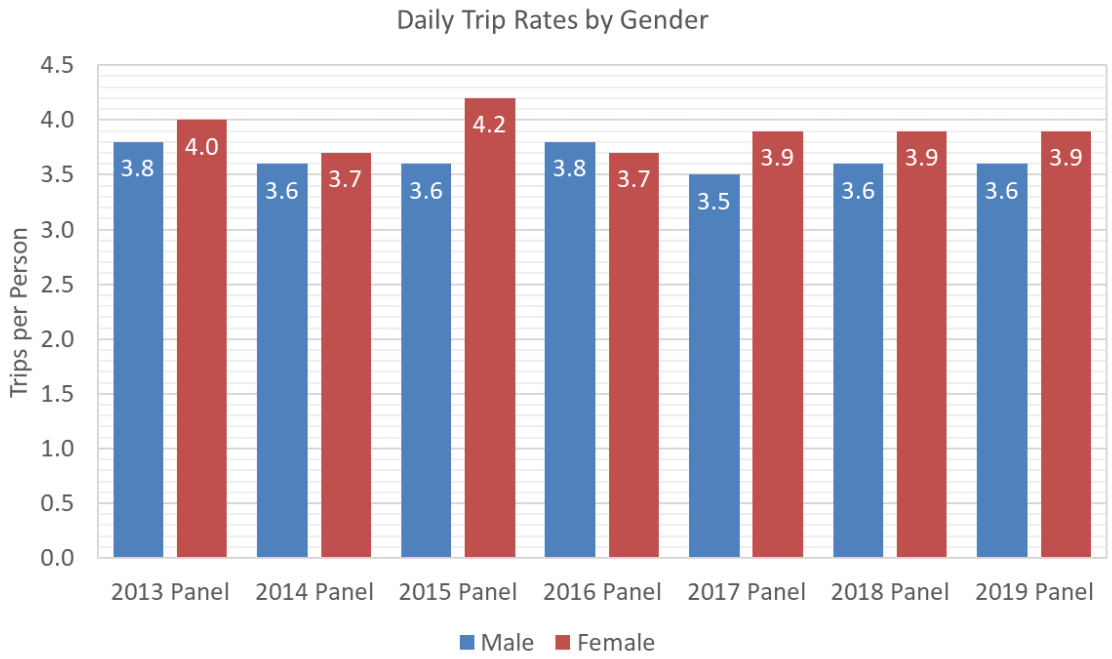


Figure 4-15 shows trip rates across the four age cohorts with the 45 to 64 age group being the most active in all survey years. People aged 65 and above made fewer trips compared to 2017 and 2018. Compared to 2018, the daily trip rate for those in the 18 to 24 age group has remained steady at 2.9 trips per person. As displayed in the figure, the overall split between all survey years is approximately the same, considering the confidence interval of survey results with a 0.5% sample of Vancouver residents.

Figure 4-15: Trip Rates by Age Group

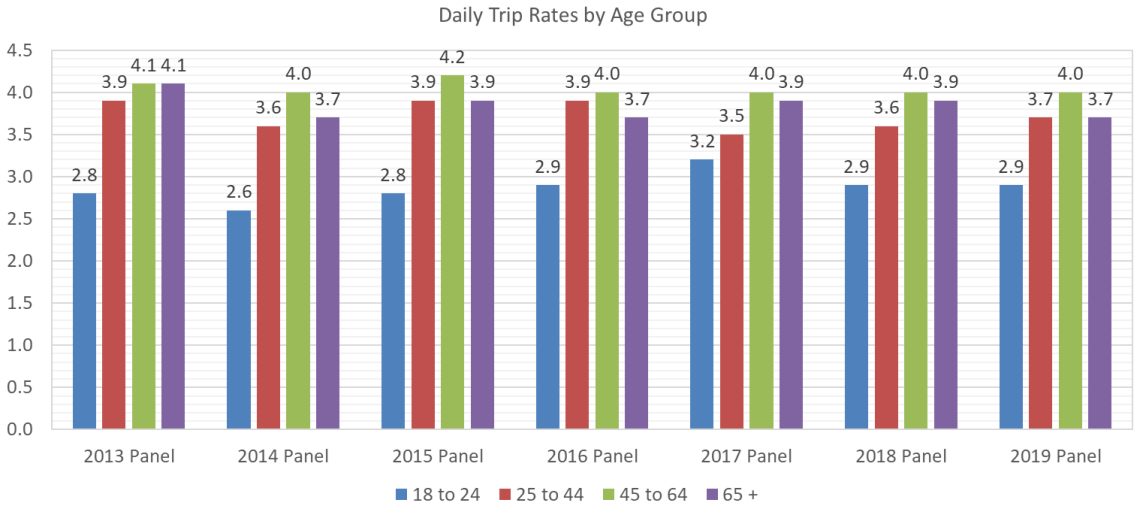
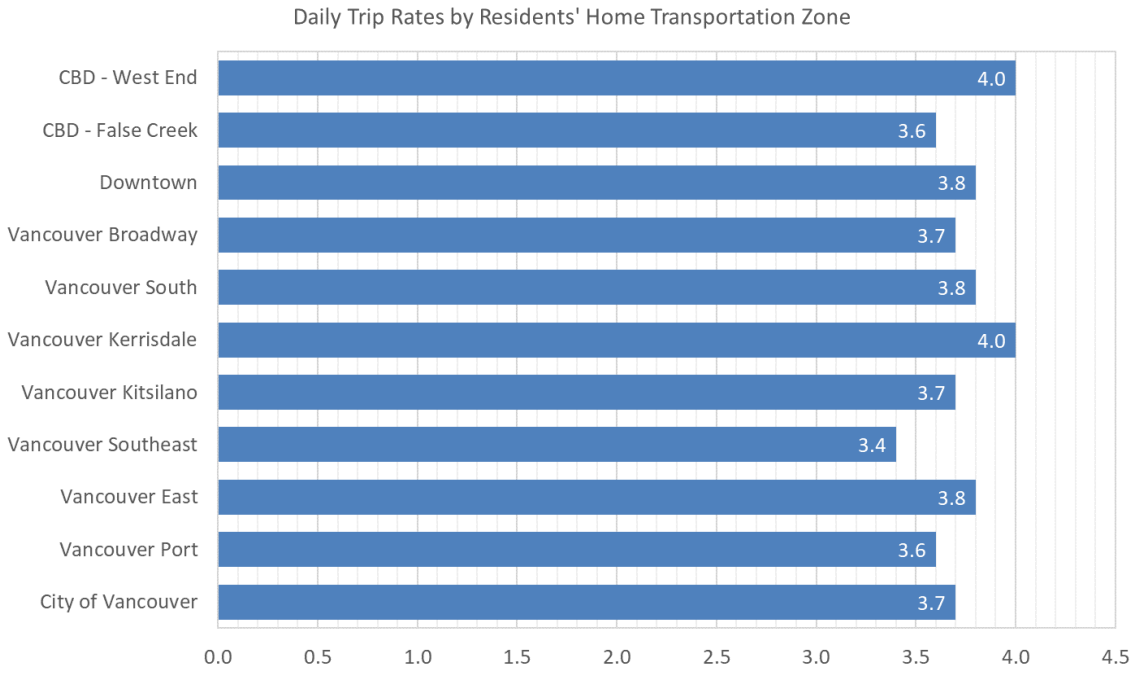


Figure 4-16 shows that the daily trips rates by neighbourhood zone are similar to the trip rates reported in the 2018 survey. Compared to the 2018 findings, survey responses indicate that the daily trip rate for those residing in CBD – West End has increased by 0.8 trips per person in the last year, while Kitsilano residents, on average, make 0.4 trips less per person. As suggested in the figure, CBD – West End and Vancouver Kerrisdale residents made slightly more trips than other parts of the City.

Figure 4-16: Trip Rates by Transportation Zone



4.5. Vehicle-Kilometers Travelled

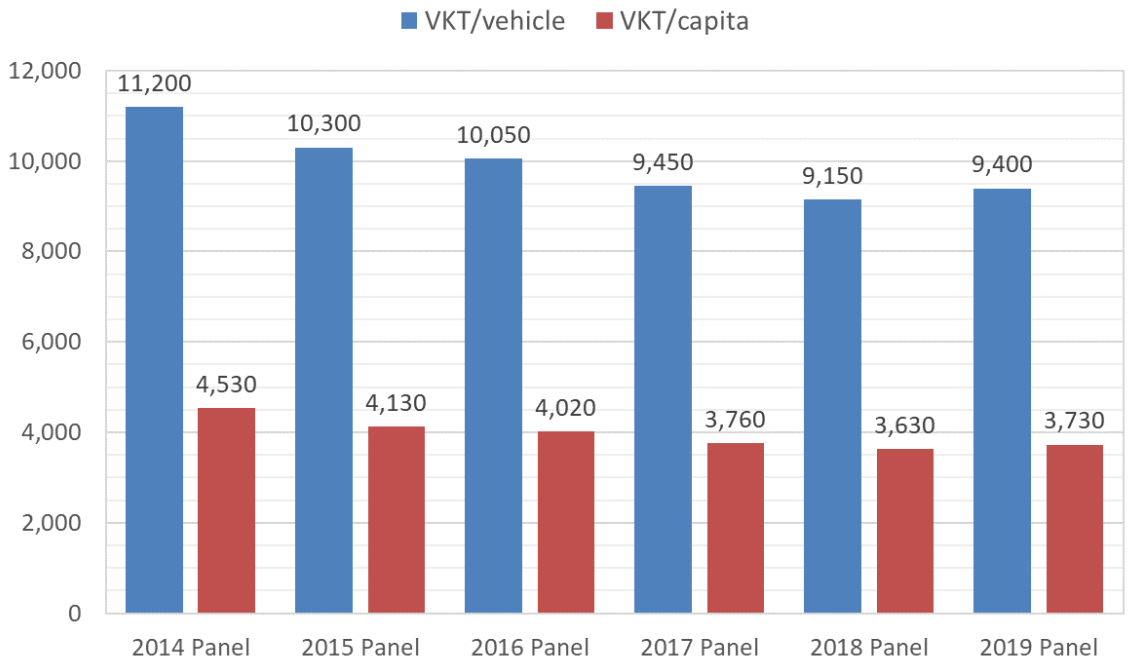
The Greenest City action plan and Transportation 2040 have set a goal to reduce the average distance driven per resident by 20% compared to 2007 levels. This measurement is referred to as vehicle-kilometres travelled (VKT). It is important to track whether VKT is trending in the right direction to meet this goal. In 2014, VKT was calculated using a variety of methods and data sources including AirCare, Insurance Corporation of British Columbia (ICBC), the regional (Emme) transportation model, and Panel Survey odometer data. The AirCare VKT model had been used by various local agencies to estimate Metro Vancouver's VKT and GHG emissions for many years. As this program has been discontinued since December 2014, it unfortunately cannot be used to track VKT in the future. Of the remaining methods, the Panel Survey odometer reading was deemed to provide the most reliable method to track VKT for the following reasons:

- The Panel Survey provides an adequate sample size statistically to estimate the average kilometres travelled per vehicle in Vancouver using the odometer readings of returning panel members.
- This method for calculating VKT is dynamic. In other words, the average kilometres travelled will change year over year based on the outcomes of the Panel Survey.
- This method is the closest approximation to the regionally accepted Air Care VKT method and represents a reliable method with new survey data.

Odometer readings from returning panel members were used to determine the average annual VKT. After review and cleaning of the data, this method provided a sample of 1,129 odometer readings. The average was approximately **9,400 vehicle-kilometres travelled per vehicle**. As illustrated in the figure, the average VKT per vehicle has decreased by 16% when compared to 2014, suggesting that participants are now taking shorter-distance trips. The average vehicle age reported for 2019 was roughly **10.2 years.**

Multiplying the average distance travelled per capita by the population size published for the City of Vancouver in 2019 yields an annual VKT for 2019 of **2.61 billion**. Based on BC Stats population estimates for 2019, this equates to a 18% decrease in VKT per capita, from 4,530 km in 2014 to **3,730 km** in 2019. *Figure 4-17* shows the VKT statistics based on Panel Survey odometer readings.

Figure 4-17: Trends in VKT per vehicle and VKT per capita



4.6. Walk/Bike/Transit Mode Trend Analysis

The Panel Survey has provided a valuable indicator for tracking trends on the percentage of people walking, biking, and taking transit. *Figure 4-18* shows the sustainable mode share with 95% confidence from 2013 to 2019 based on survey results. As illustrated, the sustainable mode share has held steady between 2014 and 2015 as a result of an increase in walking and cycling mode share and a decrease in transit mode share. In 2016, the mode share was similar to 2015 with slightly more transit and slightly less auto driver mode shares while the 2017 panel survey saw a downturn in the overall sustainable mode share largely due to the significant decrease in walking trips. Analysis of City of Vancouver's residents' mode choices for the fall 2018 survey revealed a greater uptake of the active and transit travel modes with the sustainable mode share reaching 52.8%. This upswing is largely driven by an apparent change in travel behaviour from private car use to walking where short distance trips that were previously made by car are now made by foot instead. As in 2018, responses from the 2019 survey continue to show an upward trend from 2013 in terms of walking, cycling, and transit for Vancouver residents. As shown in the chart, travel by transit and active modes is higher than in previous years, with the share of sustainable modes increasing from 52.8% of daily trips in 2018 to 54.1% in 2019.

Extrapolating the travel survey trends to the future would suggest that this trend should continue with the further densification of Vancouver, continued improvements to the regional transit system, and the City's walking and cycling initiatives. Although the confidence ranges indicate that the sustainable mode shares could be between 52.2% and 56.0%, it is undeniable that the trendline is in the positive direction. There is still a strong indication that the City of Vancouver is on track to meet its 2020 mode share target set out in the Greenest City Action Plan and Transportation 2040.

Figure 4-18: Trends in Sustainable Mode Share (High and Low Ranges)

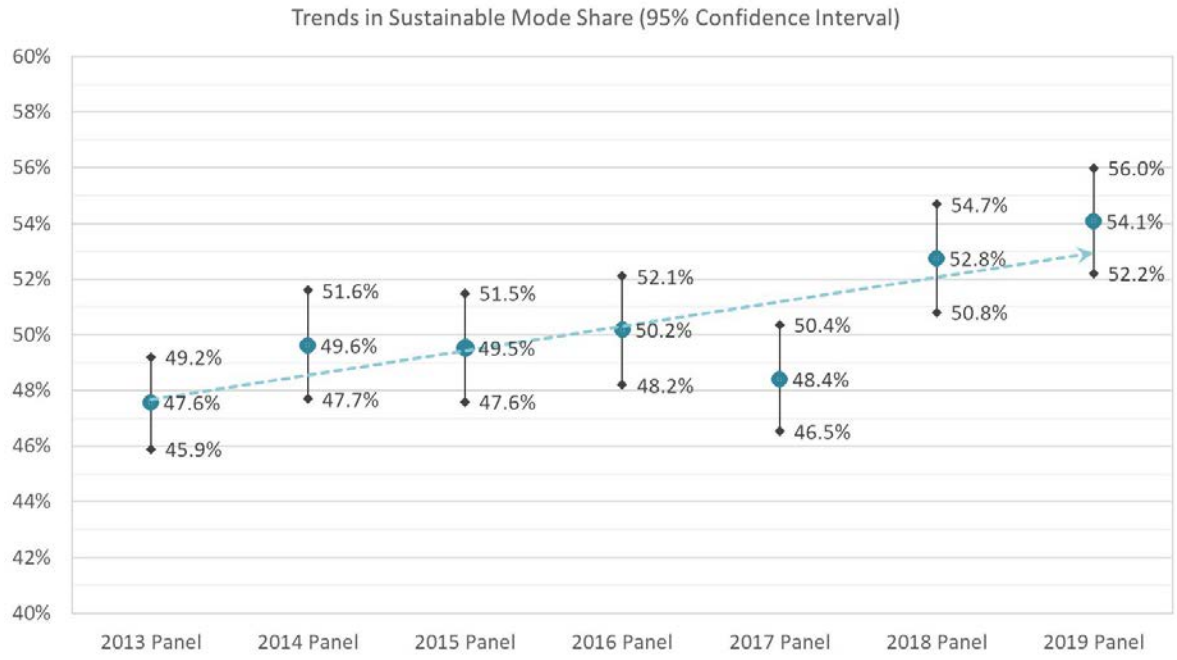


Figure 4-19 presents the mode splits by walking, cycling, and transit modes. Overall, trips made by cycling and transit modes are at an all-time high in 2019 with daily travel by bike reaching 174,600 trips and transit trips peaking to 362,900 trips. Compared to the survey conducted in 2018, the share of those who biked has increased by 1.5% while the share of transit trips increased by 1.3%.

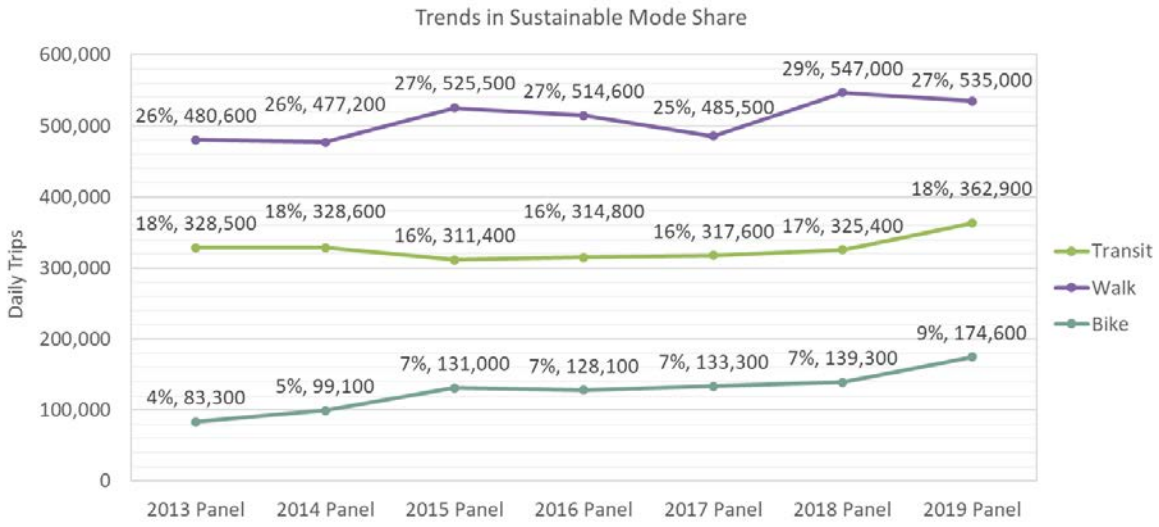
With the City's pledge to expand Vancouver's cycling network and improve existing bike lane routes, the notable increases in cycling trips may be attributed to the recent upgrades to the City's cycling infrastructure, such as the five city greenways currently in progress.

Further improvements to regional and local transit services, including the launch of the new RapidBus routes, along with improved accessibility to transit facilities may have helped to increase ridership. With the implementation of additional RapidBus services in the coming years and the construction of the Broadway Subway Project, transit ridership and mode share are anticipated to continue increasing.

As illustrated, the share of trips made by walking was 28.5% in 2018, the highest of the sustainable modes among City residents that year. However, in the last year, the walk mode share has fallen from 28.5% to 27%, setting it closer to the average walk mode share of 26.5% across the six previous surveys from 2013 to 2018.

Tracking the panel's travel behaviour and travel trends is critical as it provides an opportunity to better understand the impacts of infrastructure investments to Vancouver residents.

Figure 4-19: Trends in Sustainable Mode Share



As part of the survey, participants were asked to provide the approximate duration of walking and/or biking that made up all or part of longer transit trips. Answers to this question help provide insight into two key areas: the degree to which people are willing to walk/bike as part of transit trips and the amount of physical activity that is integrated into daily travel.

Figure 4-20 shows the duration of walk trips and bike trips. About 83% of walk trips are less than 20 minutes and 84% of cycling trips are under 30 minutes.

Figure 4-20: Walk and Bike Trips by Duration

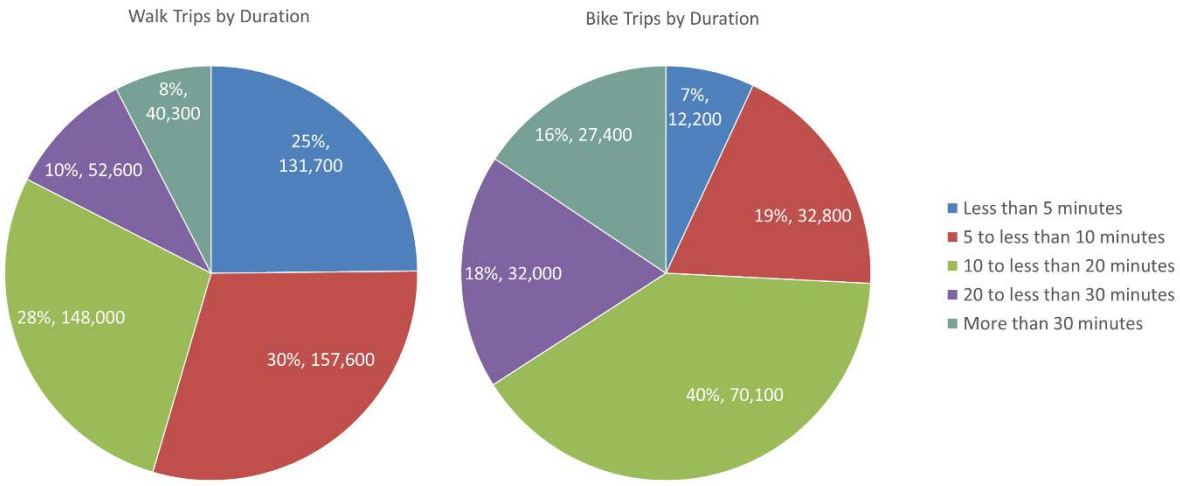


Figure 4-21 shows the journey distances of walk and bike trips. Based on the responses obtained from the trip diary component, almost half of all walk trips are less than 1 km long. This is fairly consistent with the findings reported for the duration of walk trips (*Figure 4-20*), where 55% of walk trips were less than 10 minutes, assuming an average walking speed of 5 km/hour.

According to *Figure 4-20*, more than 80% of bike trips were reported to be less than 30 minutes in duration, equating to roughly 10 km in distance assuming an average cycling speed of 20 km/hour. As indicated in *Figure 4-21*, this finding is in line with the trip distances of bike trips where approximately 90% of all bike trips are less than 10 km in distance.

