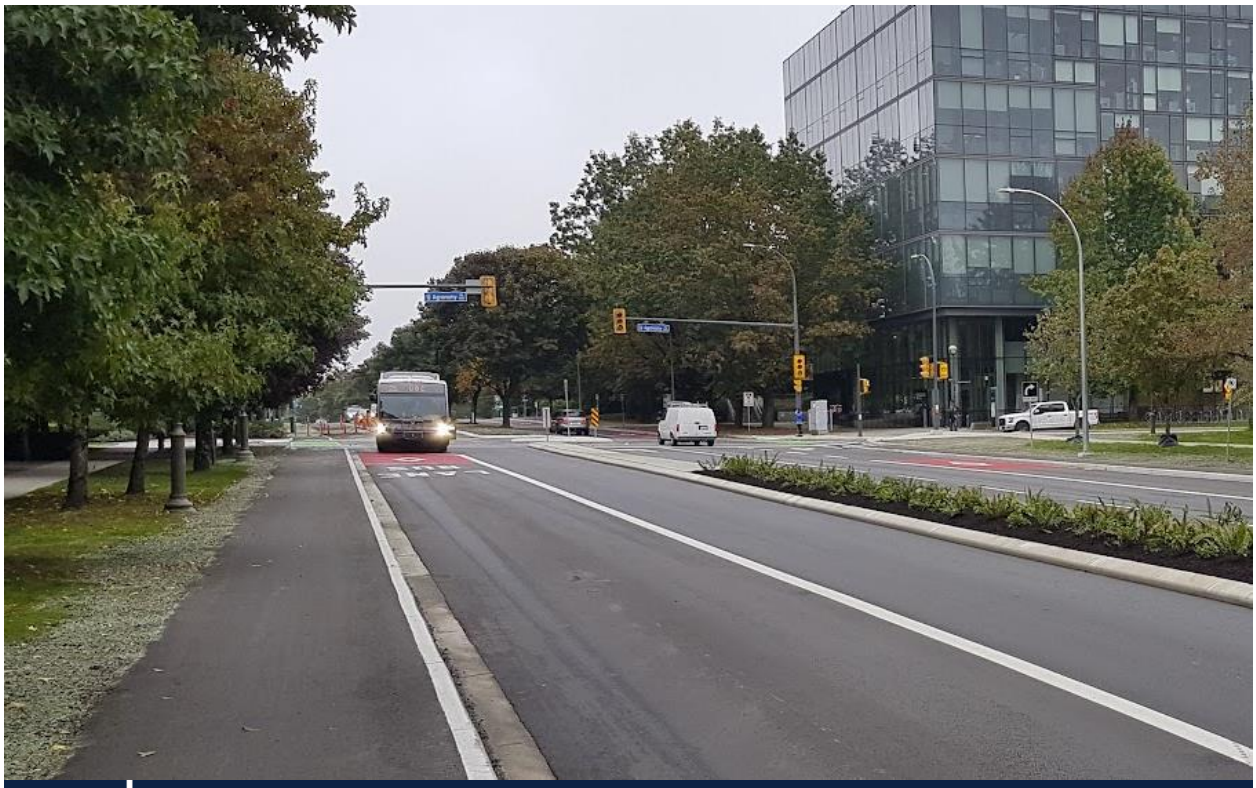
University of British Columbia – Vancouver Campus

# Transportation Status Report Fall 2021



THE UNIVERSITY OF BRITISH COLUMBIA

# Executive Summary

*In 2021, data was collected during the COVID-19 pandemic during which some classes were still being offered online and some staff and faculty were still working remotely. As a result, the data in 2021 will be different from previous years. However, this shift may reflect the beginning of a new trend given the positive benefits of enabling some remote work and some online learning for the campus community.*

UBC has set a number of transportation targets to reduce greenhouse gas emissions from commuting and to enable the repurposing of existing parking lots. To meet these targets UBC encourages and supports more sustainable modes of transportation, including transit, biking, walking and carpooling, through an integrated land-use and transportation plan including implementation of a transportation demand management strategy. Every fall since 1997, UBC has monitored travel patterns to and from campus to evaluate progress towards the transportation targets. These targets and the corresponding results from the 2021 data collection effort *are* summarized below.

**TARGET 1:** By 2040 at least two-thirds of all trips to and from UBC will be made by walking, cycling or transit and maintain at least 50% of all trips to and from the campus on public transit.

× In 2021, 51% of all trips were made by transit, walking and cycling.

× In 2021, 49% of all trips to and from the campus were made by transit.

**TARGET 2:** Reduce Single Occupant Vehicle (SOV) trips to and from UBC by 20% from 1997 levels and reduce single occupancy vehicle trips per person to and from UBC by 30% from 1997 levels.

× In 2021, there were 49,500 SOV vehicle trips, which is a 7.6% increase from 1997 values.

× In 2021, there were 0.80 SOV trips per person, which is a 26% reduction from 1997 values.

**TARGET 3:** Maintain daily private automobile traffic at or less than 1997 levels. Private automobiles include single occupant vehicles and carpools / vanpools, but do not include buses, motorcycles and trucks.

✓ In 2021, there were 56,800 private vehicles per day, which is a 9% reduction from 1997 values.

The focus of the first transportation target is the mode of transportation used to travel to and from campus. Trips by mode from 1997 to 2021 are presented in ***Figure A***. As shown, there have been substantial changes in the transportation mode share to and from campus over the years. As expected, the number of trips per day has increased as a result of academic and neighbourhood residential growth on campus. Most of the increase in trips has been in trips by transit, which is attributed to the introduction of the student U-Pass in 2003. In 2021, the sustainable mode share (walking + cycling + transit) is 51%, however, in recent years the sustainable mode share was 55% or greater. The decrease is attributable to lower transit ridership over the past few years. Some recovery to the sustainable mode share is anticipated in future years.

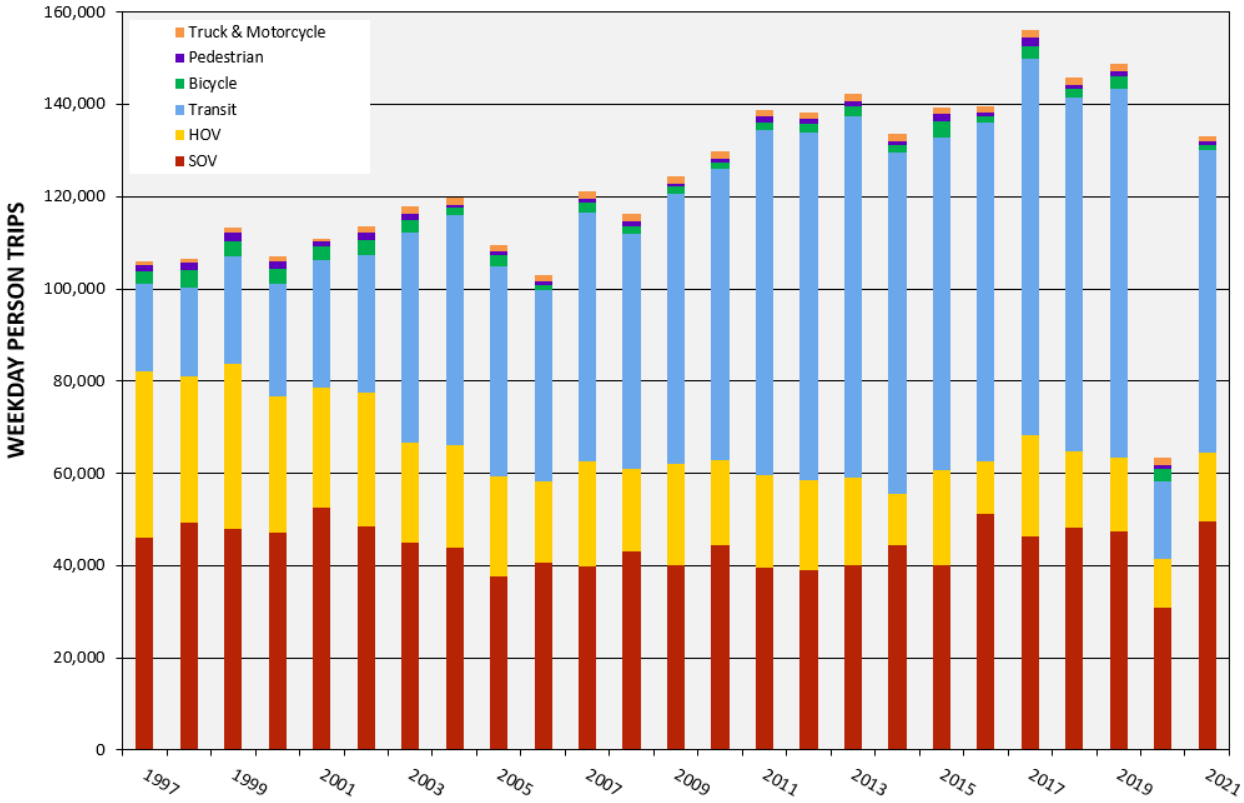



***Figure A: Weekday Person Trips to / from UBC, 1997 – 2021***

The bicycle and pedestrian mode share to / from UBC are very low in comparison to the transit and SOV mode share, however, there are still an impressive amount of people biking to campus. It is anticipated that the number of pedestrian and bicycle trips will continue to gradually increase, but the mode share for these two modes are not expected to increase much as a result of the high number of trips to and from campus per day. In addition, a substantial increase in the number of people biking and walking to campus is not realistic given the topography to get to campus and the distance the campus is from where a majority of the campus population lives.

The second transportation target is related to SOV trips compared to the baseline 1997 values. In 2021, there was a 7.6% increase in SOV trips to campus compared to 1997. The number of SOV trips in 2021 is the highest number of SOV trips since a peak that occurred in 2016 despite the hybrid work / learn

environment on campus. This jump in SOV trips can likely be attributed to people avoiding transit due to COVID-19 by driving or getting dropped-off and picked-up. In order for UBC to achieve Target 2 in future years, the number of trips to campus will need to decrease and more trips made by transit, biking and carpooling will need to increase. This can be accomplished by facilitating remote work where possible, coordinating online learning and schedules, and ongoing efforts to encourage and support sustainable mode choices.

Target 3 focuses on reducing overall automobile traffic, which includes single occupant and high occupant vehicle trips. ***Figure B*** captures the trend in automobile traffic to / from UBC since 1997. Included in the chart is a representation of the three-year rolling average, to soften fluctuations in data year to year, as well as the campus population. In 2021, a new methodology was used to estimate the average daytime population on campus using Full Time Equivalent (FTE) numbers of staff, students and faculty, directly provided by UBC's Planning and Institutional Research (PAIR) department. This new methodology was applied back to 2000, which explains the apparent drop in population between 1999 and 2000.

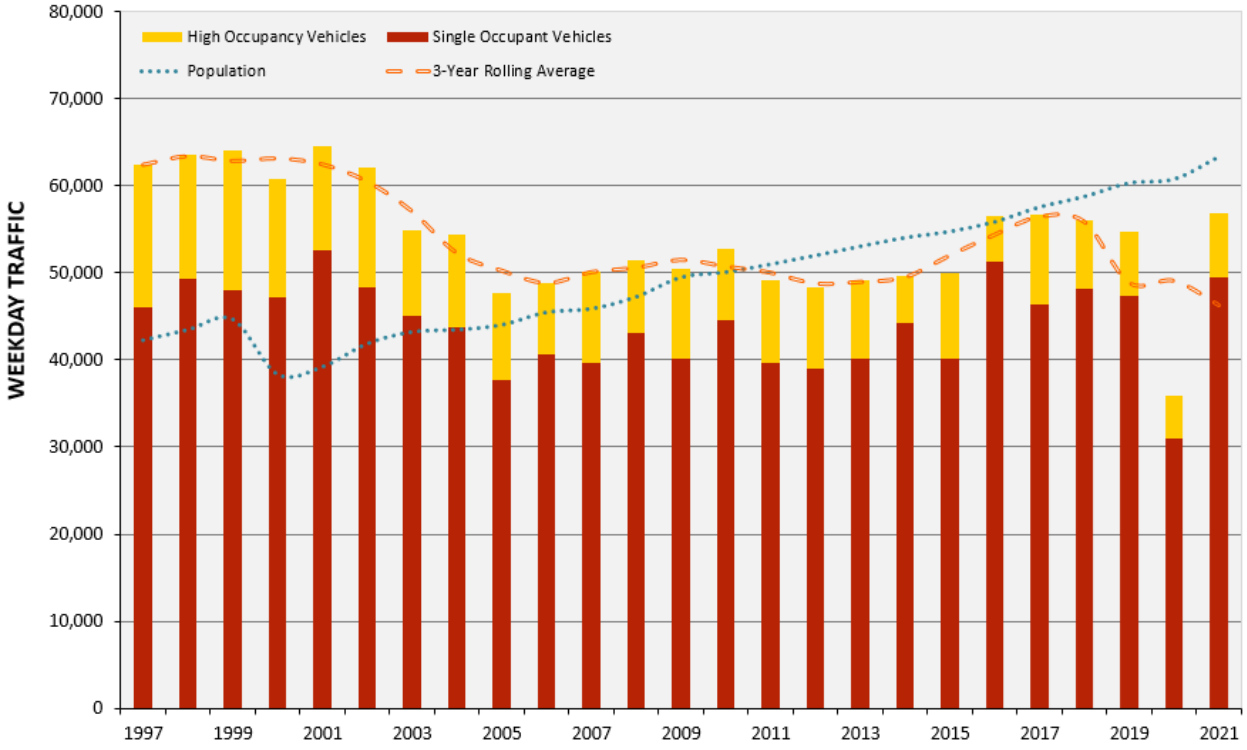



***Figure B: Average Weekday Automobile Traffic to / from UBC, 1997 – 2021***

Automobile traffic declined in 2003, which correlates with the introduction of the student U-Pass, and remained relatively steady until 2016 at which point vehicle trips began to rise again. It is believed this increase is partially attributed to an at capacity transit system. Although the number of vehicle trips has increased over the past six years, it does not surpass 1997 levels despite a substantial increase in the campus daytime population.

