



January 13 2015
Project No. 5070.05

Neil Connelly, Director
University of Victoria, Campus Planning and Sustainability
PO Box 1700 STN CSC
Victoria, BC V8P 5C2

Dear Neil:

**Re: UVic 2014 Traffic Survey
Final Report**

Bunt & Associates was retained by the Office of Campus Planning & Sustainability, University of Victoria in the Fall of 2014 to conduct a comprehensive survey of current traffic access patterns to and from the University for a typical weekday. As per your direction, the structure of the 2014 report has been simplified to include only the modal split information and is presented as a Summary Report.

The 2014 survey trends are essentially no different from the 2012 survey and are consistent with those in the region. Fluctuations from year to year are to be expected depending on weather conditions and campus activities. The overall conclusion from the 2014 results is that there have been no significant changes in the modal share results for travel to and from campus.

Yours truly,
Bunt & Associates

A handwritten signature in black ink, appearing to read "Sharon", is written over a light blue horizontal line.

Sharon Lee, CTech, CAPM
Senior Transportation Technician

1. BACKGROUND

UVic conducted its first comprehensive travel mode study in 1996. Since that time, the portion of people choosing to travel to campus by means other than the single occupancy vehicle has increased by almost 18%. This increase is the result of a number of successful Transportation Demand Management (TDM) programs including the student UPass program, an employee subsidized bus pass option, and a partnership with the Victoria Car Share Co-op.

The University continues to work with BC Transit and neighbouring municipalities to improve transit service and access by bicycle to campus via dedicated bike paths.

In 2014, BC Transit and the University of Victoria worked together to plan and create an expanded bus exchange between the current bus exchange and the Student Union Building with 10 new bus bays allowing for increased transit service to campus. Over 95% of the transit fleet in Victoria has bicycle racks on board, to enable transit riders to make cycling part of a multi-modal commute.

UVic is a bicycle-friendly campus with more than 2900 bike parking spaces, covered bicycle shelters, electric bike charging stations, bike lockers, clothing storage lockers, shower and change room facilities and a self-service bike repair kiosk.

The University's Sustainability Action Plan for Campus Operations 2014-2019¹ includes the following two major goals:

Goal 1: Increase the use of transit, cycling, walking and carpooling to 70% of the transportation modal split by 2019.

Goal 2: Improve the sustainability of the campus fleet by reducing fuel consumption by 10% through staff training and gradual replacement of vehicles with the most fuel-efficient versions on the market.

Bunt & Associates was retained by the Office of Campus Planning & Sustainability, University of Victoria in the Fall of 2014 to conduct a comprehensive survey of current traffic access patterns to and from the University for a typical weekday.

To enable a consistent basis for comparison, the traffic and transit data requirements of the 2014 Campus Traffic Survey replicates the methodology and analysis reported in our 2012 survey and are consistent with the 2010, 2008, 2006, 2004, 2000 and 1996 Campus Traffic Surveys.

¹ https://www.uvic.ca/sustainability/assets/docs/SustainabilityActionPlanBooklet2014_WEB.pdf

The undertaking of the 2014 Traffic Survey involves the recruitment of traffic observers to undertake the manual traffic surveys. Bunt attempts to hire students from UVic whenever possible to undertake the survey and supplements them with personnel we use for our project related surveys. There are 27 field crew staff required (some count locations require two count staff), all of whom were required to attend a training / orientation session. The inbound AM and outbound PM vehicle counts include a record of vehicle occupancy (i.e. number of persons per vehicle) for comparative analysis with previous study observations. Pedestrian, cyclist, skateboarder and roller-blader volumes are also collected during the manual traffic surveys.

Automatic Traffic Recorder (ATR) Surveys are conducted on five principal access roads / driveways to the University – University Drive, West Campus Gate, McGill Road, Finnerty Road and Gabriola Road. The data is collected by TransTech Data Services and the raw data is provided in an Excel worksheet format.

While the ATR data provides an overview of hourly traffic volumes, the manual survey data provides a more disaggregated view of the data in terms of person trips to and from the UVic Campus by mode and time of day. The comparative analysis of this data with previous studies provides a basis for evaluation of the effectiveness of UVic TDM programs and their overall transportation strategy over a consistent and well documented time-line.

BC Transit provides a record of all inbound and outbound transit ridership for the University Campus based on route specific data throughout September and October. This data is acquired using BC Transit's Automated Passenger Counter (APC) equipped busses that service the routes accessing the UVic Campus.

