



Prepared for



## Summary Report

# 2016 Vancouver Panel Survey

April 2017 | Submitted by:



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## Executive Summary

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This report summarizes the results of the City of Vancouver's fourth annual Transportation Panel Survey conducted in 2016. 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. These are the two principal metrics for gauging progress in sustainable transportation, as outlined in the City of Vancouver's Greenest City Action Plan, Transportation 2040, and associated policies. As this survey tracks the travel characteristics of the same group of people<sup>1</sup> from year to year it will also be helpful in determining what 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 a given weekday. This data was compared to previous panel surveys conducted in 2013, 2014, and 2015, which followed similar design, recruitment, and analysis methodologies. As was the case in 2016, and as part of the evolution of the Panel Survey, there were some changes to the demographic and trip diary components to better reflect the City's priorities. These are explained in more detail within the report but are summarized as follows:

- 1) The 2016 survey updated the options for transit payment method to reflect the addition of Compass Card facilities and elimination of fare saver tickets.
- 2) The 2016 survey introduces a question asking participants if they are a member of Mobi, the City of Vancouver's public bike share system. The data is useful to evaluate the coverage and effectiveness of the bike share program.
- 3) The 2016 survey added car share as a driver, car share as a passenger, bike share and scooter to the modes of transportation questions. This is in response to the increasing market share for car share and addition of the bike share program in the City of Vancouver.

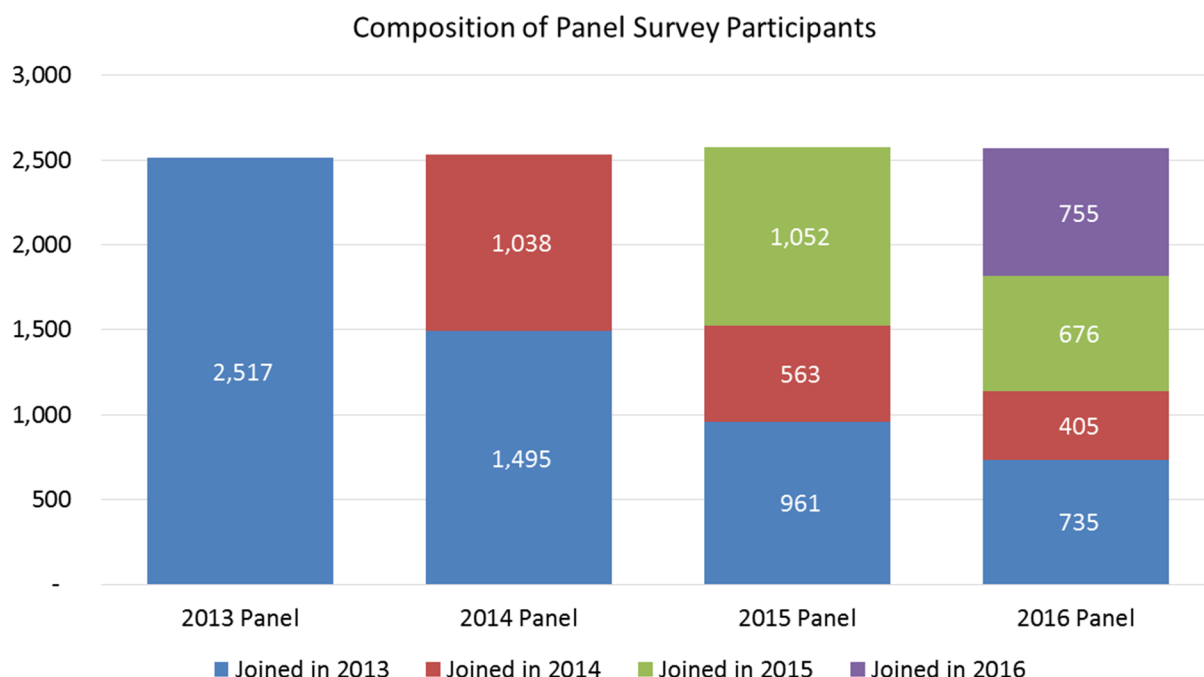
Additionally, a more effective cash-based incentive program was introduced in 2016, which resulted in 1,795 of 2,572 panel members returning from 2015 for the 2016 Panel. This helped achieve a lower 30% attrition rate, compared to the 41% attrition rate from the previous two years. It is important to retain as many of the previous year's panel members to effectively track changes in travel behaviour and patterns year-over-year. The complete composition of the 2013 to 2016 panelists, grouped by when they first joined, is shown in *Figure 0-1*.

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<sup>1</sup> 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 2016 are similar to 2015. Some of the key highlights from the 2016 survey results include:

- 1) Despite unfavourable weather conditions in 2016, the percentage of people travelling by walk/bike/transit increased to just over 50% (50.2% compared to 49.5% in 2015)<sup>2</sup>, which is on track to achieve the City's mode share target<sup>3</sup> by 2020.
- 2) There is negligible change in mode share from 2015 to 2016, except for a 1% decrease in the auto driver mode share which is instead captured by the other modes. 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 trips for commuting, as illustrated in [Figure 0-3](#).
- 3) Benchmarking vehicle kilometres travelled (VKT) per capita using odometer readings from panel participant's vehicles indicates a further reduction in 2016 of approximately 6%.
- 4) Car sharing has further increased in 2016 with 29% of residents (aged 18+ including those without valid driver license) having a car share membership, up from 26% in 2015 and 20% in 2014. Access to private vehicles has also increased across the City, from 78% to 79%.

In addition to the fall panel survey, a smaller summer survey was conducted to engage panelists and ask additional questions regarding bicycle usage and parking. The results of the summer mini survey are documented in a technical memo<sup>4</sup> to City of Vancouver.

<sup>2</sup> Note that these 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.

<sup>3</sup> The Transportation 2040 plan target is that by 2020 at least half of all trips are by walking, biking or transit.

<sup>4</sup> 2016 Vancouver Panel Survey – Mini Survey, McElhanney, August 2016.



Figure O-2: Total Trips by Mode and Mode Share (2013-2016 Panel Surveys)

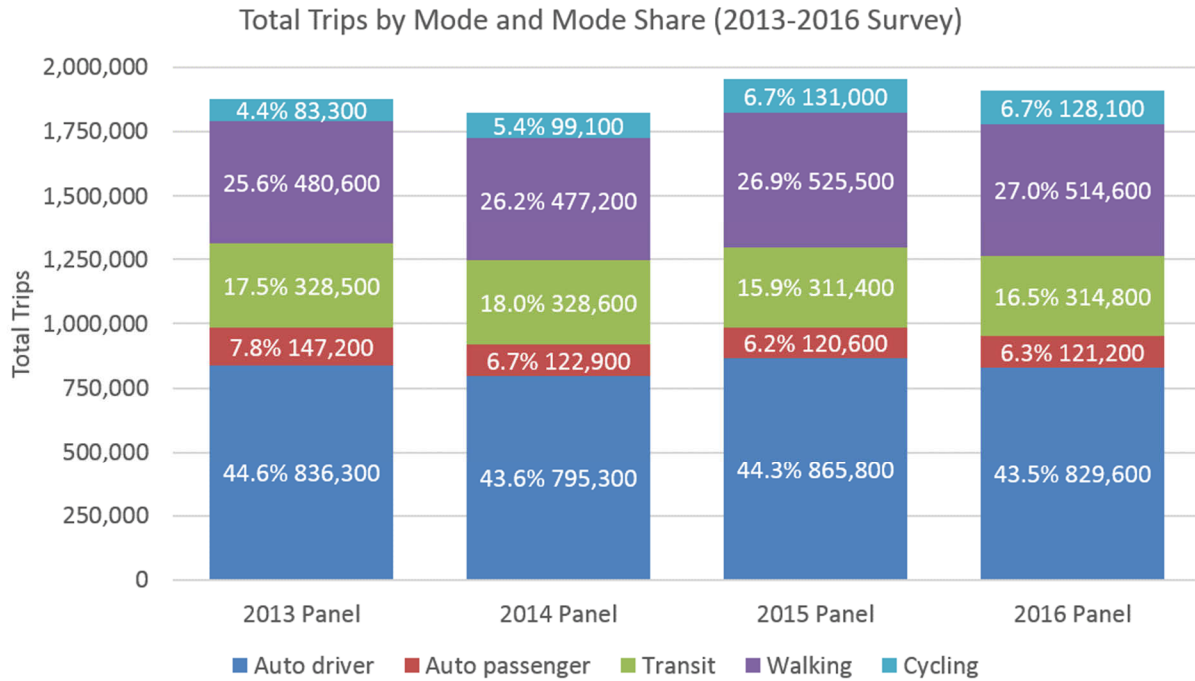
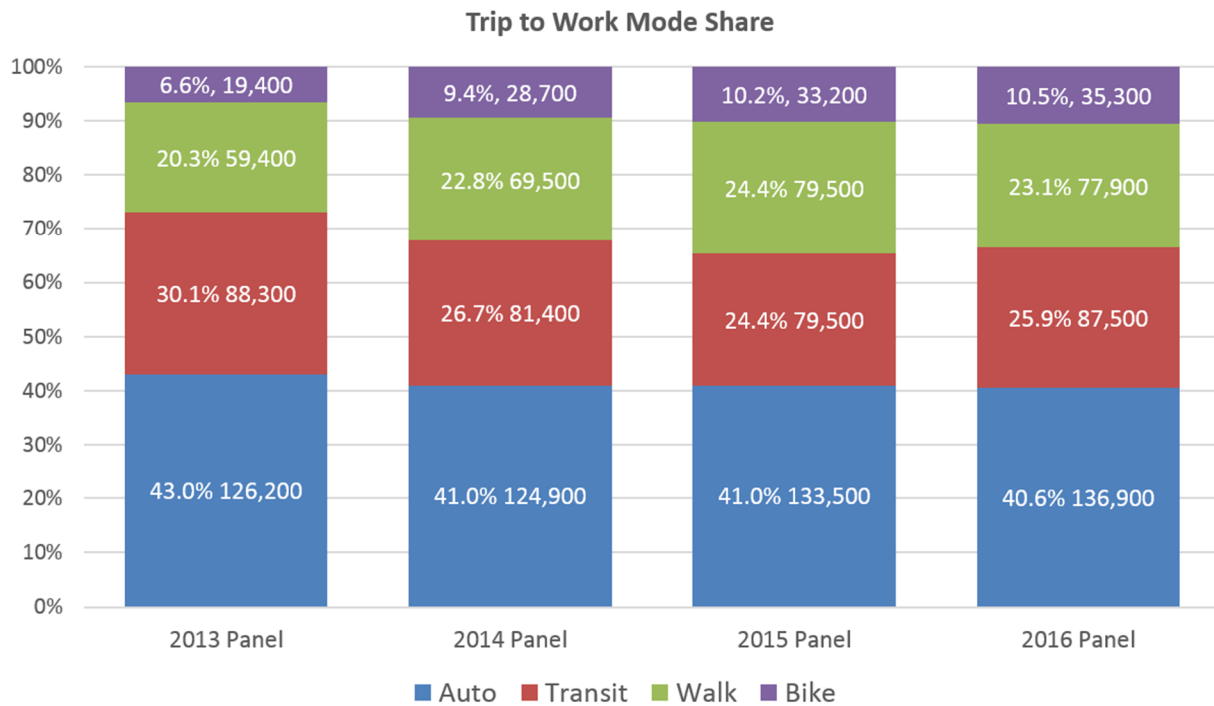


Figure O-3: Comparison of Panel Survey Trips to Work



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# 1. Introduction

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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 and Transportation 2040 offer appealing visions 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 adjacent communities and senior levels of government; and educating citizens.

In many respects, that vision 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 protected bike lanes and transit oriented development has also gone a long way to support more walk/bike/transit modes of transport.

In late 2015, the City approved plans to expand the cycling network over the next five years (2016 to 2020) and to initiate a pilot project to allow roller-bladers, skateboarders, and push scooters to use protected bike lanes.<sup>5</sup> Further, the City of Vancouver launched the Mobi bike-share system on July 20, 2016 providing a transportation alternative to people who might not own a bicycle.

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, and TransLink's Regional Trip Diary Survey, a Panel Survey is one of the best tools to capture and track such trends.

The ability to track changes in mode share and VKT takes on greater significance in light of the Federal government's commitments to increase infrastructure spending through the New Building Canada Fund.

This is the fourth year of the City of Vancouver's annual Panel Survey. This survey is intended to be used to benchmark progress towards Greenest City and Transportation 2040 targets. Each year the survey is being refined to include other metrics related to health, propensity of travel by active transportation modes, and reasons for shifting travel patterns.

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<sup>5</sup> 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 Transportation 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 or non-residents.

The objectives of the Panel Survey are to:

- 1) Assess the travel mode share and number of trips for 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 2014, 2015 and 2016 Panel Surveys are compared, allowing the City to accurately 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 previous regional travel surveys in that this survey aims to measure relative annual change 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, the fourth year of the Panel Survey, trends can be drawn from Panel data 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 commute to work Census survey that occur approximately every 5 years, the latest of which was conducted in 2016<sup>6</sup>.

## 1.2. 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 (CACs);
- Enhanced community livability when taking into account:
  - Social connectedness – residents more engaged within their own neighbourhoods
  - Improved security – following Crime Prevention Through Environmental Design (CPTED) principles – due to greater use of the public realm;
  - Reduced transportation costs when factored into the housing affordability equation.

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<sup>6</sup> The Census Journey to Work data has not been released at the time of drafting this report.



- Postponement of investments in infrastructure 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.

## 1.3. 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 Panel members. This section also provides a summary of vehicle ownership, car-sharing, transit, 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 is comparing the 2016 Panel Survey results with previous Panel Survey data.
- 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) **Factors Affecting Growth** – This section provides high-level commentary on external and likely contributing factors that affect mode share and VKT and other travel patterns.
- 7) **Lessons Learned and Next Steps** – This section highlights themes from previous Panel Surveys and lays out the work program over the coming months leading up to the fall 2017 Panel Survey.

## 2. Survey Methodology

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### 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, vehicle-kilometres travelled (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 bike/vehicle parking trends. It also introduces a question that delves into social interactions during trip making and health related metrics.

In 2015, additional changes were made to the survey instrument. The main differences include:

- 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

In 2016, the following minor changes / additions were applied:

- Added a question to determine membership in Mobi, the City's new bike sharing program
- Modified / expanded response options within questions measured 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 modified to reflect TransLink's 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

More in-depth questions were contemplated during the process of updating the survey instrument in 2016. In the interest of brevity and minimizing participant fatigue, these were once more tabled for

possible inclusion in future years. It is expected that this process will be revisited every year, as guided by socio-economic and technological changes.

As in previous surveys, 2016 participants were entered into a random draw to incentivise participation while not biasing outcomes. Differing from 2015 and before however, \$100 Visa Gift Cards were added this year to the existing list of City facility and attraction incentives. This was implemented to increase participation levels among the newly recruited as well as to reduce the attrition rate among returning panelists.

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

Continuing with the past methodology, residents that completed the required 2016 study components were invited via email to participate in the study. Next, to address the attrition in the 2015 random sample, Mustel Group conducted telephone recruitment by continuing random selection of gender, but initially focusing on residents 15-34 years of age and in specific transportation zones (demographics that were below target in the previous waves).

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, as applicable to assist in 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 reporting day, which is 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 included in **Appendix A**.

## 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. *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

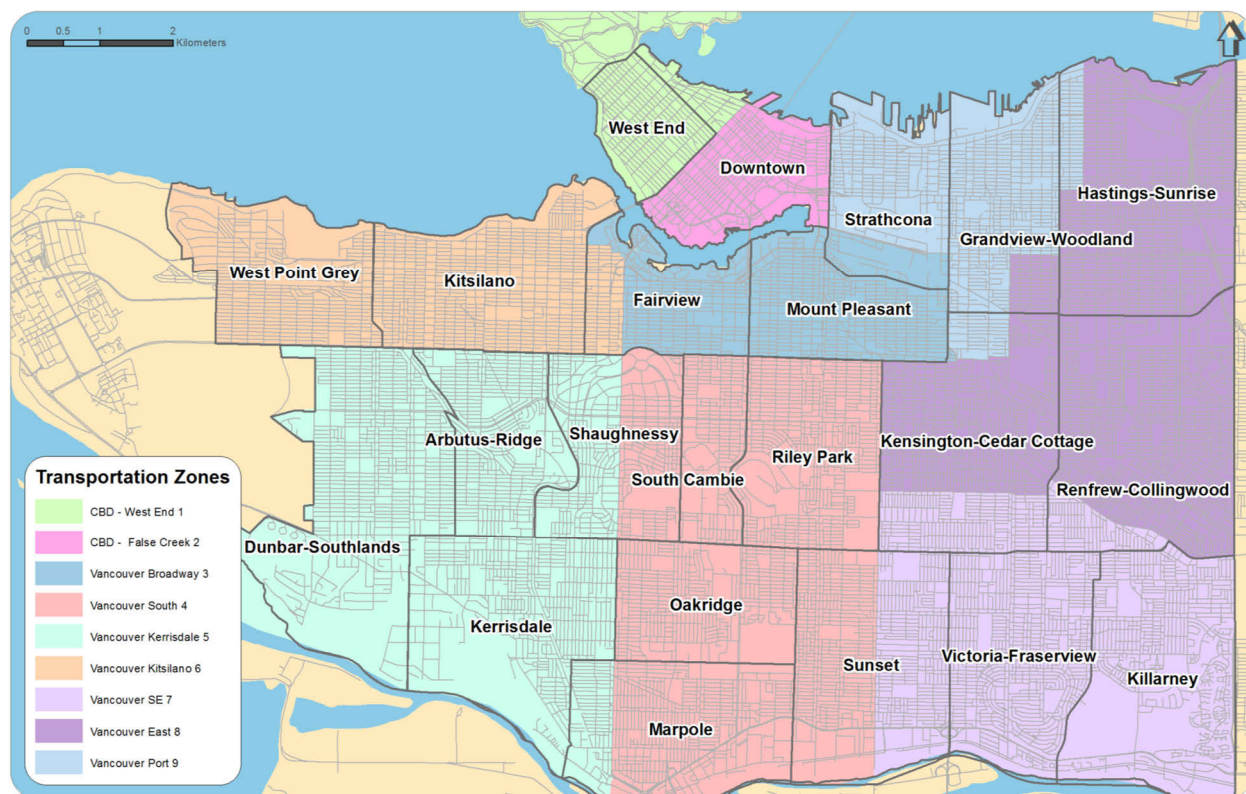


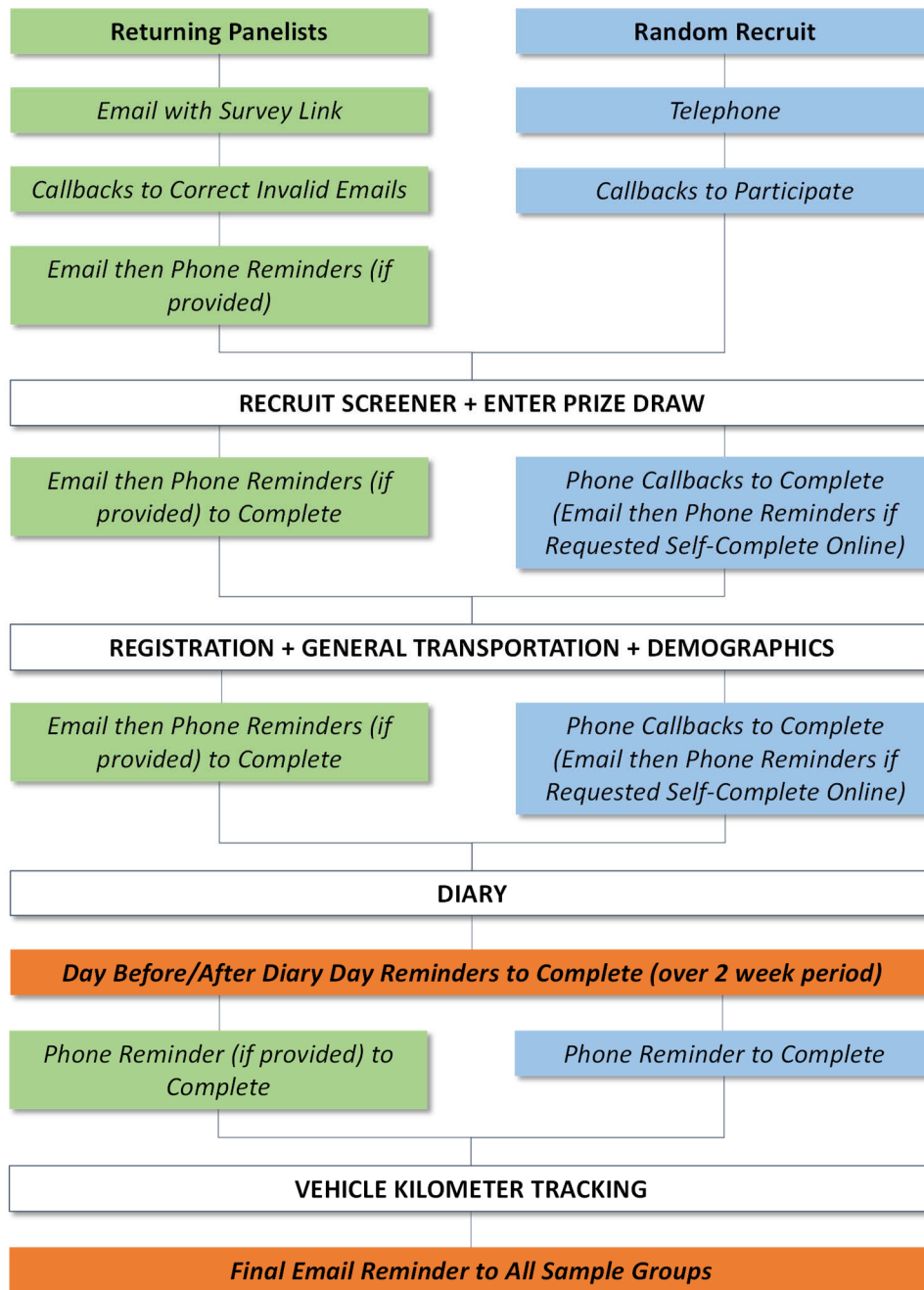
Table 2-1 shows proportionate sampling targets for the estimated 2016 population (based on a projection of 2011 Census data) required to achieve a representative total of at least 2,500 residents. Similar to previous surveys, the panel only included people 15 years and older. The total estimated 15+ population from the 2011 Census is approximately 532,383. Of the 15+ 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 15+)

		2016 Projection Based on 2011 Census Data			
Transportation Zone		Total Population	Population 15+	Proportion 15+	Proportionate Sample
1	CBD – West End	60,192	57,328	10.77%	269
2	CBD – False Creek	59,249	55,711	10.46%	261
3	Vancouver Broadway	59,344	54,298	10.20%	255
4	Vancouver South	81,679	70,180	13.18%	330
5	Vancouver Kerrisdale	61,172	51,677	9.71%	243
6	Vancouver Kitsilano	61,078	54,839	10.30%	257
7	Vancouver SE	83,029	70,643	13.27%	332
8	Vancouver East	96,757	82,791	15.55%	389
9	Vancouver Port	39,221	34,916	6.56%	164
Total		601,721	532,383		2,500

The panel recruitment process, illustrated in the flow chart in Figure 2-2 began in the third week of September, precisely the same time frame as in 2015. Returning panelists were sent email invitations starting September 19<sup>th</sup>, new recruitment started on September 28<sup>th</sup> and ran until December 5<sup>th</sup> and the window to enter trip diaries was from September 21<sup>st</sup> to December 11<sup>th</sup>. The first trip diary completions were made within a week, with a substantial portion (>80%) of completions amongst returning panelists done by early November. The bulk of new recruits completions were done by mid-November.

Figure 2-2: Panel Survey Flow Chart



Telephone recruitment to replenish randomly recruited panelists lost to attrition began September 28<sup>th</sup>, three weeks earlier than in 2015. In an attempt 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. Along with the upgraded incentives, these proactive measures resulted in reducing the attrition rate from 42% in 2015 to 30% in this year's panel.

Continued challenges in recruiting the 18-34 age cohort as well as residents in transportation zones below target necessitated randomly recruiting all age groups in all zones as well as extending recruitment and reminder efforts to achieve the city-wide target.

As indicated earlier, Mustel Group recruited panel participants using a random probability sampling method. The panel characteristics (e.g., age, gender) were closely monitored during recruitment. For the random probability sampling, Mustel Group's 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.

Specific methods to reach out to previously underrepresented geographies and age groups included:

### 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 was 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.

Of the total diaries completed by those within the 15-34 age cohort, 58.5% were recruited via cell phone sample, compared to only 41.5% via landline. Cell phone sampling will be an ongoing and increasing requirement, especially in contacting the 15-34 age cohort, and considering the incidence of landlines is expected to decrease over time.

In contrast, for the 35 to 54 age cohort, only 17.8% were recruited by cell phone. This figure drops to 4.3% for the 55+ age cohort.

### Incentives

An additional cash-based incentive was approved by the City for the 2016 survey which has helped to lower the attrition rate. For the 2016 survey, 90.5% of participants entered the draw, which is very consistent with the 2015 survey.

Travel days for 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 2016 sample include the following:

- A total of **2,571** respondents completed the trip diary, of which approximately 16 respondents were aged between 15 and 17 (with only one participant declining to provide their age). *Table 2-2* presents a breakdown of these respondents by geographic sub-area. The target figures show the number of samples required in order to match the proportions from the census.
- **55%** of respondents were female, **45%** were male, a similar distribution as in 2015.
- **2,286** respondents had access to a private vehicle in the random sample, though only **1,862 (81%)** entered an odometer reading for their vehicle.

*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 reported data. Improvements were made in 2016 to address under-sampling; however as in 2015, it was difficult to recruit panel members from a few transportation zones. CBD-False Creek results for this area 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.