# Contents

# 1 INTRODUCTION

Since 1997, UBC has collected data each fall to monitor travel patterns to and from the Vancouver Campus. This UBC Transportation Status Report Fall 2021 provides a snapshot of overall travel trends, and details of travel patterns for each mode of transportation to and from UBC, as well as an overview of transportation trend lines since 1997 at UBC.

This 2021 data was collected over one week in the fall of 2021 during the COVID-19 pandemic when some classes were provided online and some staff and faculty were working remotely. As a result, data is expected to be different from previous years.

## 1.1 Context

Transportation planning at UBC is undertaken within the direction and context provided by several plans and policies, including:

- **UBC Strategic Plan: Shaping UBC's Next Century** sets out UBC's collective vision and purpose, as well as goals and strategies for the years ahead. The Plan builds on the university's previous strategic plan, Place and Promise, and focuses on three themes that are believed to be critical to society today: Inclusion, Collaboration and Innovation. Shaping UBC's Next Century will guide decisions, actions and interactions into the future, and will create a framework for resource allocation across the University.
- **The UBC Land Use Plan.** In June 2010, the Minister of Community and Rural Development enacted legislation that realigned the responsibility for this plan, previously known as the Official Community Plan. The OCP is no longer a regional district bylaw. The University is responsible for the Land Use Plan with direct oversight by the Minister. The Land Use Plan retains a number of transportation demand management objectives aimed at increasing walking, cycling and transit in preference to trips by single-occupant vehicles. The Land Use Plan establishes goals toward building complete communities thereby helping to reduce demands placed on transportation infrastructure.
- **The Vancouver Campus Plan.** In 2010, UBC adopted a new Vancouver Campus Plan, which covers the academic lands of UBC's Vancouver Campus. This plan guides the institutional capital investment in facilities for teaching and research, student housing and campus infrastructure and services.
- **Neighbourhood Plans.** For each of the neighbourhoods on campus, there is a neighbourhood plan describing site-specific land uses, development controls, design guidelines, and servicing and transportation strategies consistent with UBC's Land Use Plan. Each neighbourhood is designed to support the University's academic mission, while providing the amenities and services required to achieve a compact, transit-oriented, pedestrian friendly community.

- **UBC Climate Action Plan 2030.** UBC's recent Climate Action Plan (CAP 2030), puts the university on an accelerated path to net zero emissions for buildings and energy supply and for the first time includes targets for extended impact emissions, which includes commuting. Commuting by students, faculty and staff to the Vancouver campus is the highest extended impact emissions category accounting for nearly the same GHG emissions of buildings and energy supply combined. The Plan includes a suite of actions to significantly reduce greenhouse gas emissions by commuting over the next 15 years that are in alignment with UBC's Transportation Plan targets.

- **The UBC Transportation Plan.** UBC has committed to implement a comprehensive and integrated transportation management strategy. The Transportation Plan is the result of that commitment, and was approved by UBC's Board of Governors in November 1999 and renewed in 2014. The Plan includes targets to ensure accountability, shape decision making and inspire the community to act in ways to achieve UBC's campus vision. The targets identified in The Plan include:

    - **TARGET 1:** By 2040 at least two-thirds of all trips to and from UBC will be made by walking, cycling or transit and maintain at least 50% of all trips to and from the campus on public transit.
    - **TARGET 2:** Reduce single occupant vehicle trips to and from UBC by 20% from 1997 levels and reduce single occupancy vehicle trips per person to and from UBC by 30% from 1997 levels.
    - **TARGET 3:** Maintain daily private automobile traffic at or less than 1997 levels.

## 1.2 Transportation Monitoring Program

Travel patterns to and from UBC are monitored on an on-going basis through a variety of different data collection methods. Data is collected each fall at the end of October to early November to enable consistent year to year comparisons of travel patterns, mode shares, and traffic volumes. Additional data collection activities may be undertaken at other times of the year to obtain information regarding specific modes of travel, seasonal variations and localized traffic volumes, but are not documented in this report. The annual monitoring results are used to assess progress towards meeting UBC's transportation targets and also help guide future implementation priorities.

Data collection activities for 2021 are summarized in ***Table 1.1***, and data collection locations are illustrated in ***Figure 1.1***.

***Table 1.1: 2021 Summary of Transportation Data Collection***

| Data Collection Activity | Locations | Description |
|---|---|---|
| Turning Movement Counts (TMC) | At intersections throughout campus | Manual observation for 8 hours (3hrs in AM, 2hrs in Midday, 3hrs in PM) for one day. |
| Automatic Traffic Recorder (ATR) Volume / Speed Counts | Roads throughout campus. | Automatic tube counters on roads for 7 days (24 hours / day). |
| ATR Screenline Traffic Counts | Screenlines | Automatic tube counters on roads for 7 days (24 hours / day). |
| Transit Ridership | Screenlines | Manual observation for 22.5hrs (6:00AM to 4:30AM) over one day. |
| Vehicle Occupancy & Classification | Screenlines | Manual observation for 8 hours (3hrs in AM, 2hrs in Midday, 3hrs in PM) for one day. |
| Bicycle and Pedestrian Counts | Screenlines | Manual observation for 15 hours (6AM to 9PM) over one day. |
| Heavy Trucks | Screenlines | Manual observation for 13 hours (6AM to 7PM) for one day each quarter. |
| Licence Plate Surveys | South Campus / Wesbrook Village | Licence plate surveys are conducted to understand travel patterns. Every other year. |

## 1.3 Understanding the Data

The following terms and measures are used throughout this report to describe various characteristics of travel patterns and trends at UBC:

- A **screenline** is an imaginary line across which trips are recorded. At UBC, the screenline around the campus is illustrated by the dotted blue line in ***Figure 1.1***. As shown, there are approximately five different entry and exit options, indicated by the screenline ATR.

- **Mode share** (also called "mode split") refers to the relative proportions of trips by various travel modes during a particular time period. Mode shares are generally reported for single occupant vehicles (SOVs), carpool and vanpools (also called high occupancy vehicles or HOV's), transit, bicycle, pedestrians and other modes such as motorcycles and trucks.

- The data presented in the Transportation Status Report include **traffic volumes** and **person trips**. Traffic volumes are simply the number of vehicles passing a point, whereas person trips are the number of people passing a point by all modes of transportation. A person trip is a one-way trip made by one person. For example, in one hour there might be 500 vehicles travelling along a section of road (traffic volumes generally reflect vehicles travelling in both directions). These 500 vehicles might include 450 automobiles with a total of 600 persons in them, 30 buses with a total of 1,000 persons in them, and 20 light and heavy trucks with 25 persons in them. The total number of person trips associated with these 500 vehicles is 1,625 person trips.

  *Throughout this report, unless otherwise stated all reported trips are in **person trips.***

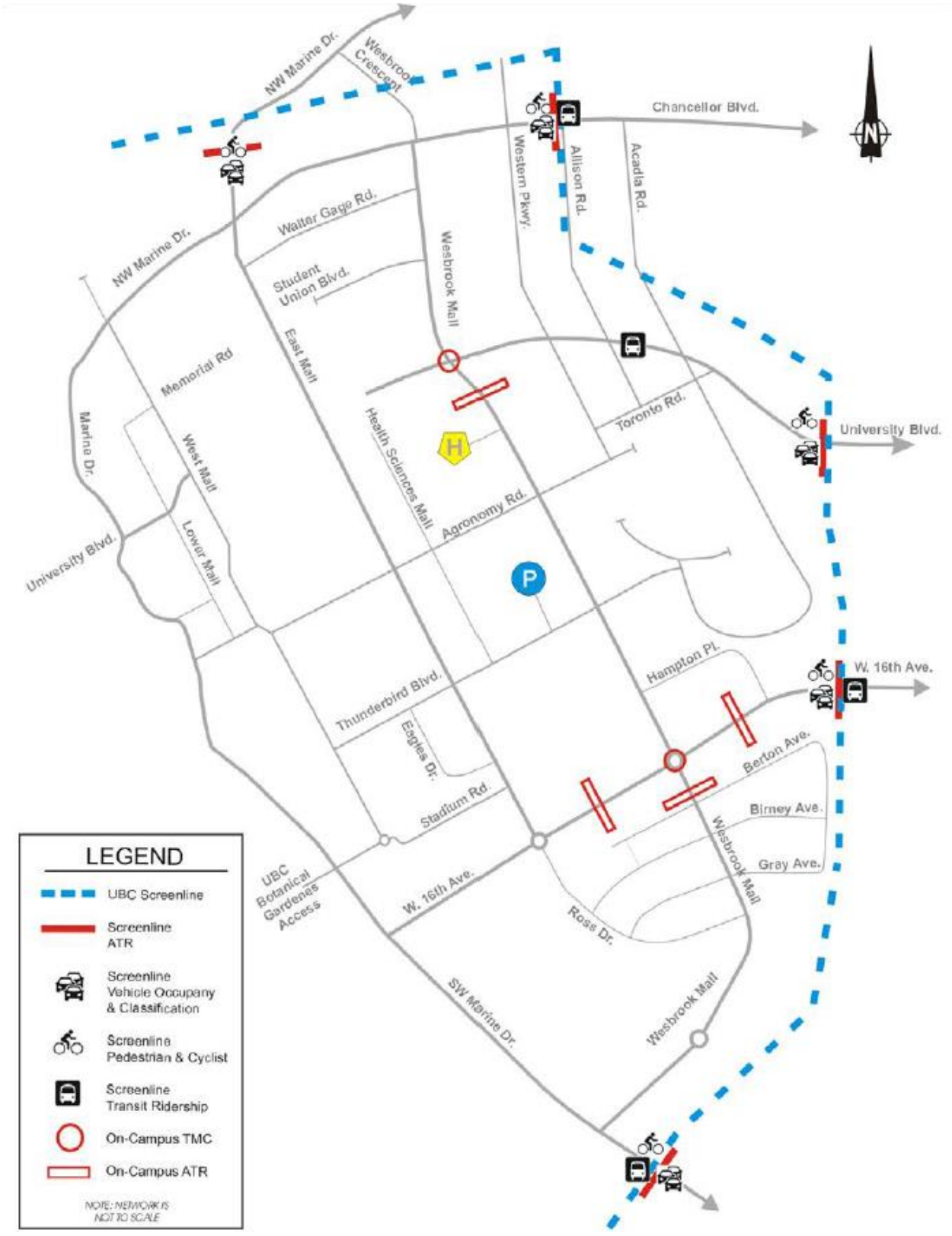



***Figure 1.1: Data Collection Locations***

- The population at UBC — students, staff, faculty and residents —has increased every year from 1997. This means that when comparing absolute numbers of person trips and traffic volumes, changes from one year to another reflect the effects of two different factors — changes in travel patterns and increases in population growth. To distinguish changes in travel patterns from changes due to population increase, a different measure is used — **trips per person**. This provides a consistent basis for monitoring travel trends regardless of how much or how little population growth occurs. Trips per person are calculated as the number of person trips divided by the average daytime population on campus. The methodology to calculate the average daytime population was revised in 2021 to incorporate Full Time Equivalent's (FTE) of staff, students and faculty as reported by UBC's Planning and Institutional Research department. Numbers of on-campus residents are not included in the population count, in many cases it could be a double count as a result of many staff, faculty and students living on campus.

- Substantial effort and cost are required to collect travel data at UBC. Consequently, it is neither reasonable nor necessary to collect all data in all locations at all hours of the day and night. Instead, some data are collected during selected **time periods** only (***Table 1.1*** indicates the time periods for each type of data collection activity). Traffic data on all routes leading to and from UBC are collected over a period of one week between the end of October and early November using automatic counters placed on the roadway. Vehicle occupancy and classification counts are done manually for a total of 8 hours from the morning peak through the afternoon peak periods. Daily totals are estimated by combining occupancy and classification data with the average daily traffic data.

- **Rolling average.** Much of the data presented in this report is from a single day to a week and observed travel patterns fluctuate from year to year and are heavily influenced by weather. Consequently, the results for any particular year should not be considered in isolation. A more meaningful picture of travel patterns is obtained by considering trends over time. To better illustrate trends and minimize the apparent variability from year to year, charts illustrating trips by mode for each year since 1997 include a trend line based on a three-year rolling average. Rolling averages are calculated as the average of a particular year plus one year before and one year after. This means that for 2006, for example, the rolling average is calculated as the average number of trips in 2005, 2006 and 2007.