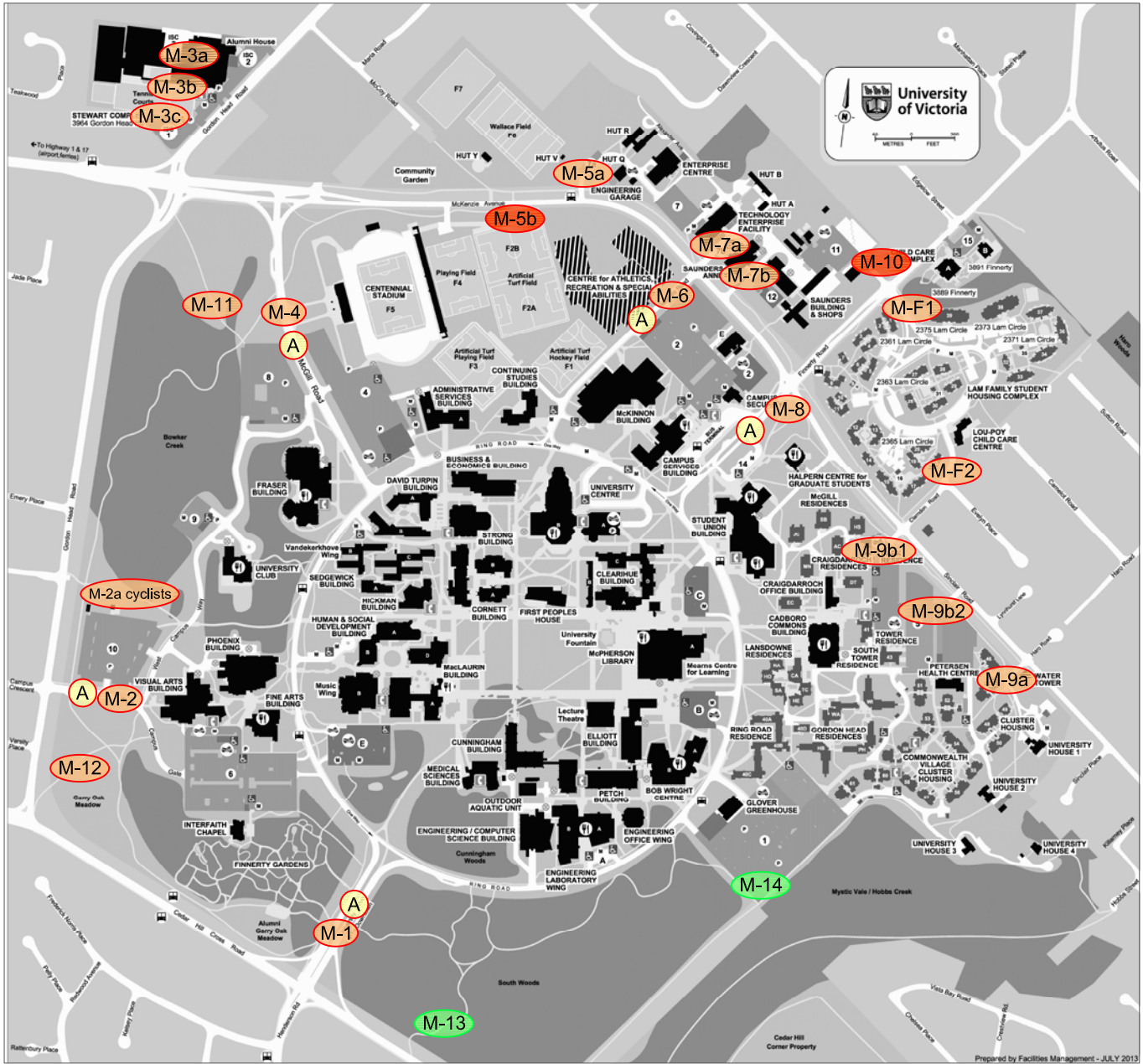
Once the data entry of the manual surveys, ATR data and Transit data is complete, factoring is used to estimate cyclist and pedestrian movements outside of the manual count periods. These factors are based on the weekday traffic profiles derived from the ATC data.

2. METHODOLOGY

The 2014 survey methodology was consistent with that followed for the 2012 survey with two exceptions: two new manual count stations were added and two were removed. Station M-5b was temporarily closed this year due to the construction of the new Centre for Athletics, Recreation and Special Abilities (CARSA) Building and station M-10 was excluded as the data collected for previous surveys had not used for several reporting periods. The two new stations, M-13 and M-14, were added to capture the alternative mode trips made by persons utilizing these pathways. These changes are illustrated on **Exhibit 1 – Location Plan and Count Station Map**.

The 2014 UVic Campus Traffic Survey included three types of traffic counts:

- Driveway Counts – 5 locations for 24-Hour Automatic Tube Counts (ATC) from October 20 to November 2, 2014 by Transtech Data Services;
- Transit Counts - Arriving / Departing Passenger Counts recorded through automatic counters on the BC Transit bus fleet by BC Transit; and
- Manual Counts – 21 locations for Peak Period Manual Observations including vehicles, vehicle passengers, cyclists, pedestrians, and skateboarders/ roller-bladers. The surveys were conducted Wednesday October 22, 2014 from 0700 – 1000 and 1430 – 1830 hours and on Thursday October 23, 2014 from 0700 – 1000 and 1400 – 1800 hours. The Wednesday PM traffic count shift starts 30 minutes later to account for the later starting and finishing classes on that day.