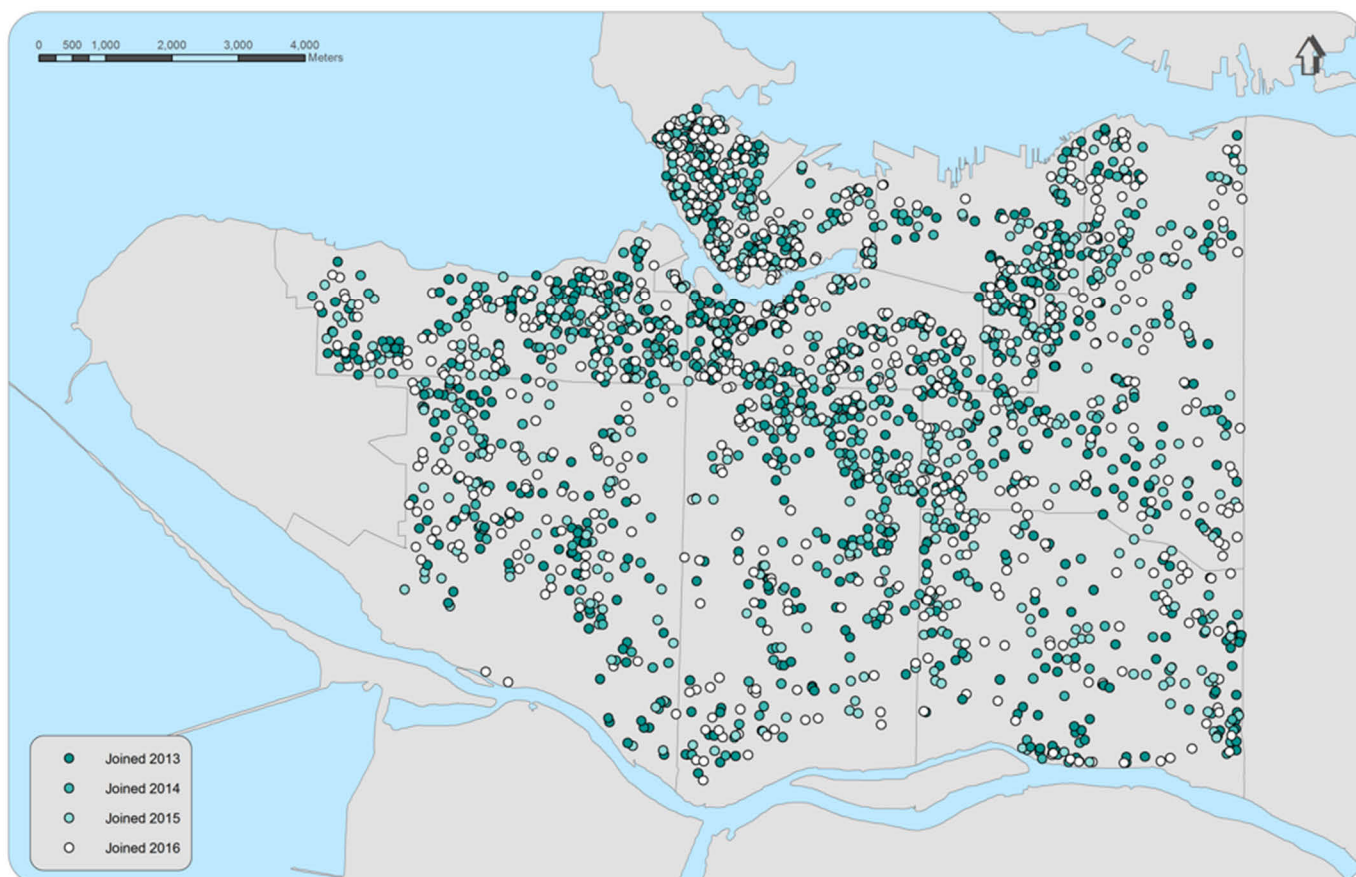


Table 2-2: Completed Trip Diaries by Transportation Zone

Transportation Zone	Mustel	Target	$\Delta$ Target	% Difference
1 CBD – West End	280	269	11	4%
2 CBD – False Creek	212	261	-49	-19%
3 Vancouver Broadway	306	255	51	20%
4 Vancouver South	332	330	2	1%
5 Vancouver Kerrisdale	272	243	29	12%
6 Vancouver Kitsilano	329	257	72	28%
7 Vancouver SE	256	332	-76	-23%
8 Vancouver East	373	389	-16	-4%
9 Vancouver Port	211	164	47	29%
<b>Total</b>	<b>2,571</b>	<b>2,500</b>	<b>71</b>	<b>3%</b>

Figure 2-3 shows the distribution 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 15+.

A firm specializing in sampling, mapping and census information, Environics Analytics (EA), provided the sample for survey recruitment, developed demographic projections for 2016 based on 2011 Census Data. Population forecasts were derived from the 2011 Census base population data by projecting change over the period 2011 to 2016 across a number of key demographic factors. The factors taken into account included birth rate, death rate, immigration and emigration for each age grouping within gender within the City's transportation zones. The factor changes were applied on a year-by-year basis to reach the final projections for 2016.

The travel survey represents 0.50 percent of the study area population (2,571 respondents out of 532,383 City of Vancouver residents over 15 years of age). As the data collected from this benchmark 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 (15+).

To ensure a statistically representative sample, the weighting and expansion factors developed for the person and trip data collected in the COV Panel Survey in 2016 matched known demographic characteristics for City of Vancouver 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 on the basis of 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.<sup>7</sup>

A total of 48 weight expansion categories were required to cover the eight transportation zones, three age categories (15 to 34, 35 to 54, and 55 and over), and two genders. Additional expansion cells were included for respondents who refused to provide their age. Records with age refusal were represented as their actual proportion within the corresponding zone and gender. As there was only one record where age was refused, the age refusal expansion process has no overall effect on age distribution. *Table 2-3* shows the actual survey sample age and gender distribution prior to weighting. Compared to 2015, there is a smaller proportion of participants in the 35-54 age cohort, and greater proportion in the 55+ cohort. *Table 2-4* shows the City's 2016 population estimates based on 2011 Census Data.

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<sup>7</sup> 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 3-5, wherever relevant) to account for the low sampling in CBD-False Creek and to be consistent with previous reporting.

Table 2-3: Panel Survey Age and Gender Distribution

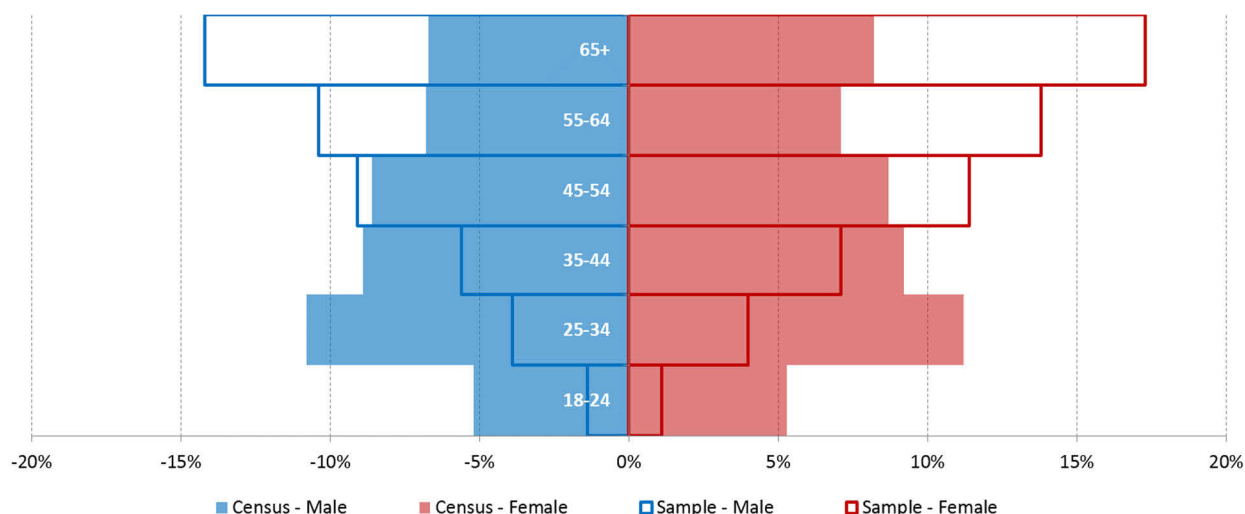
Gender	15-17	18-24	25-34	35-44	45-54	55-64	65+	Total
Male	0.3%	1.4%	3.9%	5.6%	9.1%	10.4%	14.2%	45.0%
Female	0.3%	1.1%	4.0%	7.1%	11.4%	13.8%	17.3%	55.0%
<b>Total</b>	<b>0.6%</b>	<b>2.5%</b>	<b>7.9%</b>	<b>12.7%</b>	<b>20.5%</b>	<b>24.2%</b>	<b>31.5%</b>	<b>100.0%</b>

Table 2-4: 2016 Demographic Projections (based on 2011 Census)

Gender	15-17	18-24	25-34	35-44	45-54	55-64	65+	Total
Male	1.6%	5.2%	10.8%	8.9%	8.6%	6.8%	6.7%	48.6%
Female	1.6%	5.3%	11.2%	9.2%	8.7%	7.1%	8.2%	51.4%
<b>Total</b>	<b>3.2%</b>	<b>10.5%</b>	<b>22.0%</b>	<b>18.1%</b>	<b>17.3%</b>	<b>13.9%</b>	<b>14.9%</b>	<b>100.0%</b>

Figure 2-4 illustrates the age and gender distribution of the survey sample versus the study area universe. Similar to the 2015 panel survey, there is some over-sampling of older age groups (55+ age cohorts) and under-sampling of younger age groups (15-34 cohort). The 15-34 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 married.

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



The expanded person weight above was then applied to trip data, but also included a weekday equalizer weight to balance out trip days of week (Monday to Friday). In the end, for the total sample size of 2,571 (for the random sample only) to be reflective of the entire 15+ COV population for this survey (532,383), the average expansion factor applied to the dataset was 207.7. The expanded population includes people who reported 'rather not say' for the age question.

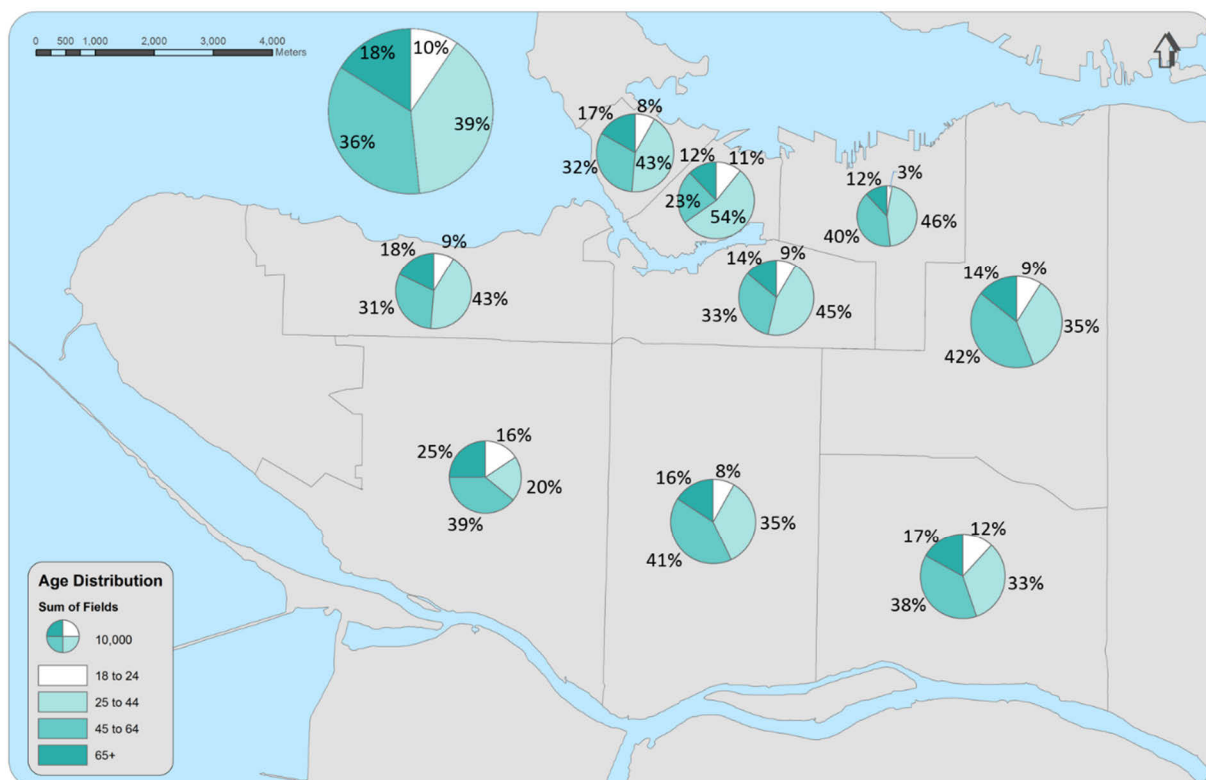
## 3. Panel Characteristics

Key characteristics of people within the transportation panel are presented in the following thematic maps, which show the geographic distribution of these attributes. Only characteristics and trends of people aged 18+ are shown in this section<sup>8</sup>.

### 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. The CBD-West End, CBD-False Creek, Kitsilano, Port, and Broadway zones have a higher proportion of residents 34 and under. Overall, the age breakdowns by sub-area are very similar to the 2015 Panel Survey. The biggest differences are observed in the 18-24 and 25-34 age categories. This is primarily attributed to the low sampling of those two age groups and the fact that the expansion target for the young population was to the 15-34 cohort.

Figure 3-1: Age Distribution: Weighted Population

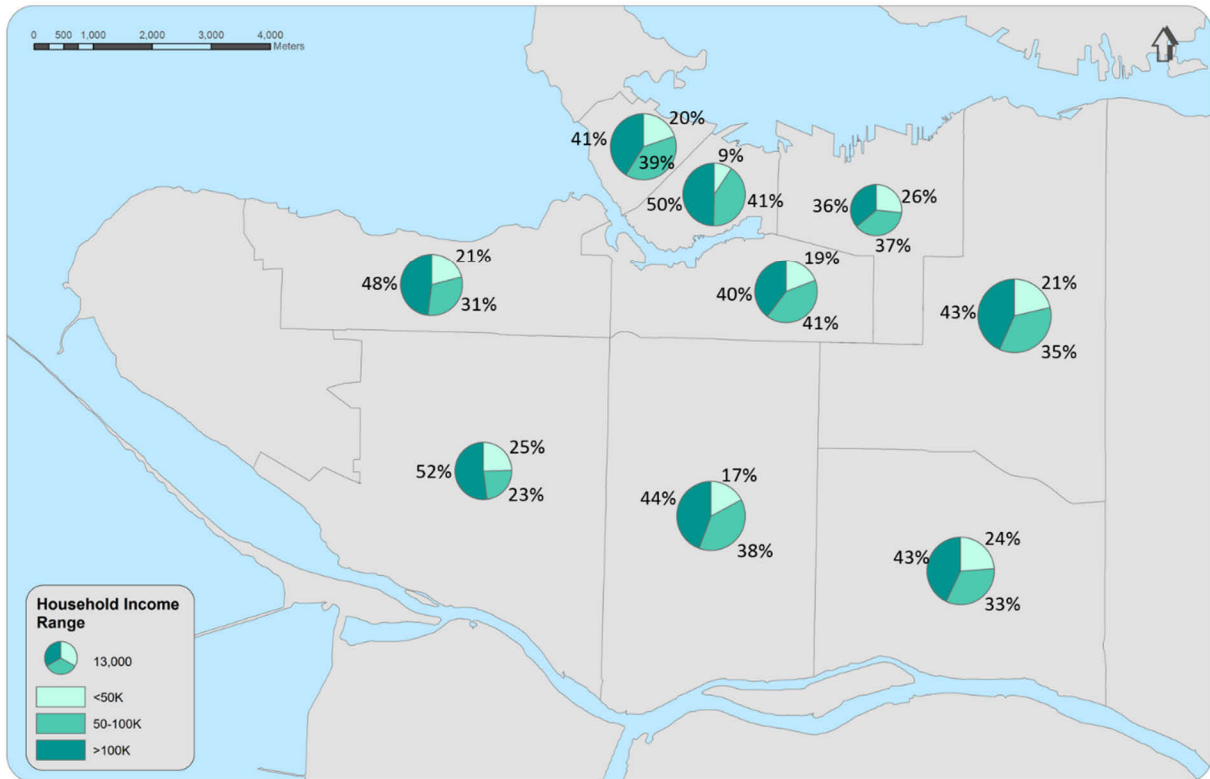


<sup>8</sup> TransLink's trip diary surveyed people aged five and above. The trip diary, however, only provided the age attribute by cohort. People aged 15, 16 and 17 were lumped in with the 13-17 cohort. As such, while the data sampling and expansion details presented in this section include the 15-17 age cohort, it was decided to use the population 18+ as a basis for the analyses presented in this section as well as sections 4 and 5.

## 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. There are only minor differences in income distribution compared to 2015.

Figure 3-2: Income Distribution: Weighted Population



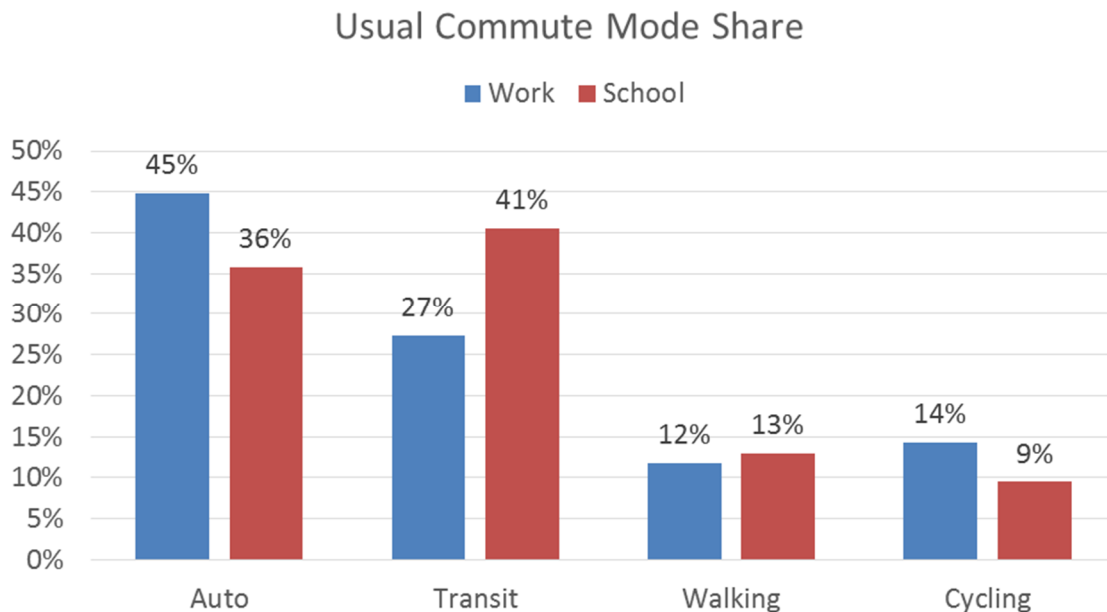


### 3.3. Usual Commute Mode

As discussed in Section 2.3 of this report, demographic projections for 2016 were based on 2011 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 2016, 45% of workers commuted 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.

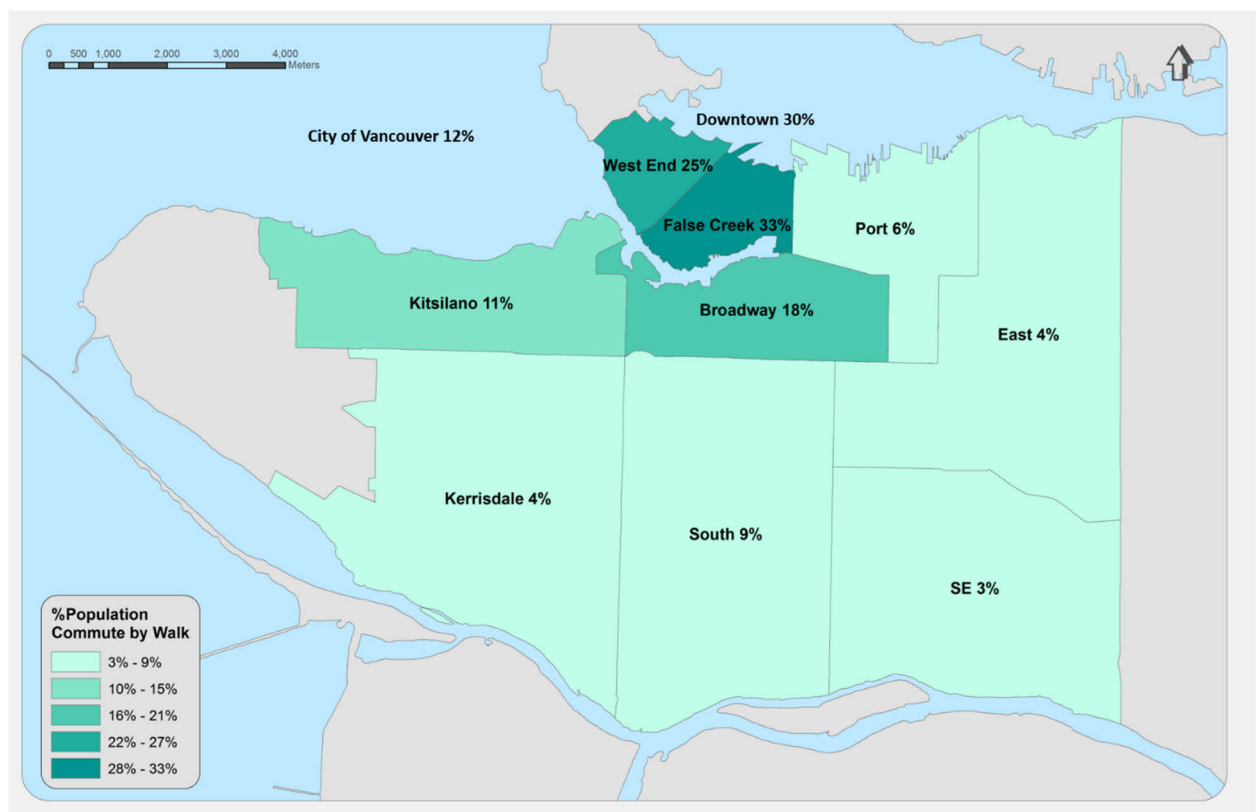
Figure 3-3: Usual Mode of Travel to Commute



### 3.4. Walking

Based on trip diary responses, there were approximately 514,600 walk trips made in 2016 which equates to a 27% walking mode share. Additionally, all survey participants were asked what they identify as their usual mode of travel to work. As shown in *Figure 3-4*, 12% of all respondents identified walking as their usual mode. This is lower than the actual recorded walking trips. Looking at the transportation zones, 30% of the population in downtown commutes on foot, which is a reflection of the high walkability score in the downtown core. It is also a result of land use in that 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 3-4: People who Identified Walking as Their Usual Mode of Travel to Work



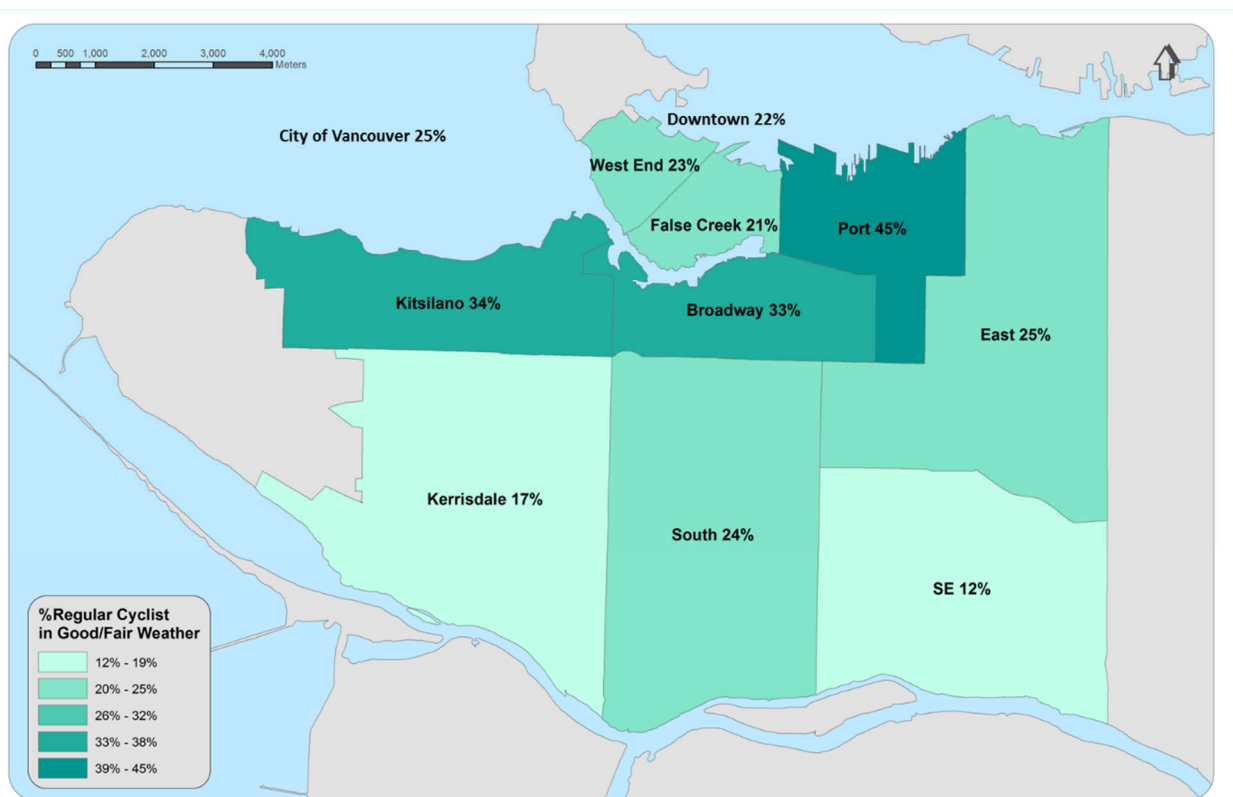
### 3.5. Cycling

In the Transportation 2040 plan, the City has taken steps to expand a bicycle network that is designed for people of all ages and abilities. Specifically, cycling infrastructure has been expanded within the CBD transportation zones, and on Point Grey Road in Kitsilano.