Figure 4-21: Walk and Bike Trips by Distance

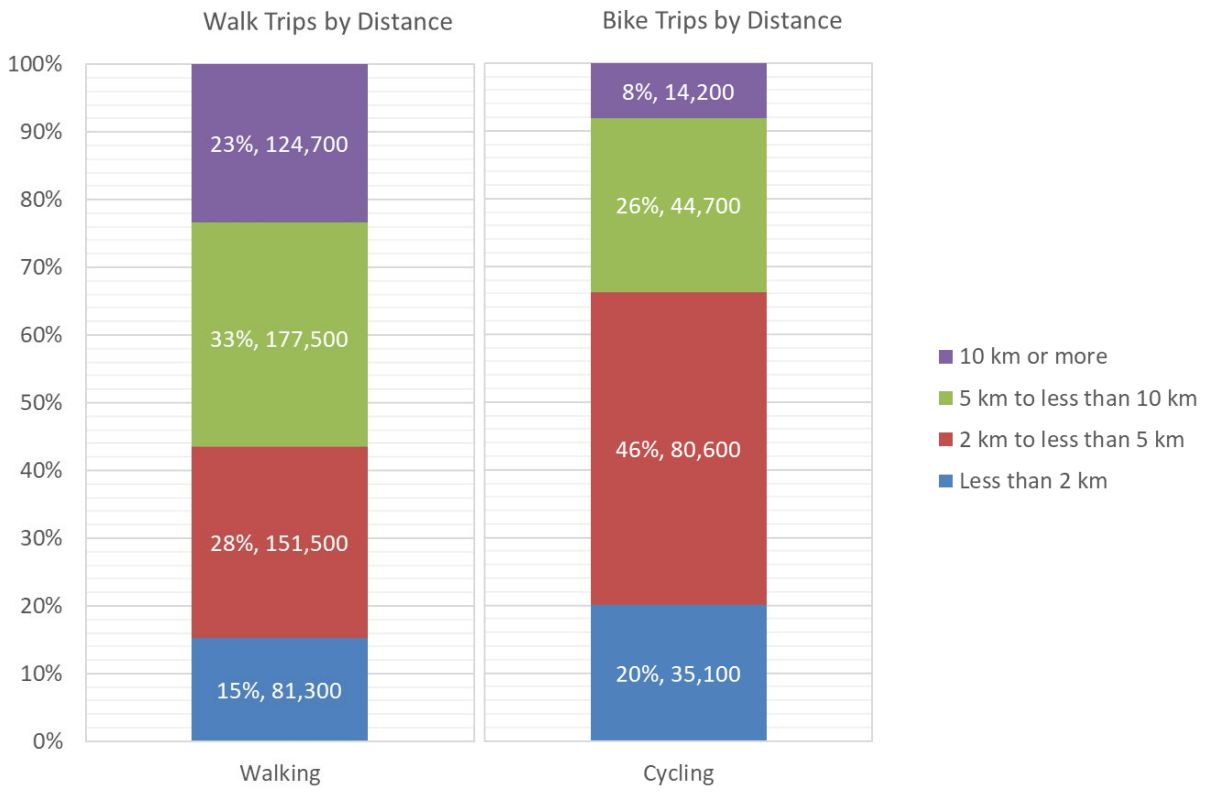
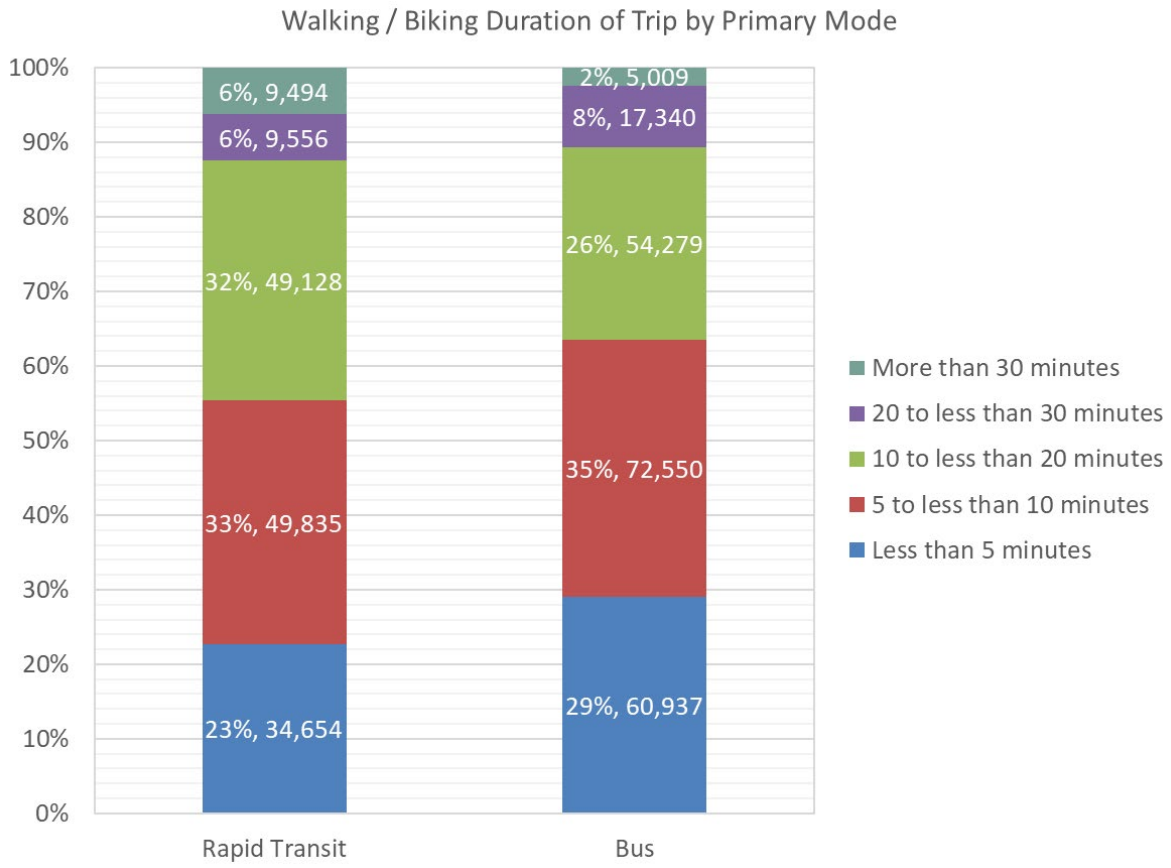


Figure 4-22 shows the duration of the walk or bike portion of trips with bus or rapid transit being the primary mode of travel. More than half of residents had a walk/bike component up to 10 minutes for rapid transit and bus trips. As illustrated in the graph, there is a greater proportion amongst rapid transit users who are willing to walk/bike for more than 30 minutes. This reinforces transit planning assumptions for bus stop and rapid transit station catchment areas with people willing to travel further to access rapid transit services.

Figure 4-22: Duration of Walk and Bike Trips by Primary Travel Mode



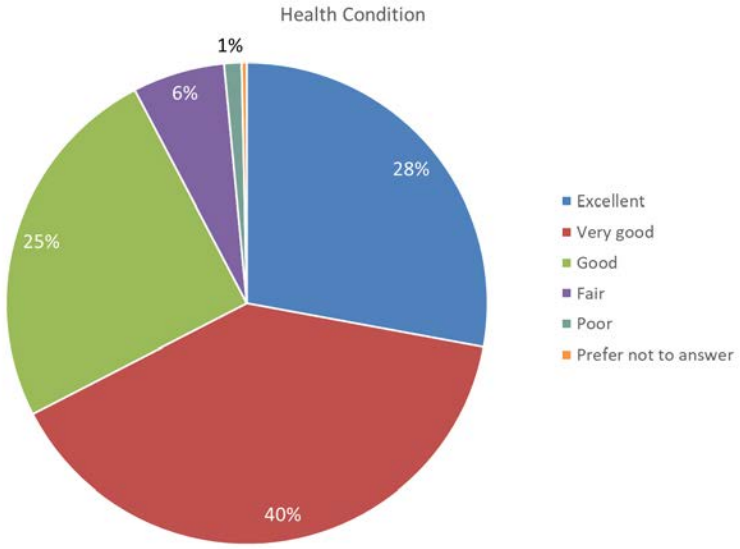
4.7. Health Status

The My Health My Community[7] Survey was conducted in 2013-2014 across the Lower Mainland to better understand community health as it related to transportation choices (i.e. commute to work / school). The survey is part of an emerging field of study exploring the ways in which transportation choices impact our lifestyle and health. Evidence from other jurisdictions shows that well-planned and accessible transportation systems can increase physical activity, improve air quality, and reduce vehicle-related injuries, leading to better physical and mental health.

In 2014, a question was introduced to the Panel Survey asking respondents to report on their perceived health. Self-reported overall health assessments are simple but well-established as having a strong correlation with overall mortality risk and they capture aspects of health that are difficult to capture, such as disease severity, social function, psychological reserves, etc. By incorporating a health-related question into the Vancouver Panel Survey, the City is able to track trends in health versus mode choice over time.

Figure 4-23 shows a summary of respondents' self-reported health status; about 68% of respondents indicated they were in very good or excellent health, similar to the 2017 and 2018 results. This generally agrees with the findings of the Canadian Community Health Survey (Fraser Health Authority + Vancouver Health Authority subsets)[8].

Figure 4-23: Self-Reported Health Status of Respondents



[7] My Health My Community is a non-profit partnership between Vancouver Coastal Health (VCH), Fraser Health (FH) and the eHealth Strategy Office (eHSO) at the University of British Columbia (UBC).
[8] Based on 2009-2013 data from the Canadian Community Health Survey which only includes excellent, very good, fair, and poor health categories.

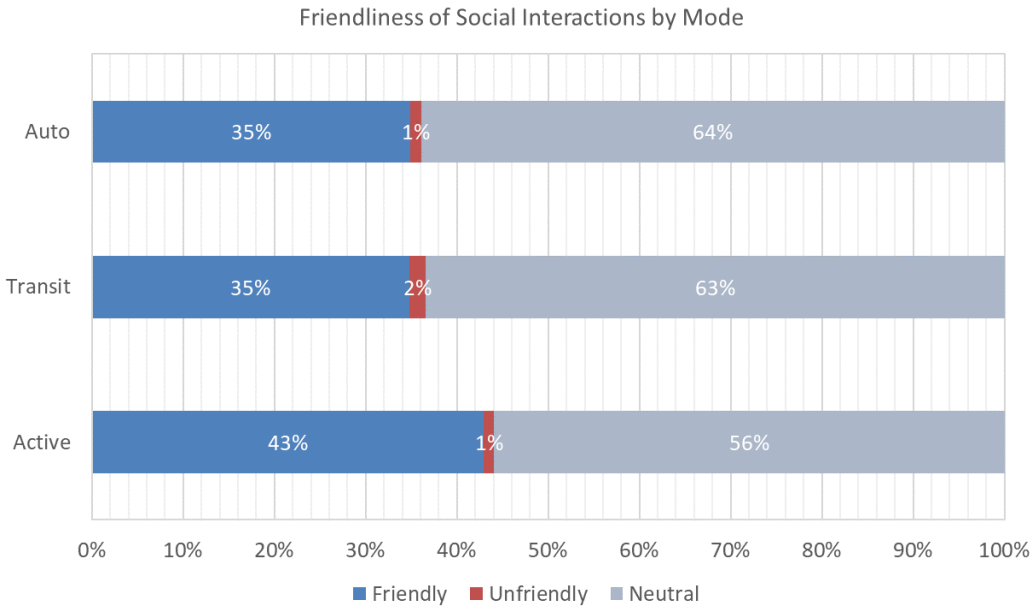
4.8. Trip Experience

As part of the evolution of the Vancouver Panel Survey, survey participants were asked about their trip experience and views on the infrastructure they passed during their commute to gain a better understanding of:

- Whether they engaged in friendly interactions on their commute;
- How residents feel about their personal safety and security;
- Was their trip hindered by any road closure or disruption to street infrastructure;
- Was their trip comfortable and enjoyable?

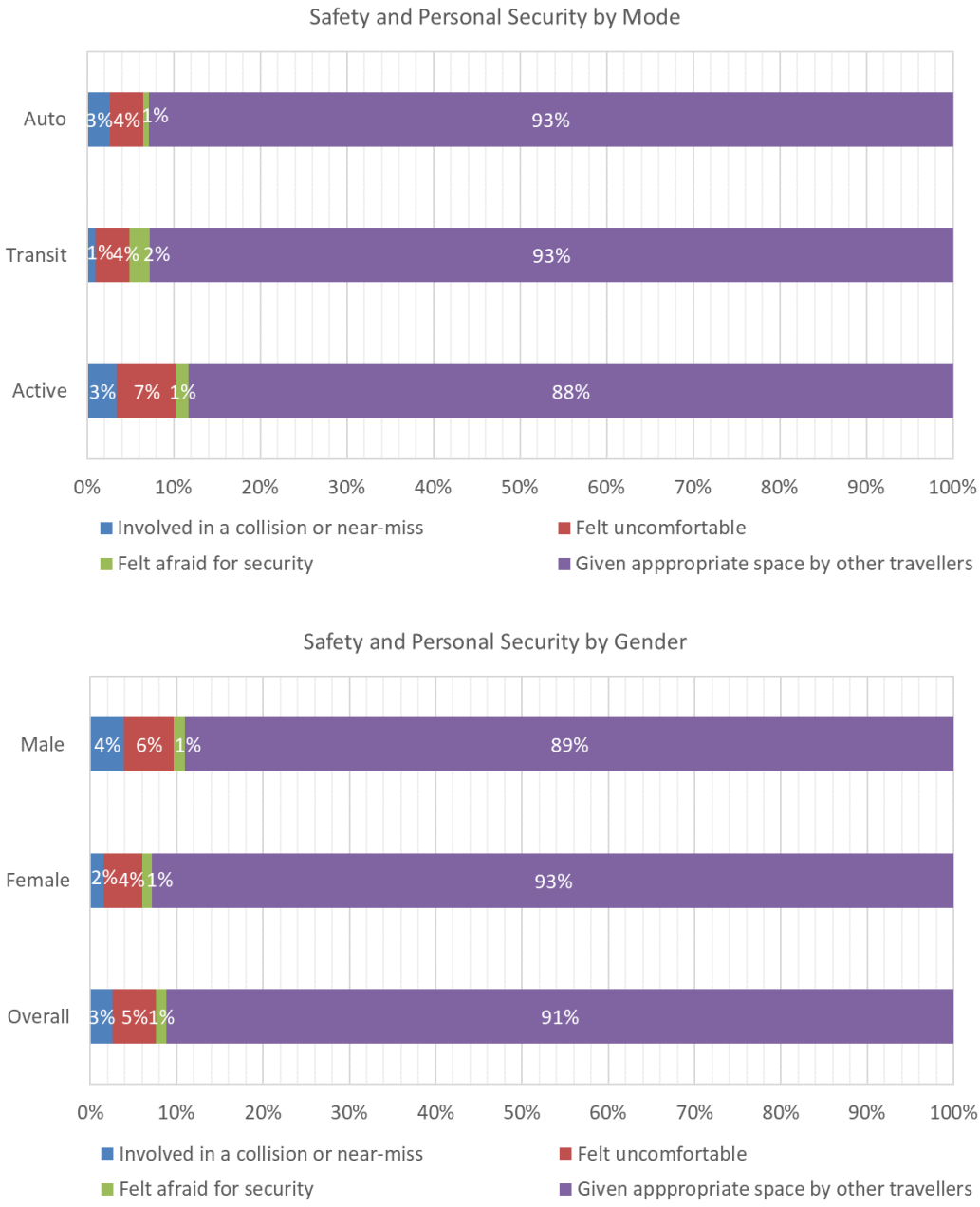
In 2014, the survey instrument was expanded to include a question regarding the nature of social interaction (outside of travel companions) during trip making. As shown below, *Figure 4-24* shows the degree of social interaction cross-referenced against travel modes. Not surprisingly, panel members travelling via active modes were more likely to engage in friendly interactions. Of the trips that were made by private vehicle and transit, 35% experienced a friendly encounter.

Figure 4-24: Nature of Social Interaction During Trip



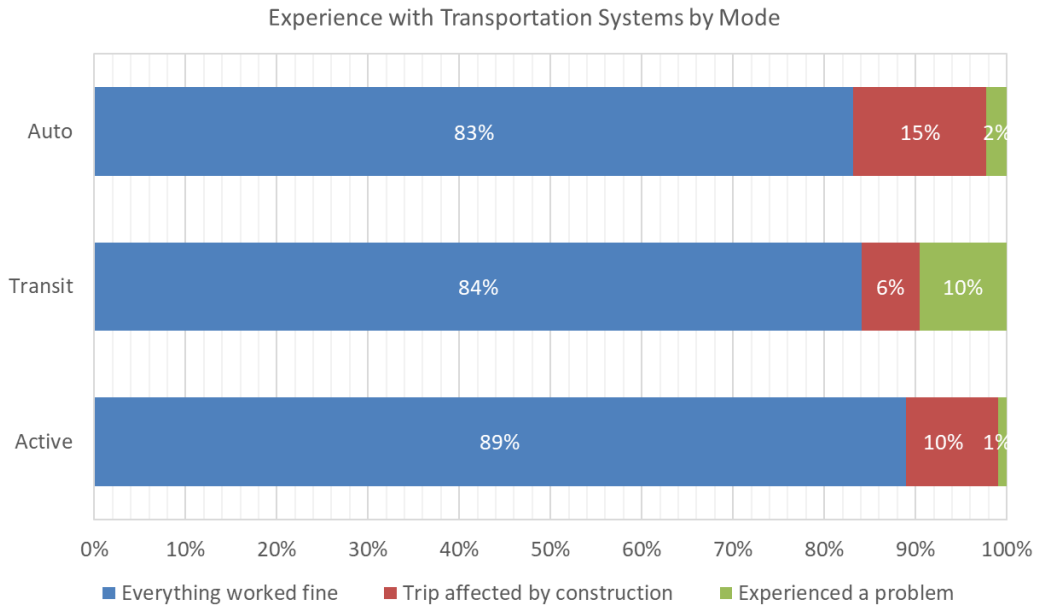
Regarding personal safety and security concerns, 88% of trip responses for active modes and 93% of responses for auto and transit modes indicated that the resident was given appropriate space when sharing the road with other road users. Of those that travelled by either walking or cycling, 7% of trip responses using these modes indicated that the panel member felt uncomfortable during their trip, as shown in *Figure 4-25*. Further, findings from the survey show that there were a greater proportion of men who were either involved in a collision or near-miss and felt uncomfortable during their trip when compared to their counterpart.

Figure 4-25: Safety and Personal Security Concerns



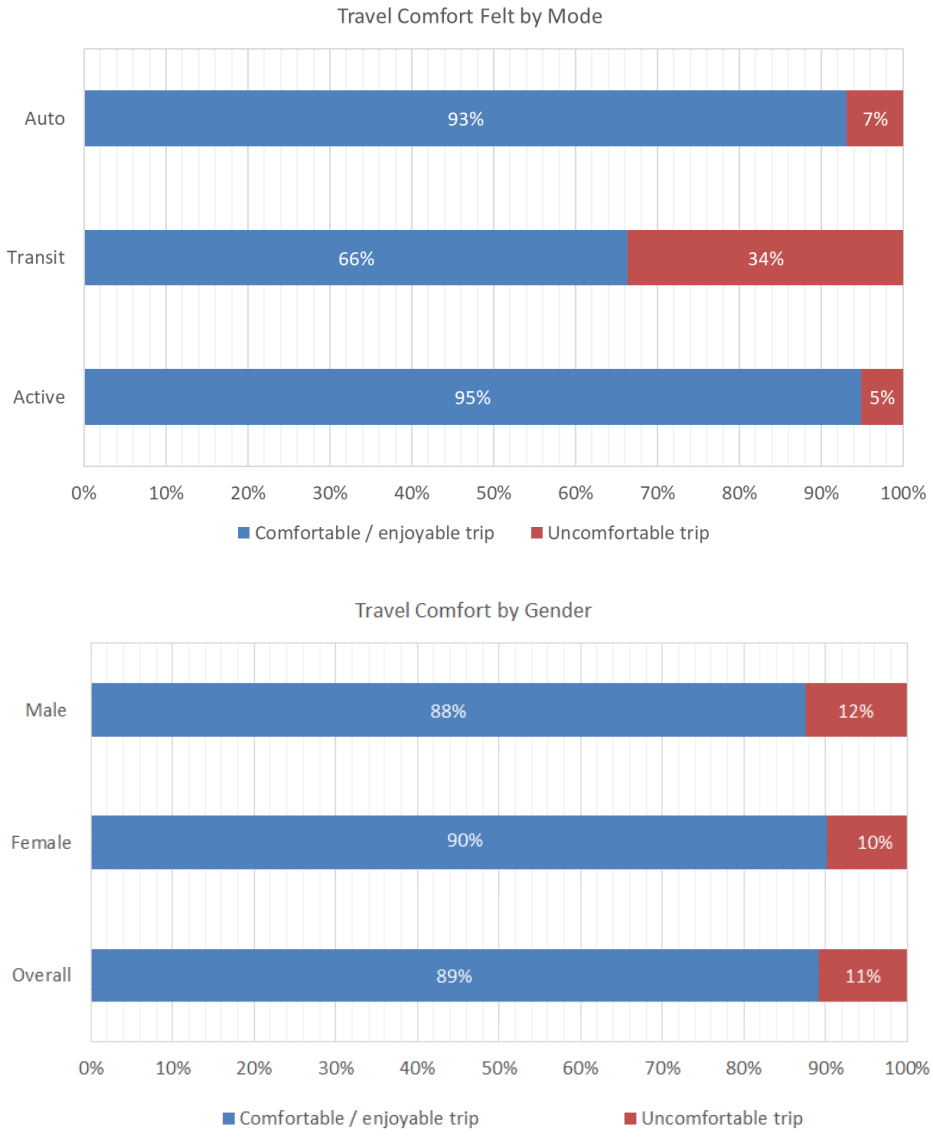
As suggested in *Figure 4-26*, more than 80% of responses for all modes indicated that they did not witness any disruption to traffic signals or any other types of street infrastructure during their travel. Of the trips made by public transit, 10% experienced a problem.

Figure 4-26: Interference from Surrounding Infrastructure



When respondents were asked whether they felt comfortable during their trip, most cited that their trip was particularly comfortable and enjoyable. As shown in *Figure 4-27*, 34% of the trips made by public transit were reported to be an uncomfortable experience. When comparing the responses received between male and female participants, both men and women felt similar degrees of comfort during their trip.

Figure 4-27: Travel Comfort Experienced



4.9. Origins and Destinations

Table 4-2 captures the daily origin and destination (O-D) patterns for Vancouver residents based on geocoded trip-end coordinates. It shows the breakdown of trips within the nine transportation zones, to other zones within the City, and outside of the City. These are also illustrated graphically in *Figure 4-28* to *Figure 4-36* by each transportation zone. O-D patterns by mode are attached in *Appendix A*.

The Panel Survey surveyed Vancouver residents only, so it does not include trips by people who work in Vancouver but live in other areas of the Lower Mainland. While the results may not be statistically representative, patterns do emerge:

- The O-Ds are fairly balanced, as evidenced by the symmetry on either side of the diagonal (cells highlighted in pink).
- Travel is predominantly within Vancouver: approximately 75% of trips originate and ends within the city.