- A Automatic Count Station (5)
- M Manual Count Stations (21)
- M New Count Station
- M Removed Count Station

Exhibit 1 Location Plan and Count Station Map

3. SURVEY RESULTS

Summarized data is provided in the following Appendices:

- Appendix A - Manual Count Data
- Appendix B - BC Transit Data
- Appendix C - ATR Data

3.1 Automobile Drivers

A comparison between the manually counted 2000 to 2014 traffic volumes (a combined total of the AM and PM periods for all driveways) is shown in the following **Table 1**.

Table 1: Observed Driveway Traffic Volumes (Peak 7 hours)

Travel Direction	2000 Survey	2004 Survey	2006 Survey	2008 Survey	2010 Survey	2012 Survey	2014 Survey
Inbound	8,010	6,598	6,197	6,683	7,187	7,197	6,835
Outbound	7,006	6,732	6,534	6,087	6,702	6,492	6,126
Total	15,016	13,330	12,731	12,770	13,889	13,689	12,960

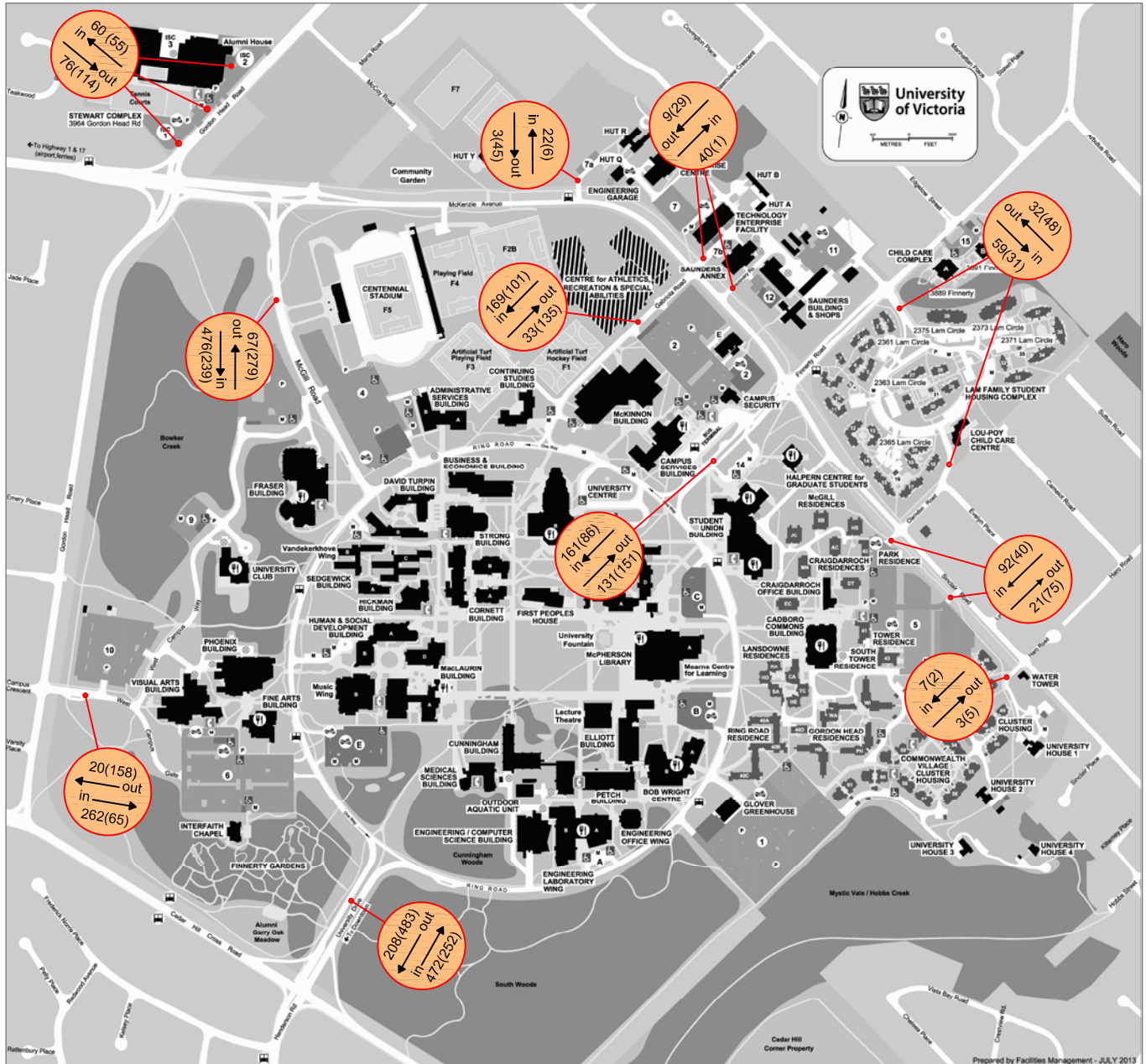
Note: Volumes are averaged over the two days of manual counts for each year.

Table 1 reflects the decrease in the average driveway volumes recorded during the manual surveys. For the observed traffic counts, the overall decrease from 2012 to 2014 is approximately 730 vehicles or approximately 5%.