In 2016, the cycling-related questions in the survey instrument were refined to provide a better understanding of cycling preferences. The main refinement was to ask two separate questions related to the propensity to bike in fair weather as opposed to cold/rainy weather. As in 2015, the survey asked whether respondents would like to ride a bike more often, and the environments in which they are comfortable riding.

*Figure 3-5* maps the distribution of the respondents who indicated that they cycled two to four times per week in fair weather. The highest concentration is within the Port transportation zone where 45% of respondents use a bicycle two or more times per week in fair weather.

Figure 3-5: Respondents who Generally use a Bicycle Two or More Times per Week in Fair Weather



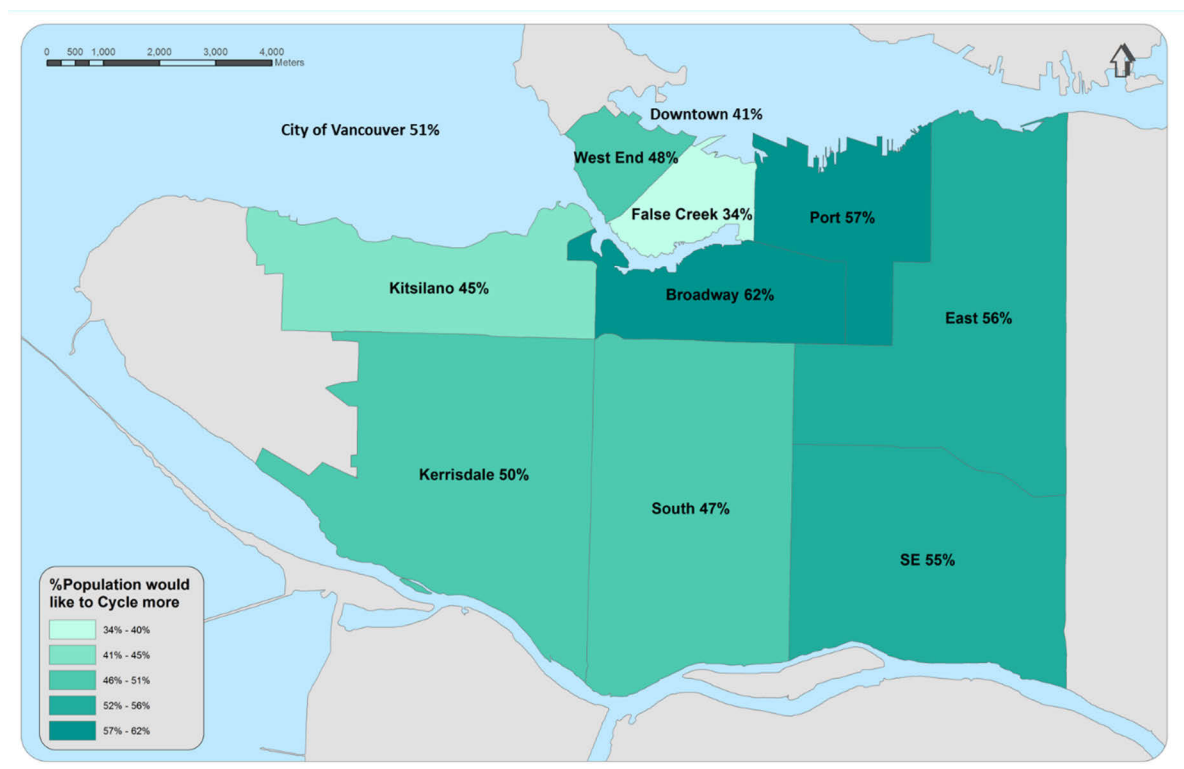
*Table 3-1* shows a breakdown of cycling frequency in fair or rainy/cold weather conditions. As expected, panel members are much more likely to cycle in fair weather (approximately twice as likely). However, it is worthwhile to note that a core group of more than 32,400 cyclists are expected to bike at least five times a week in inclement weather.

Table 3-1: Cycling Frequency in Fair Versus Rainy/Cold Weather (Weighted Population)

	Frequency			
	At least 5 times per week	2 to 4 times per week	Once per week to once per month	Less than once per month
Fair Weather	63,300	66,300	79,700	89,000
Rainy/Cold Weather	32,400	35,700	48,000	49,700
<b>Ratio (Fair/Poor)</b>	<b>2.0</b>	<b>1.9</b>	<b>1.7</b>	<b>1.8</b>

Respondents were also asked if they would like to travel by bicycle more often than they do currently. *Figure 3-6* shows a much greater interest in biking more often. This is especially true for the Port and Broadway zones and transportation zones on the east side of Vancouver.

Figure 3-6: Respondents who Would Like to Travel by Bicycle More Often



*Figure 3-8* shows panel responses aged 18+ (excluding those who do not ride a bicycle at all) regarding the types of bicycle facilities illustrated in *Figure 3-7* that participants would feel comfortable using. The residents were allowed to pick more than one option for this question. Less than 1% of respondents were not comfortable cycling in any of the conditions. As expected, there is a strong preference for cycling away from traffic. Results for 2014, 2015 and 2016 are very consistent.

Figure 3-7 Cycling Facilities Illustration



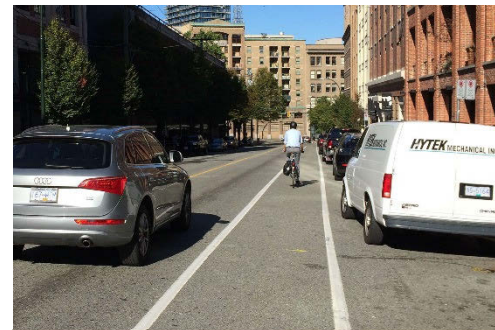
Bicycle paths far away from motor vehicles



Local neighbourhood streets with little traffic and low speeds



Major streets, provided they have bike lanes separated from traffic with a physical barrier

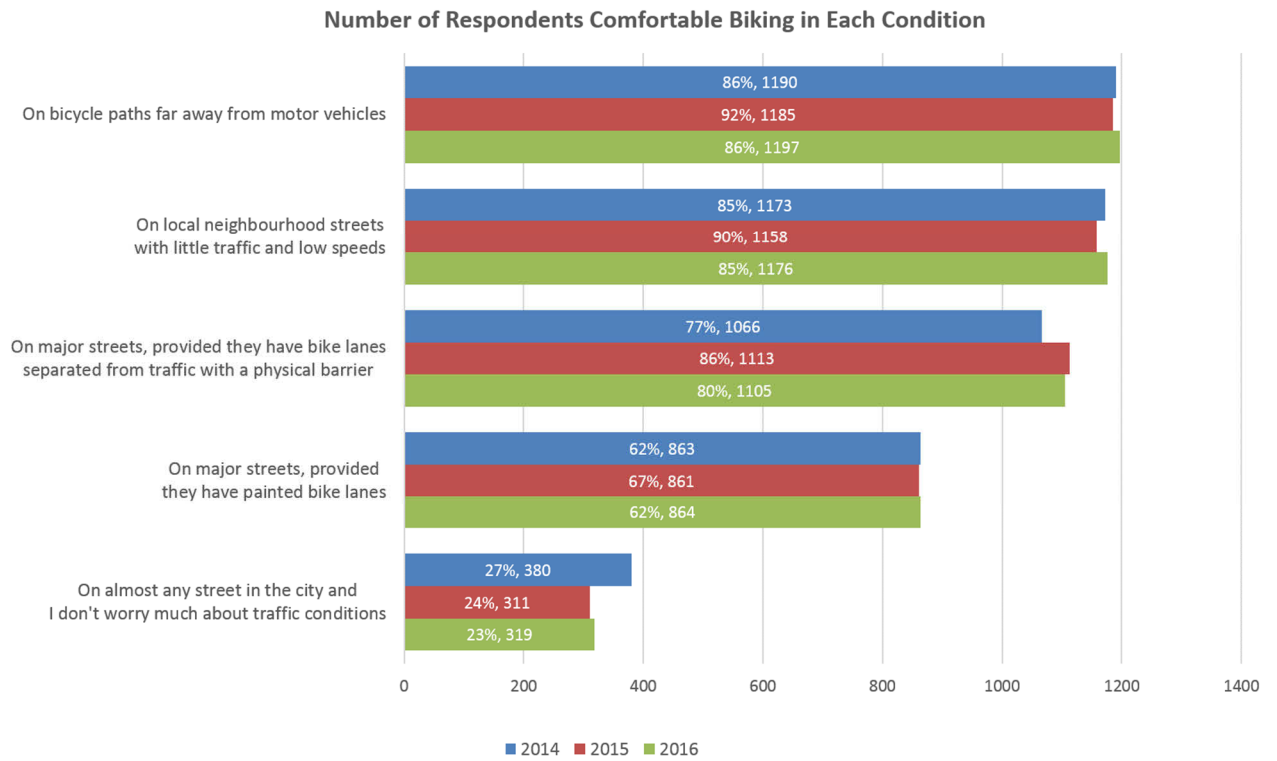


Major streets, provided they have painted bike lanes



Almost any street in the city regardless of traffic conditions

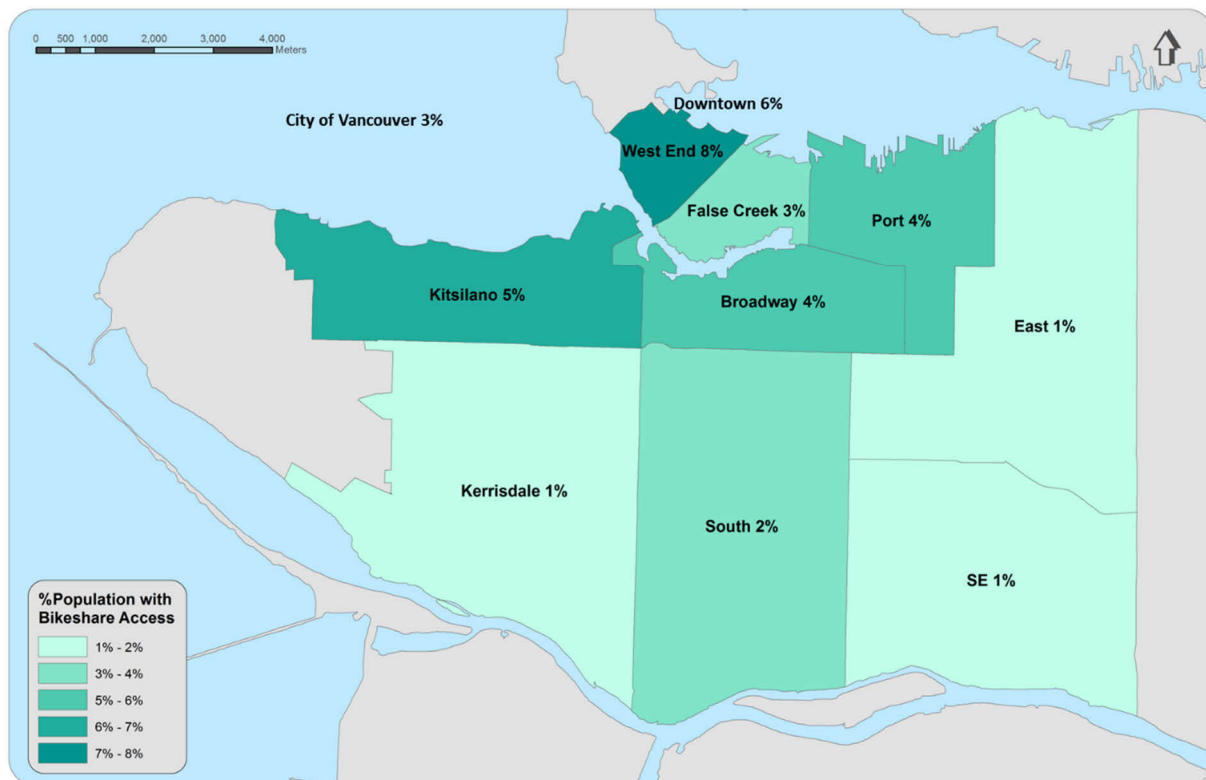
Figure 3-8: Bicycle Facility Preferences





*Figure 3-9* shows a breakdown of residents aged 18+ with access to bike share within Vancouver. Phase 1 of the Mobi bike share system included coverage in downtown Vancouver and as far east as Main St, as far south as 16<sup>th</sup> Ave and as far west as Arbutus St. Within most transportation zones people have low access (less than 5%) to this service. The expanded number of people with access to bike share is estimated to be approximately 16,000 from the panel survey. The Mobi bike share reported 10,350 annual and monthly members and day passes issued on December 21<sup>st</sup>, 2016. This comparison is not an exact comparison, but provides a high level validation of the panel survey results.

Figure 3-9: Percentage of Population with Bike Share Access



### 3.6. Transit Usage

The largest transportation segment after auto drivers is made up of public transit users. *Figure 3-10* and *Figure 3-11* shows the distribution of people who identified transit as their usual mode of travel to work and school, respectively. In previous years, some panel members were confused by the phrasing of the question when selecting a trip purpose. While TransLink and ultimately 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 Kitsilano transportation zone has the highest level of transit use (over 40%) for people travelling to work. On the other hand, in most transportation zones over 50% of students use transit.

Figure 3-10: People who Identified Transit as Their Usual Mode of Travel to Work

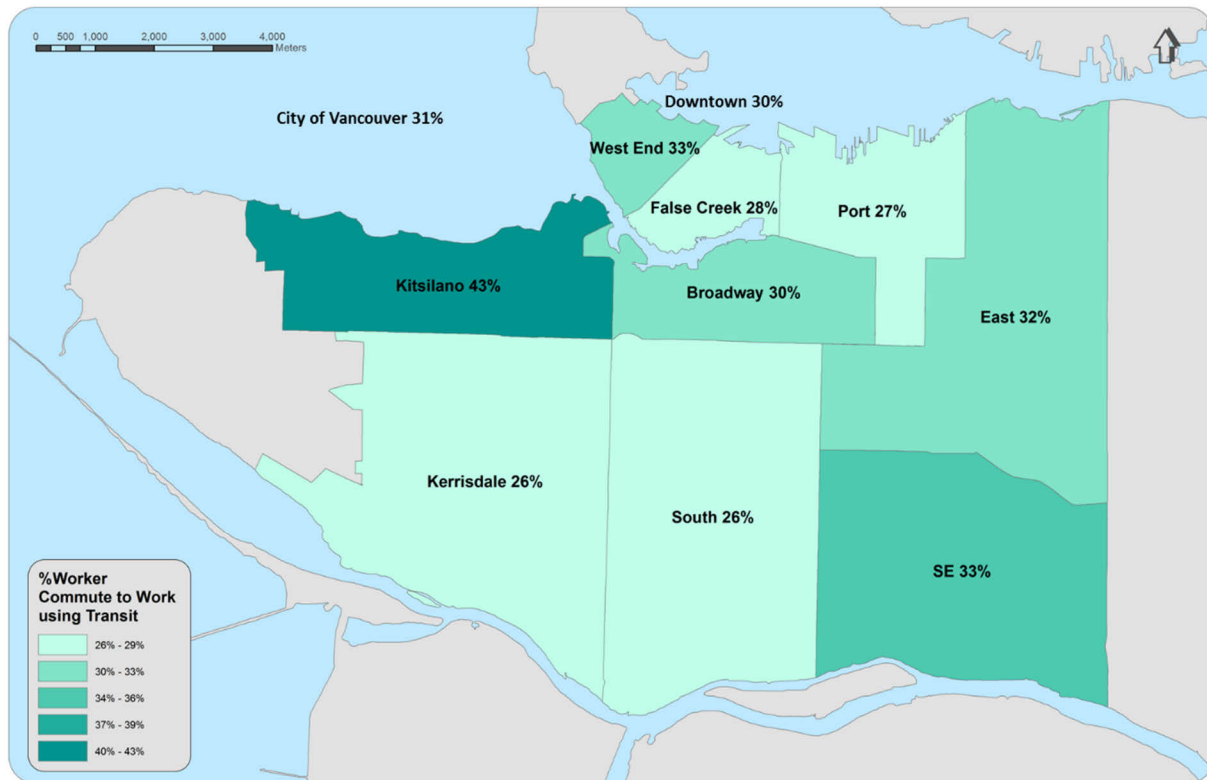


Figure 3-11: People who Identified Transit as Their Usual Mode of Travel to School

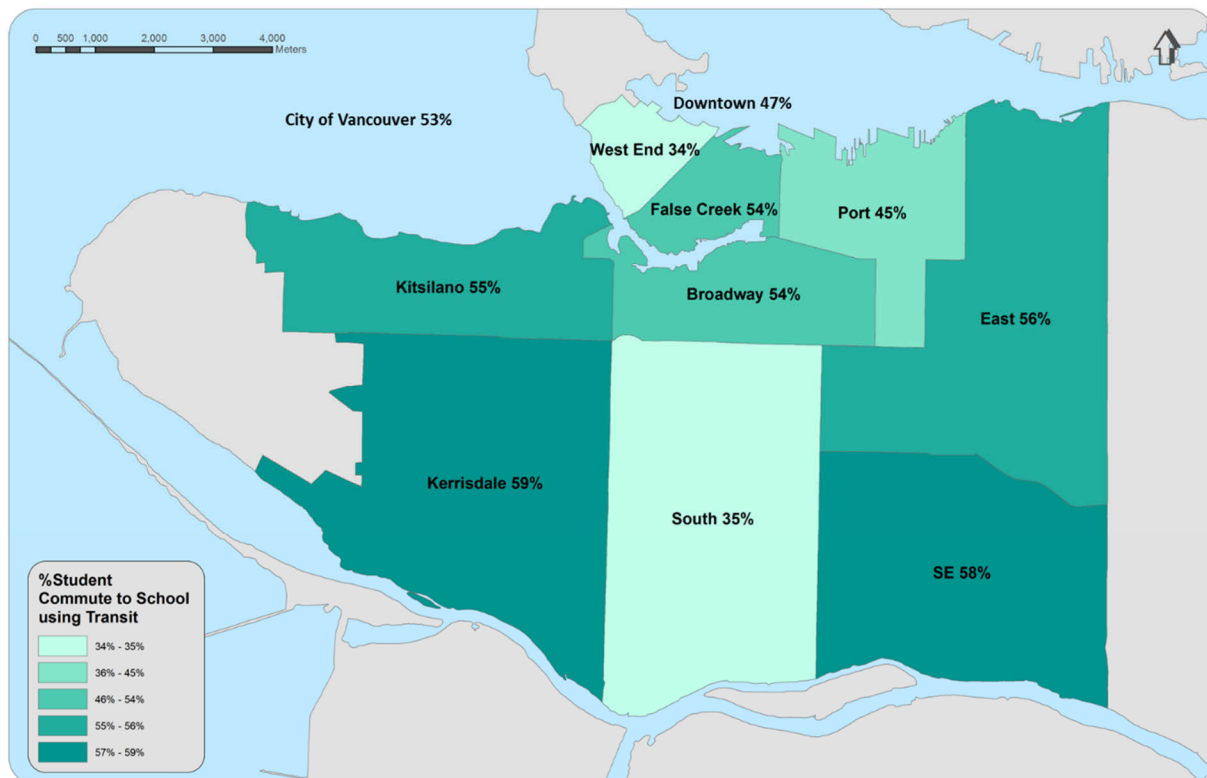
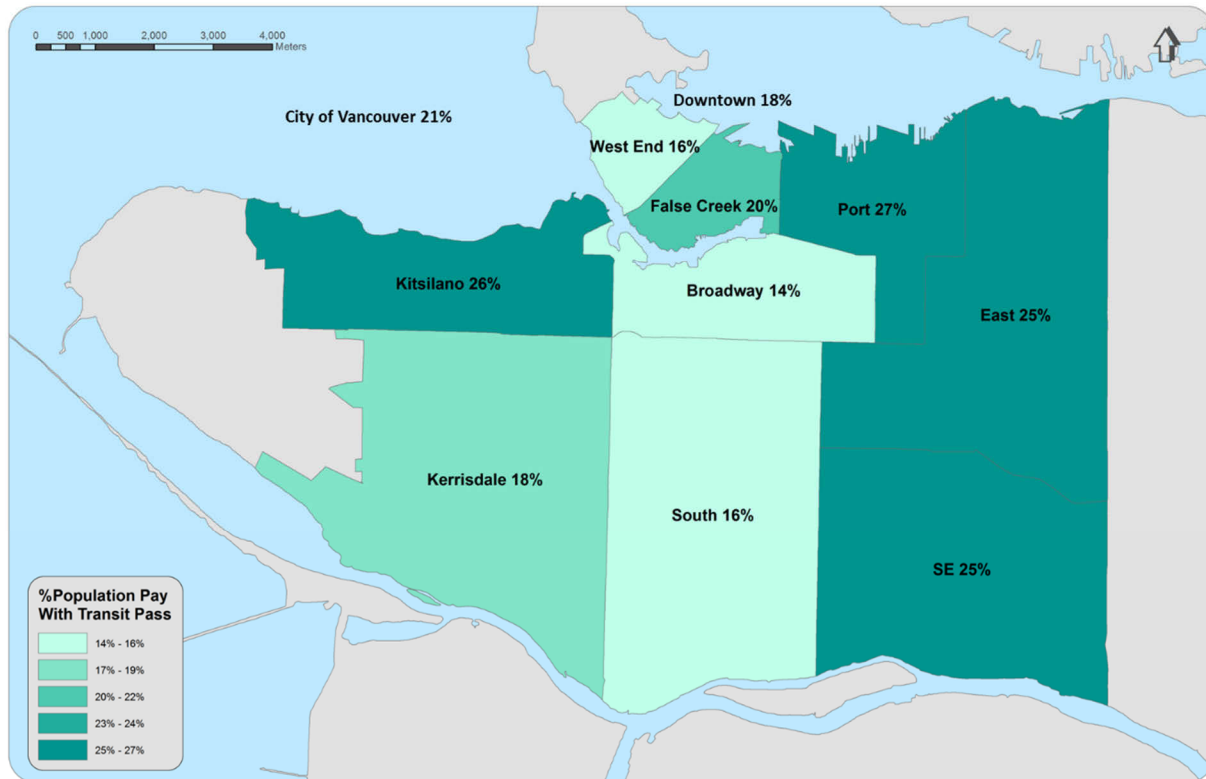


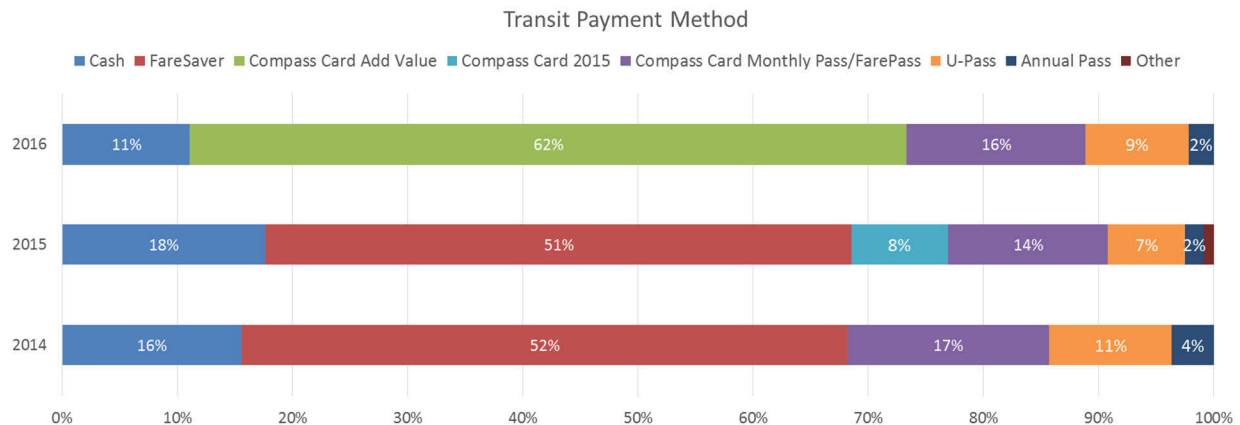
Figure 3-12 shows the proportion of participants who use transit passes. The geographic distribution echoes that of regular transit commuters, which is to be expected.

Figure 3-12: Proportion of Survey Participants Who Use Transit Passes



In 2014, the annual employer pass program was discontinued by TransLink. This changed the way those transit users pay for transit. The other major change was the official roll-out of the Compass Card in late 2015. Figure 3-13 illustrates the shift from 2015 to 2016 in terms of transit fares. The payment options are grouped into the following categories: Cash/FareSavers, Monthly FarePass, Annual Pass, Compass Card, and U-Pass. In January 2016, both FareSavers and Monthly FarePasses were discontinued. The Compass Card payment method has replaced the FareSaver payment method. Additionally, users paying with cash decreased by over a third as a result of the Compass Card roll-out.