Table 4-2: Origins and Destinations within Transportation Zones and Outside Vancouver

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	74,400	41,400		11,800	6,000	2,600	6,300	3,100	5,400	3,600	14,300
False Creek	37,800	126,300		26,900	13,500	6,600	17,400	5,900	12,100	16,800	22,900
Downtown			279,900	38,700	19,500	9,200	23,700	9,000	17,500	20,400	37,200
Vancouver Broadway	12,800	28,000	40,800	101,600	26,400	8,100	19,100	4,100	18,900	15,300	19,100
Vancouver South	4,900	12,600	17,500	26,500	86,000	17,300	7,000	19,600	13,100	4,800	25,700
Vancouver Kerrisdale	3,000	6,800	9,800	9,800	17,200	64,200	17,100	3,400	2,300	2,100	18,700
Vancouver Kitsilano	8,100	15,100	23,200	19,400	8,100	15,700	83,700	1,700	3,800	4,200	22,800
Vancouver Southeast	2,900	6,000	8,900	6,000	18,100	2,900	1,500	41,800	14,200	4,200	30,100
Vancouver East	6,400	14,700	21,100	20,700	12,100	2,600	4,000	14,600	69,400	19,800	33,100
Vancouver Port	3,300	17,800	21,100	13,700	3,600	2,700	3,500	3,300	20,800	50,700	16,200
Outside Vancouver	14,800	21,000	35,800	17,800	25,300	21,300	21,300	27,000	34,800	14,000	97,400

Figure 4-28: Trip Distribution to/from West End

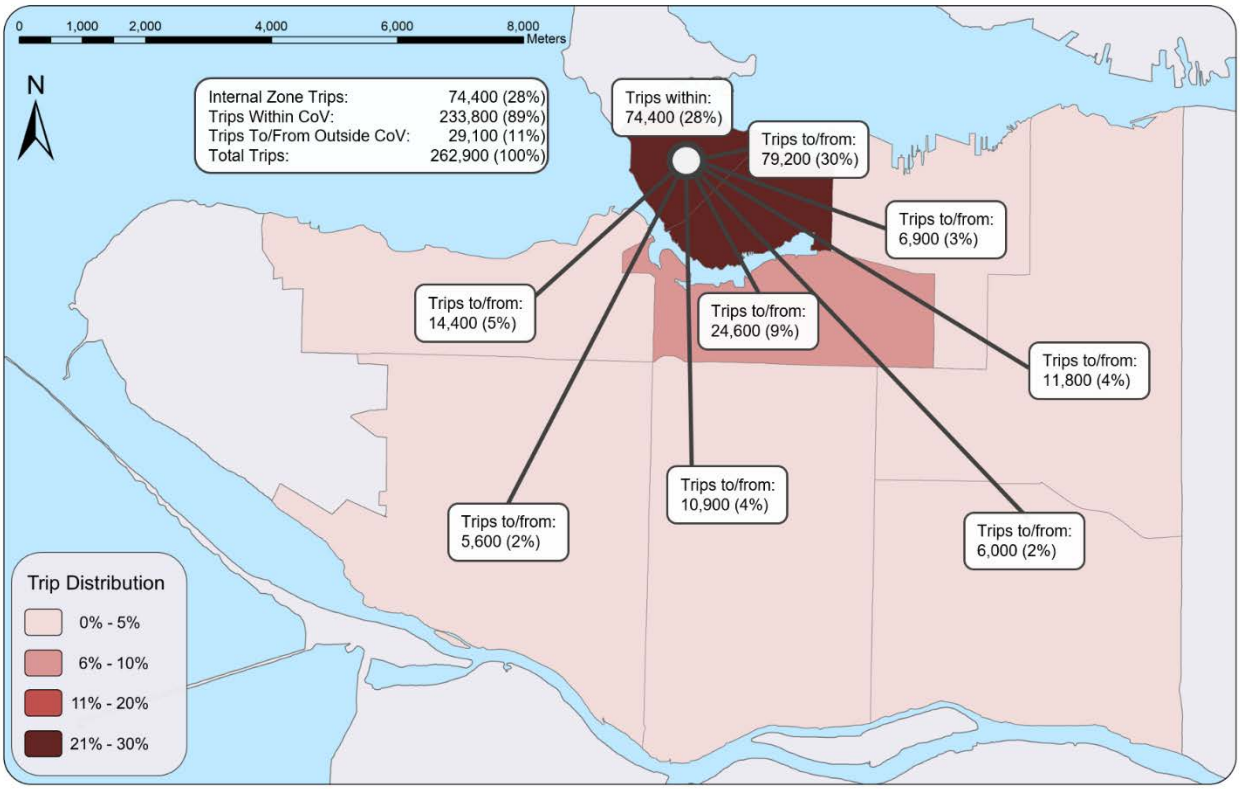


Figure 4-29: Trip Distribution to/from False Creek

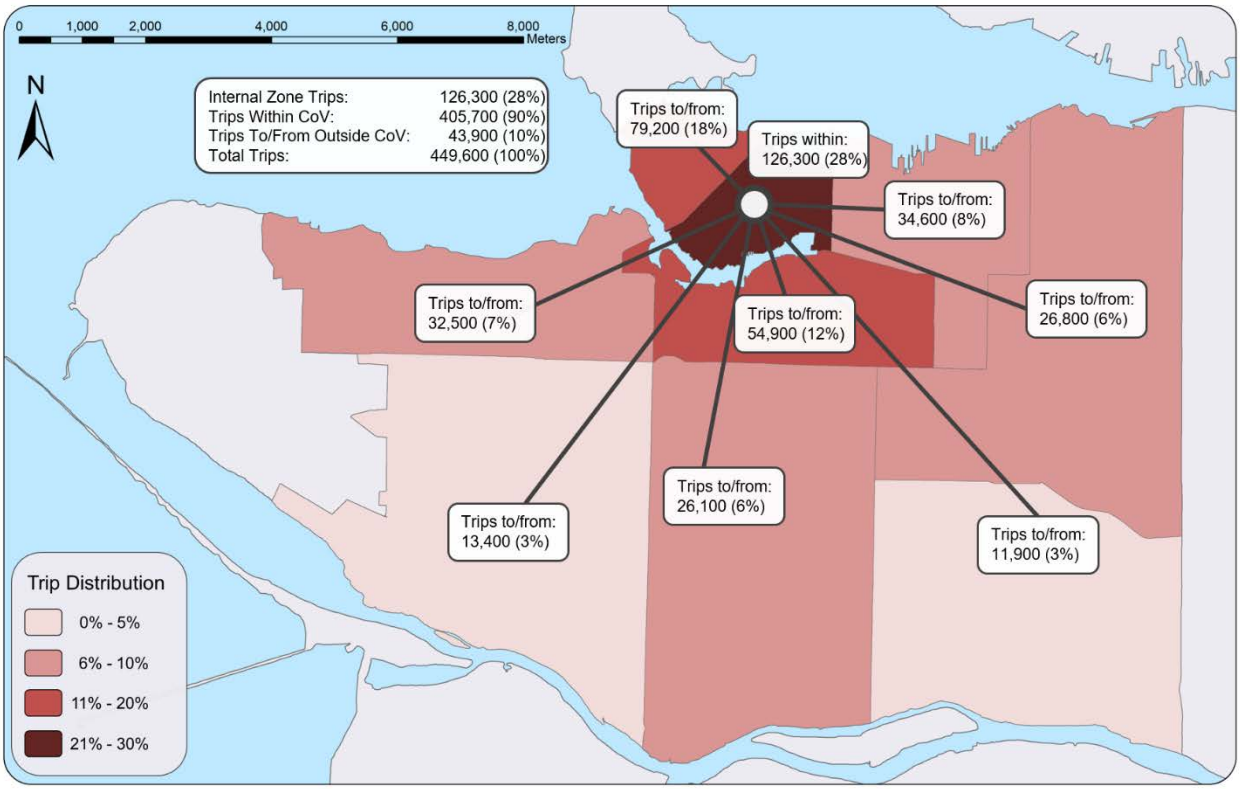


Figure 4-30: Trip Distribution to/from Vancouver Broadway

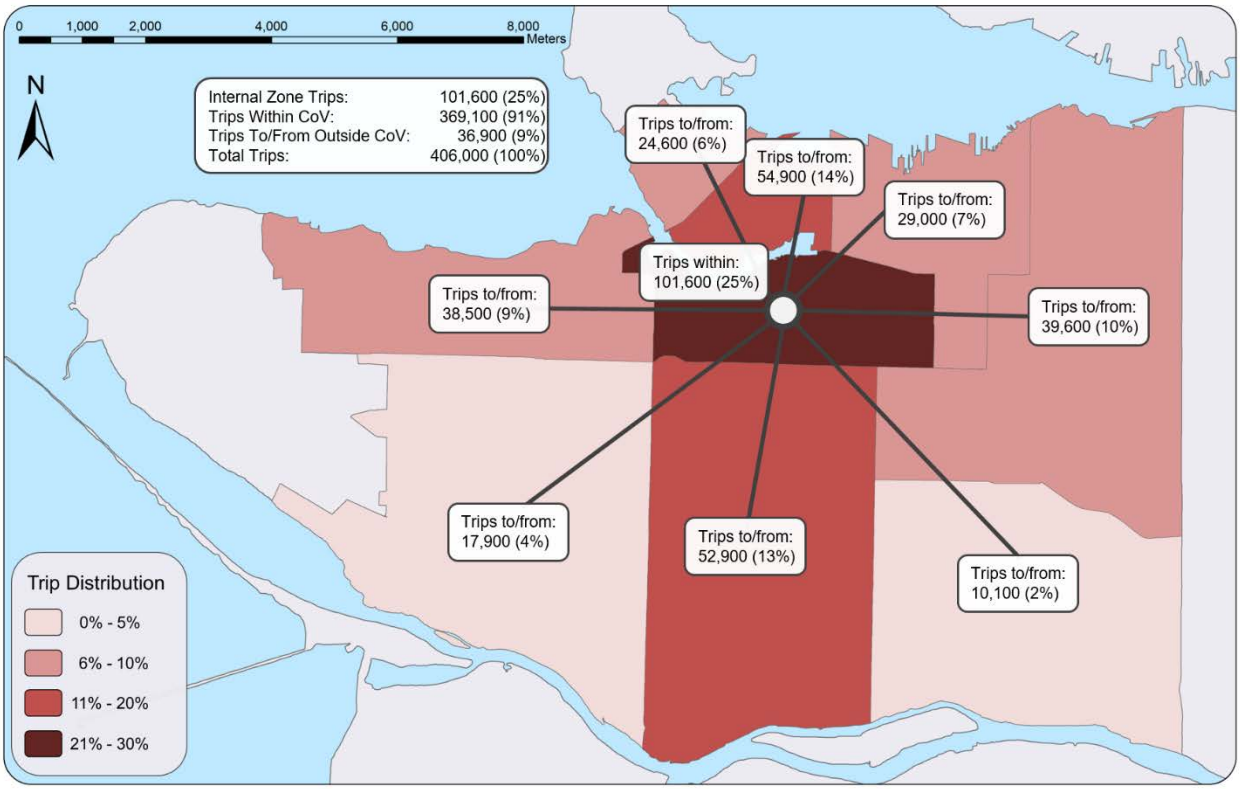


Figure 4-31: Trip Distribution to/from Vancouver South

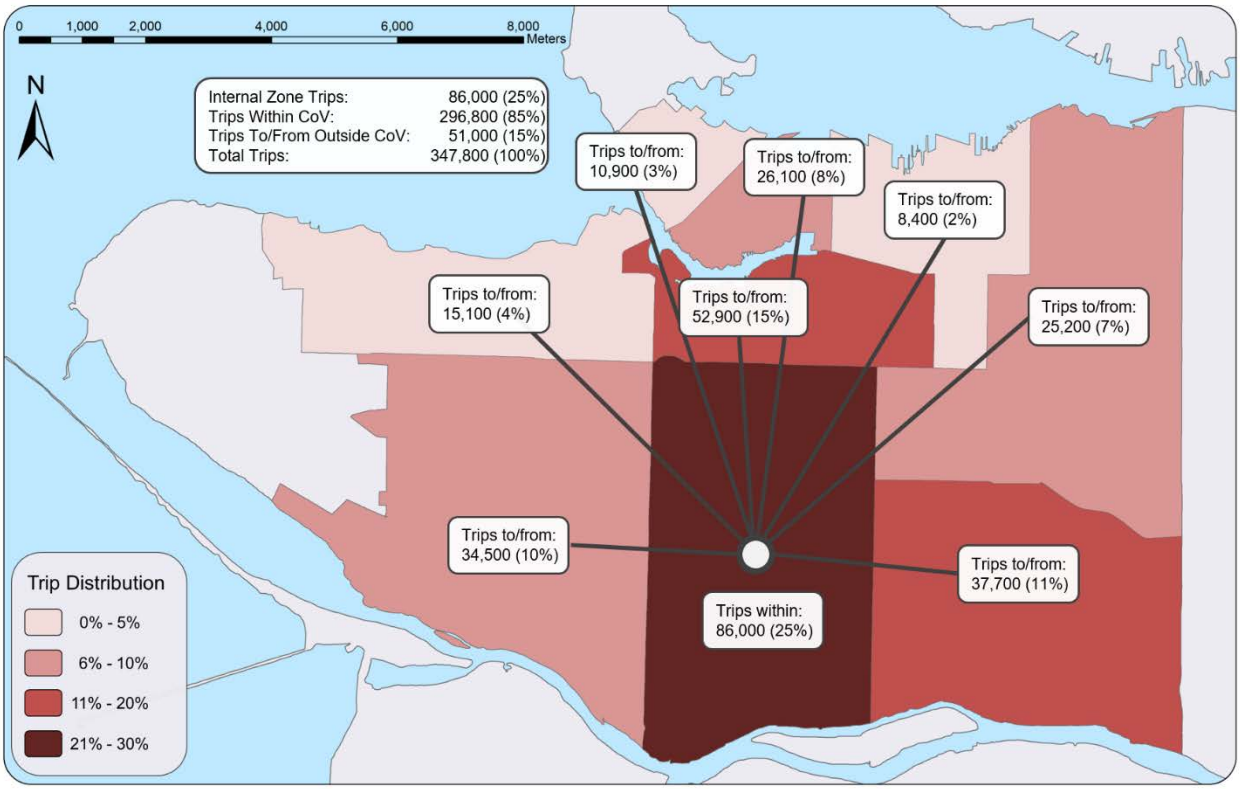


Figure 4-32: Trip Distribution to/from Vancouver Kerrisdale

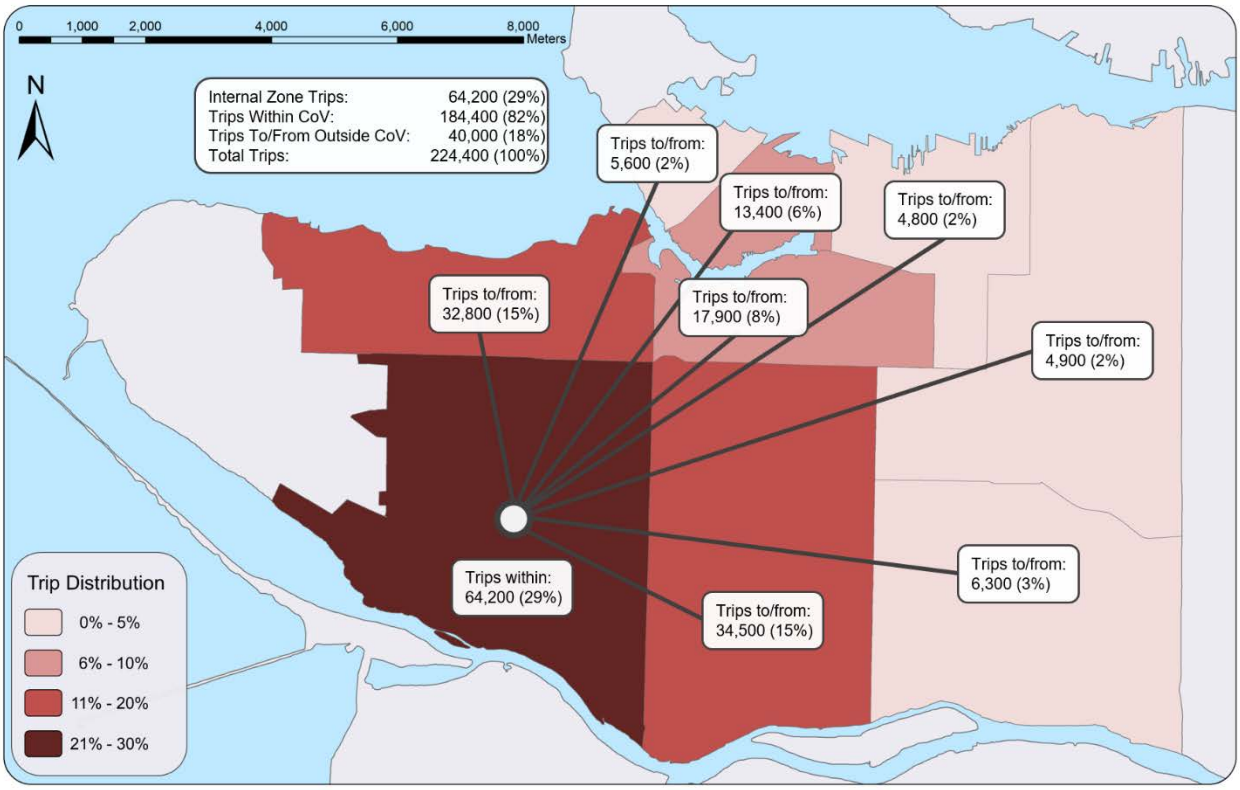


Figure 4-33: Trip Distribution to/from Vancouver Kitsilano

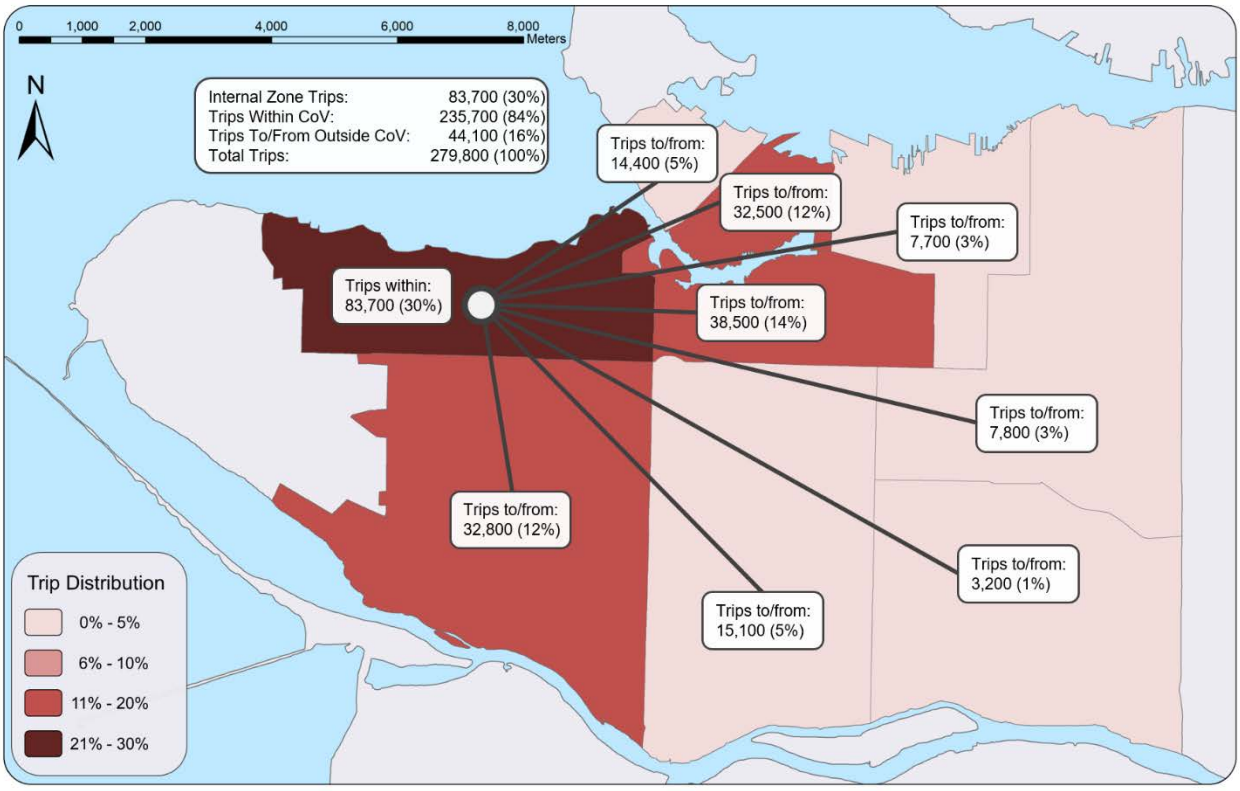


Figure 4-34: Trip Distribution to/from Vancouver Southeast

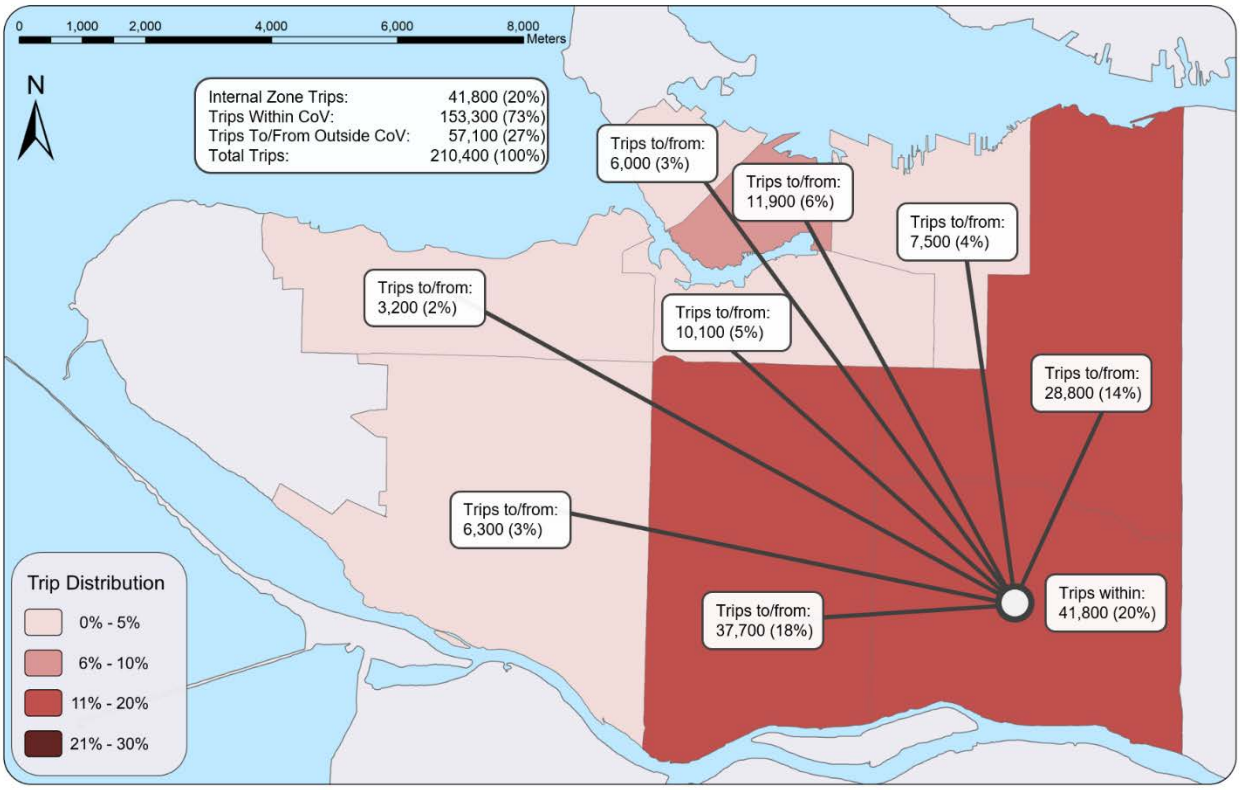


Figure 4-35: Trip Distribution to/from Vancouver East

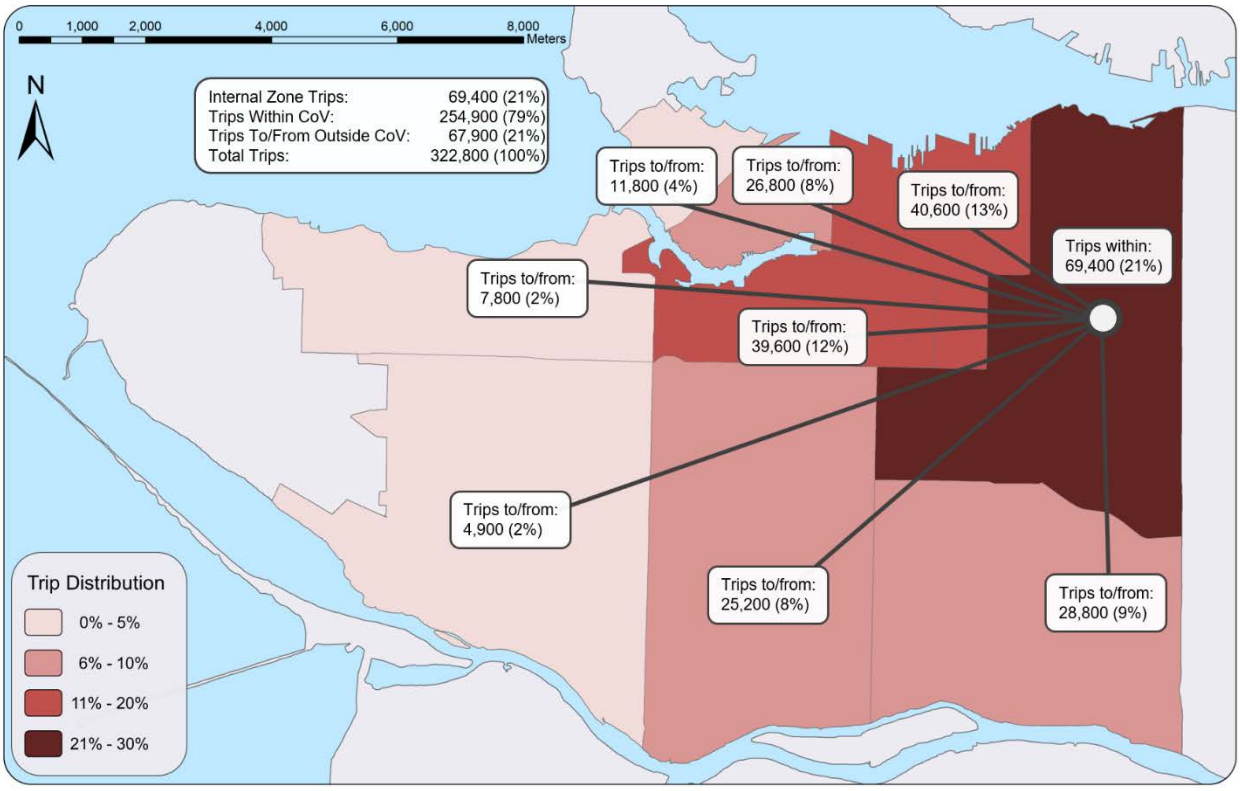
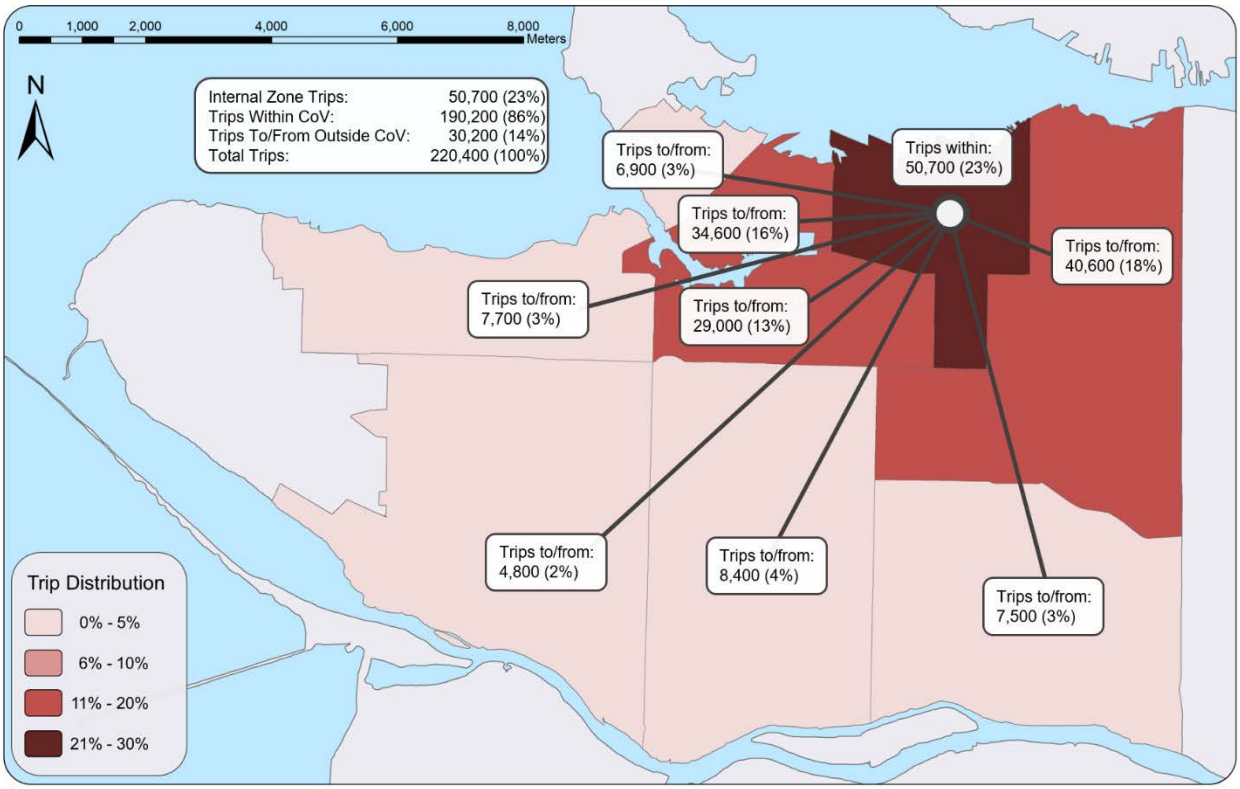