3.2 Peak Hour Vehicle Traffic

A summary of the AM and PM peak hours (averaged over the two days of manual counts) is illustrated in the following **Exhibit 2**. The AM peak hour occurs from 8:00 to 9:00 AM and during that period the heaviest two-way volumes are on University Drive (M-1), McGill Road (M-4), Finnerty Road (M-8) and West Campus Road (M-2) at 28%, 22%, 12% and 12% respectively. The pattern is similar during the PM peak hour from 4:00 to 5:00 PM with heaviest two-way volumes are on University Drive (M-1), McGill Road (M-4), Finnerty Road (M-8) and Gabriola Road (M-6) at 31%, 22%, 10% and 10% respectively, of all vehicular traffic entering or leaving the campus.

Overall, during the 2014 AM and PM peak hours there were approximately 85 fewer vehicles (inbound and outbound) observed compared to those in 2012.



AM peak hour 08:00 - 09:00
 Total inbound traffic = 1805 vehicles
 Total outbound traffic = 626 vehicles

PM peak hour 16:00 - 17:00
 Total inbound traffic = 879 vehicles
 Total outbound traffic = 1503 vehicles

Exhibit 2 Peak Hour Vehicle Traffic

UVic 2014 Traffic Survey
 5070.05 December 2014 Scale NTS



3.3 Transit Passengers

BC Transit's complete summary of the transit passenger survey conducted between September and November 2014 is shown in **Table 2** in terms of average weekday ridership.

Table 2: Transit Passenger Summary 2004-2014

Travel Direction	2004 Survey	2006 Survey	2008 Survey	2010 Survey	2012 Survey	2014 Survey
Inbound	8,194	7,885	9,426	8,805	9,569	7,892
Outbound	6,694	7,550	8,546	8,314	7,628	8,134
Total	14,888	15,435	17,972	17,119	17,197	16,026

As shown in Table 2, in 2014 there was a decrease in inbound ridership and an increase in outbound ridership over the 2012 results. Overall, there was a decrease in total ridership of approximately 1,170 passengers (or 7%) from the 2012 results.

It should be noted that in 2014, there was no data provided for Routes 13 and 33, although these routes accounted for only 114 transit trips for 2012.

In terms of bus frequency, an average of 1,102 inbound and outbound bus trips are made throughout the typical weekday with 175 trips made during the 2014 AM and PM peak hours. In 2012, an average of 1,075 inbound and outbound bus trips are made throughout the typical weekday with 181 trips made during the AM and PM peak hours.

In December 2014, service changes were made to some routes that serve UVic to address existing service reliability and capacity issues. Service changes are based on the system's long term Transit Future Plan, recent Victoria Regional Service Review and approved 2014/2015 Annual Service Plan, in addition to feedback and detailed route analysis.²

For example, Route 14 was experiencing service issues. Additional trips and recovery time were added on this route in December 2014 to address pass-ups and improve service reliability. In 2012, approximately 1,750 more average weekday rides and 39 more trips on this route were recorded. This indicates a decrease of approximately 40% of rides on this route from the 2012 results.

² <http://bctransit.com/servlet/documents/1403642179196>

The approximate distribution of transit trips at UVic is shown in **Exhibit 3**. Of the routes serving the University Campus, the most heavily used route in 2014 is the #4 (UVic / Downtown) route, accounting for 18.5% of all trips to and from the campus. The next most popular route is the #15x (UVic / Esquimalt) with 15.8% of all trips, followed by #14 (Vic General / UVic) with 15.6% of all trips. In 2014, these three routes carried 50% of all trips to and from the campus during an average Fall weekday.