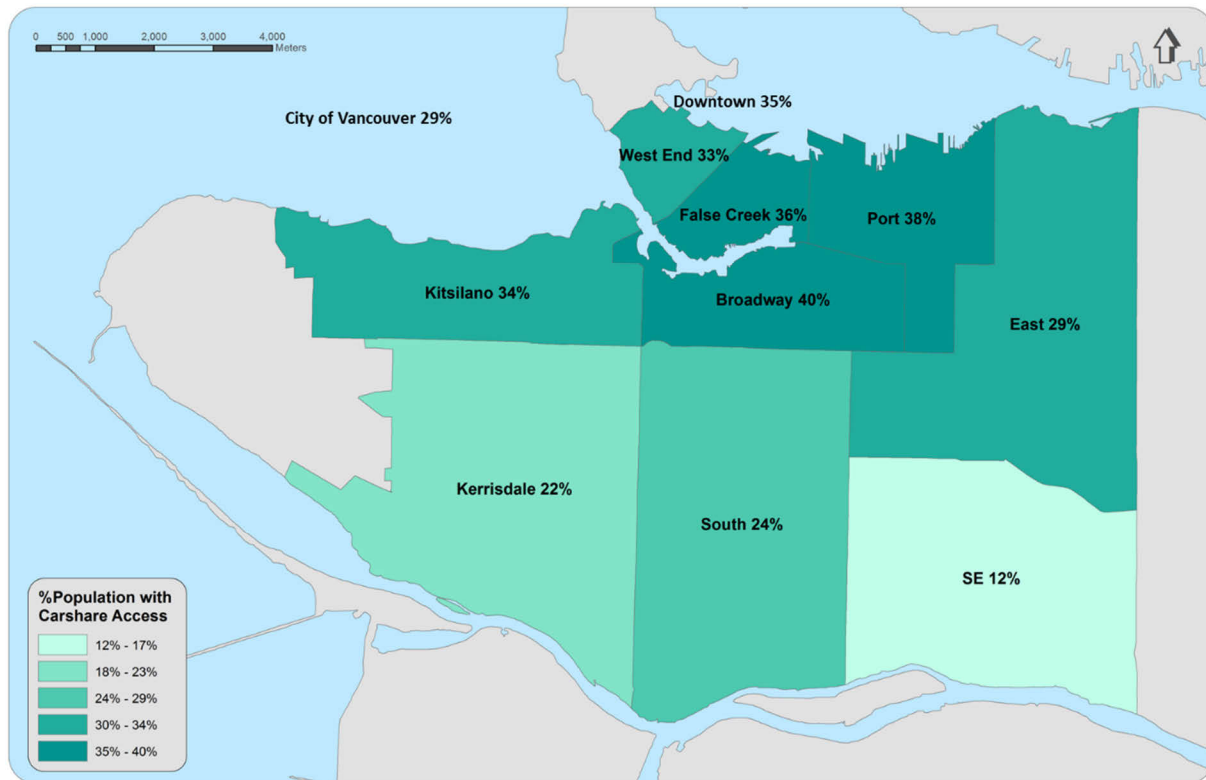
Figure 3-13: Transit Payment Methods (2014 to 2016)



### 3.7. Car Share Access

In 2016, 1.1% of trips involved car share (0.9% driver, 0.2% passenger), up from 0.82% share in 2015. This data should be used with caution since it represents less than 1% of total trips reported by panelist. Car sharing programs such as Modo, Zipcar, and Car2Go have continued to gain patronage in recent years. 2014-15 saw the addition of the Evo program, sponsored by BCAA. The distribution of those with regular access to a car-sharing program is shown in [Figure 3-14](#). Among population aged 18+ including those without valid driver license, subscription to car sharing programs is up to 29% from 26% in 2015. Vancouver East, Vancouver Port, CBD West End, and Vancouver Broadway have experienced the greatest percentage increase in car share patronage.

Figure 3-14: Access to Car Sharing Program



### 3.8. Private Vehicle Access

In 2016, approximately 950,800 trips were made using a private vehicle, 829,600 of which were drivers and 121,200 were passengers. This equates to a roughly 49% auto mode share (43% 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 2015, a lower proportion of lower income households have access to a private vehicle. However, the mode share by income level has not changed appreciably.

*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 12% for people without private vehicle access. This is consistent with the findings from the 2015 Panel Survey.

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 2015. Vehicle ownership is lowest in the downtown core area; this can be explained by good transit coverage and walkability of the CBD area. More than 90% of residents have access to private cars outside the downtown core, Broadway, Kitsilano and Port areas.



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

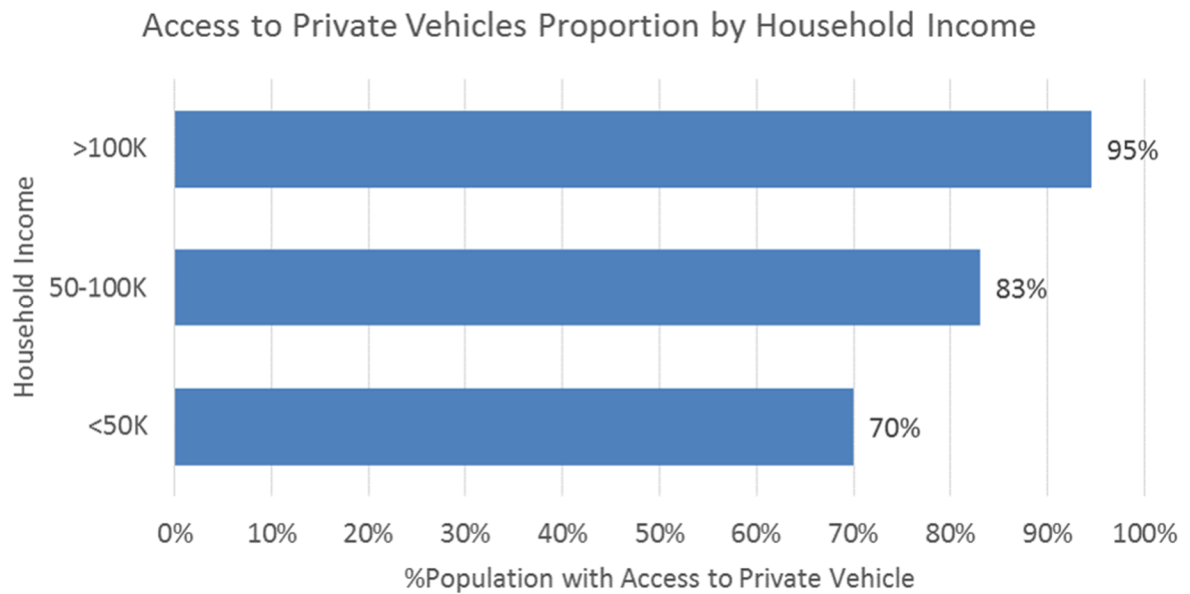


Figure 3-16: Mode Share Distribution by Household Income

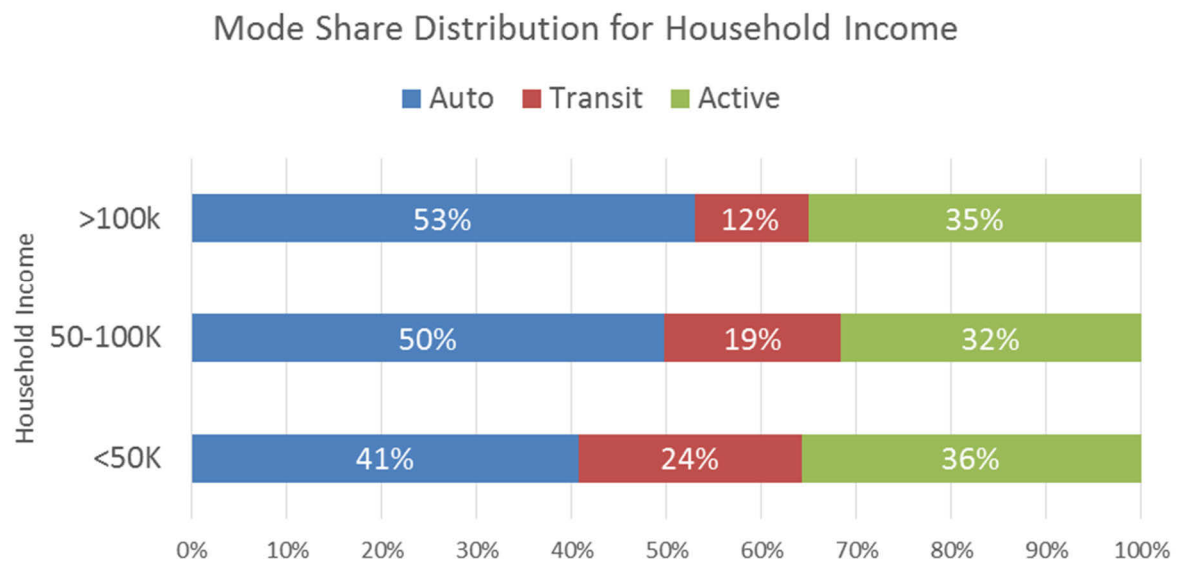


Figure 3-17: Vehicle Accessibility Distribution by Mode Choice

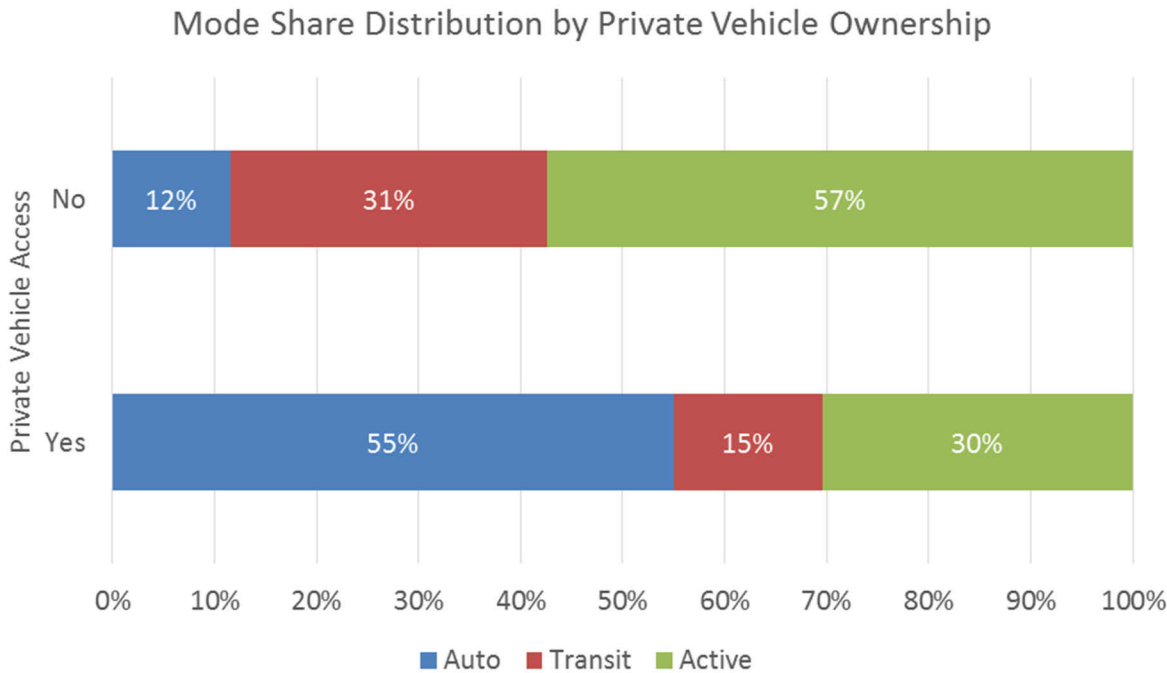
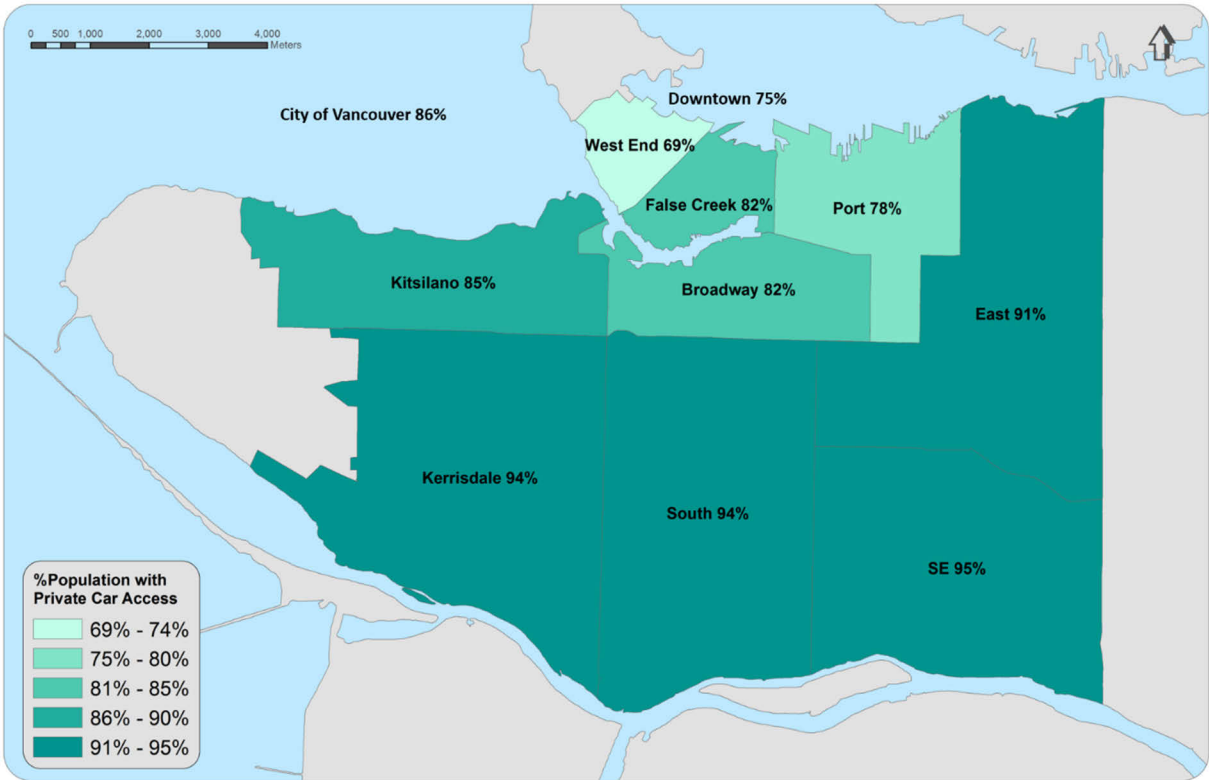


Figure 3-18: Private Vehicle Access



## 4. Trip Characteristics

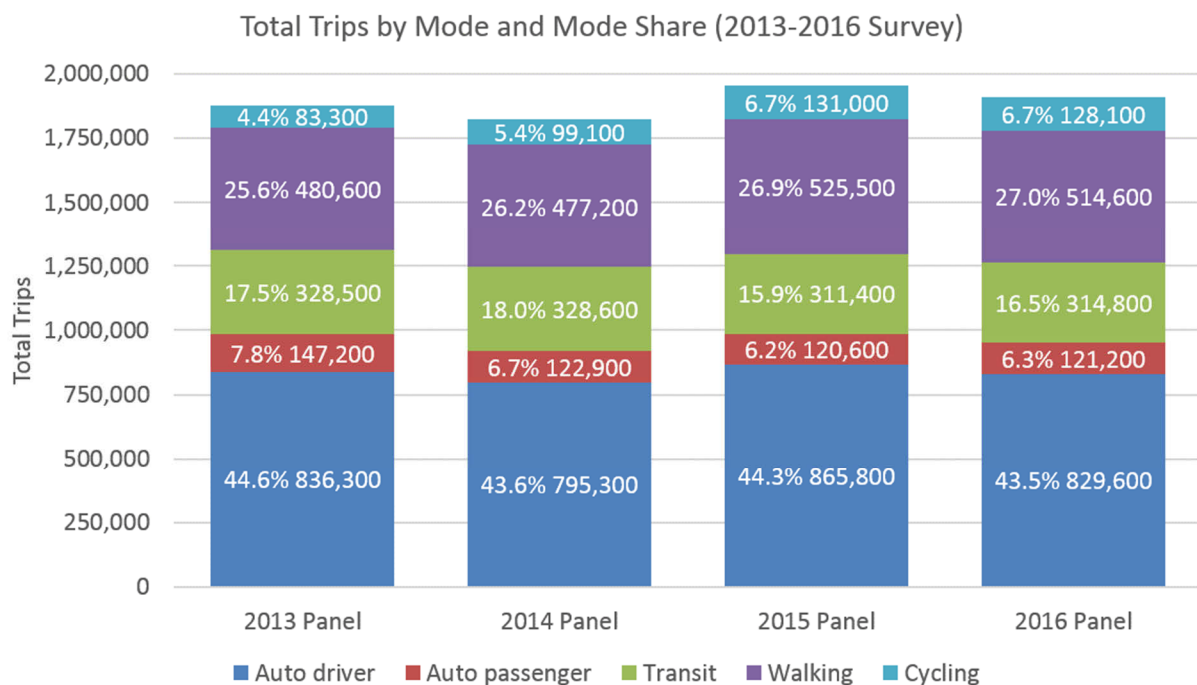
One major aspect of the panel survey is to track trends in transportation choices, especially as they relate to specific City initiatives and infrastructure improvements. This analysis section is focused on comparing the results of the 2016 Panel Survey with the past panel survey results. A comparison of trip characteristics amongst returning panelists is included in Section 5 of this report.

Another objective of the panel survey is to add to the emerging understanding of the relationship between transportation choices and health.

### 4.1. Mode Share

The City is particularly interested in tracking how walk/bike/transit mode share grows over time. *Figure 4-1* compares the overall mode shares of the 2013-2016 Panel Surveys. In this initial snapshot, it is evident that the walking and cycling mode share has held relatively constant, and auto driver/passenger mode share has decreased marginally when compared with previous survey results.

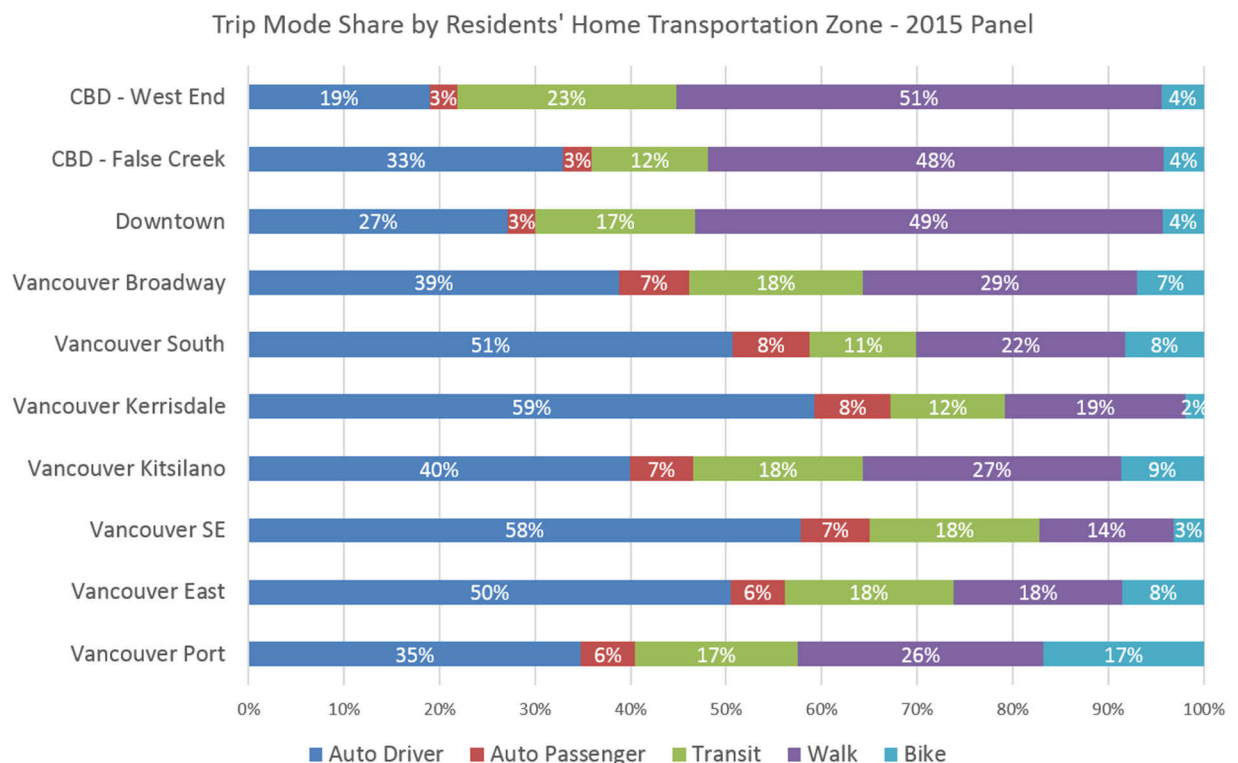
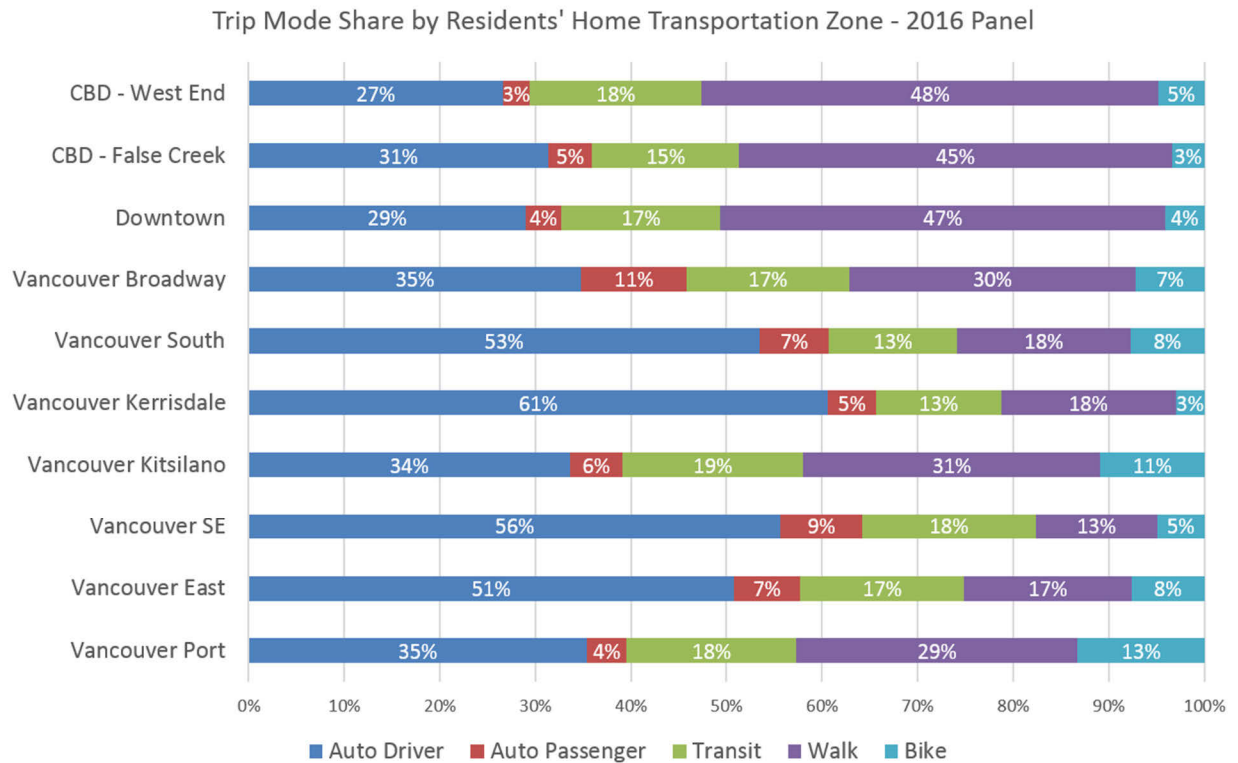
Figure 4-1: Total Trips by Mode and Mode Share (2013-2016 Panel Surveys)



*Figure 4-2* compares the Panel Survey mode share for reported trips, broken down by residents' home transportation zone, for the 2015 and 2016 Panel Surveys. The reported trip mode share distribution by zone is consistent with the patterns observed in 2015. It will be possible to track trends in mode share at the zone level with future survey data, 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 walk/bike/transit mode share or merged subareas.

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



*Table 4-1* summarizes the Panel Survey walk/bike/transit mode share for reported trips (transit, walking and cycling) by transportation zone. It also highlights the 95% and 90% confidence intervals of these results as well as the number of samples required to achieve a +/- 5% mode share error range at the 95% confidence level. *Table 4-2* compares the 2015 and 2016 survey results for walk/bike/transit mode share and corresponding confidence intervals. The table highlights the year over year variation when mode share is compared by transportation zone. In all transportation zones, the 2016 walk/bike/transit mode shares still fall within the 2015 confidence intervals which enhances overall confidence in the reliability of the results. For comparative analysis, it is best to use aggregate statistics such as Downtown or Vancouver mode shares.