Figure 4-36: Trip Distribution to/from Vancouver Port



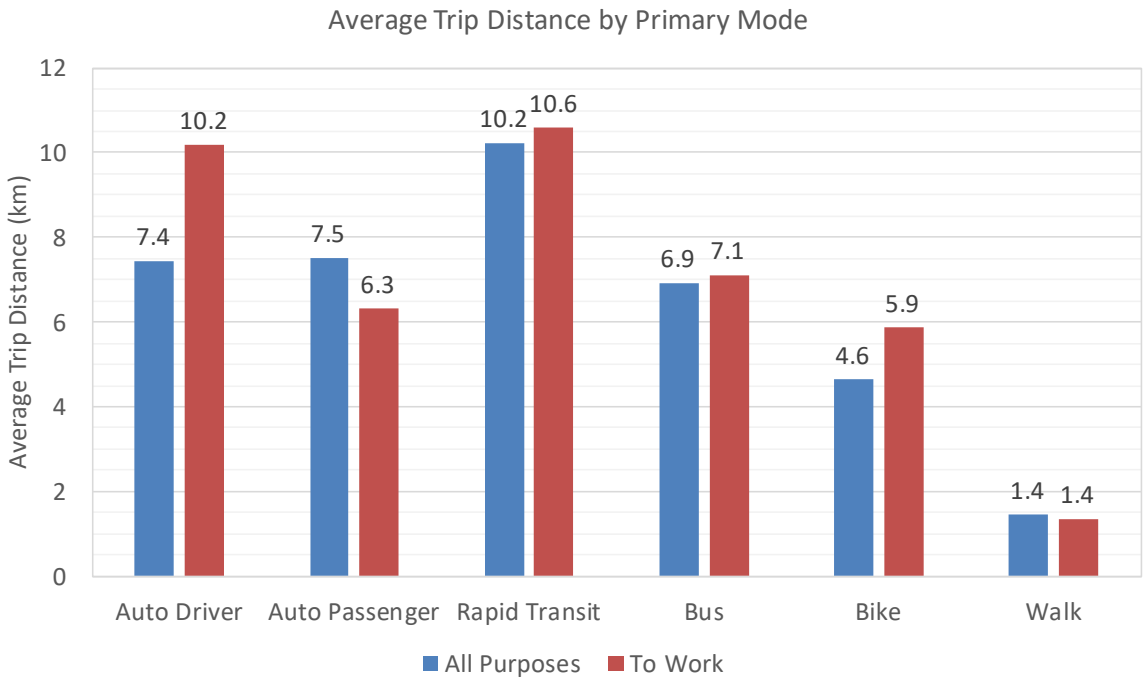
4.10. Average Trip Distance

Trip lengths have been estimated using the distance matrix from the Regional Transportation Model's shortest distance assignment. The origin and destination location for each reported trip was matched with the model's transportation zones using the corresponding latitude and longitude coordinates. Average trip distances by primary mode are presented in *Figure 4-37*.

For trips made by automobile as a driver, the average trip length to travel to work was found to be 10.2 km, while the average trip length for rapid transit trips was reported to be 10.6 km. As illustrated in the figure, residents are willing to travel further as an auto driver for travel to work while those commuting as an auto passenger are more willing to make longer distance trips for all purposes. When comparing the average trip lengths of the sustainable modes, survey responses indicate that rapid transit users have generally longer commutes with an average trip length of 10.2 km and 10.6 km for work commute trips. Furthermore, the chart shows that cyclists are willing to bike a longer distance for work as shown by the average trip length of 5.9 km.

Walking trips have the lowest average distance of 1.4 kilometers, which is about 17 minutes at an average 5 km/hour walking speed. This is fairly consistent with the trip duration data reported in *Section 4.6*, where 83% of walk trips are less than 20 minutes.

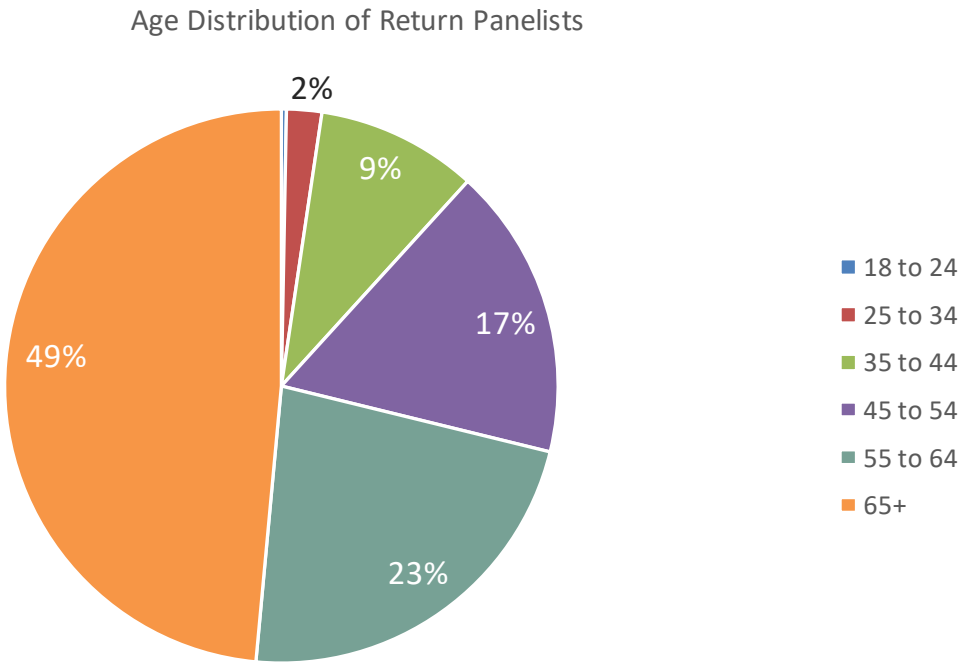
Figure 4-37: Average Trip Distance by Primary Mode



5. Comparison of Returning Panel Members

This section provides a high-level trend analysis of the mode shares of the 340 residents who have participated consistently each year in the transportation survey since 2013. Due to the limited sampling of the younger age population as roughly 72 percent of returning panel members are over 55 years old (shown in *Figure 5-1*), the analysis in this section will be based on individual responses instead of expanded trips weighted by population as calculated in previous sections.

Figure 5-1: Age Distribution of Return Panel Members



5.1. Access to a Vehicle

Table 5-1 shows growth in vehicular access, both in terms of private vehicles and car share programs, over the last seven years. Reasons for the change include wider spread adoption of car sharing as a primary and supplementary form of transportation. While the number of returning panelists with access to a private vehicle and a valid driver license have not changed, the number of returning panelists with a car share membership continues to increase gradually each year. Whether more people would give up car ownership as a result of the car-share economy should be closely monitored in future surveys with the potential proliferation of ride hailing services including Uber and Lyft.

Table 5-1: Access to Motor Vehicles (2013-2019)

	2013	2014	2015	2016	2017	2018	2019
Valid Driver License	96%	96%	95%	95%	95%	95%	95%
Private Vehicle Access	79%	83%	84%	84%	84%	84%	83%
Car Share Program	16%	21%	23%	26%	28%	32%	33%
No Car Access	15%	9%	10%	10%	10%	9%	9%

5.2. Mode Share Patterns

A comparison of mode splits amongst returning panelists (residents who first joined the panel in 2013 and continued to participate in every survey) and 2019 new recruits shows that the share of transit trips is 7% higher amongst the new recruits, as illustrated in *Figure 5-2*. According to this year's survey results, of the trips taken by returning panelists, 45% were made by automobile as an auto driver, while 38% were made by active modes. As suggested in the chart, trips made by the new recruits were more transit-oriented, while returning panelists tended to travel more by walking, cycling, and driving, similar to the findings from the 2018 survey.

Figure 5-2: Comparison of Mode Share Amongst New Recruits and Returning Panelists

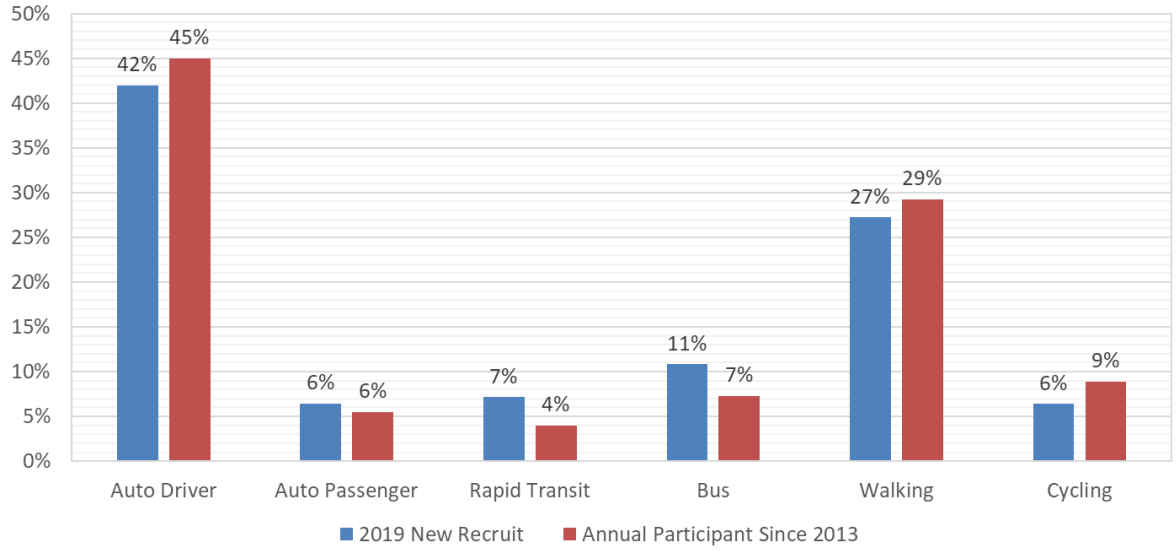


Figure 5-3 summarizes the change in mode share for all modes amongst returning panelists from 2013 to 2019 for all trip purposes. While the shares of the active modes (walk and bike) have declined in the last year, the overall walk and bike mode shares have increased steadily since the inception of the Transportation Panel Survey by about 2% and 1.5%. The bus mode share has remained relatively consistent over the years while the share of rapid transit trips has gradually decreased by 1.4%, from 5.4% in 2013 to 4.0% in 2019.

Figure 5-3: Change in Mode Share (2013-2019)

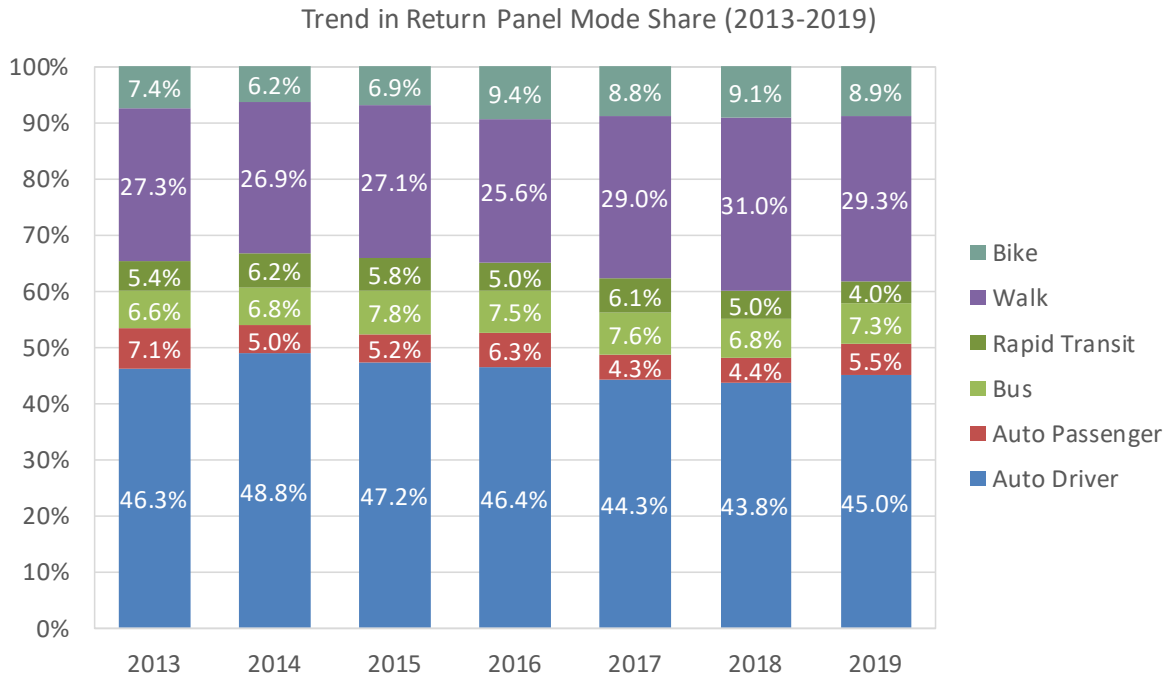


Figure 5-4 and *Figure 5-5* compare 2013-2019 mode shares for commuting (to work/school) and non-commuting trips, respectively. During this seven-year period, the overall auto driver mode share for work/school commute has dropped by approximately 5.5%. Although the share of walk trips has declined from a high of 21.6% in 2017, the mode share has remained at 17.4% for the last two years. As illustrated in the graph, the shares of bus and rapid transit trips to and from work/school have fluctuated over the years, however, the mode shares of both transit modes have grown by roughly 2% from 2013 levels. The largest growth is seen in the bike mode share which has increased from 14.4% in 2013 to a high of 20.8% in 2019 for commute trips.

As for the non-commute trips, the share in auto passenger trips has rebounded back to slightly below 2016 levels to a 6.1% share, as illustrated in *Figure 5-5*. The trip responses obtained from the returning panelists indicate that the bus mode share has remained steady over the years as the share of bus trips (6.5%) is consistent with the average bus mode share collected from 2013 to 2018. While the chart shows minor fluctuations for the active modes over the past seven years, the share of travel by cycling and walking has increased from 2013 levels by about 1% for the bike mode share and 2.5% for the walk mode share.

Figure 5-4: Mode Share for Commuting Trips (2013-2019)

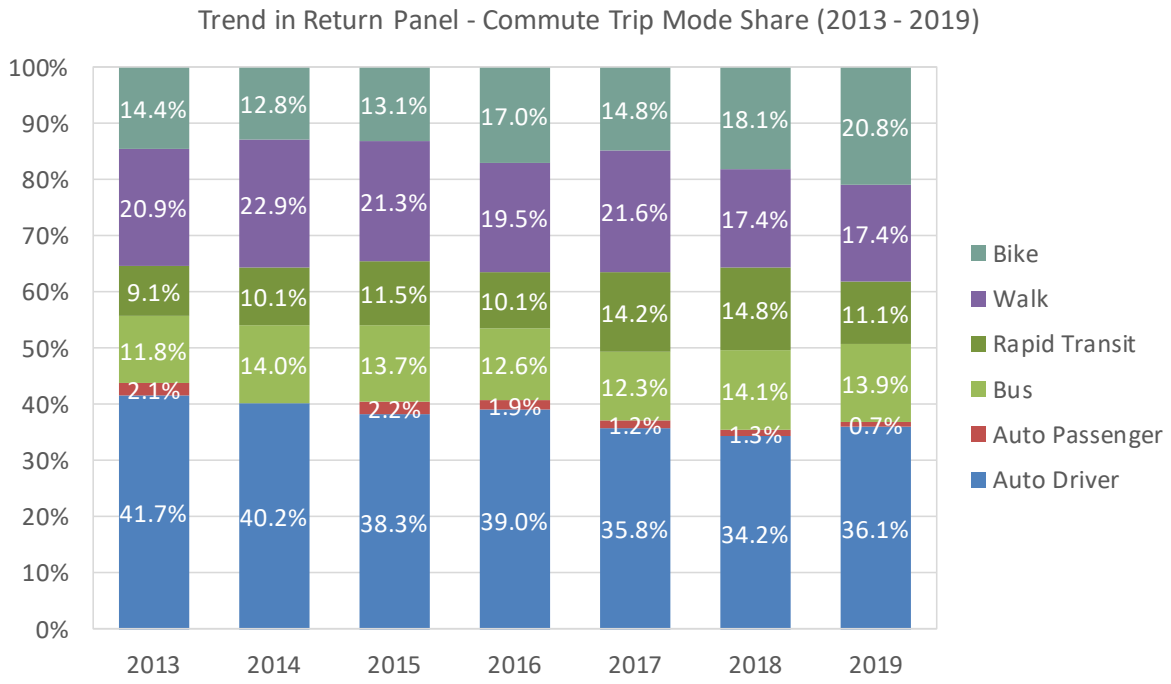
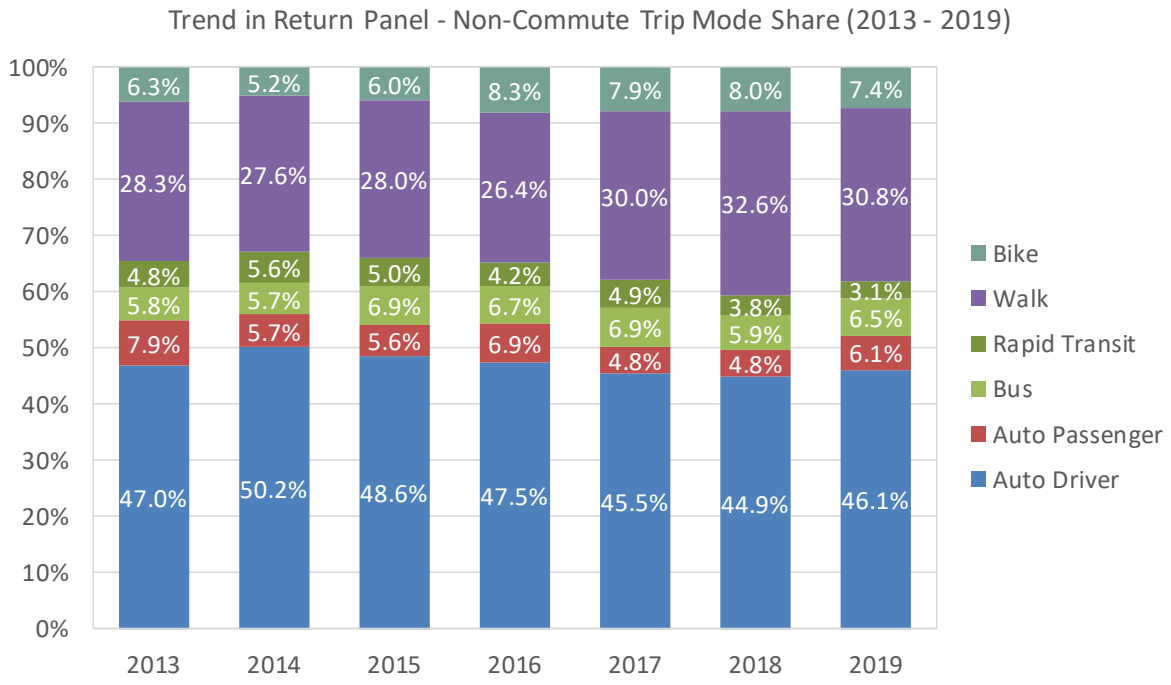


Figure 5-5: Mode Share for Non-Commuting Trips (2013-2019)



6. 2017 TransLink Trip Diary Comparative Analysis

In Fall 2017, TransLink conducted their latest regional household travel survey. The TransLink Trip Diary is administered approximately every five years with the goal of understanding travel behaviour and patterns across the Lower Mainland. The survey overlapped with the 2017 Vancouver Panel Survey and this presented an opportunity to conduct a comparative analysis.

Although both surveys are travel surveys, there are several key differences between them, which are highlighted below:

Survey Purpose: The Vancouver Panel Survey is a longitudinal survey with the purpose of tracking changes in residents' travel behaviour and patterns annually, and their responsiveness to the City's emerging priorities and policies. The TransLink Trip Diary is a cross-sectional survey to understand regional travel behaviour and patterns, and to support the regional model validation and calibration efforts.

Survey Participants: The Vancouver Panel Survey is a survey of individual Vancouver residents aged 18 and older. The TransLink Trip Diary is a household survey in the Lower Mainland including all those aged 5 and older.

Recruitment Process: The TransLink Trip Diary is conducted by mail order with follow-up via phone calls, while the Vancouver Panel Survey is conducted via phone only.

For the purpose of this comparison, certain changes were required to both surveys to ensure consistency between the two surveys. This analysis includes only Vancouver residents filtered from the Trip Diary. The TransLink Trip Diary was also filtered to include only individuals aged 19 and older. Due to the age groups in the Trip Diary, it was not possible to include 18-year old's as well. Additionally, trips with the same origin and destination were excluded from the Vancouver Panel Survey due to the difference in recreational trip definition and reporting in the two surveys. Therefore, the results presented in the comparative analysis may vary from the official Vancouver Panel Survey and TransLink Trip Diary results. Please note that this analysis was conducted by McElhanney for the City of Vancouver, independent of TransLink.

6.1. Data Sampling

The Vancouver Panel Survey samples approximately 0.5% of residents living in Vancouver. By comparison, the TransLink Regional Trip Diary surveys approximately 2.5% of households in the Lower Mainland.

Figure 6-1 and *Figure 6-2* illustrate the survey sample size targets established for the Vancouver Panel Survey and the TransLink Regional Trip Diary, along with the geographic sample obtained for each of the nine Vancouver zones. As indicated in the figure, the 2017 Panel Survey succeeded at reaching or exceeding the sample target for most zones. Zones which fell short of its target were CBD – False Creek, Vancouver Southeast, and Vancouver East.

The 2017 TransLink Trip Diary had a similar sampling profile compared to the 2017 Vancouver Panel Survey. The Trip Diary succeeded at reaching or exceeding the sample target for most of the Vancouver

zones. Similar to the 2017 Vancouver Panel Survey, the CBD – False Creek and Vancouver Southeast fell short of the sample target.