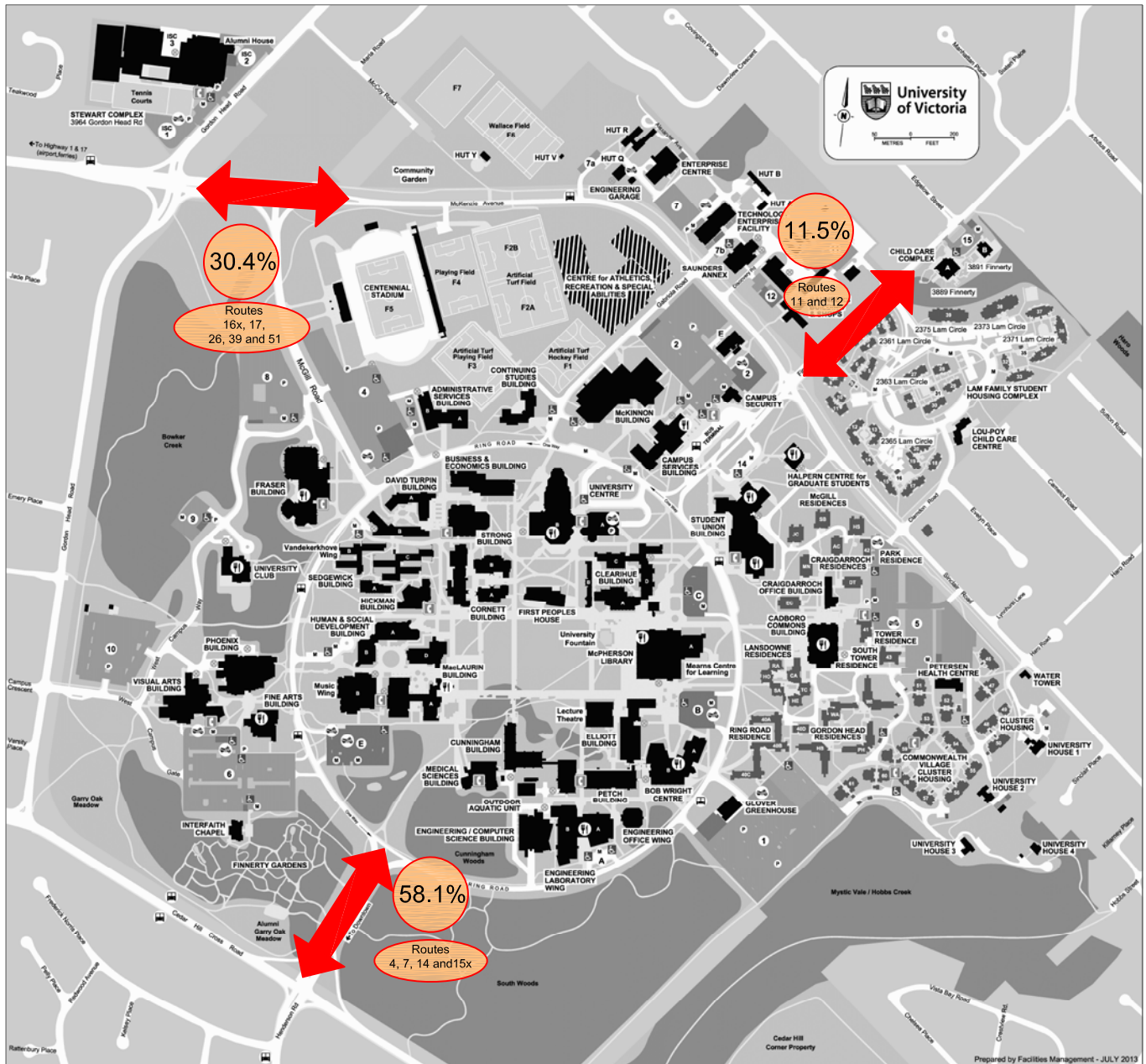


Exhibit 3 Transit Passenger Directional Distribution

3.4 Cyclists

A summary of the total inbound and outbound cycling trips at the University from 7:00 AM to 10:00 PM is summarized in **Exhibit 4**.

The most heavily used driveway for cycling trips is University Drive accounting for approximately 26.8%, followed by Gabriola Road at 16.3% and West Campus Gate at 15.2%. A shift in access patterns has been observed since 2012 when the trips made via the McKenzie Avenue multi-use pathway (M-11) were 12.6% (compared to 6.1% in 2012) and trips made via Gabriola Road were 8.0%.

During the 2014 survey, the multi-use pathway (M5-b) was closed during 2014 due to construction. The two new manual count stations (M-13 and M-14) along pathways from adjacent roadways to the University accounted for 1.1% of the total daily cycling trips in 2014. The cycling trips made along these pathways were not counted in previous surveys.

It is calculated that during an average Fall weekday approximately 4,357 bicycle trips were made between 7:00 AM and 10:00 PM. This is decrease of approximately 315 trips from the 4,674 cycling trips calculated in 2012. The 2014 cycling trip total includes 2,388 inbound and 1,969 outbound cycling trips. As with previous years, there is a slight inbound / outbound imbalance that may be due to cyclists still being on campus at 10:00 PM or cyclists using transit or other means for their outbound trip.