## 1.4 Changes at UBC Affecting Travel Patterns

UBC is striving to reduce automobile trips to and from the UBC Vancouver Campus by encouraging the use of sustainable modes of transportation, including transit, carpooling, cycling and walking. To date, UBC has implemented several initiatives in support of non-automobile modes of transportation, including a student U-Pass program, bicycle infrastructure and end-of-trip facilities, carshare parking, a vanpool pilot program, and is exploring carpooling programs and incentives. In addition, TransLink, in collaboration with UBC, has made ongoing efforts to improve transit service and increase transit capacity to UBC.

Key changes at UBC that have affected travel patterns among students, staff, faculty and community members are as follows:

- **Population.** The daytime population at UBC has increased by 50% since 1997. This includes increased student enrolment and associated increases in faculty and staff. For the purposes of monitoring trends in travel to and from UBC, the average daytime population on campus, comprised of students, staff and faculty, is used to calculate person trips. On campus residents are not included in the population estimate. In many cases it would result in a double-count since many staff, faculty and students live on campus. ***Table 1.2*** summarizes population figures for fall 1997 and fall 2021.

  It is important to note that the methodology for estimating the average daytime population changed in 2021 to better represent how many staff, students and faculty may be on campus each day. The average daytime population estimate is derived directly from the Planning and Institutional Research Department (PAIR) using Full Time Equivalent (FTE) numbers of staff, students and faculty.

***Table 1.2: Average Daytime Population at UBC, 2021 vs. 1997***

| Group | Fall 1997 | Fall 2021 | Increase (count / percentage) | |
|---|---|---|---|---|
| Students | 33,200 | 47,550 | +14,354 | +43.2% |
| Staff | 7,250 | 11,900 | +4,645 | +64.1% |
| Faculty | 1,850 | 3,800 | +1,964 | +107.6% |
| **Totals** | **42,300** | **63,250** | **20,963** | **50%** |

*Source: UBC Planning and Institutional Research Department*

- **Compass Card (U-Pass).** One of the most significant changes affecting travel patterns at UBC has been the student U-Pass, which was introduced in September 2003. The U-Pass is a universal transportation pass that is mandatory for all eligible students at a cost to students in 2020/2021 of $42.50 per month. The U-Pass offers students unlimited access to TransLink Bus, SkyTrain and SeaBus services (all zones), and discounted West Coast Express fares. The Compass Card came into effect for the 2016 data collection period, which replaced the U-Pass card, but the U-Pass program continues.

- **Increased transit service.** In conjunction with introduction of the student U-Pass, TransLink has substantially increased the level of transit service provided to UBC and continues to make service improvements annually. The majority of the increase has been on the Route 99 B-Line. Other improvements since 1997 include a new Route 33 on 16$^{th}$ Avenue, and several express routes

including the new R4 RapidBus Route launched in January 2020 that connects UBC to Joyce Station via 41st Avenue. TransLink ridership data indicates routes to UBC carry the highest passenger volumes in the region year over year. More effort is being made on transit priority in the region as well, UBC has participated by providing bus lanes on Wesbrook Mall between 16th Avenue and University Boulevard.

- **Class start times were changed in September 2001.** In an effort to spread the transit demand in the morning peak period, UBC adjusted morning class start times. Previously, the first classes in the morning all began at 8:30 a.m. This was changed so that some students begin classes at 8:00 a.m., some at 8:30 a.m., and others at 9:00 a.m. Subsequent analysis showed that the desired spreading of morning peak demands was achieved, and that as a result, 12% more transit trips per day were accommodated on the same number of buses. Although there are limitations with further efforts to spread class start times, Campus Planning will continue to emphasize the importance with scheduling services to continue to spread the class start times out as class space permits.

- **Parking supply and costs.** UBC has eliminated approximately 3,500 commuter parking stalls on campus since 1997 — a reduction in the commuter parking supply of over 25%. At the same time, the price of parking on campus has increased (UBC does not provide any free parking spaces on campus for commuters). Daily parking rates have increased from $2.00 in 1997 to $16.00 in 2019, and prices for parking permits and short-term parking have also increased.

- **Electric vehicle chargers.** As a result of the growth in Electric Vehicle (EV) ownership in the Lower Mainland, UBC has been adding EV charging stations in the parkades across campus. Currently UBC Parking offers access to over 70 EV chargers (both Level 2 and fast chargers), which is the highest in the region per capita. UBC will continue to add more as capacity permits and has also started implementing strategies to increase turnover of the use of the stations.

- **Bicycle facilities.** Since 1997, new bicycle lanes have been implemented on several roadways on campus and to / from campus. Most notable was the conversion of University Boulevard west of Blanca, from two lanes in each direction to one travel lane and one bicycle lane in each direction. Bicycle lanes were also added on SW Marine Drive, Wesbrook Mall, East Mall, Thunderbird Boulevard and 16th Avenue. Similarly, the City of Vancouver has made significant progress on bike facilities that connect to the five key routes to and from UBC. All unrestricted roads on campus function as shared roadways that accommodate cyclists as well as automobiles. Bicycle racks are provided at every building on campus in addition to secure bike lockers, bike cages and numerous end-of-trip facilities. UBC also offers a bike share program on campus through HOPR with discounted rates for the campus community.

- **Alternative modes of travel.** UBC has encouraged the use of non-single occupancy vehicle (SOV) modes of travel through a range of programs, including a comprehensive transportation demand management strategy that includes U-Pass, bike-share, carpooling, car sharing, cycling, a vanpool pilot, an emergency ride home program, and other sustainable transportation programs.

- **Campus development and land use.** UBC has developed and is continuing to develop additional housing for students, staff, and faculty on-campus as a means of reducing the commuting population. At the same time, an increased number and range of commercial services and amenities are now available on campus and in the University Endowment Lands adjacent to campus to reduce the need to travel off campus.

## 1.5 More Information

The following resources provide additional information regarding travel patterns and trends at UBC, as well as transportation services and facilities. Most of this information can be found at UBC's Campus and Community Planning website:

- This UBC Transportation Status Report Fall 2021, along with previous Transportation Status Reports.
- The 2017 Transportation Survey.
- 2014 UBC Transportation Plan.
- The 2005 Strategic Transportation Plan.
- A review of the first 18 months of the student U-Pass program and the results of the Community Transportation Pass (ComPASS) demonstration project.
- Information on other transportation facilities and services on campus.
- Information regarding campus plans and neighbourhood plans.

# 2 Summary of Transportation at UBC

This section presents a general summary of transportation to and from UBC including person trips, trips per person, mode share, and vehicle occupancy. Details for each different mode of transportation are presented in ***Section 3***.

## 2.1 Person Trips

The average weekday person trips to and from UBC in fall 2021 was 133,100, which is less than recent years past as a result of the hybrid work / learn environment at UBC with some classes being offered online only and some staff and faculty working remotely, in response to COVID-19. A summary and comparison of daily person trips by mode for 1997, 2020 and 2021 are provided in ***Table 2.1*** and ***Figure 2.1***.

***Table 2.1: Weekday Person Trips to / from UBC Vancouver***

| Travel Mode Classification | Person Trips | | | | |
|---|---|---|---|---|---|
| | Fall 1997 | Fall 2020 | Fall 2021 | Change 1997-2021 (count / %) | |
| Single Occupant Vehicle (SOV) | 46,000 | 30,900 | 49,500 | +3,500 | +7.6% |
| Carpool / Vanpool (HOV) | 36,100 | 10,500 | 15,000 | -21,100 | -58.4% |
| Transit | 19,000 | 16,800 | 65,500 | +46,500 | +244.7% |
| Bicycle | 2,700 | 2,800 | 1,300 | -1,400 | -51.9% |
| Pedestrian | 1,400 | 800 | 600 | -800 | -57.1% |
| Truck & Motorcycle | 900 | 1,600 | 1,200 | +300 | +33.3% |
| **Totals** | **106,100** | **63,400** | **133,100** | **+27,000** | **+25.4%** |

In 2021, the number of person trips substantially increased from 2020. Trips by transit rebounded from 2020, but are still quite a bit lower than pre-Pandemic levels. The number of SOV trips is substantially higher than previous years. This could be attributed to the uptake of ride hailing as well as more people choosing to get dropped-off and picked-up instead of taking transit.

Comparing the 2021 data to 2019, the number of trips in 2021 is approximately 10% less than the number of trips in 2019, but more trips were made by SOV and less trips were made by transit.

There is a lot of variability in trips by mode year over year and the data collected in 2020 and 2021 will be unique as a result of the COVID-19 pandemic. To help smooth the variability, a three-year rolling average is referenced throughout the report.

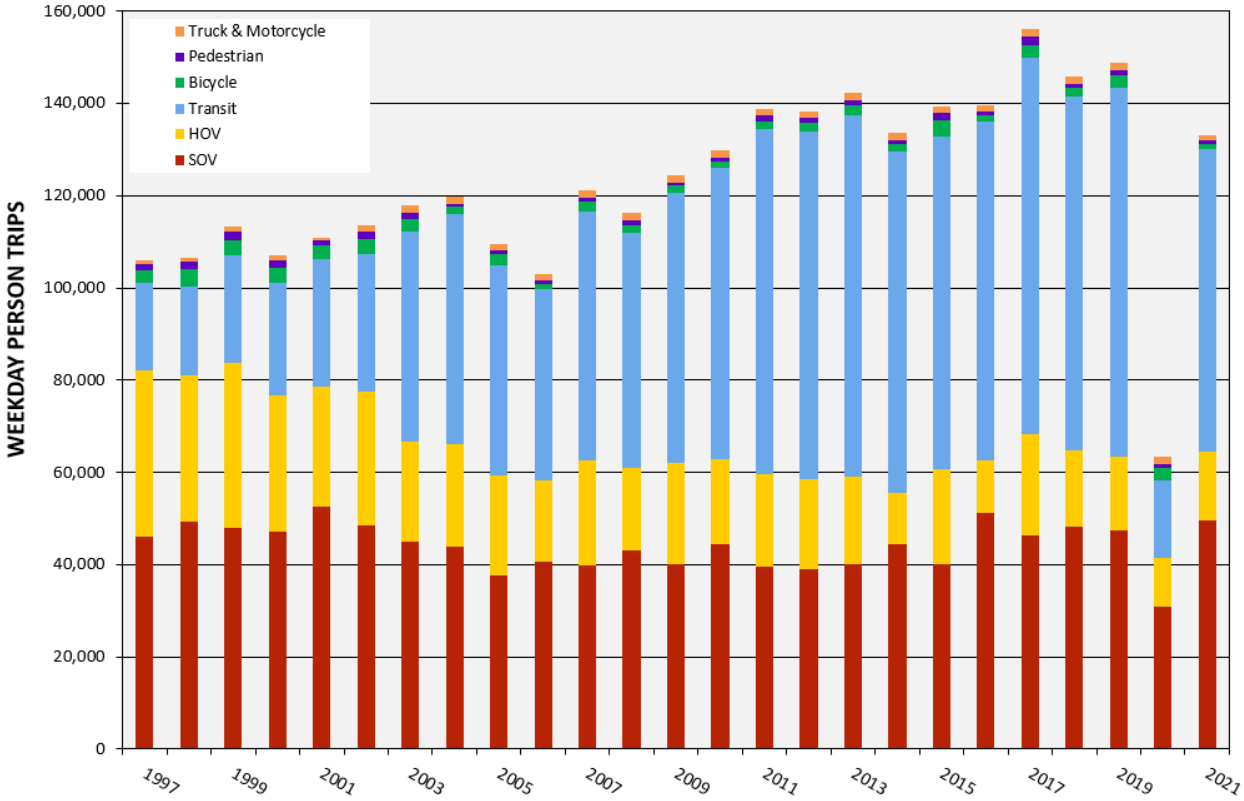



***Figure 2.1: Weekday Person Trips to / from UBC, 1997 – 2021***

To compare travel patterns from year to year on a consistent basis, it is important to negate the effects of population / enrolment growth. To compare the trips per person by mode the average weekday person trips for each mode is divided by the average number of people on campus per day. The methodology used to determine the average weekday population on campus changed in 2021 and includes FTE for staff, students and faculty. However, the effect of the change will not be noticeable in 2021 as a result of the impacts of COVID-19. The campus population and trips per person to and from UBC are presented in ***Table 2.2***.

***Table 2.2: Weekday Trips Per Person to / from UBC***

| Travel Mode Classification | Trips Per Person | | | |
|---|---|---|---|---|
| | Fall 1997 | Fall 2020 | Fall 2021 | % Change 1997-2021 |
| Single Occupant Vehicle (SOV) | 1.09 | 0.51 | 0.78 | -28.1% |
| Carpool / Vanpool | 0.86 | 0.17 | 0.24 | -72.2% |
| Transit | 0.45 | 0.28 | 1.04 | +130.3% |
| Bicycle | 0.06 | 0.05 | 0.02 | -67.8% |
| Pedestrian | 0.03 | 0.01 | 0.01 | -71.4% |
| Truck & Motorcycle | 0.02 | 0.03 | 0.02 | -10.9% |
| **Totals** | **2.51** | **1.04** | **2.10** | **-16.2%** |
| ***AVG DAYTIME POPULATION**** | ***42,300*** | **60,700** | **63,250** | **+50%** |

**Avg. Daytime population numbers obtained from PAIR and include FTE of students, staff and faculty.*

The trips per person in 2021 recovered slightly from 2020 when the campus was operating almost entirely remotely and most trips were made by single occupant vehicles. In 2021 the total trips per person are still lower compared to pre-COVID levels, but trips by transit really recovered compared to 2020. A majority of trips in 2021 were made by transit, followed by single occupant vehicles.