Figure 6-1: 2017 Vancouver Panel Survey Sample Size by Zone

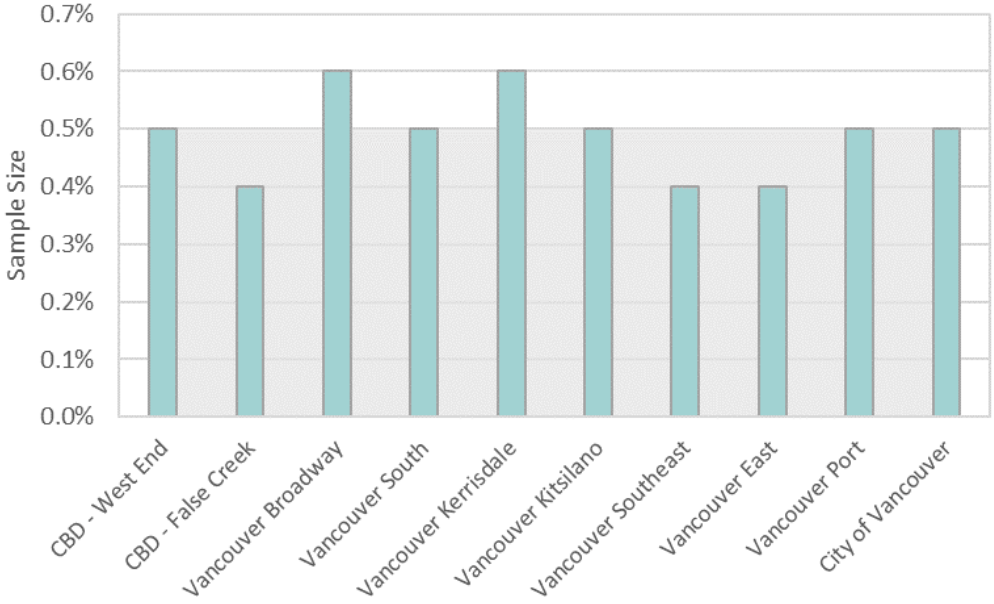
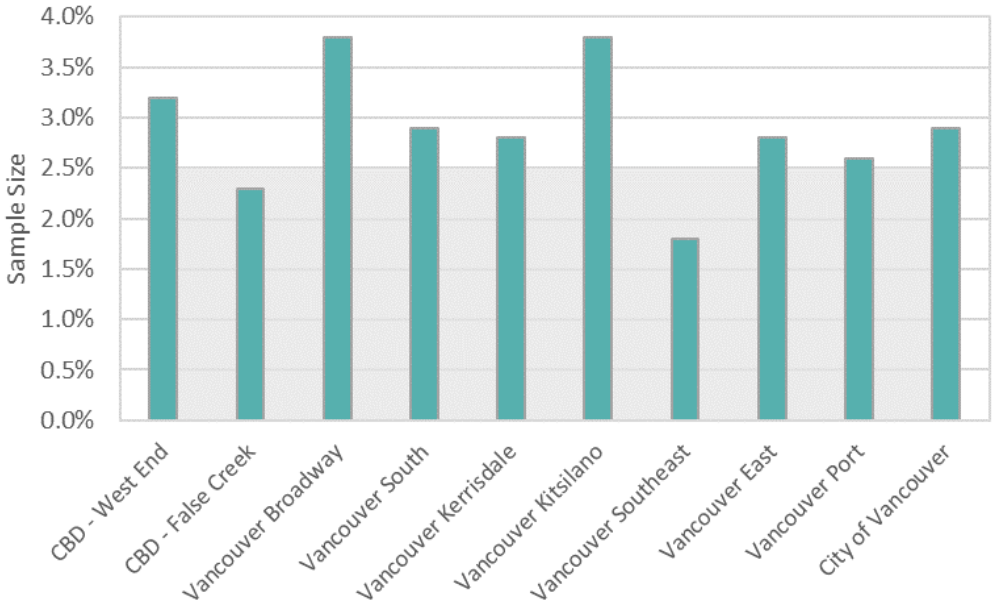


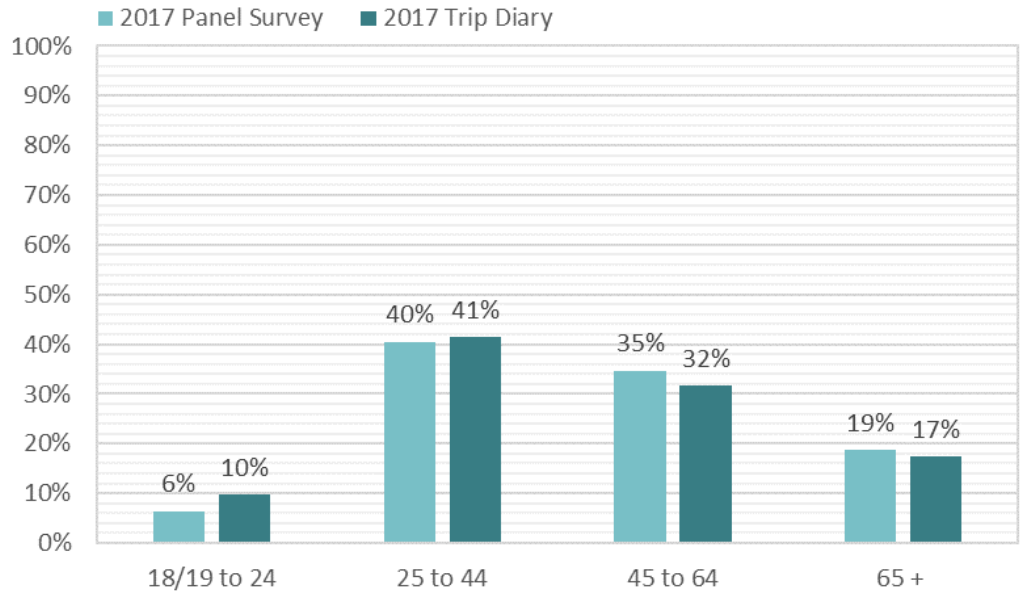
Figure 6-2: 2017 TransLink Trip Diary Survey Sample Size by Zone



6.2. Age Distribution

Figure 6-3 compares the age distribution of the survey sample between the 2017 Vancouver Panel Survey and the 2017 TransLink Trip Diary. As illustrated, the two surveys have similar sampling for all age groups. While under-sampling of the younger age cohort (18/19 to 24 years old) occurs in both surveys, the TransLink Trip Diary was able to capture a higher proportion of young adults belonging to this age group due to its nature of being a household travel survey where parents could fill out the survey on behalf of their children or dependents.

Figure 6-3: Age Distribution Comparison



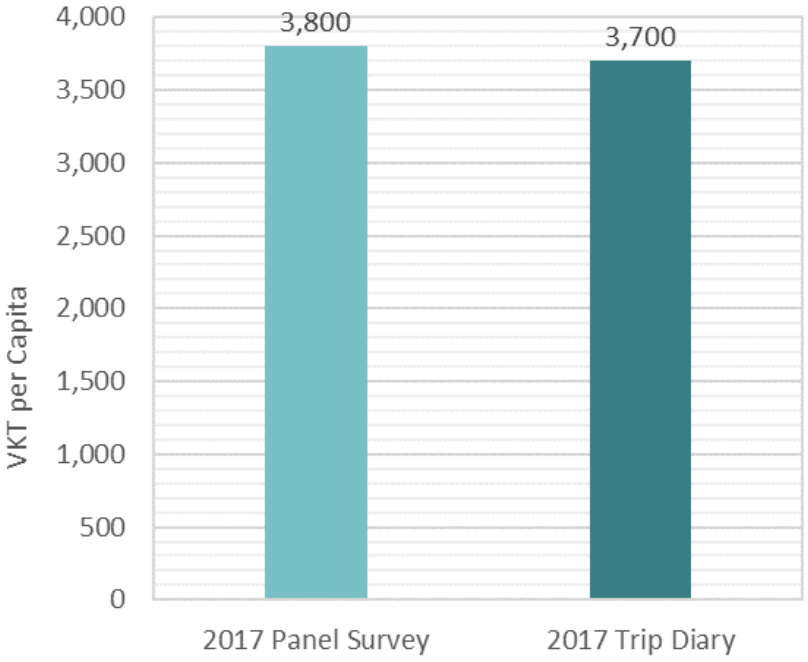
6.3. Vehicle Kilometres Travelled

Vehicle kilometres travelled (VKT) is calculated differently in the two surveys. The 2017 Trip Diary includes the lengths for each trip, which was expanded for all auto driver trips to calculate the average daily VKT. This value was then converted to an annual VKT per capita result.

The Vancouver Panel Survey collects vehicle odometer readings each year. This allows the calculation of VKT for all returning panelists. This value is then expanded to the full survey population and then converted to an annual VKT per capita result.

Figure 6-4 presents the average annual VKT per capita for Vancouver residents as calculated from the 2017 Vancouver Panel Survey and the 2017 TransLink Trip Diary. The two estimates are very similar; 3,800 VKT per capita from the Panel Survey versus 3,700 VKT per capita from the TransLink Trip Diary. The Panel Survey may report a higher value because of the vehicle odometer reading including longer trips outside the region that might not be captured in the daily travel survey component.

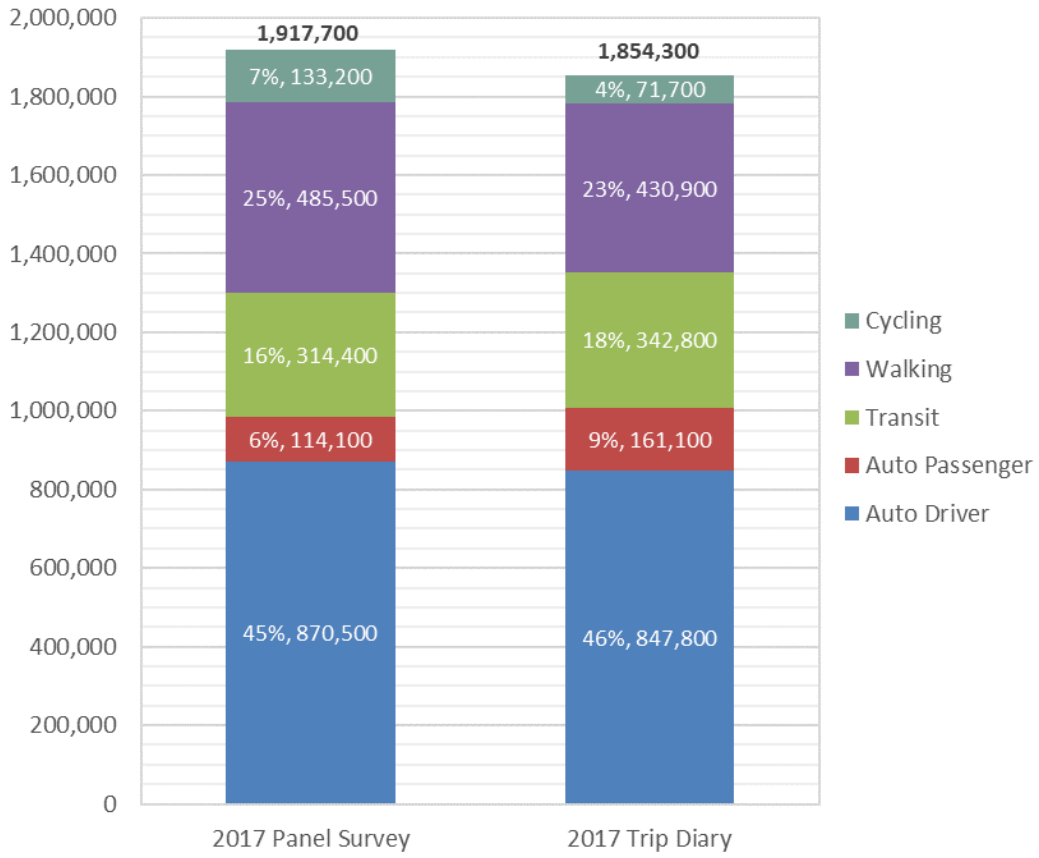
Figure 6-4: Annual VKT per Capita Comparison



6.4. Mode Share

Figure 6-5 provides a comparison of the mode shares between the two travel surveys for all trips reported in 2017. As indicated in the figure, both surveys report approximately 1.9 million trips daily by Vancouver residents. The share of auto driver trips is similar in both surveys. However, the 2017 Vancouver Panel Survey reported a lower share in auto passenger and transit trips, but a higher share of active mode trips. This could be a result of potential survey bias in that the Panel Survey may be perceived as an active modes survey for the City while the Trip Diary may be perceived as a transit survey for TransLink.

Figure 6-5: Mode Share Comparison



6.5. Concluding Remarks

Based on the findings above, the 2017 Panel Survey and 2017 Trip Diary are relatively close in terms of the metrics that were analyzed. This provides confidence in findings from the Panel Survey particularly as its sample size is much lower than that of the Trip Diary. The Trip Diary also provides a useful benchmark to confirm VKT and mode share trends observed in the annual Panel Survey.

7. Contributing Factors Affecting Change

This section provides a brief discussion of post-2010 trends that have potentially influenced travel behaviour and patterns in Metro Vancouver in general and the City of Vancouver in particular. These include changes in socio-economic patterns (population and employment), transit ridership, and fuel prices. *Table 7-1* provides a description of these accounts and their corresponding data sources.

Table 7-1: Socio-Economic Accounts Affecting Travel

Account	Description	Geography	Source
Socio-economic	Population	City of Vancouver	Stats Can
Socio-economic	Employment	Metro Vancouver	Stats Can
Network Ridership	Transit	Metro Vancouver	TransLink
Cost	Fuel Price	Metro Vancouver	Stats Can

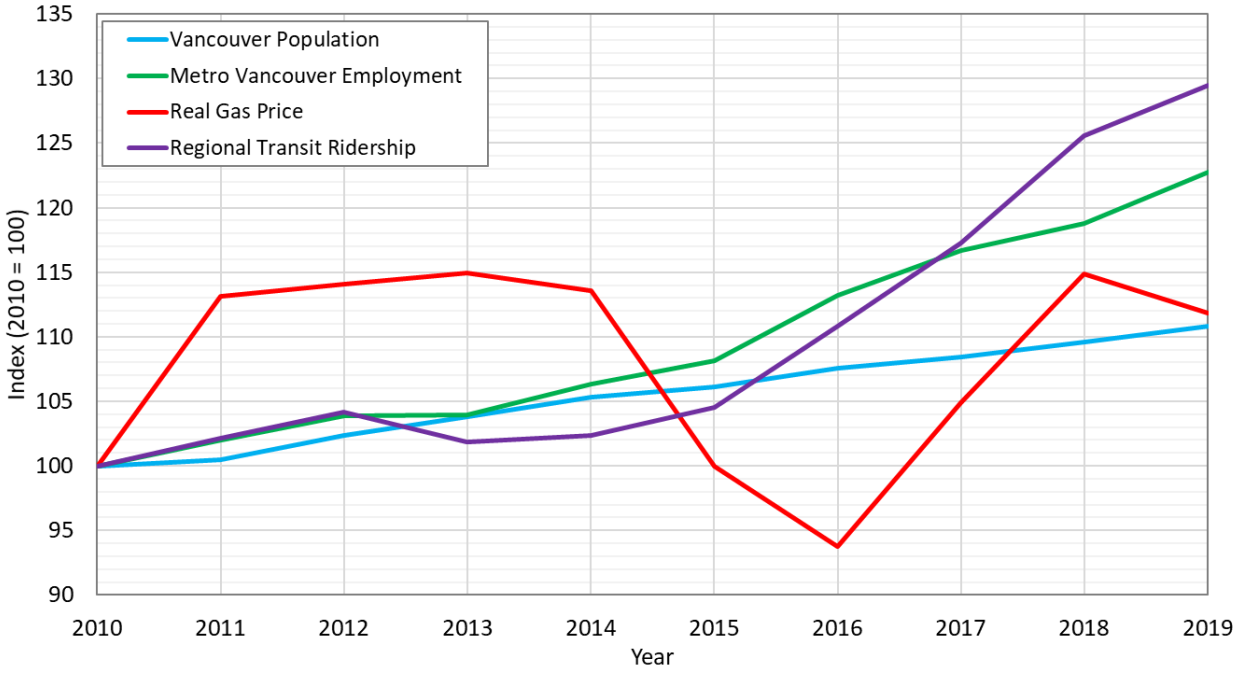
TransLink's 2017 Trip Diary revealed that the region's transit and active mode share increased from 24.2% to 27.1% between 2011 and 2017. Additionally, travel by Vancouver residents was largely made by transit and active modes with the sustainable mode share representing about 45% of all trips in 2017. The increased uptake in transit and active modes could be attributed to the opening of the Evergreen Line, significant increases in bus service supply and coverage in the region, improvements to the active transportation network, and overall changes in travel behaviour. The analysis of the 2013-2019 City of Vancouver Panel Surveys revealed that:

- The average sustainable mode share over all years is around 50.3%.
- The total number of trips increased from 1.88 million in 2013 to 1.98 million in 2019, an increase of 5.7%.
- Daily VKT per capita has declined by about 18% from 4,530 km in 2014 to 3,730 km in 2019.

Figure 7-1 shows the trends of the accounts described in *Table 7-1* and indexed to the year 2010. Overall, population and employment have steadily grown in the last nine years. As illustrated in the figure, Vancouver's population has grown steadily by approximately 10% from 2011 to 2019. Metro Vancouver's employment remained flat between 2012 and 2013 but rebounded between 2013 to 2014 (+2.3%) and has shown substantial growth since 2015 (+14%). Fuel prices rose sharply in 2011 and continued to grow at a much slower rate until 2013 after which it decreased by 1.2% in 2014. 2015 saw a sharp decline (-12.0%) in fuel price and a further decrease in 2016 (-6.2%). As shown in the figure, fuel price did recover and rose sharply by about 22.5% from 2016 to 2018. However, fuel price has dropped by 2.7% in the last year.

Transit ridership has grown strongly since 2015 with the number of boardings increasing by approximately 24% over the course of the last 5 years. This increase is likely attributed to strong employment growth, higher fuel prices, increased traffic congestion, improvements to the transit service plan, and widespread adoption of the Compass Card system.

Figure 7-1: Socio-Economic Trends Indexed to 2010



Overall, travel by mode and purpose have seen a large increase in transit and bike trips in the past year. Compared to 2018, there has been a decrease in the share of auto driver and walking trips accompanied by an apparent shift to public transport and travel by bike. Travel by purpose, time of day, and geography have remained consistent with last year's survey showing that travel characteristics have not changed substantially.

8. Lessons Learned and Next Steps

The 2019 Vancouver Panel Survey builds upon the data collected from the previous six Panel Surveys. Having a panel of residents that are surveyed on an annual basis provides the City with a unique and valuable dataset to track trends in walk/bike/transit mode share and vehicle usage.

Some of the key lessons learned from the 2019 Panel Survey data collection and analysis phases include the following:

- The first year of the Panel Survey incurred the highest recruitment cost to establish the panel. Originally anticipated cost savings in future panels may not be realized due to the high attrition rate which necessitates a higher level of recruitment to replenish the pool of panelists. In an effort to draw more people to participate in the 2017 survey, a cash-based only incentive design was implemented as opposed to the combination of City based facility/ attraction and Visa gift cards awarded in 2016. In addition to the random cash-based prize draw introduced in 2017, the 2018 survey added a $20 direct incentive provided to any 15 to 34-year-olds who registered and completed their trip diary. These cash incentives, coupled with the referral process implemented last year, have encouraged greater participation in the younger age cohort. As part of the 2019 survey, participants between the ages of 18 and 44 years old were also entered to win one of twenty Mobi monthly passes.
- To maintain one of the primary goals of consistency with TransLink's Regional Trip Diary Survey and past Panel Surveys, and to reduce the programming effort for the online portion of the survey, it will be important to minimize year-to-year modifications to the survey. Furthermore, should there be an interest in adding questions to the current program, it is recommended that a proper review of the instrument be conducted in advance to see which existing questions should be removed so that survey length, attrition rate, and recruitment efforts remain stable.
- This transportation panel survey included a significant amount of effort and technical expertise to do logic and error checking, programming, weighting, and expansion. This level of logic and error checking should be maintained for future panel surveys to maintain data consistency and to ensure quality analysis and results.
- By starting the survey and recruitment earlier in the year, the goal to reliably capture fall travel patterns was achieved. This will result in a more accurate reflection of trip rates and travel characteristics.
- Findings from this year's panel survey revealed decreased car dependency and an increase in active travel compared to the previous Panel Survey. Findings from this year's panel survey revealed increasing uptake of the sustainable modes (walk, bike, and transit) among Vancouver residents, with the share of these travel modes reaching a new high of 54.1%. It is important to continue tracking mode share in the ensuing years to determine whether the City is headed towards their longer-term targets.
- Ongoing monitoring of travel within the City can serve as a useful metric to gauge the effectiveness of land use and transportation options afforded to Vancouver residents.

Appendix A – Origin and Destination Patterns by Mode

Table A- 1: Origins and Destinations of Auto Trips (Total Auto Trips and Auto Mode Share)

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	7,500	4,000		4,100	3,900	2,100	2,600	1,400	2,600	2,200	4,100
False Creek	5,000	9,800		10,800	5,400	3,500	6,400	1,900	3,800	2,700	8,800
Downtown			26,300	14,900	9,300	5,600	9,000	3,300	6,400	4,900	12,900
Vancouver Broadway	3,500	10,000	13,500	22,900	12,900	4,700	7,900	3,500	8,900	7,500	11,600
Vancouver South	2,800	5,900	8,700	14,100	44,700	14,100	6,400	13,400	8,800	3,100	16,000
Vancouver Kerrisdale	2,400	2,900	5,300	5,500	14,400	41,100	11,900	2,300	1,700	900	11,400
Vancouver Kitsilano	2,100	6,300	8,400	8,300	6,700	10,900	24,900	1,400	1,900	2,600	9,100
Vancouver Southeast	900	1,400	2,300	4,000	12,000	1,800	1,300	26,400	10,800	2,800	21,500
Vancouver East	2,800	5,600	8,400	9,400	8,200	2,200	2,200	11,800	42,400	9,500	22,000
Vancouver Port	1,800	2,800	4,600	5,800	2,400	1,200	2,100	2,200	9,200	11,500	10,300
Outside Vancouver	5,600	9,800	15,400	10,900	16,300	12,200	7,600	19,100	24,800	9,600	61,900

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	10%	10%		35%	65%	81%	41%	45%	48%	61%	29%
False Creek	13%	8%		40%	40%	53%	37%	32%	31%	16%	38%
Downtown			9%	39%	48%	61%	38%	37%	37%	24%	35%
Vancouver Broadway	27%	36%	33%	23%	49%	58%	41%	85%	47%	49%	61%
Vancouver South	57%	47%	50%	53%	52%	82%	91%	68%	67%	65%	62%
Vancouver Kerrisdale	80%	43%	54%	56%	84%	64%	70%	68%	74%	43%	61%
Vancouver Kitsilano	26%	42%	36%	43%	83%	69%	30%	82%	50%	62%	40%
Vancouver Southeast	31%	23%	26%	67%	66%	62%	87%	63%	76%	67%	71%
Vancouver East	44%	38%	40%	45%	68%	85%	55%	81%	61%	48%	66%
Vancouver Port	55%	16%	22%	42%	67%	44%	60%	67%	44%	23%	64%
Outside Vancouver	38%	47%	43%	61%	64%	57%	36%	71%	71%	69%	64%

Table A- 2: Origins and Destinations of Transit Trips (Total Transit Trips and Transit Mode Share)

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	3,700	7,000		4,700	1,500	500	1,500	1,600	2,200	1,100	8,600
False Creek	5,100	7,500		8,600	5,500	2,300	6,700	3,600	7,400	7,400	12,700
Downtown			23,300	13,300	7,000	2,800	8,200	5,200	9,600	8,500	21,300
Vancouver Broadway	4,700	11,000	15,700	4,600	5,000	1,100	4,100	600	7,200	2,100	6,400
Vancouver South	1,600	4,900	6,500	4,600	3,800	800	100	1,900	1,500	400	8,300
Vancouver Kerrisdale	500	3,000	3,500	900	200	500	700	1,000	400	500	5,300
Vancouver Kitsilano	4,200	6,100	10,300	4,300	200	2,600	4,700	200	1,300	600	10,200
Vancouver Southeast	1,800	4,000	5,800	1,700	1,400	1,000	200	2,600	1,800	500	6,600
Vancouver East	2,900	7,600	10,500	7,700	1,400	0	1,200	1,200	2,100	2,400	7,800
Vancouver Port	800	5,500	6,300	3,800	700	100	900	800	3,000	700	3,700
Outside Vancouver	7,700	10,900	18,600	4,800	6,800	6,200	10,200	6,300	6,600	2,500	3,900