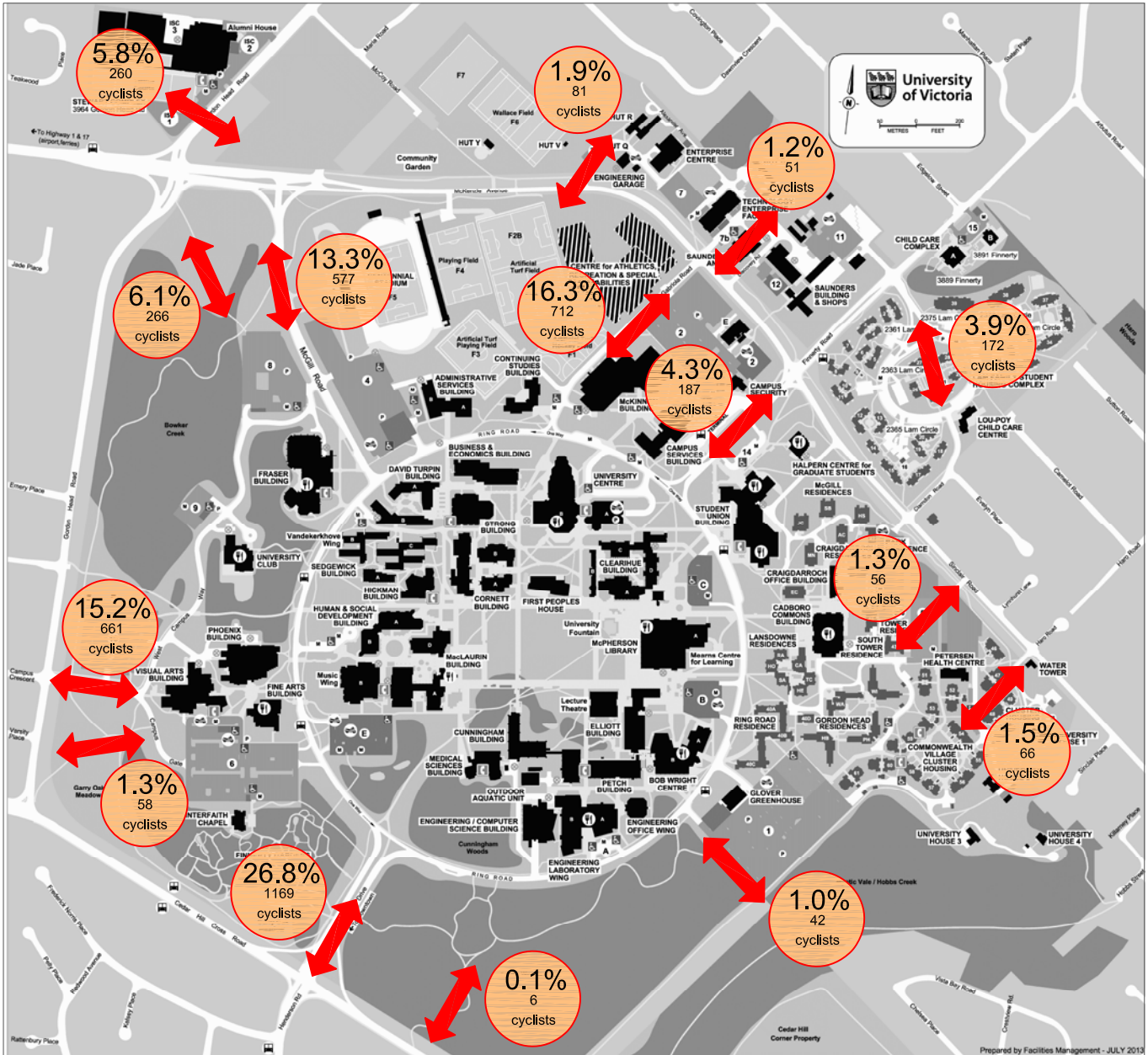
3.5 Pedestrians

A summary of the total inbound and outbound pedestrian trips at the University from 7:00 AM to 10:00 PM is summarized in **Exhibit 5**.

The two new manual count stations (M-13 and M-14) accounted for 5.6% of the total daily pedestrian trips in 2014. The pedestrian trips made along these pathways were not counted in previous surveys.

The number of daily pedestrian trips to / from the University is estimated at approximately 8,680 consisting of 4,910 inbound and 3,770 outbound trips. This represents a slight increase (56 pedestrian trips) over the 8,624 daily trips calculated in 2012.