## 2.2 Mode Share Summary

The mode share comparison for 1997 and 2021 is shown in ***Figure 2.2***. As shown, the most noticeable differences in 2021 compared to 1997 are the increased transit mode share, decreased HOV mode share, and slightly decreased SOV mode share.

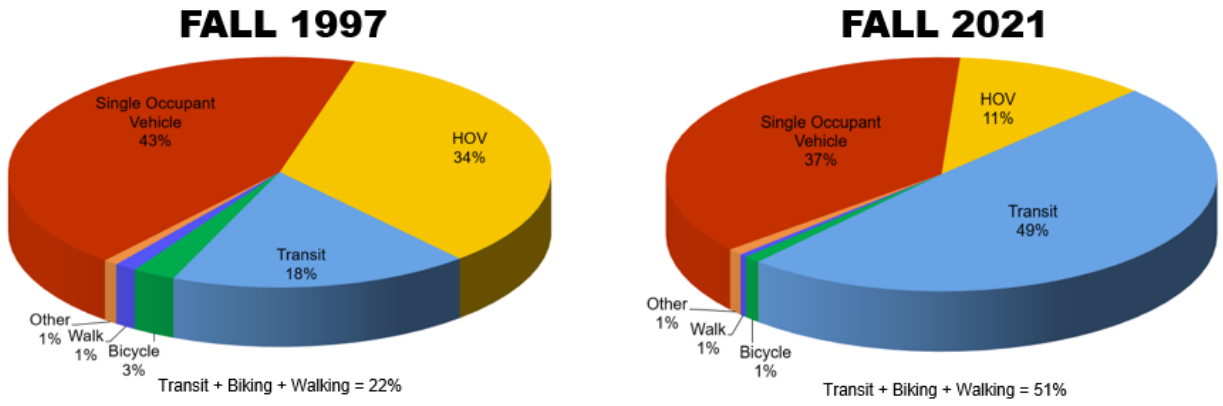



***Figure 2.2: Average Weekday Trips by Mode to / From UBC, 1997 vs. 2021***

**TARGET 1:** By 2040 at least two-thirds of all trips to and from UBC will be made by walking, cycling or transit and maintain at least 50% of all trips to and from the campus on public transit.

× In 2021, 51% of all trips were made by transit, walking and cycling.

× In 2021, 49% of all trips to and from the campus were made by transit.

The distribution of weekday person trips throughout the day is shown below in ***Figure 2.3***. In 2021, the peak hour number of trips nearly reached 2019 levels and patterns with a sharp morning and a sharp afternoon peak period. It is desirable to achieve a more rounded peak to reduce the strain on the surrounding transportation network and more importantly the public transit system. Peak demands, similar to those shown in ***Figure 2.3,*** translate to overcrowding and poor service / experience to transit riders, which tends to push people to less sustainable transportation alternatives.

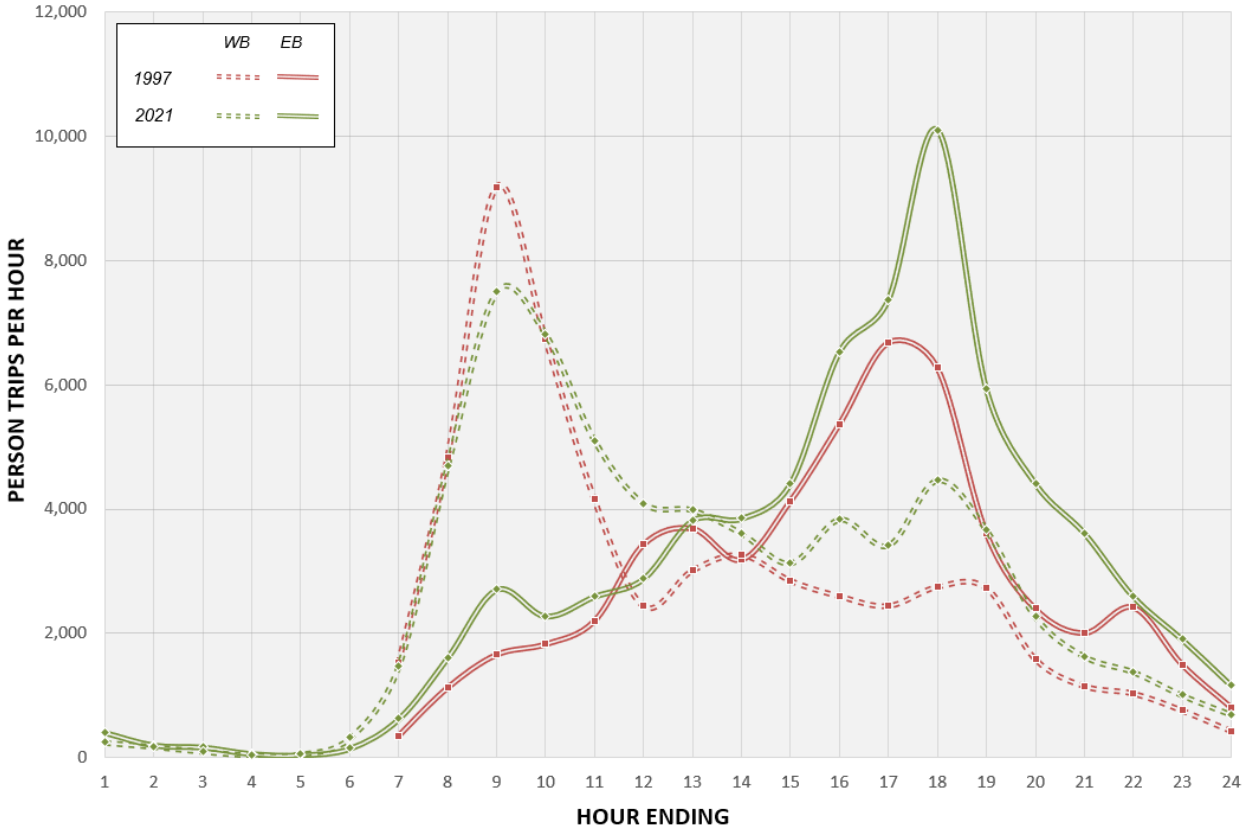



***Figure 2.3: Hourly Distribution of Average Weekday Person Trips to / from UBC, 1997 vs. 2021***

The peak hour summary of trips by mode is summarized in ***Table 2.3***. This information is useful to understand how many trips per hour are occurring and by what mode. In 2021 the peak hour trips by mode, with the exception of truck and motorcycle, were all higher in the evening peak hour compared to the morning peak hour.

***Table 2.3: Average Peak Hour Person Trips by Mode to/from UBC, 2021***

| Travel Mode Classification | AM Peak Hour (8am to 9am) | | PM Peak Hour (5pm to 6pm) | |
|---|---|---|---|---|
| | Westbound | Eastbound | Westbound | Eastbound |
| Single Occupant Vehicle (SOV) | 2,095 | 1,470 | 1,435 | 2,312 |
| High Occupancy Vehicle | 568 | 379 | 392 | 994 |
| Transit | 4,596 | 775 | 2,477 | 6,551 |
| Bicycle | 158 | 18 | 69 | 181 |
| Pedestrian | 28 | 22 | 76 | 40 |
| Truck & Motorcycle | 51 | 44 | 19 | 24 |
| **Totals** | **7,496** | **2,708** | **4,468** | **10,102** |

## 2.3 Automobile Traffic

Automobile traffic to and from UBC decreased substantially from 1997 values once the U-Pass was introduced, but it began climbing again in 2016 as a result of overall campus growth and the at capacity transit service to and from campus.

The second target in UBC's transportation plan is to reduce single occupant vehicle trips to and from UBC by 20% from 1997 levels. In 2021, this target was not met as shown ***in Table 2.4***.

***Table 2.4: Average Weekday SOV and HOV Traffic Volume to/from UBC, 1997 vs. 2021***

| Travel Mode Classification | Fall 1997 | Fall 2021 | Change (count / percentage) | |
|---|---|---|---|---|
| Single Occupant Vehicle (SOV) | 46,000 | 49,500 | +3,500 | +8% |
| High Occupant Vehicle (HOV) | 16,400 | 7,300 | -9,100 | –55% |
| **Totals** | **62,400** | **56,800** | **–5,600** | **–9%** |

***Table 2.5*** summarizes the daily traffic volumes at each screenline location. It is important to note that these figures include trucks, buses and motorcycles, in addition to SOV's and HOV's so the numbers in this table do not match those presented in ***Table 2.4***.

***Table 2.5: Summary of Average Weekday Traffic Volumes at Screenlines***

| Screenline | Average Daily Traffic Volume | | | |
|---|---|---|---|---|
| | Fall 1997 | Fall 2019 | Fall 2020 | Fall 2021 (%) |
| NW Marine Drive | 2,040 | 1,220 | 1,440 | 1,440 (4%) |
| Chancellor Boulevard | 11,660 | 9,850 | 4,610 | 8,190 (14%) |
| University Boulevard | 14,610 | 10,180 | 7,250 | 10,890 (18%) |
| 16th Avenue | 12,880 | 16,720 | 11,890 | 16,740 (28%) |
| SW Marine Drive | 23,410 | 20,830 | 14,120 | 23,038 (38%) |
| **Totals** | **64,600** | **58,800** | **39,310** | **60,300** |

With the exception of Chancellor Boulevard, there was an increase in traffic along all corridors to campus in 2021 compared to 2019 (pre-COVID levels). In fact, average daily traffic volumes in 2021 were just below the highest recorded traffic volumes that occurred in 2017 (60,750 automobiles). Interestingly though, parking demand was less than recent years at approximately 10% less suggesting there are more pick-up / drop-off trips occurring.

Vehicle occupancy allows UBC to understand travel patterns of the community. Vehicle occupancy is a measure of the average number of people travelling per vehicle during a certain period of time and are presented in ***Table 2.6*** for the last few years. As shown, vehicle occupancies are reduced from 2019 and 2020 values as a result in the increase in single occupancy vehicle trips.

***Table 2.6: Average Daily Vehicle Occupancy to / from UBC***

| Travel Mode Classification | Fall 1997 | Fall 2019 | Fall 2020 | Fall 2021 |
|---|---|---|---|---|
| Vehicles (SOV's + HOV's) | 1.32 | 1.16 | 1.15 | 1.14 |
| HOV's (Carpools / Vanpools) | 2.20 | 2.14 | 2.09 | 2.06 |

# 3 Transportation to and from UBC

This section of the Transportation Status Report describes travel patterns and trends for trips to and from the UBC Vancouver campus for each mode of travel. Information regarding transportation conditions on campus is presented in ***Section 4***.

## 3.1 Transit

Generally, transit usage has been very high as a result of the student U-Pass program, continued improvements in transit service, a reduced supply of commuter parking, and higher parking costs on campus.

***Table 3.1*** provides a summary of the increase in transit trips and the transit mode share from fall 1997 to fall 2021, highlighting the change from 2002 to 2003 when the student U-Pass was introduced. In 2021, there were 65,500 trips per day, which equates to a 49% mode share. For comparison to pre-COVID levels, there were fewer trips by transit in 2021 compared to 2019 when 80,190 trips by transit occurred on average per day.

***Table 3.1: Summary of Average Weekday Transit Trips to / from UBC, 1997 – 2021***

| Transit Trips | Before U-Pass | | After U-Pass | | Change 1997-2021 (count / percentage) | |
|---|---|---|---|---|---|---|
| | Fall 1997 | Fall 2003 | Fall 2004 | Fall 2021 | | |
| Person Trips | 19,000 | 45,400 | 49,900 | 65,500 | +46,500 | +245% |
| Trips Per Person | 0.45 | 1.05 | 1.15 | 1.04 | +0.59 | +130% |
| Transit Mode Share | 18% | 39% | 42% | 49% | +31% | +175% |

***Table 3.2*** provides a summary of transit trips by corridor while ***Table 3.3*** provides a summary of transit trips by route comparing the last three years.

***Table 3.2: Average Weekday Transit Trips to / from UBC by Corridor***

| Corridor | Fall 2018 | Fall 2019 | Fall 2020 | Fall 2021 (%) |
|---|---|---|---|---|
| Chancellor Blvd. | 11,760 | 11,120 | 1,280 | 7,480 (11%) |
| University Blvd. | 33,990 | 31,200 | 5,210 | 21,710 (33%) |
| 16th Avenue | 11,060 | 10,230 | 3,330 | 10,490 (16%) |
| SW Marine Drive | 19,830 | 27,640 | 7,010 | 25,820 (39%) |
| **Totals** | **76,640** | **80,190** | **16,830** | **65,500** |

Although the number of trips by transit in 2021 are down from 2019, the proportion of trips on each corridor is similar to 2019, with the exception of an increase in the proportion of trips using SW Marine Drive.