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	5%	17%		40%	25%	19%	24%	52%	41%	31%	60%
False Creek	13%	6%		32%	41%	35%	39%	61%	61%	44%	55%
Downtown			8%	34%	36%	30%	35%	58%	55%	42%	57%
Vancouver Broadway	37%	39%	38%	5%	19%	14%	21%	15%	38%	14%	34%
Vancouver South	33%	39%	37%	17%	4%	5%	1%	10%	11%	8%	32%
Vancouver Kerrisdale	17%	44%	36%	9%	1%	1%	4%	29%	17%	24%	28%
Vancouver Kitsilano	52%	40%	44%	22%	2%	17%	6%	12%	34%	14%	45%
Vancouver Southeast	62%	67%	65%	28%	8%	34%	13%	6%	13%	12%	22%
Vancouver East	45%	52%	50%	37%	12%	0%	30%	8%	3%	12%	24%
Vancouver Port	24%	31%	30%	28%	19%	4%	26%	24%	14%	1%	23%
Outside Vancouver	52%	52%	52%	27%	27%	29%	48%	23%	19%	18%	4%

Table A- 3: Origins and Destinations of Walk Trips (Total Walk Trips and Walk Mode Share)

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	60,100	23,900		500	100	100	100	0	0	0	700
False Creek	21,700	104,300		4,400	300	0	1,400	0	0	2,200	1,200
Downtown			210,000	4,900	400	100	1,500	0	0	2,200	1,900
Vancouver Broadway	1,600	4,600	6,200	59,800	5,100	500	4,100	0	1,300	2,300	100
Vancouver South	100	300	400	4,700	31,200	1,600	0	2,400	1,300	400	0
Vancouver Kerrisdale	100	0	100	400	1,400	19,600	1,400	0	0	400	100
Vancouver Kitsilano	300	800	1,100	3,400	0	500	46,500	0	0	0	100
Vancouver Southeast	0	0	0	0	2,700	0	0	10,000	1,300	0	500
Vancouver East	0	200	200	1,300	1,300	200	0	1,100	20,400	5,200	500
Vancouver Port	200	4,500	4,700	1,000	100	400	0	0	4,800	32,700	0
Outside Vancouver	600	0	600	100	0	0	900	500	500	0	26,800

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	81%	58%		4%	2%	4%	2%	0%	0%	0%	5%
False Creek	57%	83%		16%	2%	0%	8%	0%	0%	13%	5%
Downtown			75%	13%	2%	1%	6%	0%	0%	11%	5%
Vancouver Broadway	13%	16%	15%	59%	19%	6%	21%	0%	7%	15%	1%
Vancouver South	2%	2%	2%	18%	36%	9%	0%	12%	10%	8%	0%
Vancouver Kerrisdale	3%	0%	1%	4%	8%	31%	8%	0%	0%	19%	1%
Vancouver Kitsilano	4%	5%	5%	18%	0%	3%	56%	0%	0%	0%	0%
Vancouver Southeast	0%	0%	0%	0%	15%	0%	0%	24%	9%	0%	2%
Vancouver East	0%	1%	1%	6%	11%	8%	0%	8%	29%	26%	2%
Vancouver Port	6%	25%	22%	7%	3%	15%	0%	0%	23%	64%	0%
Outside Vancouver	4%	0%	2%	1%	0%	0%	4%	2%	1%	0%	28%

Table A- 4: Origins and Destinations of Bike Trips (Total Bike Trips and Bike Mode Share)

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	2,300	5,600		700	500	0	2,000	100	600	300	700
False Creek	5,900	4,000		2,500	2,000	800	1,000	300	900	3,600	200
Downtown			17,800	3,200	2,500	800	3,000	400	1,500	3,900	900
Vancouver Broadway	1,200	1,800	3,000	13,300	3,400	1,900	2,400	0	1,300	3,100	900
Vancouver South	400	1,400	1,800	3,100	5,900	700	600	2,000	1,300	1,000	1,200
Vancouver Kerrisdale	0	800	800	3,000	400	2,900	3,200	0	200	0	2,000
Vancouver Kitsilano	1,600	1,800	3,400	2,000	1,100	1,600	7,500	100	700	900	3,300
Vancouver Southeast	100	300	400	200	2,000	0	100	2,100	400	700	1,200
Vancouver East	600	1,300	1,900	2,100	1,200	200	500	500	4,400	2,600	2,400
Vancouver Port	400	5,000	5,400	2,900	300	700	200	0	3,600	4,700	2,300
Outside Vancouver	700	200	900	1,200	2,000	2,900	2,400	800	2,800	2,000	2,600

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	3%	14%		6%	8%	0%	32%	3%	11%	8%	5%
False Creek	16%	3%		9%	15%	12%	6%	5%	7%	21%	1%
Downtown			6%	8%	13%	9%	13%	4%	9%	19%	2%
Vancouver Broadway	9%	6%	7%	13%	13%	23%	13%	0%	7%	20%	5%
Vancouver South	8%	11%	10%	12%	7%	4%	9%	10%	10%	21%	5%
Vancouver Kerrisdale	0%	12%	8%	31%	2%	5%	19%	0%	9%	0%	11%
Vancouver Kitsilano	20%	12%	15%	10%	14%	10%	9%	6%	18%	21%	14%
Vancouver Southeast	3%	5%	4%	3%	11%	0%	7%	5%	3%	17%	4%
Vancouver East	9%	9%	9%	10%	10%	8%	13%	3%	6%	13%	7%
Vancouver Port	12%	28%	26%	21%	8%	26%	6%	0%	17%	9%	14%
Outside Vancouver	5%	1%	3%	7%	8%	14%	11%	3%	8%	14%	3%

Table A- 5: Origins and Destinations of Trips made by Other Modes (Total Other Trips and Other Mode Share)

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	800	800		1,900	0	0	100	0	0	0	100
False Creek	100	700		600	300	0	1,800	200	0	800	100
Downtown			2,400	2,500	300	0	1,900	200	0	800	200
Vancouver Broadway	1,800	500	2,300	1,000	100	0	700	0	200	200	100
Vancouver South	0	100	100	100	400	200	0	0	200	0	200
Vancouver Kerrisdale	0	0	0	0	800	100	0	0	0	300	0
Vancouver Kitsilano	0	100	100	1,300	0	0	100	0	0	100	200
Vancouver Southeast	0	200	200	0	0	0	0	600	0	300	300
Vancouver East	0	0	0	200	0	0	0	0	200	100	400
Vancouver Port	0	0	0	200	0	300	200	300	200	1,200	0
Outside Vancouver	200	100	300	800	200	0	200	300	0	0	2,200

Origin / Destination	West End	False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver Southeast	Vancouver East	Vancouver Port	Outside Vancouver
West End	1%	2%		16%	0%	0%	2%	0%	0%	0%	1%
False Creek	0%	1%		2%	2%	0%	10%	3%	0%	5%	0%
Downtown			1%	6%	2%	0%	8%	2%	0%	4%	1%
Vancouver Broadway	14%	2%	6%	1%	0%	0%	4%	0%	1%	1%	1%
Vancouver South	0%	1%	1%	0%	0%	1%	0%	0%	2%	0%	1%
Vancouver Kerrisdale	0%	0%	0%	0%	5%	0%	0%	0%	0%	14%	0%
Vancouver Kitsilano	0%	1%	0%	7%	0%	0%	0%	0%	0%	2%	1%
Vancouver Southeast	0%	3%	2%	0%	0%	0%	0%	1%	0%	7%	1%
Vancouver East	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%
Vancouver Port	0%	0%	0%	1%	0%	11%	6%	9%	1%	2%	0%
Outside Vancouver	1%	0%	1%	4%	1%	0%	1%	1%	0%	0%	2%

Appendix B – 2019 Panel Survey Instruments

Returning Panelists and New Recruits

EMAIL INVITATION – RETURNING PANELISTS COMPLETING ALL SURVEY SECTIONS ONLINE

Subject: Trip Day - City of Vancouver Annual Transportation Survey

Sender: Mustel Group for City of Vancouver [covtravelsurvey@mustelgroup.ca]

Hello and welcome back to the City of Vancouver Annual Transportation Survey!

In the past year, you completed a transportation survey for the City of Vancouver and agreed to be a part of an ongoing panel to help the City better understand transportation needs and address transportation issues for area residents. Thank you again for providing your input to help your community.

As a returning panelist, we again are looking forward to hearing from you on the trips you make and how you travel over a one-day period. Even if your travel patterns have not changed from last year, your input as a returning panelist on the trips you make over a one-day period is still important. Also, if you are planning to be away in the fall, you can still participate as the survey runs from September to end of November, giving you plenty of time to complete it.

And, as a thank you for your ongoing participation, this year (IF 18 TO 34 you will have the option to receive a guaranteed $20 for completing all survey tasks or) you will have a 1-in-10 chance to win one of 245 cash-based incentives ranging from $50 to $1,000 or one of 20 monthly Mobi bike passes! Further details on the prize draw are available once you access the survey.

Note that your diary day will be assigned once you click the link below.

PIN Number. This is important if you need to contact our Help Line (see below) for any questions or assistance with your survey. Be sure to provide this number when emailing or calling in.

YOUR PIN NUMBER: 34232343

You can start your survey now by clicking on YOUR UNIQUE LINK:
http://www.covtravelsurvey.com/dash/Dash?id=covtravel,34232343

If your email program doesn't support *html* and you are unable to click on your unique link above, please copy and paste the link directly into your browser.

Thank you in advance for your continued participation!

Mustel Group Study Team (covtravelsurvey@mustelgroup.ca)
402-1505 West 2nd Ave
Vancouver, BC V6H 3Y4

Need Help?
Reply to this email or call us at: **778-383-3416**
(Please have your PIN Number handy when you do.)

To unsubscribe from receiving email reminders, please click here
To unsubscribe from this survey altogether, please click here

City of Vancouver Annual Travel Survey

Your assigned travel day is next **(INSERT DAY)**.

Please read this information regarding your one-day trip diary.

- If you are unable to record your trips to the online survey for your assigned day, you can do so within a week or two afterwards.
- Watch this video with key points to remember on your travel day (Trip Diary Video).
- Also, if you plan to be away for a period of time, you can still participate as the survey is open until the end of November.
- Before recording and entering your trips, we will first confirm information you provided last year.

NOTE: Even if any of the following applies to you, we still need you to complete the survey.

- You do not make any trips on your assigned day
- The trips you take on your assigned day are not typical
- Your trip patterns have not changed from year to year

When you are ready to begin the first part of the survey, click the NEXT button.

Need help/ more info? Click here (link to www.mustelgroup.com/covsurveyhelp)

CONFIRM PANELIST: Did you complete last year's City of Vancouver Transportation Survey?

1. Yes → **SKIP THESE Q'S** **A. GENDER, C. AGE BELOW, + Q7-8-9 IN DEMOGRAPHICS**
2. No

A. Do you identify as:
1. Male 2. Female 3. Transgender 4. Other (specify) 5. Prefer not to answer

D. EMAIL ADDRESS

The email address we have on file for you for this Annual Transportation Survey is below. If you wish to update to a more frequently used address, or one that is more convenient, please let us know.
Your email address: _____

1. Yes, this information is correct
2. No, I need to update this information

E. UPDATE EMAIL
Please enter the email address you prefer to use:_____
Confirm email:_____
ALERT IF BOTH FIELDS BELOW DO NOT MATCH

B. Please confirm the home postal code you entered last year. If changed, please update so we are sure you still live in the survey area. AUTO_POPULATE FROM 2016 (6-digit) __ __ __ __ __ __

1. Yes, this information is correct 2. No, I need to update this information

IF DIFFERENT FROM TAGGED COV SUB-AREA, BUT IS ONE OF 8 OTHER VALID SUB-AREAS, ACCEPT.
IF DIFFERENT AND NOT IN ANY COV SUB-AREAS, THANK AND END. QA.page
Please enter your 6 digit home postal code with no spaces or punctuation.

__ __ __ __ __ __

(FLAG EMPLOYEE) EVERYONE- EMPLOYMENT SCREENER: QAA1. Do you or does anyone in your household work for the City of Vancouver, Mustel Group or McElhanney?

1. Yes → QAA2. Please note that while we can include your responses for this study, due to standard contest rules you will not be eligible for any incentives or prizes.

   Are you still interested in participating?

   a. Yes → REMOVE FROM PRIZE DRAW AND CONTINUE

   b. No → THANK AND END INTERVIEW Sorry this was not of interest to you. Please click the button below to exit the survey.
2. No CONTINUE
3. Not sure → FOLLOW QAA2.page FLOW ABOVE

AUTO-POPULATE - ASK EITHER C OR C2 DEPENDING ON RESPONSE FROM PREVIOUS WAVE

C. Please confirm this is the age group that applies to you? (INSERT AGE GROUP)

1. Yes, this information is correct
2. No, I need to update this information UPDATE YEAR OF BIRTH: Please select the year in which you were born.

   _____

IF REFUSED YEAR BORN: C2. Please choose the age group that applies to you from the list below.

1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 65+
6. PREFER NOT TO ANSWER

ii) PRIVACY: As one of the goals of this study is to understand and track changes in residents' travel patterns over time, your contact information linked with your survey responses would be retained by the City **for this annual study only**. Note that all information would remain confidential in a secure environment and would not be used on an individual basis for any other purpose.

Do you agree to share your personal contact and linked survey responses with the City of Vancouver for the sole purpose of participating in this transportation survey?

Yes
No

Questions about privacy? Click here to find out more.

PRIZE DRAW

This year, (IF 18 TO 34 you will have the option to receive a guaranteed $20 for completing all survey tasks or) you will have a 1-in-10 chance to win one of 20 monthly Mobi bike passes or one of 245 cash-based incentives as follows:

Prize	# of prizes	Amount
1st	3	$ 1,000.00
2nd	4	$ 750.00
3rd	6	$ 500.00
4th	12	$ 250.00
5th	40	$ 100.00
6th	180	$ 50.00
Mobi Monthly Bike Pass	20	$ 25.00

IF 35+

1. Yes, please enter me into the draw. *(Upon completing the full survey we will enter you to the prize draw. Note that winners will be contacted within the first quarter of 2020.)*

2. No, thank you

IF 18 to 34

1. I prefer to receive the guaranteed $20 for completing all survey tasks.

2. I prefer to be entered to the draw. *(Upon completing the full survey we will enter you to the prize draw. Note that winners will be contacted within the first quarter of 2020.)*

3. No, thank you

REGISTRATION QUESTIONS

R1. Please confirm your first and last name. Also, as the trip diary could include trips you make to or from work and home, please confirm the home address you provided last year.

1. Yes, this information is correct
2. No, I need to update this information → Please update your name and address.

Please confirm your name and address.
To make the process easier for you to enter your trip information, we have a few additional questions.
What is your first and last name? If you prefer to provide initials that works.
As the trip diary could include trips you make to or from work and home, please enter your home address.

FNAME: LNAME: _____
SUITE#: STREET#: STREET: STREET TYPE: STREET DIRECTION:
CITY: PROVINCE: POSTAL CODE

IF UPDATING INFORMATION (R1=2), OBTAIN NEW ADDRESS AND DISPLAY MAP WITH NEW HOME LOCATION IDENTIFIED [DESCRIBE CROSS-STREETS NEAREST TO PIN-POINT]

R3. Is this the correct location?

1. Yes
2. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**
3. Mapping system cannot find my address/ intersection

If the map software is unable to find your location, please move the marker to the correct location.

R4. If you are employed, your trip diary may include trips you make to and from work. Please confirm the work address you provided last year?

STREET#: STREET: STREET TYPE: STREET DIRECTION:
CITY: PROVINCE: POSTAL CODE

1. Yes, this information is correct
2. No, I need to update this information → Please enter your work address here to simplify trip reporting later. When recording the street number enter the building address only; no apartment or suite number is necessary.

   Do not work (unemployed)
   No work address (no fixed work address OR only work from home)
   Enter work address

IF UPDATING INFORMATION (R4=2), OBTAIN NEW EMPLOYMENT INFO. IF CHANGE OF WORK ADDRESS, DISPLAY MAP WITH NEW WORK LOCATION IDENTIFIED. [DESCRIBE CROSS-STREETS NEAREST TO PIN-POINT]

Is this the correct location?

1. Yes
2. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**

If you have more than one work address, please provide your second work address here.
When recording the street number enter the building address only; no apartment or suite number is necessary

1. No second work address
2. Yes – **ENTER 2nd WORK ADDRESS**

STREET#: STREET: STREET TYPE: STREET DIRECTION:
CITY: PROVINCE: POSTAL CODE

DISPLAY MAP WITH WORK LOCATION IDENTIFIED [DESCRIBE CROSS-STREETS NEAREST TO PIN-POINT]

Is this the correct location?

1. Yes
2. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**

PROFILING, GENERAL TRANSPORT & PARKING QUESTIONS

1. Do you currently have a valid driver's license?
   1. Yes 2. No → SKIP TO Q3a

2. How many vehicles do you own or have regular access to (please include all cars, vans or light trucks that are **brought home and parked overnight** but not motorcycles / scooters or bicycles; do not include car share vehicles)? _____ None

3. What car share services are you a part of, if any? (check all that apply)
   1. Car2go___ 2. Modo___ 3.ZipCar___ 4. Evo___
   5. Other___ None___

   3a. Are you a member of "Mobi", the City of Vancouver's public bike share system?
   1. Yes
   2. No

4. Are you a commercial driver, that is do you drive or make deliveries as part of your job (e.g., if a bus or taxi driver, courier, etc.)?
   1. Yes → *Note that this survey concerns your travel for personal trips and those including travel to and from your job, but not trips made as part of your commercial driving job.*
   2. No

5. a) What is your **usual mode of transportation** this time of year for trips to or from **work**? If you use more than one mode, select the one used for **most of the travel distance. CHECK ONE ONLY**
   a. Private car, truck, or van **as a driver**
   b. Private car, truck, or van **as a passenger**
   c. Car share as a driver (e.g. Modo, Car2go, ZipCar, Evo, etc)
   d. Car share as a passenger (e.g. Modo, Car2go, ZipCar, Evo, etc)
   e. Transit bus
   f. SkyTrain
   g. West Coast Express
   h. SeaBus
   i. HandyDART
   j. School bus
   k. Other bus
   l. Personal bicycle
   m. Personal electric bicycle
   n. Bike Share (Mobi)
   o. Walk
   p. Taxi
   q. Ride hailing (e.g. Kater, Lyft, Uber, etc.)
   r. Motorcycle
   s. Other → Please describe other mode of travel _____
   t. DO NOT TRAVEL TO WORK

b) What is your **usual mode of transportation** this time of year for trips to or from **school as a student**? If you use more than one mode, select the one used for **most of the travel distance. CHECK ONE ONLY**

a. Private car, truck, or van **as a driver**
b. Private car, truck, or van **as a passenger**
c. Car share **as a driver** (e.g Modo, Car2go, ZipCar, Evo, etc)
d. Car share as a passenger (e.g Modo, Car2go, ZipCar, Evo, etc)
e. Transit bus
f. SkyTrain
g. West Coast Express
h. SeaBus
i. HandyDART
j. School bus
k. Other bus
l. Personal bicycle
m. Personal electric bicycle
n. Bike Share (Mobi)
o. Walk
p. Taxi
q. Ride hailing (e.g Kater, Lyft, Uber, etc.)
r. Motorcycle
s. Other (specify) _____
t. DO NOT TRAVEL TO SCHOOL AS A STUDENT

6. What would you consider to be a reasonable distance to walk when travelling to the following destinations?

Destination	Less than 5 minutes	5 to less than 10 minutes	10 to less than 15 minutes	15 minutes or more	I would not walk to that destination
a. Bus stop	o	o	o	o	o
b. SkyTrain station	o	o	o	o	o
c. Grocery store	o	o	o	o	o
d. Other shopping	o	o	o	o	o
e. Work	o	o	o	o	o
f. Park or other public space (e.g. plaza)	o	o	o	o	o
g. Childcare	o	o	o	o	o
h. Elementary school	o	o	o	o	o
i. High school	o	o	o	o	o
j. Public facilities (e.g. library, community centre, etc.)	o	o	o	o	o

7. Think about walking around your neighbourhood, or rolling if you use a mobility assistance device such as a wheelchair. To what extent do you agree with the following statements? For each statement, please rate your level of agreement from "Strongly Disagree" to "Strongly Agree."

Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I have direct walking paths to my destinations.	o	o	o	o	o
b. I live in a dense area, like downtown.	o	o	o	o	o
c. There are many small stores nearby.	o	o	o	o	o
d. There are many different kinds of places to walk to nearby.	o	o	o	o	o
e. There are many sidewalks in my neighbourhood.	o	o	o	o	o
f. The sidewalks are in good condition.	o	o	o	o	o
g. Overall, I live in a walkable neighbourhood.	o	o	o	o	o

SKIP 8-9 IF REGISTRATION QR4 = Do not work (unemployed)

8. Do you make any trips for business purposes during work?
    1. Yes
    2. No → SKIP Q9

9. Do you have access to employee programs that support or provide the following (MULTIPLE RESPONSE):
   Check all that apply
    1. Company Carpool / Car Share
    2. Employer Subsidized Transit Pass
    3. Employer Subsidized Bike Share / Mobi Membership
    4. Other specify:_____
    5. No, I do not have access to such programs

DEMOGRAPHICS

A few questions to help us classify the survey data.

1. Including you, how many people reside in your household?
   DROP DOWN MENU

2. The City is interested in tracking the health of its residents. In general, would you say that your health is…
    a. Excellent
    b. Very good
    c. Good
    d. Fair
    e. Poor
    f. Prefer not to answer

3. What type of dwelling do you currently live in?
    a. A single detached home (includes basement suites, laneway houses, etc)
    b. An apartment or condo in a low rise (5 levels or less)
    c. An apartment or condo in a high rise (more than 5 levels)
    d. A townhouse/row house
    e. Semi-detached home or a duplex (includes basement suites)
    f. Residential care or long term care facility
    g. A mobile home
    h. Other
    i. Prefer not to answer

4. EMPLOYMENT: Are you: (MULTIPLE RESPONSE EXCEPT CANNOT SELECT *Working full-time* AND *Unemployed*, NOR SELECT Student full-time AND Student part-time, NOR SELECT *Unemployed* WITH ANY WORK OPTIONS)
    a. Working full-time (30+ hours per week)
    b. Working part-time (less than 30 hours per week)
    c. Self-employed
    d. Volunteer only (not for pay)
    e. Unemployed
    f. Looking after home/family
    g. Retired
    h. Student full-time
    i. Student part-time
    j. Prefer not to answer

5. HOUSEHOLD INCOME: Which of the following best describes your total **household** income (the combined gross income for all household members)?
    a. Less than $25,000
    b. $25,000 to less than $50,000
    c. $50,000 to less than $75,000
    d. $75,000 to less than $100,000
    e. $100,000 to less than $150,000
    f. $150,000 or more
    g. Prefer not to answer

6. What is the highest level of education you have completed?
    a. Have not completed high school
    b. Completed high school/secondary school
    c. Trade certificate or diploma from a vocational school or apprenticeship training
    d. Non-university certificate or diploma from a community college, CEGEP or nursing school
    e. University certificate below bachelor's level
    f. Bachelor's degree
    g. Graduate degree (master's degree or doctorate)
    h. Prefer not to answer

7. **ETHNICITY**: Were you born in Canada?
    a. Yes
    b. No
    c. Prefer not to answer

8. Vancouver residents come from many different backgrounds and this question helps us to understand whether we are hearing from the diverse range of people that call Vancouver home. What is your main ethnic background? [ALLOW UP TO TWO OPTIONS TO BE SELECTED]
    06. Canadian (including First Nations, Inuit, Metis)
    01. African
    02. American
    04. Australia
    05. British (English/Scottish/Welsh/Irish)
    07. Chinese
    08. Dutch
    10. East European (Ukrainian, Polish, Hungarian, Serb, etc.)
    11. Filipino
    12. French
    13. German
    14. Greek
    15. Italian
    16. Japanese
    17. Korean
    18. Latin American (Guatemalan, Nicaraguan, Mexican, etc.)
    19. Middle Eastern
    20. Portuguese
    21. South American (Brazilian, Peruvian, Colombian, Chilean, Ecuadorian)
    09. South Asian (Punjabi, Indian, Tamil, Guyana, Pakistani, etc.)
    22. Scandinavian
    23. Spanish
    24. Vietnamese
    03. Other Asia (Indonesian, Malaysia, Thailand)
    25. OTHER SPECIFY:_____
    99. Prefer not to answer

<u>IF Q7 = YES OR Q8 = 01. Canadian</u>

10. Do you identify as an Aboriginal person (i.e. First Nations, Inuit, Mets)?
    1. Yes 2. No

NEW QUESTIONS ASKED ONLY OF THOSE 35 YEARS AND OLDER, AND HAVE MORE THAN 1 PERSON IN HOUSEHOLD:

10a. Is there anyone in your household between the ages of 18 and 34 years?