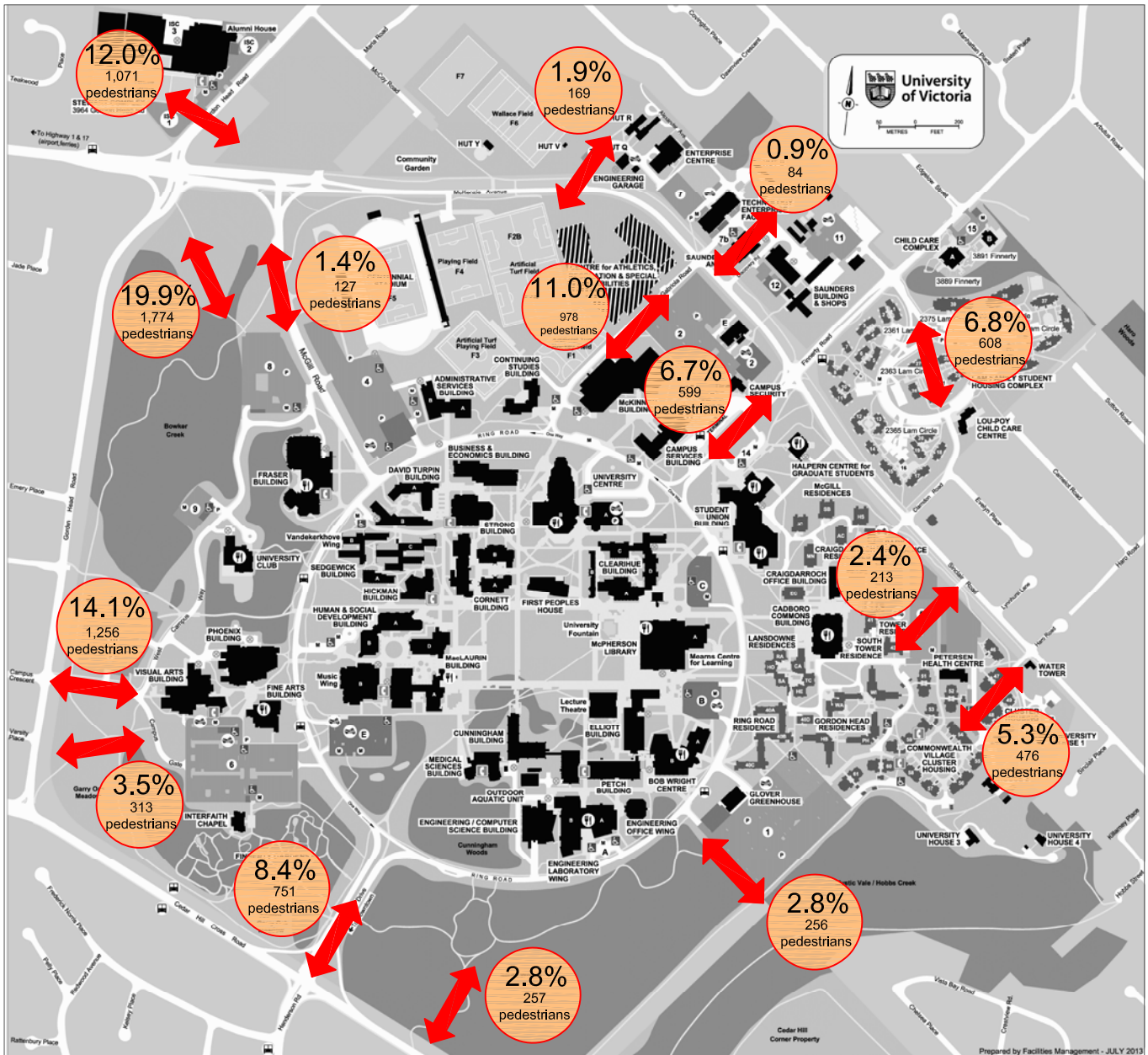
The highest percentage of pedestrians was recorded at the McKenzie Avenue multi-use pathway with 19.9% followed by the West Campus Gate at 14.1% and the Stewart Complex at 12.0%. These results are similar to the access patterns observed in 2012.



Daily Cyclist Traffic (07:00 - 22:00)
 Inbound: 2,388
 Outbound: 1,969
 Total: 4,357

Exhibit 4 Cyclist Access Patterns





Daily Pedestrian Traffic (07:00 - 22:00)
 Inbound: 4,910
 Outbound: 3,770
 Total: 8,680

Exhibit 5 Pedestrian Access Patterns



4. TRAVEL MODE SUMMARY

The findings of the 2014 surveys reflect the success of the University's Transportation Demand Management Strategy. The shifts in travel modes over past years have been very encouraging. The following **Table 3** provides a summary of the modal split for 2014 and a comparison to previous year's survey results.