***Table 3.3: Average Weekday Daily Transit Trips to / from UBC by Route***

| Route | | Fall 2019 | Fall 2020 | Fall 2021 (%) |
|---|---|---|---|---|
| 4 | 4th Avenue | 3,429 | 650 | 2,260 (3%) |
| 9 | Broadway | 1,861 | - | 1,110 (2%) |
| 14/N17 | Broadway | 5,041 | 1,042 | 3,040 (5%) |
| 25 | King Edward | 6,548 | 2,047 | 6,380 (10%) |
| 33 | 16th Avenue | 3,593 | 1,285 | 4,110 (6%) |
| 44 | 4th Ave. Express | 5,017 | - | 3,030 (5%) |
| 49 | 49th Avenue | 8,394 | 2,877 | 9,620 (15%) |
| 84 | 4th Ave. Express | 5,867 | 1,274 | 4,450 (7%) |
| 99 | Broadway B-Line | 20,543 | 3,486 | 15,210 (23%) |
| 258 | North Shore Express | 402 | - | - |
| 480 | Richmond Express | 4,789 | - | - |
| R4 | 41st Ave RapidBus | 14,243* | 4,051 | 15,910 (24%) |
| NIS | Not In Service | 464 | 123 | 380 (1%) |
| | **Totals** | **80,191** | **16,835** | **65,500** |

**Routes 43 and 41 replaced by R4 RapidBus January 2020.*

In January 2020, the new R4 RapidBus was launched, but due to COVID-19 it could not be evaluated accurately. In 2021, the new R4 carried 24% of all trips, just over what the 43 and 41 used to bring to campus.

***Figure 3.1*** illustrates transit ridership from year to year and includes the three-year rolling average to help balance out the variation year over year. A sharp increase was observed in 2003 when the u-pass was introduced, which was followed by a steady increase until it leveled off in 2011. It is anticipated that the number of trips by transit will increase in future years, but it will take some time to recover back to pre-2020 ridership as a result of travel pattern changes and the strong interest in ongoing remote working and online learning.

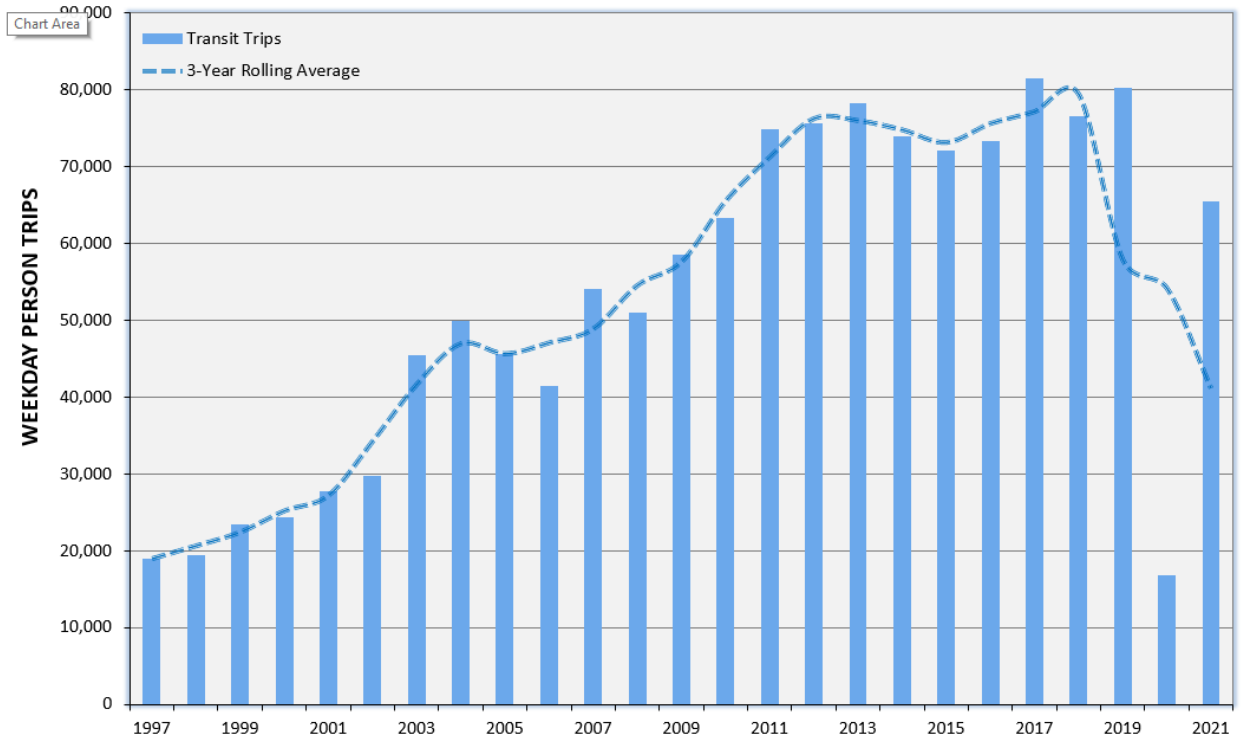



***Figure 3.1: Average Weekday Transit Trips to / from UBC, 1997 – 2021***

A summary of the most significant observations about transit trips to / from UBC is as follows:

- Bus routes using SW Marine Drive account for 39% of all transit trips to / from UBC in 2021. This varies from previous years when University Boulevard carried the highest number of transit trips.
- Ridership in the "UBC Line"[1] corridor amounts to 60% of all transit trips to and from UBC.
- The R4 RapidBus route carries 24% of all transit trips and the 99 B-Line carries 23% of all transit trips.
- All express bus routes carry 59% of all transit trips.
- Trolley bus Routes account for 10% of all transit trips, which is down from previous years.

[1] UBC Line refers to the future rapid transit line to UBC that is expected to be used by people currently taking transit to / from UBC via Chancellor Boulevard, University Boulevard and 16th Avenue.

The daily distribution of transit trips to and from UBC in 2021 and 1997 is shown in ***Figure 3.2***. As shown, there is a higher peak in transit trips from campus in the afternoon compared to trips to campus in the morning. In addition, the afternoon peak in transit trips from campus occur over one hour between 5pm and 6pm. This sharp peak in demand results in overcrowded buses and pass-ups along the route. This contributes to unsatisfied customers and people choosing alternative modes, as evidenced by the 2017 transportation survey discussed below. It is difficult to identify new travel patterns this year with the hybrid of in person and remote learning and working at UBC. However, this will be monitored closely over the coming years.

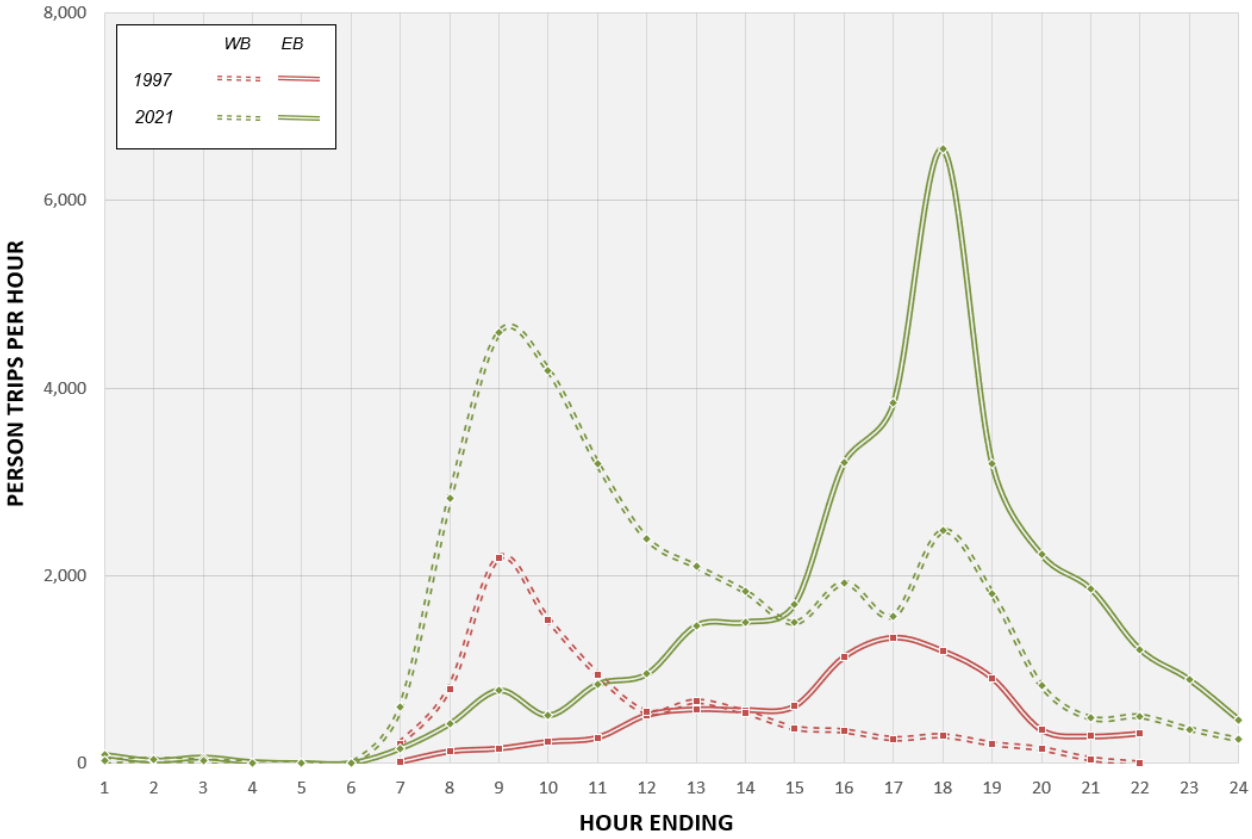



***Figure 3.2: Distribution of Average Weekday Transit Trips to / from UBC, 1997 vs. 2021***

In 2017, UBC carried out a transportation survey of the campus community to gather more detailed information about travel to / from and around campus. The top three responses to a question about what would increase the likelihood of travelling to campus by public transit more often were shorter travel times, less overcrowding of buses, and increased frequency of service. Of people that currently do take transit to travel to / from UBC the average travel time from respondents was 50.5 minutes, one way. This information suggests strong support for rapid transit and a high likelihood that vehicle trips would be replaced by rapid transit trips if there was a rapid transit connection to UBC.

## 3.2 Bicycles and Pedestrians

***Table 3.4*** and ***Figure 3.3*** provide summaries of the trend in bicycle trips from fall 1997 to fall 2021. There was a significant decrease in trips by bike after the U-Pass program was introduced in 2003. However, with the exception of a few years, there has been a general increase in the number of bicycle trips since 2010. This is likely credited to continued improvements in bike infrastructure at UBC and in the City of Vancouver as well as the general popularity of biking in the region including the uptake of e-bikes that increases the distance cyclists are willing to travel to commute. Since data is recorded over a single day, variations in data year over year are highly anticipated, particularly as weather has a direct correlation with the number of bicycle trips.

***Table 3.4: Summary of Average Weekday Bicycle Trips to / from UBC, 1997 vs. 2021***

| Average Weekday Bicycle Trips | Before U-Pass | | After U-Pass | | Change 1997-2021 (count / percentage) | |
|---|---|---|---|---|---|---|
| | Fall 1997 | Fall 2003 | Fall 2004 | Fall 2021 | | |
| Person Trips | 2,700 | 2,800 | 1,600 | 1,300 | -1,400 | -52% |
| Trips Per Person | 0.06 | 0.06 | 0.04 | 0.02 | -0.04 | -68% |
| Bicycle Mode Share | 2.5% | 2.4% | 1.3% | 1% | -1.6% | -62% |

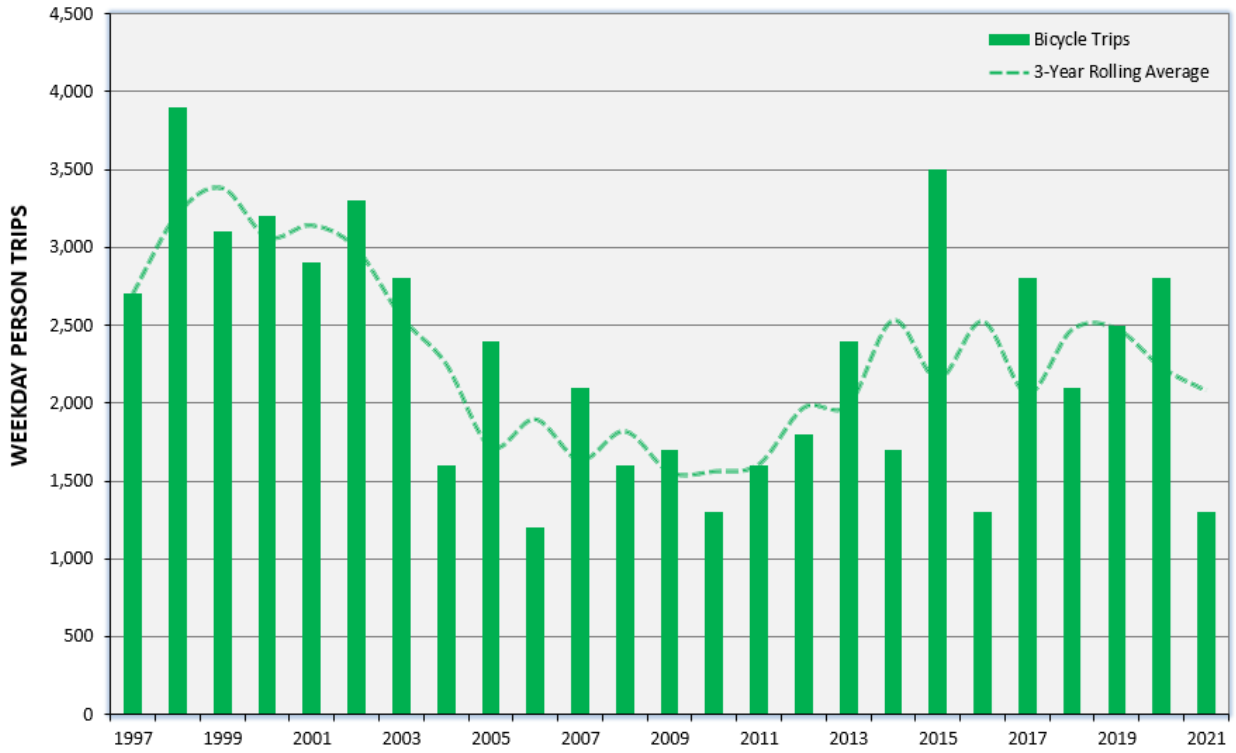



***Figure 3.3: Average Weekday Bicycle Trips to / from UBC, 1997 – 2021***

In 2019, UBC entered into a new bike share program with HOPR on campus. This program does not have an impact on commuter trips since the program services on campus trips only. In the future, if there is an integrated bike share program between UBC and the City of Vancouver, it is likely the number of bike commuter trips would increase, especially with an electric bike share program. However, it is unlikely to increase the bicycle mode share for the campus given the high volume of trips to and from UBC each day.