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

Transportation Zone	Sustainable Mode Share (%)	95% Confidence Interval	90% Confidence Interval	No. of persons sampled (18+)	Sample size Required at 95%
CBD - West End	71%	(65%-76%)	(66%-75%)	280	319
CBD - False Creek	64%	(58%-71%)	(59%-70%)	212	353
Downtown	67%	(63%-71%)	(64%-71%)	492	338
Vancouver Broadway	54%	(49%-60%)	(49%-59%)	306	381
Vancouver South	39%	(34%-45%)	(35%-44%)	332	366
Vancouver Kerrisdale	34%	(29%-40%)	(30%-39%)	272	346
Vancouver Kitsilano	61%	(56%-66%)	(56%-65%)	329	365
Vancouver SE	36%	(30%-42%)	(31%-41%)	256	353
Vancouver East	42%	(37%-47%)	(38%-46%)	373	375
Vancouver Port	60%	(54%-67%)	(55%-66%)	211	367
City of Vancouver	50%	(48%-52%)	(49%-52%)	2571	2891

Table 4-2: Aggregate Walk/Bike/Transit by Transportation Zone and Sample Size

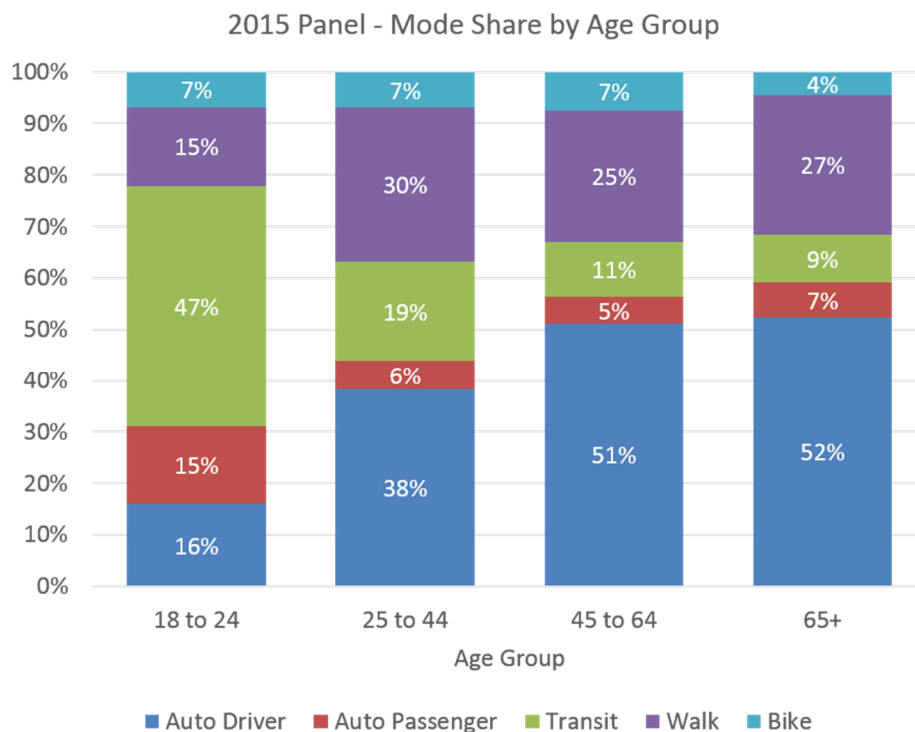
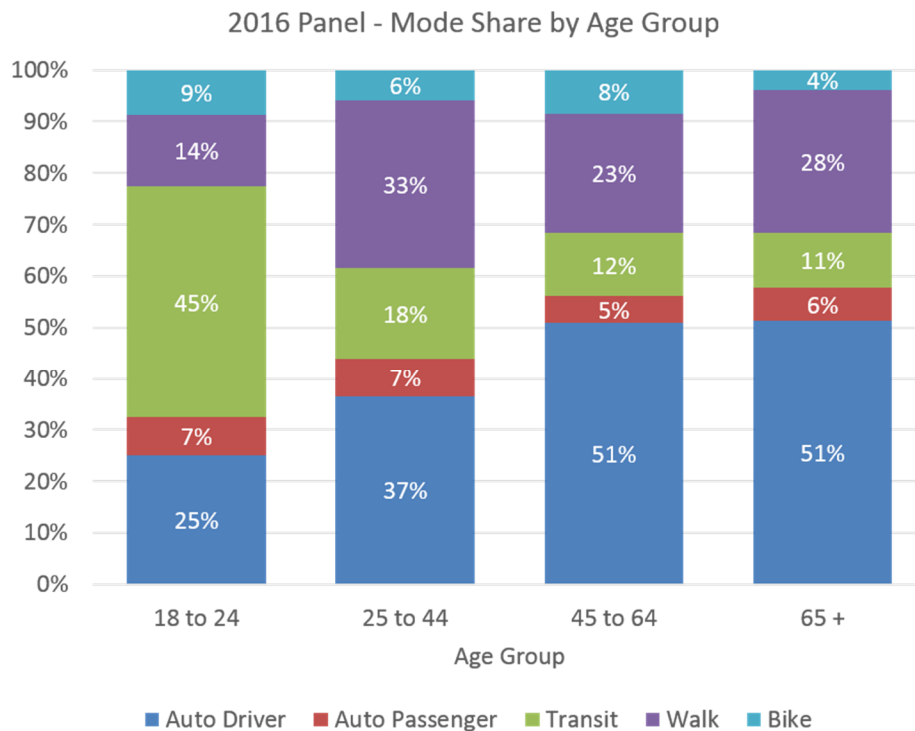
Transportation Zone	2016 Panel		2015 Panel	
	Sustainable Mode Share (%)	95% Confidence Interval	Sustainable Mode Share (%)	95% Confidence Interval
CBD - West End	71%	(65%-76%)	78%	(73%-83%)
CBD - False Creek	64%	(58%-71%)	64%	(58%-70%)
Downtown	67%	(63%-71%)	70%	(66%-74%)
Vancouver Broadway	54%	(49%-60%)	54%	(48%-60%)
Vancouver South	39%	(34%-45%)	41%	(36%-46%)
Vancouver Kerrisdale	34%	(29%-40%)	33%	(27%-39%)
Vancouver Kitsilano	61%	(56%-66%)	53%	(48%-59%)
Vancouver SE	36%	(30%-42%)	35%	(29%-41%)
Vancouver East	42%	(37%-47%)	44%	(39%-49%)
Vancouver Port	60%	(54%-67%)	60%	(53%-66%)
City of Vancouver	50%	(48%-52%)	50%	(48%-51%)

*Figure 4-3* compares the mode share by age distribution between the 2015 and 2016 Panel Surveys. As expected and observed in previous travel surveys, people in the 18-24 and 25-44 cohorts tend to



use transit, walk, and cycle more than the 45+ cohort. The 2016 Panel Survey indicates a large increase in auto driver and large decrease in auto passenger in the 18-35 cohort; however, it needs to be recognized that the small sample size in these age groups could lead to overrepresentation.

Figure 4-3: Mode Share by Age Distribution



## 4.2. Trip Purpose

Figure 4-4 shows a comparison of trip purposes for the 2015 and 2016 Panel Surveys. The distribution by trip purpose is relatively consistent between the two surveys with the majority of trips for going home and to work.

Figure 4-4: Trip Purpose Distribution

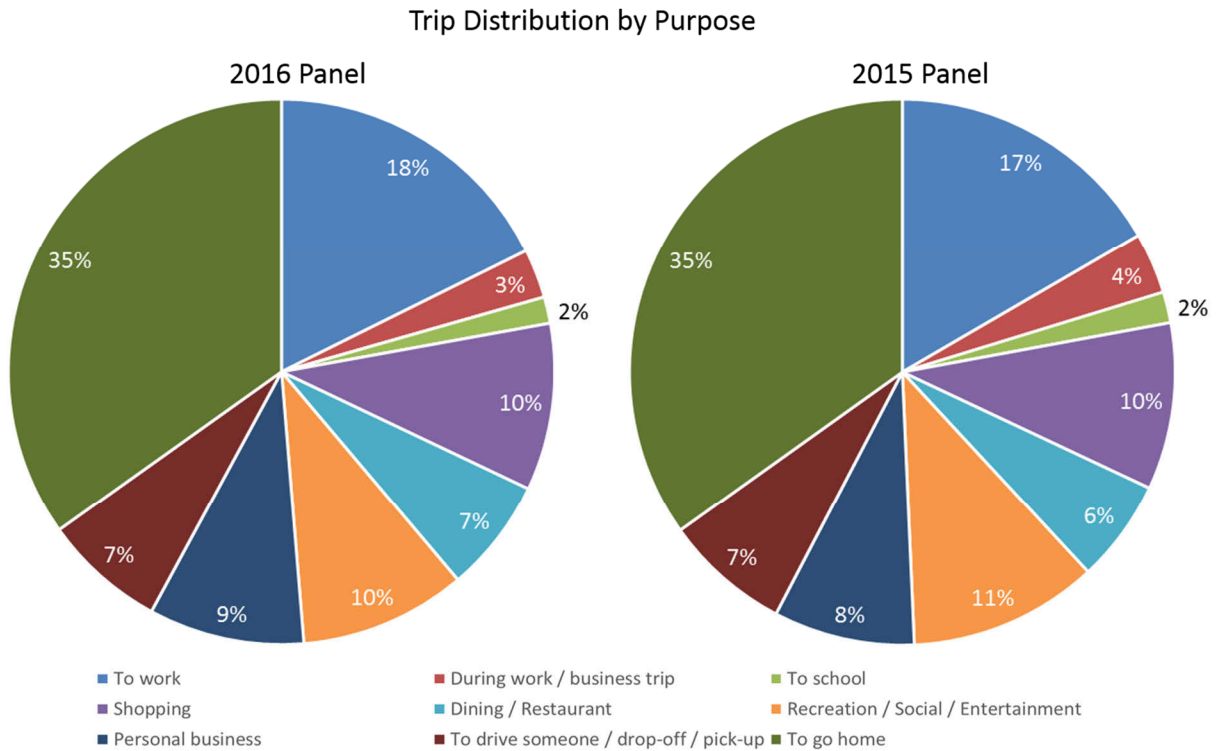


Figure 4-5 shows a detailed comparison of the mode share by trip purpose. Transit trips for purposes unrelated to school tended to increase, walking and bike trips held relatively constant, and auto trips held relatively constant (aside from trips during work where there was a large increase).

Figure 4-5: Mode Share by Trip Purpose

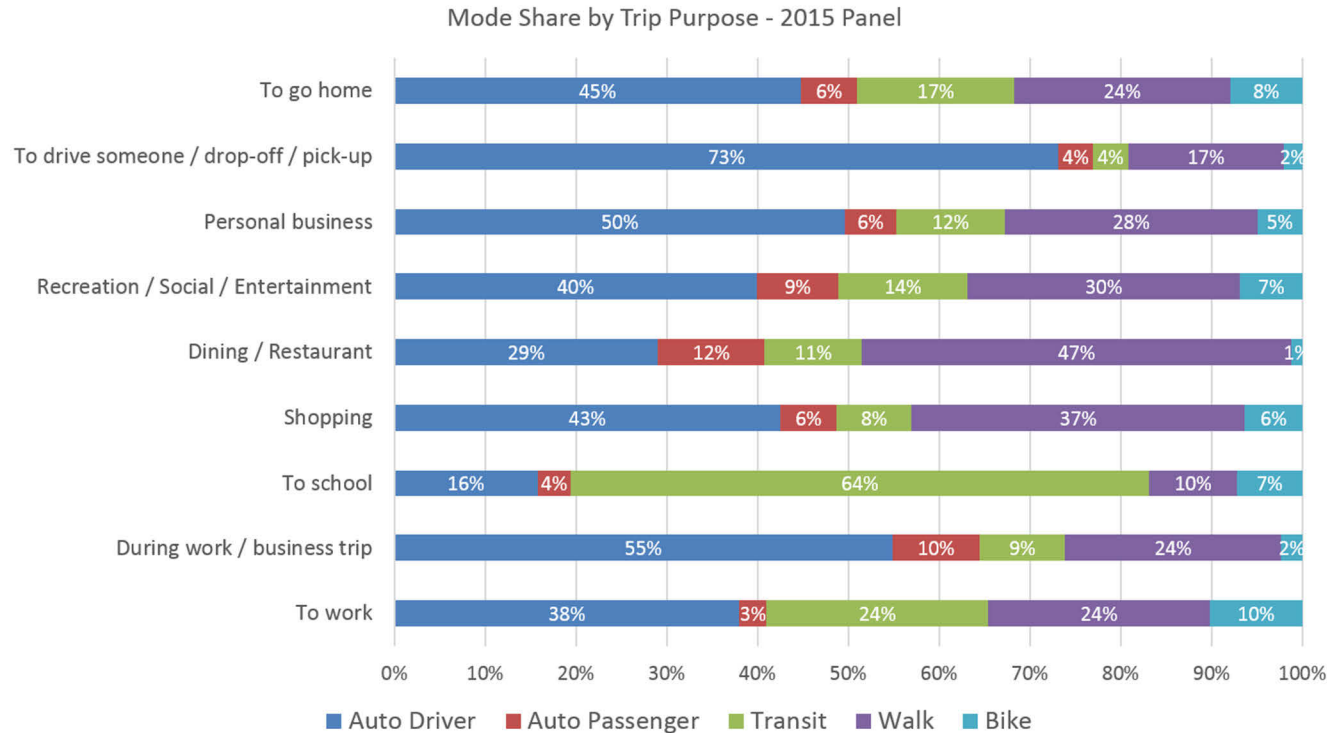
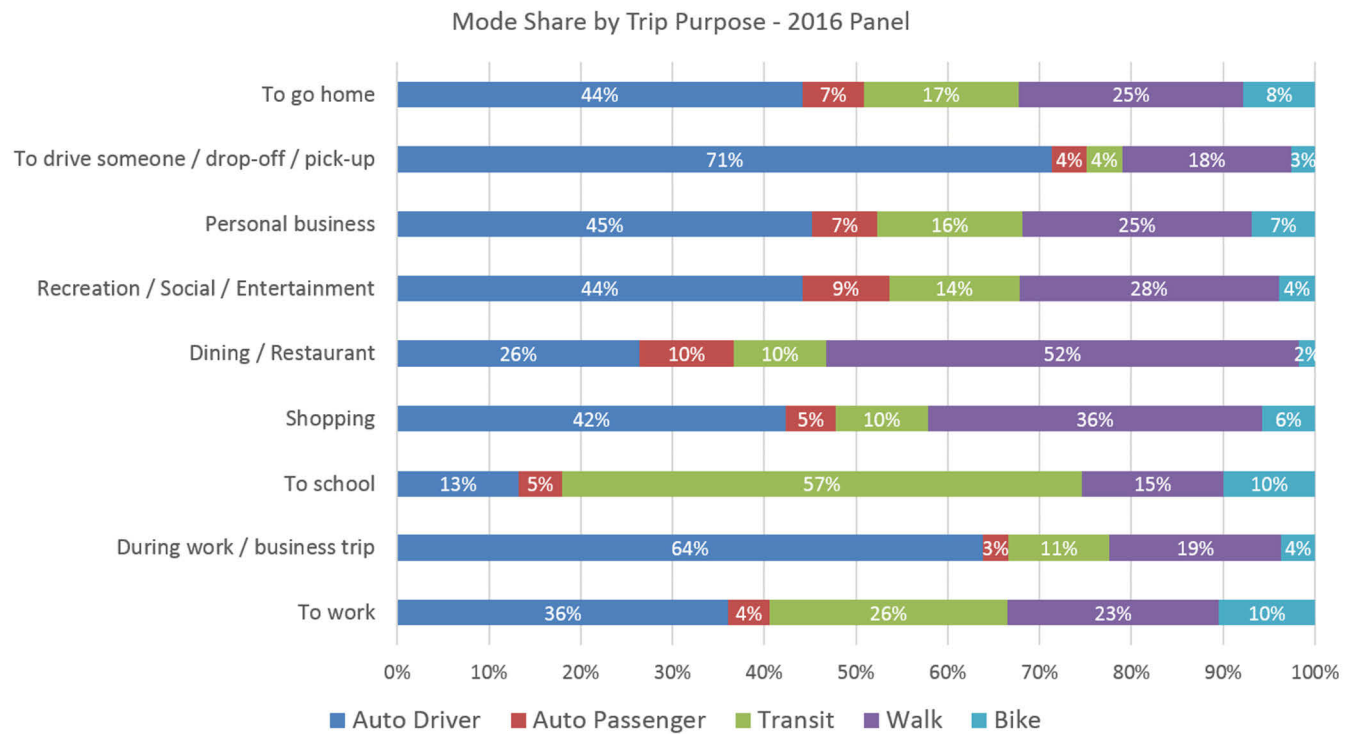


Figure 4-6 is a comparison between the 2013 to 2016 Panel Survey trips to work. There has been a 4% increase in work trips (322,800 in 2015 to 337,600 in 2016). The 2016 Panel Survey shows higher shares of transit trips, while the other modes held relatively constant.<sup>9</sup>

Figure 4-6: Comparison of Panel Survey Trips to Work

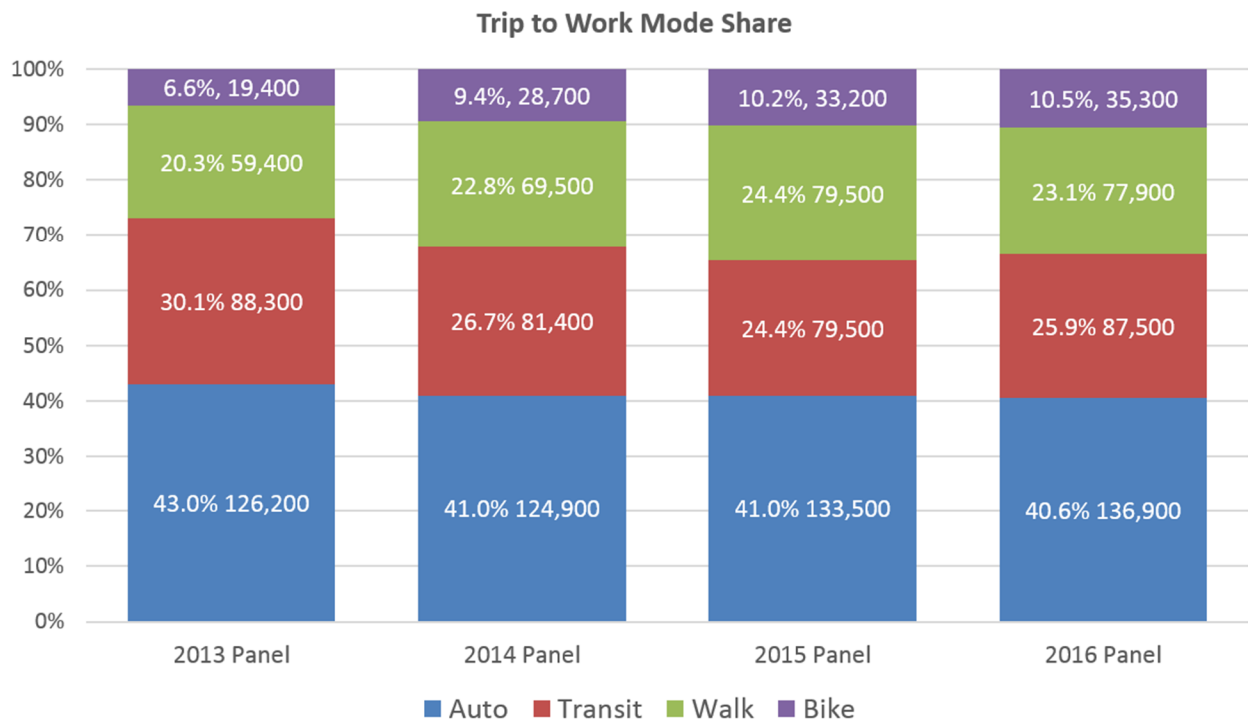
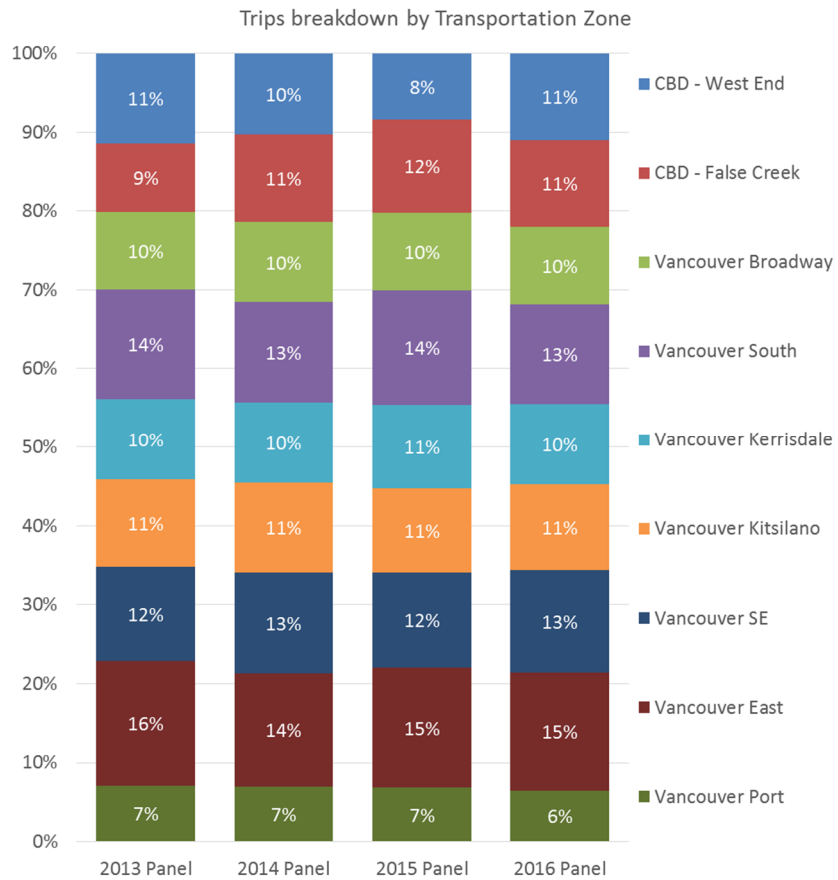


Figure 4-7 breaks down the total number of trips by transportation zone for panel surveys from 2013 to 2016. The 2015 and 2016 Panel Surveys are very similar in terms of the trips from each of these zones.

<sup>9</sup> Results should be treated in context of small sample sizes, especially for the bicycle trip to work subset.

Figure 4-7: Total Trips Breakdown by Transportation Zone

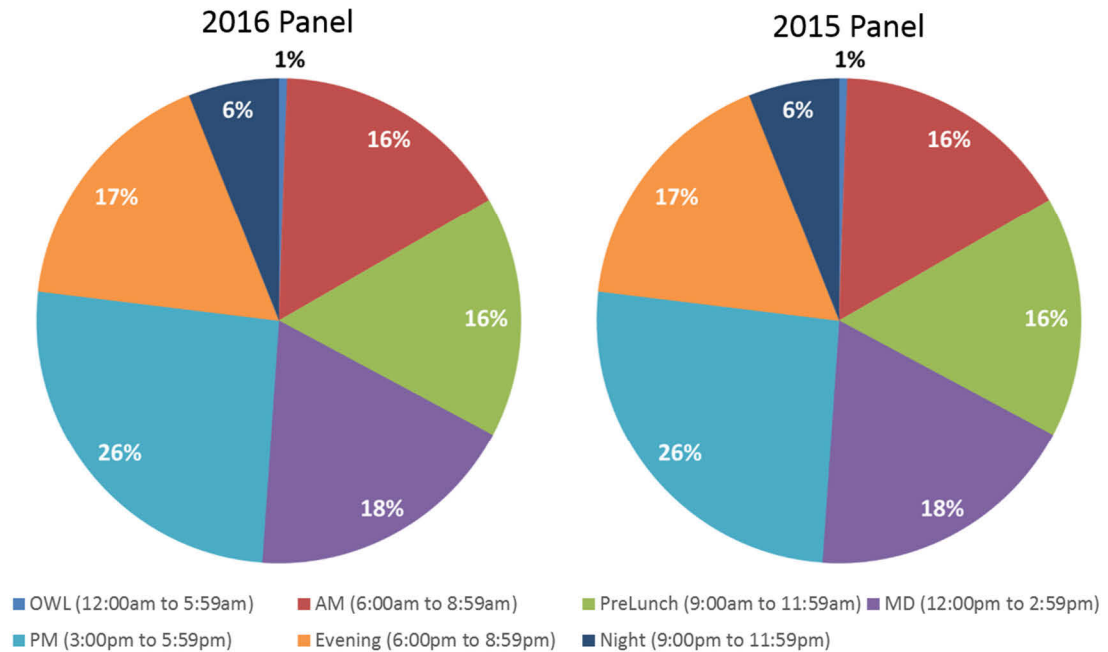




### 4.3. Time of Day

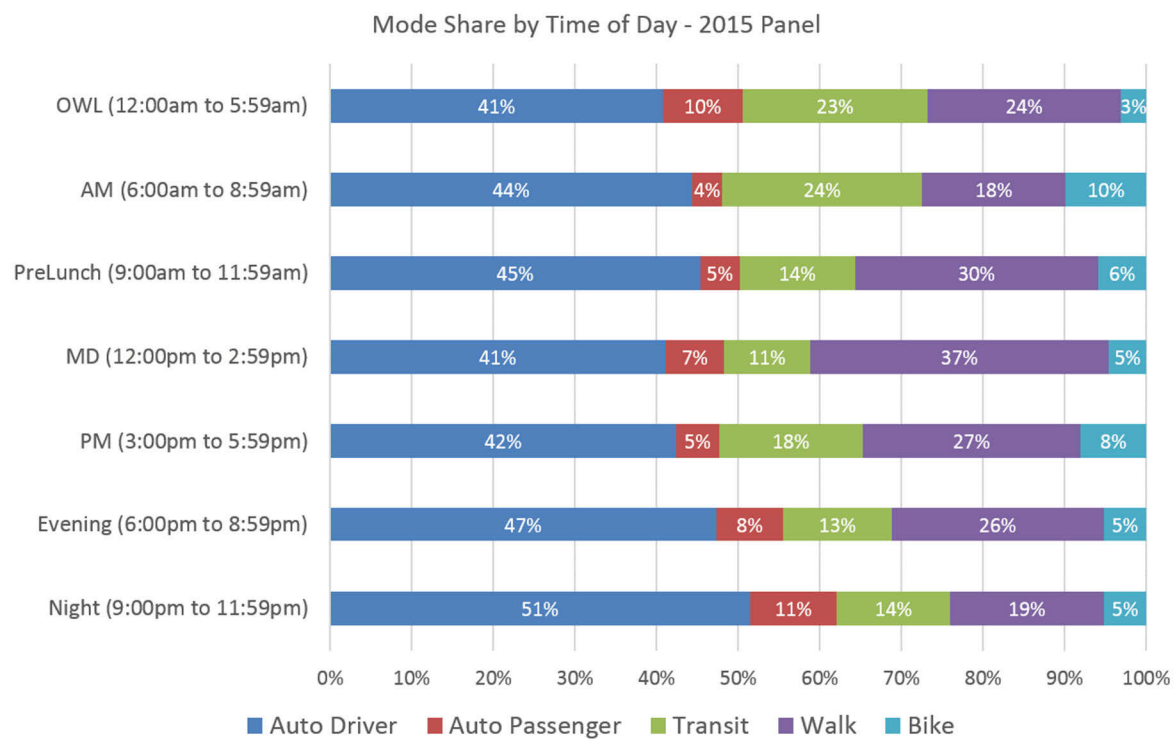
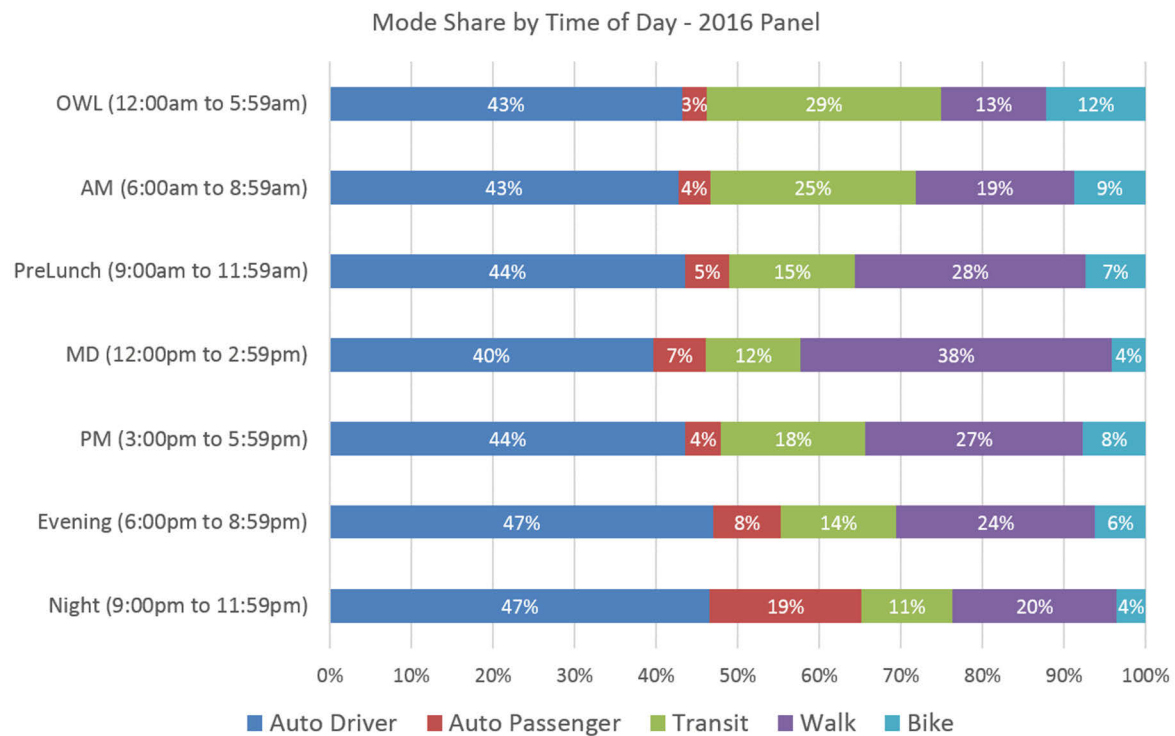
A comparison of time of day travel is shown in *Figure 4-8*. The proportions of trips being made during the day are generally the same as the 2015 proportions.