1. Yes
2. No → **THANK AND END**

9999. Prefer not to answer → **THANK AND END**

IF YES IN Q10a

10b. We would like to invite one additional household member from this age group to also participate in this transportation survey. Do you think they would be interested?

1. Yes
2. No → **THANK AND END**

Please provide their email address and we will send them a link to the survey.

EMAIL: _____

RE-ENTER EMAIL: _____

And could we have their name and phone number? We may need to call them to make sure they received the email.

NAME: _____

PHONE: _____

Is this a cell or landline number?

Cell Landline

Who should we say has referred this youth to our survey? _____

The email invitation has been sent and they should receive it shortly.

They should look for an email from:	covtravelsurvey@mustelgroup.ca
with the following subject line:	City of Vancouver Annual Transportation Survey

If convenient, please have them check their Inbox to make sure they have it.

If they do not see it in their Inbox, please have them check their SPAM or JUNK mail folder.

If it is still not there, please call us at this number: (778) 383-3416.
Please press **next** to continue.

SEND NEW RECRUIT EMAIL TO SELF-COMPLETE ONLINE

City of Vancouver Annual Transportation Survey

Your assigned travel day is next **(INSERT DAY)**.

Please read this information regarding your one-day trip diary.

- If you are unable to record your trips to the online survey for your assigned day, you can do so within a week or two afterwards.
- Watch this video with key points to remember on your travel day (Trip Diary Video).
- Also, if you plan to be away for a period of time, you can still participate as the survey is open until the end of November.
- Before recording and entering your trips, we will first confirm information you provided last year.

NOTE: Even if any of the following applies to you, we still need you to complete the survey.

- You do not make any trips on your assigned day
- The trips you take on your assigned day are not typical
- Your trip patterns have not changed from year to year

If you are ready to begin the trip diary, click the NEXT button. Otherwise click the Exit button and return to complete your diary when you are ready.

TRIP BEHAVIOUR (Monday to Friday only)

Trip Diary

The City needs to understand residents' transportation choice each time they make a trip within or through the Lower Mainland. Please watch this quick video on how to fill in the trip diary: Trip Diary video.

In this survey, we are asking about all of your trips taken on Wednesday between midnight and 11:59 p.m. (a full 24-hour day).

DEFINITION OF A TRIP

A trip is travel from one location to another location for a purpose.

- Include trips made by all means (e.g., walking, cycling, transit, car, etc.)
- Include short trips (e.g., stopping at a coffee shop, a gas station or dropping someone off)
- Include return trips (e.g., going home)
- Include recreational outings that end at the same place they started (e.g., dog walking, going for a walk or jogging)

*Please click the **Next** button to start the survey.*

Please confirm the date of your (ASSIGNED DAY) travel:
INSERT CALENDAR

1. Did you make any trips that started and ended on [ASSIGNED DAY], between midnight and 11:59 p.m (a full 24-hour day)?
    1. Yes
    2. No, stayed home or was out of town for the whole day → SKIP TO VKT SECTION

1. Trip 1

Q1a) What was the **starting location**? If this trip started from home or work, please click "Home" or "Work". Otherwise, give precise address, nearby cross-streets or a landmark. Be sure to include the municipality.
If you need help, please refer to this map. (COV ON GOOGLE MAPS)

- Home address
- Work address
- Precise address (specify below)
- Nearby cross-streets (specify below)
- Landmark (specify below)

Q1b) What was your **end location**? If this trip ended at home or work, please click "Home" or "Work". Otherwise, give precise address, nearby cross-streets or a landmark. Be sure to include the municipality.
If this is a recreational trip where your start and end locations are the same, please select that response. (Examples of recreational trips are dog walking, jogging, etc)
If you need help, please refer to this map. (COV ON GOOGLE MAPS)

- Home address
- Work address
- Precise address (specify below)
- Nearby cross-streets (specify below)
- Landmark (specify below)
- Same as origin (a recreational trip)

Municipality:

1. Vancouver
2. Burnaby
3. Coquitlam
4. Delta/Ladner/Tsawwassen
5. Langley/Langley Township/Fort Langley/Aldergrove
6. Maple Ridge
7. New Westminster
8. North Vancouver
9. Pitt Meadows
10. Port Coquitlam
11. Port Moody/Anmore/Belcarra
12. Richmond
13. Surrey
14. West Vancouver (including Horseshoe Bay/Lions Bay)
15. White Rock
16. All Other Locations Ending Outside of Metro Vancouver

GOOGLE MAP WITH PIN POINT OF LOCATION. Confirm: Is this the correct location? IF YES: **INSERTION OF LAT-LONG FROM GEO-CODER.** IF NO, RETURN TO END LOCATION SCREEN FOR RE-ENTRY/REVISION OF LOCATION DETAIL)

Q1c) What time of day did you start this trip?

1. 12:00am to 12:59am
2. 1:00am to 1:59am
3. 2:00am to 2:59am
4. 3:00am to 3:59am
5. 4:00am to 4:59am
6. 5:00am to 5:59am
7. 6:00am to 6:59am
8. 7:00am to 7:59am
9. 8:00am to 8:59am
10. 9:00am to 9:59am
11. 10:00am to 10:59am
12. 11:00am to 11:59am
13. 12:00pm to 12:59pm
14. 1:00pm to 1:59pm
15. 2:00pm to 2:59pm
16. 3:00pm to 3:59pm
17. 4:00pm to 4:59pm
18. 5:00pm to 5:59pm
19. 6:00pm to 6:59pm
20. 7:00pm to 7:59pm
21. 8:00pm to 8:59pm
22. 9:00pm to 9:59pm
23. 10:00pm to 10:59pm
24. 11:00pm to 11:59pm

Q1d) IF RESPONSE "Same as origin" IN b) ask: Approximately how long was this recreational trip?

1. Less than 10 minutes
2. 10 to less than 20
3. 20 to less than 30
4. 30 to less than 40
5. 40 to less than 50
6. 50 to less than 60 minutes
7. 60 minutes or more

Q1e) What was the main **purpose** of this trip? ONE RESPONSE ONLY AUTO CODE AS "Recreation" IF RESPONSE "Same as origin" IN b)

1. To work
2. During work/business trip
3. To school (as student)
4. Shopping
5. Dining/restaurant
6. Recreation (including dog walking, jogging, etc)/social/entertainment)
7. Personal business (e.g. bank, doctor, volunteering, etc)
8. To drop-off/pick-up someone (via driving, walking, transit, cycling, etc.)
9. To go home

Q1f) How did you travel to this location? Choose all that apply. If more than one, list in order of use.
If you walked and used other modes, select "walked as part of the trip" as well as the other modes.
Please enter your first travel mode below and click next.

1. Private car, truck, or van as a driver
2. Private car, truck, or van as a passenger
3. Car share as a driver (ex Modo, Car2go, ZipCar, Evo, etc)
4. Car share as a passenger (ex Modo, Car2go, ZipCar, Evo, etc)
5. Transit bus
6. SkyTrain (Expo, Canada and Millennium Lines)
7. West Coast Express
8. SeaBus
9. HandyDART
10. School bus
11. Other bus
12. Walked/jogged the whole way (CANNOT BE COMBINED WITH OTHER RESPONSES)
13. Walked/jogged as part of the trip
14. Personal bicycle
15. Personal electric bicycle
16. Bike Share (Mobi)
17. Taxi
18. Ride hailing (ex Kate, Lyft, Uber, etc.)
19. Motorcycle
20. Other (specify) _____

Second mode, third mode, etc.
(SAME LIST BUT WITH "No others" ADDED CODE AT TOP OF LIST

IF TRIP.(f) RESPONSE IS “Transit Bus”, “SkyTrain”, “WestCoast Express”, “Seabus”, “HandyDART”, “School Bus”, “Other bus”, “Walked/jogged the whole way”, “Walked/jogged as part of the trip”, or “Bicycle” ASK:

Q1k. Approximately how long was the walking and/or biking portion of this trip?

1. Less than 5 minutes
2. 5 to less than 10
3. 10 to less than 20
4. 20 to less than 30
5. 30 to less than 40
6. 40 to less than 50
7. 50 to less than 60 minutes
8. 60 minutes or more

AUTO CODE AS “No”, IF RESPONSE “Same as origin” IN b)

Q1g) Was this trip a stop along the way to your next location? (e.g. a short trip such as a drop off, gas station, coffee shop, etc.)

1. Yes → Did you pre-plan to make this stop? 1. Yes 2. No
2. No

Q1h2. TRIP SUMMARY: Please carefully review the information you have provided for this trip.

INSERT

START LOCATION
END LOCATION
TIME OF DAY
MAIN PURPOSE OF TRIP
METHODS OF TRAVEL

Is this information complete and correct?

1. Yes *(If you select this and click **Next**, you will not be able to make changes to this trip)*
2. No *(If you select this and click **Next**, you will be taken through the trip to make corrections)*

To make corrections:
If you click **Next** on this page, you will be taken back through your trip to make changes.

As you go through the trip and the page that displays does not require corrections, simply click **Next** to continue until you reach the information that needs to be changed. Then select or type in the correct response to the question. Please be sure to follow the instructions carefully when you access the map pages.

After you have revised the trip, you will again be asked to verify that it is correct.

Click **Next** to revise your trip OR click **Back** if you arrived here by mistake.

Q1h2. Which of the following experiences, if any, did you have during **this trip**?
Choose all that apply. If none, please click NEXT below.

Social Interaction:

1. It was friendly (e.g. hand waving, smiles, etc.)
2. It was unfriendly
3. It was neutral

Safety/Personal Security:

4. I was involved in a collision
5. I experienced a "near miss" (e.g. a collision was narrowly avoided, etc.)
6. I felt uncomfortable (e.g. vehicles passed too close to me while biking, etc.)
7. I felt afraid for my security (e.g. walking alone in the dark, etc.)
8. Other travelers gave me appropriate space

Transportation Systems:

9. Everything worked the way it is supposed to work
10. My trip was affected by construction (e.g. sidewalk/road was closed, etc.)
11. I experienced a problem (e.g. traffic signal didn't work, bus was late, etc.)

Travel Comfort:

12. My trip was particularly comfortable/enjoyable (e.g. great public space, nice weather, lovely flowers, etc.)
13. My trip was uncomfortable (e.g. bus was too crowded, etc.)

*If you have made an error and would like to change your answers, click "Clear". Otherwise, click the **Next** button to continue.*

TRIP COMMENTS

Do you have any other details or comments about **this trip** that you would like to provide?
*If you have no additional comments, click **NEXT** to continue.*

Q1i) Did you make another trip on this day before 11:59pm? (Remember to include return trips.)

1. Yes
2. No (last trip of the day) → IF LAST TRIP DID NOT RETURN HOME, ASK j)

Q1j) Did you return home before 11:59pm on this travel day?

1. Yes
2. No - Did not return home on this day → **IF Q1g =** Yes, a stop along to another destination, **INSERT ERROR MESSAGE:** You mentioned earlier this trip was a stop along the way to another destination. Is it correct that you did not make any more trips today?
   If this is correct you can leave your answer as is and click "Next" again to continue, otherwise please correct your response. (**CLICKING NEXT SKIPS TO TOTAL TRIP SUMMARY, THEN VKT)**

Trips 2-15: REPEAT TRIP QUESTIONS STARTING WITH….

b) **Destination:** Where did you go next? ALL OTHER QUESTIONS SAME AS ABOVE

AFTER LAST TRIP OF DAY, TOTAL TRIP SUMMARY: Please review your trips below.

k) Are your trips complete?

INSERT TRIP SUMMARIES

TRIP	FROM	TO	PURPOSE
1	ADDRESS	ADDRESS	PURPOSE
2	ADDRESS	ADDRESS	PURPOSE
3, etc.	ADDRESS	ADDRESS	PURPOSE

1. Yes 2. No

IF NO: This action will delete all of your trips. You will need to re-enter all of your trips to complete the survey. Are you certain that you wish to delete all of your trips? **tripReset.page**

1. Yes → **REDO ALL TRIP ENTRIES** **2.** No → **CONTINUE**

VKT SECTION

PROGRAMMER NOTE: IF PRIVATE VEHICLE CHOSEN IN RECRUIT PROFILING AND GENERAL TRANSPORT SECTION (Q2), ASK

QS1. Below is the make**,** model and year of the private vehicle you provided to us in the 2018 survey (the one you typically used for your personal trips). If this has changed please let us know.

INSERT: **MAKE** **MODEL** **YEAR**

1. Yes, this is the private vehicle I typically use for my personal trips → **ASK Q SEND ODOMETER**
2. No, the private vehicle I typically use for my personal trips has changed

IF NO: What type of private vehicle do you typically drive? Please choose the make of your vehicle. If you cannot locate the vehicle you typically drive scroll down to the very bottom of the drop-down menu and select "OTHER". **(IF OTHER CHOSEN, PROMPT** Please specify other for the make of your vehicle)

QS1a. Please choose the model and year of your vehicle.

(IF OTHER CHOSEN, PROMPT Please specify other for the model of your vehicle)

INSERT IF COMMERCIAL DRIVER IDENTIFIED IN RECRUIT PROFILING & GENERAL TRANSPORT SECTION (Q3) This is the vehicle typically driven for your personal trips. If you typically use a commercial vehicle for your personal trips, select that vehicle from the list below.

DROP DOWN MENUS AS PER NRCAN DATASET
AS NRCAN LIST ONLY INCLUDES PASSENGER VEHICLES, ALLOW OVERRIDE

Is this a zero-emission vehicle?

Yes
No

Q Send Odometer**:** It is important for the City to understand how many kilometers residents are driving in a year as it helps provide a measure of fuel consumption and emissions, which impact air quality and climate change.

Would you like to enter your odometer reading now, or email a link to enter it later? The email link will provide you with a mobile-friendly way to enter the odometer, so you can complete it in your car with your smartphone or tablet, if you choose.

1. Provide my odometer reading right now
2. Email a link to enter my odometer reading later (Please specify the email address you would prefer to receive the link to the odometer reading. _____@_____.

QS2. Please record the current odometer reading for this vehicle (to nearest 100km's). If unsure, you may check the vehicle and return to enter later. _____ km's

CLOSING: This completes our survey. Thank you very much for your input and interest in this annual trip diary survey! As a small thank you, once all trip diaries have been collected and analyzed, we will email you key results and a link to the full report from this year's survey made possible by your participation. If you are eligible for the prize draw, all winners will be contacted within the first quarter of 2020.

IF 18 TO 34: Your $20 incentive will be mailed to you within 4 to 8 weeks after the survey closes.

Thank you once more and we'll be in touch in 2020!

Please click the button below to submit the survey.

RECRUITMENT SCREENER – NEW TEL RECRUITS

Random sample & Cell sample: City of Vancouver households.

Hello, I'm __ of Mustel Group, a professional research company calling on behalf of the City of Vancouver to invite you to participate in an important annual online transportation study. Your household has been randomly selected for this panel transportation study and your input will help the City make better decisions regarding future transportation plans and investments for area residents.

Please note this call may be monitored or recorded for quality control purposes.
QLocation. In which city do you live? 1. Vancouver (CONTINUE) 2. Other (THANK & END)

A. **(GENDER)** To randomize our interviews, may I please speak to the male/female in your household who is 15 years of age or older and whose birthday comes next? **IF TRANSGENDER/OTHER IDENTITY OFFERED, CODE ACCORDINGLY**
1. Male 2. Female 3. Transgender 4. Other (specify)_____ 5. Prefer not to say

B. **(HOME POSTAL)** To ensure our sample covers all areas of the City of Vancouver, may I please have your 6-digit home postal code? __ __ __ __ __ __
IF DIFFERENT FROM TAGGED COV SUB-AREA, BUT IS ONE OF 8 OTHER VALID SUB-AREAS, ACCEPT.
IF DIFFERENT AND NOT IN ANY COV SUB-AREAS, THANK AND END.

(FLAG EMPLOYEE) EVERYONE- EMPLOYMENT SCREENER: QAA1. Do you or does anyone in your household work for the City of Vancouver, Mustel Group, or McElhanney?

1. Yes → QAA2. Please note that while we can include your responses for this study, due to standard contest rules you will not be eligible for any incentives or prizes. Are you still interested in participating?
   a. Yes → REMOVE FROM PRIZE DRAW AND CONTINUE
   b. No → THANK AND END INTERVIEW Sorry this was not of interest to you.
2. No CONTINUE
3. Not sure → FOLLOW QAA2.page FLOW ABOVE

C. **(YEAR BORN)** And so we can be sure the sample represents all ages of residents please tell me the year in which you were born? ____ **IF REFUSED YEAR BORN: (AGE CODE)** C2. If you prefer, I can read you a short list and you can let me know which one applies to you.
1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 55-64
6. 65+
7. PREFER NOT TO ANSWER

Your household has been randomly selected for this panel and your input will help the City make better decisions regarding future transportation investments for area residents. By participating, you will be making an important contribution to the City. In appreciation of your time, (IF 18 TO 34 you will have the option to receive a guaranteed $20 for completing all survey tasks or) you will have a 1-in-10 chance to win one of 245 cash-based incentives ranging from $50 to $1,000 or one of 20 monthly Mobi bike passes! Further details on the prize draw are available once you access the survey.

READ ONLY IF ASKS FOR SPECIFICS:

# of Prizes	Prize Amount
3	$1,000
4	$ 750
6	$ 500
12	$ 250
40	$ 100
180	$ 50
20 Mobi Monthly bike passes	$ 25

The survey is in two parts. My time with you today will take approximately 7-10 minutes and then we would email you an invitation to the second part, which involves recording your travel for one day.

Are you interested in participating in this annual transportation survey? IF REQUIRED: The second part is simply a log or diary of the trips you make on a single assigned day.

1. Yes
2. No → THANK AND END: Those are all the questions for today. Good bye.

QS1.Do you have access to email?

3. Yes
4. No → THANK AND END: Those are all the questions for today. Good bye.

PERSUADERS—only if needed:

- Even if you travel a little, a lot or not at all, your survey responses matter.
- We are interested in all types of travel: walking, cycling, transit and personal or shared vehicle trips, etc.
- If you are planning to be away, the survey is open until the end of November, so you have plenty of time to complete it.
- This is strictly a transportation survey; we are not selling or soliciting anything.
- Your number was selected at random for participation in this research.
- This study is important as it will help the City better understand travel patterns, transportation needs and to help make better decisions regarding transportation investments for area residents.
- City of Vancouver Contact only if requested: Phone 311

ii) PRIVACY: As one of the goals of this study is to understand and track changes in residents' travel patterns over time, your contact information linked with your survey responses would be retained by the City **for this annual study only**. Note that all information would remain confidential in a secure environment and would not be used on an individual basis for any other purpose.

Do you agree to share your personal contact and linked survey responses with the City of Vancouver for the sole purpose of participating in this transportation survey?
Questions about privacy? Click here to find out more.

Yes → PRIZE DRAW & EMAIL CAPTURE
No → THANK AND END. Those are all the questions for today. Thank you.

PRIZE DRAW (SKIP IF QAA1 EMPLOYMENT SCREENER = STUDY EMPLOYEE)

Do you wish to (IF 18 TO 34: receive a guaranteed $20 or) be entered into the prize draw? **READ IF NECESSARY:** You would be eligible to win various prizes including one of 20 monthly Mobi bike passes or one of 245 cash-based incentives ranging from $50 to $1,000!

READ ONLY IF ASKS FOR SPECIFICS:

# of Prizes	Prize Amount
3	$1,000
4	$ 750
6	$ 500
12	$ 250
40	$ 100
180	$ 50
20 Mobi Monthly bike passes	$ 25

In all, approximately a 1-in-10 chance to win.

IF 35+

1. Yes, please enter me into the draw. *(Upon completing the full survey we will enter you to the prize draw. Note that winners will be contacted within the first quarter of 2020.)*

2. No, thank you

IF 18 to 34

1. I prefer to receive the guaranteed $20 for completing all survey tasks.

2. I prefer to be entered to the draw. *(Upon completing the full survey we will enter you to the prize draw. Note that winners will be contacted within the first quarter of 2020.)*

3. No, thank you

D. **EMAIL CAPTURE:** May I please have your name and email address so we can send you the survey link?
READ IF NECESSARY: Be assured that your email address will not be shared with any marketing companies and you will not receive any SPAM emails.

i. First name: _____ Last name: _____
ii. email address: _____
iii. CONFIRM BY RE-ENTERING AND REPEATING UNTIL CORRECT: email:_____

SEND EMAIL INVITATION – SEE INVITE TEXT AFTER DEMOGRAPHICS

Your email invitation has been sent and you should receive it shortly.
Please look for an email from covtravelsurvey@mustelgroup.ca
with the following subject line: City of Vancouver Annual Transportation Survey.
If convenient, please check your INBOX now to make sure you have it.
IF NOT RECEIVED: Maybe check your SPAM or JUNK mail folder.
IF STILL NOT RECEIVED, RETURN AND VERIFY EMAIL ADDRESS
IF CHECK LATER: If you do not receive the email, please call us at this number: 778-383-3416

REGISTRATION QUESTIONS

R1. Please confirm your first and last name. Also, as the trip diary could include trips you make to or from work and home, please confirm the home address you provided last year.

1. Yes, this information is correct
2. No, I need to update this information → Please update your name and address.

Please confirm your name and address.
To make the process easier for you to enter your trip information, we have a few additional questions.
What is your first and last name? If you prefer to provide initials that works.
As the trip diary could include trips you make to or from work and home, please enter your home address.

FNAME:_LNAME: _____
SUITE#:_____ STREET#:_____ STREET:_____ STREET TYPE:_____ STREET DIRECTION:_____
CITY:_____ PROVINCE:_____ POSTAL CODE

IF UPDATING INFORMATION (R1=2), OBTAIN NEW ADDRESS AND DISPLAY MAP WITH NEW HOME LOCATION IDENTIFIED [DESCRIBE CROSS-STREETS NEAREST TO PIN-POINT]

R3. Is this the correct location?

1. Yes
2. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**
3. Mapping system cannot find my address/ intersection

If the map software is unable to find your location, please move the marker to the correct location.

R4. If you are employed, your trip diary may include trips you make to and from work. Please confirm the work address you provided last year?

STREET#:___ STREET:_____ STREET TYPE:_____ STREET DIRECTION:_____
CITY:_____ PROVINCE:_____ POSTAL CODE

1. Yes, this information is correct
2. No, I need to update this information → Please enter your work address here to simplify trip reporting later. When recording the street number enter the building address only; no apartment or suite number is necessary.

   Do not work (unemployed)
   No work address (no fixed work address OR only work from home)
   Enter work address

IF UPDATING INFORMATION (R4=2), OBTAIN NEW EMPLOYMENT INFO. IF CHANGE OF WORK ADDRESS, DISPLAY MAP WITH NEW WORK LOCATION IDENTIFIED. [DESCRIBE CROSS-STREETS NEAREST TO PIN-POINT]

Is this the correct location?

1. Yes
2. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**

If you have more than one work address, please provide your second work address here.
When recording the street number enter the building address only; no apartment or suite number is necessary

1. No second work address
2. Yes – **ENTER 2nd WORK ADDRESS**

STREET#:___ STREET:_____ STREET TYPE:_____ STREET DIRECTION:_____
CITY:_____ PROVINCE:_____ POSTAL CODE

DISPLAY MAP WITH WORK LOCATION IDENTIFIED [DESCRIBE CROSS-STREETS NEAREST TO PIN-POINT]

Is this the correct location?