All buses operating on transit routes serving UBC are equipped with bicycle racks, each of which has space for two bicycles. Below is a summary of the usage of racks over the past three years:

- In 2021, total of 78 bicycles were on buses at a 1.9% usage rate of rack space.
- In 2020, total of 38 bicycles were on buses at a 1% usage rate of rack space.
- In 2019, total of 212 bicycles were on buses at a 4.6% usage rate of rack space.

UBC tracks this usage to identify capacity issues. It is not uncommon for bike racks on popular routes to be full to campus in the morning because more cyclists (66%) bring their bikes on buses westbound, up the hill, to campus. The most popular transit routes for cyclists to travel with their bicycles are the 99 B-Line and the R4 rapid bus.

***Table 3.5*** provides a summary of the trend in pedestrian trips, and ***Figure 3.4*** illustrates year-by-year changes. Similar to bicycle trips, pedestrian trips decreased significantly after the U-Pass was introduced and have fluctuated over the past few years with another decrease in 2021.

***Table 3.5: Summary of Average Weekday Pedestrian Trips to / from UBC, 1997 vs. 2021***

| Average Weekday Pedestrian Trips | Before U-Pass | | After U-Pass | | Change 1997-2021 (count / percentage) | |
|---|---|---|---|---|---|---|
| | Fall 1997 | Fall 2003 | Fall 2004 | Fall 2021 | | |
| Person Trips | 1,400 | 1,500 | 600 | 600 | -800 | -57% |
| Trips Per Person | 0.03 | 0.03 | 0.01 | 0.01 | -0.02 | -71% |
| Pedestrian Mode Share | 1.3% | 1.3% | 0.5% | 0.5% | -0.9% | -66% |

Over the long term, UBC doesn't anticipate to see much of an increase in pedestrian trips or pedestrian mode share to and from campus as a result of the location of the campus and the distance to where a majority of the campus population lives. However, UBC will continue to make improvements to infrastructure to enhance the walking experience on campus since all trips must start or end with walking on campus. UBC will also continue to work with the BC Ministry of Transportation and Infrastructure to identify improvements to bike and pedestrian connections to the campus. Late in 2020, the Ministry paved a multi-use pathway along 16th Avenue, which may attract more trips along that corridor in future years.

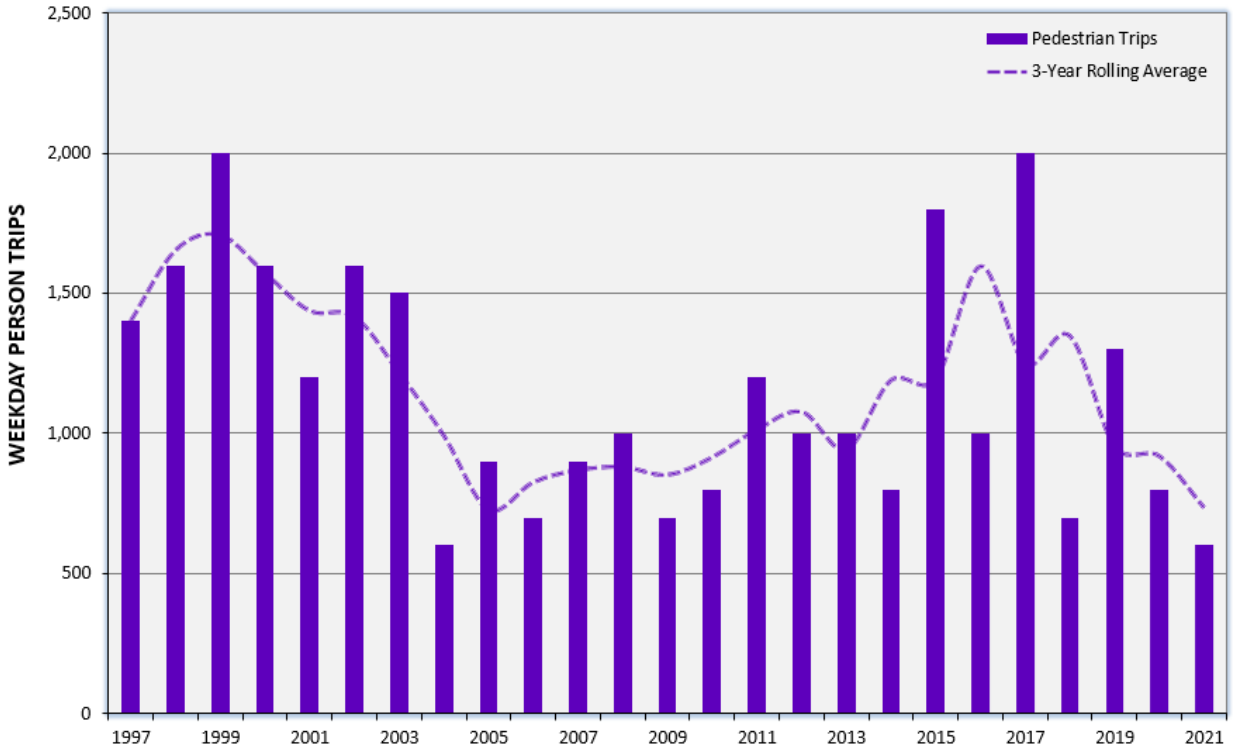



***Figure 3.4: Average Weekday Pedestrian Trips to / from UBC, 1997 – 2021***

## 3.3 Automobiles

UBC is committed to reducing the amount of single occupant automobile traffic travelling to and from UBC each day as indicated by two of the three transportation targets (**Section 1.1**) focusing on vehicle traffic.

***Table 3.6*** provides a comparison of SOV travel in fall 1997 and fall 2021, and ***Figure 3.5*** provides a summary of year-by-year changes and the three-year rolling averages.

***Table 3.6: Summary of SOV Trips to / from UBC***

| Average Weekday SOV Trips | Fall 1997 | Fall 2020 | Fall 2021 | Change 1997-2021 (count / percentage) | |
|---|---|---|---|---|---|
| Person Trips | 46,000 | 30,900 | 49,500 | +3,500 | +7.6% |
| Trips Per Person | 1.09 | 0.51 | 0.78 | –0.31 | –28% |
| SOV Mode Share | 43% | 48.7% | 37.2% | -6.2% | -14.2% |

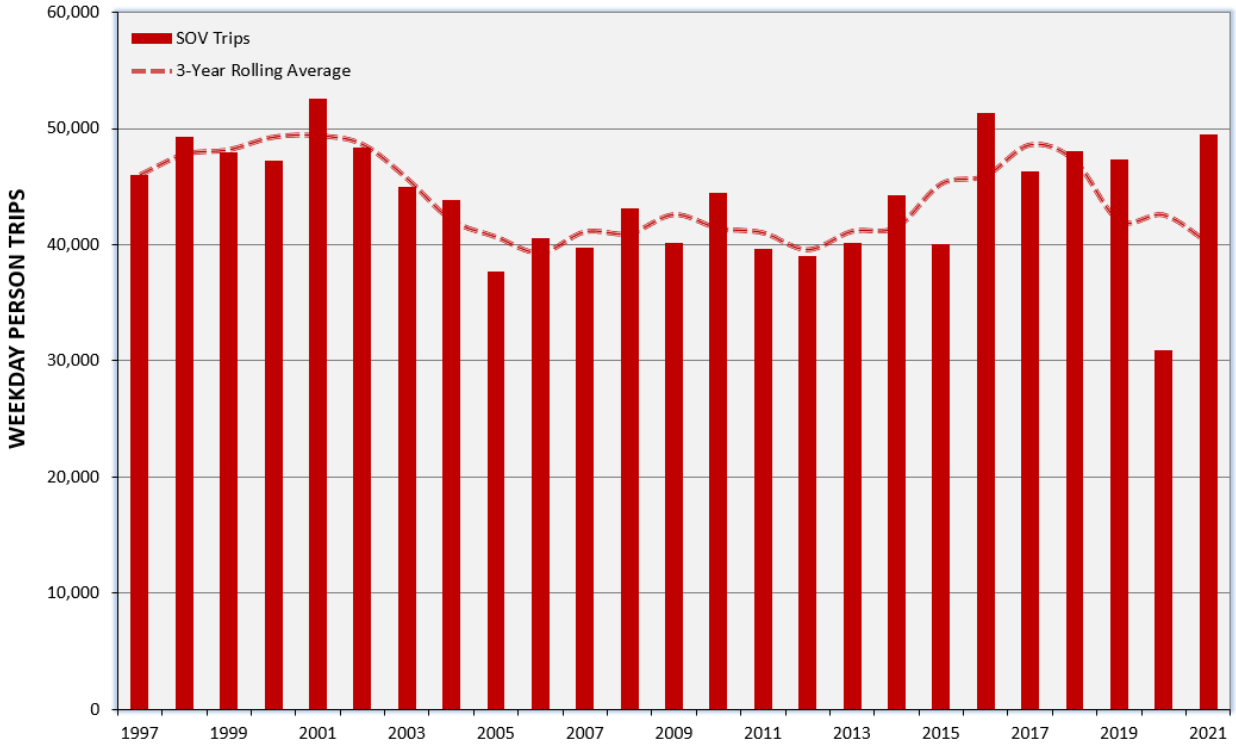



***Figure 3.5: Average Weekday SOV Trips to / from UBC, 1997 - 2021***

This year, there was a significant increase in the number of SOV trips compared to 2020, and 2019. There was a greater proportion of people driving alone to and from campus compared to previous years, which is likely attributable to COVID-19 with fewer people sharing rides or taking transit.

From the 2017 Transportation Survey, the campus community was asked why they chose to drive alone. Their top three responses were to pick-up children from daycare and schools, public transit is not an option because they live too far away, and they do not like to take public transit in general. Of the respondents that identified they travelled alone, 75% of them said they would take transit if there was a rapid transit connection to UBC. A Rapid Transit extension to UBC is currently being planned with a completion date approximately 10 years away. In the meantime, a new RapidBus route, R4, started running to UBC in January 2020 to provide the desired express service.

Carpooling, or High Occupancy Vehicle travel (HOV), has decreased substantially since 1997. A summary of the trend in HOV travel is provided in ***Table 3.7***, and a summary of year-by-year changes and the three-year rolling average is provided in ***Figure 3.6***.

***Table 3.7: Summary of HOV Trips to / from UBC***

| Average Weekday HOV Trips | Fall 1997 | Fall 2020 | Fall 2021 | Change 1997-2021 (count / percentage) | |
|---|---|---|---|---|---|
| Person Trips | 36,100 | 10,500 | 15,000 | -21,100 | -58.4% |
| Trips Per Person | 0.85 | 0.17 | 0.24 | –0.62 | –72% |
| HOV Mode Share | 34% | 16.6% | 11.3% | –22.8% | –67% |

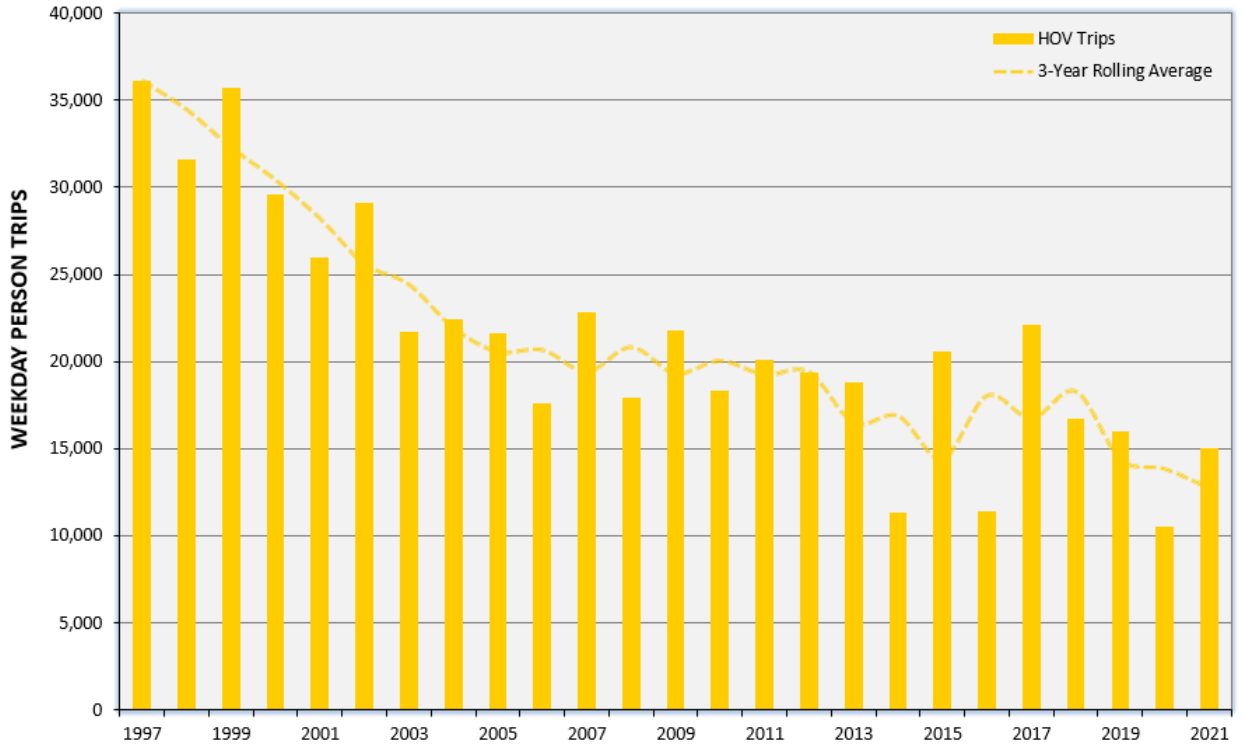



***Figure 3.6: Average Weekday HOV Trips to / from UBC, 1997 – 2021***

HOV trips have generally decreased since 1997 with fluctuation year to year, possibly correlated with the increase in transit trips over the same time period. In 2021, the number of HOV trips increased to close to what was observed in 2019.