Figure 4-8: Trip Distribution by Time of Day Shift to Have 2015 first then 2016



*Figure 4-9* breaks down mode share by time of day for the 2015 and 2016 Panel. Mode share stays the same as 2015, despite some shifts during the night and owl time periods. For owl trips after midnight, the walk mode share was halved and replaced with cycling trips. This might look promising but only 1% of trips are made during this time frame, which can be easily skewed by the small number of samples. During the night before midnight, there are 8% more carpool trips balanced by 4% less driving and 3% less transit trips. This implies a decrease in single-occupancy vehicles trips at during this time period.

Figure 4-9: Mode Share Distribution by Time of Day

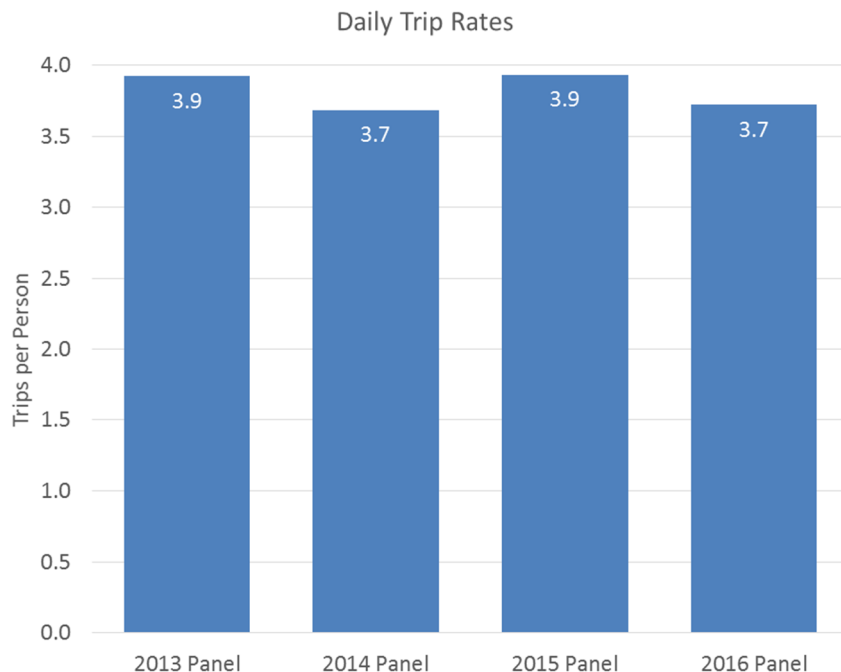


## 4.4. Trip Rates

*Figure 4-10* compares overall trip rates<sup>10</sup> for the 2013 to 2016 Panel Surveys. In 2014, recreational trips with the same start/end points (e.g., walking the dog, jogging) were introduced to the survey instrument as an exclusive type of trip. The 2014 panel respondents made slightly fewer trips, even when including the new recreational trip subset. One possible explanation is the seasonal variation between the two surveys as mentioned previously in Section 2.2. In previous surveys, the recruitment and trip diary completion was conducted in the fall.

The trip rate dropped in 2016, partially due to the abnormally cold weather in 2016 that might have discouraged people to make trips. Overall, however, the average trip rate has hovered around 3.8 trips per day +/- 0.1 trips.

Figure 4-10: Daily Trip Rates (Ages 18+)



Compared to previous years, male participants made significantly more trips while female participants made fewer trips in 2016, as shown in *Figure 4-11*. These results reflect trip reporting by participants and can vary from year to year depending on participant's travel patterns on their survey day which, again, can vary significantly.

<sup>10</sup> 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 4-11: Trip Rates by Gender

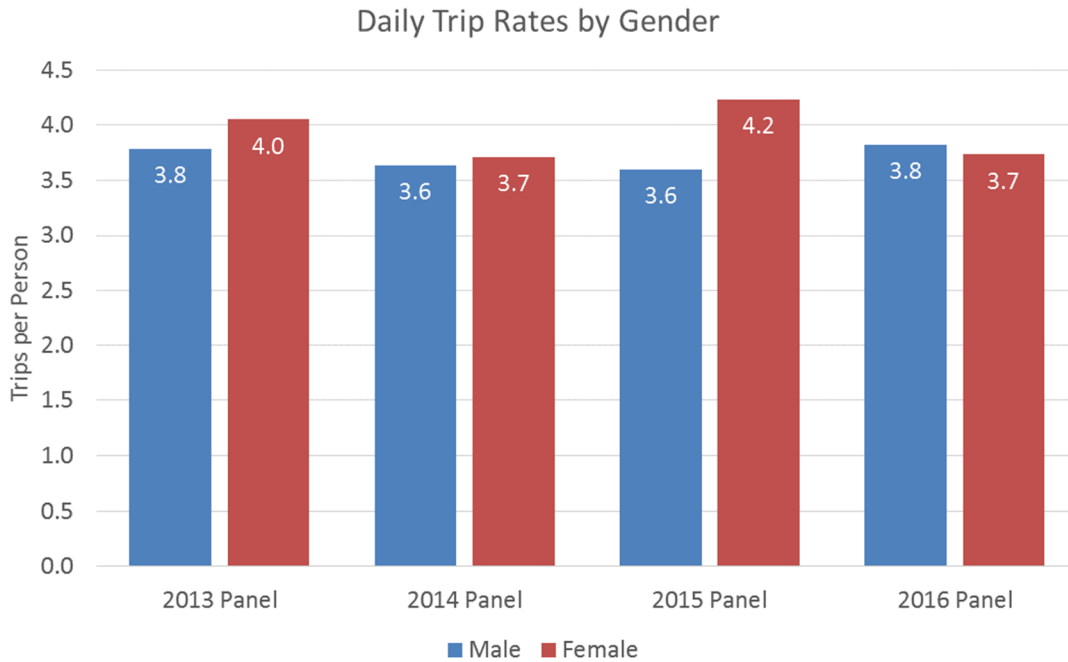


Figure 4-12 shows trip rate across the four age cohorts with the 45-64 being the most active in all survey years. People aged 45 and above made less trips compared to 2015. However, the overall split between all survey years is approximately the same, considering the confidence interval of survey results with a 0.5% sample of Vancouver residents.

Figure 4-12: Trip Rates by Age Group

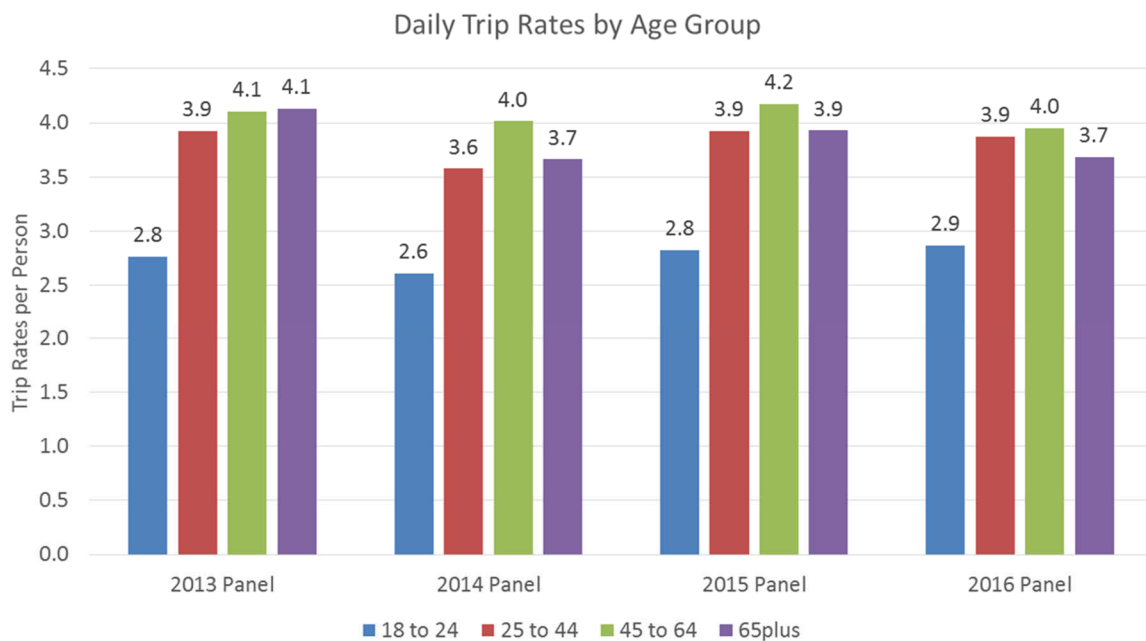
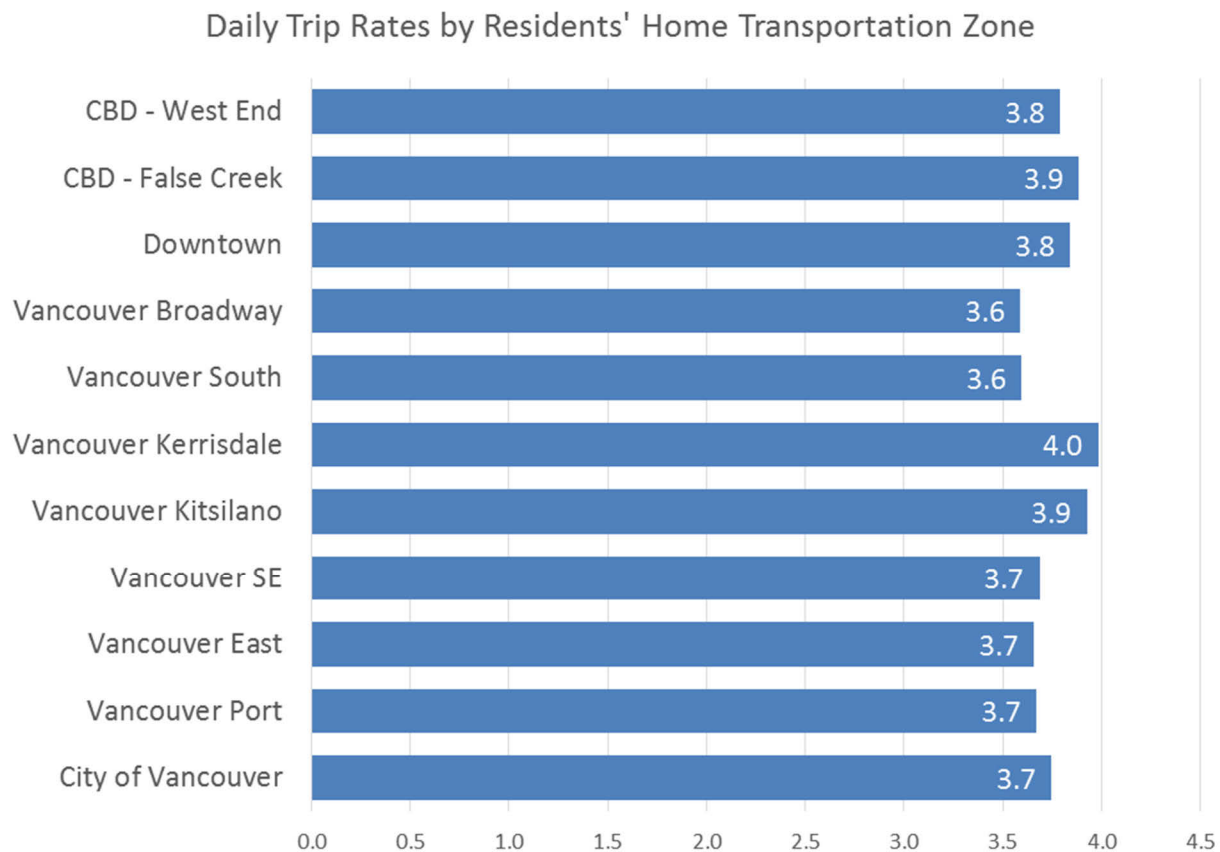


Figure 4-13 shows the trips rates by neighbourhood zone are more balance compared to 2015, though some communities seem to make more trips. Residents in downtown made more trips while trip rates drop outside the downtown core.

Figure 4-13: Trip Rates by Transportation Zone



## 4.5. Vehicle-Kilometers Travelled

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 Air Care, Insurance Corporation of British Columbia (ICBC), EMME transportation model, and Panel Survey odometer data. The Air Care 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, 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.

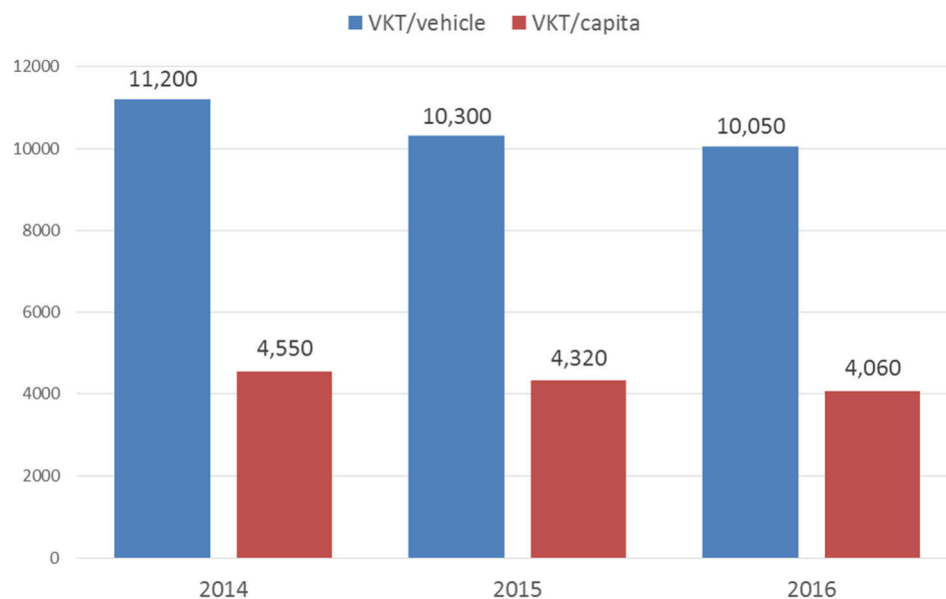
- This method for calculating VKT is dynamic. In other words, the average kilometres travelled will change year over year based on Panel Survey outcomes.
- This method is the closest approximation to the regionally accepted Air Care VKT method, and represents a reliable method with new survey data.

Odometer readings from returning panel members were used to determine the average annual VKT. After some data cleanup, this method provided a sample of approximately 1,010 odometer readings, a better sample size compared to 860 readings from previous year. The average was approximately **10,050 vehicle-kilometres travelled per vehicle**. The average vehicle age was approximately **10.7 years**.

Multiplying the average distance travelled by the estimated<sup>11</sup> number of actively insured vehicles in ICBC's database yields an annual VKT for 2016 of **2.73 billion**. Based on BC Stats population estimates for 2016, this equates to a 6% decrease in VKT per capita, from 4,320 km in 2015 to **4,060 km** in 2016.

*Figure 4-14* shows the VKT statistics based on Panel Survey odometer readings.

Figure 4-14: Trends in VKT per vehicle and VKT per capita



<sup>11</sup> 2016 estimation is based on available ICBC data for years 2007, 2008, and 2011 through 2015.

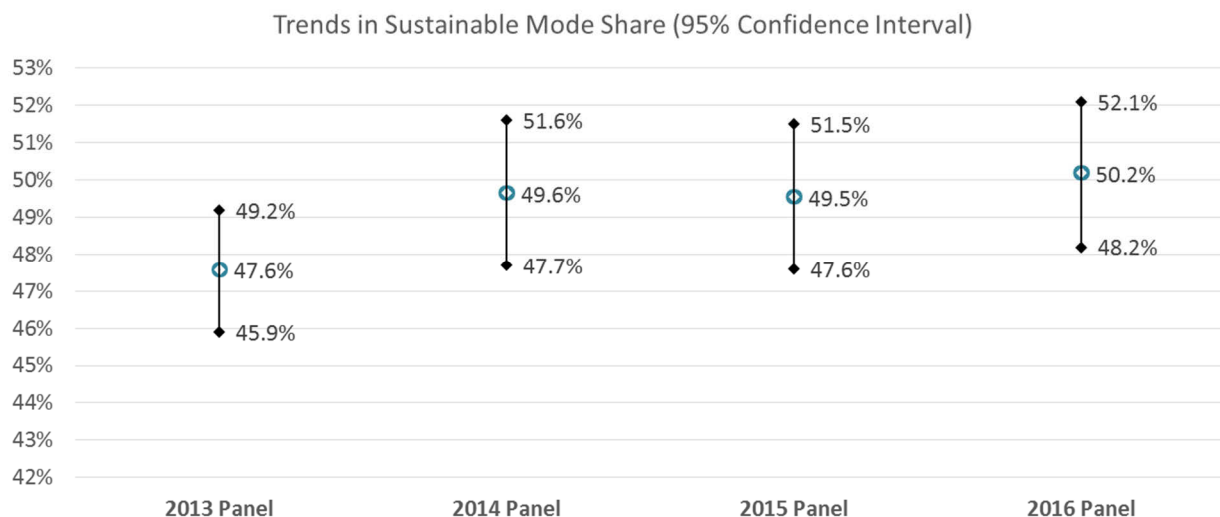


## 4.6. Walk/Bike/Transit Mode Trend Analysis

The Panel Survey has provided a valuable indicator for tracking trends in of the percentage of people walking, biking and taking transit. *Figure 4-15* shows the sustainable mode share with 95% confidence from 2013 to 2016 based on panel survey results. This chart shows an upward trend from the 2013 base year in terms of walking, cycling and transit for Vancouver residents. 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. Thus overall sustainable mode share improved but by less than 1%.

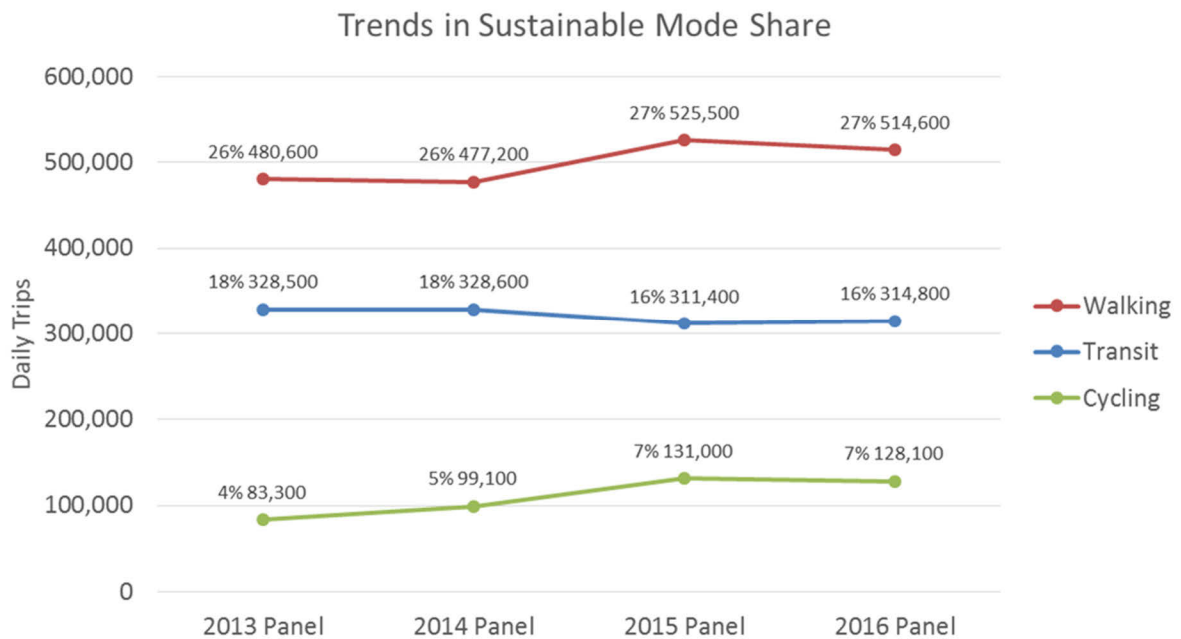
Extrapolating the travel survey trends to the future would suggest that this trend should continue with the further densification of Vancouver and the City's walking and cycling initiatives. There is still a strong indication that the City of Vancouver is on track to meet its 2020 mode share target set out in the Greenest City Action Plan and Transportation 2040; however, the provision of local and regional transit services will have a strong bearing on achievement of that goal by the 2020 target date.

Figure 4-15: Trends in Sustainable Mode Share (High and Low Ranges)



*Figure 4-16* presents the mode splits by walking, cycling, and transit modes. Transit mode shares increased by 0.5% in 2016.

Figure 4-16: Trends in Sustainable Mode Share



The 2016 Panel Survey asked for the approximate duration of walking and/or biking that made up all or part of longer walk/bike/transit trips. The answers to this new 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 4-17 shows the duration of walk trips and bike trips. About 81% of walk trips are less than 20 minutes and 72% of cycling trips are under 30 minutes.

Figure 4-17: Walk and Bike Trips by Duration

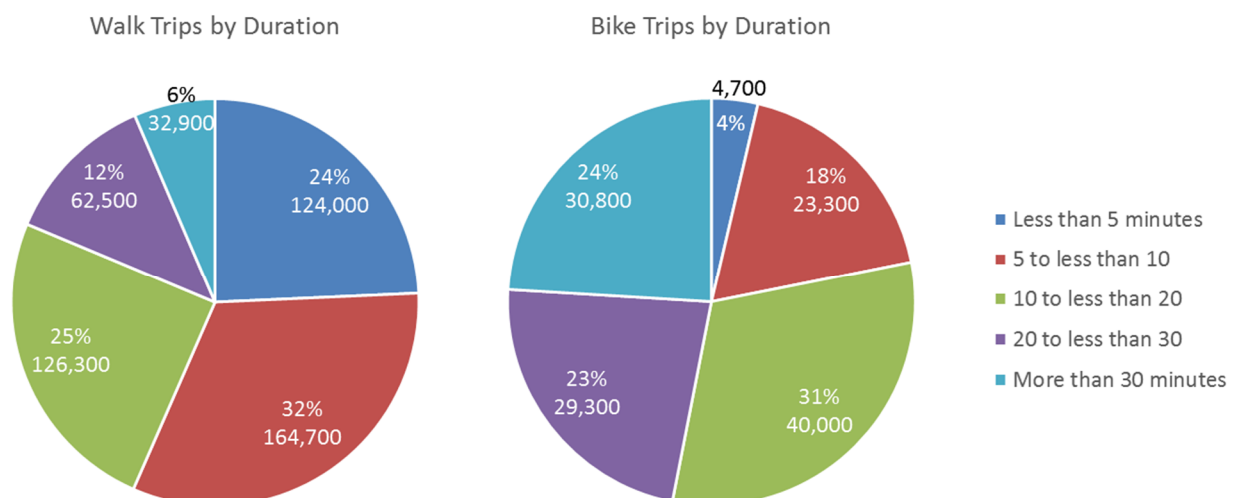
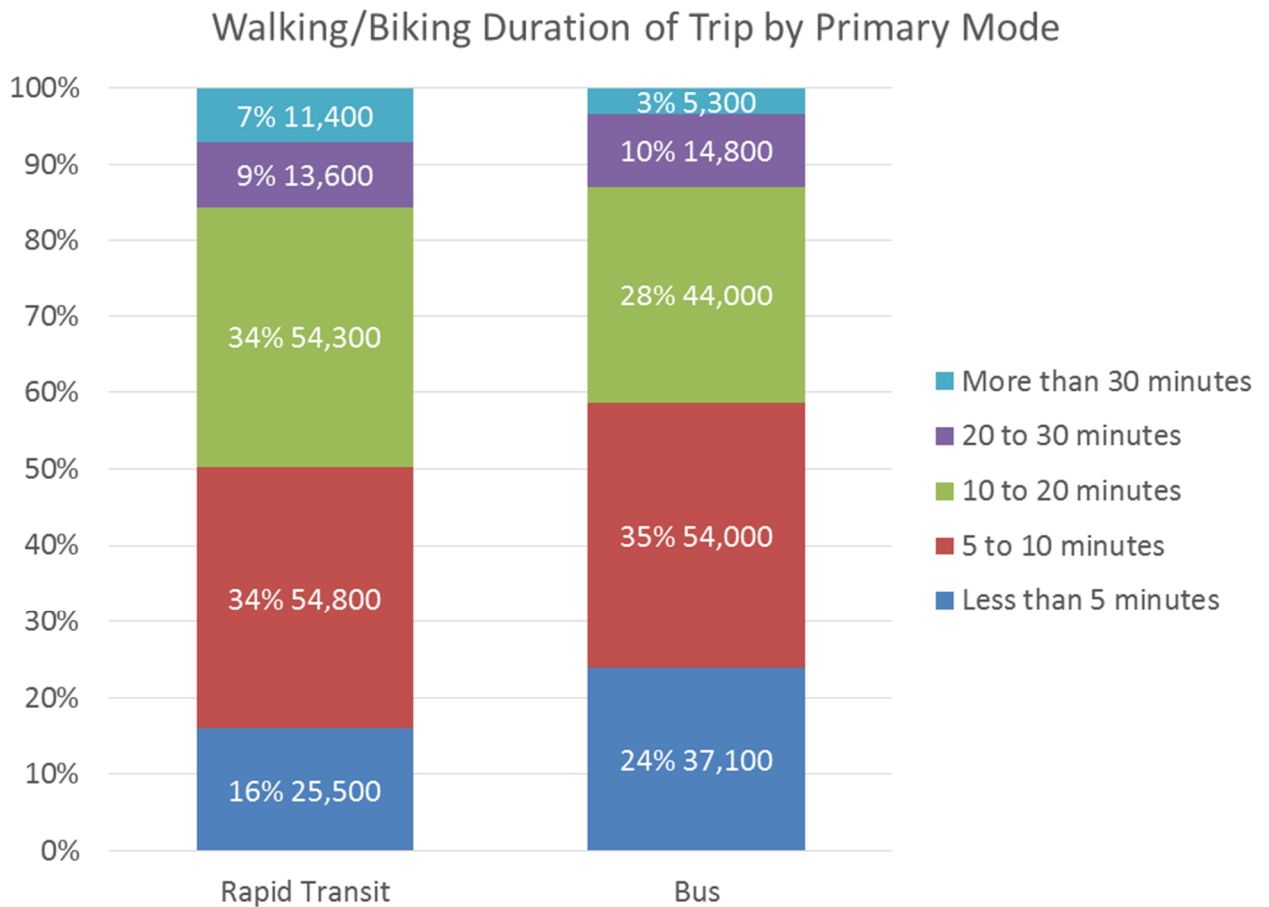


Figure 4-18 shows the duration of the walk or bike portion of trips with bus or rapid transit being the primary mode of travel. The majority of residents had a walk/bike component up to 10 minutes for transit trips. People who used rapid transit were more willing walk/bike longer. Amongst those travelling via rapid transit, most were willing to walk/bike up to 20 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 4-18: Duration of Walk and Bike Trips by Primary Travel Mode



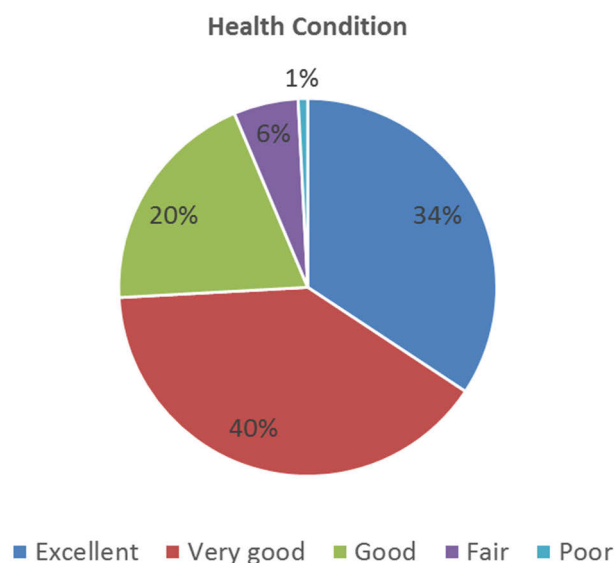
## 4.7. Health Status

The My Health My Community<sup>12</sup> 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 panel survey, the City will be able to track trends in health vs. mode choice over time.