1. Yes
2. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**

PROFILING, GENERAL TRANSPORT & PARKING QUESTIONS

1. Do you currently have a valid driver's license?
   1. Yes 2. No → SKIP TO Q3a

2. How many vehicles do you own or have regular access to (please include all cars, vans or light trucks that are **brought home and parked overnight** but not motorcycles / scooters or bicycles; do not include car share vehicles)? _____ None

3. What car share services are you a part of, if any? (check all that apply)
   1. Car2go___ 2. Modo___ 3.ZipCar___ 4. Evo___
   5. Other___ None___

   3a. Are you a member of "Mobi", the City of Vancouver's public bike share system?
   1. Yes
   2. No

4. Are you a commercial driver, that is do you drive or make deliveries as part of your job (e.g., if a bus or taxi driver, courier, etc.)?
   1. Yes → *Note that this survey concerns your travel for personal trips and those including travel to and from your job, but not trips made as part of your commercial driving job.*
   2. No

5. a) What is your **usual mode of transportation** this time of year for trips to or from **work**? If you use more than one mode, select the one used for **most of the travel distance. CHECK ONE ONLY**
   a. Private car, truck, or van **as a driver**
   b. Private car, truck, or van **as a passenger**
   c. Car share as a driver (e.g. Modo, Car2go, ZipCar, Evo, etc)
   d. Car share as a passenger (e.g. Modo, Car2go, ZipCar, Evo, etc)
   e. Transit bus
   f. SkyTrain
   g. West Coast Express
   h. SeaBus
   i. HandyDART
   j. School bus
   k. Other bus
   l. Personal bicycle
   m. Personal electric bicycle
   n. Bike Share (Mobi)
   o. Walk
   p. Taxi
   q. Ride hailing (e.g. Kater, Lyft, Uber, etc.)
   r. Motorcycle
   s. Other → Please describe other mode of travel _____
   t. DO NOT TRAVEL TO WORK

b) What is your **usual mode of transportation** this time of year for trips to or from **school as a student**? If you use more than one mode, select the one used for **most of the travel distance. CHECK ONE ONLY**

a. Private car, truck, or van **as a driver**
b. Private car, truck, or van **as a passenger**
c. Car share **as a driver** (e.g Modo, Car2go, ZipCar, Evo, etc)
d. Car share as a passenger (e.g Modo, Car2go, ZipCar, Evo, etc)
e. Transit bus
f. SkyTrain
g. West Coast Express
h. SeaBus
i. HandyDART
j. School bus
k. Other bus
l. Personal bicycle
m. Personal electric bicycle
n. Bike Share (Mobi)
o. Walk
p. Taxi
q. Ride hailing (e.g Kater, Lyft, Uber, etc.)
r. Motorcycle
s. Other (specify) _____
t. DO NOT TRAVEL TO SCHOOL AS A STUDENT

6. What would you consider to be a reasonable distance to walk when travelling to the following destinations?

Destination	Less than 5 minutes	5 to less than 10 minutes	10 to less than 15 minutes	15 minutes or more	I would not walk to that destination
a. Bus stop	o	o	o	o	o
b. SkyTrain station	o	o	o	o	o
c. Grocery store	o	o	o	o	o
d. Other shopping	o	o	o	o	o
e. Work	o	o	o	o	o
f. Park or other public space (e.g. plaza)	o	o	o	o	o
g. Childcare	o	o	o	o	o
h. Elementary school	o	o	o	o	o
i. High school	o	o	o	o	o
j. Public facilities (e.g. library, community centre, etc.)	o	o	o	o	o

7. Think about walking around your neighbourhood, or rolling if you use a mobility assistance device such as a wheelchair. To what extent do you agree with the following statements? For each statement, please rate your level of agreement from "Strongly Disagree" to "Strongly Agree."

Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I have direct walking paths to my destinations.	o	o	o	o	o
b. I live in a dense area, like downtown.	o	o	o	o	o
c. There are many small stores nearby.	o	o	o	o	o
d. There are many different kinds of places to walk to nearby.	o	o	o	o	o
e. There are many sidewalks in my neighbourhood.	o	o	o	o	o
f. The sidewalks are in good condition.	o	o	o	o	o
g. Overall, I live in a walkable neighbourhood.	o	o	o	o	o

SKIP 8-9 IF REGISTRATION QR4 = Do not work (unemployed)

8. Do you make any trips for business purposes during work?
    1. Yes
    2. No → SKIP Q9

9. Do you have access to employee programs that support or provide the following (MULTIPLE RESPONSE):
    Check all that apply
    1. Company Carpool / Car Share
    2. Employer Subsidized Transit Pass
    3. Employer Subsidized Bike Share / Mobi Membership
    4. Other specify:_____
    5. No, I do not have access to such programs

DEMOGRAPHICS

A few questions to help us classify the survey data.

1. Including you, how many people reside in your household?
    DROP DOWN MENU

2. The City is interested in tracking the health of its residents. In general, would you say that your health is…
    a. Excellent
    b. Very good
    c. Good
    d. Fair
    e. Poor
    f. Prefer not to answer

3. What type of dwelling do you currently live in?
    a. A single detached home (includes basement suites, laneway houses, etc)
    b. An apartment or condo in a low rise (5 levels or less)
    c. An apartment or condo in a high rise (more than 5 levels)
    d. A townhouse/row house
    e. Semi-detached home or a duplex (includes basement suites)
    f. Residential care or long term care facility
    g. A mobile home
    h. Other
    i. Prefer not to answer

4. EMPLOYMENT: Are you: (MULTIPLE RESPONSE EXCEPT CANNOT SELECT *Working full-time* AND *Unemployed*, NOR SELECT Student full-time AND Student part-time, NOR SELECT *Unemployed* WITH ANY WORK OPTIONS)
    a. Working full-time (30+ hours per week)
    b. Working part-time (less than 30 hours per week)
    c. Self-employed
    d. Volunteer only (not for pay)
    e. Unemployed
    f. Looking after home/family
    g. Retired
    h. Student full-time
    i. Student part-time
    j. Prefer not to answer

5. HOUSEHOLD INCOME: Which of the following best describes your total **household** income (the combined gross income for all household members)?
    a. Less than $25,000
    b. $25,000 to less than $50,000
    c. $50,000 to less than $75,000
    d. $75,000 to less than $100,000
    e. $100,000 to less than $150,000
    f. $150,000 or more
    g. Prefer not to answer

6. What is the highest level of education you have completed?
    a. Have not completed high school
    b. Completed high school/secondary school
    c. Trade certificate or diploma from a vocational school or apprenticeship training
    d. Non-university certificate or diploma from a community college, CEGEP or nursing school
    e. University certificate below bachelor's level
    f. Bachelor's degree
    g. Graduate degree (master's degree or doctorate)
    h. Prefer not to answer

7. **ETHNICITY**: Were you born in Canada?
    a. Yes
    b. No
    c. Prefer not to answer

8. Vancouver residents come from many different backgrounds and this question helps us to understand whether we are hearing from the diverse range of people that call Vancouver home. What is your main ethnic background? [ALLOW UP TO TWO OPTIONS TO BE SELECTED]
    06. Canadian (including First Nations, Inuit, Metis)
    01. African
    02. American
    04. Australia
    05. British (English/Scottish/Welsh/Irish)
    07. Chinese
    08. Dutch
    10. East European (Ukrainian, Polish, Hungarian, Serb, etc.)
    11. Filipino
    12. French
    13. German
    14. Greek
    15. Italian
    16. Japanese
    17. Korean
    18. Latin American (Guatemalan, Nicaraguan, Mexican, etc.)
    19. Middle Eastern
    20. Portuguese
    21. South American (Brazilian, Peruvian, Colombian, Chilean, Ecuadorian)
    09. South Asian (Punjabi, Indian, Tamil, Guyana, Pakistani, etc.)
    22. Scandinavian
    23. Spanish
    24. Vietnamese
    03. Other Asia (Indonesian, Malaysia, Thailand)
    25. OTHER SPECIFY:_____
    99. Prefer not to answer

<u>IF Q7 = YES OR Q8 = 06. Canadian</u>

9. Do you identify as an Aboriginal person (i.e. First Nations, Inuit, Mets)?
    1. Yes 2. No

NEW QUESTIONS ASKED ONLY OF THOSE 35 YEARS AND OLDER, AND HAVE MORE THAN ONE PERSON IN HOUSEHOLD: Finally, …

10a. Is there anyone in your household between the ages of 18 and 34 years?

1. Yes
2. No → **THANK AND END**
99. Prefer not to answer → **THANK AND END**

IF YES IN Q10a

10b. We would like to invite one additional household member from this age group to also participate in this transportation survey. Do you think they would be interested?

1. Yes 2. No → **THANK AND END**

10c. Is he/ she available right now?

1. Yes 2. No

10d. **IF 10c = YES:**

Hello, I'm __ of Mustel Group, a professional research company and we are inviting you to participate in an important annual online transportation study.

Your participation will help the City make better decisions regarding future transportation plans and investments for area residents like yourself. In appreciation of your time to complete all survey tasks, you will have the option to receive a guaranteed $20 for completing all survey tasks or you will have a 1-in-10 chance to win one of 245 cash-based incentives ranging from $50 to $1,000 or one of 20 monthly Mobi bike passes! Further details on the prize draw are available once you access the survey.

IF ASKS WHAT IS INVOLVED: We will email you a link to the two-part online survey. The first is a brief 10-minute registration, and the second a one-day diary that is completed at a later date. The survey runs from mid-September to the end of November, giving you plenty of time to complete it.

Will you participate?

1. Yes 2. No → THANK AND END

IF YES: Can I have your first name: _____

And your email address:_____

RE-ENTER EMAIL: _____

And a telephone number in case we need to contact you:

1. TEL:_____
2. SAME AS CURRENT CALL

The email invitation has been sent and you should receive it shortly.

You should look for an email from: covtravelsurvey@mustelgroup.ca with the following subject line: City of Vancouver Annual Transportation Survey. If convenient, please check your Inbox to make sure you have received it.

If you do not see it in your Inbox, please check your SPAM or JUNK mail folder. If it is still not there, please call us at this number: (778) 383-3416.

10e. **IF 10c = NO (REFERRED YOUTH)**

Please provide their email address and we will send them a link to the survey.

EMAIL: _____

RE-ENTER EMAIL: _____

And could we have their name and phone number? We may need to call them to make sure they received the email.

NAME: _____

PHONE: _____

Is this a cell or landline number?

Cell Landline

Who should we say has referred this youth to our survey? _____

The email invitation has been sent and they should receive it shortly.
They should look for an email from: covtravelsurvey@mustelgroup.ca with the following subject line: City of Vancouver Annual Transportation Survey. If convenient, please have them check their Inbox to make sure they have received it. If they do not see it in their Inbox, please check them their SPAM or JUNK mail folder. If it is still not there, please call us at this number: (778) 383-3416.

SEND NEW RECRUIT EMAIL TO SELF-COMPLETE ONLINE

EMAIL INVITATION

Hello and welcome to the City of Vancouver Annual Transportation Survey!

Your unique link to the trip diary survey is below.

Note that your assigned travel day is a **(INSERT DAY)**. Please keep track of your trips on this day and then access the survey to complete the online diary [IF UNDER 35 YEARS:to receive a guaranteed $20 or] [IF 35 YEARS AND OVER: and] be entered to the prize draw for a 1-in-10 chance to win one of 245 cash-based incentives ranging from $50 to $1,000 or one of 20 monthly Mobi bike passes! (Approximate chances of winning are 1-in-10.)

When you access the survey you will first be able to review helpful information on how to complete it.

Here is YOUR UNIQUE LINK:
http://www.covtravelsurvey.com/dash/Dash?id=covtravel,34232343

Below is your **PIN Number**. This is important if you need to contact our Help Line (see below) for any questions or assistance with your survey. Be sure to provide this number when emailing or calling in.
YOUR PIN: 34232343

If your email program doesn't support hyperlinks and you are unable to click on the link above, please copy and paste the link directly into your browser.

Thank you in advance for your participation!

Mustel Group Study Team (covtravelsurvey@mustelgroup.ca)
402-1505 West 2nd Ave,
Vancouver, BC V6H 3Y4

Need Help?
Reply to this email or call us at: **778-383-3416**
(Please have your PIN Number handy when you do.)

To unsubscribe from receiving email reminders, please click here (insert hyperlink)

To unsubscribe from this survey altogether, please click here (insert hyperlink)

City of Vancouver Annual Transportation Survey

Your assigned travel day is next **(INSERT DAY)**.

Please read this information regarding your one-day trip diary.

- If you are unable to record your trips to the online survey for your assigned day, you can do so within a week or two afterwards.
- Watch this video with key points to remember on your travel day (Trip Diary Video).
- Also, if you plan to be away for a period of time, you can still participate as the survey is open until the end of November.
- Before recording and entering your trips, we will first confirm information you provided last year.

NOTE: Even if any of the following applies to you, we still need you to complete the survey.

- You do not make any trips on your assigned day
- The trips you take on your assigned day are not typical
- Your trip patterns have not changed from year to year

If you are ready to begin the trip diary, click the NEXT button. Otherwise click the Exit button and return to complete your diary when you are ready.

TRIP BEHAVIOUR (Monday to Friday only)

The City needs to understand residents' transportation choices each time they make a trip within or through the Lower Mainland. Please watch this quick video on how to fill in the trip diary: **Link to Trip Diary Video**

In this survey, we are asking about all of your trips taken on [INSERT ASSIGNED DAY] between midnight and 11:59 p.m. (a full 24-hour day).

PROGRAMMER NOTE: INSERT THIS TEXT IF DRIVES OR MAKES DELIVERIES AS PART OF JOB (PROFILING AND GENERAL TRANSPORT QUESTION 3 = YES):

Please remember to exclude trips you make as part of your job (i.e. driving a bus, taxi or commercial vehicle), but do include trips to and from work as well as any other personal trips you make.

DEFINITION OF A TRIP (ON FIRST SCREEN – HAVE AS LINK OR DROP DOWN ON EVERY OTHER TRIP SCREEN)

A trip is travel from one location to another location for a purpose.

- **Include trips made by all means (walking, cycling, transit, car, etc)**
- **Include short trips** (e.g., stopping at a coffee shop, a gas station or dropping someone off)
- **Include return trips** (e.g., going home)
- **Include recreational outings that end at the same place they started** (e.g., dog walking, going for a walk or jogging)

T1. Did you make any trips that started and ended on [INSERT ASSIGNED DAY], between midnight and 11:59 p.m. (a full 24-hour day)?

1. No, stayed home or was out of town for the whole day → SKIP TO VKT SECTION
2. Yes

1. Trip 1

Q1a) What was the **starting location**? If this trip started from home or work, please click "Home" or "Work". Otherwise, give precise address, nearby cross-streets or a landmark. Be sure to include the municipality.
If you need help, please refer to this map. (COV ON GOOGLE MAPS)

- Home address
- Work address
- Precise address (specify below)
- Nearby cross-streets (specify below)
- Landmark (specify below)

Q1b) What was your **end location**? If this trip ended at home or work, please click "Home" or "Work". Otherwise, give precise address, nearby cross-streets or a landmark. Be sure to include the municipality.
If this is a recreational trip where your start and end locations are the same, please select that response. (Examples of recreational trips are dog walking, jogging, etc)
If you need help, please refer to this map. (COV ON GOOGLE MAPS)

- Home address
- Work address
- Precise address (specify below)
- Nearby cross-streets (specify below)
- Landmark (specify below)
- Same as origin (a recreational trip)

Municipality:

1. Vancouver
2. Burnaby
3. Coquitlam
4. Delta/Ladner/Tsawwassen
5. Langley/Langley Township/Fort Langley/Aldergrove
6. Maple Ridge
7. New Westminster
8. North Vancouver
9. Pitt Meadows
10. Port Coquitlam
11. Port Moody/Anmore/Belcarra
12. Richmond
13. Surrey
14. West Vancouver (including Horseshoe Bay/Lions Bay)
15. White Rock
16. All Other Locations Ending Outside of Metro Vancouver

GOOGLE MAP WITH PIN POINT OF LOCATION. Confirm: Is this the correct location? IF YES: **INSERTION OF LAT-LONG FROM GEO-CODER.** IF NO, RETURN TO END LOCATION SCREEN FOR RE-ENTRY/REVISION OF LOCATION DETAIL)

Q1c) What time of day did you start this trip?

1. 12:00am to 12:59am
2. 1:00am to 1:59am
3. 2:00am to 2:59am
4. 3:00am to 3:59am
5. 4:00am to 4:59am
6. 5:00am to 5:59am
7. 6:00am to 6:59am
8. 7:00am to 7:59am
9. 8:00am to 8:59am
10. 9:00am to 9:59am
11. 10:00am to 10:59am
12. 11:00am to 11:59am
13. 12:00pm to 12:59pm
14. 1:00pm to 1:59pm
15. 2:00pm to 2:59pm
16. 3:00pm to 3:59pm
17. 4:00pm to 4:59pm
18. 5:00pm to 5:59pm
19. 6:00pm to 6:59pm
20. 7:00pm to 7:59pm
21. 8:00pm to 8:59pm
22. 9:00pm to 9:59pm
23. 10:00pm to 10:59pm
24. 11:00pm to 11:59pm

Q1d) IF RESPONSE "Same as origin" IN b) ask: Approximately how long was this recreational trip?

1. Less than 10 minutes
2. 10 to less than 20
3. 20 to less than 30
4. 30 to less than 40
5. 40 to less than 50
6. 50 to less than 60 minutes
7. 60 minutes or more

Q1e) What was the main **purpose** of this trip? ONE RESPONSE ONLY AUTO CODE AS "Recreation" IF RESPONSE "Same as origin" IN b)

1. To work
2. During work/business trip
3. To school (as a student)
4. Shopping
5. Dining/restaurant
6. Recreation (including dog walking, jogging, etc)/social/entertainment
7. Personal business (e.g. bank, doctor, volunteering, etc)
8. To drop-off/pick-up someone (via driving, walking, transit, cycling, etc.)
9. To go home

Q1f) How did you travel to this location? Choose all that apply. If more than one, list in order of use.
If you walked and used other modes, select "walked as part of the trip" as well as the other modes.
Please enter your first travel mode below and click next.

1. Private car, truck, or van as a driver
2. Private car, truck, or van as a passenger
3. Car share as a driver (ex Modo, Car2go, ZipCar, Evo, etc)
4. Car share as a passenger (ex Modo, Car2go, ZipCar, Evo, etc)
5. Transit bus
6. SkyTrain (Expo, Canada and Millennium Lines)
7. West Coast Express
8. SeaBus
9. HandyDART
10. School bus
11. Other bus
12. Walked/jogged the whole way (CANNOT BE COMBINED WITH OTHER RESPONSES)
13. Walked/jogged as part of the trip
14. Personal bicycle
15. Personal electric bicycle
16. Bike Share (Mobi)
17. Taxi
18. Ride hailing (ex Kate, Lyft, Uber, etc.)
19. Motorcycle
20. Other (specify) _____

Second mode, third mode, etc.
(SAME LIST BUT WITH "No others" ADDED CODE AT TOP OF LIST)

IF TRIP.(f) RESPONSE IS "Transit Bus", "SkyTrain", "WestCoast Express", "Seabus", "HandyDART", "School Bus", "Other bus", "Walked/jogged the whole way", "Walked/jogged as part of the trip", or "Bicycle" ASK:

Q1k. Approximately how long was the walking and/or biking portion of this trip?

1. Less than 5 minutes
2. 5 to less than 10
3. 10 to less than 20
4. 20 to less than 30
5. 30 to less than 40
6. 40 to less than 50
7. 50 to less than 60 minutes
8. 60 minutes or more

AUTO CODE AS "No", IF RESPONSE "Same as origin" IN b)

Q1g) Was this trip a stop along the way to your next location? (e.g. a short trip such as a drop off, gas station, coffee shop, etc.)

1. Yes → Did you pre-plan to make this stop? 1. Yes 2. No
2. No

Q1h2. TRIP SUMMARY: Please carefully review the information you have provided for this trip.

INSERT

START LOCATION
END LOCATION
TIME OF DAY
MAIN PURPOSE OF TRIP
METHODS OF TRAVEL

Is this information complete and correct?

1. Yes *(If you select this and click **Next**, you will not be able to make changes to this trip)*
2. No *(If you select this and click **Next**, you will be taken through the trip to make corrections)*

To make corrections:
If you click **Next** on this page, you will be taken back through your trip to make changes.

As you go through the trip and the page that displays does not require corrections, simply click **Next** to continue until you reach the information that needs to be changed. Then select or type in the correct response to the question. Please be sure to follow the instructions carefully when you access the map pages.

After you have revised the trip, you will again be asked to verify that it is correct.

Click **Next** to revise your trip OR click **Back** if you arrived here by mistake.

Q1h2. Which of the following experiences, if any, did you have during **this trip**?
Choose all that apply. If none, please click NEXT below.

Social Interaction:

1. It was friendly (e.g. hand waving, smiles, etc.)
2. It was unfriendly
3. It was neutral

Safety/Personal Security:

4. I was involved in a collision
5. I experienced a "near miss" (e.g. a collision was narrowly avoided, etc.)
6. I felt uncomfortable (e.g. vehicles passed too close to me while biking, etc.)
7. I felt afraid for my security (e.g. walking alone in the dark, etc.)
8. Other travelers gave me appropriate space

Transportation Systems:

9. Everything worked the way it is supposed to work
10. My trip was affected by construction (e.g. sidewalk/road was closed, etc.)
11. I experienced a problem (e.g. traffic signal didn't work, bus was late, etc.)

Travel Comfort:

12. My trip was particularly comfortable/enjoyable (e.g. great public space, nice weather, lovely flowers, etc.)
13. My trip was uncomfortable (e.g. bus was too crowded, etc.)

*If you have made an error and would like to change your answers, click "Clear". Otherwise, click the **Next** button to continue.*

TRIP COMMENTS

Do you have any other details or comments about **this trip** that you would like to provide?
*If you have no additional comments, click **NEXT** to continue.*

Q1i) Did you make another trip on this day before 11:59pm? (Remember to include return trips.)

1. Yes
2. No (last trip of the day) → IF LAST TRIP DID NOT RETURN HOME, ASK j)

Q1j) Did you return home before 11:59pm on this travel day?

1. Yes
2. No - Did not return home on this day → **IF Q1g =** Yes, a stop along to another destination, **INSERT ERROR MESSAGE:** You mentioned earlier this trip was a stop along the way to another destination. Is it correct that you did not make any more trips today?
   If this is correct you can leave your answer as is and click "Next" again to continue, otherwise please correct your response. (**CLICKING NEXT SKIPS TO TOTAL TRIP SUMMARY, THEN VKT)**

Trips 2-15: REPEAT TRIP QUESTIONS STARTING WITH….

b) **Destination:** Where did you go next? ALL OTHER QUESTIONS SAME AS ABOVE

AFTER LAST TRIP OF DAY, TOTAL TRIP SUMMARY: Please review your trips below.

k) Are your trips complete?

INSERT TRIP SUMMARIES

TRIP	FROM	TO	PURPOSE
1	ADDRESS	ADDRESS	PURPOSE
2	ADDRESS	ADDRESS	PURPOSE
3, etc	ADDRESS	ADDRESS	PURPOSE

1. Yes 2. No

IF NO: This action will delete all of your trips. You will need to re-enter all of your trips to complete the survey. Are you certain that you wish to delete all of your trips? **tripReset.page**

1. Yes → **REDO ALL TRIP ENTRIES** **2.** No → **CONTINUE**

VKT SECTION

PROGRAMMER NOTE: IF PRIVATE VEHICLE CHOSEN IN RECRUIT PROFILING AND GENERAL TRANSPORT SECTION (Q2), ASK

QS1. What type of private vehicle do you typically drive? Please choose the make of your vehicle. If you cannot locate the vehicle you typically drive scroll down to the very bottom of the drop-down menu and select "OTHER".

(IF OTHER CHOSEN, PROMPT Please specify other for the make of your vehicle)

QS1a. Please choose the model and year of your vehicle.

(IF OTHER CHOSEN, PROMPT Please specify other for the model of your vehicle)

INSERT IF COMMERCIAL DRIVER IDENTIFIED IN RECRUIT PROFILING & GENERAL TRANSPORT SECTION (Q3) This is the vehicle typically driven for your personal trips. If you typically use a commercial vehicle for your personal trips, select that vehicle from the list below.

DROP DOWN MENUS AS PER NRCAN DATASET
AS NRCAN LIST ONLY INCLUDES PASSENGER VEHICLES, ALLOW OVERRIDE

Is this a zero-emission vehicle?

Yes
No

Q Send Odometer. It is important for the City to understand how many kilometers residents are driving in a year as it helps provide a measure of fuel consumption and emissions, which impact air quality and climate change.

Would you like to enter your odometer reading now, or email a link to enter it later? The email link will provide you with a mobile-friendly way to enter the odometer, so you can complete it in your car with your smartphone or tablet, if you choose.

1. Provide my odometer reading right now
2. Email a link to enter my odometer reading later (Please specify the email address you would prefer to receive the link to the odometer reading. _____@_____.

Qs2. Please record the current odometer reading for this vehicle (to nearest 100km's). If unsure, you may check the vehicle and return to enter later. _____ km's

CLOSING: This completes our survey. Thank you very much for your input and interest in this **annual trip diary** survey!

As a small thank you, once all trip diaries have been collected and analyzed, we will email you key results and a link to the full report from this year's survey made possible by your participation. If you are eligible for the prize draw, all winners will be contacted within the first quarter of 2020.

IF 18 TO 34: Your $20 incentive will be mailed to you within 4 to 8 weeks after the survey closes.

Thank you once more and we'll be in touch in 2020!

Please click the button below to submit the survey.