The 2017 Transportation Survey asked the campus community why they drive alone and what would make them choose to travel by more sustainable options such as carpooling. The primary response was the need to carry out other errands such as picking children up from daycare / school, indicating that flexibility is a requirement when exploring carpooling programs. Respondents also identified that more carpool incentives would increase the likelihood of them carpooling over travelling alone. UBC is working on increasing the HOV mode share with pilot programs and incentives in addition to ongoing research to understand the barriers to carpooling / vanpooling. One of the current pilot programs, a vanpool pilot, shows that there is interest in vanpooling and therefore potential for growth in future years as an alternative to overcrowded buses or driving alone.

***Figure 3.7*** shows the change in daily automobile traffic volumes from 1997 to 2021. In fall 2021, daily automobile traffic was 56,800 vehicles per day, which is a 9% decrease from 1997. Up to 2016, daily traffic to / from UBC decreased, but from 2016 the number of automobile trips increased, which may be attributed to the population growth in on campus neighbourhoods. Although some of the people living within neighbourhoods work or study at UBC, other members of the household may not, resulting in trips off campus in the morning and to campus in the evening. As noted earlier in the report, in 2021 a new methodology was used to determine average daily population on campus. This new methodology was applied from 2000 onwards, which is why there appears to be drop in the campus population line in 2000.

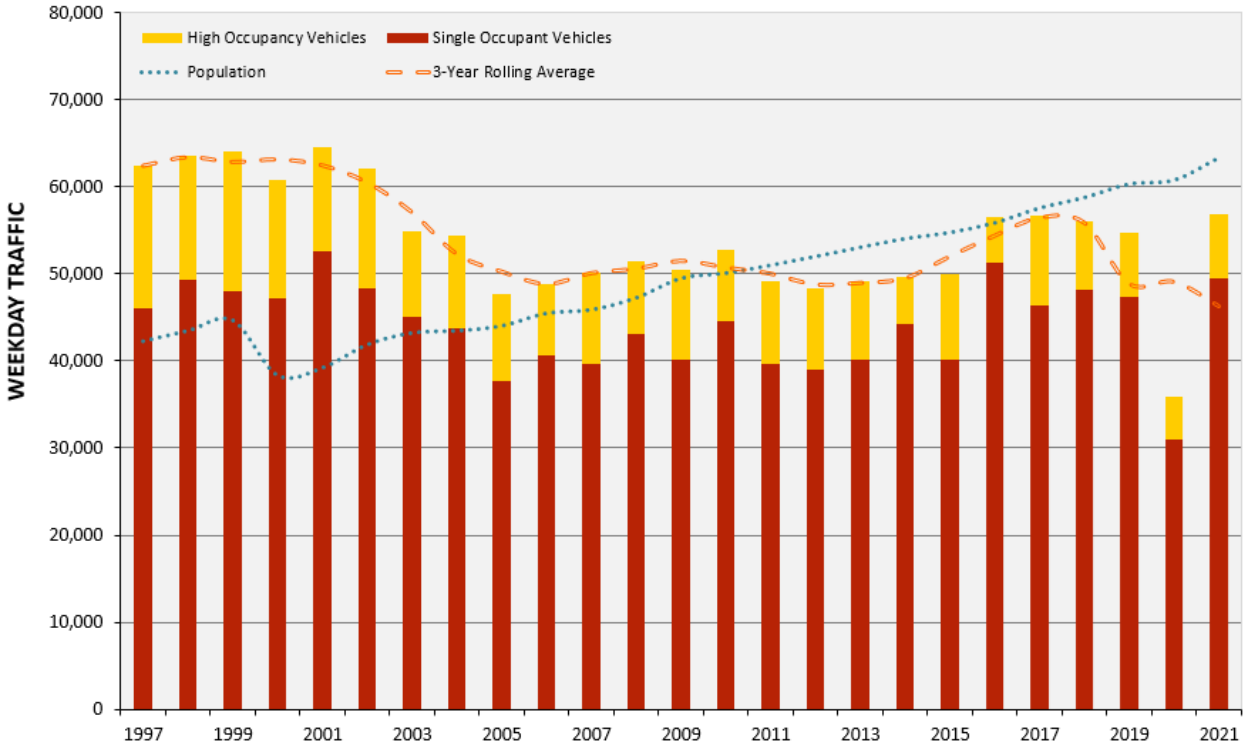



***Figure 3.7: Average Weekday Automobile Traffic to / from UBC, 1997 – 2021***

**TARGET 2:** Reduce single occupant vehicle trips to and from UBC by 20% from 1997 levels and reduce single occupancy vehicle trips per person to and from UBC by 30% from 1997 levels.

× In 2021, there were 49,500 SOV vehicle trips, which is a 7.6% increase from 1997 values.

× In 2021, there were 0.80 SOV trips per person, which is a 26% reduction from 1997 values.

**TARGET 3:** Maintain daily private automobile traffic at or less than 1997 levels. Private automobiles include single occupant vehicles and carpools / vanpools, but do not include buses, motorcycles and trucks.

✓ In 2021, there were 56,800 private vehicles per day, which is a 9% reduction from 1997 values.

Without substantial changes to travel patterns, UBC is unlikely to reach Target 2 at the rate the campus is growing, even with a rapid transit connection. However, if remote work and online learning continue along with a rapid transit connection, it could possible.

As a result of the significant uptake of car sharing in Vancouver, UBC started tracking the number of car share trips to and from campus. Car share vehicles were counted at screenline locations over an eight-hour period, which is presented below in ***Table 3.8***. UBC provides around 160 dedicated parking stalls to Modo and Evo carshare in addition to overflow parking on the roof level of parkades. In 2020, Car2Go stopped operating in Vancouver, leaving Evo as the only one-way car share provider for the city.

***Table 3.8: Summary Car Share Trips to and from UBC***

| Car-Share Vehicle Trips | Fall 2016 | Fall 2017 | Fall 2018 | Fall 2019 | Fall 2020 | Fall 2021 |
|---|---|---|---|---|---|---|
| 1-Person Trips | 388 | 408 | 503 | 497 | 163 | 408 |
| 2-Person Trips | 41 | 73 | 41 | 101 | 45 | 82 |
| 3+ Person Trips | 7 | 39 | 9 | 13 | 18 | 11 |
| **Totals** | **436** | **520** | **553** | **611** | **226** | **501** |

There has been a significant increase of over 75 more car share trips to / from UBC from 2015 to 2019. There was a drop in 2020 as a result of COVID and the departure of Car2Go, but the number of trips by carshare did increase in 2021 again with a majority of the trips made with only one person in the vehicle.

Results from the 2017 Transportation Survey of the campus community identified Car2Go and Evo as the top two car share providers that respondents had memberships to. Respondents also identified the top three reasons they use car share vehicles are to run errands / shopping, when the weather is poor, and for commuting to school / work.

More research is required to determine the overall benefits of car share at UBC. For example, what travel mode is being replaced by car share and how many times do the vehicles that are driven to campus move throughout the day.

## 3.4 Heavy Trucks

Construction activity at UBC and the day-to-day operation of the university generate truck traffic. The City of Vancouver, through which all trucks must travel to reach UBC, manages heavy truck traffic with a number of bylaws and regional regulations. For the purposes of monitoring travel patterns to and from UBC, heavy trucks are defined as vehicles with three or more axles. This simpler definition makes it easier to monitor heavy truck traffic, as it is only necessary to count the number of axles on a truck to determine whether it is a "heavy truck". In addition, the purpose of monitoring is to help us better understand truck volume and noise rather than vehicle weights.

Counts of heavy truck traffic were undertaken on a quarterly basis during 2021, which are summarized by route. ***Table 3.9. Figure 3.8*** compares the total construction on non-construction related truck traffic at UBC over the last three years.

***Table 3.9: Average Weekday Heavy Truck Trips to / from UBC, 2021***

| Route | Type of Truck | | Totals by Route |
|---|---|---|---|
| | Construction | Non-Construction | |
| Chancellor Boulevard | 19 | 7 | 26 (9%) |
| University Boulevard | 10 | 14 | 24 (8%) |
| W 16th Avenue | 13 | 12 | 24 (8%) |
| SW Marine Drive | 175 | 47 | 222 (75%) |
| **Totals** | **217 (73%)** | **81 (27%)** | **298 (100%)** |

As shown in the table, on average 298 heavy truck trips per day were counted to / from UBC. Of the 298 trips, 73% of them were construction related trips. Of the four routes to / from UBC, SW Marine Drive carried 75% of the truck traffic.

Comparing the last four years, truck traffic in 2021 was the lowest truck traffic observed. Truck traffic is variable depending on what stage of construction projects are in at the time of data collection. In 2021 there were many active project sites, but not many in the excavation stage.

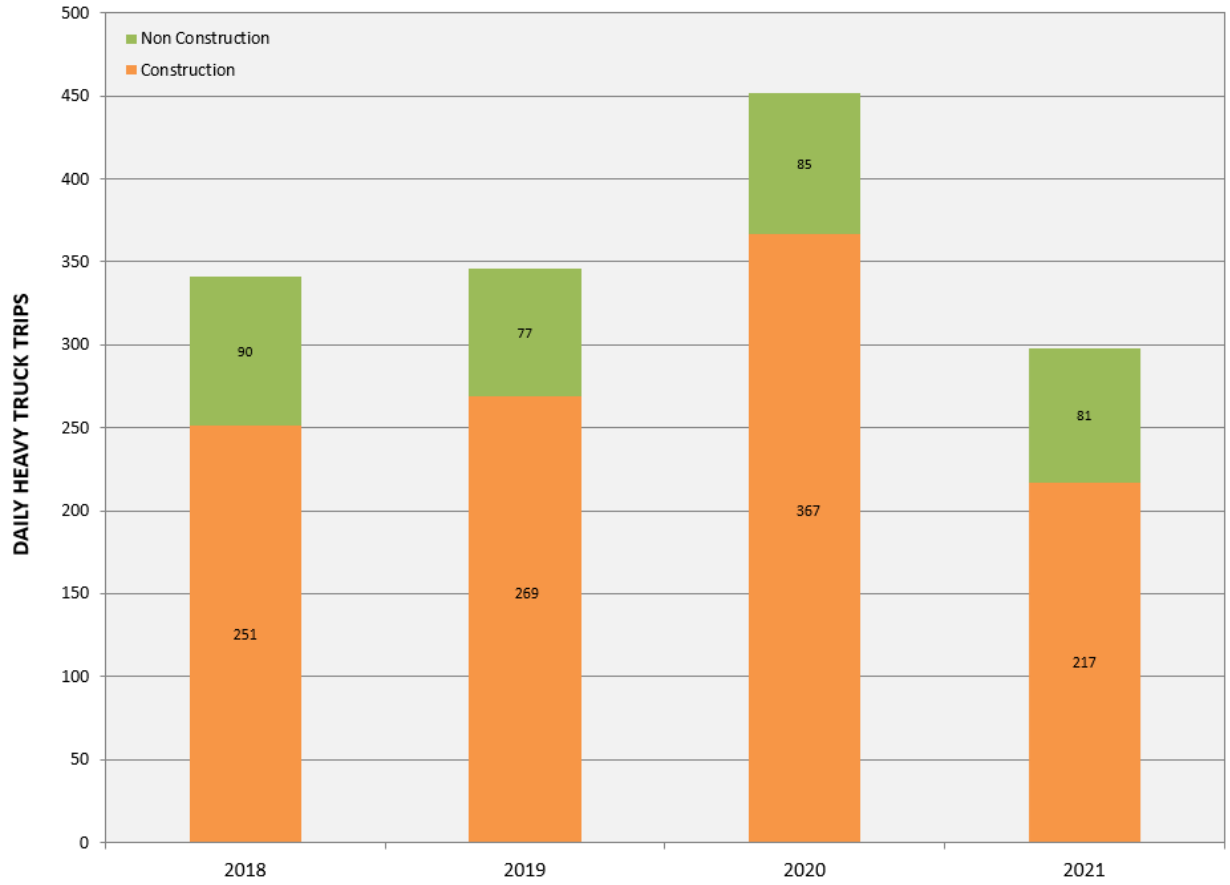



***Figure 3.8: Heavy Truck Trips to / from UBC***

# 4 Traffic Conditions At UBC

This section of the *Transportation Status Report* summarizes transportation conditions on campus, particularly traffic volumes and speeds at key locations throughout the campus.