Table 3: Modal Split Summary

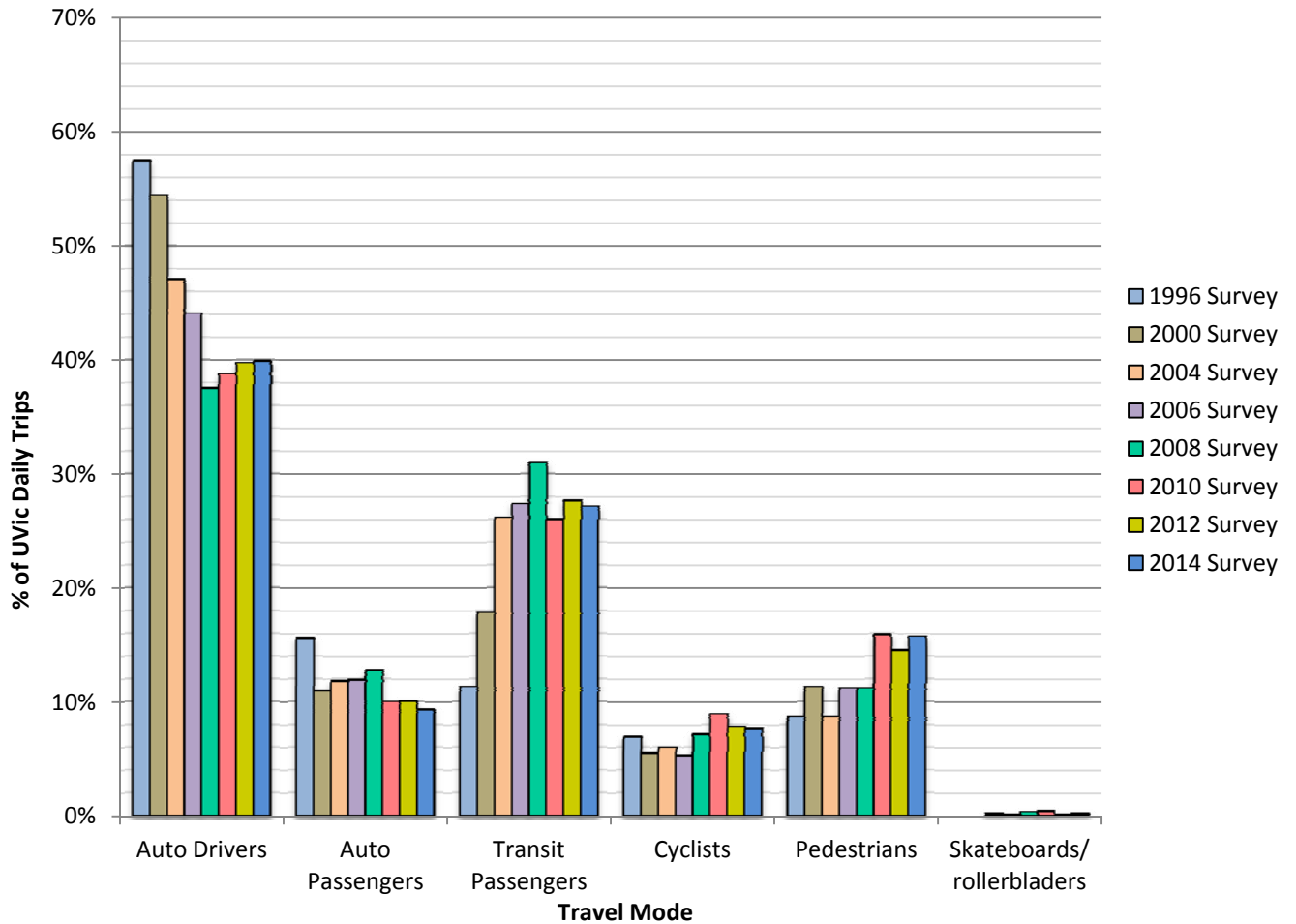
Travel Mode	1996 Survey	2000 Survey	2004 Survey	2006 Survey	2008 Survey	2010 Survey	2012 Survey	2014 Survey
Auto Drivers	57.5%	54.4%	47.1%	44.1%	37.5%	38.8%	39.8%	39.9%
Auto Passengers	15.6%	11.0%	11.8%	11.9%	12.8%	10.0%	10.1%	9.3%
Transit Passengers	11.3%	17.8%	26.2%	27.4%	31.0%	26.0%	27.7%	27.1%
Cyclists	6.9%	5.5%	6.0%	5.3%	7.1%	8.9%	7.9%	7.7%
Pedestrians	8.7%	11.3%	8.7%	11.2%	11.2%	15.9%	14.5%	15.7%
Skateboards/ Rollerbladers	0.0%	0.0%	0.2%	0.1%	0.3%	0.4%	0.1%	0.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The mode split has stabilized over the last three surveys and changes for the most part were minor. Highlights from this survey are:

- The percentage of automobiles drivers in 2014 (39.9%) is comparable to that recorded in 2012 (39.8%) and the total automobile-related trips was again below 50%.
- The total number of automobile passengers results in a lower percentage of 9.3% for 2014 as compared to 10.1% for 2012.
- The total number of transit passengers shows a decrease in overall mode split percentage from 27.7% in 2012, to 27.1% for 2014.
- The mode share for cyclists is 7.7% in 2014, a decrease of 0.2% from 2012.
- There were more pedestrians reported with a mode split share of 15.7%, up from the 14.5% reported for 2012.
- Skateboarders and roller-bladers mode split share is up 0.1% from 2012, when there was a 0.1% mode split.

The following **Figure 1 - Travel Mode Summary Chart** graphically illustrates those results shown in Table 3.

Figure 1 - Travel Mode Summary Chart



In 2014, it is calculated that there were 56,641 total trips (all travel modes) made to and from the University Campus between 7:00 AM and 10:00 PM. In 2012, a total of 59,512 total trips were calculated. Although 2,871 fewer total trips were made to and from the Campus during 2014, including 1,068 fewer single occupant vehicle trips than those observed in 2012, the overall travel mode split does not reflect this. As with previous years, travel mode summary results are compared in terms of percentages for the various travel modes.

5. CONCLUSIONS

The travel mode trends are essentially no different from the 2012 survey and are consistent with those in the region. Fluctuations from year to year are to be expected depending on weather conditions and campus activities. The overall conclusion from the 2014 results is that there has been no significant change in the modal share for travel to and from campus compared to 2012.

As with the results from the 2012 survey, there were positive signs in 2014 with regard to TDM programs. The combined percentages of transit, pedestrian, bicycle and skateboarders and rollerbladers account for over 50% of the trips made to UVic.

The University's Sustainability Action Plan's goal to increase the use of transit, cycling, walking and carpooling to 70% of the transportation modal split by 2019 can be achieved with the actions described in the Plan and by monitoring the progress relative to the goals.