Figure 4-19 shows a summary of respondents' self-reported health status; 74% of respondents indicated they were in very good or excellent health, similar to the 2015 results. This generally agrees with the findings of the Canadian Community Health Survey (Fraser Health Authority + Vancouver Health Authority subsets).<sup>13</sup>

Figure 4-19: Self-Reported Health Status of Respondents



<sup>12</sup> 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).

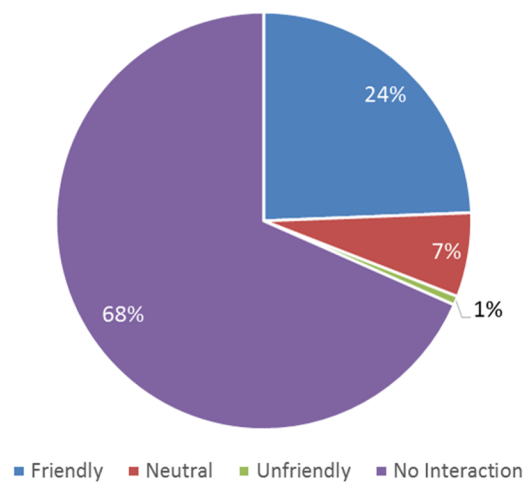
<sup>13</sup> Based on 2009-2013 data from the Canadian Community Health Survey which only includes excellent, very good, fair, and poor health categories.

## 4.8. Friendly Interaction

In 2014, the survey instrument was expanded to include a question regarding the nature of social interaction (outside of travel companions) during trip making. The trip diary only recorded whether the participants had engaged in friendly interaction or not. In 2015, the question was refined to include greater detail in the description of the interactions. *Figure 4-20* indicates that 68% of panel members had no social interaction, similar to the 2015 result (69%). Of those that did, most reported friendly or neutral interactions.

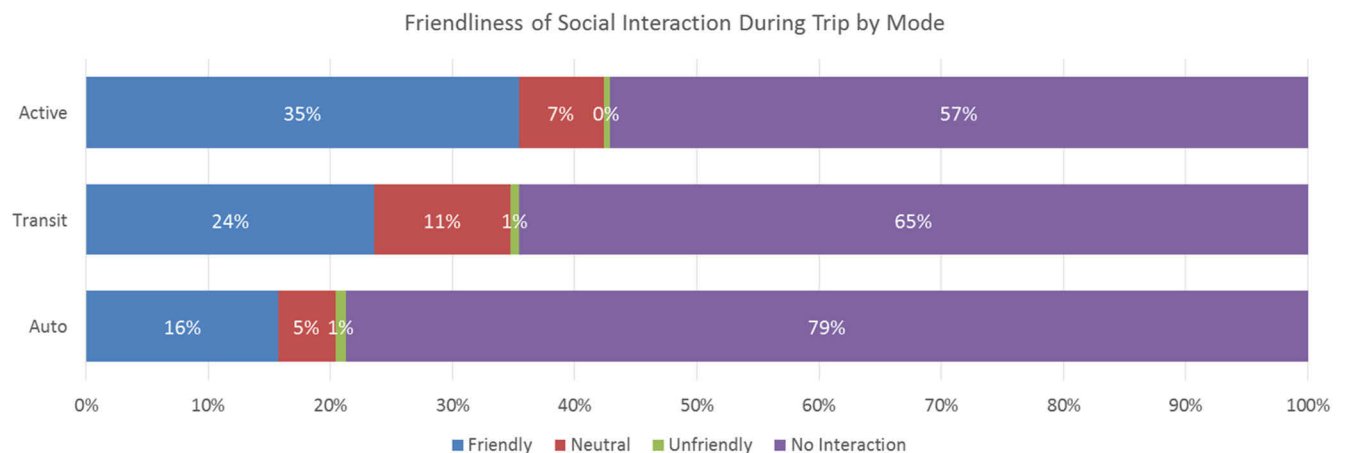
Figure 4-20: Nature of Social Interaction during Trip

Friendliness of Social Interaction During Trips



The degree of social interaction is cross-referenced against travel modes in *Figure 4-21*. Not surprisingly, panel members travelling via active modes were more likely to engage in friendly interactions.

Figure 4-21: Engagement in Friendly Interaction by Trip Mode



## 4.9. Origins and Destinations

*Table 4-3* captures the origins and destinations (O-D) of the Panel Survey respondents based on geocoded trip-end coordinates. It shows the breakdown of trips within transportation zones, to other zones within the City, and outside of the City.

The Panel Survey covers Vancouver residents only, so 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: 75% of trips originate and ends within the city.



Table 4-3: Origins and Destinations within Transportation Zones and Outside Vancouver

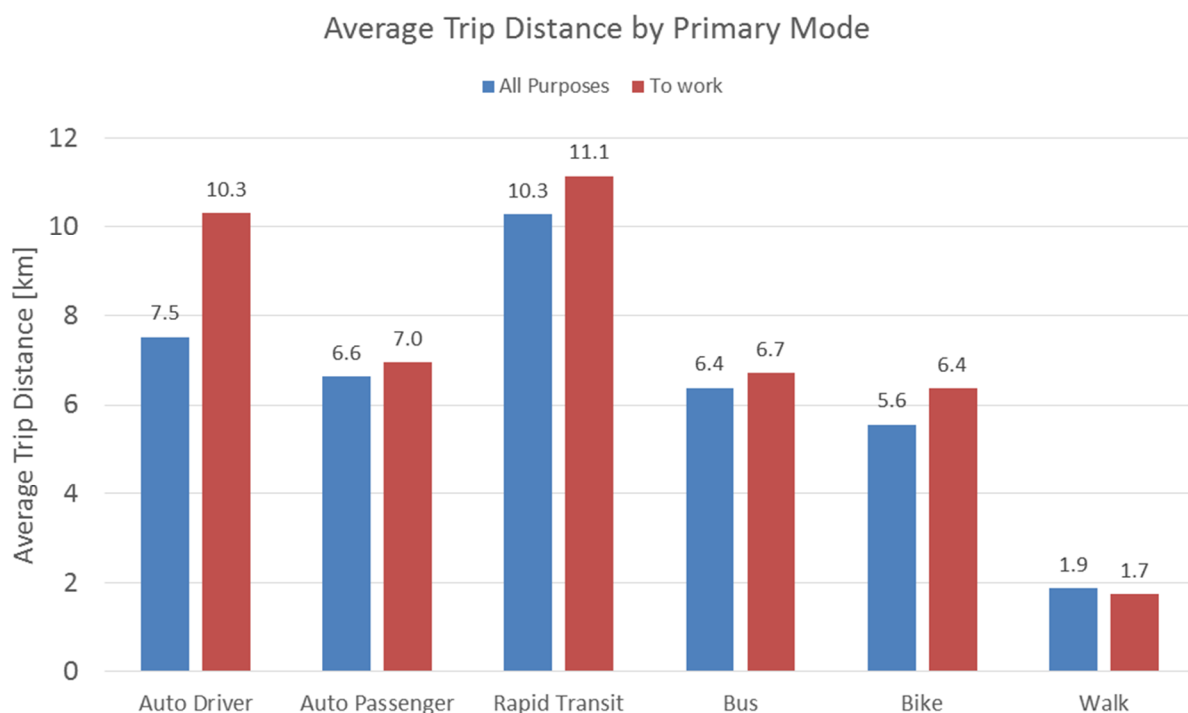
Origin/Destination	CBD - West End	CBD - False Creek	Downtown	Vancouver Broadway	Vancouver South	Vancouver Kerrisdale	Vancouver Kitsilano	Vancouver SE	Vancouver East	Vancouver Port	Outside Vancouver
CBD - West End	63,800	40,200		10,600	7,800	4,100	8,400	3,000	4,200	5,000	16,600
CBD - False Creek	38,800	139,100		26,000	16,200	3,700	16,900	9,800	13,000	11,800	19,000
Downtown			281,900	36,600	24,000	7,800	25,300	12,800	17,200	16,800	35,600
Vancouver Broadway	9,400	24,300	33,700	84,800	26,300	7,500	23,300	8,500	11,300	10,400	20,500
Vancouver South	7,700	17,400	25,100	24,800	81,500	13,100	8,800	16,400	10,500	3,600	24,700
Vancouver Kerrisdale	3,200	3,200	6,400	6,900	15,000	55,200	19,100	2,200	3,600	1,700	20,800
Vancouver Kitsilano	14,400	17,500	31,900	20,900	7,400	18,800	77,400	1,500	4,300	4,400	19,900
Vancouver SE	3,600	9,200	12,800	8,400	15,700	1,900	1,600	42,000	13,100	3,700	30,900
Vancouver East	4,600	13,700	18,300	10,700	10,400	3,100	4,800	15,300	72,000	16,900	33,800
Vancouver Port	4,800	10,800	15,600	11,800	4,300	1,700	4,100	3,400	18,700	40,000	10,500
Outside Vancouver	15,700	18,300	34,000	21,800	24,200	19,800	21,100	29,200	34,900	10,800	81,400

## 4.10. Average Trip Distance

Trip lengths have been estimated using the distance matrix from TransLinks' Regional Transportation Model for each reported trip based on the geocoded locations of trip origin and destination. Average trip distances by primary mode are presented in *Figure 4-22* *Figure 4-21*. These are fairly consistent with trip lengths reported from TransLink's trip diary survey.

Residents, auto drivers in particular, are willing to travel further for the work purpose. Meanwhile, rapid transit trips are the longest, with an average trip length of 10.3 kilometres and 0.8 kilometres more for work commute trips. Walking trips have the lowest average distance of 1.9 kilometres, which is about 23 minutes at an average 5 km/hour walking speed. This is higher than trip duration data reported in section 4.6, where 81% of walk trips are less than 20 minutes. Residents might have walked longer and further than they reported, especially for non-commute trips.

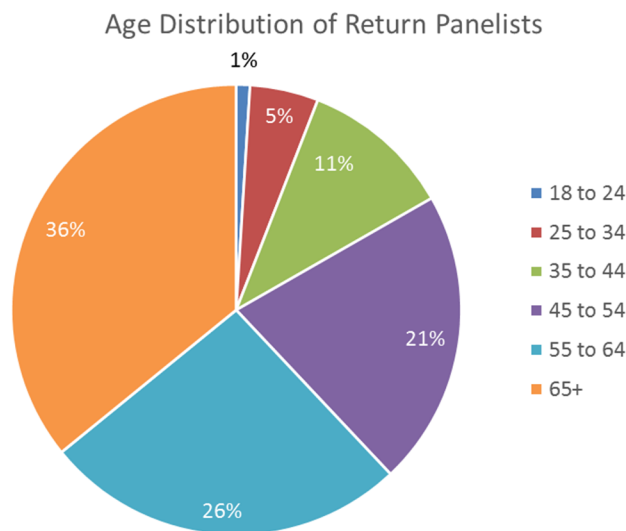
Figure 4-22: Average Trip Distance by Primary Mode



## 5. Comparison of Returning Panel Members

This section provides a high-level trend analysis of mode shares of 711 residents who participated in the panel since 2013. In general, they made less trips for both commute and non-commute purposes compared to previous years. This might be caused by limited sample for the younger age population as the majority of returning panel members were over 55 years old as of 2016. Thus, the analysis in this section will be based on individual response, instead of expanded trips weighted by population 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. Reasons for the change include wider spread adoption of car sharing as a primary and supplementary form of transportation. While car-share membership increases, the number of residents with no car access did not drop in 2016; this suggests people with private car access are signing up for car share programs in 2016. Six people with car-share membership (1% of sample population) had decreased private car access in 2016. 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 care-share services including Uber and Lyft.

Table 5-1: Access to Motor Vehicles (2013-2016)

	2013	2014	2015	2016
Valid Driver License	94%	94%	93%	94%
Private Vehicle Access	78%	82%	82%	83%
Car Share Program	12%	18%	21%	24%
No Car Access	18%	12%	12%	12%

## 5.2. Mode Share Patterns

The following comparisons focus on observed patterns in mode share.

Figure 5-2 shows a comparison of the mode shares of trips for all purposes. Both the auto driver and auto passenger mode share slightly decreased, while travel by walking, cycling and transit has increased. Though it is still early to derive conclusive trends from the comparison, it is encouraging to see that overall walk/bike/transit mode share is moving in a positive direction. Cycling trips are growing despite the overall decline in trip rates, which suggests positive feedback from cycling infrastructure investments. It will be possible to ascertain this increase in the near future as more panel data are collected especially as the survey instrument and return rate become more stable and consistent over time. It is worth noting that the 2014 Panel results, which included more December and some January 2015 records, may be more affected by seasonality and weather factors.

Figure 5-2: Change in Mode Share (2013-2016)

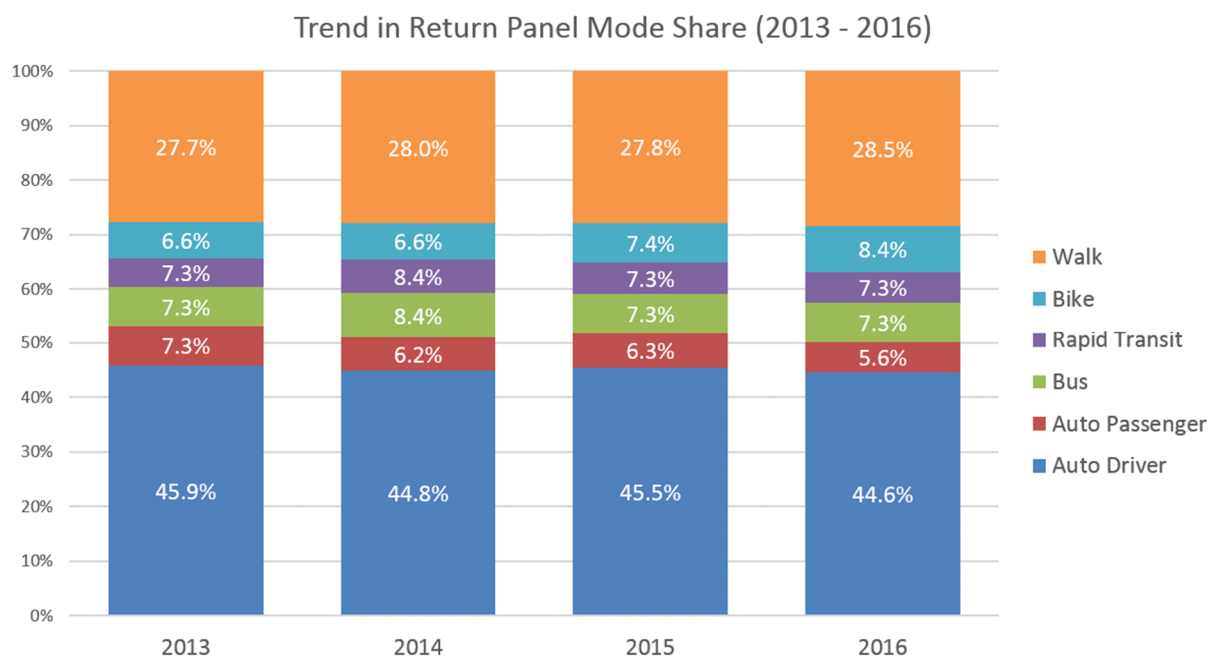


Figure 5-3 and Figure 5-4 compare 2013-2016 mode shares for commuting (to work/school) and non-commuting trips, respectively. Despite less work trips made, there is an increase in bike trips to commute. At the same time, auto driver mode share to work or school continued its declining trend since 2014. The mode share did not change for non-commuting trips, except for the 1% sample population who used to carpool shifting to walking.

Figure 5-3: Mode Share for Commuting Trips (2013-2016)

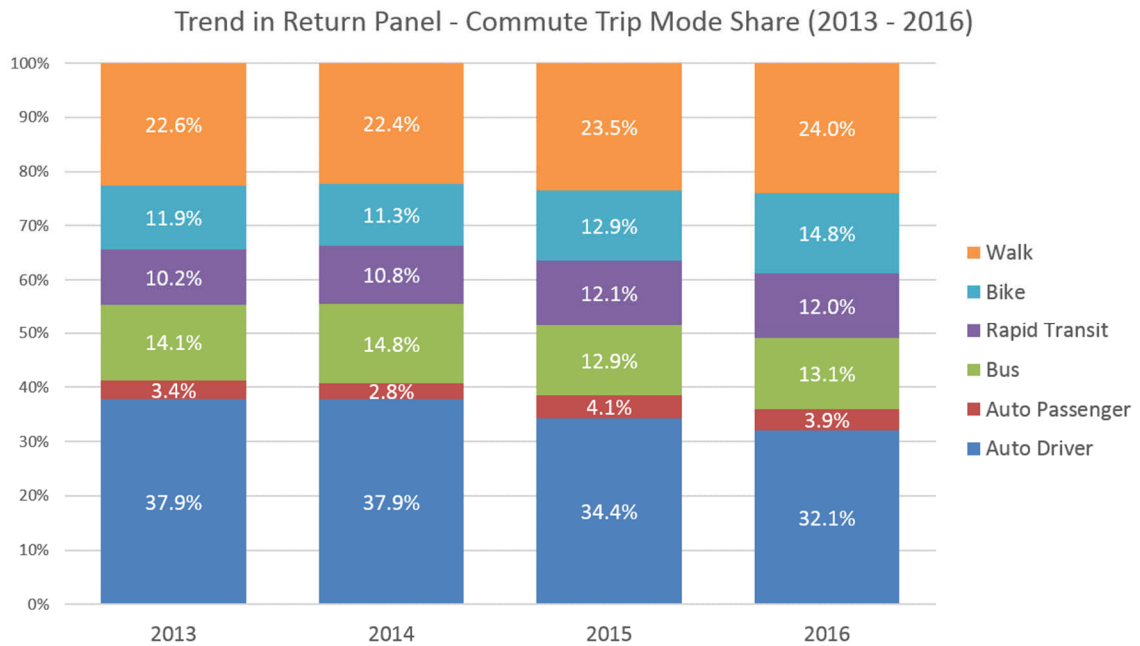
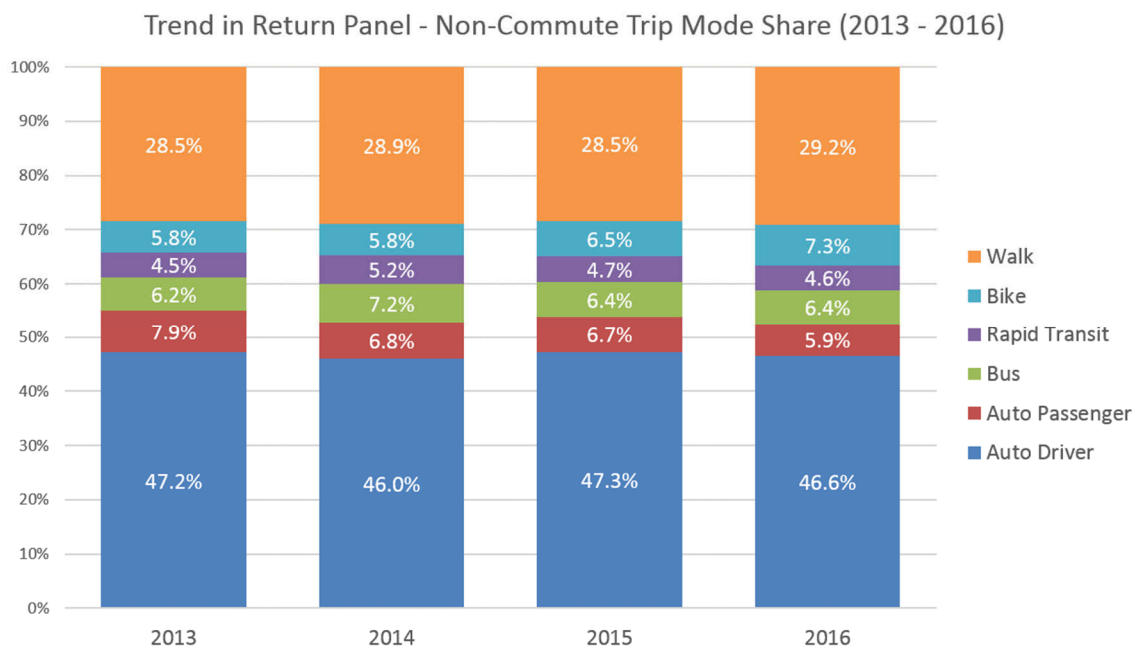


Figure 5-4: Mode Share for Non-Commuting Trips (2013-2016)



## 6. Contributing Factors Affecting Change

This section provides a brief discussion of recent (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 6-1* provides a description of these accounts and their corresponding data sources.

Table 6-1: 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 2011 Trip Diary revealed that the region's walk/bike/transit mode share, in general, has increased from 25.5% to 26.8% between 2008 and 2011. This could be attributed to the opening of the Canada Line, significant increases in bus service supply and coverage in the region, improvements to the active transportation network and overall changes in travel behaviour. Also, trip rates have generally gone up slightly over the same period, from 2.68 trips/person to 2.77 trips/person. While not conclusive<sup>14</sup>, the increase in trip rates can be attributed to recovery from the 2008-2009 economic downturn.

The analysis of the 2013-2016 City of Vancouver Panel Surveys revealed that:

- Walk/bike/transit mode share has increased from approximately 48% to 50%.
- The total number of trips increased from 1.88 million in 2013 to 1.91 million in 2016, an increase of 1.5%.
- Daily VKT based on odometer readings is decreasing.

Additional Panel Survey data are needed to see if this trend continues. As with the Trip Diary, it is important to be cautious in drawing conclusive trends of shifting travel behavior using a limited sample of residents.