## 4.1 Traffic Speeds

Traffic speeds were recorded over one week on campus using pneumatic tubes. The locations are identified in ***Figure 1.1***.

The 85th percentile speed is typically used for the purposes of representing travel speeds and is the speed below which 85% of the traffic travels. The average 85th percentile speed data from 2018 to 2021 is summarized in ***Tables 4.1 and 4.2*** for eastbound / northbound traffic and westbound / southbound traffic, respectively. Data highlighted in red represents locations where collected speed data is 5km/h+ above the posted speed limit in the current monitoring year.

***Table 4.1: Average 85th Percentile Traffic Speeds (km/h) Eastbound / Northbound, 2018 – 2021***

| Location | Speed Limit (km/h) | Eastbound / Northbound | | | |
|---|---|---|---|---|---|
| | | Fall 2018 | Fall 2019 | Fall 2020 | Fall 2021 |
| Wesbrook Mall s/o Gage | 50 | 54 | 50 | - | 44 |
| Wesbrook Mall s/o University | 50 | 49 | 45 | 51 | 50 |
| Thunderbird w/o Wesbrook | 30 | 53 | 37 | - | 46 |
| West Mall s/o University Blvd | 30 | 29 | 33 | - | 33 |
| East Mall s/o Thunderbird | 30 | 51 | 48 | - | 48 |
| Wesbrook Mall n/of 16th Ave | 50 | 52 | 53 | - | 51 |
| Wesbrook Mall s/o 16th Ave. | 50 | 33 | 33 | 40 | 35 |
| 16th Ave w/o East Mall | 60 | 68 | 68 | - | 67 |
| 16th Ave w/o Wesbrook Mall | 50 | 66 | 56 | 67 | 64 |
| 16th Ave e/o Wesbrook Mall | 50 | 66 | 67 | 63 | 84 |
| Chancellor e/o Western Pkwy | 50 | 58 | 54 | 58 | 58 |
| University e/o Toronto Rd | 50 | 60 | 61 | 63 | 62 |

***Table 4.2: Average 85th Percentile Traffic Speeds (km/h) Westbound / Southbound, 2018 – 2021***

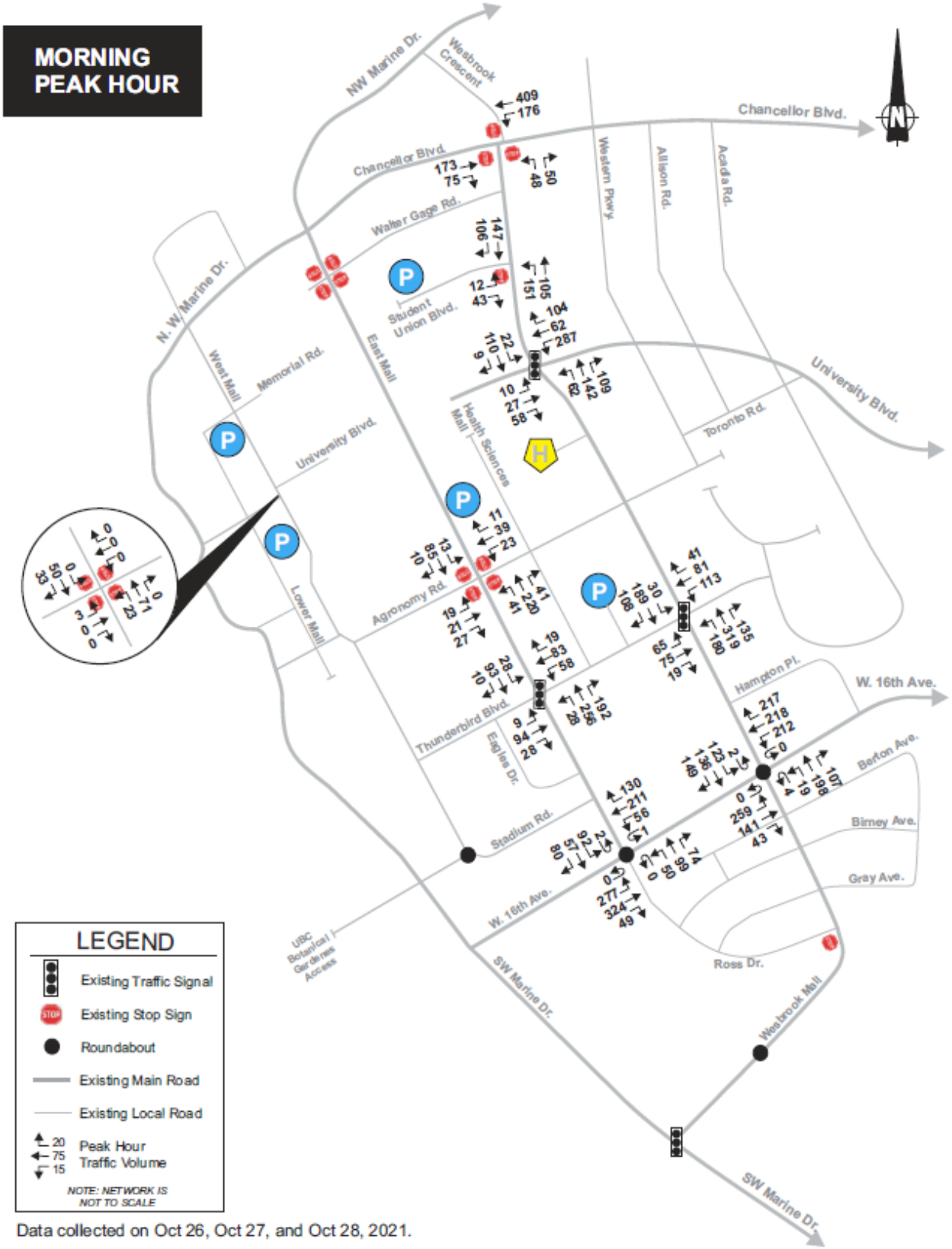
| Location | Speed Limit (km/h) | Westbound / Southbound | | | |
|---|---|---|---|---|---|
| | | Fall 2018 | Fall 2019 | Fall 2020 | Fall 2021 |
| Wesbrook Mall s/o Gage | 50 | 50 | 44 | - | 38 |
| Wesbrook Mall s/o University | 50 | 49 | 49 | 51 | 53 |
| Thunderbird w/o Wesbrook | 30 | 54 | 47 | - | 43 |
| West Mall s/o University Blvd | 30 | 32 | 30 | - | 34 |
| East Mall s/o Thunderbird | 30 | 54 | 57 | - | 48 |
| Wesbrook Mall n/of 16th Ave | 50 | 53 | 54 | - | 57 |
| Wesbrook Mall s/o 16th Ave. | 50 | 32 | 31 | 43 | 30 |
| 16th Ave w/o East Mall | 60 | 71 | 68 | - | 79 |
| 16th Ave w/o Wesbrook Mall | 50 | 58 | 61 | 58 | 58 |
| 16th Ave e/o Wesbrook Mall | 50 | 60 | 60 | 64 | 67 |
| Chancellor e/o Western Pkwy | 50 | 61 | 58 | 62 | 57 |
| University e/o Toronto Rd | 50 | 62 | 60 | 57 | 63 |

Overall, speeds in 2021 are comparable to 2020, with a few exceptions as noted below:

- Traffic speeds on BC Ministry of Transportation and Infrastructure roadways to and from campus exceed the posted speed limit of 50 km/h. This includes 16th Avenue, University Boulevard, and Chancellor Boulevard. The most concerning speed data is on 16th Avenue east of Wesbrook Mall where 85th percentile speed eastbound is 84 km/h in a 50 km/h speed zone. UBC has informed the local RCMP detachment and the Ministry to bring their awareness to this speeding issue.
- According to the UBC Road and Traffic Rules, internal road speed limits are 30km/h (not including Wesbrook Mall). Roads on campus with average speeds in excess of 30 km/h include East Mall, and Thunderbird Blvd. Reasons for less speeding on the internal roadways include heavy pedestrian traffic and traffic calming measures.
- Traffic calming was implemented on East Mall near Eagles Drive in the summer of 2021. The impact is a reduction in the 85th percentile speed to 48km/h from 57km/h for southbound traffic. The results of that work have had a very positive impact on the experience of users at the pedestrian crossing. The application of similar traffic calming in other areas on campus where speeding is observed will be explored.

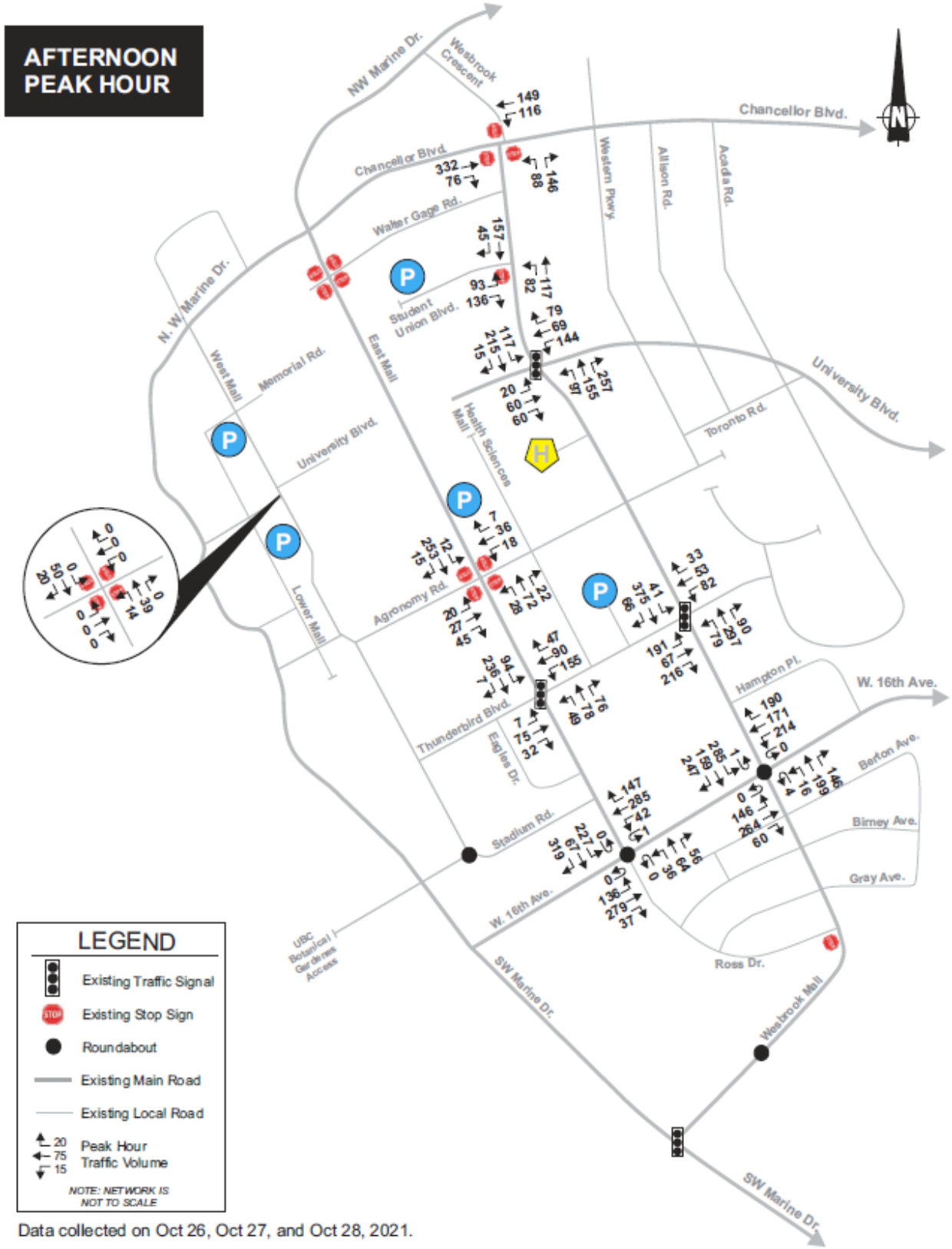
## 4.2 Traffic Volumes

Peak hour traffic volumes collected over one day at key intersections on campus are illustrated in ***Figures 4.1*** and ***4.2***. The turning volumes are not intended to represent average daily traffic volumes or conditions, but are intended to provide a general overview of traffic patterns to / from and on campus during the AM and PM peak hours.




Data collected on Oct 26, Oct 27, and Oct 28, 2021.

***Figure 4.1: 2021 Morning Peak Hour Traffic Volumes at UBC***




Data collected on Oct 26, Oct 27, and Oct 28, 2021.

***Figure 4.2: 2021 Afternoon / Evening Peak Hour Traffic Volumes at UBC***