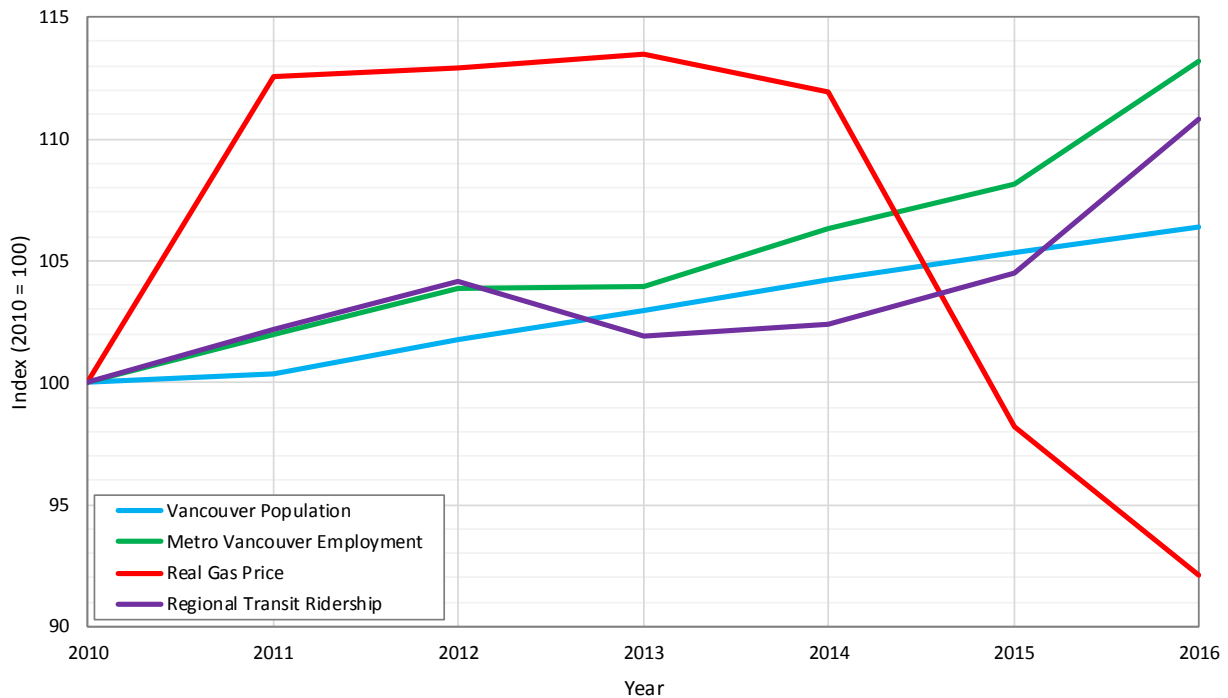
*Figure 6-1* shows the trends of the accounts described in *Table 6-1* and indexed to the year 2010. Overall, socio-economic variables, population and employment, have steadily grown in the last six years. Vancouver population grew steadily by approximately 6% from 2011 to 2016. Metro-Vancouver employment slightly decreased between 2012 and 2013, but rebounded between 2013-14 (+2.4%) and has shown strong growth in the last year (+5%). Fuel price rose sharply in 2011 and continued to grow at a much slower rate until 2013 after which it decreased by 1.5% in 2014. 2015 saw a sharp decline (-13.7%) in fuel price and a further decrease in 2016 (-6.1%).

<sup>14</sup> The trip diary's sample size is approximately 2% of all of Metro-Vancouver's households. While this provides an adequate sample size, comparisons between travel surveys must always be treated with caution as subtle changes to the survey instrument or sampling biases can influence the results of any comparative analysis.



Transit ridership has grown strongly in the last year with 6.3% growth in the last year which could be attributed to strong employment growth resulting in more commuter travel.

Figure 6-1: Socio-Economic Trends Indexed to 2010



Overall, travel by mode and purpose have not changed substantially in the past year compared to relative changes observed in previous surveys. There has been a slight increase in the share of active modes with a corresponding slight decrease in auto trips. Travel by purpose, time of day and geography have remained consistent with last year's survey showing that travel characteristics have not changed substantially.

## 7. Lessons Learned and Next Steps

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The 2016 Vancouver Panel Survey builds upon the data collected since the previous three 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 during the 2016 Panel Survey data collection and analysis phases include the following:

- The first year of the Panel Survey incurred the highest recruitment cost in order 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 2014 and 2015, the attrition rate was over 40%. In 2016, a cash-based incentive was offered and the attrition rate has dropped to just below 30% which preserves the integrity of the panel survey findings.
- To maintain one of the primary goals of consistency with TransLink's Regional Trip Diary Survey, 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 might be removed so that survey length, attrition rate, and recruitment efforts remain stable.
- The bulk of panel members complete their trip diaries in October-November, and notification of incentives/final wrap up occurs around March. For the 2016 Panel Survey, a mini summer survey was conducted to engage panelists and to remind them of the upcoming fall survey. This has likely helped to maintain existing panel members and remind residents of the importance of this survey.
- 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 capture fall travel patterns was achieved. This is manifest in a more accurate reflection of trip rates and travel characteristics.
- Progress was also made in 2016 in getting a more geographically representative distribution of panel members. However, the 15-34 age cohort continues to be underrepresented. It is important in future surveys to develop a new approach to capturing this key demographic, as their travel behaviours are most likely to be in flux. Development and testing of a smartphone based app to record travel characteristics would likely help in engaging this cohort.
- The travel patterns reported in the 2016 Panel Survey are similar to the 2015 Panel Survey, and show consistent growth in the active transportation mode share. Access to private vehicles and car sharing services has also grown, resulting in a reduction in transit mode share. It is important to track transit mode share in the ensuing years, prior to the development of any new high-capacity services to the region.
- Future monitoring of travel within zones and elsewhere within the City can serve as a useful metric to gauge the land use integration and live/work choices afforded to Vancouver residents.

## **Appendix A – 2016 Panel Survey Instruments**

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### **Returning Panelists and New Recruits**

**EMAIL INVITATION – RETURNING PANELISTS COMPLETING ALL SURVEY SECTIONS ONLINE**

**Subject:** Trip Day - City of Vancouver Annual Travel Survey

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

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

In the past year you completed a travel 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. **As a thank you for your ongoing participation in the fall survey, this year the City is expanding the prize draw options to include a chance to win one of 100 Visa Gift Cards each worth \$100!**

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 2<sup>nd</sup> Ave,e  
Vancouver, BC        V5T 1M5

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

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

- Your assigned travel day is next **(INSERT DAY)**. 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](#)).
- Before recording and entering your trips, we will first confirm information you provided last year.

NOTE: Even if you do not make any trips or the trips you take are not typical on your assigned day, we still need you to complete the survey.

**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](http://www.mustelgroup.com/covsurveyhelp))

A. What is your gender? 1. MALE 2. FEMALE

### D. EMAIL ADDRESS

The email address we have on file for you for this Annual Travel 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: \_\_\_\_\_

Please confirm your email address: \_\_\_\_\_

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 2014 (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 the Prize Draw. 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 the year in which you were born? \_\_\_\_\_

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 confirm this is the age group that applies to you.

1. 15-17
2. 18-24
3. 25-34
4. 35-44
5. 45-54
6. 65+
7. PREFER NOT TO ANSWER



### PRIZE DRAW

In addition to the prizes usually offered for your valued participation, this year the City has expanded the options to include 100 Visa Gift Cards each worth \$100!

Here is the full list of prizes available for the 2016 Travel Survey:

- a Visa Gift Card worth \$100 (there are 100 cards in the draw, each worth \$100)
- a 3 month Flexipass – providing unlimited admission to any Park Board pool, fitness centre, or rink in the City during the validity period (there are 50 passes in the draw, each valued at approximately \$121)
- a 1-year Premium Membership to the VanDusen Botanical Gardens, providing the member and a guest free entrance year round (there are 50 memberships in the draw, each valued at approximately \$112)
- a PNE PlayLand PlayPass for two – a one-day pass providing access to over 30 rides and attractions (there are 77 passes in the draw, each valued at approximately \$43.50).

In all, approximately a 1-in-9 chance to win.

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 2017.)

2. No, thank you

### REGISTRATION QUESTIONS

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.

- R1. FNAME: \_\_\_\_\_ LNAME: \_\_\_\_\_  
 SUITE#: \_\_\_\_\_ STREET#: \_\_\_\_\_ STREET: \_\_\_\_\_ STREET TYPE: \_\_\_\_\_ STREET DIRECTION: \_\_\_\_\_  
 CITY: \_\_\_\_\_ PROVINCE: \_\_\_\_\_ POSTAL CODE \_\_\_\_\_
- Yes, this information is correct
  - No, I need to update this information → Please update your name and address.

### IF UPDATING INFORMATION (R2=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?

- Yes
- No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**

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 \_\_\_\_\_

- Yes, this information is correct
- 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?

- Yes
- 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

- No second work address
- Yes – **ENTER 2<sup>nd</sup> 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?

- Yes
- 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 Q5
  
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 (ex Modo, Car2go, ZipCar, Evo, etc)
  - d. Car share as a passenger (ex 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. Bike Share (Mobi)
  - n. Walk
  - o. Taxi
  - p. Motorcycle
  - q. Other → Please describe other mode of travel \_\_\_\_\_
  - r. 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 (ex Modo, Car2go, ZipCar, Evo, etc)
- d. Car share as a passenger (ex 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. Bike Share (Mobi)
- n. Walk
- o. Taxi
- p. Motorcycle
- q. Other (specify) \_\_\_\_\_
- r. DO NOT TRAVEL TO SCHOOL AS A STUDENT

6. In terms of walking, what would you consider a reasonable walking distance for travel purposes (work, school, shopping, etc.) (RECORD FARTHEST DISTANCE): <400m (6 min), 400-800m (6-12 min), 800-1,200m (12-18 min), >1,200m (>18 min).

**IF Q5a OR 5b = "Bicycle", CANNOT SELECT CODES 5-6 BELOW. ERROR MESSAGE:** *You mentioned earlier that you use a bicycle as your main mode of travel for trips to work and/or school. Please correct your answer here or click the previous button to correct your travel modes to work and/or school.*

7. How often do you typically travel by bicycle in fair weather?

1. At least 5 times per week
2. 2-4 times per week
3. Once per week to once per month
4. Less than once per month
5. I do not ride a bicycle at all (**SKIP TO Q11**)
6. I am physically unable to ride a bicycle (**SKIP TO Q11**)

8. How often do you typically travel by bicycle in rainy or cold weather?

1. At least 5 times per week
2. 2-4 times per week
3. Once per week to once per month
4. Less than once per month
5. I do not ride a bicycle in rainy or cold weather

9. Are you interested in travelling by bicycle more than you do now?

1. Yes
2. No, I am happy with how much I currently bicycle
3. No, I want to travel less by bicycle

10. If you were travelling by bicycle on your own, in which of the following environments would you feel comfortable:

1. On almost any street in the city and I don't worry much about traffic conditions.
2. On major streets, provided they have painted bicycle lanes.
3. On major streets, provided they have bicycle lanes separated from traffic with a physical barrier.
4. On local neighbourhood streets with little traffic and low speeds.
5. On bicycle paths far away from motor vehicles.
6. Not comfortable cycling in any of the above environments (**UNCHECK ANY ABOVE**)

11. Have you traveled by public transit in the past month?

1. YES → **ASK 12**

2. NO

12. IF YES: How do you usually pay for your travel by transit this time of year? (RECORD ALL THAT APPLY)

1. Cash
2. Compass Card Add Value
3. Compass Card Monthly Pass
4. U-Pass
5. Employer Pass (Discount or fully paid for by employer)
6. Other Specify: \_\_\_\_\_

### DEMOGRAPHICS

Just 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:

- 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?
- Have not completed high school
  - Completed high school/secondary school
  - Trade certificate or diploma from a vocational school or apprenticeship training
  - Non-university certificate or diploma from a community college, CEGEP or nursing school
  - University certificate below bachelor's level
  - Bachelor's degree
  - Graduate degree (master's degree or doctorate)
  - Prefer not to answer
7. **ETHNICITY:** Were you born in Canada?
- Yes
  - No
  - Prefer not to answer
8. Vancouver residents come from many different backgrounds. What is your main ethnic background? [ALLOW UP TO TWO OPTIONS TO BE SELECTED]
- African
  - American
  - Other Asia (Indonesian, Malaysia, Thailand)
  - Australia
  - British (English/Scottish/Welsh/Irish)
  - Canadian (including First Nations, Inuit, Metis)
  - Chinese
  - Dutch
  - East Indian (Punjabi, India, Tamil, Guyana, Pakistani, etc)
  - East European (Ukrainian, Polish, Hungarian, Serb, etc)
  - Filipino
  - French
  - German
  - Greek
  - Italian
  - Japanese
  - Korean
  - Latin American (Guatemalan, Nicaraguan, Mexican, etc)
  - Middle Eastern
  - Portuguese
  - South American (Brazilian, Peruvian, Columbian, Chilean, Ecuadorian)
  - Scandinavian
  - Spanish
  - Vietnamese
  - OTHER SPECIFY: \_\_\_\_\_
  - Prefer not to answer

IF Q8 = 06. Canadian

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



### City of Vancouver Annual Travel Survey

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

- The trip diary section will ask about the trips you make on your single assigned day indicated below.
- Watch this video with key points to remember on your travel day (Trip Diary Video)
- Your assigned travel day is a (INSERT DAY). 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.

NOTE: Even if you do not make any trips or the trips you take are not typical on your assigned day, we still need you to complete the survey.

**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)

1. 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 please enter ONE of the following for your start location:

- a precise address, OR
- nearby cross-streets, OR
- a landmark

Always include the municipality.

Q1b) What was your **end location**? If this trip ended at home or work, please click "Home" or "Work". 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)

Otherwise please enter ONE of the following: for your end location

- a precise address, OR
- nearby cross-streets, OR
- a landmark

Always include the municipality.

☐ Same as origin (a recreational trip such as walking, dog walking or jogging where you start and end your trip at the same location)

Address: \_\_\_\_\_

Nearby cross-streets: \_\_\_\_\_ and \_\_\_\_\_

Landmark : \_\_\_\_\_

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

(NEW SCREEN: 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 5:59am
2. 6:00am to 8:59am
3. 9:00am to 11:59am
4. 12:00pm to 2:59pm
5. 3:00pm to 5:59pm
6. 6:00pm to 8:59pm
7. 9:00pm 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.

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. Bike Share (Mobi)
16. Taxi
17. Other (specify) \_\_\_\_\_

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

Q1h) Excluding any travel companion(s) that may have been with you during this trip, did you interact with anyone else while travelling to your destination (e.g. waving to a neighbour, chatting with another transit rider or bus driver, honking, etc)? **MULTIPLE RESPONSE, EXCEPT OPTION 4**

1. Yes, it was friendly
2. Yes, it was unfriendly
3. Yes, it was neutral
4. No notable interaction with anyone else

**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 **Previous** if you arrived here by mistake.

**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. **COMMENT BOX PROVIDED**

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 - Please record the details of this trip
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 Q1-2

**QS1 Return.** Below is the make, model and year of the private vehicle you provided to us in the 2015 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 → **ASK QS1 BELOW**

**QS1-1a.** What type of private vehicle do you typically drive? Please choose the make, model and year 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**

MAKE  MODEL  YEAR

**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. \_\_\_\_\_@\_\_\_\_\_.

**Q52.** 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 2017.

Thank you once more and we'll be in touch in 2017!  
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 and we are 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 investments for area residents.

- 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? 1. MALE 2. FEMALE

Your household has been randomly selected for this transportation study 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 and in appreciation of your time, each year you would have a 1-in-9 chance of winning one of the following prizes:

- a Visa Gift Card worth \$100 (there are 100 cards in the draw, each worth \$100)
- a 3 month Flexipass – providing unlimited admission to any Park Board pool, fitness centre, or rink in the City during the validity period (there are 50 passes in the draw, each valued at approximately \$121)
- a 1-year Premium Membership to the VanDusen Botanical Gardens, providing the member and a guest free entrance year round (there are 50 memberships in the draw, each valued at approximately \$112)
- a PNE PlayLand PlayPass for two – a one-day pass providing access to over 30 rides and attractions (there are 77 passes in the draw, each valued at approximately \$43.50).

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

Are you interested in participating in this annual travel 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.

- B. **(HOME POSTAL)** To ensure our sample covers all areas of the City of Vancouver, may I please have your 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.

(6-digit) \_ \_ \_ \_ \_

**(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 the Prize Draw. 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



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.** So that the study is reflective of all resident age groups, I can read you a short list and you can let me know which one applies to you.

1. 15-17
2. 18-24
3. 25-34
4. 35-44
5. 45-54
6. 55-64
7. 65+
8. PREFER NOT TO ANSWER

### **PERSUADERS—only if needed:**

- 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 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 purposes.

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 travel survey?

**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 be entered into the prize draw? **READ IF NECESSARY:** You would be eligible to win one of the following:

- a Visa Gift Card worth \$100 (there are 100 cards in the draw, each worth \$100)
- a 3 month Flexipass – providing unlimited admission to any Park Board pool, fitness centre, or rink in the City during the validity period (there are 50 passes in the draw, each valued at approximately \$121)
- a 1-year Premium Membership to the VanDusen Botanical Gardens, providing the member and a guest free entrance year round (there are 50 memberships in the draw, each valued at approximately \$112)
- a PNE PlayLand PlayPass for two – a one-day pass providing access to over 30 rides and attractions (there are 77 passes in the draw, each valued at approximately \$43.50).

In all, approximately a 1-in-9 chance to win.

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 2017.

2. No, thank you

## NEW RECRUITS - COV Travel Survey 2016 Study B782

- 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](mailto:covtravelsurvey@mustelgroup.ca)  
with the following subject line: City of Vancouver Annual Travel 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

Thank you for agreeing to participate!

To make the process easier for you to enter your trip information to the online survey, we have a few additional questions.

R1. What is your first and last name? If you prefer to provide initials, that works.

FNAME:\_LNAME: \_\_\_\_\_

R2. As the trip diary could include trips you make to or from work and home, may I have your home address?

SUITE#: \_\_\_\_\_ STREET#: \_\_\_\_\_ STREET: \_\_\_\_\_ STREET TYPE: \_\_\_\_\_ STREET DIRECTION: \_\_\_\_\_  
CITY: \_\_\_\_\_ PROVINCE: \_\_\_\_\_ POSTAL CODE \_\_\_\_\_

### DISPLAY MAP WITH HOME LOCATION IDENTIFIED

R3. Is this the correct location?

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

R4. If you are employed, your trip diary may include trips you make to and from work, may I have your work address?

1. Do not work (unemployed)
2. No work address (no fixed work address OR only work from home)
3. Yes – **ENTER WORK ADDRESS**

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

### DISPLAY MAP WITH WORK LOCATION IDENTIFIED

Is this the correct location?

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

Do you have more than one work address?

1. No second work address
2. Yes – **ENTER 2<sup>nd</sup> 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?

3. Yes
4. No → **RETURN TO VERIFY INFORMATION UNTIL CORRECT**

**PROFILING & GENERAL TRANSPORTATION QUESTIONS**

1. Do you currently have a valid driver's license?
  1. Yes
  2. No → SKIP TO Q5
  
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 (ex Modo, Car2go, ZipCar, Evo, etc)
  - d. Car share as a passenger (ex 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. Bike Share (Mobi)
  - n. Walk
  - o. Taxi
  - p. Motorcycle
  - q. Other (specify) \_\_\_\_\_
  - r. DO NOT TRAVEL TO WORK

## NEW RECRUITS - COV Travel Survey 2016 Study B782

b) What is your **usual mode of transportation** this time of year for trips to or from **school**? 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 (ex Modo, Car2go, ZipCar, Evo, etc)
- d. Car share as a passenger (ex 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. Bike Share (Mobi)
- n. Walk
- o. Taxi
- p. Motorcycle
- q. Other (specify) \_\_\_\_\_
- r. DO NOT TRAVEL TO SCHOOL

6. In terms of walking, what would you consider a reasonable walking distance for travel purposes (work, school, shopping, etc.) (RECORD FARTHEST DISTANCE): <400m (6 min), 400-800m (6-12 min), 800-1,200m (12-18 min), >1,200m (>18 min).

**IF Q5a OR 5b = "Bicycle", CANNOT SELECT CODES 5-6 BELOW. ERROR MESSAGE:** *You mentioned earlier that you use a bicycle as your main mode of travel for trips to work and/or school. ASK RESPONDENT TO CLARIFY AND CORRECT RESPONSE IN Q5a OR Q5b AS REQUIRED.*

7. How often do you typically travel by bicycle in fair weather?

1. At least 5 times per week
2. 2-4 times per week
3. Once per week to once per month
4. Less than once per month
5. I do not ride a bicycle at all (**SKIP TO Q11**)
6. I am physically unable to ride a bicycle (**SKIP TO Q11**)

8. How often do you typically travel by bicycle in rainy or cold weather?

1. At least 5 times per week
2. 2-4 times per week
3. Once per week to once per month
4. Less than once per month
5. I do not ride a bicycle in rainy or cold weather

9. Are you interested in travelling by bicycle more than you do now?

1. Yes
2. No, I am happy with how much I currently bicycle
3. No, I want to travel less by bicycle

## NEW RECRUITS - COV Travel Survey 2016 Study B782

10. If you were travelling by bicycle on your own, in which of the following environments would you feel comfortable:
1. On almost any street in the city and I don't worry much about traffic conditions.
  2. On major streets, provided they have painted bicycle lanes.
  3. On major streets, provided they have bicycle lanes separated from traffic with a physical barrier.
  4. On local neighbourhood streets with little traffic and low speeds.
  5. On bicycle paths far away from motor vehicles.
  6. Not comfortable cycling in any of the above environments (**UNCHECK ANY ABOVE**)
11. Have you traveled by public transit in the past month?
1. YES → **ASK 12**
  2. NO
12. IF YES: How do you usually pay for your travel by transit this time of year? (RECORD ALL THAT APPLY)
1. Cash
  2. Compass Card Add Value
  3. Compass Card Monthly Pass
  4. U-Pass
  5. Employer Pass (Discount or fully paid for by employer)
  6. Other Specify: \_\_\_\_\_

### DEMOGRAPHICS

Just a few questions to help us classify the survey data.

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

DROP DOWN MENU

2. 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

**READ IF NECESSARY:** The City is simply interested in tracking the health of its residents for research purposes.

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

4. **EMPLOYMENT:** Are you: (MULTIPLE RESPONSE EXCEPT CANNOT SELECT *Working full-time* AND *Unemployed*, 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

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



6. What is the highest level of education you have completed?
- Have not completed high school
  - Completed high school/secondary school
  - Trade certificate or diploma from a vocational school or apprenticeship training
  - Non-university certificate or diploma from a community college, CEGEP or nursing school
  - University certificate below bachelor's level
  - Bachelor's degree
  - Graduate degree (master's degree or doctorate)
7. **ETHNICITY:** Were you born in Canada?
- Yes
  - No
8. Vancouver residents come from many different backgrounds. What is your main ethnic background? [ALLOW UP TO TWO OPTIONS TO BE SELECTED]
- African
  - American
  - Other Asia (Indonesian, Malaysia, Thailand)
  - Australia
  - British (English/Scottish/Welsh/Irish)
  - Canadian (including First Nations, Inuit, Metis)
  - Chinese
  - Dutch
  - East Indian (Punjabi, India, Tamil, Guyana, Pakistani, etc)
  - East European (Ukrainian, Polish, Hungarian, Serb, etc)
  - Filipino
  - French
  - German
  - Greek
  - Italian
  - Japanese
  - Korean
  - Latin American (Guatemalan, Nicaraguan, Mexican, etc)
  - Middle Eastern
  - Portuguese
  - South American (Brazilian, Peruvian, Columbian, Chilean, Ecuadorian)
  - Scandinavian
  - Spanish
  - Vietnamese
  - OTHER SPECIFY: \_\_\_\_\_
  99. Prefer not to answer

IF Q8 = 06. Canadian

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

**EMAIL INVITATION**

**Welcome to the City of Vancouver Annual Travel 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 and be entered into the prize draw to win one of the following:

- a \$100 Visa Gift Card
- a 3 month COV Community Centre Flexipass (\$121 approximate value)
- a 1-year Premium Membership to the VanDusen Botanical Gardens (\$112 approximate value)
- a PNE PlayLand PlayPass for two (\$43.50 approximate value)

When you access the survey you will 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>

We also provide you with a **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**

If your email program doesn't support *html* 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](mailto:covtravelsurvey@mustelgroup.ca))  
402-1505 West 2<sup>nd</sup> Ave,  
Vancouver, BC V5T 1M5

**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 Dashboard (COMPLETED BY RESPONDENT)**

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

- The trip diary section will ask about the trips you make on your single assigned day indicated below.
- Watch this video with key points to remember on your travel day (Trip Diary Video)
- Your assigned travel day is a (INSERT DAY). 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.

NOTE: Even if you do not make any trips or the trips you take are not typical on your assigned day, we still need you to complete the survey.

**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.**

Need help / more info? [Click here: www.mustelgroup.com/covsurveyhelp](http://www.mustelgroup.com/covsurveyhelp)

### 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 please enter ONE of the following for your start location:

- a precise address, OR
- nearby cross-streets, OR
- a landmark

Always include the municipality.

Q1b) What was your **end location**? If this trip ended at home or work, please click "Home" or "Work". 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)

Otherwise please enter ONE of the following: for your end location

- a precise address, OR
- nearby cross-streets, OR
- a landmark

Always include the municipality.

☐ Same as origin (a recreational trip such as walking, dog walking or jogging where you start and end your trip at the same location)

Address: \_\_\_\_\_

Nearby cross-streets: \_\_\_\_\_ and \_\_\_\_\_

Landmark : \_\_\_\_\_

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

(NEW SCREEN: 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 5:59am
2. 6:00am to 8:59am
3. 9:00am to 11:59am
4. 12:00pm to 2:59pm
5. 3:00pm to 5:59pm
6. 6:00pm to 8:59pm
7. 9:00pm 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.

1. Private car, truck, or van as a driver
2. Private car, truck, or van as a passenger
3. Car share as a driver (e.g. Modo, Car2go, ZipCar, Evo, etc)
4. Car share as a passenger (e.g. 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. Bike Share (Mobi)
16. Taxi
17. Other (specify) \_\_\_\_\_

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 → Q1g2. Did you pre-plan to make this stop? 1. Yes 2. No  
2. No

Q1h) Excluding any travel companion(s) that may have been with you during this trip, did you interact with anyone else while travelling to your destination (e.g. waving to a neighbour, chatting with another transit rider or bus driver, honking, etc)? **MULTIPLE RESPONSE, EXCEPT OPTION 4**

- 1) Yes, it was friendly
- 2) Yes, it was unfriendly
- 3) Yes, it was neutral
- 4) No notable interaction with anyone else

**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
2. No

**IF NO. 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 **Previous** if you arrived here by mistake.

**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.

**COMMENT BOX PROVIDED**



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 - Please record the details of this trip → NEXT TRIP
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 → 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? Yes → **REDO ALL TRIP ENTRIES** No → **CONTINUE**

### VKT SECTION

**PROGRAMMER NOTE: IF PRIVATE VEHICLE CHOSEN IN RECRUIT PROFILING AND GENERAL TRANSPORT SECTION (Q2), ASK Q1-2**

1. 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)

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**

**MAKE** **MODEL** **YEAR**

- 2: 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. \_\_\_\_\_@\_\_\_\_\_.)

## NEW RECRUITS - COV Travel Survey 2016 Study B782

**Q52.** 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 2017.

Thank you once more and we'll be in touch in 2017!

Please click the button below to submit the survey.